

(Ambient, Ethical Futures—**Mariana Quintero**)—(A Dialogue **Thomas Duggan and SJ Fowler**)—(From Architecture to Shoe-Making **Sara González de Ubista**)—(Microbiocene: A Microscopic View on Matter **Baum & Leahy**)—(Através: An Embodied Approach to Change **Gabriela Simões Garcia**)—(Growing Radically Sustainable Cotton **hydroCotton**)—(Prototyping Urban Self-Sufficiency **Fab City Hub**)—(Rent your Body as Data Storage **alterR.studio**)—(Reawaken, Cognizant **Jeanine Verloop**)—(Multilayer: Conversing Between Rhythm & Space **nueveojos**)—(Ontology of a Crisis: The Shape of a Virus **Saira Raza**)—(Experimental Approaches towards Furniture Design **Mina Mina**)—(An Open Space **TestSite Meent**)

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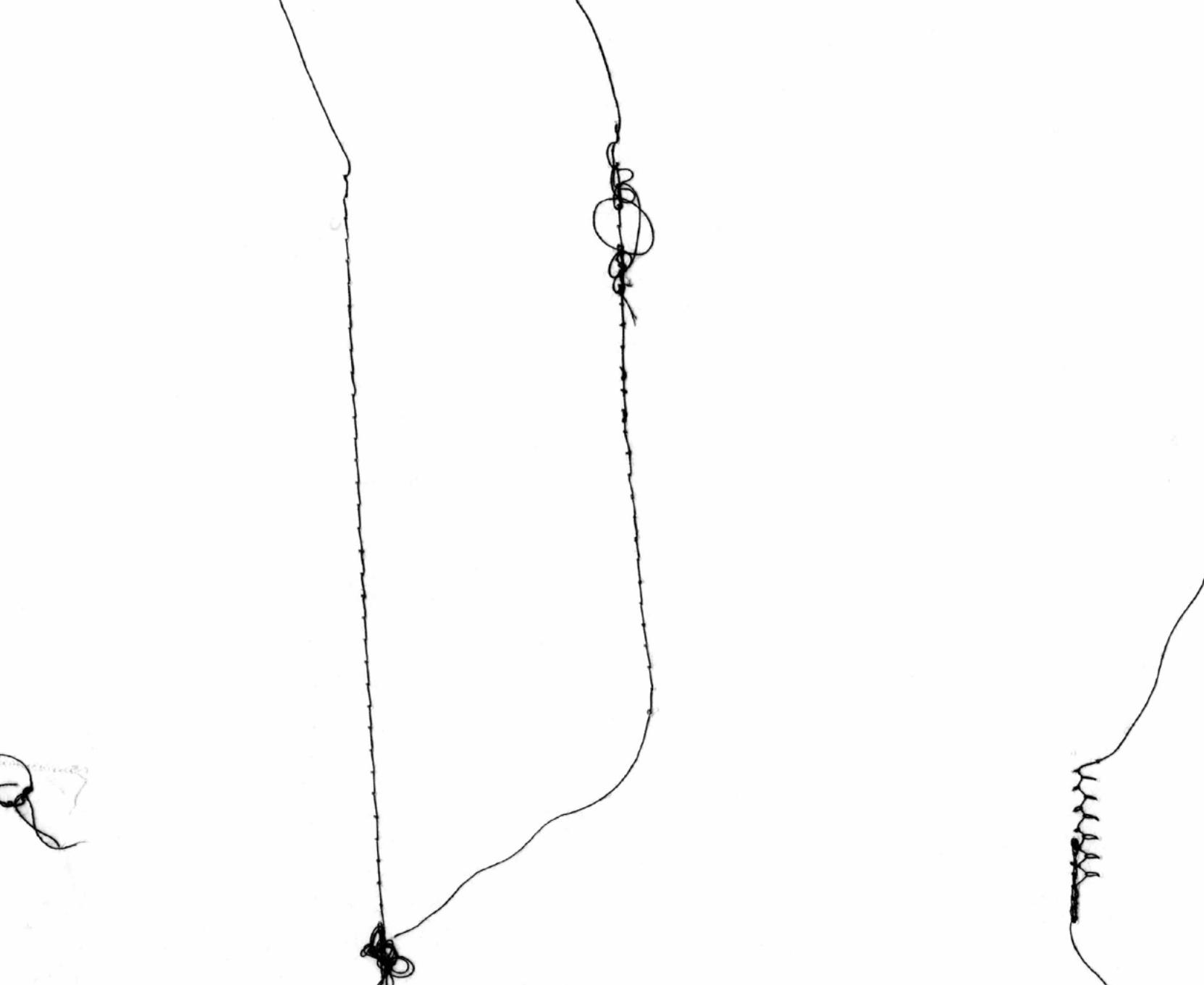
LINK Journal

Issue 01: States of Matter

Contact @linkjournal
link-journal.com
Edited by [Julia Bertolaso and Veronica Tran]
Published by [LINK]

Creation 01.2020 - 12.2020

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We are incredibly excited to release LINK Journal, a year long project that started at the beginning of 2020 with a conversation between two friends, and ended in a strange new world, as we all adjust to the new realities of a COVID-19 pandemic. In undertaking this project, we've been so fortunate to have this opportunity to create a 'space for conversation' like we have always discussed, via the form of this publication to address emergent narratives within creative practices. We wanted a project that would allow ourselves to reflect on what our practices could evolve into and look like tomorrow, and letting us collaborate with each other as two designers with different backgrounds.

What started as an idea quickly evolved to a multitude of inspiring conversations with many different creatives. We are proud to showcase so many different voices, diverse in origin, age, experience, education and everything in-between.

We would like to take this opportunity to thank everyone involved in the project, from our mentors, advisers and friends, to most importantly the contributors. Without their willingness to invite us to see a snippet of the world through their lenses, there would be no LINK Journal.

This book is a collection and curation of stories, reflections, case studies, interviews, conversations, editorials, and strands of thoughts, with designers, artists, and researchers who work within the

intersections of multiple fields. LINK Journal aims to tangibilize this 'in-between' space, a space where we may feel a bit lost, or where knowledge and information is not quite clear—the entanglement in-between processes, disciplines, and stages of life. This book compiles 13 contributions from 6 different countries and has been developed between Melbourne and Barcelona.

This is a self published book, and we've had the chance to learn so much about the process of creating it—the medium, the ideas, and the materials. We hope our readers can take as much away from the project as we did. We invite you to get inspired, question ideas, and enjoy reading!

Julia

+

Veronica

MARIANA QUINTERO

Mariana Quintero is a multimedia developer, interaction designer & researcher. She works and develops her practice at the intersection of where digital fabrication technologies, digital literacy, computational ethics & aesthetics meet. Mariana is contributing to projects that investigate the rise of the third digital revolution, questioning how digital information and technologies translate, represent and mediate knowledge about the world.

THOMAS DUGGAN & SJ FOWLER

Thomas Duggan is an artist, maker and an inventor exploring an array of intersections— between nature, design, materials, architecture, science, advanced generative design, technology, craft and robotic fabrication. Thomas' collaborative and multidisciplinary research studio, based in the United Kingdom, explores design, material science and sculpture using advanced robotic fabrication to support collaborative projects

for individuals, companies and institutions.

SJ Fowler is a writer, poet, and artist based in London. He has published eight collections of poetry, five of artworks, six of collaborative poetry plus volumes of selected essays and selected collaborations. His writing has explored diverse subjects such as prescription drugs, films, fight sports, museums, prisons and animals.

SARA GONZÁLEZ DE UBIETA

Sara De Ubieta completed her studies in architecture at ETSAB (UPC) during which she learned how to apply craft to footwear. The discovery of this practice led her to study the possibilities of non conventional materials through research projects. Sara has worked as a fashion and product designer with local factories, paying attention to the supply chain of materials from different industries. Her projects discuss the techniques and creation around the agency of materials as living subjects, and on the relationship

between object and craft.

JEANINE VERLOOP

Jeanine Verloop's practice of ongoing research and visual exploration explores the realm of imagination and beauty surrounding technology. Her printing devices combine analog and digital technology, connecting us with the lost beauty and magic within everyday devices. Besides her personal work, Jeanine is the initiator of a collaborative project called Testsite Meent, an artist-run exhibition space surrounding media and technology, created to encourage a breeding ground for makers and creative networks.

FAB CITY HUB

The Fab City Hub is an innovation hub located in Poblenou, Urban District of Barcelona, led by Emily Whyman and Jessica Guy. They design and prototype sustainable solutions to urban food, water, energy and waste challenges. By holding workshops, lectures and experiences open to the local and global community, they

support and promote regenerative, compassionate futures. Fab City Hub is part of Fab Lab Barcelona and the Fab City Network.

GABRIELA SIMÕES GARCIA

Gabriela Simões Garcia graduated in Architecture and Urbanism from Universidade de São Paulo and has a master in Design for Emergent Futures from IAAC/Elisava-UPC in Barcelona. Gabriela founded através, a cross-disciplinary creative practice focusing on transformation – of spaces, relations, perceptions, and conventions. Previous and current projects address topics related to sustainability, biomimicry, systems change, digital fabrication, craftsmanship and shared knowledge. As an architect always exploring new crafts and strategies, her belief lies in the power of making as a tool of connection and awareness.

BAUM & LEAHY

Baum & Leahy is an award-winning international, creative duo working across interactive installation, art

direction, scenography and experience design. They collaborate with experts across disciplines, from microbiologists to musicians, quantum computer scientists to architects, to open up, question and translate scientific research into sensory, tactile, and participatory experiences. Through research-led worldmaking and material storytelling, their work enables the viewer to come closer to alternative realities, melting between the feasible and fantastical.

ALTERR.STUDIO

alterR.studio is a multi-disciplinary research-based studio, located in San Francisco and New York, working on the intersection of art, design and technology. Their work speculates possible futures to address unseen challenges and opportunities through designed artifacts, scenario-building, and immersive experiences. They have been selected as 100 designs of the year 2019 by Award 360°, finalist of WIRED Japan Creative Hack Award, and their work have been exhibited at the Institute

For the Future's (IFTF) 10 Year Forecast Summit and Toronto Design Week.

HYDROCOTTON

hydroCotton is a London-based startup co-founded by the scientists, designers & engineers John Bertolaso, Edward Brial, and Edward Hill. They are undertaking the challenge to reduce their environmental impact by growing radically sustainable, transparent and future-proof cotton using novel in-field farm technology. They are working at the intersections of science, technology and engineering to grow cotton from their research lab currently in South London.

NUEVEOJOS

Nueveojos are dedicated to visual communication with a particular interest in the world of culture. They conceive their work from an author's perspective, so that each project is an open creative space. Starting from 2008 they have worked with producers, agencies, public institutions, artists and all kinds of creative workers. They are a team

of three filmmakers specialized in post-production and art direction working with the best experts and creators. They understand production as a task that is multidisciplinary and cooperative. They communicate ideas with digital art.

TESTSITE MEENT

Testsite Meent is a temporary, free-form exhibition space housed in an old Albert Heijn supermarket which was located on Meent 80 in Rotterdam. Testsite Meent was founded on the principles of collaboration and experimentation, and it focused itself mainly on housing and exhibiting works of art involving (new) technology and media, as well as seeking collaborations and interconnecting creatives with similar interests. Testsite was initiated by Jeanine Verloop, Sanne Schilder, Caio Vita, Jeroen Rijnart, Jochem Walboomers, and Armand Bakx.

SAIRA RAZA

Saira Raza is a researcher interested in data-driven material design, knowledge building and

co-creative methods in technology development. She has a background in engineering and experience in finding insights for NGOs and media organisations using literature, data and by co-designing with stakeholders. Her recent investigations seek to bridge the research-practice gap in data-driven metamaterial design. Prior to this she has researched topics on water and sanitation in emergencies and development.

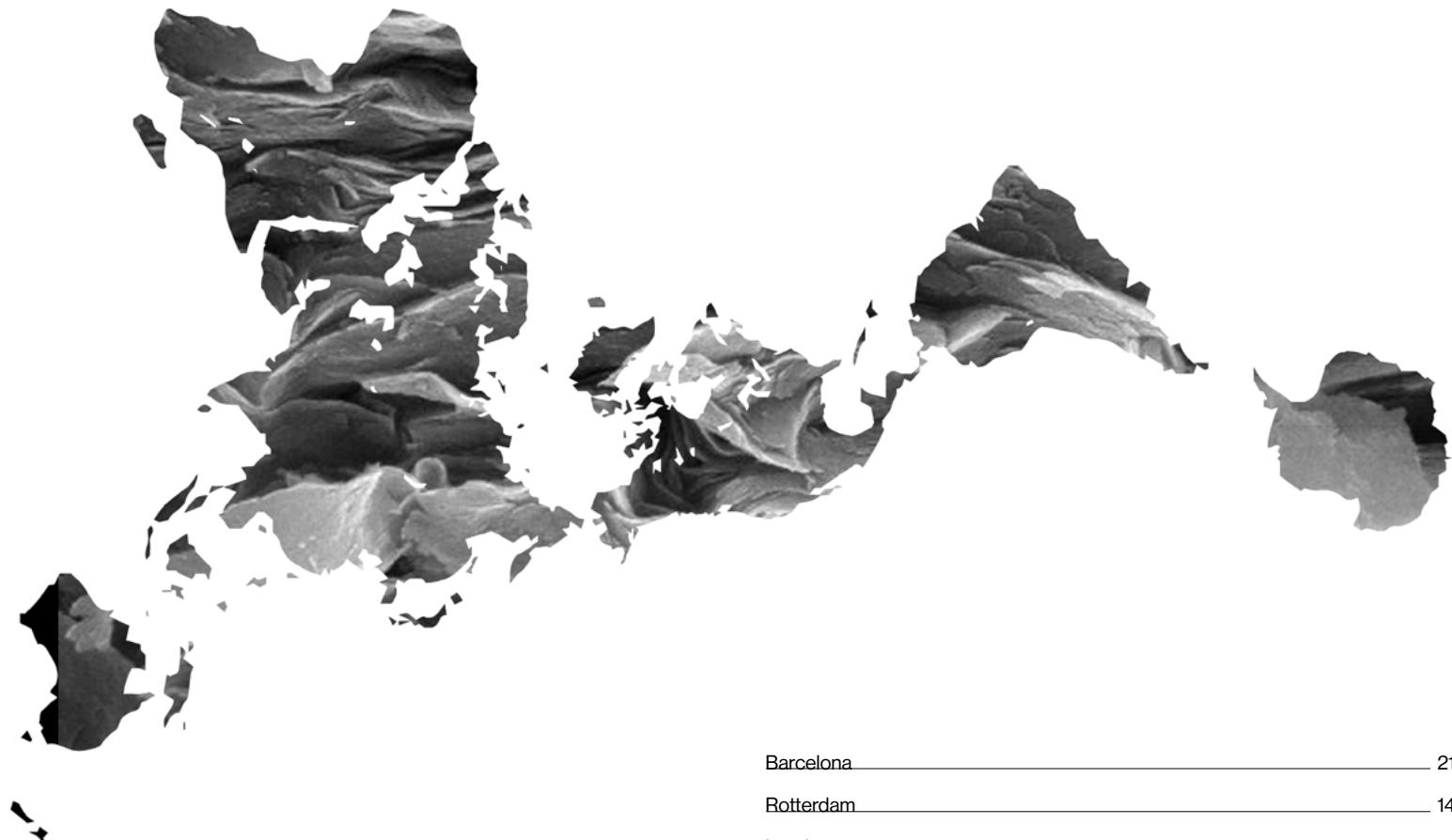
MINAMINA

Mina Mina is a design collaboration between two architects Mitch and Nancy based in Melbourne, Australia. The moniker Mina Mina comes from the first letters of Mitch and Nancy and also nicely defines their approach to design. In Japanese 'mina' means all. The unique duo explore many approaches to furniture design and enjoy making it with everyone, having a go at everything and sharing it.

LINK's first edition is

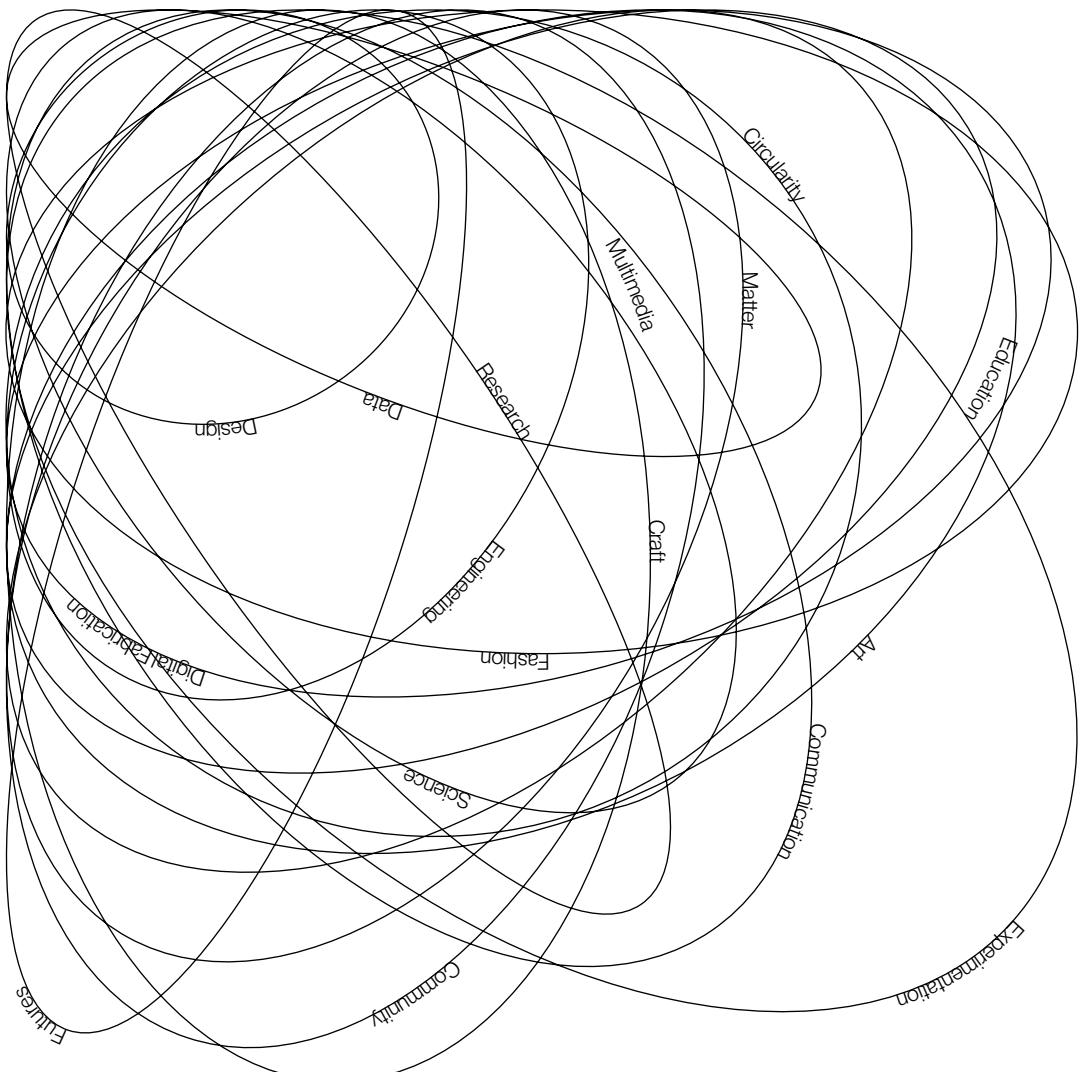
(480) pages
(29) people
(13) contributors
(18) disciplines
(23) conversations
(49,755) words
(6) locations

LINK collaborated with 29
people around the world.



The ecology of LINK Journal is defined by the relationships between the following key 17 topics

- Design
- Research
- Data
- Technology
- Science
- Engineering
- Fashion
- Education
- Experimentation
- Communication
- Craft
- Futures
- Matter
- Art
- Community
- Circularity



Collaborators
Contributors
Advisors



SARA
GONZÁLEZ DE
UBIETA*



MARIANA
QUINTERO*



ALTERR
STUDIO*



NUEVEJOS*



BAUM & LEAHY*



THOMAS
DUGGAN*



SJ FOWLER*



GABRIELA SIMÕES
GARCIA*



SAIRA
RAZA*



MINA MINA*



HYDROCOTTON*



FAB CITY HUB*

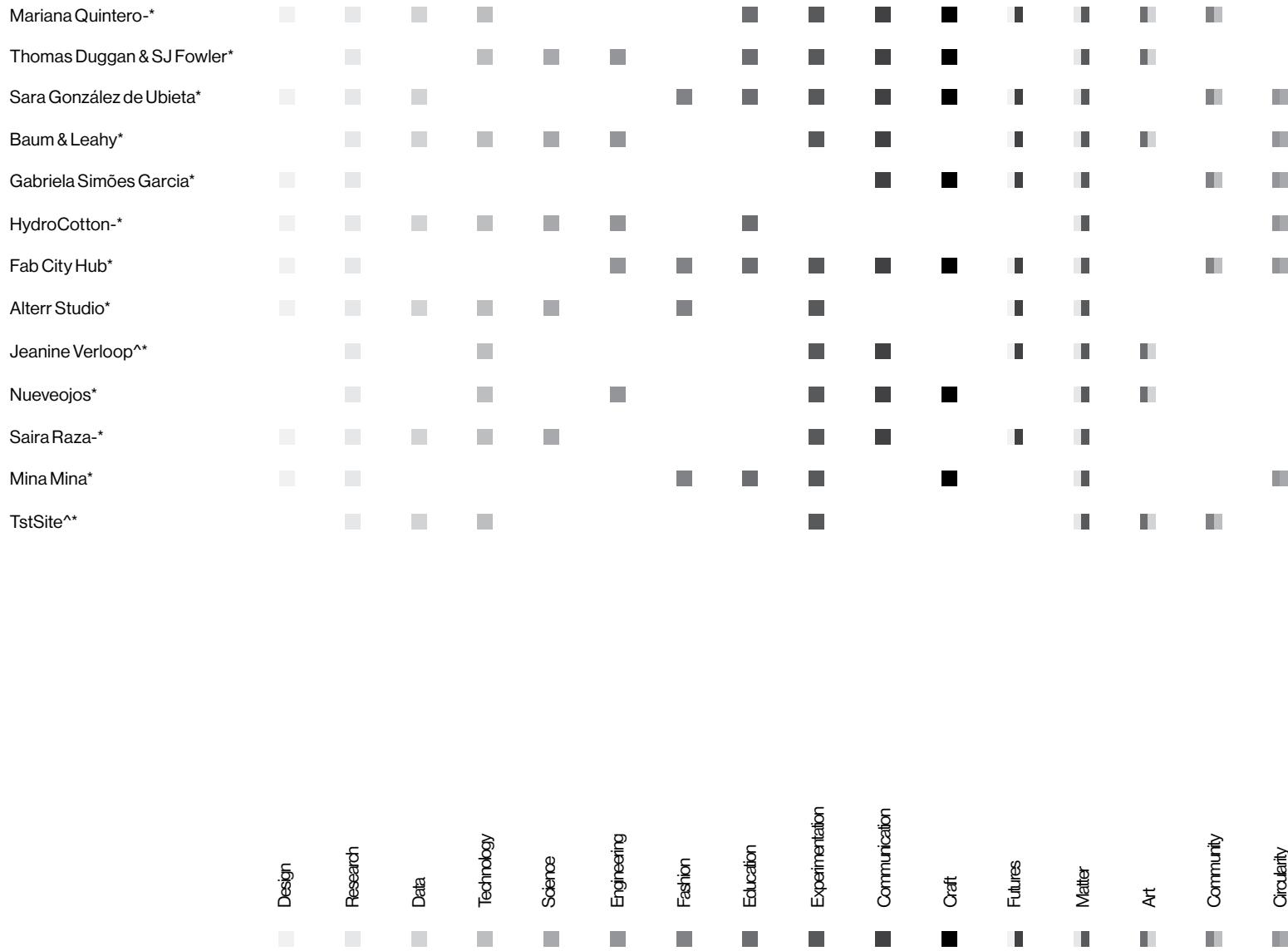


JEANINE
VERLOOP**



TSTSITE**

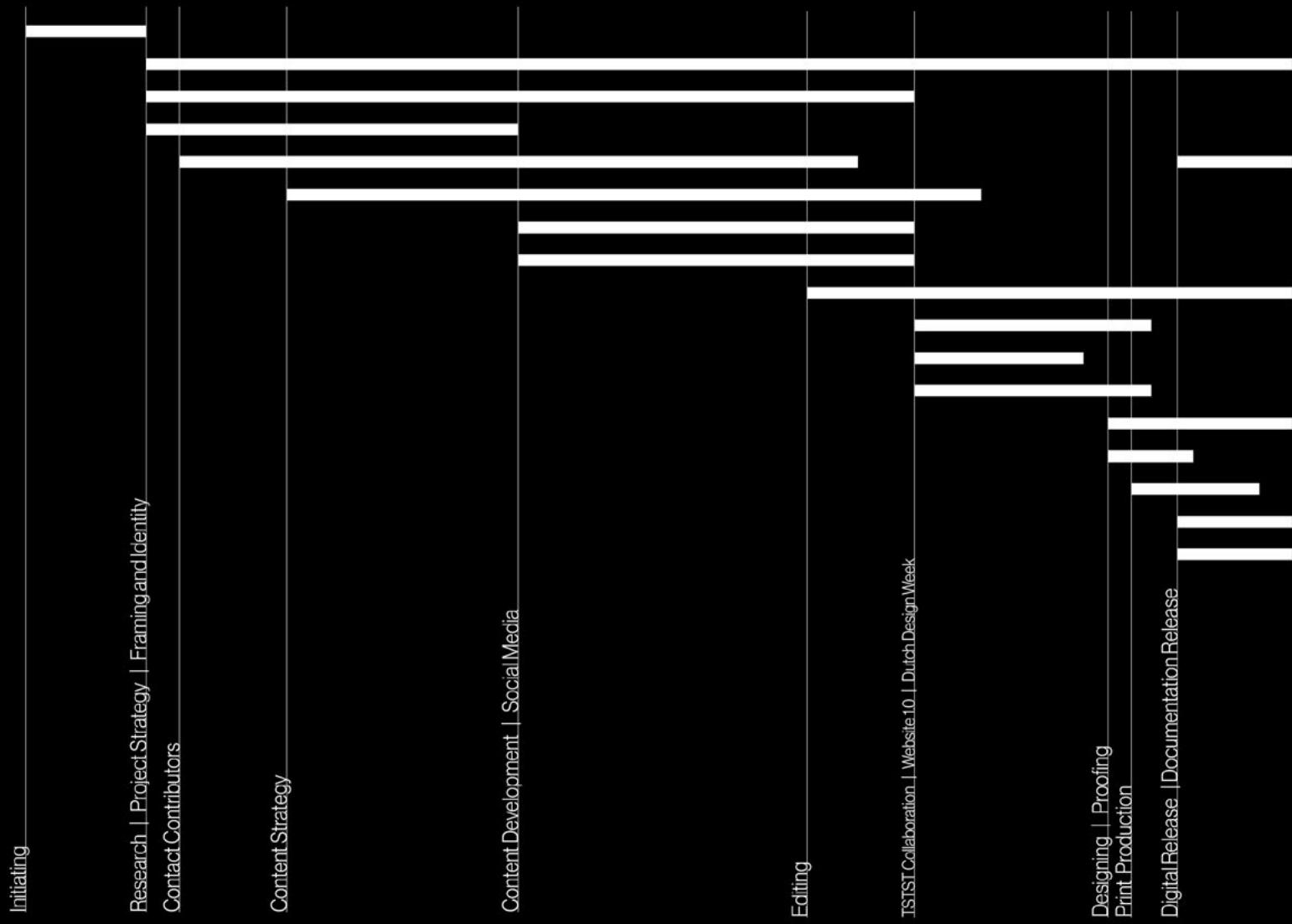
Tags



Timeline

Dec 2019

Dec 2021



Barcelona

Espai Joliu
Fab Lab Barcelona
Hangar
Impossible
Satan's coffee
Orval
Three Marks
Sopa
Llop
Little Fern
Nomad

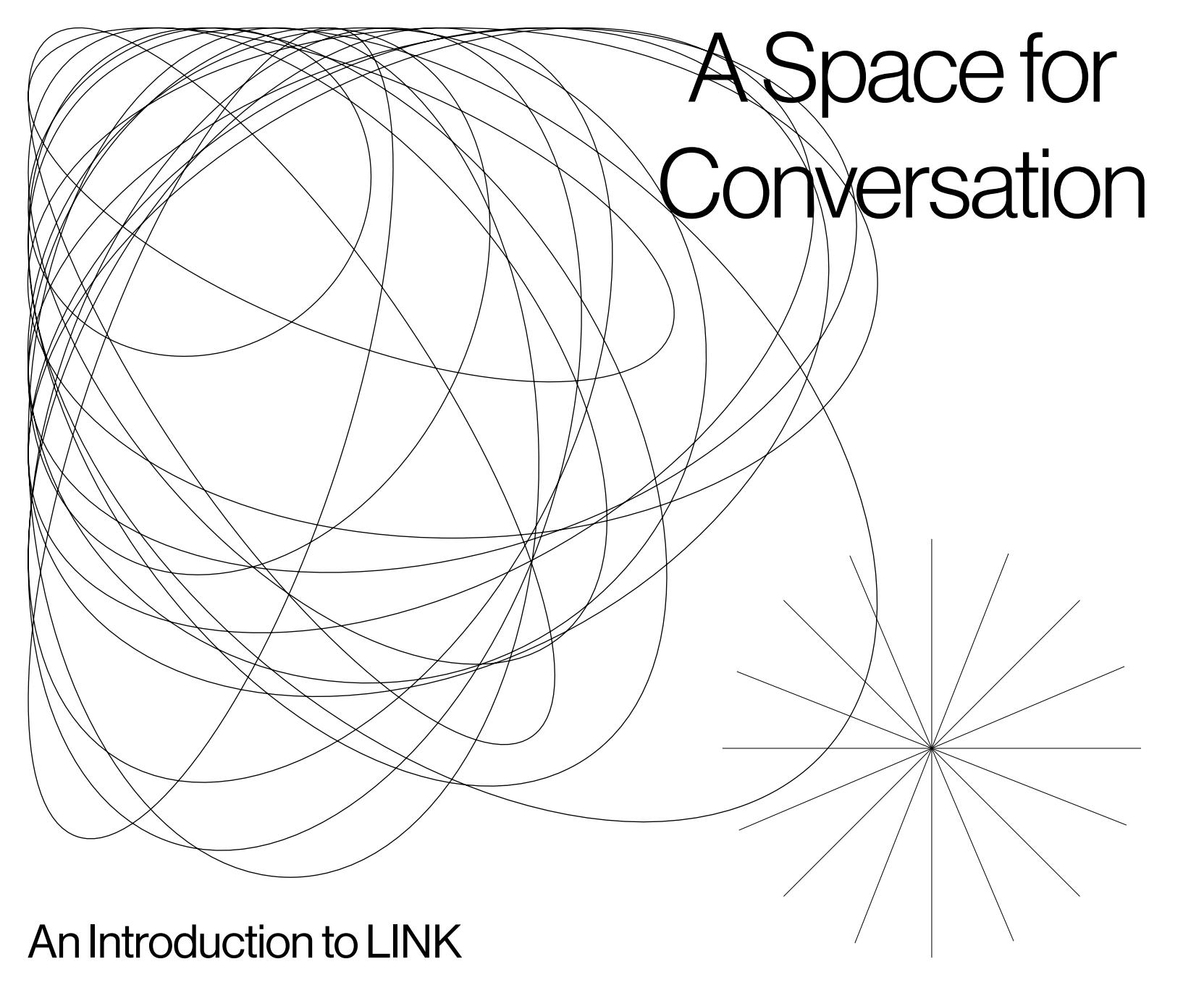


Skype, Zoom, Jit.si

25 November 2019, 00:43 hours
02 December 2019, 01:10 hours
04 December 2019, 00:33 hours
03 January 2020, 01:42 hours
11 January 2020, 01:24 hours
15 January 2020, 00:47 hours
20 January 2020, 00:43 hours
16 March 2020, 00:39 hours
20 March 2020, 00:49 hours
26 March 2020, 00:44 hours
27 March 2020, 02:20 hours
28 March 2020, 00:41 hours
29 March 2020, 01:06 hours
30 March 2020, 01:52 hours
31 March 2020, 01:48 hours
01 April 2020, 00:23 hours
02 April 2020, 01:17 hours
03 April 2020, 00:26 hours
05 April 2020, 00:27 hours
07 April 2020, 01:30 hours
10 April 2020, 02:03 hours
13 April 2020, 01:13 hours
17 April 2020, 01:04 hours
20 April 2020, 01:47 hours
21 April 2020, 00:55 hours
22 April 2020, 00:51 hours
24 April 2020, 01:48 hours
27 April 2020, 01:15 hours
02 May 2020, 00:46 hours
08 May 2020, 00:41 hours
10 May 2020, 01:32 hours
12 May 2020, 00:38 hours
15 May 2020, 01:22 hours
20 May 2020, 00:36 hours
26 May 2020, 00:55 hours
03 June 2020, 00:54 hours
06 June 2020, 01:05 hours
11 June 2020, 00:19 hours
16 June 2020, 00:53 hours
23 June 2020, 01:24 hours
20 July 2020, 00:34 hours
26 July 2020, 01:20 hours
27 July 2020, 00:25 hours
14 August 2020, 01:07 hours
23 August 2020, 01:01 hours
25 August 2020, 00:28 hours
29 August 2020, 00:55 hours
05 September 2020, 01:12 hours
12 September 2020, 00:23 hours
15 September 2020, 02:34 hours
21 September 2020, 01:26 hours
25 September 2020, 00:27 hours
01 October 2020, 01:38 hours
14 October 2020, 00:22 hours
06 November 2020, 02:16 hours
08 November 2020, 00:51 hours
14 November 2020, 01:55 hours
24 November 2020, 02:03 hours
08 December 2020, 01:10 hours
16 December 2020, 00:53 hours
28 December 2020, 01:17 hours

About 70 hours of conversation

to be continued..



A Space for Conversation

An Introduction to LINK

STARTING POINT

A collaboration
An experiment

VALUES

Experimental
Open
Design-Led

AREAS OF INTEREST

In-Between Spaces
Translations
Modes of Communication

A Space for Conversation

THEME

States of Matter

Contributions



[LINK]

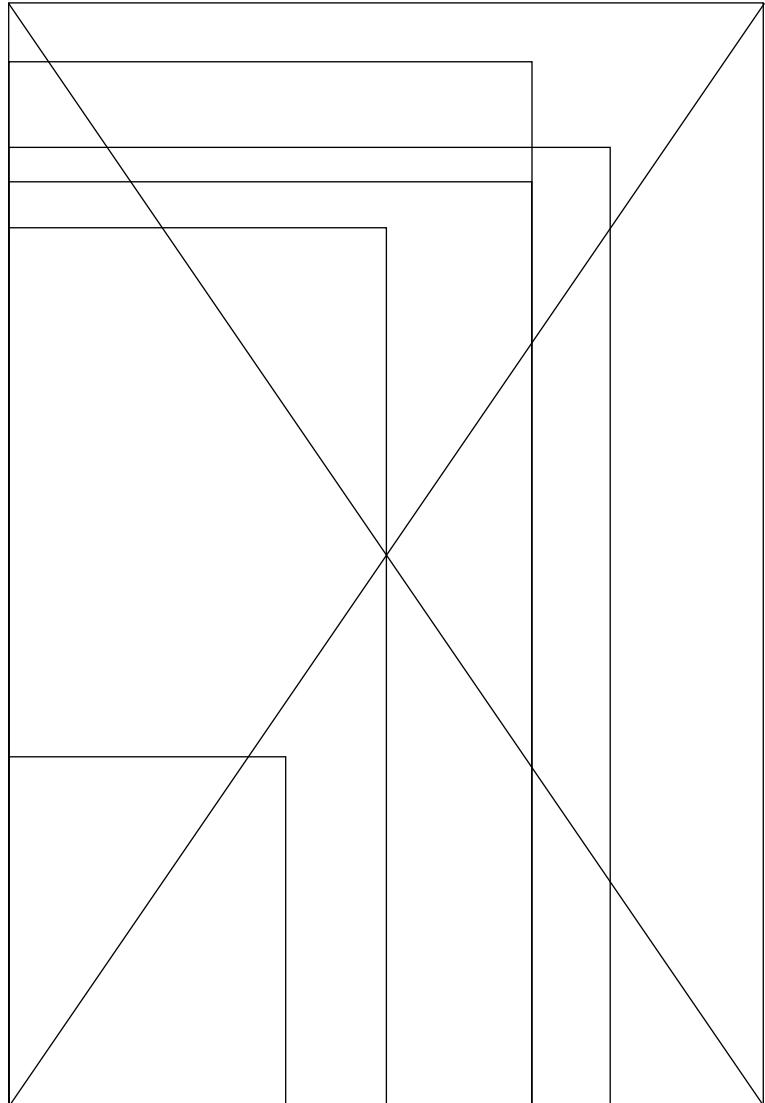
Born from a compulsive curiosity in hybrid environments, LINK Journal is an experiment dedicated to exploring [in-between] spaces.

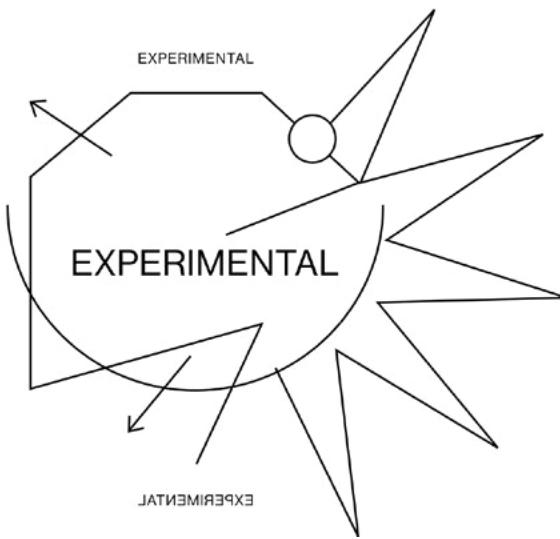
It seeks to connect opposing ends of different spectrums of thought within visible and invisible environments, in order to form a fertile ground for discussion in order to communicate different ways of thinking, seeing and doing.

It will address a variety of topics;

- materiality of digital systems
- exchanges of information mediated by the physical environment
- transparency of processes within creative project development
- embodied methodologies to perceptions of digital environments

More specifically, it is exploring these topics through the discipline of design; speaking directly to how design and creative practitioners are intertwined with digital and ecological interactions.



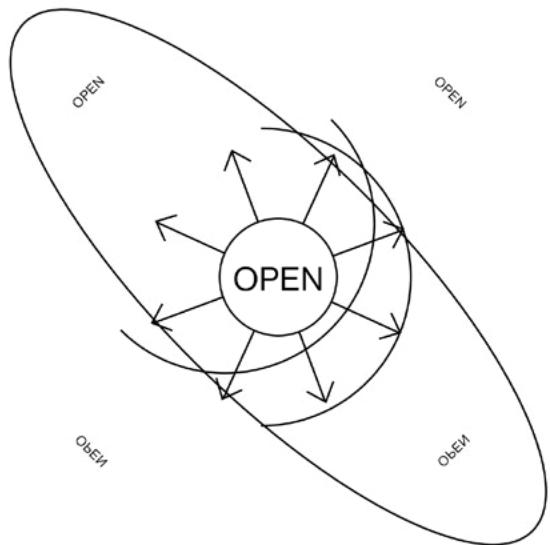


LINK is experimental, purposefully meandering. It is a space to bridge ideas, generate new thoughts, engage in conversations and reflect on those intricate connections found in those spaces in-between. These spaces refer to the points of tension constantly forming to give appearance on topics that are core to conversations around the built environment, people, design, and preferable futures. Within this complex mesh of peripheral knowledge, a link forms and rapidly transforms knowledge in ways that one would not usually see.

The primary objective of this journal aims to articulate, visualise and communicate the multiple layers of information that surrounds us, questioning where lines converge between data, information, knowledge within cultures, communities and our society.

'Almost indistinguishable from noise.'

It connects the dots, making links in-between the signs, words, lines and pages of this book. What is a book but a body of symmetries, ink on paper, bound together with string, connecting narratives, connecting materials, and connecting the in-betweens? The journal hence serves as a conceptual and practice-based space on how we can reflect on our relationship with dominant narratives related to today's design practice.

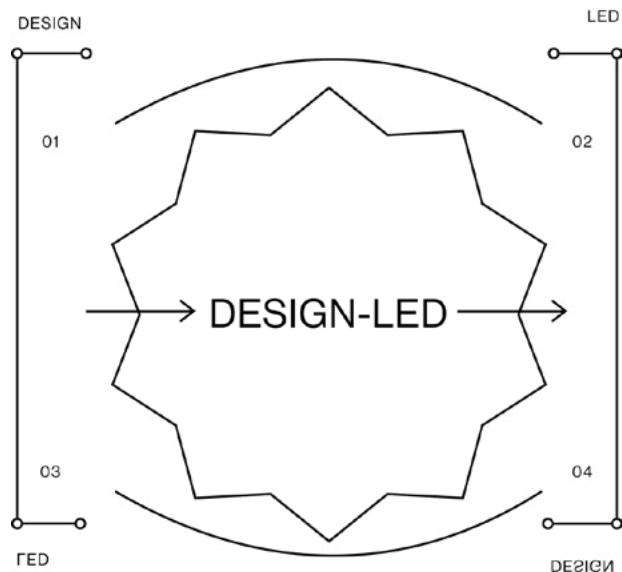


Starting from the desire to support practitioners and their visions, we created this space with the aim to articulate and visualise layers of the mixed realities, differing perspectives and invisible systems found in a hybrid world. By concretizing those ideas, systemic changes can be made, in the ways of seeing, feeling and doing, for preferable futures to be achieved. Through participation in the design process and decision making, our contributors and collaborators communicate the process in its entirety.

“Reorientation of mindsets, behaviours and mechanisms that foster long-term thinking and acting.” dmoo

LINK Journal is an open-source publication, highlighting connections between disciplines and arguments to address the narratives of 2020. Transparency of thought is essential for the purposeful development of this design experiment.

With the aim of making our thought process an open book, we communicate the process in with total transparency for the readers to gain a holistic understanding of how this medium is explored and how it used it as a tool to communicate common knowledge; sketches, scraps, previous versions of writing, communications, budgeting, design, will all be documented and published as a part of the medium.



Design today can be a process, a methodology, or a language, with the mission to translate information and communicate knowledge to society. Its role is not limited to problem-finding and problem-solving, but also requires practitioners to look into the space, created between the starting and ending point of the design process itself. In recent years design has been shaped by the entanglement of built, virtual, social and economic environments, all of which are contributing to transforming its contemporary role.

To make this process possible, a common ground needs to be created at different levels - from virtual and tangible communities to individuals and practitioners, values and beliefs, all connecting and influencing the cultural, political, economic and environmental points of view.

From the questioning of how will we learn to adapt to changing form of information, find new ways to translate and communicate, how will information manifest in diverse environments and cultures.

1	2
3	

of design practice and material futures and will attempt to showcase a unique creative collective of practitioners and creatives based worldwide.

Through the deconstruction of existing languages, words and signs, taxonomies are created to challenge the assumptions that those have a fixed reference point beyond themselves, and give exposure to differing meanings and new associations.

Following this method, LINK Journal opens up conversations with individuals and forward thinkers looking for change.

LINK Journal will explore through an experimental methodology the meaning of this age of entanglement, our online-lead physical connectivity in society, and the existing languages to communicate and make information visible.

It will make a projection of tomorrow's in-between space by sharing emerging topics within the areas

Translations

LINK investigates the notion of 'translations' by revealing ways of translating its multiple meanings within specific contexts of discussion, and the use of translation as a methodology. The act of translating is defined as conveying information from one language to another, whether it be code, to spoken word, to non-verbal language, between machines, humans, and living organisms.

The combination of signs within a language develops a coding system to convert raw data to knowledge, which only then can be communicated outside the specific language of origin. It is a hybrid process from which countless forms of languages can emerge and its meaning transforms along the process. All translations must include some form of interpretation along the way, creating various possible iterations and meanings to each one of them. It is easy to misunderstand and make sense of a set of signs which once taken out its context is lost in a world of information.

What are possible experimental languages that could enable conversation between disciplines and approaches? Here we explore the power and complexity of translations, to understand the importance of process and perspective.

In-Between Spaces

In the last decades, the development of information and communications technology (ICT) has multiplied the ways in which visible and invisible information can be exchanged. The speed at which it has evolved is faster than the ability for society to synthesize this information. As a response to this rapid changing 'state of matter', an overly connected world has revealed an increasing disconnection to

our physical space. Our constant connectivity and energy-intensive information and communications technology structures, have a substantial environmental cost with the ultimate capacity to endanger human's very own existence on Earth.

Data centres are a technology which organize a company or organisation's servers, switches, storage space; the entire ICT package manages the environmental conditions of the space (temperature, humidity, dust) to ensure robustness. However this infrastructure's energy consumption has a rapidly increasing carbon footprint.

"A study from Imperial College London estimated that US data centres used 100 billion litres of water in 2014 to cool their servery." ScreenShot Magazine, 2020

Therefore, LINK questions the motivations, moments and methods to connect to the internet in ways that could bring more balance to the relentless pressure put on the Earth's natural and limited resources.

In an increasingly digital culture of ubiquitous and, 'immaterial' technology, we've come to ask how do layers of mediation of our environment affect society? How does the infosphere metabolize information and knowledge?

History can explain why we have come today to such complex meaning and form of information. Stemming from economic needs to trade, Sumerians and Egyptians were considered the first to create a writing system, originally a phonemic script which made use of symbols and drawings to represent phonemes - basic sounds. This mode of communication then developed into the latin alphabet and today's alphabets respond in the best ways to their own status quo.

Our curiosity brought us to seek ways of breaking down our surroundings complex and codified knowledge, and to remap its content to look back into its meanings and possible alternative translations. Interpretation and creation of language intersects with the interests of LINK, aiming to examine the semiotics of new narratives.

Over the last two decades, data generation and consumption has grown exponentially. It is the result of the transformation of information, by which it seeks to capture elements of the physical world and simulate them for technological use. Each data point represents and communicates a single point of view limited to its own context. LINK explores how we can analyse these points of views to find points of tension, contrast, and connection. What becomes a matter of perception of reality and reality itself? Our society is being conditioned to not see, nor consider, the physical manifestation of

our digital interactions. As seen through abstract language used to characterise digital services, 'The Cloud' is an ethereal nether; it is simply abstract matter without geographical locations, it obfuscates visibility of physical infrastructure, not allowing for critical reflection.

"Everything that can be digital, will be"

Everyware: The Dawning Age of Ubiquitous Computing by Adam Greenfield

We grow more dependent on the internet in our everyday lives, yet our awareness and consideration of the material processes behind it remains limited. Fibre optic cables running through the streets, attached to subsea cables running between borders. We do not see the 'smart city', of sensors and cameras and towers, it is embedded, ubiquitous.

'Users are entitled to know what the interface hides. Access to knowledge is a fundamental right.'

Such as the prisoners mistake appearance for reality in Plato's cave, we have painted images of what the world is like under a digital lens through designed interfaces, coming up with metaphors for perceived reality, painting a narrow image that is merely a singular construction of one reality. Designed icons and pixels that make up images displayed on screen, mediate the space between the screen of a computer

and a sighted living being. The computer becomes an image, an encoded world of scenes and situations. But we forget that these are bits, we do not decode the code, and yet become a function of it – visual metaphors and representative elements, transferring our understanding of something into something else, assimilating to the new environment.

“Mathematical operations become aesthetic, and aesthetics becomes mathematical operations”

Josep M. Català Domènech

Strategies and explorations to manage certainty are becoming a growing necessity, visualising misassembled information into a visible structure for one to understand and confirm the information's integrity.

Data is a point of view, bound with a political agenda. The modern anxieties of disinformation plague the internet. Emerging language models are a largely controversial example of machine language displaying a broad set of capabilities, generating synthetic text akin to human writing at a very high quality. They are able to read, comprehend, summarize, answer questions, learning how to do so from raw text. The quality of writing is uncanny

and speaks to further implications into how this technology can scale in an age of disinformation. When human quality fake text can be automated, efforts toward media literacy, ethics, and social implications become further entangled with the development of technology.

Technologies are gathering social influence, whereby people adapt and revise their opinions or beliefs as a result of social interactions. This can play an impactful role in 'self-organized phenomena such as herding in cultural markets, the spread of ideas and innovations, and the amplification of fears during epidemics.'

Modes of Communication

Language is intricately connected with modes of communication. The process of exchanging information, defined by an understanding and capacity to respond to this very same information, is a form of communication. Recent languages, used within the digital environments, have redefined the ways in which we, as humans, process information and communicate knowledge within society today, changing the way we make sense of data.

"The medium is the message" phrased by Marshall McLuhan in his book Understanding Media: The Extensions of Man, 1964.

The philosopher and writer, Marshall McLuhan understood the notion of a "message" as "the change of scale or pace or pattern" that a new invention or innovation "introduces into human affairs." In this sense, it is not the message itself but the medium by which it is communicated that influences and transforms our behaviour and attitude within a defined environment.

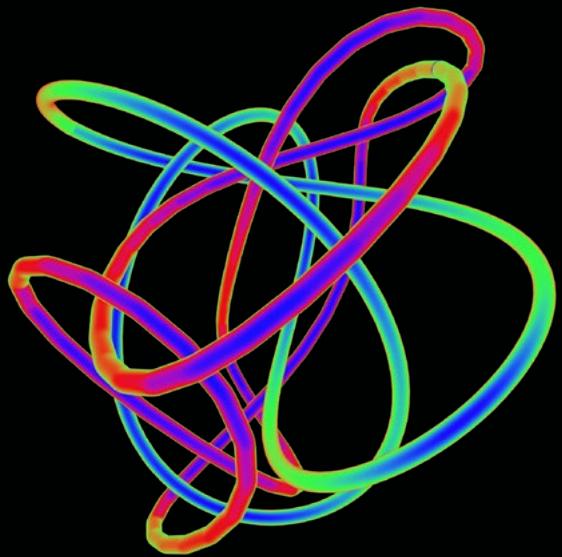
Two identical pieces of information, whether acquired in a book or on an online article, will create two distinct sensorial experiences by which the human body will read and interpret this information. These materials will be translated into equally distinct attitudes and actions. As a consequence, the medium plays a crucial role in defining society's behaviour no matter the content it is carrying.

The future of communication is defined by the tools, enabling humans to mediate conversations between the online and offline, with the goal of embracing more empathetic behaviour towards our physical environment, and towards one another. It experiments with the materialisation of information into ways that translate accurately, taking into consideration the possible implications of such choice of medium to materialise LINK Journal.

A Space to Question

States of

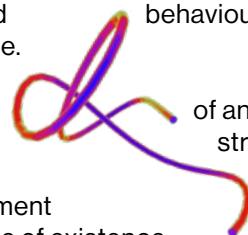
Matter



LINK Journal's first issue is dedicated to the theme 'States of Matter', with a focus on the changing forms in between information and knowledge.

The ancient Greeks translated the natural science of physics as "knowledge of nature", it studies matter, its motion, and behaviour in relation to space and time.

The 'state' to the form of its a specific moment temporal mode of existence, with the power to radically transform, when introduced to a new environment. Hence, the state of the particles that make up one matter is not the same as another. What is commonly defined as 'matter' is the physical part of the universe; a substance or a body, which defines various environments, consequently creating the diversity of materiality present on this planet Earth. The concept goes back to Antiquity, with a 'particulate theory of matter' developed in ancient India, which stated that all matter is made of atoms that are countless and indestructible. Three centuries later, the knowledge of the elements of the material world has had a massive development – moving from subatomic particles, such as 'protons' and 'neutrons' to point particles, known as 'quark' and 'leptons'; but there has also been no further development in the definition of 'matter' itself.



of an element refers to structure and materiality within

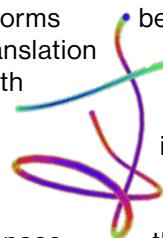
in time. It is a

with the power

These advancements in science demonstrate that these particles, which create matter do not behave as an everyday object might. They are in some way invisible, making the things around us visible. In the same way that information might feel abstract, but is also physical and visible.

The infinite nature of information present around us is shaping our behaviours and influencing our movements. It is defining society and individuality through the lens of physical objects used to communicate this information. The supporting physical infrastructure of the internet remains static as digital culture evolves by the second. The changing nature of information gives the way for multiple morphologies to form tensions and reveal connections.

As matter transforms processes of translation 'in-between'. Both spatial, this of structure appearance matter within is in this hybrid space in behaviour and properties of the matter will happen, redefining its meaning and role within its environment. Closeness, motion and arrangement of particles will change as its state changes.



between states, the define something temporal and conversion

is redefining the and meaning of this its environment. It

that a radical change properties of the matter will happen, redefining its meaning and role within its environment. Closeness, motion and arrangement of particles will change as its state changes.

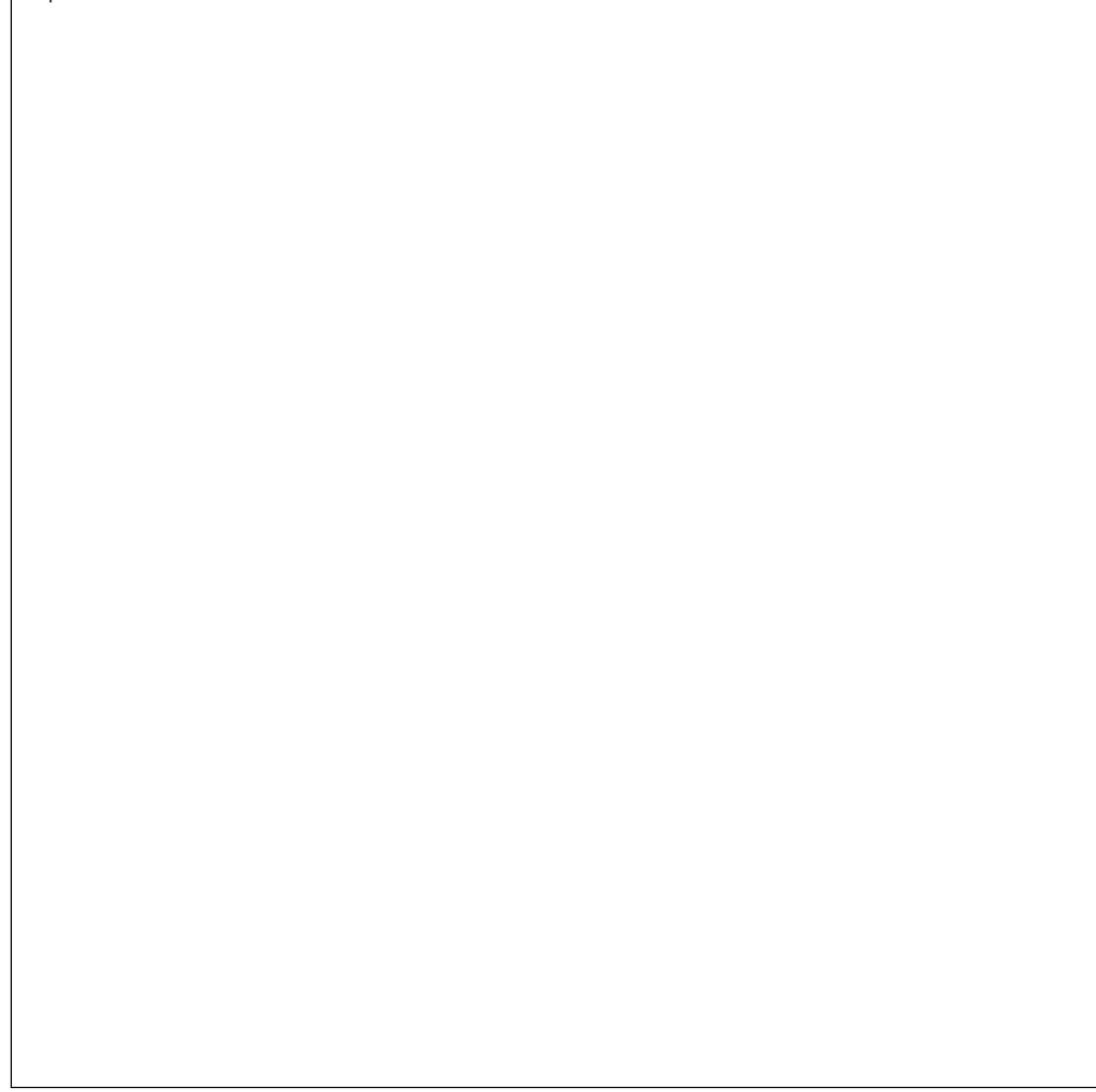
Space for interpretations of the notion

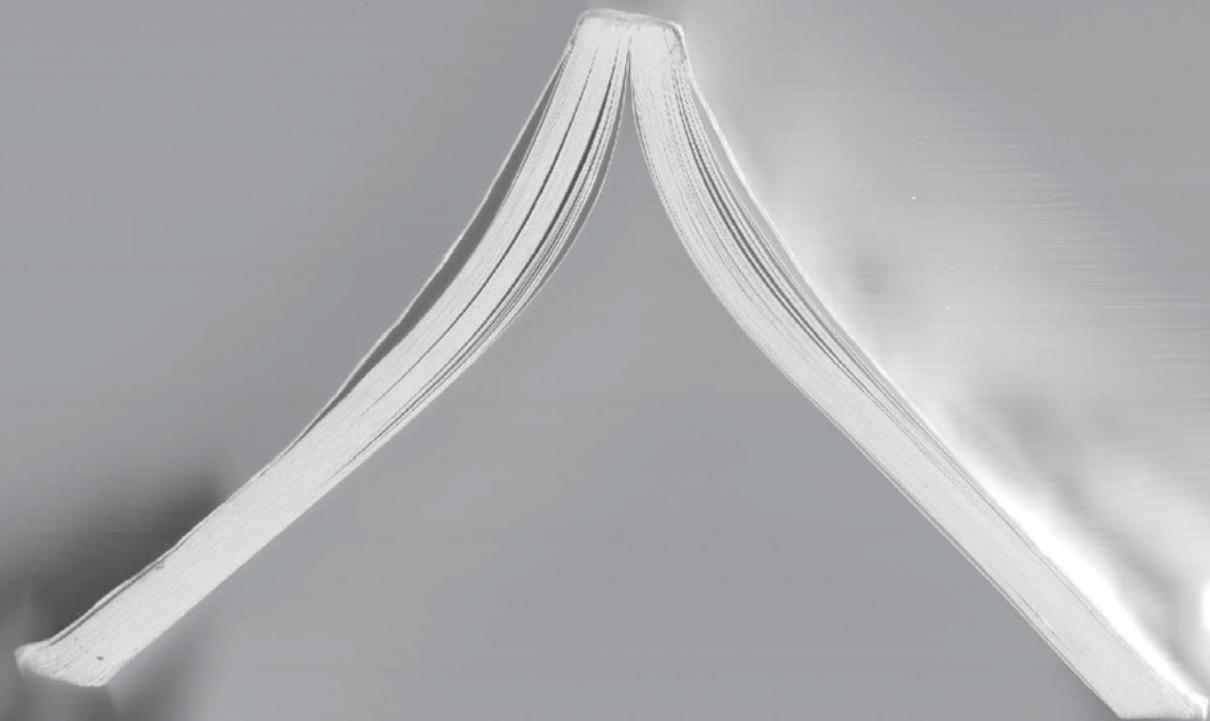
In the same way that physics studies matter, this first issue analyses the nature of information and its physical embodiment. 'States of Matter' explores the materialities of systems and impact of interdependence between physical spaces.



It questions the possibilities for what is matter, with the aim to provoke our current understandings, progress these concepts between now and the future. Is matter a form of energy? Can we hold it? Can we interact with it? How can we further unpack the definitions of matter?

A Space to Ideate



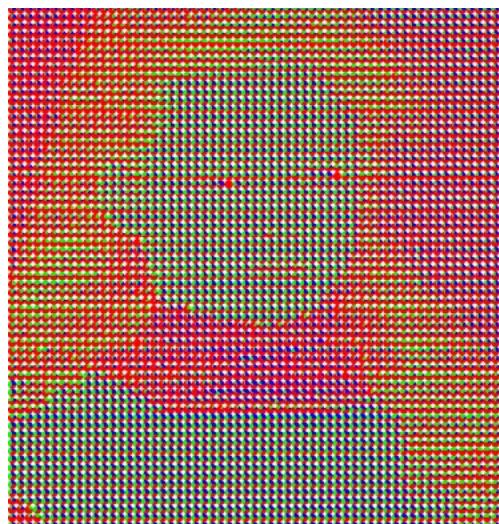


MARIANA QUINTERO

REFLECTIONS
WITH MARIANA
IN HER STUDIO IN
BARCELONA, SPAIN,
2020

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Ambient, Ethical Futures



From the Beginning

I can never place it exactly. I could never place the beginning in time because as always, this can be traced back to childhood or to teenage years. But I studied in a very scientific school. I went to a german school. ...This school was not very art or humanities oriented, it was always very rational and more towards the STEM:

Science, Technology, Engineering and Math.

Art as A Critical Tool

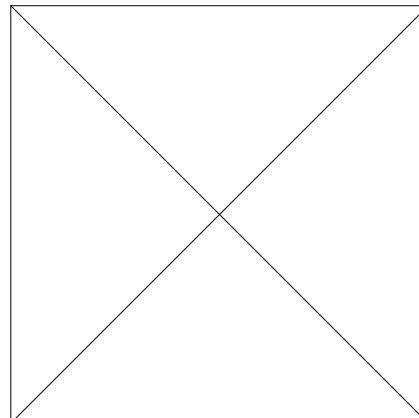
You know, I love the arts and the art hours that I had in school, but they were too marginal, and didn't connect with school projects or school material at all. It was specific projects mainly, but now it's changing into more hybrid classes of art and who knows... physics. I think this is the vision I have for artists today, to really be able to observe the sciences or to practice the sciences. To use it [art] as a critical tool to observe math and science, and scientific models through the critical perspective art gives you.

A Hybrid Profile

I was always like that— half artistic,
half scientific.

The school was like that and I was like that. I really liked both and I never could choose between them. ...No one taught me the ways of combining both and so it's difficult to choose when you don't have the options, when you don't know what you can choose.

I think these in-between spaces are also really important to present. Especially now, to present them to the new generation like "this is a space you can choose, you can be a hybrid profile, you can live in between those spaces and perfectly build a career around it". But at that time we didn't know, it was either this or that.



Studying Journalism

I was at school studying Journalism, and I started working in a political magazine, hardcore Colombian politics, because I felt that if you wanted to be a serious journalist, you had to be an investigative journalist. But I had all these ideas in my mind that I never allowed myself to do, what I really wanted to do. I did this for a while, but I hated that.

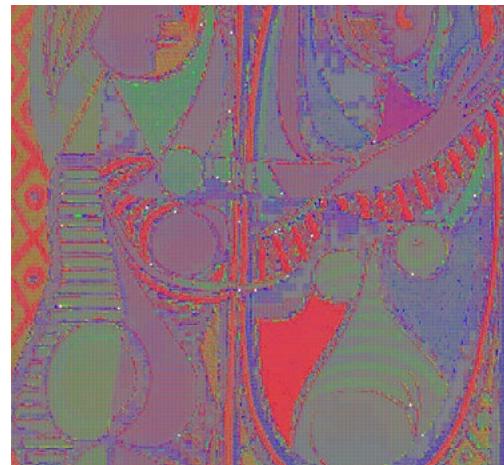
I had to navigate almost all the professions available to me [in this field of Media Communication] to be able to come back to that initial desire. But I feel like everything I've learned, I can somehow use it in everything that I do.

Making Sense of Complexity

Then things happened, and at some point I started working as a teacher in my university and worked as a consultant for the Ministry of Education for three years with my thesis tutor. I learned lots about data and building huge databases, or let's say, making sense of big data. During this project, we had to do a very complex task, we had to monitor every social media, every news outlet in the country and be able to say to the Ministry of Education which topics people were talking about. So we had to not only build the technical system for all of that to happen, but also build the reports and know how to tie together all that complex information into something that could create serious political impact. Nowadays, we have a greater responsibility to be able to translate [this information] accurately.

Data, Perceptions and Automation

I think at that point I really trusted the system we had created for this project, but it taught me one of the most important lessons that I know today, which is that data is just a point of view. And it will always be, even if you're working with every possible system that can automate. Automation has a bias in itself, which is that you're capturing a bit of reality and registering it. But reality, even the most tiny point in reality, is multi-dimensional. So even if you capture one side of the particle, you're missing the rest, especially because everything in reality is relational. ...Today AI can build complex systems from different points of view of the same point in reality but even so, if you observe them all at once, you will never finish capturing information about that point in space and time because your interfaces will stop at one point to be able to see all of the possible relational dimensions that can be captured.

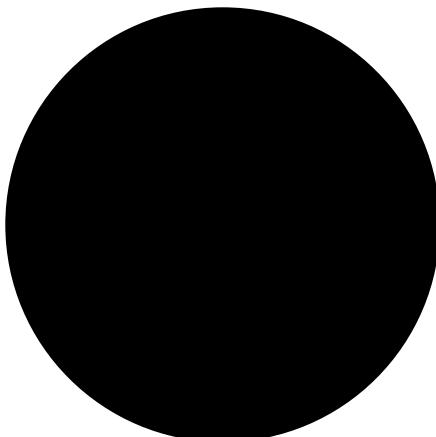


Data is just...

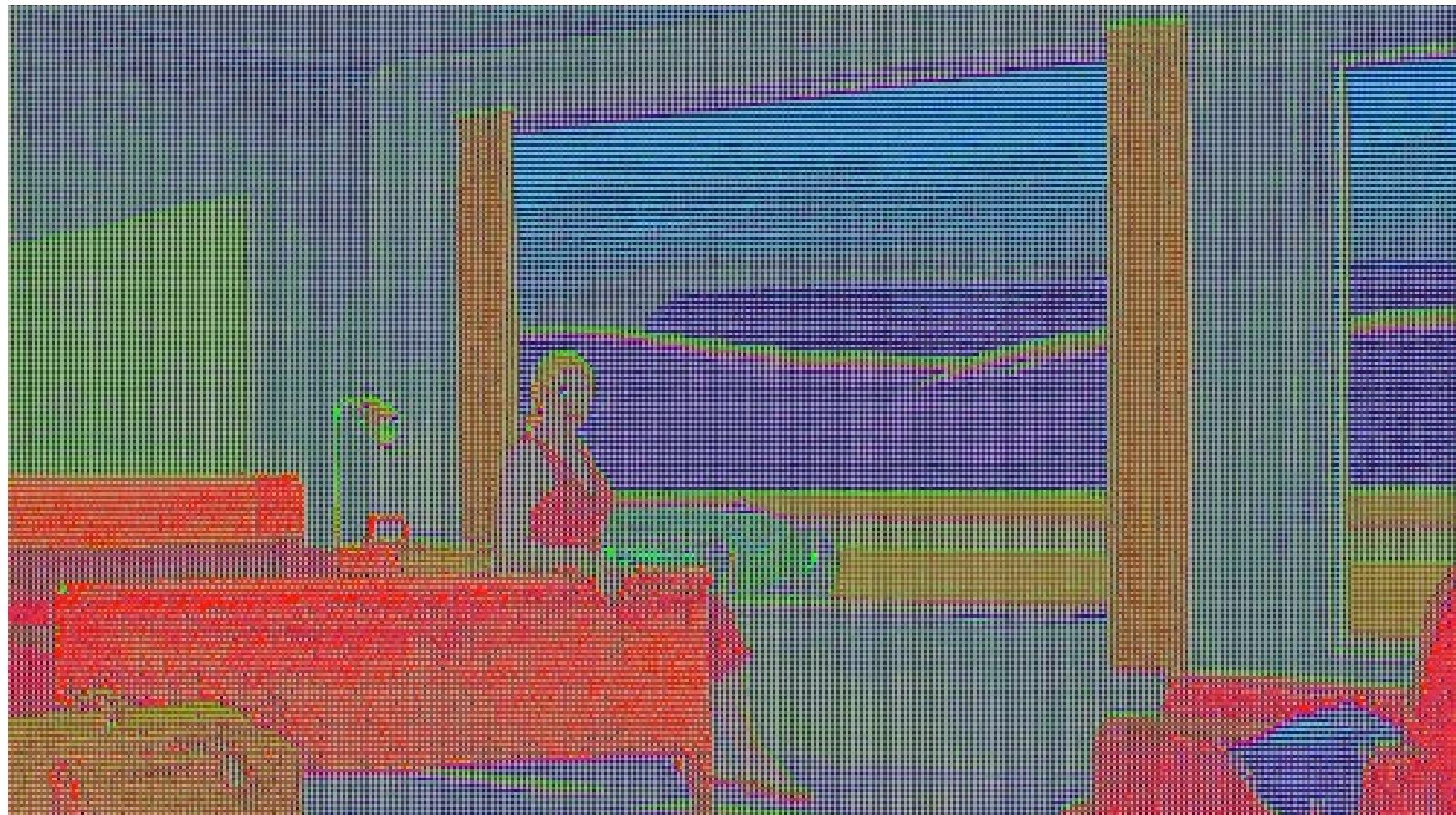
...a point
of view

Every paradigm is contingent

I learned a lot in that time, but it kind of broke the blind faith in science that I had from german school, and for the first time I questioned our whole scientific paradigm, to be able to take a critical position in relation to it. In the end, every truth is going to be relative, two-sided.



Reality, even the most tiny point in reality, is multi-dimensional.



A New Point of View Comes With A New Tool

We have created this magnificent human effort to create and test and peer-to-peer review hypotheses together and build on that knowledge. But it's always something that can be proven wrong because a new point of view will come with a new tool, a new interface, a new model. For instance, I realised that without the microscope, there are no microbes. Of course there are, but there was only the idea of the microbes. It wasn't until the interface was invented, that we were able to see that reality 'directly' with our eyes.

I told this story because one of the main things that I like to research, in whatever practice I do or even teaching, is to be able to understand that everything is contingent, every scientific theory or paradigm is contingent or dependent on the tools, on the materiality, and on the ideas that give shape to it. And if you change an idea, you change the materiality to change again an idea. So this is, I think, the most wonderful aspect of it, how it evolves. I think that evolution has to do with how ideas and information mutate.

Education: An Endless Process of Learning

When I finished communication school and journalism and advertising and all of that, I was so frustrated with the career that I had chosen....When you start school every possibility is open, but somehow when you finish it is like: "Is this what I chose? No." They [graduates] should feel like a process of learning has closed but they can start another one anytime. But we have this cultural thing of school being so definitive and I don't know if it is

because it is so expensive, or if it is because it is like this cultural idea that "this is what you're going to be, and you cannot move away from this". So I think the whole thing has to completely change in the mind of people, to start to be able to change the infrastructure.. Nowadays I'm believing every day more and more that first you have to change the idea, and then materiality will change. it is not the other way around.

First you have to change the idea, and then materiality will change.

A Discourse of the Future Scenario Building

Usually with human structures, in politics and business, it's first the ideas that change. I really believe in future scenario building, that if you're able to think into imagining these futures, you start to build them with other people in the community of practice, and will become reality in that process

...But the discourse about possible futures cannot be dominated by apocalyptic futures, because, in some way, it will be these ideas that will be translated into reality. In the same way that you create other kinds of futures, they will end up being translated. So we have to balance now the apocalyptic discourse with other kind of narratives. This is why this kind of Masters programmes, the 'Design for Emergent Futures' at IAAC where I collaborate now, are so important.

My story is so complex, but there are bits that I prefer more than others, so this is how I tell the story today...

[This story is non-linear, it can not be linear as there will always be different ways of telling a story.]

An Encounter with Data Art

So back then, I was completely frustrated. I had to do my thesis project and I was going to do it in journalism on terrorism images in the news and how that affected the national discourse because we were actually putting war images everyday on the news, everywhere... I was super super away from myself at that point. And I said no, I don't want to do this because I would have to be basically analysing war images for six months and it would completely affect me...

One day, I was there in the library and someone had left a book over the table and it was... I don't know which book it was exactly, but it was a data art book. And I thought "what on earth is data art or software? Does that exist? Who would make art with data or software? It doesn't make sense...". I knew absolutely nothing about this field. At that point, the book was there, and I just grabbed it. ...I then went to my thesis advisor and I said: "I don't know what I'm going to do, but I want to do my thesis about this". I didn't understand most of the things that I was trying to understand in the book, because I didn't have any kind of computer science literacy at the time.



Transistor



Resister



Capacitor

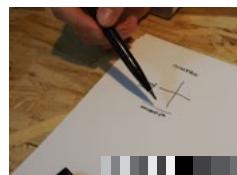


Boolean

I felt so ashamed that I was actually in my fifth year of studying Communication, and no one in the Communication and Media Faculty, a corpus of maybe around 500 students and faculty (people that are still working on media today, with most media or all of them today being digital, no one really knew what 'digital' was... So, it means that a communication professional or a media professional doesn't know what media is today, in reality. I felt super ashamed, so I did that process of educating myself... I started learning what a transistor, a resistor and a capacitor are. Asking what is boolean logic, what are conditionals, where do they come from, etc. Of course, it was a lot to try to learn but I felt I needed to know this. So, I tried to approach it and my thesis was this, trying to approach information and what computers were and what digital information processing was from a media student point of view. I divided this thesis into four chapters that have been the framework in which I have organised everything I know.

Rosa De Los Vientos

It was like a navigation compass, or a "rosa de los vientos". Information was one of the four corners. Because at that time, in media theory it was about establishing what information was. Is it data, or is it 'meaningful', data? You would have all those debates, and still going now, about what information is. The second corner was about information interfaces. The third one about the politics of them, information interfaces, and the ethics and the politics of them... And the fourth one was the morphology of information itself [saying as Mariana was drawing]...



Information Meaning and Embodiment

We always take it for granted but information, data,... these are words that have a historical path to them, a genealogy. ...Information was a word, or a concept, that was being used by the people that were studying genetics and people working with engineering cables and infrastructure for digital information borrowed it. Then I was trying to understand all the morphology of how information is stored, how it is translated... So trying to understand the physical materiality of information in the hardware and that is basically what you're doing, you know, from the board to even further, if you create an electrical pulse, and then make it discrete. And then you turn it into language, or whatever... So, I was trying to understand how this process was, I was able to see this process in a material way and how that materiality here affected, of course, the ways in which these processes are made. And this has to do with interfaces and with ethics and the politics, because who designed this, who decides, who designs this?

We were discussing this with you two¹ last year as well, you have layers of visibility of the processes and what is happening and what you can do with the information and who decides what you can see...

So through this, I was trying to navigate this fourth point, a fourth chapter in which I looked at what we are saying information is nowadays? What is information for us? Why is it so relevant? Why does it have so much value? Why are we talking about having an

'information age' and 'information paradigm'? I feel they are overwhelming questions to think of but necessary. Sometimes you don't know how to answer because there are so many theories or people working with these concepts. So I decided that the best way was actually to confront 'information' starting this by yourself to better understand how to create an electrical pulse, how to create an interface,... an embodied combination of these things.

In Latin America I was a bit frustrated because it was a bit like that, lots of people in media theory didn't know what a freaking resistor was. How can you build media theory about digital anything without knowing this?

So I felt that if I wanted to be able to talk about this, I necessarily had to go through this process of embodying it and having to solder the wires because if not, you cannot approach it in a responsible way.

1: Veronica+Julia
thesis projects
explored (in)
visibilities of
infrastructure

Emotional Intelligence trapped in conventions

I was always trying to ask who decided all things. For instance, why Facebook decided that all of the range of human emotions and reactions was just transmittable in these seven freaking buttons. Here someone is deciding what human reaction should be like and I think this is a problem for us. Now with their interface, suddenly all of human experience that passes through Facebook gets looked at from these seven points of view but this is really, in my perspective, extremely narrow to human emotion and even starts squaring a very narrow way of talking about humans and emotional intelligence. I think you have to be able to widen the range of how you express your emotions.. These are some of the issues we're having right now, as people don't have the language to talk about their emotions and they confuse them with something else that is not anger, but maybe it's sadness, or a different kind of sadness...

I mean, of course these are conventions, human conventions are useful on so many levels but I'd like to see also at which point they start becoming realities that are not so "cool" for us, for diversity, for peripheral knowledge and everything that gets left outside.

This happened at many points I mean, I think... I did media journalism but why don't we know the first thing about media now? We were media journalists and we don't know. Media is all digital, and we don't know what digital is. So what is digital? And how does that mediate reality and the knowledge of reality?

And then... I did this project with big data. Sometimes I don't know which came first, but I did this thing with big data at some point. Now data's a point of view. [Mariana started scribbling on the paper again] And then at some point, I don't remember which, yeah, at some point when I did that thesis, I just didn't know how to do anything to move forward with this. That's when I started working with this [making an indication on the map] and then I decided after this to go and do a postgraduate course in Digital Arts. That's when I did this. I really wanted to train myself to learn to code, to learn Arduino, to learn all of that stuff. I went to Art school to understand all of this. I think it's really interesting because you would expect to understand this from computer science or whatever, but Art school



helped me understand and answer in some way these questions that I had. And because I had written my fourth chapter on ethics and politics it was mainly about artists because these are the people that didn't take for granted any bit... You would get your Microsoft at home and you would start using it but you never doubted it, just because it's usable. You just start using the software and then learn to use Excel, Word, etc. but artists had the task of saying: "Okay, Word is really nice, but is this really the best word processing tool there is? What is this leaving behind?". We are organising the way in which we write with those tools, and maybe this is just a very narrow way of seeing how human thought processes with written words. Artists would be the ones to be able to question all of this.

What happened in the history of computation is that it was completely a heteropatriarchal innovation. So you had these centres of research in the world, where all that knowledge and all the materiality and all the computers, sent the knowledge to China, and China turned the knowledge into materiality, well I don't know transistors were made in the US, but well... But then the whole of the World is using that but these were basically white Western centres of knowledge so it will be really different if you ask perhaps a woman in the Amazon how she would develop a graphic user interface.

Maybe this could be such an interesting research. I don't know, there are computer languages written in other languages other than English. Of course, because conventions, this was an interconnected system, and interoperability demanded that a computer had to understand another. Now I think we have moved faster and we are at a very interesting time in history where you could try to write computer code in indigenous languages for example to see what it looks like. Because perhaps the logic of the world is not boolean. Now we can start thinking about what is queer computing. Now that we are half a century after queer theory, can we apply the ideas of queer theory to queer computing or non-heteropatriarchal computing? These are the things I am interested in right now.

...Again we're talking about science as a way in which we created this process and know the scientific method to build knowledge on top of other people's knowledge,

then to peer review it and be able to have a more consistent, resilient, provable and scalable knowledge. But the thing with the scientific method is its study has been white, western and male, exactly, so what happens when you start including other people from the periphery in all of this panorama has to change, and it will change drastically in a good way I think. But I've never seen or I haven't sat down to properly examine research papers on this but I hope it will be interesting to see that kind of thing. If you want to think about logic in a different way with perhaps a very different cosmovision... Like a non-boolean... I don't know. It has so many interesting questions there that I would like to ask.

Part Of A Journey



After school, I used to try to do some experimentation, some installations. Actually this is also sometimes difficult to do. You need sometimes a Fab Lab, you need projectors, you know how difficult it is to be able to experiment sometimes alone at home. So I tried to be in a collective of artists and designers, sometimes this is difficult as well, because we lived in different cities. So, at some point I felt like I didn't know where to go from here, and I went back and just to survive, I started working in whatever, I wrote copy for design studios, worked in advertising... And, yeah, obviously a disaster because if you don't live the life you want to live, you end up depressed.

My mother had given me some miles for a plane ticket. Then I said okay, I'm gonna go to different cities and see where I would want to live. And actually the first city that I arrived at was Barcelona, and here I am, four years later. I never went to a second city or third city like I imagined to do. This has been my first pit stop.

At the beginning, I tried to look for a community of practice but somehow it didn't coagulate because perhaps it was people in other cities. I asked my teachers in art school if they could give me anything but at that point everyone was busy. So I was feeling like I didn't have an entry point to the world in which I wanted to be. And someone had told me "if you're in Poblenou, go visit laaC, you're gonna like it because you like all that stuff".

Back to Art

In there, you see people tinkering, you see people building stuff, and it's a mess, but still I felt like there was something. I came first as an intern. And then I just started developing so many projects with the people there. It went well, I started working on other projects in the house on everything, basically, because... You know how hybrid we are there, we just do.

At some point in all of this I don't know why I started teaching at this art school where I participated as a teacher. I had a fantastic time there. I was so passionate about it, and one of the teachers invited me to teach with him. So I had my first teaching experience and I loved it. Actually, you know what happened? I returned the final conclusion of my thesis in communication which was "Why do people in media and communication schools need to learn the foundations of computing?".

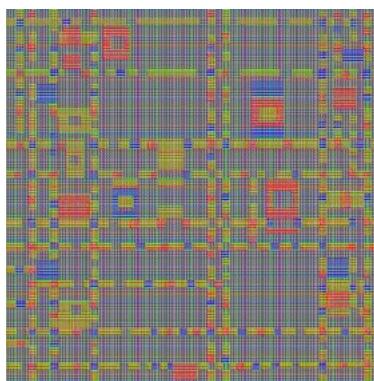
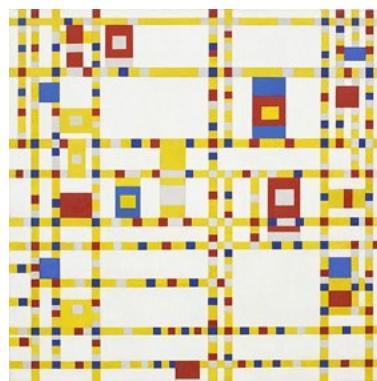
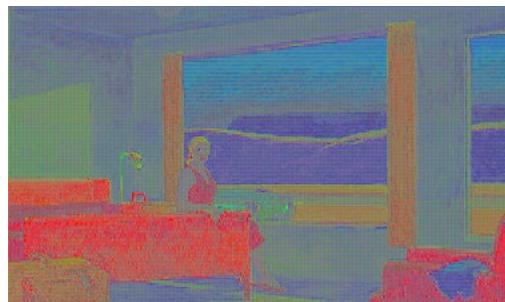
I really wanted to go back to teaching. So I started to talk with Santi because he was already working with kids. So we started thinking about workshops for kids and workshops for adults, and we started doing a couple here and there. Later on, I also built an afterschool programme for kids, based on the idea of building electrical pulses, interfaces, and understanding how you can play with this information. So I tried to build that here in Barceloina and build a methodology too. ...I think that's what's so amazing as a test group for anything that you want, because they [the kids] will be super honest, and you will see in their faces, whether they're engaged or not.

And now, what I'm trying to do is I think two things; first is to consolidate... I don't know what it is because I never been in the art world per se, so I don't know how you start exhibiting, selling or anything like that.

I got to exhibit my final project in the largest Media Arts Festival in Latin America, and won a mention and everything there. I was super excited because I didn't know how that worked. I was a journalist, I didn't know how art people even went about their lives, but I built something they liked and they let me show it two or three times after that. I don't know if I wanna go back and try this per se but I really think that I want to explore all of my ideas again in a more 'making' fashion. I already did like this large tour of 'digital', for myself, teaching it to others, but I really want to go back to maybe making something in the shape of I don't know... work for a gallery or for I don't know, something more experimental that helps me learn, and that's the story.

...What I am into now is art and the history of science and a relationship with art and history. History of Science and computation.

...I can tell you what I'm doing right now and why perhaps?



Making

I'm going to show you something. Ah! This is another world that happened at some point. Because I was super frustrated, I was feeling super self conscious of anything that I did. Especially with digital, graphic or anything that you try, you make some of these experiments and sometimes the result isn't good. So you just throw it back at yourself and you say: "I'm just bad at this. I don't know how to create a great installation. And it takes so much time to do that. It's just a waste of time to do this..." I was feeling self-conscious about anything I did, and it felt like everything that I was doing was bad.

But the good thing about clay, and I didn't know this when I started but I know this now, what happened to me, is that it kind of gives you agency to make again. You just sit there and you're completely ashamed of yourself and what you do, but you just create this little dog, and even if it's horrible, you just put it again on the ball of clay, and you can start all over again. So it's a really permissive material. You're just there and you say oh, this is pretty, and then you fire it and then you have this really nice feeling of thinking "I made this". Coming back to the simple basics now, after going through all of the complexity of putting three projectors and cables and nothing works, and it makes you not want to make anything again. But only when someone gives you a ball of clay and you just build something, and you think: "Okay, this wasn't so bad, I can make something again!". It was a huge reconciliation with making.

...I was making everything digital, and starting again and

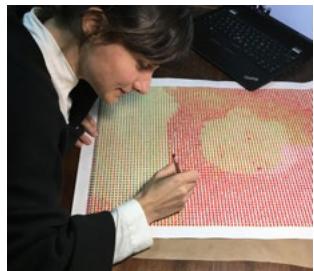
drawing those birds, it was great because it reminded me that I really like to just work with paintings. And I think I've never been completely digital, completely physical because I think I love them both....I wanted to have something physical out of that work, to be reminded that I did all of this, but sometimes you don't have the painting that you made... I made this installation that was very abstract but it required lots of equipment so I don't have it anymore. I have a video.

So I wanted to bring, or to start doing, this hybrid between digital and physical. I want to do this also because this idea that data is just a point of view has never left my mind, and we have to be reminded of that constantly, especially now in this world, where data has become a very political material.



The Meaning of Data Back In Reality

...I was thinking that what is great about the act of re-drawing each data point, is the quality of the handmade. It's giving back this dignity, this human quality of what is hand-drawn to data. I can do one for you. Let's see... [Mariana sits down facing her art piece and she squeezes out some primary green colour point and takes a paint brush to start filling one part of the work, as



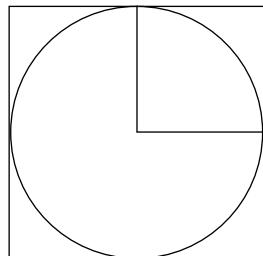
she continues explaining] ...There's some sort of dignity in bringing back data to the material reality, because when you bring data back to reality, it is more truthful to itself. It's not just some dead data point, but it has already the story of context. [Pointing out one previously painted tiny part of the work] Perhaps when I drew these I was tired, so this was more sloppy... I like actually when some of these turned out to be sloppy, I actually would like to explore this further. I would like to take this into a real canvas with oil, and make it even more textured, more human.

Although it was originally completed algorithmically, I really like this idea of making this hybrid work. And to ask

the question: "Why would someone sit down and draw all of these little points if she could have printed them?" I love that question. I could, but I didn't. I wanted to draw each one of them. It's also part of a meditation....I have to find the words, sit down and really write why I am doing this. But it's not without purpose; it has a purpose to give human dignity back to the data point.

Visualising A Painting With Pie Charts

...I chose to do this artwork only with impressionism, because the whole idea of Impressionism was this, that they were trying to make the case for the impressions of the world. The way that impressionists were painting the world, is the way that they were feeling and experiencing it. And today, it talks about interfaces. The world can be seen in so many different ways depending on, not only the interface, but the mood of the Impressionist. ...Also with Impressionists paintings, when you look really close you can not really see what it is, but if you stand far away you see what it captures. In the same way as looking really really close to this here, you don't understand what it is you just see, this pie chart but when you stand far away, you see the whole picture.



Physical and Digital Interdependence

I would really like in the future, if I keep doing artwork, to have these two phases, creating an algorithmic base first, but then bring it down and turn into a physical form, to create this hybrid that couldn't exist without one another.

1:18:49

[Veronica: How was it working on Processing?]

The Digital Renoir Is Not The Renoir

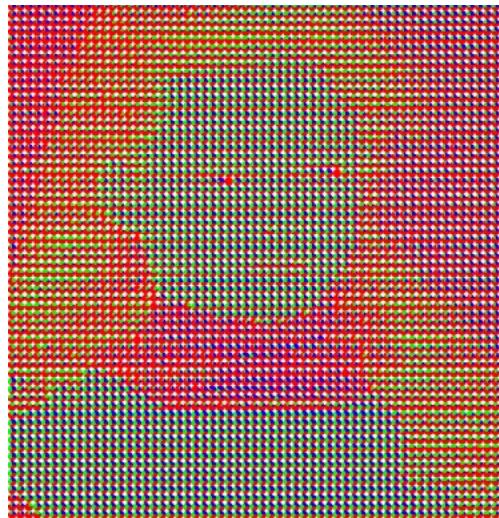
That is super simple. Have you seen the original of this? Let me show you... So to get this 3D as a painting and aesthetic outcome, you have to play a lot with the resolution of the data points, but basically I'm iterating through each pixel and asking the RGB of the pixel and just turning it into or displaying it into a pie chart. Maybe next time I want to do something like different colours to perhaps get different results... The Renoir painting I am using, has many, many ways of being visualised because it's when an art is an original artwork or when the world itself gets turned into digital. Basically numbers that could have 1000 data have 1000 interfaces. So this could be shown like this or it could be CMYK, or this could be who knows, even completely distorted and just do something with the amounts of the colours... I thought about at this point, what if I grabbed just the numbers of colours, but created a whole different thing, but the

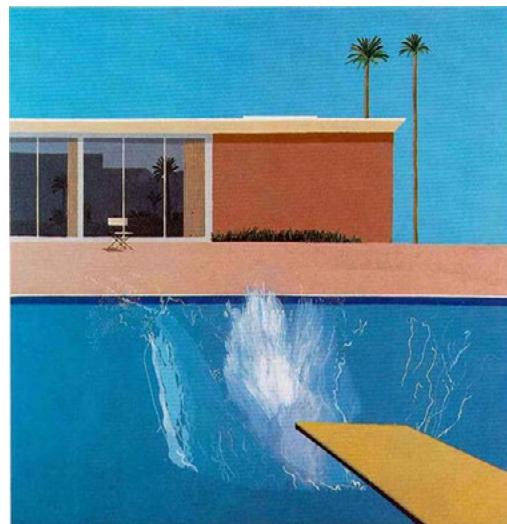
original is the amount of colour in that painting of Renoir. The interface is reinterpreting, representing the mutation that the world is undergoing, this is exactly to make this point. The digital Renoir is not the Renoir. And my Renoir is not in the digital Renoir. People need to understand that the digital world does not represent the world in full and when it comes back to the world, it's not in a way just digital. The thing itself suffers transformations, depending on the intention or the point of view in which you are looking at it.

1:20:59

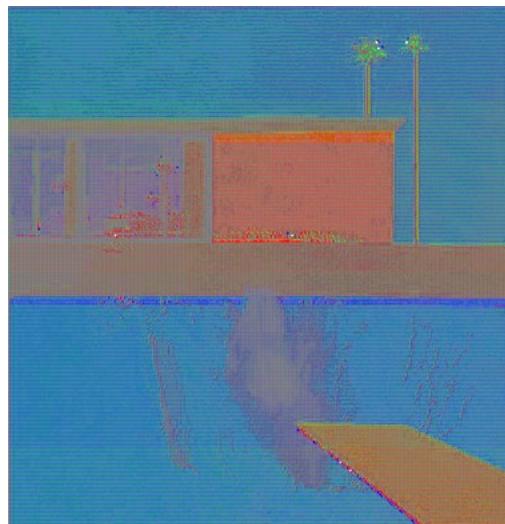
[Julia: You started this work in its digital form to be able to print it and then physically work on it, how does that process of multiple transformations happen?]

I'm going to show you the step by step actually because I think it's interesting.





Input



Output

Hockney

My First Code

This was my first code. I don't even remember what I was trying to do with this... Ah! I think it was back when I was really into data journalism. So I went to hackathons, I went to Congress, I worked with organisations that were trying to fight corruption with data journalism, and I was super into data visualisation, going to workshops and seminars. I completely forgot. I completely left it out because I actually think it's super mad. But yes, I actually organised hackathons with a local organisation in Latin America, that is called "Hacks Hackers", that is to bring together hacks with hackers to try to make journalism.. In the States, they used to call the journalists 'hacks' That was the time that Wikileaks was dumping lots of things Journalists didn't know the first thing of what to do with it So I was working lots with data and trying to understand this transformation of data.

This is the code [showing to us on her screen]. What it does is take the information from the original image and transform it into some new form of data. It's like a transmutation of the same old thing. And basically what I did is then I made a PDF out of this. I tried different resolutions. It's not the same if this is more synthetic. But then you can if you use some of these resolutions that with a really small data point you will see more of the details. Actually I have it here but I was so unhappy with the results...

It took me so long and has not been easy, but I understood that this is what I am and I cannot fight it. When you find your community of practice, but perhaps

the people you grew up with, they are more oriented. Not everyone is very hybrid but people sometimes are more straightforward.

These spaces though are more difficult to find for yourself and also to make them financially stable. I haven't figured that out completely yet. This is my constant search.

...I took the original. The original was a painting from the 20th century. I digitized it, I algorithmically reinterpreted it. So, I want to understand how that information transforms... The question is what happens when the world enters into digital form? When this happens, you can completely deconstruct this information. It will not be the same information because the photo was a photograph, photograph or not, it's not paint. But that information from the photograph, you can deconstruct, construct it and repeat it in any kind of way you want.

Originally, I just wanted to know the quantities. This was a big experiment... At some point I wanted to take 20 or all of Renoir's work and say he uses mostly red or blue or green and do that with different artists to see what could be the result. But when I was experimenting, for some reason I didn't know the algorithmic code to grab the whole information. So here [Mariana pointing at her code on the screen] each pie chart is taking eight pixels in one.

I just did so many iterations with other paintings... You can for example just leave the green and the red. I would

like actually to have just the red channel, just the green channel to see how it could look.

Veronica: It could be interesting on a risograph as it's just one colour as well.

I also thought about risographing. I don't know if I thought about many things but yeah, I could have done that and maybe visually would be really nice just framing. I really wanted to try this because I really want to create like the old canvas to go back to the original technique actually, to go back to the oil painting to close the circle and to make it full circle.

But yeah, I really wanted to call it perhaps "Data is just a point of view" and have a few of these.

Julia: What are you hoping to get from it after you've closed the loop?

I have no idea because again, I've never worked with paint so I don't know how painters do. I don't know if to call a gallery to see if this is interesting... I don't have the slightest clue.

But I really want to come back to the oil, but I need to be strategic about it. Because if I lower the resolution here, you won't see the effects. Yeah, it's really a game of calibrating the result until you get to see something pleasing that also makes the point. Art is difficult.

My challenge now is to understand that world and to see what to do in it.

Julia: And if you were to present in a museum or any other exhibition space, what kind of mediums would you use to communicate this piece?

I was thinking about that the other day. If I had that space to show this, I would go absolutely bonkers. I would have an installation and I would play with this idea of the translation and the circle of translation from digital to physical and vice versa. I would try to figure out different ways to show this. I did one [exhibition] many years ago that I would like to do again. I don't know, I like to play with the history of art and say hi from the future to the past, and say:

"Hey, this is what we're doing, this world is crazy. Look at what this is now."

```

/*
-->
/\\
<_/_\

  " " http://mqvlm.github.io/

}

//EXPERIMENTO: VISUALIZAR UN CUADRO CON GRÀFICOS DE
TORTA

//Código para reinterpretar la información de color de una imagen

//http://mqvlm.github.io/blog/renoir.html

/*Processing 3.3.5*/

PImage foto;

//variables para tortas
float r, g, b;
float sumaColores;
float anguloR, anguloG, anguloB;
float porcentajeR, porcentajeG, porcentajeB;
//

//resolución (cada cuántos pixeles hacer la captura y pintar la torta)
int res=8;

void setup(){
  size(481,650);
  foto = loadImage("renoir.JPG");
}

```

```

ellipseMode(CORNER);
smooth();

sumaColores= 765; /*es la suma de r+g+b (cada uno tiene
computacionalmente el valor 255)
para después hacer la regla de 3 y saber cuánto de cada uno hay en
el total */

}

void draw(){
  background(255);

  foto.loadPixels(); /*carga los pixeles de la imagen para poder
recorrerlos uno a uno con el siguiente for:
(la variable res define cada cuántos pixeles se toma información) */

  for (int x = 0; x < foto.width; x= x + res)
  {
    for( int y = 0; y < foto.height; y= y + res)
    {

      /*esta función es la que encuentra un pixel dentro de la imagen
seleccionada. Con el loop
      lo que hace es ir recorriendo la imagen extrayendo los valores r, g,
      y b para cada pixel*/
      int loc = x + (y*foto.width);

      //tomar información de color
      r = red(foto.pixels[loc]);
      g = green(foto.pixels[loc]);
      b = blue(foto.pixels[loc]);
    }
  }
}

```

```

/* toca equiparar los porcentajes de color a valores de ángulo
para poder armar los charts, por eso
establecemos primero máximos y mínimos de cada uno de los
dos, así podremos hacer correspondientes
los rangos*/

float minAngulos = 0;
float maxAngulos = 360;

float minPorcentaje = 0;
float maxPorcentaje = 100;

//sacamos primero los porcentajes con regla de tres
sumaColores = r+g+b;

porcentajeR= (r*100)/sumaColores;
porcentajeG= (g*100)/sumaColores;
porcentajeB= (b*100)/sumaColores;

/*luego la función map convierte el valor del porcentaje que salió
en la regla de
tres a un valor de ángulo para dibujar el pedazo correspondiente
de la torta*/

anguloR= map(porcentajeR,minPorcentaje,
maxPorcentaje,minAngulos,maxAngulos);
anguloG= map(porcentajeG,minPorcentaje,
maxPorcentaje,minAngulos,maxAngulos);
anguloB= map(porcentajeB,minPorcentaje,
maxPorcentaje,minAngulos,maxAngulos);

//ahora se pinta cada uno de los trozos del pie Chart, ángulo por

```

```

ángulo
noStroke();

/*la función arc se determina así:
arc(coordenadaxcentro, coordenadaycentro, width,height,
angulodonde inicia el arco, angulo donde finaliza)*/

//pedazo Rojo
fill(255,0,0);
arc(x,y,res,res,radians(0),radians(0)+radians(anguloR));

//pedazo Verde
fill(0,255,0);
arc(x,y,res,res,radians(anguloR),
radians(anguloR)+radians(anguloG));

//pedazo Azul
fill(0,0,255);
arc(x,y,res,res,radians(anguloR)+radians(anguloG),
radians(anguloR)+radians(anguloG)+radians(anguloB));

}
}
}

```

A Space to Introspect



THOMAS DUGGAN
&
SJ FOWLER



A
Dialogue



REFLECTIONS AND TRANSCRIPTION, REDACTED
BETWEEN THOMAS DUGGAN AND SJ FOWLER



T.D.

Within my work I find the most valued thing is the time researching the unknown.

S.J.F.

I could not concur harder. I think everything I have done has been towards realising what is unknowable, and then working back from that.

That which can't be communicated, in language, is the starting point of poetry.

T.D.

I am not specifically searching for an 'artists hand', though being sensitive as a character towards material and observation, I believe, is the backbone of both science and art.

I am not searching for aesthetic but if it turns out to be aesthetic, so be it. It is not the specific aim anymore within my work. I am sensitive to the material, whether that material is ancient or of scientific development.

S.J.F.

Here we split, and compliment each other, in that all I do is aesthetic, but I am still orientated in the process over the product. And material, yes. Without knowledge of it, where are we? For me the material is language itself. For you, it seems like everything might be material.

T.D.

Indeed material is very important to me and for this reason I do not really regard myself as a 'traditional artist' (whatever that means, I truly am not sure), nor do I believe it particularly relevant to my practice to only

explore the role of an artist, but I am still involved and searching for an understanding of 'art'.

S.J.F.

You are perhaps an artist in a way that is traditional if we begin at the Renaissance and before, without complimenting you too much.

T.D.

I greatly enjoy experiment and research of all scales, whether it be architectural or finding inspiration from an SEM image or simply finding knowledge and understanding in that image, sometimes this is enough. I try not to pursue things in a contrived way. By this, I mean, I am not searching to necessarily find tangential meaning where there is not, or at least, when there is a greater purpose to the work. To follow tangents within research however is something I can pursue.

S.J.F.

This is the challenge. I find myself also trying not to follow tangents but then wonder how I might discern the instinctual love of a subject, method, material, and follow that, against some contrivance. I suppose because our generation, or the one coming up before us, exists in completely unprecedented times, with hyper materialism battling profound technological advancement, we are often working with, against or around that. I certainly am working with it when I've written about surveillance or prescription drugs, but against when writing about prison culture or culture.

T.D.

We are indeed in unprecedented times in relation to time and context. As a communicator of my

T.D.

work within these technological advancements, I often tell people I'm a sculptor, because it is maybe more immediately accessible, ambiguous and I believe can operate across many areas of knowledge and interests. I've found this a good way to infiltrate lots of specialities. In reality I spend many hours reading science papers, have an in-depth knowledge of various materials through a strong 'making' aspect to my practice. I also have a layman's fascination with physics.

S.J.F.

You are a sculptor with an interest in the originary properties of your sculptures. I have been trying to do that with language, but it's more ephemeral, linguistics instead of physics.

T.D.

I have tried to avoid the mentality of a 'designer' in my most successful projects. I am not interested in a 'signature' identity of work and maybe that's why I seem to cover a broad range of topics and diverse professional career.

S.J.F.

Which is to any artist's credit, to not lean into a brand.

T.D.

I try to act as a facilitator for matter rather than imposing anything more. It is the searching for the higher level of entity, away from the obvious, or the immediately understandable. I enjoy working at the confluence of the natural sciences and processes within nature and mathematics, which are often at the forefront of my thinking when approaching new work. If nature is my

inspiration, then collaboration is my necessity. I am a strong believer that collective intelligence within work and interests is the most valuable.

S.J.F.

I've just today been interviewed about Tom, and his work, and his life. I should've said, with a clarity I don't possess, Tom is a facilitator for matter. Instead I stressed how Tom's work has helped me realise the most interesting things are the result of controlled accidents, by definition and an interesting creative person tends to have a good relationship with the incidental. Because my own work is often poetry and therefore marginal and ambiguous in its very nature, I like to think of it with a reductive formula which lends itself to capturing accidents precisely because it is deliberately and impossibly formulaic, as I believe the paradox is creative. Material plus Method plus Subject. Most often, this means Language plus Literary Poetry plus Whatever. Tom's work, in the light of my thinking here, is influential on me because it is often about recreating the shape and appearance of physical things in three dimensional space with the most outlandish range of methodologies. One day, building a door. The next, operating a robot. One day, set design for a play. The next, synthetic silk. One day, building my beautiful kitchen. The next day, an aerospace collaboration.

T.D.

I would like to pick up on one particular point you mentioned. That of the 'mistake' or 'unplanned'. For me this is a fine and experienced line to tread. There are methodologies within my work akin to that of a researcher

T.D.

/ scientist. For the scientist must not direct his outcome, as surely this goes against the very soul of the subject. While an artist, in my belief, must too remain open to the changing, unknown and be accepting of the 'mistake'. It is an opening gesture, a dance, to be on the edge of mistake and creation and with a sensitive curatorial hand.

S.J.F.

I think we've chatted about my residency at Wellcome Collection Tom, where I worked with neuroscientists for a few years. I found, and this is a stereotype, often scientists perceive artists as translators for difficult scientific ideas, and for your art, where you might work with scientific ideas, and mine, which I'd like to put in the tradition of say Heraclitus, full of deliberate mystery, this doesn't work. I wonder if both artist and scientist must avoid directing their outcome, but in different ways because of different end points? And this is about the necessity of outcomes?

T.D..

I try to find interest within my work that can transcend knee-jerk reactions to the world. This is often a challenge as sometimes artists are perceived as tools to interpret the immediate, whereby the sciences, in my opinion, tells a story that is long and hard-worn. I do not say either are correct or more important than the other, only what I am reflecting at this moment of writing. Artists by cliche are tortured and hard worn, but research is often subject to scrutiny and maybe a stronger continuity of knowledge transfer and of the telling of a story, this path can be regarded as gradual and interconnected with

relatable parts. Having said this, the same could be argued about 'art'.

S.J.F.

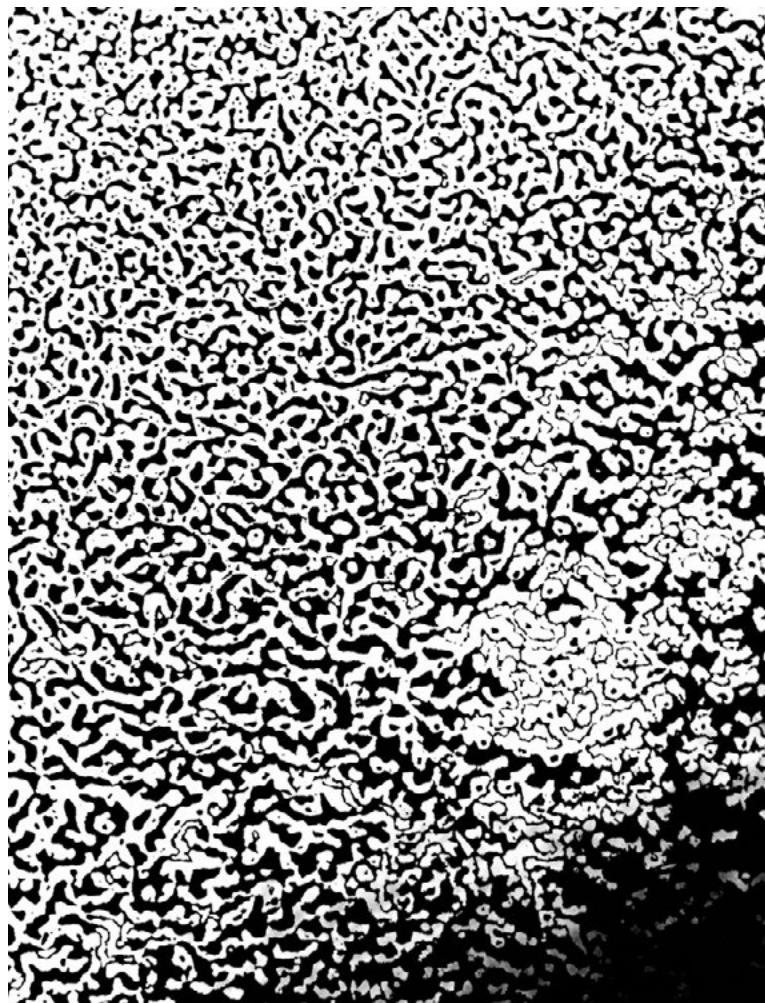
Interesting, so you see artists as being perceived as translators of the immediate, rather than of ideas too difficult to represent in formal communication? I like the idea too, that sciences tell a story that is about the history of trial and error, and art doesn't. This I absolutely agree with.

T.D.

The 'mistake' for me is often a starting point rather than the 'work' itself, so you can imagine how the 'artistic' expression of that 'mistake' is perceived as 'art' and yes of value across the board, as a means to an end, but more so now, I'm interested in the next steps, that of understanding the mistake in as much depth as is needed. This doesn't detract from me being open to the next mistake, which is again of great importance. As I mentioned before I'm not really interested in creating art for the sake of it, but sometimes it is a resultant by-product of something I regard as more interesting at the moment. I have mentioned that processes and gaining of knowledge is a larger part of my practice, then next comes an application, which can be broad.

S.J.F.

Again I think you can do this, as a method, precisely because your work echoes or even directly engages with the more pragmatic, peer tested realities of science and the plastic arts. Your sculpture, even if abstract, can't collapse, for example. This is something valuable to me, for someone who wants to work to the



S.J.F. core of what language can and can't do. Because nothing can collapse on me, and the knowledge I pursue is not shadowing things in the world that people rely on. So it's more religious in a sense. Your mistakes are such because there is a possible end point in the process which is not a mistake. Everything I do is a mistake embraced.

T.D. Back to that 'mistake'.. This happened recently when creating a complex ceramic piece using a KUKA robot, whereby the piece collapsed creating an infinitely more complex piece, in fact unachievable using even the complex programming ability of that specific tool. This 'mistake' naturally offers so much, and maybe journeys from the 'designed' to the 'undesigned' the 'one off' piece is created, which has held itself highly in Art History. However, I do not see this as 'undesigned' quite simply because it still lies within the bounds of physics and nature, it is not 'undesigned', it is simply not designed by man or woman. This collapse tells a story worth investigating and is indeed a thing of beauty.

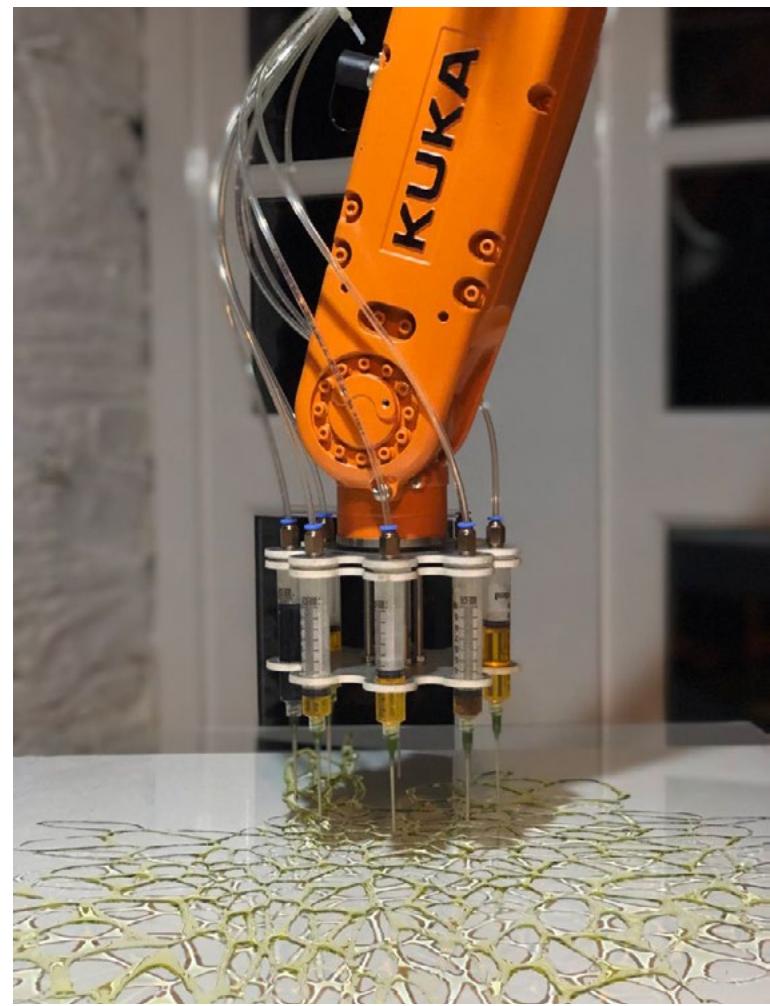
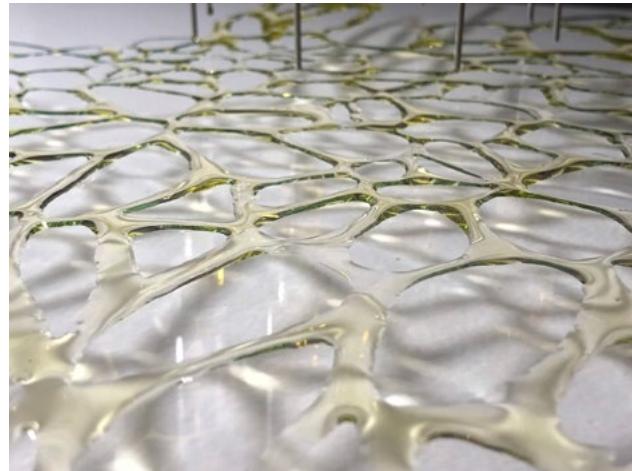
S.J.F. Well there's a case to be made that it is, but by one remove. But then we start to fall into a discussion on free will, which is slippery for us all, especially those interested in creating things.

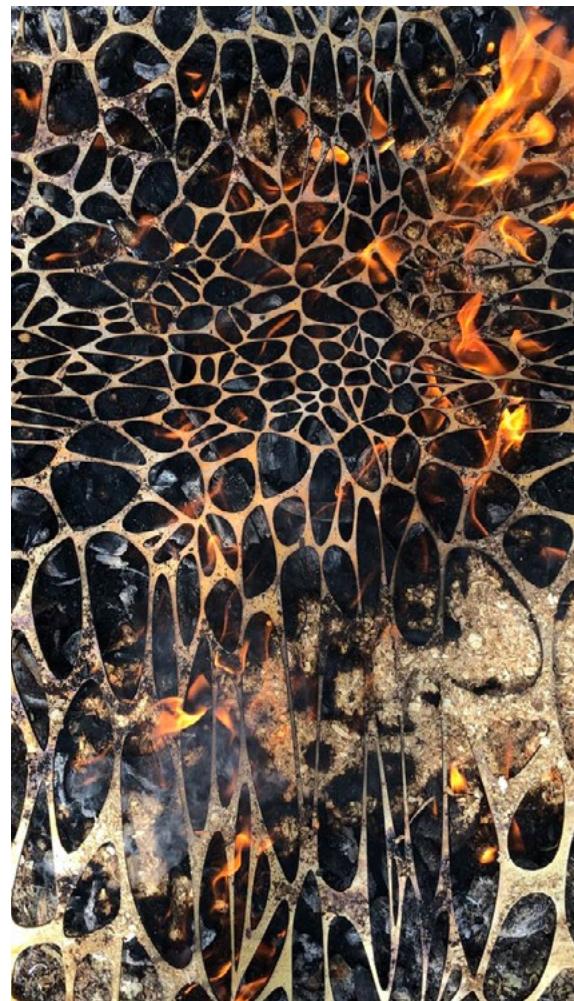
T.D. This type of work is now my focus and my guide. More and more we will see these 'undesigned' (by man or woman) objects entering the mainstream. We are moving away from human or individualistic control, as

T.D. this has limited us in the past, both psychologically and in making and the needed diversity of biomes at all scales which support a society. We're embracing aspects of the biological and complex digital systems and that of much more emergent systems, across all parts of life and materiality. Yes, there are initiators but the strongest systems have proven to be that of the decentralised and diverse, for me that decentralised in this context can start with the 'undesigned' as we have traditionally perceived. This is where my interest in material grows, literally, and when that starting material can be a stem cell, or even a skin cell, you can see the possibilities open up hugely away from our current use of design of materials, to a material led 'design' and into material designed design. And if the potential of this can create consciousness, as we know it, well this opens up a whole other discussion we don't have time to go into here.

S.J.F. That's fascinating, but also frightening. As someone who, if I have an expertise in anything, is an expert in the very material we are using to have this dialogue, there is so much said there which is metaphysical in a sense. Human control in general is in doubt, but not as you mean it, literally of course.

T.D. Sometimes I feel we are living in archaic times if I look around my immediate vicinity. I am acutely aware of the dedication of labs around the world progressing this research with wonderful resolve and I'm interested in how biomaterials guided by complex systems found within nature can be applied.





S.J.F.

It's vision you have that few can see. If anything my perception of the archaic is reassuring. That all still definitely want the same things we have always wanted.

T.D.

If I would consciously think about these systems and our previous discussion of mistake in relation to 'failure' in my work, it is the issue of speed. I want to fail as quickly as possible, for this is the quickest way to learn.

S.J.F.

The true dictum of any artist, normally given too easily to scientists alone.

T.D.

An open-mindedness and acceptance of failure is a great force for exploration, naturally it is a fine balance between maintaining confidence, both personally and professionally to ride that wave. From my experience these 'peaks' and 'troughs' of failure have flattened somewhat with experience and putting the research and experimentation hours in over and above what is commonly deemed a 'normal' working week helps too. My greatest challenge is maintaining the level of work across many fields, whereby I am confident enough to be on par or within reach of someone who is knowledgeable in that specific field. If I am at least able to have a conversation regarding their interest and level of work and spark a conversations and friendship that is the stepping stone to my collaboration and exchanging of specialist knowledge that I require. Being able to speak many languages is something I've found helpful and I don't mean languages in the common understanding of language.

I mean those of materials, intuition, physics,

T.D.

robotics, mathematics..etc

S.J.F.

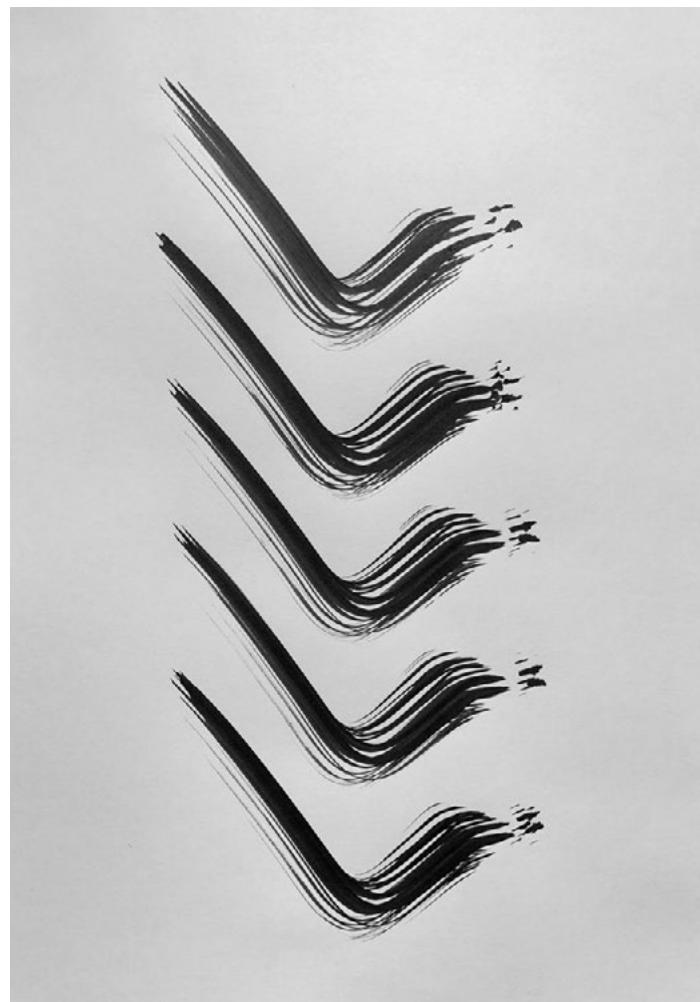
I feel a kinship with what you're saying, but have no access to certain principles, as I have little scientific knowledge. Or rather I do not operate under the auspices of scientific rigour. Maybe I don't know properly what that is. Efficacy? Pressure testing? Peer reviewing? Pragmatism. I am jealous of that. Because it must be comforting, not in your work say, but in general, to have an end point which proves the methodology, and the creativity, inherent in the journey. My work doesn't even have the option of transcending knee jerk reactions it doesn't seem. It doesn't jerk knees. But then artists find a way to work usefulness in – creativity underlying human evolution, language being a core reason for human evolution, inspiring / reflecting / insight. Your work, I've thought, tends to take the best from both (if we allow the vague binary here between science and arts). Maybe this is because, as you describe, process or idea led work will produce by-product others can perceive as completed artworks.

T.D.

A great deal of what I know about my own work, which I didn't seek to understand so readily, has come from my teaching. Has this been the same for you? I know you have been teaching in Barcelona recently? Has the act of teaching, the process, altered your work itself, as well as your perception of it (if it has)?

I have only done a small amount of teaching compared to you, but I've greatly enjoyed it. I think there's a strong correlation between the experience of teaching in





T.D.

relation to the students and also the wider administration or politics within that institution. I have been very fortunate to be teaching alongside wonderful students and within an environment that is incredibly fitting and progressive, which suits my practice and interests. I feel my role as a 'teacher' is to share my experiences and to guide the students within their interests as best I can.

I enjoy collaboration and enjoy the reflective process of absorbing and advising the work of the students. I am not sure if you are asking whether the teaching directly affects my work or whether for you this is the case, but I haven't at this stage especially found a direct correlation with my teaching and my projects per se. I have found the broader my knowledge base the better equipped I feel to help the students join the dots and the need for diversity and interconnectedness across subjects with a diverse and emergent knowledge base. I appreciate this is not always the case or at least not needed within all subjects, in fact I wonder if actually a lot of academic practice is specialist knowledge on a particular subject, which too is incredibly valuable, and something I often seek within my broader practice. That of calling on a diverse range of specialists. I would enjoy further roles as a lecturer but also appreciate this would need to be within a context similar to that of IAAC. How would you like to see our collaborations progress in the future? What comes to mind for me and in relation to 'States of Matter' and LINK Journal is our started project, 'ASH'. This is an evolving project, and one where entropy is brought into mind, body and soul and raises topics of memory, material and a relationship to the wider world.

S.J.F.

This project asks questions of life and death in relations to matter.

I think a lot of the time I get stuck on verbalising certain ideas because they seem so obvious in their permanence, immensity, and therefore obviousness, that I try to just write them through in the most authentically personal way I can. Which tends to be obscure, and unexplained. In this case, collaboration helps me be more lucid, to others. The issue here, when discussing ASH, is one of matter. But while I know you have palpable knowledge of matter, as a thing to be shaped, and vitally, transformed, I am interested very specifically in what matter provides or contains but does not represent or explain.

The brain / mind question being the main example of this I have pursued, in my latest book (I will show you the life of the mind (on prescription drugs) from Dostoyevsky Wannabe Press 2020) and through most of my neuopoetics work. What remains of the human being's personality, soul, whatever we want to say, when we are dead? It would seem nothing, but the question is the process worth our time. ASH was, and is, about death for you and I, the material the human body becomes after cremation, a pure transformation of matter from animate to inanimate. It is bursting with significance and potential, and seeks out, in a physical, material way, thanks to your expertise and artistic instincts, probably the core interest of my work, death. That which is arguably the ordering and only singular truth we can enjoy, is almost entirely ignored in most

S.J.F. people's daily lives in the 21st century European milieu. Not entirely, obviously, but somewhat. Amazing. So I hope we go through with our performance of ASH, using music, ash writing, building, making together in a space, but also more collaborations where my words become embodied into things, in three dimensions, and in materials that carry with them the properties the poems explore.

A Space for Thought



SARA GONZÁLEZ DE UBIETA

AN ONLINE
CONVERSATION
WITH SARA

TRANSCRIBED AND
REDACTED BY LINK

From Architecture to Shoe- Making



LINK

Can you introduce yourself and your current practice?

Sara González de Ubieta

My name is Sara González de Ubieta. I studied architecture and later did postgraduate studies to specialize in sustainable architectural construction. When I finished, in 2008, it was a difficult period with little to no job opportunities in architecture. Most of my friends were leaving Spain to move to Germany and other countries where you could still find work as an architect. I worked a little bit as an architect, but during my studies, I got very interested in crafts. I had a teacher who was a master in shoemaking. He taught me many things about his practice. From then onwards, I became very interested in doing things with my hands, experimenting with materials through various processes, some intuitive. Later on, when I finished my studies, I had the opportunity to teach with him and we started giving lessons to other people. This was when I started making handmade shoes. Then I started a brand and it was tough...The way everything happened was very organic and, because I still liked architecture a lot, I think it influenced the way I saw and did things, even though I've always been very open to other disciplines. That year, for me, it was very natural and organic to test and do different things.

I became very interested in ways of studying materials and the approach taken by crafters. When I started working with leather, I tried to understand the material itself - leather - then I tried to understand how to design, and how to develop material driven experiences and methodologies. Later on, I started designing, and working with factories to produce what I had imagined. I don't know, maybe I hadn't given the matter much thought until then. I had a small shop that started growing, demand was increasing, and at that point I realised I was not able to produce everything myself. So I started drawing more, rather than working hands-on. This was when I started designing and producing in factories. However, most factories focus on producing and don't have the time for experiments or research, although the big brands have their own labs, providing space for experimentation. My research began when I started designing and producing. At that point, I was more into creating a fashion business. It was a very good experience and I learned a lot, but I have also been really lucky to be able to work, research and experiment with materials and with my hands.

I had reached a stage where I was still doing some projects in my studio and I had a few opportunities, but I was never able to work on my collections because the factories were not open to this method of production. Instead, I kept on doing small things in my studio, for myself. At one point, I found opportunities to do the same but for exhibitions, research calls, etc, and I realised I was interested in creating knowledge, in researching rather



than producing. So that is what I have been doing in recent years, along with being a teacher. This has given me the opportunity to have study groups with students and to create workshops for collective research. This is what I'm doing the most right now. I have also designed for other brands, and stopped doing it for myself, because I am not interested. Everything I do now is related to my experience with crafting and materials and design. We organize open calls and exhibitions and we also do talks, conferences, workshops, which contribute to developing the theory to support our practice.

I also have a material policy, but I would like to introduce new materials in my research. I haven't done textiles, but I believe that you can always learn about new things. I don't think it's so important to focus on a specific thing.

LINK

Going from design to architecture and crafting to design along with education and teaching work, different practices can be drawn upon. How do you think your previous experiences inform the current ones?

Sara

Many things have influenced a lot of my work. It's not like you can erase what you've previously learned and done and then start fresh. Instead, I see it all as a big accumulation of knowledge and practice. For example,

what I've learned from architecture is that you can be very artistic but you also have to be very technical, and even if you're working on a speculative project you have to be very accurate. It is also about working with a lot of people. Some know more about structures, while others will have more specific knowledge in other areas. You end up having to be like an engineer to be able to work in a team with other people and communicate accurately. In this sense, I think it's very important to be open, to keep learning from others and to always do a little bit of research before speaking to others so that we understand each other and speak the same language. As architects, we are very aware that every practice and specialization has its own language, and you always have to be able to at least understand the basics of the language of other professionals.

In crafting, the language is through your hands. Your hands move and your brain follows them. The combination of both has helped me grow my design practice. I use my hands as my primary tool. While in teaching, I like to take a "doing it together" approach, so that there's a real conversation happening between the teacher and the students. This allows my students not only to learn important basic knowledge but to explore many new things with their teacher. In the same way, crafting also involves a conversation in which the teacher brings something to the pupils and they, in turn, seek to initiate new explorations. This is similar to what I experienced with Carlos, my master in shoemaking. He taught me how to do classical shoes and I soon became very interested in doing new things, adding to the traditional knowledge of this craft that I had gained. This was a conversation and I try to do the same in my classes, creating workshops in which we all can learn.



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LINK

I see you have been managing to share your time between making, being in touch with clients, being with your students and teaching, but you are also managing to keep the production and experimentation going. How do you balance all of this out?

**Sara**

Ah yes! Well as it happens, sometimes I haven’t got much time for one or the other aspect. For example, two years ago, I was doing lots of classes in the evenings and I quickly realised that that was not good, because of the lack of balance between all of the things I was doing. I didn’t have time to do my research and prepare new things to teach to my students. So I always try to strike that balance when I plan my month or my term. So, for instance, I plan two days per week to do some work, and schedule a few other days to go to my studio. I need that balance to be able to speak with people, to spend time with my students and to keep going with my own learning and work. I realise from experience that it is very important to allow the right amount of time for all of the things you want to do. It also depends on what projects are underway. Sometimes I am asked if I want to be a consultant and I have to say no because I have too many consultancies or other work to do. And I don’t want to be a full-time teacher, for example, or a full-time researcher.. The balance I have achieved makes sense to me right now, but maybe in a year it will change.

LINK

It looks as though all of the things you are doing are complementary.

Sara

It hasn't always been like that, but yes right now it is.

LINK

You mentioned that you really enjoy researching, do you use different methodologies for research?

Sara

It's not always the same, but often I get inspired by a story. For example, I once heard about a hospital in the Pyrenees that was built at the beginning of the 20th century and was made of cardboard. It was created because a community of people moved there when they were trying to get electricity from the waterfalls in the Pyrenees. So in six hours they built this whole hospital for the workers. Now, more than 100 years later, I had the opportunity to visit it. Looking at this inspiring project, I became very interested in cardboard, in wood and in what the words "material", "matter" and "madeira" (wood in Spanish) actually mean. That's how I became obsessed with cardboard and why I work with it. At the time, the hospital was made with leftovers from local paper factories, an example of circularity in production that is a hundred years old. Because of this story, I fell

in love with this modest material and started making things with it. I was invited to join a research group in an art centre in Madrid, and got in contact with people who were researching liquid wood. This is one story, but I have many others like it. I can be reading an article and something will catch my attention and touch me. So that's how I come to work with materials. It's like a story, a human story behind every material and my interest in it.



LINK**Do you have phases of using different materials?****Sara**

Yes, usually I start something in my studio and if I have the opportunity, I share it with my students. But it's true that I have almost always ended up in speculative work and haven't managed to implement my results. Now, with the current situation [COVID-19] it's hard to get into a working phase as I can't go to work in my studio as easily. Last year I was cooking a lot of bioplastics and many people got in touch with me to do further research on the topic. That was the year I did the most work on bioplastics, accumulating lots of knowledge and research. Now, with the pandemic, people seem to be looking back, exploring ancient processes such as fermentation and natural dyes, from home.



LINK

It's really interesting because you are saying that you work a lot in speculation and you don't really implement that speculation, but I see implementations in the sense that you produce things that are quite experimental, and then you aim to actually test them in real life. We project ourselves into the future in order to make something, and in your case this involves creating a tangible product that you can actually start to play with.

Sara

That is true, and that's why I say that being speculative doesn't mean you're not being meticulous or you're not being precise, or that you can only produce a sample. No, it merely means that you're not in the market. It seems that designers have to sell, and that products or objects have to be sold as such, right? But I'm happy to do it the way I do, researching through experimentation and improving results, and to just to keep on learning. In the end, there is an object that you can touch, that you can try out, and that, for me, is enough.

LINK

So you would say the value of speculative design is within the knowledge that's produced?

Sara

Yes, precisely. I think it's very easy to move from one world to another and change what you're doing. I can switch from bioplastics to wood, but right now I don't need to be in the marketplace. I don't need to be, so why should I?

LINK

Coming back to education, where do you see your role in the next generation of design education and how do you plan to contribute to it?

Sara

Well, I'm very happy that part of the education system has changed, because when I was studying, it was completely different. My architecture school is very well-known in Spain, and it used to be a six-year course. I enjoyed the experience there and don't regret it, but there were some things that didn't make sense to me. They didn't prepare us for the future, they didn't prepare us for the present, but instead they prepared us for the past. I think now, at least some schools are more interested in the present and the future, and go a step further towards understanding what the problems are now and what is going to happen, and I think this is definitely very useful knowledge to have. I work in ELISAVA and in another design school, and I am very happy to see that the people I work with also consider this to be important.





They didn't prepare us for the future, they didn't prepare us for the present, but instead prepared us for the past.

LINK

With the digital sphere growing rapidly in many disciplines, how do you view the relationship between your practice, which is in many ways tangible, and the digital world?

**Sara**

Of course, when I work with clients, I work with Rhino and I work with 3D. I live in this era so it is necessary to work with those tools and I think we can work with both. Some tools are good for one thing, and other tools are good for other things. In the end, they're just tools, and they should be used to help in a process. Touching is always going to be necessary, and even when doing things digitally, there is some tangible form to it. For me, digital is just a means of achieving things. Sometimes I spend many hours working with Rhino because I'm working on a mold, and sometimes I spend time stretching felt...the thing is, we now live in a very strange situation where we are going to be obsessed with what we touch and how we relate to others, but at the same time, it's going to be forbidden or at least difficult to do things together. There are so many conferences online, and that makes no sense to me because I'm not going to be able to see all of them. More and more, we do things digitally without thinking about why we are doing them this way. With so many tools and options, we need to think twice about what we are doing and why. We are overwhelmed with so much information. More than ever, what we need now is a strong sense of community. I think that's the future.

LINK

Because we can make things digitally, we don't necessarily question whether we should do it any other way. It's also incredible that we're able to meet and talk to people around the world, while losing track of the people living with us, in our building or in the same neighbourhood.

Sara

Yes exactly. That's something I've been thinking about a lot these days, and will continue to be concerned about.

LINK

Do you think there is a connection between this focus on things local, on being close to one another, and the ideals of a circular economy? You've mentioned circular economy a couple of times. Do you think there could be a new relevance for it at the present time?

Sara

Yes, of course. As I mentioned, I have a project on circular economy with some friends. It is on hold now, also because all my contacts at the factory are from Igualada, which is locked down because of the pandemic. But you will have noticed that in a capitalist society, in every supermarket, you can buy everything and anything. Now, we are coming to realise that maybe there is a need to buy locally, and that we are not always going to have everything. So, more than ever, we need to think about what materials are efficient from every aspect. For example, when students do crafts in a university, most of the time they play and work with any

material they decide. But shouldn't we be teaching them more about local materials? It makes no sense to me to be working with silver, if silver doesn't come from where you are. What are the factories near us? What are the leftovers? That's what we were saying before when I mentioned teaching with the future in sight. If you're very interested in silver, why not travel to the country where they have silver and learn about this material at the source?

LINK

Would you say your process of shoemaking and designing in general is material-driven?

Sara

Yes, precisely. For example, one shoemaking project I did was with a family company located one hour from here that used felt made with recycled clothing from Catalonia. They made **threads** and then from that they made a **woven textile** for insulation. They gave me all the **scrap materials** from the process and with that I made the shoe. And the shape of those shoes was obviously influenced by the material, not the other way around. I taught for a long time in a very classical fashion school, and I grew tired of people drawing, on paper and in colour, without thinking of the materials. The result is just digital, it is not an object. I find it strange to keep working this way.

LINK

Is there anything that you would like to see more of in design? What do you think is lacking, whether it be in industry or in education?

Sara

Drawing is important because drawing is like writing, you need to draw and write. You need both. Then, for example when I work with brands or with a studio, if it's organic cotton they are happy. But maybe it's organic cotton that has been dyed using chrome. So it's really about starting to understand materiality as it is. It's not just creating and speculating, it's about understanding that humans are not the centre of the world, and that animals, plants, and materials have agency, that they have a life cycle. So we need to understand that and be more serious about it. And I think that this is what is lacking on the part of many designers and consumers. Information can hurt, so it can be hard for some people to accept that this approach is more than just a trend. They may not want to hear the entire story.. Working with materials is a way of understanding the world. It's not only about designing, it's about living differently.



Working with materials is a way of understanding the world. It's not only about designing differently, but living differently.



LINK

What do you consider to be the key components of craftsmanship?

Sara

First, being generous.

Why? Because if you're generous to other crafters, they will be generous to you.

Secondly, being intuitive.

Intuition is not magic. Intuition is about following what you feel. Intuition is good in crafting.

And third, remembering.

Having a good memory and great documentation skills, taking pictures and writing things down.

For me those three ingredients are the three tools you need to be a good practitioner.



A Space to Create



BAUM & LEAHY

(Mariana Guintero)

Microbiocene:

A CASE STUDY BY AMANDA
BAUM AND ROSE LEAHY

A
Microscopic
View on
Matter





June, 2020

Through a dissolving and reforming of priorities, the covid-19 pandemic has composed new worldviews and new ways of being. As our species reassesses threats – within oneself, each other and our surroundings – the unseen and unknown become vectors for fear. Yet, the unimaginably immense world of microscopic entities and organisms remains vital to supporting our health and all life on Earth. All aquatic and terrestrial ecosystems are shaped through constantly replicating life, matter and the myriad inbetween. More than half of the cells in your body are microbial. To these trillions of bacteria, archaea, fungi and protozoa your body is the home for their lived reality. How are our conscious and subconscious minds interwoven with the microbial life cycles moving within and around us? And how can the pandemic bring about new perspectives on the multiscalar reality we live in?



The Microbiocene

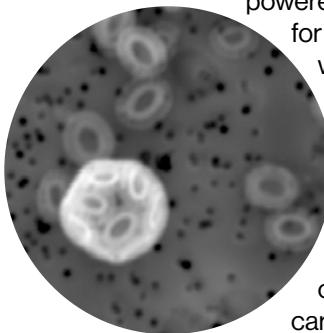


For the past three years we have been worldbuilding a speculative epoch spanning 3.7 billion years. The Microbiocene envisions the story of Earth told through the impact of microbial life, through their evolutionary events, present entanglements and possible future worldlings. Microorganisms are ubiquitous and yet fantastical – carrying out planetary transformations from collective micro-constellations. They meet in powerful symbiosis, make use of what local, available matter they can get their membranes on, communicate in chemical networks, and connect our bodies with all other bodies on the planet. We are interested in the blurry line that emerges between the human and microbial when we start to understand our bodies as walking ecosystems, super organisms alive with invisible creatures. There are more bacteria in your gut than there are stars in our galaxy. Your body is hosting archaea, whose ancestors were the first life forms on earth; and there are microscopic, eight-legged animals living in your eyelashes, right now. Your genome is woven with viral, bacterial, fungal DNA. Your microbiome, all the genes of these microbiota living on and around you, is essential to your health.

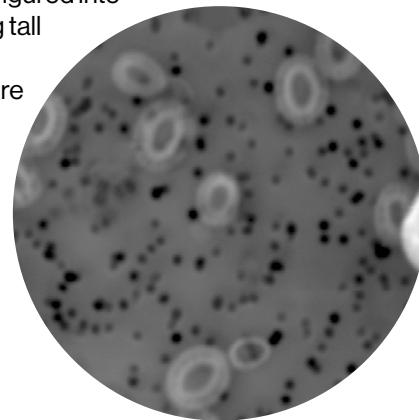




Held in the soft, encompassing membrane of the speculative epoch of the Microbiocene, we have entangled ourselves in some of the endlessly fascinating strands of the microbial world. Examples of Microbiocene work include Host (2019), an alternative domestic setting where your gut health is gardened along with your home, Interterrestrials (2018), a nematode-powered gong bath, and scenography for Mikroba (2020), a universe where humans are reincarnated as microbes. To exemplify ways of materially approaching this strangely ubiquitous microcosmos, we will delve into the muddy and monumental project Microbiocene: Ancient ooze to future myths. The project carves out ways of relating to the microscopic view of matter and life.

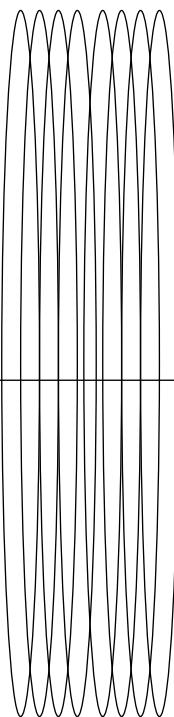


Following the flow of microbial information through deep time: algae once alive in the ocean, then as organic matter in the oozing seabed, before being analysed in a marine laboratory in Texel, refigured into microglyphs, standing tall as a monument, and projected into the future through speculative mythologies.



Molecular Matter

Microbiocene: Ancient ooze to future myths presents a scenario where an imagined future civilisation has shifted into the mindset and materiality of this microbial deep time. The installation depicts a future archaeological site, where a monument is inscribed with myths of microbiological pasts.



This project was developed for the Bio Art & Design Awards, in collaboration with biogeochemists Julie Lataud, Gabriella Weiss and Laura Schreuder from the Royal Netherlands Institute for Sea Research. They study the alkenone biomarkers, especially sturdy molecules, left by microorganisms in sea sediment. This sediment is collected in long cores, which have a cross section of earth from the seabed and below, layers denoting atmospheric transformation from past times. Working with a sample of calcareous ooze, this muddy column contained microbial histories dating back to 10,000 years ago, now compacted and compressed into chalky white lines of matter.

We created the myths on the Microbiocene monument based on our studies of the molecular remains of microorganisms left in the sea sediment core. Specifically, we focused on the abundant coccolithophore, *Emiliania Huxleyi*, *E. hux*, a calcium-rich, single celled algae whose hard outer shell is particularly effective at preserving molecular information about past ecosystems. Using column and gas chromatography we unearthed this information holding stories of Earth as narrated through the more-than-human. The sea sediment became an interface between human presents and nonhuman pasts. By making the microbes the storytellers, we wished to de-center the human from the narrative, and focus on periods of time that stretch beyond our own lifespans.



Material Storytelling

The Microbiocene monuments were the site for these stories to be told. The monumental sculptures were 3D-printed with Dutch XL 3D-printing company Vertico, led by Volker Ruitinga. In the collaboration between machinic and manual labor, we mixed in the dried sea sediment from the studies, to obtain recursivity between materiality and the stories being told. The nature of the bioinspired shapes pushed the boundaries of what was previously achievable with this type of material and 3D-printing technique.



The use of sand as the support material during printing added further processual references to the aesthetic, which referenced both the information rich layers of sea sediment and future experimental architecture.

Material storytelling is a method we continuously incorporate into our practice to explore the creative potentials in unifying structure and content, language and matter, the invisible and the tangible. Collaborating with scientists such as Schreuder, Lattaud and Weiss and technologists such as Ruitinga, we encapsulate open speculations into material outcomes. In this tension between ideas and matter, and through scientifically informed and technologically mediated material storytelling, we aim to create tangible moments of possible alternative worlds.



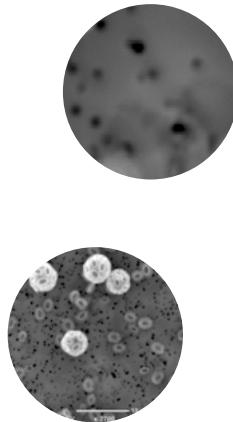
A CHANGING ATMOSPHERE



Signalling matter

Part of the worldbuilding of Microbicene: Ancient ooze to future myths was the creation of a fictional future language called microglyphs. This symbol system was co-created with the collaborating scientists, playfully evolving textual language into an ecology of signs.

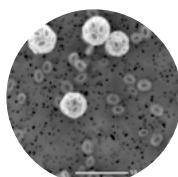
By reading the relics of this future archaeological site, visitors are invited to explore and imagine what we can learn from observing more-than-human timespans, and what alternative narratives there could be to the Anthropocene.



Viral Perspectives

Microbiocene: Ancient ooze to future myths presents a transmutation of matter, from molecular, to monumental, to lingual/symbolic. Stories extracted from molecular matter become the basis for their monumentalisation and formation into an alternative language system, suggesting new societal directions.

Through these media, Microbiocene: Ancient ooze to future myths presents microbes as a gateway to imagining and evolving other possible worlds. Looking through a microscope reveals how alive, vibrant and 'material' they are. We see them as active, reproductive, communicative, busy organisms, just like ourselves. This many faceted relationship between the microbes' ubiquitous, ghostly presence and the very material reality of their lives, which resonates with our human experience, continues to attract and inspire us. Even more incomprehensible invisible organic elements like viruses, proteins, DNA, molecules, atoms, dark matter, down to the strange world of quantum mechanics, can seem more approachable when we meet them through the universal, microbial gateway. Now recontextualised in the paradigm of the pandemic, we look to the entanglements between viruses and microbes, and between disruption and resilience from the personal to the planetary. Through our work, we wish to explore how we can start to familiarise ourselves with these multiscalar realities, the dark matter of our genomes, the unfolding unknowns. The current pandemic has further revealed the complexities of these unseen worlds, as we're



confronted with the viromes of our bodies and the biosphere.

Materially, the virus is minimalistic: genetic material spiraling within a protein envelope. The non-living virus particle is only able to replicate when hijacking a living cell – human, microbial or other. At the boundary between life and non-life, viruses can help us reimagine matter and life from a microscopic, non-anthropocentric view. Fragments of viral genes constitute 8% of the human genome. In the deep ocean viruses outnumber cellular life forms up to a hundred times. How can we rethink and remodel our material systems to be in resilient resonance with this multifaceted microscopic, and submicroscopic, mesh? And as we deepen our perspectives, what kinds of material monuments do we want to raise now, for future generations to unearth?

With our ongoing interest in microscopic structures and the recursivity between matter and mind, we wish to explore how new ideas and systems can emerge, when we find ourselves entangled with both the destructive and regulatory power of microscopic forces. From the molecular to the political and the planetary, we live at the dawn of a decade of systemic change. Re-thinking matter and mind as microbially mobilised, virally disrupted and regulated, genetically reconfiguring, and atomically ‘open’, we let our bodies and minds move into the deep time of the Microbiocene.



A Space for Notes



GABRIELA SIMÕES GARCIA

AN ESSAY BY GABRIELA,
DEVELOPED TOGETHER
WITH LINK

através: An Embodied Approach to Change



Water is the only known substance on planet Earth that naturally can be found in three different states of matter - gas, liquid and solid.

The transformation is physical, while its substance does not change. Water is still water in all of its states. The substance permeates all living beings in this "Blue Planet"; life was defined as animated water by Russian scientist Vladimir Vernadsky, who actually preferred to use the term "living matter" instead of "life"¹. Adult humans are around 60% made of water and they are the only living beings interested in manipulating the different states and the current forms of substances and materials that exist on Earth. By creating communities and developing cultures, humanity has been exploring the natural world, shaping it accordingly to its own benefit, which has culminated in some civilizations creating complex artificial living systems. In our times, the dominant societies have reached a point in which their - our - actions also define the routes of the materialities all over the Earth.

As we, humans, not only drive change on the planet but also, as a very unique species, have the power to acknowledge, comprehend and reflect upon the consequences of our actions on those changes, we can come up with different modes of inhabiting Earth without driving it to its full exhaustion. The challenge is already here, the last 50 years of intense material exploration are inevitably bringing different contexts to the next generations. So, how through design can a responsibility of this magnitude be communicated and at the same time, how can design or other creative practices drive the necessary changes?

Certainly, there will be no single response, as the world is made up of different realities and perspectives within various cultural and social environments. A process of driving change is also much connected to the geographical and historical conditions, being best conceived on its own context. As well as the time involved in such process, not all societies are willing to transition to different lifestyles or are even perceiving a need for a change yet. This issue is much related to historical privileges, in which the consequences and impacts of the decisions and actions of these small groups are out of their sight and embodied experience.

After these overall considerations, with this essay I would like to share my process of looking for a different state of being a "living matter" and of manipulating matter, a state not yet achieved, but explored through research, design and making practices. I

would like to highlight that there is no intention of bringing a formula or a route to be followed, it is a narrative of findings and questionings based on my own experience. What maybe it can do, is to resonate with the reader and provide a space for personal interpretation, questioning, deconstruction of current states, and formulation of new ones.



Touch





Coming from a formal education in Architecture and Urbanism, for a long time my trajectory was permeated by urban plans and architectural projects, activities mostly happening on a thinking sphere. There is a certain rupture in the process from creation to materialization, as architects design for others to build. From a personal interest in moving towards making practices and smaller scales, I started to explore making furniture with the aid of digital fabrication tools. For architects, these tools which involve a digital interface between thinking and making have become a bridge towards the rediscovery of craftsmanship. In that sense, I acknowledged that making - employing bodily energy in a transformative act of a material - enables learnings on different scales and spheres. The Hungarian-British polymath Michael Polanyi, who created the term tacit dimension of knowledge - which inaugurated a field of study on this dimension of knowledge - affirms that "the way the body participates in the act of perception can be generalized further to include the bodily roots of all knowledge and thought. Our body is the only assembly of things known almost exclusively by relying on our awareness of them for attending to something else. Parts of our body serve as tools for observing objects outside and for manipulating them. Every time we make

sense of the world, we rely on our tacit knowledge of impacts made by the world on our body and the complex responses of our body to these impacts. Such is the exceptional position of our body in the universe"².

Having acknowledged that making practices can improve the design process, I reflected on how to explore other materialities and go beyond myself³. How can I connect with the people and materials around me in order to practice design for transformation and nurture social and environmental justice? This individual extended exploration is only in its beginning. One of the propositions involves having workshops for collective gathering and creation, fostering making practices, through traditional knowledge from craftsmanship as well novel digital technologies, in order to reflect on topics related to creative processes, material culture and our relationship to natural resources. A first iteration happened in 2019, during Maker Faire Barcelona: the workshop ClayTime happened in collaboration with designer Barbara Drozdek⁴ and local ceramist Jan Madrenas⁵. For the following workshops, which now await an adequate moment to take place as we face this global pandemic of Covid-19, the intention is to explore the interaction between making with physical materiality (atoms) and the digital materiality (bits) for collective reflection and discussion.

Physical and digital materiality are both entangled, as in the end both are physically existent. In a lack of awareness of the materiality of the digital content, we need to remember that, even when we

refer to the material world, visible to our eyes and present in our surroundings and our cities, to look for sustainable practices only, is not enough anymore. As planetary boundaries are closer than ever, societies and communities need to start envisioning transformations that incorporate regenerative practices in their everyday lives.⁶ Making practices gently introduce some possible responses to regeneration, as they are place-based, can happen within a community - enabling co-creation - and introduce a new temporal relationship with artefacts, decelerating production and expanding our perceptions of the world.

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A Space for Critical Reflection

HYDROCOTTON

A CONVERSATION
BETWEEN ED H, ED B,
AND JOHN, REDACTED BY
JOHN IN AUGUST 2020

Growing Radically Sustainable Cotton



This is an excerpt from a conversation between Ed H, Ed B and John, the co-founders of hydroCotton, a data-driven agriculture startup helping fashion companies reduce their environmental impact by growing radically sustainable cotton in a transparent way. Redacted by John in August 2020.

hydroCotton, you said?

A bit about cotton

Cotton is an amazing fibre. It is beautiful, soft, durable, hypoallergenic and doesn't release any microplastic when washed. No wonder we've used it for millenia across the world. Long after its baby steps in man made products in Mesopotamia, South America and the Indian subcontinent, cotton started gaining global recognition during times of intense colonisation which eventually led to the industrialisation of fibre processing technologies during the Industrial Revolution. This allowed the fibre to become a key staple in ubiquitous products globally. Today, while dominated by China, India and the USA, cotton production supports the economies of over 100 countries around the world and it is estimated that 300 million people are involved in the sector - from farming to transportation and manufacturing.

Cotton is the most widely used natural fibre in the textile industry, but growing it is a dirty business. Its production requires tremendous amounts of water, threatens ecosystems and is based on a linear waste

stream from farm to landfill. With growing demand and weak regulation, it is bound to continue threatening ecosystems, fresh water reserves and the people working in the fields. If we continue producing cotton as it is today, we might even be reaching peak cotton in the coming decades.

Who we are

Naturally, with a deep desire to address systemic, social and environmental issues, we knew that this was a problem worth tackling. And as designers with technical backgrounds in engineering and material science, we knew there was something we could do about it. All three of us have had a common interest in food, agriculture, fashion and consumerism for a while. Following a double masters degree at the RCA, we all spent a few years working in various industries which consolidated our vision and skillsets.

Ed H worked in agri-tech startups on things like new animal feed farm systems in desertified regions. He also spent some time researching how to transform potato byproducts into consumer goods plastics. Ed B worked in the contemporary art industry where he explored the concept of augmented materiality. He also spent some time in East Africa doing in-field design research for an Imperial College WASH project. John also worked in the contemporary art industry building weird and wonderful electromechanical systems and interactive sculpture, before joining a female healthcare startup to lead their R&D and sustainability efforts. After a while, we converged quite naturally towards this

ambitious idea of applying new technologies to cotton farming, which is how we founded hydroCotton. Our vision is a fashion industry in balance with the natural world, while being truly accountable to consumers and the entire supply chain. So we're on a mission to use [human&nature]-centered design and technology to create farming systems that reverse climate change and reduce poverty.

Why fashion specifically? The fashion industry is one of the most polluting industries on the planet, so by working with fashion companies directly, we can help them reduce their environmental impact from the ground up and reach their ambitious sustainability targets for the coming decades.

Zooming into the 21st century

So how can we make cotton a crop for the future?

The growing technology that we are developing enables us to achieve 80% water savings, grow pesticide-free, and get a 3 fold increase in yield - which means that farmers get more money because they grow more cotton. And we're focusing on high quality fibers, which also boosts revenue generation. Fashion supply chains are typically opaque, which too often allows stakeholders to get away with social and environmental transgressions. This is partly why cotton has such a bad rep. But we see an opportunity in making supply chains more accountable by harnessing technologies available



today. So we're generating data in our farms, assuring the authenticity of that data, and utilizing it towards novel forms of accreditation in the field.

Ultimately, we believe in resilience through diversity across realms. That means our solution can work in a lot of different environments, but we don't claim it's a silver bullet. The world needs different approaches to sustainable fashion and different approaches to sustainable agriculture. And these solutions must coexist if we want to stand a chance to avoid climate collapse.

A systemic disconnect with the material world

This past year working on the business has been a constant reminder of how out of touch everyone is with the material world. Too many times we talk to experts and get told, 'oh, I had no idea that this was a thing or that this is a problem.' Even though cotton production has been mired in injustice and wholesale assaults on nature for the past 2 centuries, useful information is just not available in the right way. So consumers can't really hold fashion brands accountable until a scandal emerges. And then they feel outraged for being lied to. So we're in this period where sustainability is at the front of the agenda, but most people won't know what it means. Most will view sustainability in terms of absolute (good or bad) and there's a profound lack of appreciation for nuances. But we're starting to see a growing public engagement in the ways brands operate. A lot of brands coming out of COVID are using sustainability as a differentiating factor in their identity,

and things like workers rights, as well as environmental impact is going to become core to their identity instead of just having a page at the end of an annual report explaining how they planted some trees (which is great, but really just a start).

So what do we mean by 'environmental sustainability'?

Generally speaking, the simplistic engineering way to see it is that the planet produces a certain amount of resources that we could sustainably harvest or utilise every year without compromising our ability to utilise these resources in the future to meet our needs. With that logic, living sustainably means keeping humanity's impact on the planet below an acceptable threshold to not mess it up for everyone and everything else that lives on this planet.

We also talk a lot about 'sustainably good' and 'sustainably bad'. Sustainably bad is incremental evolution. A more sustainable disposable piece of packaging, for example, is a sustainably bad object. It is better than the existing thing, but really, that product shouldn't exist in the first place. We need to be radical and honest about certain products and certain interactions. The most challenging thing when it comes to sustainability is that we are all going to have to change behavior and perhaps reconsider certain luxuries that we are used to, because our individual actions matter collectively. Sustainably good is systemic redesign. It is when you look at every single one of your decisions and





try to focus on what is the best balance between making profit and environmental impact. This is very hard of course in this sector of agriculture, because everyone is so categorically underpaid, and farmers often don't really have the choice to be sustainably good.

The bottom line is that it is hard to know what has the most impact. We know we should consume less meat, avoid single use plastic bags, and take the plane less often. But there are so many parameters to keep in mind at all times - GHG, water, waste, microplastics, rare earth minerals, and the list goes on. Which is exactly why transparency is so critical in moving towards a more responsible way of living.

Why transparency is so important

The need for transparency boils down to understanding the true cost of things, both human and environmental. Globalisation has very conveniently displaced problematic industries out of sight and it is hard to viscerally feel the impacts of something when you don't walk through fields or past factories every day. The more information we have in real time, the easier it is for people to start relearning where things come from, and what it takes to bring them to life.

Imagine buying this brand new T shirt. Most won't have a clue about the water footprint of that product and even less of a clue about the person who spent three months straight working 10 hour days just picking cotton with no protective gear in fields covered in pesticides. And all that to just about maintain their livelihood. And that T-shirt is now in your hands. If the

information isn't readily available, you can probably hide away and not think about it. However if the information is brought to you, then you can start engaging with the products in more meaningful ways. And it won't be comfortable at first, you might feel guilty and confused. But then you will probably cherish it and take ownership of it, and hopefully invest in a more ethical and sustainable option next time. (Keep in mind that the most sustainable object is the one you already own.) So information is key to building empathy. In addition to that, it is key to regulating and improving the industry.

A holistic and contextual approach

How we tackle this very large and complex industry

Both the cotton industry and the fashion industry have an enormous social, political and environmental impact. In order to begin addressing some of the issues at hand, we must put on a holistic lens to get a comprehensive overview of the dynamics interconnecting the different stakeholders involved.

Our environmentally and socially driven farming approach is based on a top-down and bottom-up approach to bridge the gap between the end user and where the fibre comes from. From the beginning, we've approached the challenges plaguing the industry from a naive external perspective, and investigated the obvious limitations of the farming and processing methods. This allowed us to develop a small-scale advanced functional system independent of costs. We then looked into

applying the technological and human solutions we are developing in ways that work in the real world - focusing on manufacturability, scalability, ease of implementation and affordability. Think of it as the technology developed for Formula One influencing everyday car designs.

By rebuilding something from scratch, you can leapfrog existing infrastructure and implement truly systemic changes. However context is everything. Only by understanding the local social, political, economic, material and environmental factors can we begin to adapt our approach in the best way possible for long-lasting impact. In some places you'll want a jacked up Toyota Land Cruiser, whereas in others a little Fiat Panda will do.

To grow or not to grow?

For fashion companies to really achieve meaningful impact, they need to break away from the linear consumption paradigm where their survival depends on selling increasingly more to consumers who are tricked into thinking they need to replace their wardrobe every 12 months. This perverse idea of incessant growth is foundational to the economic systems that our society relies on. Because we live in a society driven by neoliberal ideology, our value systems are anchored in the idea of perpetual unshackled growth, which obviously is a problem because there's no concept of balance. In nature, whenever something's out of kilter, that's usually a sign that something's wrong. That is interesting because as designers and engineers, we've never really had to deal with economics. When you

launch a company, and especially when you're raising investment, you start to really fundamentally understand that everything is predicated on growth. Very wealthy people make their money by investing in growth - not in good, not in bad, but in growth.

You're confronted with that reality check coming out of the type of universities that really encourage radical innovation and speculative design, as you realise that when tested in the real world, those projects often can't survive because of the growth imperative. It would be interesting for forward-thinking design programmes to incorporate elements of radical thinking specifically for economic systems and business models - to reconcile business viability and environmental sustainability.

So... to grow, yes! But to grow better. It's about adopting a balance of revolutionary thinking with evolutionary development. And doing that while ensuring we build meaningful relationships with the things we interact with (cf emotionally durable design). Multi-disciplinary startups are best poised to work at this dynamic intersection. They are more agile, more reactive and can easily pivot to adapt to industry needs.

Final thoughts

Embracing diversity to build resilience

The concept of resilience is foundational to our *raison d'être*. Resilience can be defined as the ability of a system to evolve when exposed to disruptions in order to maintain acceptable levels of functioning. Effective



resilience is characterised by diversity, decentralisation, robustness and inclusiveness in ways that often mimic nature.

The monopolized farming practices that came to life during the Green Revolution enabled countless people to emerge from poverty. It has set us on a trajectory of high productivity and rapid technological progress. However the standardised agricultural systems we so heavily depend on are actually just robust-yet-fragile and vulnerable to unanticipated threats. They are also vulnerable to very anticipated threats: just like the petroleum industry is facing impending scarcity problems, the agriculture industry is already starting to pay the debt for impoverished soils.

In our case, we're designing our farms to be technologically advanced, but to remain contextually relevant, because one solution will never fit all. One thing we're learning every day is that adapting scale while making use of local labour allows us to be suitable for more diverse regions. With that in mind, we also understand that our farming system won't be appropriate everywhere, and wherever there are more simplistic systems that can guarantee quality yields with minimal agricultural inputs, we champion that and celebrate it.

The natural world is complex, the dynamics between living creatures are complex, people are complex, and the rate of change we are experiencing today demands that we build more agile and adaptable modes of production. Only by building systems that can accommodate for the spectrum of multiplicity can we

hope to future-proof our supply chains and industries.

And the role of the designer in this messy, complex world that we live in?

In our eyes design sits between art and science as a tangible manifestation of technological advance for everyday use by consumers. That said, design has evolved from its mid-20th century predecessor. Today more than ever, designers need to harness critical thinking, empathy, and a plural perspective in order to find important problems and solve them. They have inherent civic, social and environmental responsibilities, and by decoding and translating technological and societal advances, they can enhance and better everyday life. That means ensuring that both humans and nature can remain central stakeholders in the development of the things surrounding us. Another important facet of the designer is to take on the role of a facilitator or a mediator, someone who can connect the dots and bring together the resources necessary to make things happen. In connecting the dots, one can propose and inspire new realities in the mind of the people.

Design is pivotal, it's the link.



A Space for Objectives



FAB CITY HUB

A CONVERSATION
BETWEEN LINK AND FCH,
REDACTED BY LINK

Prototyping Urban Self- Sufficiency





LINK

Can you explain Fab City Hub and how you became part of the project?

Jess

Fab City Hub is part of Fab Lab Barcelona and the Fab City global initiative, and what we're doing here is bringing the vision of fab cities into a physical space. The vision of Fab City is actually thinking about how cities can become productive cities, meaning everything which is consumed within a city is actually produced in the city as well. Within the Fab City Hub, we are looking into three main topics; materials, energy and food. We focused on food for the first year based on our existing relationships from Fab Lab Barcelona to stakeholders. These stakeholders such as Winemakers, Leka, etc, are projects with the main focus on food. Our personal interest through Emily's Master thesis and our collaborative project ROOTS, has influenced this decision as well.

I think food and food making has low entry barriers. And as the FCH is the link between local communities and the Fab Lab, it just made sense. It simply was a nice fit based on our context..

We're a team of three working together to create events, workshops, lectures, and all different kinds of things here, all contributing to this community approach and opening up this idea to the people. Right now, The Fab City Vision is a very intangible idea, through the Hub and by working together with the local citizens, we hope to

bring this vision into context. The Hub gives the opportunity to interact and explore how citizens can become agents of change for productive cities.

We are bridging a gap by contextualizing in something we like to call the "third space". What is the third space? The concept of the third space has been used as a sociocultural term to designate communal space, as distinct from the home (first space) or work (second space).

Emily

And what we don't want, is to go into the nitty gritty of how people work and how people behave and not actually understand it. How can we create a space which you could go to and it feels like, I don't know, it feels like your living room. And when you're into that, we've learned a lot, but a lot of it is being soft skills. But then we're also continuously learning and that's why we are testing out so many different formats and working in different ways. We're trying to make this space kind of as open and as welcoming as possible. So someone who's got a great idea can come in and say: "Hey, this is what we want to do." For this we have the energy, but we also have the facilities to make it happen.

Jess

This is actually one of the biggest parts we also want to contribute with. Not only having the site being part of the gentrification of Barcelona, but actually trying to connect to the existing local communities and thinking how can we bring these hipsters and travellers and all



of these people with the community here together and like mash them all together with our Fab Lab community and then co-creating something new? As Emily was saying before, it's not just about us designing a space and putting it out there and then it just has to work. What if it doesn't work and we fail? Now, actually for two to three months, we tried some things out. We have a strong community orientated approach about how we could talk with our local champions here and let them know we're going to try this. If it works or not, we will see... And then after three months we can reflect on what has happened, think about adaptation and see what we can do better. So that's why we're also meeting, having moments for peer to peer exchange with our stakeholders and champions to share ideas, updates and keep everyone in the loop. I think how we both became part of this is because we both have been part of the Master in Design for Emergent Futures. Who! And Tomas gave us the opportunity to do a second year and the goal of that accelerator programme was to bring the ideas of the Masters into reality and actually trying these interventions out into a physical space and also giving the new students a possibility afterwards to be part of this onward.

LINK

How do you see this project expanding and are there any important lessons from this first journey?

Emily

Depending on the daily tasks we have, we take different roles, but I would say a most consistent position is the one of a project manager. I'm a remote project manager

at this moment as I left to do a personal project as part of SPACE10 Residency. So I wouldn't say that I am the project manager, right now I would say that Jess is the "big boss", and in the best possible way. She is holding the place together. In this sense, our roles can vary from trying to fix a blocked sink to actually hosting an event at the City Council... Our roles really vary.

How do we see the Fab City Hub expanding? I mean, I don't see it as a space like the space as our home, but it's actually the imaginary that we're trying to create. And I think we see expanding in the way that it moves to a different city, where we've seen it already. And actually the city's kind of connect on this global scale, or actually that within Barcelona expands to a bigger space because we are actually popular and so many people are interested in it, but the space can actually hold everyone that we wanted to hold. We just moved to a different space and we just moved the imaginary there.

LINK

What were the learning curves?

Emily

I think learning curves is actually being able to critically reflect on things that don't go well, along with the things that do go well. For example, understanding where your role is and actually say: "When do we step out of this and let other people take control of the space" and being able to mediate that. And then the most important lesson learned so far is collaboration, just to get out there, and speak to the people. Barcelona isn't as big as you think it is. So obviously, everyone seems to know everyone here. And there is actually always someone who's willing to help.

Jess

It was funny because when I was looking over a summer school thing yesterday, I was starting to go to my CV and I put it in the Fab City Hub, and in that moment we were thinking, what is it that we do? Yeah, we call ourselves project managers. But I think it's way more than that, you know? Because one day we are event organisers, the other day we are building a larger community... We are just like this energy which takes shape and every day it is something else. So it is just really depending on what is happening at the moment, and I think it's also really interesting because that is what we are as designers. Somehow, we have to have this "bits and bobs" like Emily would say, from all backgrounds, all of them and we just put them all together and reform each other everyday and call yourself something new. I find this idea super nice... The thing with learning, I totally agree with what Emily was saying. It's just that we really try to be critical with what we're doing. And always question what we are doing and how we can do, and do it differently. Every day, we have some new things to do, everyday we get to know new people, who want to do something with it. And we sometimes can fail in-between, in a way, but we have this amazing network supporting us behind. It's nice that we can just have each other in a way, because I think if you start this from scratch, alone, it's really difficult, but instead we are part of a network.

Emily

Yeah, definitely being part of this bigger network and having support is important.

LINK

Does the maker mindset kind of help ahead in your own learning processes, just the attitude of being really scrappy and experimenting and iterating? Does that help you? What do you think is transmitted between yourselves and between the rest of the team and the community?

Emily

I think when you take this kind of mentality and actually take people on the street, this is such a key example of the maker's mentality. It is essentially about the ability to see value in what is seen as trash by others. If you look around the space that you're in now [FCH], the majority of that stuff is coming from the streets. And I think that's been the mindset that we've entertained.

Jess

You know the maker movement or maker mindset is, I think it's the main thing here because if you don't have that and go in an empty space, we wouldn't know what to do with it. But actually we come in here and we see the space and we see the potential because we know the materials, we know the humans and we know that there's so many things you just have to combine and know how to combine them, then something will happen even if it takes time. I think some of the things which are more important than actually the mindset of the maker are patience and curiosity. Because sometimes we struggled in the beginning. And I think we forgot that now, actually, is that in the beginning, we thought: "Sh*t, we need money, and we need to make this happen tonight!" But after two, three months, we are more calm about it because of course we need those things, we need some

kind of funding, but with a bit of curiosity and patience, everything falls into place after a while. And then you see that people are coming and they say: "Hey, I would actually love to do a workshop for free here." or "I will do a lecture for free here because you're just that same mindset."

LINK

I'll go backwards and ask about the three key themes: food, energy and materials. How do you define them and what are the connections?

Jess

I think we haven't really defined them yet. That's actually one of the main things we haven't done yet because we have this topic there from the subsidy initiative. But I can say there are two key points obviously, because everything we use and make and do and produce are based on these. Food is essentially what we're most interested in. It comes from a personal relation to food, and our work with ROOTS, an alternative growing aeroponics growing system. But if you think about what we need for the future, we need energy to produce products, but we also need materials to produce those. Essentially food, materials and energy are the basis of what we need for life. Not only in cities but in general, based on this we can create almost anything, and each of the topics are interconnected in many different ways. Having the three main categories helps us to categorise projects, but also explore interconnectedness. The nice thing is that the projects which are connected to the space, they fall into these categories, but it also connects those categories.



LINK What are your current projects?

Jess We are collaborating with many people. Starting with LEKA, a “green” restaurant in our neighborhood, with which we are doing the Future Food experiences. We have the winemakers with which we are doing workshops together. There is also the interest from many new people who would like to get involved. For example, there’s this guy from South America who makes soaps from scratch and he came for a workshop and suggested teaching what he does. Or we have this guy, also from South America, Brazil specifically, who makes tomato sauce. And then we are also in touch with local companies like Tapp... So yeah, people are getting in touch with us, but now we have to see how we can work together. But there are also a lot of projects who are doing things here, for example, SISCODE, or Reflow. They have very similar values and that’s why they hosted events here. Because it just makes sense.

LINK What values are you trying to communicate? And how was what values are more specific to you as Jess, Emily, and how does that transfer to the values of Fab City? How does that translate into value? do you see any overlap or the things that are at its core that you refer back to? How do you approach these overlaps?

Our values are actually a number one category. We have sustainability very close to our heart. We are actually trying to explain what sustainability means, and a lot of that explaining is done through these kinds of projects,

Emily

because we can kind of bring more sustainability across many different aspects of our lives. But actually, we don’t actually “know” what it means, but I think that’s what we’re going to try to convey through design and other values we carry.

Jess

Knowing that we are all going to die at one point is something we have in common, but what connects us all, and even more is the hope that we can extend our time on this planet. We all know that things are going wrong. And obviously, they’re not going to be solved within the next five years. But we all say it’s worth working for a better future. And you know, this does not matter to everyone. Every individual has their own unique way to approach this reality. But in the end, we are saying it’s worth trying. And it sounds very cheesy in a way but I think it’s kind of true.

We are not a separate part of nature. So it is this reconnection that we need to make and share this idea, because the sharing of knowledge is something so important. It is key. And all of us who are partaking in this, none of us are saying: “I’ve learned this, now I’m going to put a patent on it and I’m gonna make money out of this”. No, no, it’s not like that. Someone learns something. That person invents something, and then they say: “Hey, okay, now we’re going to share it and everyone can make something even better out of it afterwards.”

LINK

I read on your website, about the future restaurant being alive. Can you elaborate on what this future restaurant will look like? What kinds of experiments would it consist of?

Restaurants should be considered labs — as a place to learn — where people experience a transformation on the way they consume, where the future of food is a learning process.

**Emily**

It's not all restaurants in the future, there are a lot. But it is this idea of going into a restaurant. You are having this experience where you sit down and you share food with someone else, but actually, what is that? That restaurant is actually something that you can learn from and then you actually try something new as well. And yeah, whether it be trying something new is a transitional dinner or experiential food. I think the experiments will consist of all the things that you said, but also something

new, because it's this idea that it's continuously moving as well. You have almost a guarantee that you're going to a restaurant and you know that you're going to come out with a different experience and you kind of tried something you never thought you could have tried.

LINK

Do you use any methodology or strategies when you're planning these kinds of events? And how are you going to utilise it throughout the projects? I think I want to say this around the methodologies and tools that you use, and is there any overlap with the rest of the projects that you did? In terms of execution, like where do you start from an idea, then what do you do contacting people? Or do you very fluidly? Or is there a rigidity in the process?

Emily

No, I think it's pretty fluid. But I think you have an idea and then you speak to someone else about it, and usually an expert or just an external opinion. And then from that, then you try and develop this idea but and that you have to understand your key factors that are going to help make you make this happen. So for example, Leka is a key champion of making these things happen. And then you have obviously all the usual run ups of the events, and then you have an evaluation after. Then it's understanding what do you do, what could you change and do better.

Jess

I think also what I've been looking into the last couple of weeks is this collective impact. We haven't implemented that much yet. But I started writing down the approach and a strategy from what they have been doing so far,

which I think it's very valuable. And in a way, we have been doing some of these things naturally, what they write about, but it's also really nice because they write about how you can make a collective impact? How do you, together, create a change? And one of the key factors, so what kind of things you have to do, such as short iterations and meet up with the stakeholders and all of these things. It gives us this backbone bone structure that we try to facilitate here because in the end, we are the backbone, we are the facilitators here, yes. But as we said in the beginning, we don't want to have this top down decision making here, we want to empower people. We are co-creating the space and I think for me, this collective impact forum is one of the key elements which guided me through, regarding the management side of the space. But the other thing is just like basic human sense, no? Haha. Caring for each other. That's the methodology.

Emily

Oh and cups of tea. Cups of tea solves everything!
Hahaha

LINK

Knowing that you create workshops and events, how do we transmit that knowledge through the education or the workshops themselves? Also is there an exchange of knowledge?

Jess

So we have these two things. One is these dinners which have different formats with LEKA, and also with Emily. The other thing is these workshops. We had two fermentation workshops so far. When I start the

workshop, I say: "Hey, guys, first of all, this is the fact that you have because this will be artists, what we're doing. We're doing this workshop, in which we share what we know, but we're not experts. I didn't learn this. I taught it myself. And all I know is what I know, and I'm super happy if anyone is an expert in this. For example, two weeks ago at the workshop, there was a guy who studied epidemiology, which is how diseases spread. It was super nice to have him there and he can give insights from research and say: "This is how you can do better..." Or another example was last Sunday. There was Alessio here, who studied food technology. When I'm talking about fermentation, I'm talking about tacit knowledge and learning by doing and learning from making things... It's all about life-long learning. When someone has a question and then I do not know the chemical formula or the actual process behind them, in detail, but he knows and shares it with the rest of us.

Julia

How do you implement this new information into your following workshops?

Jess

Every time we have a workshop, I redo my presentation. After the workshop, we send out an email thanking them and send the instructions and photos from the day, and also ask for feedback. So if anyone has any feedback or wants to suggest a change anything. Or if anyone has any ideas and would like to do a workshop themselves, we want to know that. Also during the workshop, I always

make notes and try to implement it the next time. From there, we learn how to make it even better. And for the social dinners and experiences we had so far, it is a lot about sharing knowledge and understanding our food, and what we eat and give to our bodies every day.

LINK Do you see the relationship between, what you said before about tacit knowledge, and food?

Jess For sure, if you try to teach someone how to make food, for me and Emily it's something super casual. We just make me make something and then you just put things together and then you use this spice you use that spice, and you know it will work together. And I think that is tacit knowledge also. Because if I do the workshops, and I explain to people how to ferment things, and I put those things together, and you know, it's like, why do you do this? And I don't know, it just kind of works and that's a big thing.

LINK We were talking a bit about circular economy, and there is a broader definition of it, but we were wondering what your definitions of it were within the context of setting up. Where do you place yourself in it and how is it contributing to the space?

Emily I completely understand where you're coming from with this question, but it's more that whenever someone asks about circular economy, I have your own definition and then you don't want to waste... But actually it is really difficult to define what is "circular economy". And I never



**Emily**

seem to get one even with web content, I never seem to get the actual definition, right, of what it is. But then I think that's actually a problem with defining what a good economy is, that we can't actually put a tangible simple explanation to a lot of these things.

I think the circular economy is the guys that go out on the streets and take the scrap metal out of trashed items. And I think we were trying to be circular in our methods. And we're very aware and out of necessity we have to be circular in our methods, because we don't have the funding or the financials to be able to say: "Hey, we're going to waste this hour to do this."

Jess

I think the term "circular economy" is starting to get a buzzword, just as the word "sustainability", because not everyone sees the potential behind it and I think it is very valuable but it is also overused. Especially, like Emily said, there are these terminologies and other descriptions of that and that's supposedly this circular economy or the maker movement, etc. But what it actually means for that single person, we are difficult because we don't have that much influence on it all of the time. So for example, how waste is managed within the city? Yes, we can overtake that. And we can try to make a circular economy within this space, about waste management, for example. But we have to throw something out on the street into the bins, that's where we don't have that insight. Is it a circle actually, what is happening with that waste? Is it going to Africa? Are they actually recycling it here? What does it mean to recycle? And I think the only thing that we can

actually try to share is this idea of stopping, thinking, reflecting, do I need this? Don't I need this? And then always, like reusing, refurbishing, recycling, etc. But actually the thing about recycling is that it is one of the last steps but there are so many things that happened before, which starts with the reflection about if I actually need an object and all the other things and then in the end, if there's really nothing I can do, then recycling comes in.

A lot of people automatically connect "recycling" with "circular economy", but actually there are so many things that happen before that recycle or should happen before that. There's a lot of things about the methodology and the description of the circular economy, but the actual implementation for that one single design is something very different and it starts where we consume. There's obviously different points of views on it...

LINK

What does a typical day look like?

Jess

Hum, well it usually starts with me trying to piss off Jess, throwing things at her, and maybe just a bit of shouting.

No and then we get down to work a little bit... Jess being her and me making copious cups of tea and then in-between all of that we work...

As the Fab City Hub is for all of us something we do part time, Emily and I, when we are both here, we would work in the mornings for the Fab Lab and IaaC and we do our actual work. And in the afternoon, we try to catch up with emails and try to organise the next events, talk about new collaborators, trying to document everything we're doing, putting it into GitHub,... Obviously, these are all things we do not do 100% yet, but we're also planning to do within the next few months. And a lot of listening to music, singing and like all of these stuff as well because we also cook a lot. We always have lunch here. Cook sometimes dinners because evenings they get longer than they should be. So it's a lot of extra hours and on the weekends coming as well and then events are on the evening as well. So it's like all of extra hours but it's like it's not it doesn't feel like work if it's something you're passionate about. So it doesn't



actually matter that much that you're spending extra time on it. And yeah. I think that's like a normal day here. It's, it's a whole lot of things. And if it comes to making, the most valuable person we have been interacting so far with is Vero. She's our intern and she's like, she's making so many things and she's been helping a lot with those things. So we've done a lot before the first event, but ever since she started it's crazy because she just does it, she understands what we want and hse's super passionate about everything. So She has a great mindset. I don't know what we would do without her.

LINK

How open is the space for Fab City Hub?

Jess

The door is on the street level, and people just come in and that's how it happens all the time. Most people just open the door and ask what is this place about and more things such as "Can I do co working here?", "Can I do a workshop here?", etc. So we try to be as open as possible, especially to Fab Lab Barcelona and IaaC, because we want that to be a family space, in a way, for our local network here. So it's not completely open and we don't actually want to keep people just coming by all the time because we work here actually, so we want to have two days where it's open to the community, we just open the doors and people can come in. And the rest of the time we work and do things and definitely it's nice to actually have it just for us and team members actually, because otherwise it gets crazy and everyone comes by. It's nice, we love to have people here but then you can

really focus on the work that needs to get done.

LINK

How does your business model work?

Jess

We're working on the business model together with John Findlay.

Something really nice he said two days ago was that a business model will never be done. So, we're doing it. We have feedback from some people, they give us help. So we try to see how we can get money from the companies, who have the money, to give access to free education workshops and lectures and as much as we can for the community. Because companies are more than happy to be part of this.

I think these companies are always happy to be associated with us or Fab Lab Barcelona or IaaC, because we have some really good ideas and methodologies. They want to learn from that as well. They want to change and want to be part of the new economy and in a way the future. And I think one way is actually collaborating with someone like us.

And the other thing is that for that we can hopefully have a sustainable business model in the end where we can gain money to support our financial situation, but also put this money into workshops and put this money into like, getting the place of them running even better. That also means that we're trying to get funding as much as possible, such as from European funded projects,

to really share as much as we can for free and for the community. I think that's key, because knowledge is something you should not have to pay for.

LINK

Could you tell us a bit about your projects "Roots" and "Collective Edibles"? And maybe Emily, you could tell us a bit about the project you're currently doing at SPACE10?

Emily

I guess Collective Edibles has kind of evolved into what is the Fab City Hub in a way. It's morphed into the world and a lot of the things that we do and a lot of the things that I know, at least, has come from the learnings around that. For example, being able to work with Leika and also actually be able to use food as a tool for communication, I think that's been key throughout all of the projects.

Now, because we got so busy, this project has sort of gone to the ground.

Roots is a bit in hibernation at the moment but about Roots, it is using technology, not shoving technology in people's faces but actually saying: "we have a really good way of producing food in the city, and this is done through vertical farming". But obviously there are appropriations to vertical farming and also where you can put it, but to say, we deserve a right to be able to produce food in this city and we also deserve a right to be able to kind of have what we call "food justice". And also other people should be able to access these technologies, and that's why Jess in particular works so

hard on making the software and hardware open source. So that if you wanted to build it you could but in now way it's perfect. The conversation still needs to carry on, because we still don't know enough about these kinds of things and we still need to build on and also be able to share this with other people that are at a low cost.

LINK

And then I would say that Roots and Collective Edibles kind of bring so much to production, Collective Edibles was like a mix between the two and it was actually trying to link food production to food consumption.

Emily

The other work at SPACE10 focuses on food consumption. It's actually talking about the fact that so many more people are moving into urban areas, that we have these kind of skyrocketing rates of loneliness and really questioning why this is. And then actually one of the tools that you can use to make people feel less lonely is actually through, sharing food together and when we actually share food together, and we interact with one another then we release endorphins, and these are really important for a positive well-being. So I would say the work I do at SPACE10 is deeply rooted in understanding a lot of these global megatrends of loneliness that we have in cities and that using food as a vehicle to gather people, and get some crucial endorphins.

LINK

How do you understand and in between space?

Emily

From a theoretical perspective, I would say an in-between space is the way you see people displaying

behaviours that they wouldn't necessarily display in public, which sounds really strange but often within a space, you can tell if you feel like... I don't know how to describe it. For example, I think there are lots of architectural terms, there are a lot of in-between spaces on high streets around the back of restaurants, which you actually have a lot of homeless people gathering, or you have different people, maybe they might start smoking or they might have behaviours you wouldn't see normally. So I'd say an "in-between space" is kind of indicative of certain kinds of behaviour that are not usually seen or known. I remember, there's a whole book on in-between spaces, I can't remember what it's called, but it's amazing.

Jess

Yeah, I think "in-between spaces", if you see it through the urban or architectural lens, it's very much like what Emily said, but I think "in-between spaces" can be many things. We've been talking about different mediums about translating information or communicating ideas, I think that's something also I'm interested in is how you make something, which has been there before, to be an in-between space. So for example, how you use a podcast or how you use a magazine or how you use any information to be an in-between space, because that medium has been there before, but you're reusing it, and you're using a methodology, but you're placing it somewhere that makes it to that in between space... I don't know if that makes sense.

LINK

What will the Fab City Hub be like 10 years from now on?

Jess

I hope that FCH in 2030 is hopefully not needed anymore. I hope we would need this space anymore to translate this information around these topics because hopefully we have implemented these ideas already.



[Prototyping Urban Self-Sufficiency]



A couple recipes from Fab City Hub's Circular Food Repository

Shiitake Mushrooms



Kombucha



Shiitake Mushrooms

BoM (Bill of Materials)

ITEM	DESCRIPTION	WHERE TO BUY	QUANTITY	COST	FABRICATE?
Mushroom seeds		https://cultivarsetas.es/	5.5 kg	EUR 32.4	N
Mushroom bags		https://www.amazon.es/Mushroom-Polipropileno-Resistente-temperaturas-Transpirable/dp/B0861WMY5B/ref=sr_1_31?__mk_es_ES=%C3%85M%C3%85%C5%B-D%C3%95%C3%91&dchild=1&keywords=bolsas+setas+cultivar&qid=1585663762&sr=8-31	10px (recipe only uses 4)	EUR 10	N (There is potential to sterilise and re-use the bag)
Substrate (straw)	This is a mix of wood chippings and straw	Get from a local farm - if not can buy straw online and then pasturize or sterilize. https://www.amazon.com/Pasteurized-Straw-Mushroom-Growing-Substrate/dp/B004L923LK "		Price varies	N
Coffee grounds (optional)		Free if you drink coffee			
Sterilising stuff (clothes washer)					
Rubber gloves					
Tub to sterilize straw (if straw is not pre-pasturized)					
Scissors / knife			1		

Shiitake Mushrooms

TOOLS

- Mixing bowl.

AREA

- Need a sterilized, clean surface.

HOW TO

1. Put on gloves to ensure hands are sterilised.
2. Mix $\frac{1}{2}$ mushroom seeds and $\frac{1}{2}$ straw substrate in mixing bowl (around 125g of straw and 125g of mushroom seeds).
3. Mix with hands loosely.
4. Place contents in 1 of the mushroom bags until the mushroom mix reaches the top of the bag. Leave enough space to tie the mushroom bag with an elastic band.
5. Repeat this process for the other 3 bags.
6. Leave bags in a dark place that is not drafty for around 2 weeks (a store cupboard is a good place) at around 24 degrees.
7. The mushrooms have inoculated once they have turned white. Move the mushrooms into a ventilated area and cut slits in the bags (around 4cm wide). The mushrooms will start to grow in the light and through the holes.

8. Another option to be able to reuse the bags is to simply open the tops of the bags and allow the mushrooms to fruit from there rather than cutting holes in the bag.
9. When the mushroom starts fruiting, spray them daily with water with a spray bottle. If you do not have one you can sprinkle with water to ensure they do not dry out.
10. If your mushrooms show a sign of infection (discolouration, the wrong kind of mould), cut it out with a knife.
11. Wait another 2 weeks or so and your first batch of mushrooms are ready to harvest.
12. To harvest mushrooms, twist the mushroom from the stem - it should make a crisp, cracking noise.

NOTES

- Keep it clean and the mushrooms will be forgiving.

REFERENCES

- Grocycle have some excellent guides if you are looking to go larger-scale into the mushroom farming business.
- If you want to make your own substrate rather than buy it online, there is a guide on different substrates here: <https://healing-mushrooms.net/Mushroom-Substrates>

Kombucha: Scoby

Recipe by Jessica Guy

MAKING A SCOBY

The beverage name Kombucha tea has its origin in the Kombucha culture. The culture (or mother) is a symbiosis of bacteria and yeast. The microbial population is called Scoby and can grow through fermenting sweet black tea. A Scoby is a beautiful gelatinous blob which will give your Kombucha life. It contains all the yeast bacteria for the next generations. To make the Kombucha you will need a Scoby, but you will also need Kombucha to make more Scobys. Remember to always wash your hands when handling the Scoby to not risk any contamination

YOU WILL NEED

- 2 Cups filtered water
- 3 Bags black tea
- 1/3 Cup organic cane sugar
- 1 Cup Raw Kombucha
(store bought)
- Wide mouth glass jar
- Natural cloth and rubber band
which fits over the jar

STEP BY STEP

1. Bring 2 cups of water to boil
2. Add tea bags and water into a wide mouth glass jar and let sit for at least 10 minutes. The infusion will give the Kombucha all the needed nutrients.
3. Remove the teabags and add 1/3 cup of organic cane sugar to the tea. Stir until completely dissolved.
4. Let the tea-sugar mixture cool down to room temperature. This extremely important. If the tea is too hot it will kill all your bacteria.
5. Add 1 cup of store bought raw kombucha tea (without flavor!) and mix thoroughly (you can find this easily in stores in the city). Cover with cloth and tighten with rubber band.
6. Put your Kombucha mixture in a dark corner of your room with good air circulation. Let the Kombucha work for the next 1-2 weeks. No peeking, no mixing, no touching!

Kombucha: First Fermentation

Recipe by Jessica Guy

FERMENTING WITH A SCOBY

To brew your own Kombucha you will need a (mother) Scoby and Kom- bucha. Its just like making sourdough, you will always need a mother batch with all the good nutrients and yeast. You can either make your own scoby, buy it online or get it from a friends scoby family. The goal of the first fer-mentation is to inoculate the desired amount of sweet tea. After the inocu-lation it takes two to four days until the Kombucha tea is ready to drink! You can easily double the batch if you want.

YOU WILL NEED

- 8 Cups filtered water
- 6 Bags black tea (or 12 gramm) 3/4 Cup organic cane sugar
- 1 Cup of mother kombucha Big glass jar
- Natural cloth and rubber band which fits over the jar.

STEP BY STEP

1. Boil 4 cups of water in a cooking pot
2. When boiling add the tea bags and let boil for another 10 minutes.
3. Remove the teabags and pour the tea into the glass jar. Add another 4 cups of room temperature filtered water to the glass jar.
4. Add 3/4 cup organic cane sugar to the tea and stirr thoroughly until sugar is dissolved.
5. Let the tea-sugar mixture cool down to room temperature. This extremly important. If the tea is too hot it will kill all your bacteria.
6. After the tea mixture is cooled to room temperature add the scoby and 1 cup of your mother kombucha.
7. Cover the jar with a cloth and tighten with rubber band. Put your Kom- bucha mixture in a dark corner of your room with good air circulation. Let the Kombucha work for the next 7 to 10 days. No peeking, no mixing, no touching!

Kombucha: Second Fermentation

Recipe by Jessica Guy

FERMENTING YOUR KOMBUCHA TEA

Personally I prefer the unflavored Kombucha. But you can use any fresh fruit to infuse your drink. I've tried some variations with mango and ginger. But the possibilities are endless. The extra sugar of the fruit will shorten your fermentation process, so make sure to check your bottles daily!

After extracting the Scoby to a smaller jar, you can feed it with some sweet tea if necessary. It will grow and hold up for about half a year and you can reuse one Scoby up to ten times. The scoby does not need a lot of attention. Just make sure it does not dry out or grows any mold. Before starting another batch of tea, start with the first fermentation to grow your mother Kombucha to the desirable amount.

YOU WILL NEED

- 7 Cups fermented tea
- Any fruit or ginger
- Flip top bottles

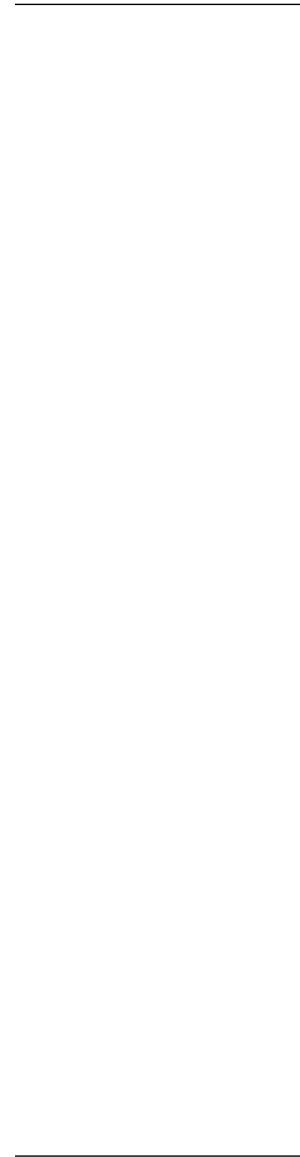
STEP BY STEP

1. Use 7 cups of your existing fermented Kombucha and divide it up equally in your bottles.
2. Keep 1 cup (of the original 8 cups) of the fermented Kombucha for your scoby.
3. If desired add about 1/4 cup of fruit or flavor to the bottles.
4. Leave your bottles on the countertop and „burp“ them every day. Be sure to do that in your sink to prevent a mess. (Burping is opening up the bottles slightly so the excess carbon can be released).
5. After about 2-4 days the fermentation process is completed (depending on how carbonated you want it).
6. Keep the bottles in the fridge. Kombucha tastes the best when its chilled! Make sure to drink it within a week (burp it every now and then) otherwise the alcohol level will rise.

HAPPY BREWING!



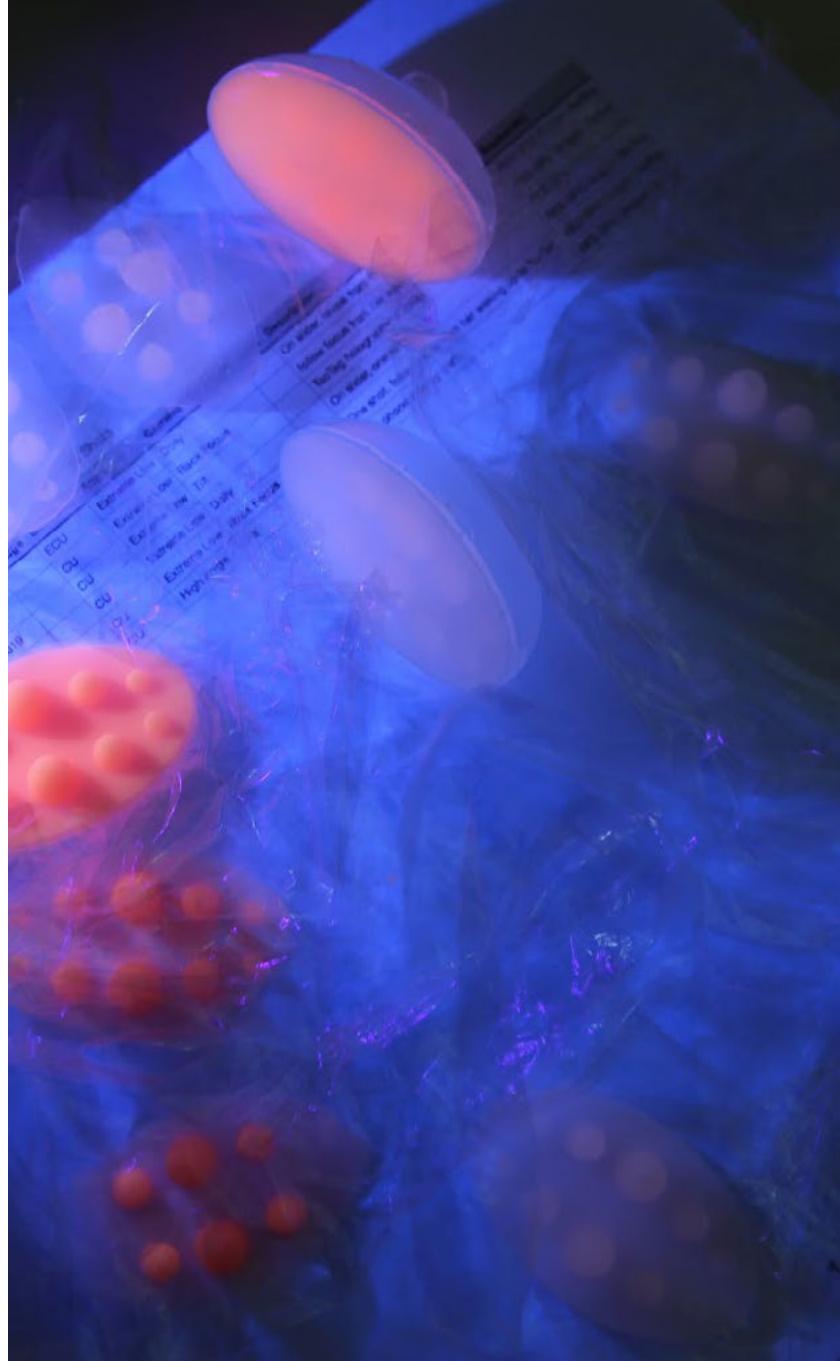
A Space for Experiments



ALTERR.STUDIO

A CASE STUDY BY
ALTERR.STUDIO

Rent your Body as Data Storage



On who we are

Our previous work has mainly focused on 'Environmental Challenges' and 'Emerging Technologies', the two main themes that drive our interest in pathways to the future.

Environmental Challenges

As humans, we have the privilege of living and consuming freely on this planet, but why haven't we taken responsibility to care for the other species and our co-lived environment? Our projects investigate air pollution, global warming, and new materials. By looking into these environmental shifts, we want to find opportunities to turn the negative into positive, and to inspire imaginations in order to nudge behavioral changes. We worked on projects like Future of Breathing, imagining how humans live within an air-polluted environment, and Personal Carbon Economy, a project which proposed a possible economic model and design interventions into a not-so-far-fetched near future of the personal carbon cap and trade.



Emerging Technologies

We have been shaped by technologies as early as the use of stone tools, in return these new tools have shaped our current daily rituals, physicalized bodies, and mentalities. Its impact is so seamless and sometimes unconscious, that we let down our guard from its negative effects. Technology, which is considered "artificial" and man-made, can easily turn into "natural" as time passes by. Knowing what we want to become and where we're going with technology is crucial to define our existence and evolution. We are always excited to explore our next human evolution, as well as the new relationships with diverse species and environments. We believe that design can therefore intervene as a lens to anticipate these possible "shapes", creating entry points towards probable futures.

"Speculative design uses design as a means of speculating about how things could be — to imagine possible futures." - From Speculative Everything, by Anthony Dunne and Fiona Raby

Motivations

We believe that all humans have the capabilities of being explorers, those who are driven by the values of imagination and curiosity. Working on speculative design projects allows us to gain new knowledge and understanding of our culture and planet.

We want to inspire the public to use critical thinking to challenge the status quo and take care of the world we live in.

There are a lot of problems, challenges and opportunities happening both in other parts of the world or just right in front of our eyes, some more difficult to spot than others due to being edged to the side and ultimately neglected. We shouldn't take things for granted—we should build a more inclusive future for different regions, cultures, races, social groups, and species.

Our speculative projects aim to bring inspiration, in order to drive better decisions through collective imaginations, as well as propose possible solutions to propose behavioral changes that can ultimately impact larger systems.

“The future is already here — it’s just not evenly distributed” by William Gibson.



Rent Your Body as Data Storage - Concept shot

A Case Study

Rent Your Body as Data Storage was a project we completed last year in 2019. We were introduced to the notion of DNA-digital data storage through a shared article introducing the science behind it, and were so fascinated by this emerging technology. Immediately we felt how groundbreaking it could be, and how our life could be changed in a radical way. Our unstoppable curiosity is our biggest motivation and what drives us to imagine, explore and create this project.

The reason why we were so interested in this topic is due to the fact that we can now see how it's pushing our perception of the physical and digital, with many new intersections now becoming visible within our realm of reality.

We used to store digital data on the hard disk drives while DNA is regarded as "molecules of life", where we refer to genetic materials. However when we store digital data within the DNA sequence, it challenges both what data and DNA means to us. For example, if we store data on a living body, will data have life then? Will it live with "host"? And how do we define the ownership of the data? And how it's going to affect the "host"?

It's fascinating to think of storing different content on different lives—imagine a world where your cat's body has your ex's texts, imagine your plants living through your grandmother's mother's diary, imagine that a singular microbe on your body has all the information in the world downloaded from Wikipedia. It's like opening a door into a brand new world.

On Process

We started with brainstorming our gut reactions, getting everything out: an organism that functions as a data storage device, which may even help with climate change as data storages consume an immense amount of energy every year, an archive garden that keeps history up to thousands of years, the human body—what if we could store memories on our body, will it carry to our offsprings? And our ultimate question: What would the interaction be? How do we access and retrieve the data?

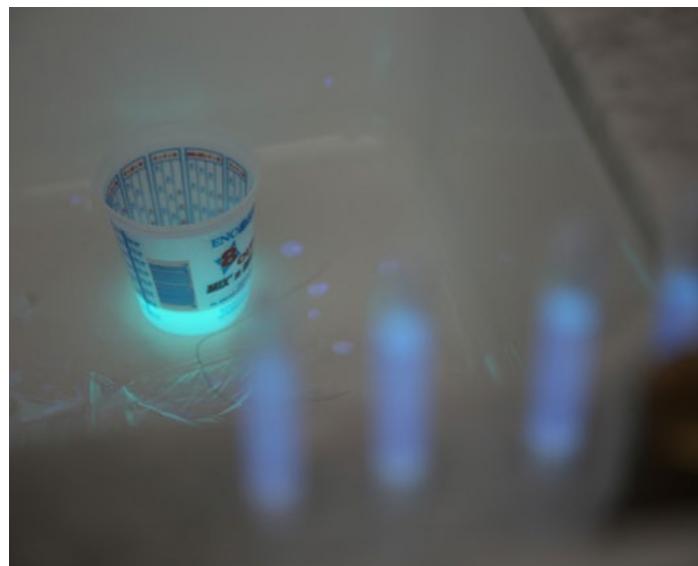
With these questions in mind, we started to research further in order to better understand the technology and related fundamental knowledge of relevant devices, starting from- how does a DNA sequencer work? How can we then add a piece of DNA into another strand? What are the implications towards safety and ethics? What issues may it cause to the body?

We read papers, articles, and caught up on the latest progress of the technology, consulted with those in related fields, and finally scientists working on genome editing. This process aided us in figuring out what is technically feasible, and what each step may look like as well as the potential problem it's confronting, which then informed a lot of design decisions we made later.

After the research phase, we began to narrow down on the direction we thought would be the most powerful and engaging for our perceived audience. We wanted people to relate the idea to themselves, and actively think of possible opportunities and concerns of this project, to find a point of provocation. We therefore started by



TACTAG® machine (Inspired by DNA sequencers and 3D printers)



TACTAG® machine (Inspired by DNA sequencers and 3D printers)



TACTAG® machine (Inspired by DNA sequencers and 3D printers)

sketching out the various narratives, focusing on storing data on our own body. Meanwhile we also designed the key object, which functions as a prop from the scenario in our minds. As we were shaping the experience, luckily we happened to connect with a professional film director—Bo Fone, who has become our good friend now, and who helped out with the creation of the video. We also got a chance to collaborate with one of our friends, graphic designer Yangyifan Dong who created the instructional manual for the key object.

Next Steps

This project is not the summary or the deliverable of our idea. Instead, it acts as a starting point for us to keep thinking about this technology, and how it may impact us. As we were going through our process and looking back to where we started, we were inspired by the project



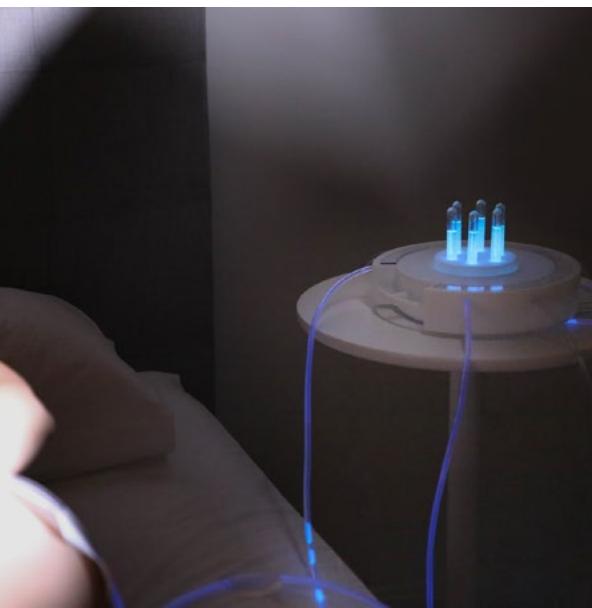
itself. At this point, it's not just about technology, as it makes us question the future of humans and humanity. It makes us think further, what does our body mean to us? What will our relationship be with other living things and machines? And what will our everyday life look like? With these questions in mind, we are currently working on the second phase of this project: explore storing data in the food, which will change the way we "digest" information disruptively.

Looking forward

Currently, speculative design as a field is getting increasing critique. As a studio who is practicing speculative design, we always self-criticise our projects and reflect on our design methodologies. Our goal is to push ourselves further in order to figure out what the next potential application of speculative design could be. We position our work as the bridge that allows the audience access to these issues in a more curated experience, and create the interfaces of the future to be visible now. We build immersive experiences to bring this future to the public, with the goal of triggering conversations and reflections, as well as preparing them for change. This will happen both mentally and physically—by engaging with the imagined future world and its value system, people will be able to interact through presence, touch, wear, and taste.

Our projects are not only meant to be a criticism of the status quo, but also to push it to the next step and towards changes. Our main goal as a studio is to power the future through speculation and imagination, with a

vision of inspiring and engaging people to design and build our future together. Both immersive experiences and products are tools to engage public attention, inviting people to reflect on the things they never thought about. We treat our designs as seeds being planted in the viewers minds, as a potential initiation that may trigger change down the road. Collectively, we can make an impact on larger systems together.



A Space to Imagine

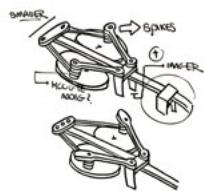
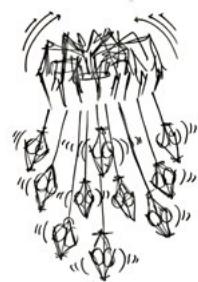
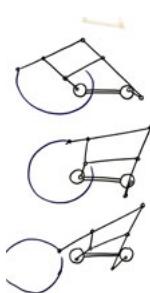
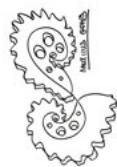
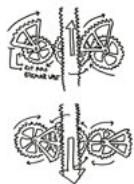
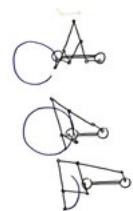
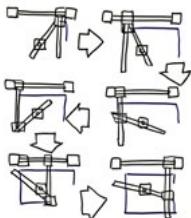
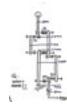
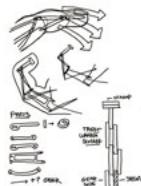


JEANINE VERLOOP

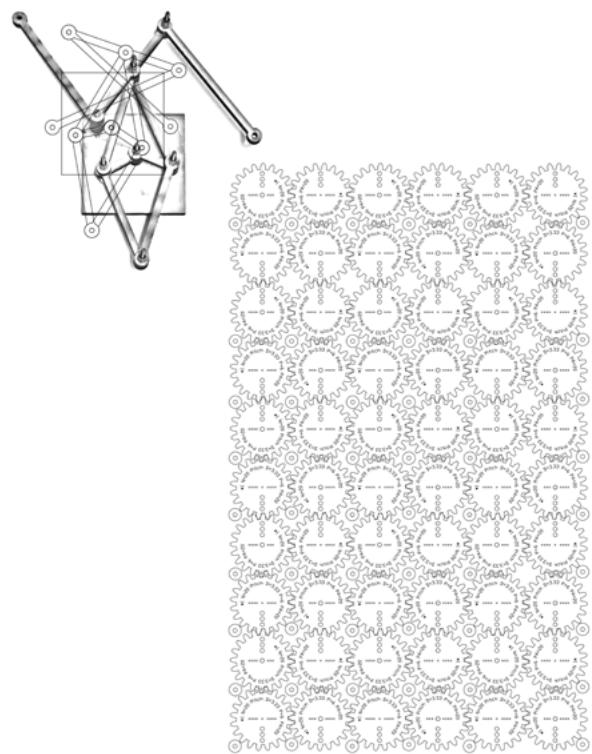
RESEARCH, VISUAL
EXPLORATIONS,
OVERVIEWS AND
REFLECTIONS BY
JEANINE VERLOOP.

Reawaken, Cognizant





“The value in doing this is in claiming our birthright, which is technology, and reconnecting us through art with the beauty and magic of our technological means.”



Cognizant and Reawaken are two kinetic print installations that I have developed. Although both works print abstract prints on paper, they are first-place visualisations of my quest for imagination and beauty around technology.

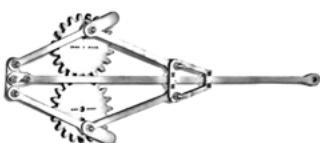
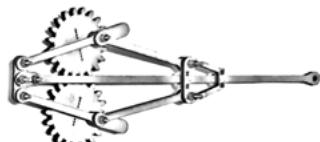
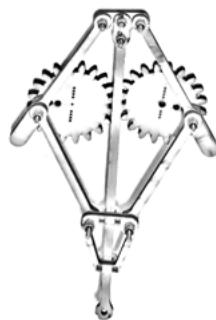
My fascination for printing machines started during my study Illustration. I was looking for a way to reanimate the dull repetition of production. For this I made a first test called Printer 1.0; an analog print machine that could produce an endless pattern, as a tribute to tactile devices. Making an imprint played the main role in this work. My work then developed further, with the machine itself becoming more prominent. The print is no longer the target but confirms the machine.

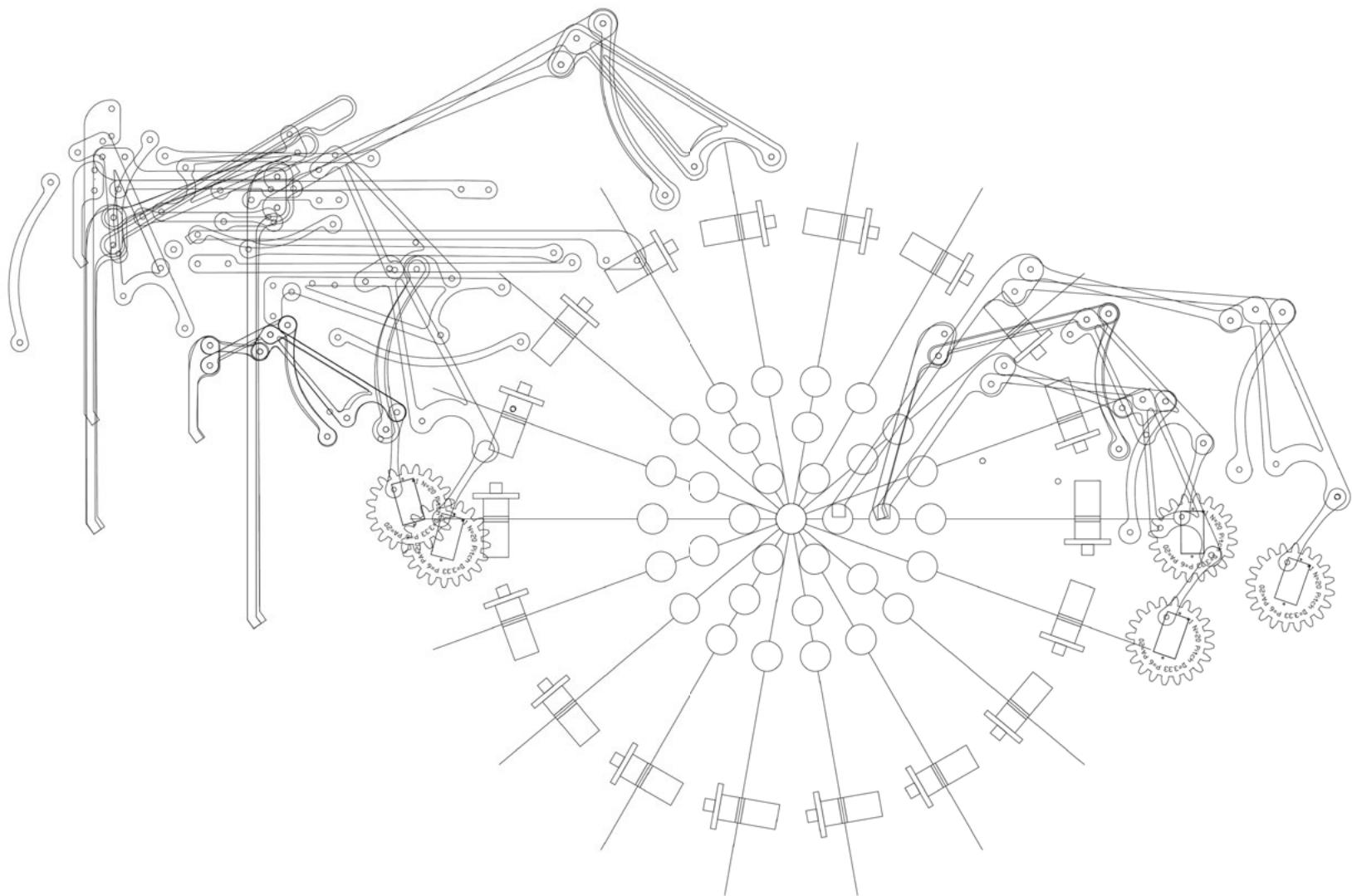
The components of my current printing installations are inspired by mechanical and biological movement principles. I collect obsolete printers and various other electronic devices and disassemble them to study the different parts. With these autopsies I increase my knowledge and let myself be inspired. Technology and machines are often synonymous with utility and efficiency, but my research now focuses mainly on the beauty of the machine itself.

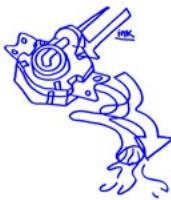
What is the value of doing this project nowadays? Why is this so special? We form our own tools and are transformed by our own creations. On a daily basis we surround ourselves with old and new technology, and experience old technology as “natural”. Technology transforms our identity and is thus part of our human nature. As flowers and bees evolve together, humans develop in a symbiotic relationship with technology.²

As a society we mindlessly use our everyday products. Our devices are more connected than ever and disconnected at the same time. We are rolling and scrolling without seeing something new. We are becoming one collective mind, the kind of mind that depends on screens for imagination. Marshall Mc Luhan published his book *The Medium is the Message*³, decades ago.

I look around and see mediums mirroring each other. A smartphone is a small tablet, a tablet is a small computer and a computer is a small television. Because we are so integrated with technology, I wonder how this affects our imagination. What do you hope to achieve? Reinterpretation [lost] techniques, for the sake of beauty not utility, will generate new ideas of what could be. By creating these fictional printers I hope to combine the technological and the mystical. I want people to have a sense of wonder when they see my work.

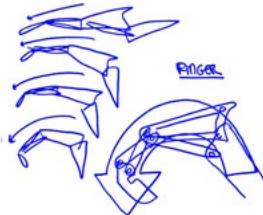






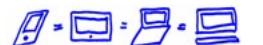
HOW DOES TECHNOLOGY INFLUENCE:

- ✖ OUR DAILY LIFE?
- ✖ OUR MIND?
- ✖ OUR FRIENDS?

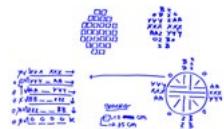
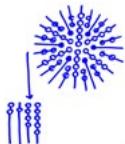
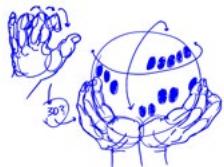


HOW DOES TECHNOLOGY INFLUENCE:

- ✖ OUR DAILY LIFE?
- ✖ OUR MIND?
- ✖ OUR FRIENDS?



- HOW DOES THIS EFFECT OUR IMAGINATION?
- ARE WE BECOMING POOR IN FANTASY?



Themes of Research

FAILED TECHNOLOGY

Technology is a mirror for humanity. Besides creating beauty, technology is there mostly to fulfill our needs. Those needs have evolved on different locations through the ages, creating a wide range of tools which we still benefit from. Research into history will show how much of our inventions we've already forgotten because of time and location. There is not one past, there are multiple past which all gave rise to our present.

IMPACT DEVICE

How does the device impact what the user will produce? How does technology influence the imagined result? For example the Malling-Hansen Writing Ball where Nietzsche was a fan of it. One of Nietzsche's closest friends, writer and composer Heinrich Koselitz, noticed a change in the style of his writing.

Nietzsche's prose had become tighter more telegraphic. "Perhaps you will through this instrument even take to a new idiom," Koselitz wrote in a letter, noting that, in his own work, "my 'thoughts' in music and language often depend on the quality of pen and paper." "you are right," Nietzsche replied. "Our writing equipment takes part in the forming of our thoughts."²³

PSYCHOLOGICAL IMPACT OF NEW TECHNOLOGY

What are the consequences of living with technology. Can human and technology be separated? People often fear the fast changing technological landscape. That distrust is not something new. Peter Paul Verbeek, Professor of Philosophy of Human and

Technology at the University of Twente, describes how in the past people got afraid every time technology took a jump. Verbeek sees technology as a part of us, in every historical timeline. "Technology shapes how we are human, and how we see the world."

It has always done that, from the fist ax to the iPhone.⁴ This jump of technology often bring waves of fear and hallucinations. Near the end of the 19th century typewriters brought a separation from the body. Before we had total control of our penmanship, the typewriter and telegraph replaced this control. This, together with the development of x-rays, frightened people. Shock Head Soul is a documentation of the autobiography of the 19th century German judge, Daniel Schreber. In 1983 he started getting messages from god via a Writing Down Machine that connected everything with everything. The following 9 years Schreber was confined to an asylum. During his confinement he wrote Memoirs of my Nervous Illness⁵ which earned him lasting fame as an outsider artist. With his memoirs he plead and won his case in court, arguing that his belief system was a matter of religious freedom and that he was sane enough to return to society.

MEDIA ARCHEOLOGY

Media archeology⁶ attempts to understand new and emerging media through close examination of the past. Often evidence is found in dead media. Dead media⁷ is a term, proposed by science fiction writer Bruce Sterling for a compilation of obsolete and forgotten communication technologies. Evidence found



in dead media notes how new media often revive and recirculate material and techniques of communication that had been lost, neglected, or obscured.

As the first generation, we experience our own archeology on a daily basis. I want to investigate this by doing autopsies on contemporary and obsolete devices and composing them in a timeline. Look at the past, also at the present. Take them apart and the history will emerge. What history can be found in our contemporary devices?

PROTOTYPE

To develop my installations I research, in theory and practice, hardware and software. Hardware are the physical parts, while software is a set of instructions that can be stored and executed by hardware.

My practical research focuses on moving mechanisms by isolating and enlarging parts of machines and biological mechanisms. Through manual sketches and wooden prototypes I gradually modify the shapes until I am satisfied with this. By making wooden prototypes I convert individual mechanisms into a whole. My theoretical and practical research influence and guide each other in the creative process.

Artistic principles

History is not linear, it has not 'been'. Meaning that old technologies and design are still used as building blocks for modern technologies. Building on, and using, known images or techniques is something we all do. It helps us to understand what we are looking at, most of the time that is what we want. I do not want my installations to look like any known device. Because my machine will be very strange it has to provoke ideas about how it could function.

I mix my passion for craftsmanship with my fascination for technology and reject the idea that craftsmanship is old and technology new. I want to emphasize that craftsmanship, art and technology go hand in hand. My aim is to preserve the soul and skill of the human hand, while taking advantage of the efficiency and increasingly limitless limits of digital design and manufacturing.

Thinking about printing there are a few 'rules', that I want to break. The printing surface is most of the time an enclosed surface with corners. The printer is also a closed machine. Meaning the system is hidden and not intended to be used in any other way than the manufacturer tells you to. My installation should be opposite of functional and smart. The printer should function but does not have to deliver a perfect print. Although the installations produces a print, their main goal is to explore imagination and beauty surrounding technology.

- 1 Huhtamo, Erkki en Pekka Parikka. Media-archeology: Approaches, Applications and Implications. University of California Press, 2011.
- 2 Mensvoort, Koert van, et al. Volgende natuur. Next Nature Network, 2015.
- 3 McLuhan, Marshall, and Quentin Fiore. "The medium is the message." New York 123 (1967): 126-128.

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- 1 Fréger, Charles. Wilder mann: the image of the savage. Dewi Lewis Pub, 2012.

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- 1 Avnskog, Sverre. "Friedrich Nietzsche and His Typewriter - a Malling-Hansen Writing Ball." The International Rasmus Malling-Hansen Society: Friedrich Nietzsche's Typewriter ----Free Download----, Malling-Hansen Society, 2 Feb. 2008, www.malling-hansen.org/friedrich-nietzsche-and-his-typewriter-a-malling-hansen-writing-ball.html.

- 2 Carr, Nicholas. The shallows: What the Internet is doing to our brains. WW Norton & Company, 2011, p. 18.

- 3 Blechinger, Joel. "Our Writing Tools Are Also Working on Our Thoughts: Kittler, Nietzsche, and Richler's Facit TP1." & Between Media & Literature, 5 Jan. 2018, www.amplab.ca/2017/10/12/writing-tools-also-working-thoughts-kittler-nietzsche-richlers-facit-tp1/.

- 4 Verbeek, Peter Paul. Wij hebben geen klauwen dus hebben we 'n Iphone.

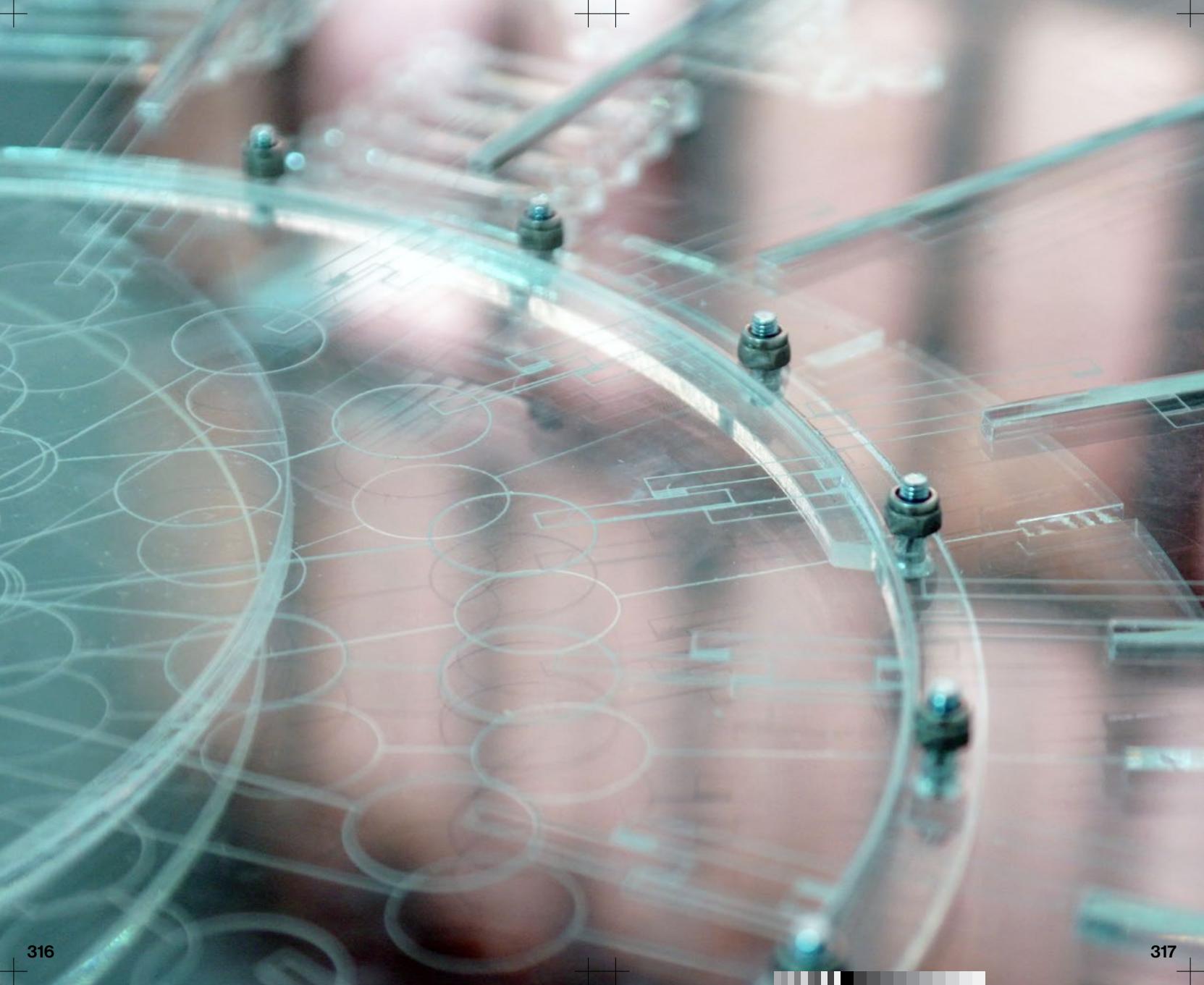
NRC.nrc.nl/nieuws/2017/10/06/wij-hebben-geen-klaauwen-en-dus-hebben-we-n-iphone-13362323-a1576272. 6 Oct. 2017.

- 5 Schreber, Daniel Paul. Memoirs of my nervous illness. New York Review of Books, 1955.

- 6 Natale, Simone. "Understanding media archaeology." Canadian Journal of Communication 37.3 (2012).

- 7 Bak, Arpad, and Bruce Sterling. "Dead Media Project: An Interview with Bruce Sterling." CTheory (2015): 3-16.





ON THE ARCHAEOLOGY OF IMAGINARY MEDIA

BIEGLAD DISTINGUISHES 3 G TYPES.

- X MEDIA REMEMBERED
- X MEDIA OBSERVED
- X MEDIA - IMAGINED

→ IMAGINARY MEDIA FOR COMMUNICATION WITH THE SPIRIT WORLD / COMMUNICATION WITH "THE OTHER" TRAVERSING SPACE AND ABSENCE TRANSCENDING TIME

TO DIG OUT SECRET PATHS IN HISTORY, WHICH MIGHT HELP US FIND OUR WAY INTO THE FUTURE

p. 68

THE BOUNDARY BETWEEN THE IMAGINARY AND THE REALISED IN THE DOMAIN OF TECHNOLOGICAL DEVELOPMENT IS POORLY DRAWN, AND THEIR RESPECTIVE MEMBRANES ARE HIGHLY PERMEABLE. AS A RESULT, THE FUTURE COURSE OF TECHNOLOGICAL AND MEDIA DEVELOPMENT, BASED ON SUCH HEAVILY MIXTURE OF THE IMAGINED, THE DESIRED, AND THE REALISED, BECOMES CONTINUOUS AND GREATLY UNPREDICTABLE.

IMAGINARY MEDIA MAY PREFIGURE REALISED MEDIA MACHINES, AND THEY CERTAINLY PLAY AN IMPORTANT ROLE IN SHAPING SIGNIFICATIONS OF THESE MACHINES

— ON THE ARCHAEOLOGY OF IMAGINARY MEDIA. P. 68

MARTIN HOWARD:
DIVERSITY IN EARLY
TYPEWRITERS



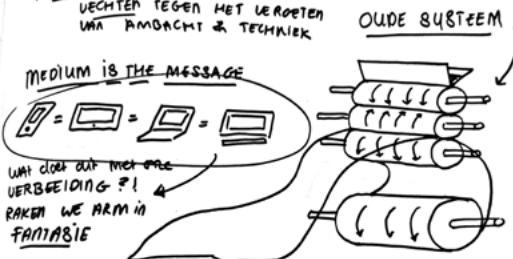
- X BY: RASMUS MAILING - MÄRSEN
YEAR: 1865
- X BOOK: HUDEM ER SKRIVEKUGLES BY JOHANNE AGERSKOV
- ZIE OOK: MATT ADEBETH PROTOTYPE
- VINCENT ZIMMER / FRIEDRICH NIETZSCHE'S WRITING BALL

HERIELEN CLIP AM BACHT /
VECHTER TEGEN HET VERLOSTEN
OM AMBACHT & TECHNIEK

MEDIUM IS THE MESSAGE

WAT DOET DIT MENSE
VERBERGEND?!

RAKEN WE ARM IN
FANTASIE



WE RAKEN ARM IN GALE FANTASIE, WE RAKEN WORDEN CARBURIA EN
VERZADIGD MET GALE NULIDICE OMGEVING. WE ZOEKEN NAAR
ECHTHEDID OM DAT WE DE CONNECTIE MET GALE PROFYLUX APPARATUUR
VERLIELEN, WE ZOEKEN EN WILLEN MEER. IN MYN SPINE KUNEN WE
DAT WILDEN IN PF SCHOONHEID VAN PRODUCTIE

(Aspirations)

This year I started to study glass. Especially glass blowing on the burner, which is also called lampworking, laboratory or scientific glass blowing. I started burning some glass on a propane torch thanks to Iris Roskam who set up her burner for me. Last November I set up my own torch. When possible, I practice every day. Because I still have little experience, I will have to invest a lot of time.

As Bernard Bolas describes in A Handbook of Laboratory Glass-Blowing¹

"Until the student can turn a tube steadily without thinking about it, real progress in glassblowing is impossible"

In my first month of my Work Contribution from the Mondriaan Fund, I wrote a piece² (also on the next page) in which I discussed the interaction between me and my work. How I have come to see this more and more as a performance, in which the machine is the performer and I the assistant.

I want to push the performance even more by replacing parts with an even more fragile material: glass. Glass inspires me through its qualities and shortcomings. The hollow shape of glass offers the possibility of temporarily trapping liquids.

The fragility of glass and the possibility of it breaking because of friction and movement is interesting and something that I want to embrace.

Exploring traditional separate domains such as programming and glass blowing allows me to take the best of different worlds to create unexpected shapes. A promising sparkle. The combination of craft and technology creates crossovers, hybrid shapes, and new possibilities. My research places "motion sensor", "laser cutting" and "3D printing" comfortably next to "burner" and "annealing furnace".

Summer 2021 I will conclude my research with a series of experimental glass objects in which I strive for movement and the trapping of liquids. This series of artifacts should provide an overview of the added value of blowing glass for my work, and the possibility to take further steps. This series will also give direction to my plan for a kinetic printing installation consisting of glass parts.

In the meantime my progress can be followed on my research page³ and my Hotglue page⁴

¹Bolas, Bernard. A Handbook of Laboratory Glass-Blowing. Amsterdam-Nederland, Nederland, Amsterdam University Press, 2019.

²Verloop, Jannetje Jeanine. "Mondriaan #1". jannetjejeanine.nl/mondr...

³Verloop, Jeanine. "research". jannetjejeanine.nl/category/research.

⁴---. "start". progress.hotglue.me, 2020. progress.hotglue.me.

ON THE ORIGINS OF THE INFLUENCING MACHINE PSYCHOSES ENHANCED BY TECHNOLOGY

→ THE MATRIX DEMONSTRATED THE HURTING SUSPICION THAT ELECTRONIC MEDIA HAVE THE ABILITY TO CONTROL REALITY AND THE MIND THROUGH THE TRANSMISSION OF "INVISIBLE INFLUENCE"

→ PSYCHIATRIST CAUGHT THIS:
 X TECHNOLOGY DELUSION
 X THOUGHT INERTIA
 X THOUGHT BROADCASTING

READ: ON THE ORIGINS OF THE INFLUENCING MACHINE IN SCHIOPPELLA

(+) ZICHERER

(+) NATALIJAH. MAGICAL THINKING

FEAR TECHNOLOGY MEN:

Hotglue is a content manipulation system which essentially allows you to create an ever-expanding online moodboard. Which is perfect for me. I can gather all seemingly unrelated ideas, fascinations and information and see where they lead me. My practice and research are currently funded by the Mondriaan Fund⁵ and Creative Industries Fund NL⁶

My fascination with printing devices started during my Illustration study. I was looking for a way to reanimate the dull repetition of production. My first device Printer 1.0, is an analog printing machine that could produce an endless pattern. A homage to tactile devices. Producing a print was the main goal. Since then the machine has moved to the foreground. The print is no longer the intended goal but confirms the machine.

Reawaken and Test Installation Cognizant are two kinetic printing installations that I developed with the machine in mind. Although both works produce abstract prints on paper, they are primarily visualizations of my quest for imagination and beauty around technology.

After graduating, I have shown my work a lot, including at the Dutch Design Week (Eindhoven), the International Film Festival (Rotterdam), and the Paratext⁷ at my residency in Barcelona. During these specific exhibitions, I have experienced the value of my presence next to the installation. During the Dutch Design Week several motors broke. Instead of doing "maintenance" after closing time, I decided to do the repairs for the public.

This decision has led to reflection on my presence and the resulting actions required for the installation to function. By turning on the work, some elements or gears jump. These vulnerabilities cannot be resolved by the

machine itself. In itself it is helpless.

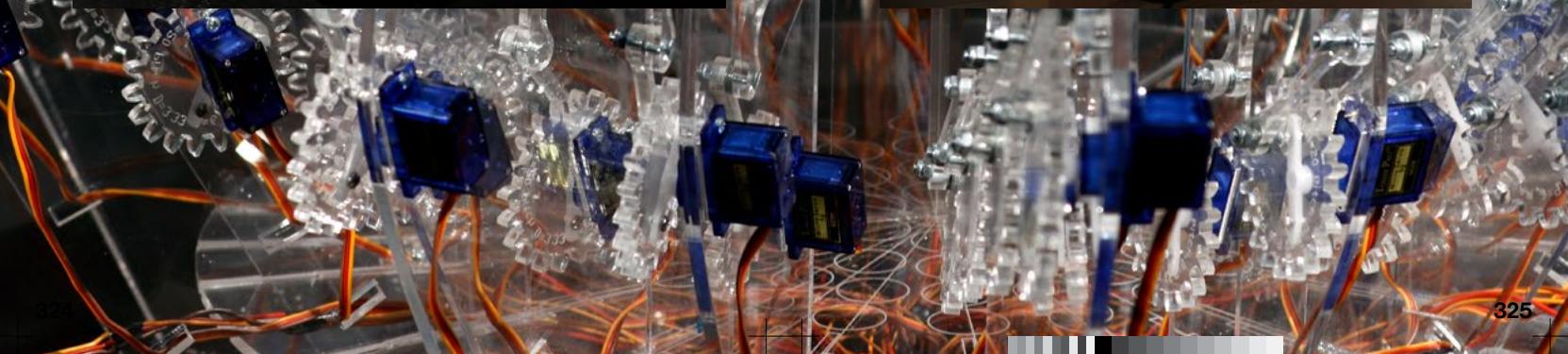
I have increasingly come to see the interaction between me and the work as a performance, in which the machine is the performer and I the assistant. As a person, I am not the lead act because the performative actions do not necessarily have to be performed by me. For the International Film Festival, I wrote instructions so that someone else could switch on and correct Testinstallation Cognizant. The instructions felt like a poem that became part of my work.

My print installations started with a focus on the print. Reawaken and Testinstallation Cognizant shifted the focus to the machine, with the print confirming the machine. With my new steps, the machine develops into a performer and the print into a memento of performance.

⁵ "Projectinvestering Kunstenaar (ook in tijden van Corona)". Mondriaan Fonds, 5 november 2020, www.mondriaanfonds.nl/aanvraag/projectinvestering-kunstenaar.

⁶ "stimuleringsfonds creatieve industrie - Onderzoek Wetenschappelijk Glasblazen". stimuleringsfonds creatieve industrie, 2020, stimuleringsfonds.nl/nl/toekenningen/onderzoek_wetenschappelijk_glasblazen/6164.

⁷ Matarese, Marzia. "Paratext #37 by Marzia Matarese | Hangar". hangar.org, 2019, hangar.org/en/blocs/bloc-paratext/espanol-paratext-37-por-marzia-matarese.



A Space for Exploration



NUEVEOJOS

A CONVERSATION WITH
NUEVEOJOS AND LINK,
REDACTED BY LINK

Multilayer: Conversing Between Rhythm & Space



(Introduction)

Mariona Omedes and Carles Mora are directors of the Multilayer project, and founders of the audiovisual creation studio nueveojos; together with Karin du Croo, they have been directing video art projects, including large format set designs, multimedia shows, motion graphic animations and video installations. This team formed in Barcelona in 2008, specializing in post-production and filmmaking. Some of their works have been seen at the Cité de l'Architecture et du Patrimoine (Paris), at the Catalonia Pavilion of the Shanghai Universal Exhibition in 2010 and at the façade of Gaudí's Casa Batlló, where they performed one of their most memorable mappings in 2012.

(Multilayer)

Alongside Mariona and Carles, LINK Journal had the unique opportunity to discuss their practice, experiences, ideas and process developed for Multilayer, a three-dimensional video installation. The technique used to form this volumetric video, already explored in static images, is a superposition of five transparent layers on which moving images are shown to create a dialogue between rhythm and space.

It is the first step towards a new concept in holographic cinema. The following editorial provides excerpts and insights from our conversations. Multilayer was released with the piece entitled "Welcome", a monochromatic film divided between semi-abstract graphic animation and fictional narrative, video-reporting on the current situation of refugees around the world.

(About the Project)

The Film

"Welcome" is a self-critical reflection on something that disturbs us currently, given that today we are passive witnesses of the largest migratory flow since the Second World War. Currently more than 65 million people have been forced to escape from their countries of origin, according to the United Nations High Commissioner for Refugees (UNHCR).

The Invention

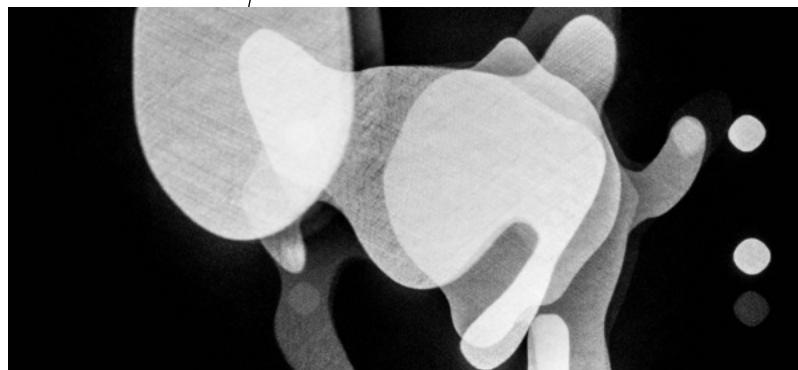
The power of Multilayer lies in its technical innovation. By utilising very simple technologies and techniques, and very precise calculations, the installation invented by Carles Mora has become a visual experience that has never been seen before. "We have not only created an installation, but we have created a new audiovisual format with its own narrative language, and we are convinced that in a few years it will become another format". At the premiere, the astonished spectators could only guess at how it worked.

Installation

The installation is totally autonomous and only needs two sockets for video and sound, as all the technical equipment and wiring is hidden inside the installation, offering the viewer a minimalist object.

Technical Aspects

The structure consists of 5 iron frames of 30mm with detachable legs. The wooden bases of 30mm act as counterweights, and together with the micro perforations of the transparent screens, make each module unmovable by the wind. The public can see the show standing or sitting on small benches, as if it were a mini cinema. It takes a day to assemble and adjust.



Learning at first

"And this is the background of Mariana, a painter that goes digital and start post production but always trying to put the painter's look into her work."

Carles

LINK How did this all start?

Mariona Omedes Well, when I was very young, I decided to paint... to paint and to be a painter. I went to London back in '86. It was the beginning of digital events and digitalisation. A friend told me that I should learn to use a very important machine on which you can draw. That was at the beginning, and at the time in Spain, we were not using it. I fell in love with the machine and started to learn how to use it. So I began to do this in England. Later, back in Spain, this friend bought a machine called Harry. It was the first machine that digitised images in Spain. So I started working with this machine. It was like After Effects, but very old and you could only put three minutes in the machine. I kept on working with it for 10 years and I learned a lot.

I stopped in 2000, and continued working on my own. Then one day I decided to have a studio with more people. I knew Cuco, so I said to him: "Okay, come with me" and we started this project together. And well, he has very good technical and creative skills.

Carles Mariona worked for these 10 years in a company that makes a lot of commercial post-production, and then she changed to more artistic projects, and started to direct multimedia pieces.

LINK And you Carles, what is your story?

Carles I am self-taught. I didn't finish high school and started graphic design. I did the first year and didn't finish the second year. Then after a few years, I wanted to get back to the world of design. I started to do animation design for myself then I went to work for video production companies. I started as an editor and did motion graphics and learned a lot there, working and working. I get obsessive sometimes when I get into things... And then, with Mariona, I wanted to start my own freelance career and continue learning. We started working with 3D and started making mappings, and got further into this.

Mariona Carles has the capacity to work and learn on his own. That's something I value a lot in him.

Carles I work within many fields, I'm not a specialist in anything but I have a lot of creativity and can do lots of things. It's never been one thing really, but instead many things.

Mariona Yes, and sometimes the technology it's too much for me. I know what I want to do as an art director, but I don't always know how to do it. Cuco knows perfectly how to do it, and that's very helpful. So we started working together a lot over the years. Now it has been 12 years working as a team. Together, we followed developments

in post-production and discovered new tools for new projects.

LINK It's great because it seems as though you work intuitively. Without having any theoretical knowledge, you decided to dive into the world of animation design and video production and you just learned on the go.

Mariona Yes, it's like ping pong, you ask one thing and the other answers and vice versa.

Carles I get her idea and process it and get back to Mariona again and say: "Okay, but I'm going to make it better" and start to work on it. This idea can not be possible without another person, so we function in that way together.

Multilayer

Mariona "Welcome" was the first piece in the Multilayer project. We set this story within a different environment for different events, and the results were very different every time.

Carles It's really important to move around it, not because it's the exact film, but because it will give you a different perspective. You see different things of the media thanks to parallax.



Ideation process**LINK**

Did you follow a method or process to create the Multilayer project?

Carles

I don't know if we have a process. We talk so much, we come up with new ideas and bounce back with other ideas. We don't especially look for a lot of references, our method does not involve a lot of research. First, we come up with an idea, understand the concept and then we do the research, but we don't start with it. It's not for any reason in particular, but this is what I see with these years that has now become our methodology.

Sometimes you realise the importance other people attach to references. And for me it is strange because we always start to try to make something new. Many times you have an idea and develop it a little bit and then do some research and say: "Woaw, there are many people who have done it before", and we have done all this work. But I think that in this practice, you don't always have to be rooted in what other people are doing, and so we always try to invent something new.

Mariona

The fact is that we have worked in many projects using the multi-layer method.

Carles

Yes, we worked with layers in 2D and in 3D and later with Mariona, we worked for theaters a lot, where they also use a similar set of projections.

Rhythm and Transparency**Mariona**

Before the Multilayer project, we were already exploring projections with this kind of transparent screen, and the results were very beautiful.

We thought that technically it was not possible to have several projectors and many images. We spent a lot of time trying to find out whether that would be possible. Once you have the projection then it's difficult to not explore the next step, and from there it became a bit obsessional to work with multiple layers. We didn't know where it would take us and then we finally found out that it was possible.

Carles

It's by pushing the ideas further and further that we finally got the right ones and the interesting ones to work on. Then we had the opportunity, for a festival in Barcelona, to make something, anything. We started working on the installation first and wanted to create it as a machine that could show different multimedia elements. So we started with the very technical aspect of the project...

Building the technical set up and this machine

"I learned a lot of things about the rhythm of the images. The rhythm is the base of what we are doing now and I think that is very important to have a good piece."

Carles Then when we had the setup, and thought about what to do with it. We thought: "We have this machine working, what do we do now?" We started using projectors and a transparent screen we borrowed, then we started playing with depth to create a more abstract show. We did a lot of testing and we ended up using the visual of a man swimming, which you can see in "Welcome".

Mariona What we were looking for was to create a person in three dimensions. To do a landscape is very easy but to make a man was much harder.

When we had solved the technical aspects and found out what we could do with this technique, we started to focus on the story. We were very worried about immigrants, and at this point, we were working with a collaborator who had been with them in Greece. We were thinking "we must talk about that", so that was the beginning of the story. It was quite easy to find the narrative, but was not so simple to explain the life of one

of these people, and that doesn't have a positive end. So at the beginning it was like "Oh it's not a very nice story." But we wanted to follow the idea through because we think the situation is very worrying. Actually, it can be a good exercise to begin to understand Multilayer problems. Wee decides to work, not in colour, but in black and white because it presents fewer problems. After the movie - after Welcome - we were beginning to work in colour and it got quite complicated. We decided to work in black and white and it was easier to start. Then what we did was a storyboard of the shots to work out how to explain the story. Sometimes we had to do shots in different ways because it didn't always work well.

Storytelling

Carles

Before this, the conceptualisation of our work, we always tried to do the storytelling. It is important to us. After a few years of working, we realised that in our work we have always tried to make narratives, like short films. Even if there is a mapping, we have always tried to do storytelling. As far as effects are concerned, it's not the thing that we are good at, or maybe we are not so interested in effects... I like a lot of things, and one of them is minimalism. But for the characteristics of the theme, we always focus first on the storytelling. Storytelling is the most important element in our work.

Mariona

Even when we make abstract things, we have something to say with this abstraction. It's not simply abstract for the sake of being abstract.

Carles

In this case, we are making something more abstract visually and something sensitive. We are playing with different elements such as depth, colour, and the stimulation derived from these things. In the end, we made the Multilayer and then said "why not mix and make the storytelling with the one we wanted to make in the other installation". We put these ideas together and made something that is not the first thing we thought of or made when building the machine. Instead, we made it like a light show with layers. This way it was difficult to tell a story that you can read with a narrative and a screenplay... and it was not just a few pieces of AfterEffects.

We wanted to make the film more cinematographic but

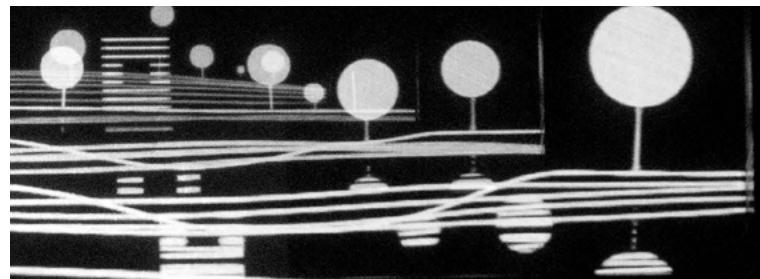
Carles

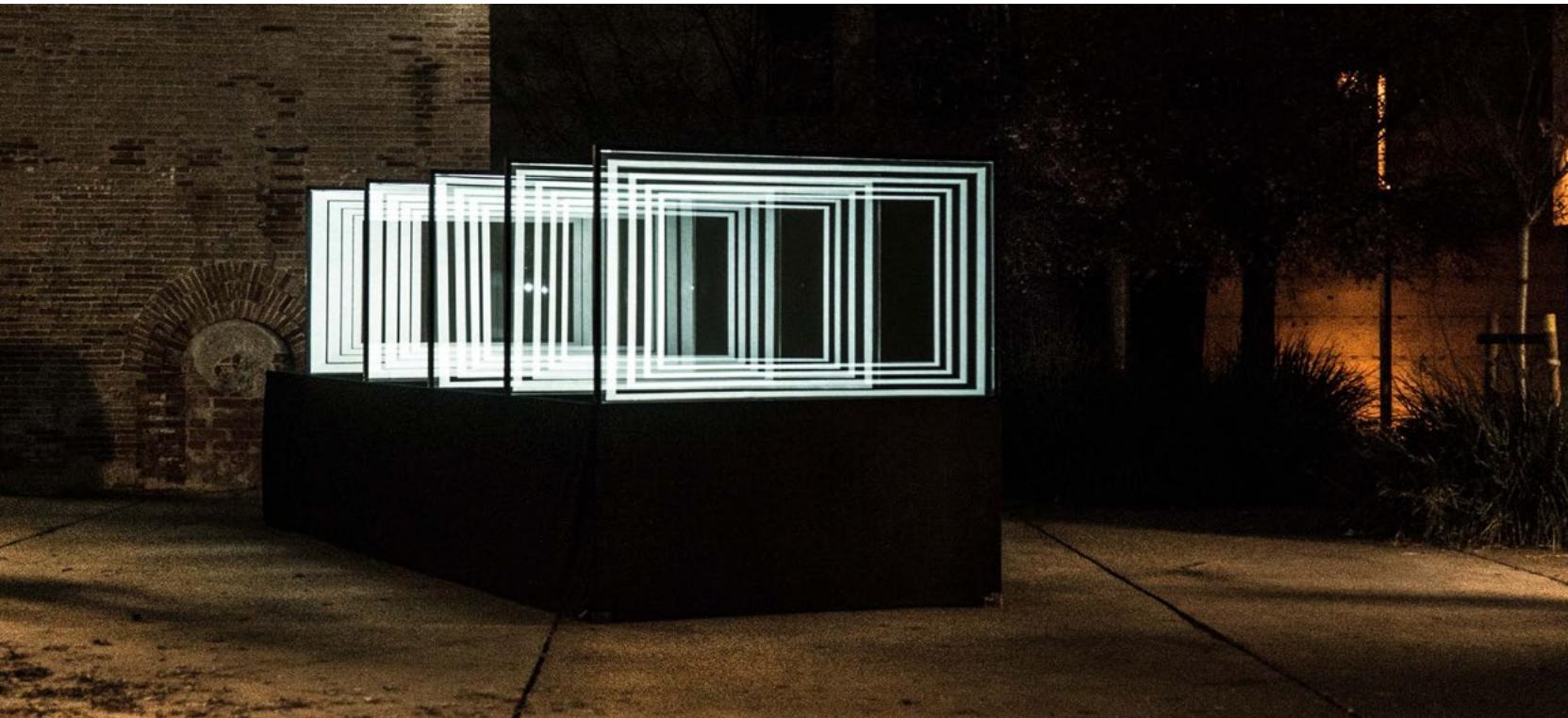
it was very important for us to make the line between the abstract and the figurative really thin. Sometimes we made a shot that was really figurative and then went back to something really abstract. We wanted to play a little bit with lines, using very few elements, to depict the narrative, a landscape, etc.

We were constantly playing to find this balance between abstract and minimalism, the narrative, different angles and also the music. We didn't want to make a really evident movie story, so if you see the movie, maybe you won't understand all the symbology but you will know that there is something happening, a story being told. But then the viewer doesn't perceive these effects. Maybe people say: "I don't know what they are trying to explain to me but I feel there is a story here and there are emotions". And you are trying all the time to understand what is happening. What we want to do is to capture the attention of the audience with emotions.

Mariona

Yes, I think it's very clear.





One man walking

Carles

And this is what we like about storytelling. Mariona didn't say so, but she thinks in images sometimes. So when we started to build the narrative for the project, she said: "One man walking". We can be talking about an idea and she will come up with an image, and she sees it very clearly. At the start of this project, she always talked about "one man dying, one man" and we provided examples to find what she had imagined. We didn't know why, but these images, Mariona had them in her mind really clearly before building Multilayer. I think more in terms of instructions, concepts and maybe motions or the structure of the piece, and also more abstract things, while Mariona thinks in images. And sometimes at the starting point, we make a video and I ask for ideas, show her the music, and she comes up with this image. When you have an empty space where you can put what you want, and then you put something in it, then the second thing you put in this space must be related to the first one. It's always a combination of things, a balance.

Mariona

Yes, I imagine that's a strange way to work really, because normally you have the concept, and then you do a storyboard, right? But I really like it if, when you are working, you have a structure, and you start with this structure, but then you lose the structure and change things during the process. Because if you narrow things down too much at the beginning, for me it doesn't work. I need this freedom. Then the project has its own life, and sometimes the project changes in the middle, and I like this. When people say: "N, define the project, , narrow it down" I say: "No, come on. Let's do it. And let's work on it. Things will happen and things might change". I know it's not very common, but I really like to work this way. I need to be free in the process of creation.

The rule

LINK

It is an interesting challenge. I think we take up the challenge because we love to experiment. But then we have to learn how to open more doors, broaden the field and experiment, and then to close some of the doors and focus, to go forward with an idea. And it's a bit of a balance between allowing ideas to float around and then at some point trying to bring them back together in a coherent way.

Mariona

You must have something to hold on to, like a rule, so as not to get lost in this process,. If you have that, then it's easier to find your way back.

Carles

If your ideas align with the rule you have created for the project, you keep them. We never start a project or, in this case, the graphics of a project, until we find a rule. For example, in the case of a video, we can say that all the time the camera has to be positioned in a given direction. And you might realise it's not always a good idea but this rule challenges your creativity. You must be very creative to solve the problems that the rule gives you.

LINK

You have a great strength here, because you are using Multilayer as your tool to tell different narratives. In this sense, the medium (Multilayer), the projection is the rule that you use to find your way back. And this is really interesting because you're making a feedback loop between your ideas on how to tell the narrative and the tool you're using to actually tell the story.

Mariona

Yes exactly.



LINK

How do you manage the different elements of the project? Since in the case of Multilayer you need animation, installation, sounds and projection, how do you organise and manage the different skills needed?

Mariona

At the beginning, Carles and I talk about it and what it will look like. Then Carles handles all the animation and all the technical things and the very difficult things. He can also change the idea or add to the piece of art. And then I take everything and put it in a timeline, and add the rhythm. I choose the sound: I spend a lot of time listening to things and recording, and then we choose something to work with.

Carles

Marina provides the direction, makes the images, and also the light design. She makes some things with Photoshop, and now increasingly in 3D. She doesn't set limitations in terms of technical means. Most of the time, when I start working on the project, I think in more practical terms and I might think something is impossible, but later we find a solution together.

Mariona

I always believe that you must be free. At the beginning you must go very high. Never, never, in the process of something, should you go back down. Then you can go back later if you want, but otherwise, creation is cut short.

LINK

I feel like there's so much trust in the picture you have in your mind. And there's trust in the team to push back and have creative conflict as well.

Mariona

Quality is something very important to us. I mean, we never want to do something that is just okay. It has to be very good. It is like life really, if you live, you must live from here [the heart], not just a little bit, not just feel it, but instead feel it strongly and have a very good life. I think the great thing about this team is that we are exigent. Things need to be done well.

LINK

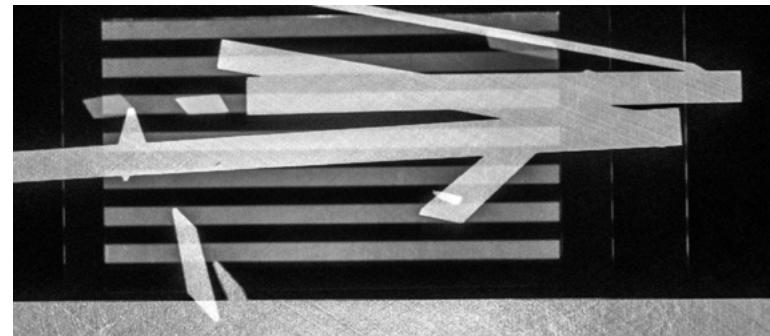
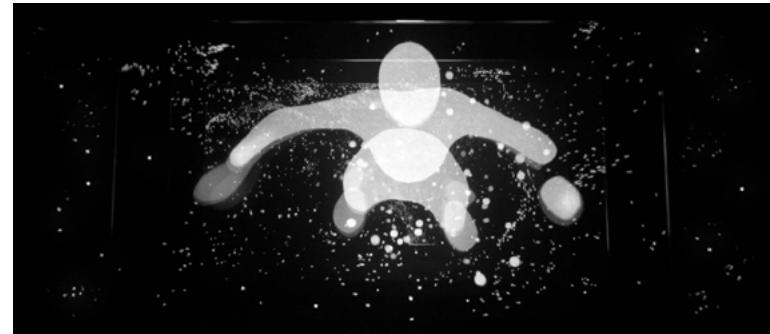
It's also really hard to know when you have reached the end of the project, because nothing is an endless process. The project could continue for an entire life... Where do you decide to stop something and to say it's good enough? I think it can be quite tricky to set the limit sometimes.

Mariona

Yes, it is really hard. But most of the time we have a deadline and try to finish two or three days before we need to. When we work for clients, we try to finish a little bit earlier, maybe one week before. And sometimes we think this is the best we can do, and it won't get any better. I think it is over when I look at the piece and I say okay, it worked. It's good. It could be better, yes, but I have done everything, and I'm exhausted, haha! For Multilayer, we worked very hard and later, when we looked at the piece, we made some changes to make things a little bit better according to specific contexts.

Carles

In the Sonar festival in Barcelona last year, we changed two shots, and for the next show, we will probably make small changes again.



Dreams and uncertainty

- LINK** What are your future plans?
- Mariona** We would like to do a show, like a theatre show with special effects, like lights and layers and LEDs. We would also like to have a directorial film, that would make me very happy. Or, if we don't do that, we want to go and live in the forest and then work with clients a little bit, and in parallel, work on a piece. We don't know what yet...
- Carles** We want to make time to work more for our own business. It's our dream, always, to do less commercial work, and try to work on longer artistic projects. We do a lot of mappings and shows that happen once, then disappear... Our heart asks us to make our own things. This is difficult when you are a company and you need to survive, especially in a time like this. But that is our dream. And we want to go live outside Barcelona to have a space for work and space to experiment, to have more of a lab and to do more artistic work. And maybe then travel a little, showing our work outside Barcelona and Spain.
- Mariona** I think with the pandemic, life has changed and it is very hard. But I want to change with life too. I mean, things will not be the same once we recover from the pandemic. And then we will want and need to adapt. I think what we are living now is very hard and very strange. We don't want to keep living in the old reality. Now we have a new reality and we want to change and adapt to live in this changed reality. What about you? Will you change some things?

Julia Yes, definitely. I'm not sure in what way yet. Well before this pandemic started, I decided to come back to Barcelona to work on this project with Veronica. I'm working on this because I really want to do this project. But in parallel, I'm also trying to find actual work, which is not easy because industries and profiles are also in transition. I think this period is going to shake everything up, but I really want to take it as an opportunity to see it as positively as possible. I think we'll find opportunities, things will come up and it's all just a matter of time. I see this change as a good thing, we're going to have to learn, all of us, to adapt, to be flexible, and learn to live differently.

Mariona So when you come back to Barcelona, we can have a drink one day if you'd like. What about you Veronica?

Veronica Yes, I feel the same way. We were talking, Julia and I, about how this has affected us two for the project, and it isn't so much because we started the project on Skype when Julia was in Belgium and I was in Barcelona. Now I'm in Australia and Julia's in Spain. So, yes, in a sense, for us, it was okay. I'm definitely on the more optimistic side, as well. I hope that once we are out of this, we won't forget it. We shouldn't just go back to normal, back to the way it was. I will stay in Australia maybe till the end of the year. And then I'll reevaluate where I want to be. Because I think our borders will not open for a few months.

Carles There's an online revolution and it's now easier to work and produce things online, and we can live outside Barcelona. There are a lot of opportunities to make things differently and also live with less money. Now the prices are going down, and that is cancelling some of the noise made by the world of consumption.

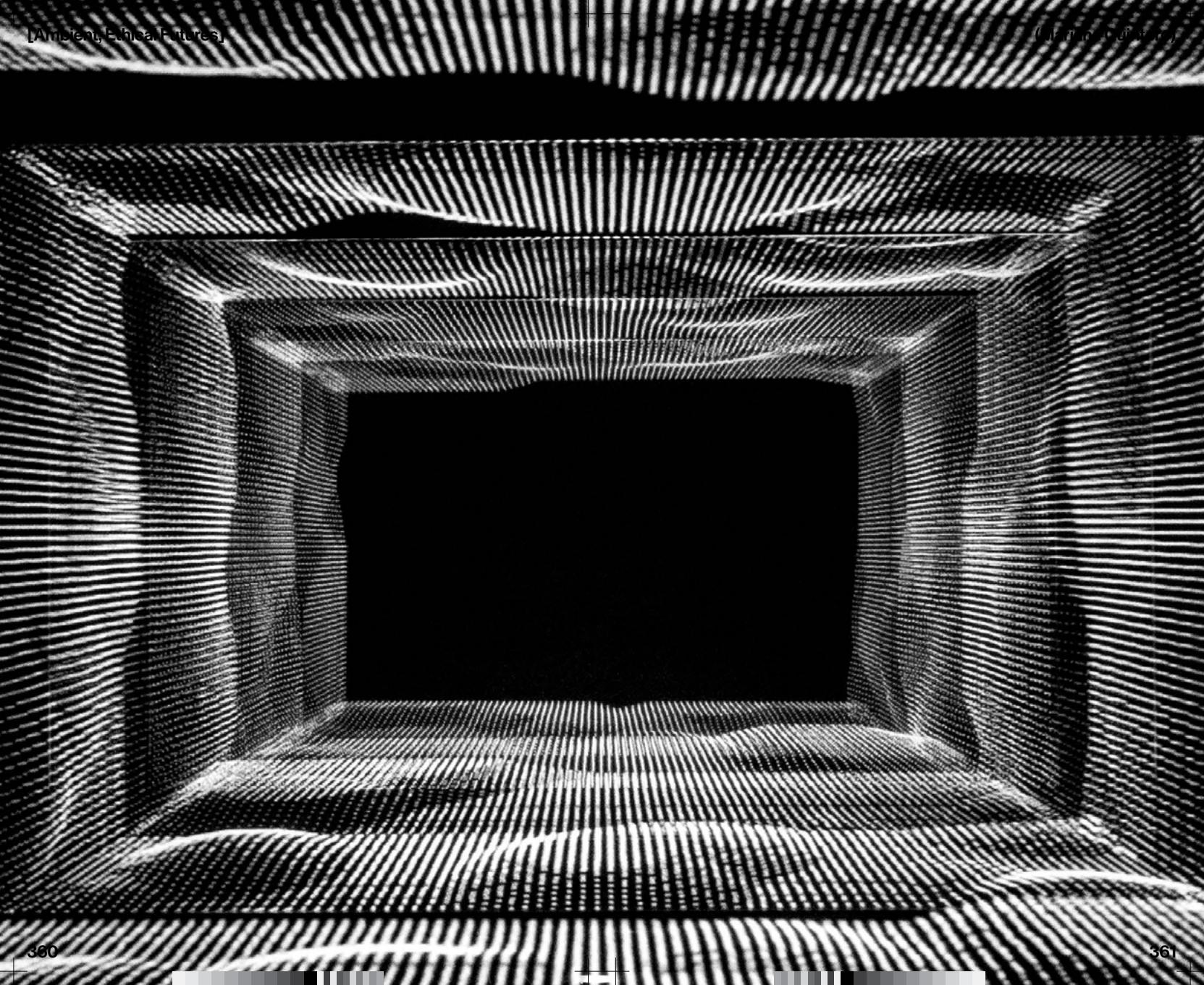
Mariona We must change the world. Yes I think we must change it for all of us.

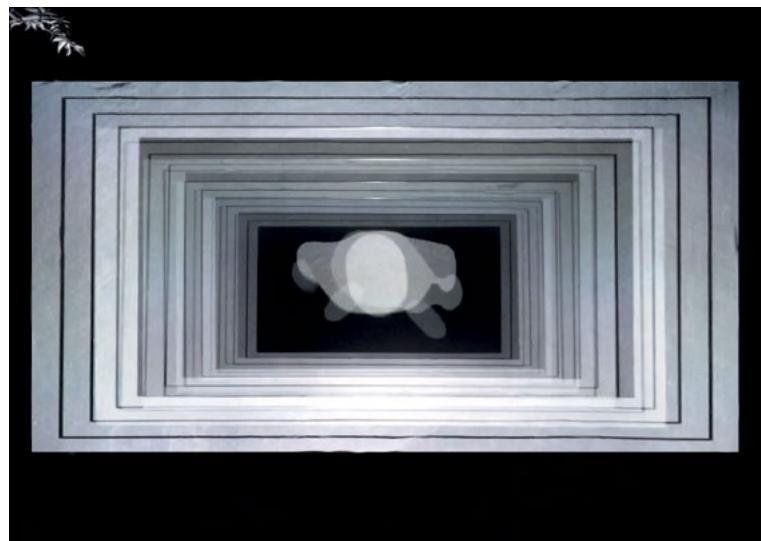
Carles I'm also optimistic... Of course we still don't know how big the crisis will be. In Spain, for sure, it will be incredibly big, and probably in many other countries. We want to make a change but we don't know how. Now, the machine of non-stop work has stopped and we can change the speed we are living at. We are using this special time for a good change.

Julia I think that, actually, maybe the only way we can have this change is to have the transition accelerated and forced upon us. We are confronted with this and we just have to find an alternative. Before, the transition was very slow. Some people were thinking about how to change the way we live but now there is a big powerful message that we need to do something.

Veronica I have the impression that even though the routine is monotonous, you start to feel highs and lows in your emotions and it's getting much stronger.

Carles Yes, these experiences are highly emotional. Oh, it's incredible. I think we all experience it. We can be really happy or really, really down, without knowing why...





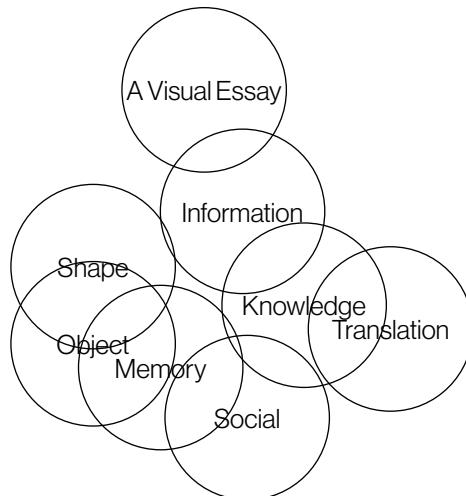
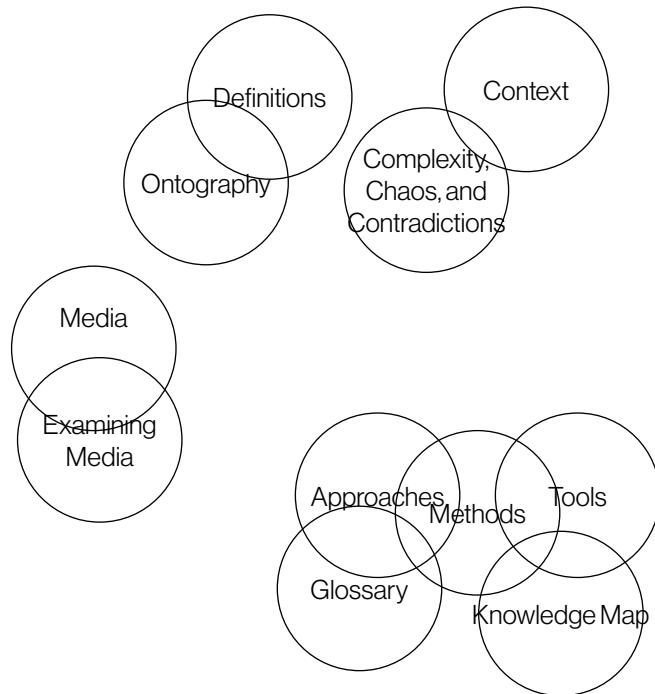
A Space to Narrate

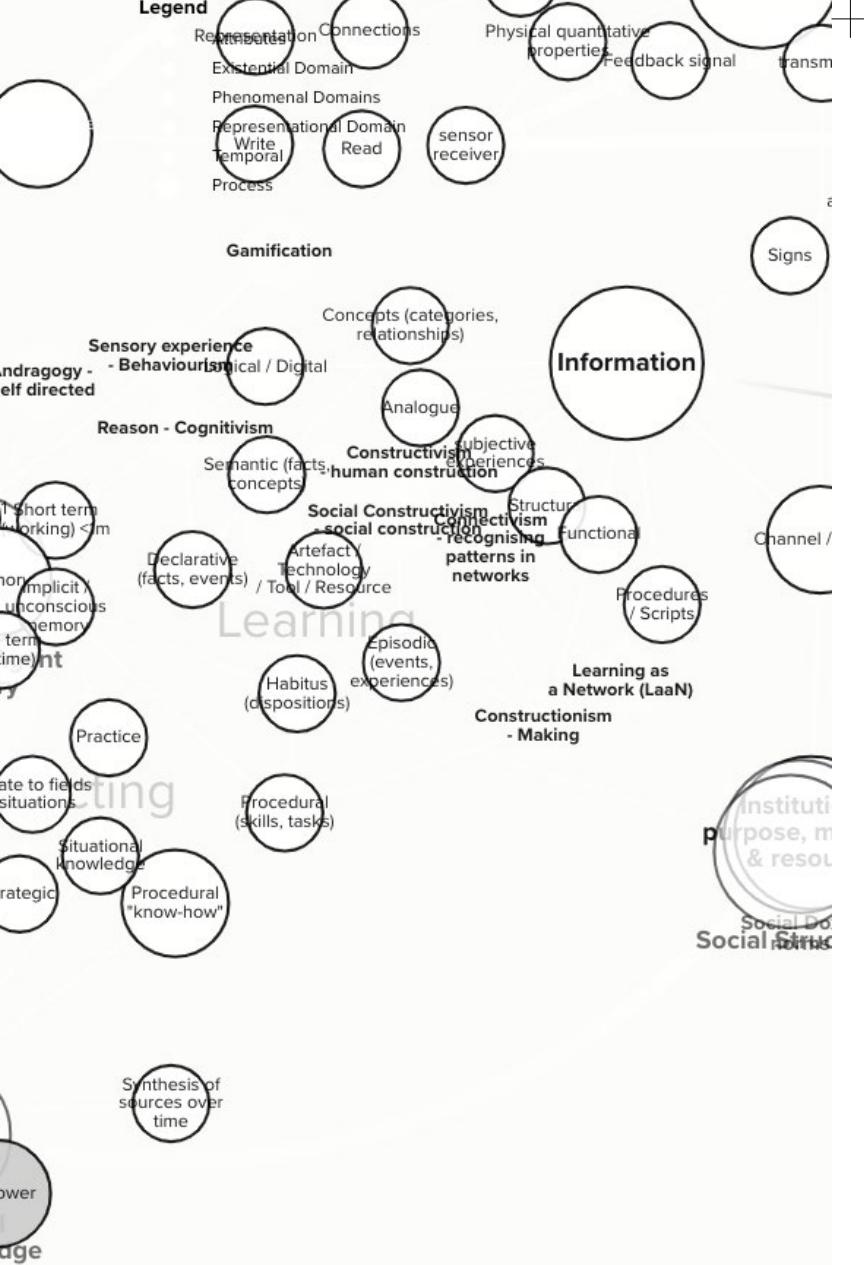


SAIRA RAZA

RESEARCH AND ESSAY
BY SAIRA RAZA, IN
COLLABORATION WITH LINK

Ontography of a Crisis: The Shape of a Virus





An ontograph is a landfill, not a Japanese garden. It shows how much rather than how little exists simultaneously, suspended in the dense meanwhile of being.. For the ontographer, Aristotle was wrong: nature does not operate in the shortest way possible but in a multitude of locally streamlined yet globally inefficient ways.. Instead of worshipping simplicity, OOO embraces messiness

Ian Bogost

What formal representations of knowledge-building and of matter can we find online?

What concepts do they present through words?

How can we represent material information about the SARS-Cov-2 virus in the context of matter?

Ontographia, *o*, L. (*Ὥντες*, a being; *γράφω*, to write.) *Nat. Philos.* Term for the describing and characterizing of things; ontography. Fr. anal. *ontographie*, f. Germ. syn. *die Beschreibung und Zeichnung der Dinge*.

Definitions

ONTOGRAPHY (SOCIOLOGY)	ONTOGRAPHY (PHYSICS)	ONTOGRAPHY (PHILOSOPHY)	ONTOGRAPHY (MEDIA)
1. Historical and ethnographic investigations of particular world-making and world-sustaining practices that do not begin by assuming a general picture of the world.	Ontology is the theory of the nature of existence, and ontography is its description. The system of such a description is a kinematics (or better ontography) and the theory of the relations among these frames/points of view is transformation theory or relativity theory. Ontology depends in a reciprocal way on ontography and transformation theory.	Ontography is an aesthetic set theory, in which a particular configuration is celebrated merely on the basis of its existence. For the ontographer, Aristotle was wrong: nature does not operate in the shortest way possible but in a multitude of locally streamlined yet globally inefficient ways.. Instead of worshipping simplicity, OOO embraces messiness... "An ontograph is a landfill, not a Japanese garden. It shows how much rather than how little exists simultaneously, suspended in the dense meanwhile of being"	Ontography centers on graphic operations, more precisely: the cultural techniques of designing, drawing, sketching and recording, of writing, of listing, of diagrammatics, and other techno-aesthetic graphics such as photography, cinematography, radiography. In contrast to other techniques, ontography has a special proximity to utensils and instruments, to the techniques and technologies of drawing and registering, to the tools of painting and writing ranging from the stick in the sand to high-tech imaging tools. However, unlike in traditional ontology, ontography does not prioritize or privilege in any way verbal writing and language in general.
2."ontography is a descriptive alternative to its grand-theoretical counterpart."	Richard F. Kitchener	Ian Bogost	Bernhard Siegert, Lorenz Engell
3. It pursues historical or ethnographic case studies, rather than general philosophical reflections on the nature of being. ..offering a general solution to those problems it describes how socially, historically, and institutionally situated agents address and provisionally resolve those problems.			
Michael Lynch			

Environment

A MATERIAL EMERGENCY	AN INFORMATION MELTDOWN
A virus highly infectious in humans and all humans are potential vectors	Everyone is involved and needs information
Spreads through droplets in breath	Information overload with every media channel producing content from more people than ever before
Too small to see (nanoscopic)	Natural lack of data in beginning stages Lack of trust in and buy-in from political leaders to give experienced practitioners the agency they need
Too new to understand with no known antigen.	Specialists making decisions outside of their field
Unpredictable effects -a wide range of possible symptoms	Inexperienced political leaders practicing PR in place of emergency public health best practices and being ineffective at producing or sharing data
Responding to severe reactions requires much intensive care resource in expertise knowledge & equipment	Research requires international collaboration
Mutations of the virus are so far less frequent than HIV but will increase with replication	Ignoring emergency public health best practices leaves social media as the primary source of information for many and misinformation and opinion drown out science
	Lack of will, experience and skillset from political leadership culminates in a narrative of preserving existing economic structures in a hypothetical future above saving lives in the current week.

LIQUID MODERNITY

"'Liquid modernity' is the growing conviction that change is the only permanence, and uncertainty the only certainty." (Bauman, 2000)

SILOED, SELF-DIRECTED LEARNING

In being locked-down and physically disconnected without consistent information, knowledge is built in ways that may not be true, sufficient or efficient when applied globally
The thing that needs to be known about has to be learned about from a 3rd person perspective as it is currently dangerous and very infectious.

HETEROTPIAS OF SPECIALISATION

A pandemic forces everyone to become experts at making their own situation work. Lock downs and the mediation of technology changes our ways of interacting and challenges our psychologies and bodies that may rely heavily on social and physical contact.

A pandemic is a time of heightened postnormality, characterised by

Complexity, Chaos and Contradictions

Complexity is experienced as interdependent systems (individuals, government, institutions, services, media, economy) operate with sub-optimal resource and performing unusual tasks they may not be experienced in. The system we operate in is beyond complex it is wicked.

PANDEMICS ARE POSTNORMAL

Chaos is experienced as infections, response operations and communication accelerate and everything from the structure of the virus, to the symptoms it causes, transmission pathways and treatments is not fully understood. In a highly networked society Small decisions and unconscious behaviours can lead to super spreaders. This includes the spreading of misinformation through poorly understood and poorly governed social messaging systems that evolve and can be exploited faster than we can understand them. Clear and inclusive communication becomes increasingly important but public engagement becomes difficult if institutions of expertise are mismanaged or disbanded and emergency health messaging and communication best practices are not followed.

Contradictions are demonstrated by politicians ignoring their own rules and becoming infected, and taking a long time to make systems that work better when put in early (lockdowns, tracking apps, testing, messaging). As a result of prolonged chaos, continuing lack or obscurity of data and poor communication the pandemic in the UK has produced a contradictory feeling of urgency and resignation – set from the start by a prime minister talking to citizens about the economy at the same time as the threat of infection and waiting for people to become infected before starting a lock down.

Contradictions in public opinion between what people think a mask symbolises, between the validity of economic losses due to the pandemic against those of Brexit and even between the value of lives of people dying due to a pool of infections verses those due to held up appointments. Our decisions have become harder to predict as the postnormality continues into its sixth month.

MEDIA

Unlike previous outbreaks of viruses like Ebola and SARS, the internet has found itself in a central real-time role in coordinating expertise and sharing information during this pandemic. It has not quite delivered the utopian “global village” Marshall McLuhan envisaged of the “electric age” nor the effective institutional technocratic biopower envisaged by Foucault. Instead, we are flooded with generalists & guesswork.

All media are active metaphors in their power to translate experience into new forms.... technologies are ways of translating one kind of knowledge into another

McLuhan, 1964

EXAMINING MEDIA

Ours is a brand-new world of all-at-once-ness. ‘Time’ has ceased, ‘space’ has vanished. We now live in a ‘global village’...a simultaneous happening. Information pours upon us, instantaneously and continuously. As soon as information is acquired, it is very rapidly replaced by still newer information

McLuhan, 1967

USING A HEURISTIC DEVICE OF FOUR QUESTIONS, A TETRAD.

Input

Twitter updates.
Government official websites, Spontaneous Communities of practice
Presentations, Google Scholar, Cited References, International messaging, Advertising & Politics
Scientific information through journals, Twitter
Cultural related sites

Output

the changing forms in between information and knowledge
Expertise, opinion, situations, past, present, theory, Google Scholar, Communities of practice, Presentations, International messaging, Advertising & Politics
Government official websites, Spontaneous Communities of practice, Twitter updates.

They can be asked (and the answers checked) by anyone, anywhere, at any time, about any human artefact. The tetrad was found by asking, ‘What general, verifiable (that is, testable) statements can be made about all media?’

We were surprised to find only four, here posed as questions:

- What does it enhance or intensify?
- What does it render obsolete or replace?
- What does it retrieve that was previously obsolesced?
- What does it produce or become when pressed to an extreme?

Approaches

HOLISM

"It is a grievous mistake to imagine that pandemics can be understood and managed by studying the pieces separately (viruses, birds, pigs, people). To understand the challenges of learning to live with diverse microbial populations, we need to re-imagine the world in deeper, more complex, more evidence-based ecosystem terms. ..to understand the relationships among multiple species at multiple scales." This is the nature of complex reality, an understanding of reality based on observation of multiple strands of real-time events rather than fabricated from data in a computer model or laboratory.

David Waltner-Toews, Zoonoses

PRAGMATISM

"Investigators into complexity do not seek prediction, control, right answers and efficiency. These are not sensible goals under conditions of complexity. Rather, the investigators seek understanding, adaptability and resilience. Scientific inquiry, more than ever, becomes an act of collaborative learning and knowledge integration. The role of the expert shifts from problem solving to an exploration of possibilities, from giving correct advice to sharing information about options and trade-offs. Those who cling to being the old sort of expert in fact lose their expertise. Because there is no correct answer and no definitive perspective, decision-making under complexity will require new institutional arrangements, and broad public participation."

Kay J. 2008

CONSTRUCTIVISM

"Constructivism is the philosophical and scientific position that knowledge arises through a process of active construction."

Mascolol & Fischer, 2005

NON-LINEAR KNOWLEDGE BUILDING

A nonlinear understanding of knowledge production, however, assumes that relevant knowledge can be produced by any kind of actor—academic or lay—who must be acknowledged for his or her specific perspective on a given problem

Weichselgartner and Truffer 2015

Tools

LISTS	SPREADSHEETS	KNOWLEDGE MAPS	VISUAL ANALYTICS
<p>Lists are perhaps the easiest way to represent a stream of thoughts in a linear way. When numbered they can enable order or ranking but an unnumbered list can provoke removal of order and removal of categories. Ian Bogost used the term "Latour litanies" to describe such lists of objects presented by Bruno Latour to exemplify "the democracy of objects".</p>	<p>Spreadsheets are useful to structure data easily into cells, grids and sheets. They can perform functions on data to produce more useful information.</p> <p>Excel is the most widely used spreadsheet programme as one of the first with a graphical interface and toolbar. Data can be saved in Excel into formats used by many other programmes making data easily transferrable.</p>	<p>Mapping is useful to represent and store theory and evidence and relationships.</p> <p>Systems thinking uses mapping to find and describe procedures through time.</p> <p>Actant Network Theory uses mapping to identify reality through relations not substances which when applied to social practices can reveal who and what has agency.</p> <p>Focusing on relations enables linking knowledge from different systems and considering them together</p> <p>Applying Information Theory to knowledge maps can reveal outliers, signify what is lost as noise and what may be usable as feedback to improve efficiency or control of information.</p> <p>Kumu is a mapping tool which enables much dimensionality and therefore analysis and was highlighted by MIT Humanitarian Supply Chain Lab as useful for systems mapping. It also has some abilities to perform systems & network analytics and formatting using these analysed metrics</p>	<p>Visual analytical uses graphical or visual representation as a tool to discover patterns, relationships and pick significant features of data and information.</p> <p>Tools include topological methods when considering a quantity as a continuum</p> <p>Lattice representations for networks</p> <p>Pixel Based Visualizations to easily identify locations</p> <p>Tree</p> <p>Flow</p>

Methods

UNIT	DEFINITION	SET BY	ANALYTIC TOOLS	TECHNIQUE
Words	Linguistic constructs that have meanings	Glossary	List, tables	Declare, set paradigm/perspective
Data	Data can be physical signals or symbols representing a signal or as a set of objective but meaningless facts taken during a collection (reading) activity in past	Theory, definitions, apparatus, experiment, event	Tables, Cells, Grids, tabs, Spreadsheets	Survey, measure & save. Read-write. Gather
Facts	Information verified by consensus through method (through institutions) – can be treated like data	Institutions	Expertise	Survey & save evidence. Gathering
Information	“Data intentionally processed, organized, and structured so that we can draw conclusions.” “Information is the flow”	The system most useful for needs	Media, Visual analytics	Understanding relations. Survey & save theory. Construct, translate
Knowledge	“created by accumulating and organizing information with respect to breadth, depth, and amount. Knowledge is dynamic, built through social interaction and experience, with the result that the “objective” facts, data, and information are considered and evaluated from different perspectives. Concerns the present & future	A body of information	Knowledge Maps Memory, Discourse, Interaction	Collect & organise, contextualise pattern recognition, Connecting scan perspectives
Wisdom	Integrated and applied knowledge concerns the future		Storytelling	

Glossary

SEMIOTICS: the study of signs and symbols and their use or interpretation.

LANGUAGE: in order to be considered a language, a system of communication must have vocabulary, grammar, syntax, and people who use and understand it.

ONTOLOGY: a set of concepts and categories in a subject area or domain that shows their properties and the relations between them.

AXIOLOGY: study of value, notions of worth

ETHNOMETHODOLOGY: the study of how social order is produced in and through processes of social interaction." a thoroughly empirical enterprise devoted to the discovery of social order and intelligibility [sense making] as witnessable collective achievements."

CLASSIFIER: a cybernetic system that recognizes the affiliation of an input state ("situation") with a

definite set (Aristotelian concept), and converts it to an output state that reflects the most important characteristics of the situation.

CYBERNETICS: the scientific study of control and communication in the animal and the machine

POSTNORMAL SCIENCE: according to its proponents Silvio Funtowicz and Jerome R. Ravetz, the name "post-normal science" echoes the seminal work on modern science by Thomas Kuhn. For Carrozza PNS can be "framed in terms of a call for the 'democratization of expertise'", and as a "reaction against long-term trends of 'scientification' of politics—the tendency towards assigning to experts a critical role in policymaking while marginalizing laypeople".

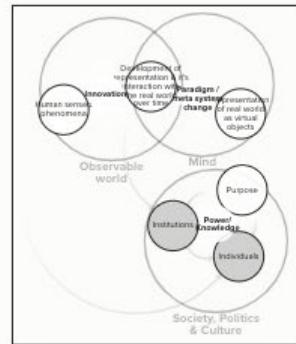
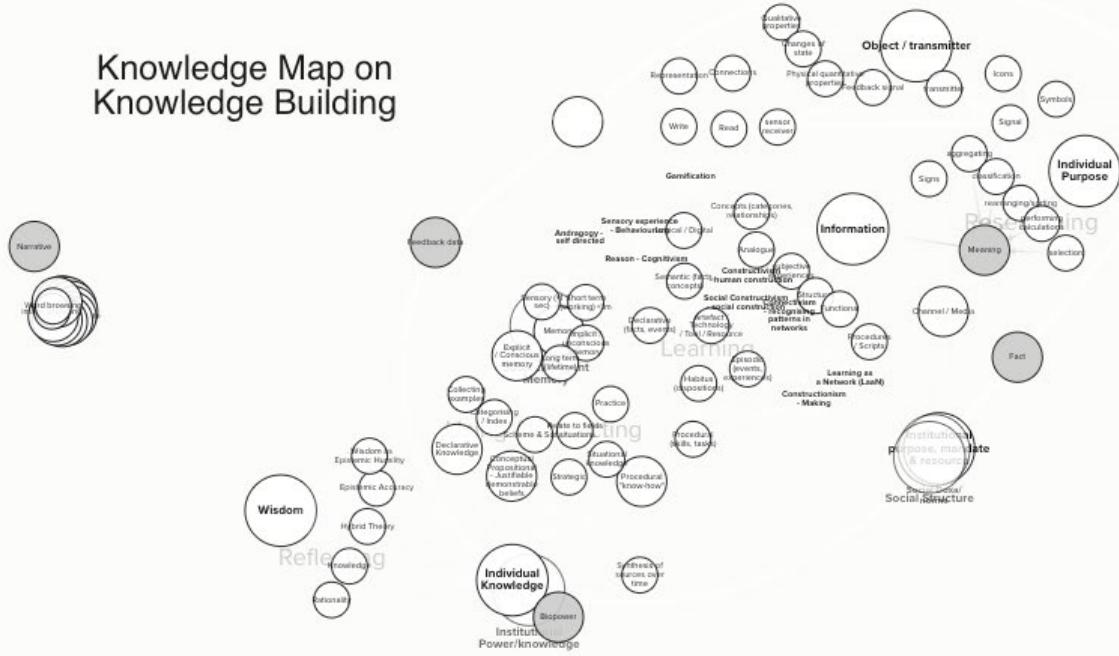
SEMIOSIS: sign process, any form of activity, conduct, or process that involves signs, including the production of meaning.

COMPLEX SYSTEMS: systems whose behavior is intrinsically difficult to model due to the dependencies, competitions, relationships, or other types of interactions between their parts or between a given system and its environment. Systems that are "complex" have distinct properties that arise from these relationships, such as nonlinearity, emergence, spontaneous order, adaptation, and feedback loops, among others.

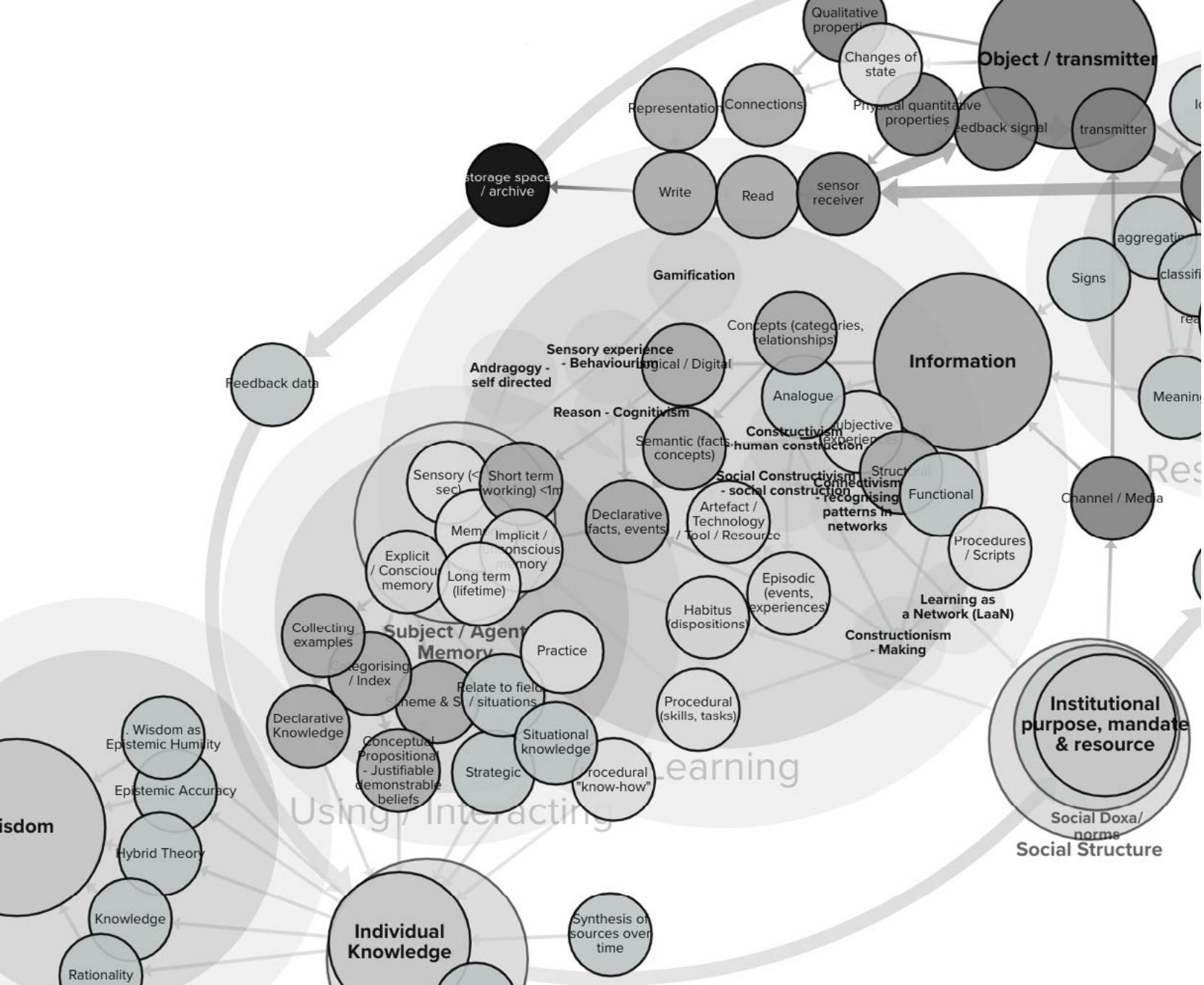
BIONOMICS: study of an organism and its relation to its environment. As translated from the French word Bionomie,

BIOINFORMATICS: bioinformatics is a subdiscipline of biology and computer science concerned with the acquisition, storage, analysis, and dissemination of biological data, most often DNA and amino acid sequences.

Knowledge Map on Knowledge Building



Agency and Progress



[HTTPS://WWW.ARE.NA/S-RAZA/
LINK-01-GALLERY](https://www.are.na/s-raza/link-01-gallery)

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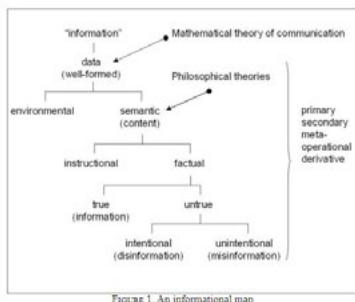
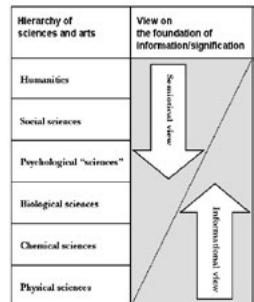


FIGURE 1 An informational map

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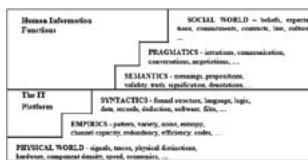
	ENTITIES	TAXON
ENTITY	Information as knowledge Knowledge	Information as thing Data, Document, recorded knowledge
PROCESS	Information-as-process Processing, inferred	Information Processing Data processing, assessment, processing, knowledge engineering

Buckland's matrix of different kinds of information (1991: 6)
where he has used the information concept as an overall concept, which will not be our strategy

(4)



(5)



(6)

Chapter 11
Matter, Energy, Information

Unpublished until now, this essay was written in 1969.¹ It takes up the ancient concept of form, in order to interpret the contemporary concept of information and to develop a unified concept encompassing both biology, as understood cybernetically, and physics. The main problem is that the concept of information is subjective of information is encountered along the way ('for whom is this event information?'). The objectification of the meaning of information, roughly analogous to measurement theory in physics, reduces information to the flow of information, i.e. to temporality. This, here, too, the transition is made from the subjective to the temporal point of view.

The line of argument begins once again with the development of physics toward unity (Sect. 11.1). Sects. 11.2 and 11.3 discuss the development of matter theory, especially in its objectification of biology. We have seen the domain of biology, however, without having contributed to its material problems of this science, since further clarification of the concept must first be sought in physics. The economic pragmatists (Sect. 11.4) represent a different kind of pragmatism; I merely ask the pragmatists to consider the question 'what if it is there an all-pervasive yardstick for value can at all exist in the economic domain. The road into physics (Sect. 11.5) leads only to conjectures that cannot be tested until elementary physics has been explicitly constructed. The conjunction, in accordance with IIL3, of matter, i.e. motion, i.e. form, with consciousness (Sect. 11.6) then leads to the threshold of what in our tradition is referred to as philosophy of the spirit.²

11.1 Matter and Energy

Historically speaking, matter is to begin with, the conceptual opposite of form. A cupboard, a tree is made of wood. Wood is their 'matter'. The name of the term 'matter' is in fact taken from this example: materia = hyle, which means wood.

¹ Cf. von Weizsäcker (1980).

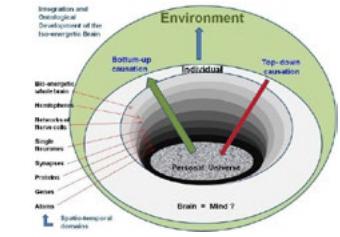
M. Deleuze (ed.), *Carl Friedrich von Weizsäcker: Major Texts in Physics*, SpringerBriefs on Pioneers in Science and Practice 22, DOI 10.1007/978-3-319-03668-7_11, © The Author(s) 2014

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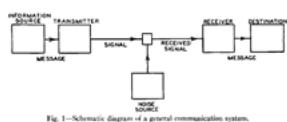
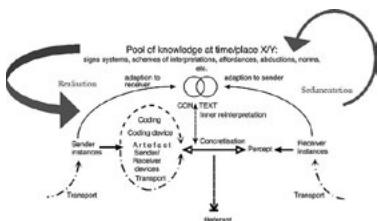


Fig. 1—Schematic diagram of a general communication system.

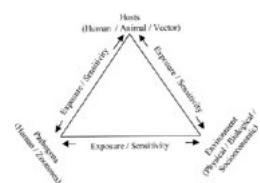
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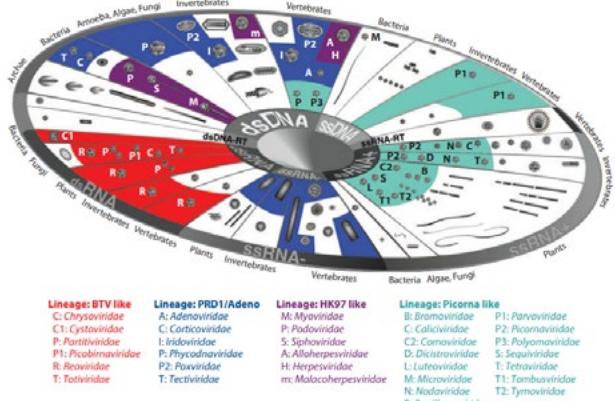
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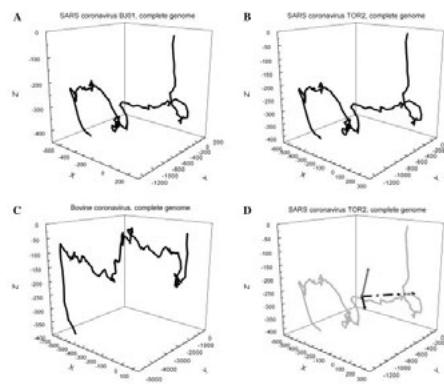
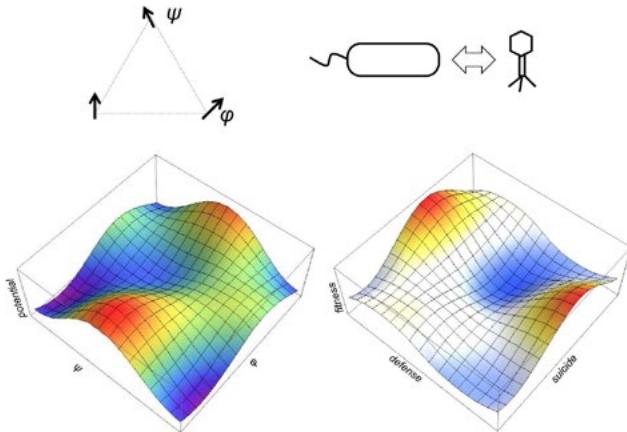


Fig. 1

The three-dimensional Z-curves (x , y , z) for three complete coronavirus genomes. (A-C) The Z-curves of BJ01, TOR2, and BCoV, respectively. It can be clearly seen that the Z-curves of BJ01 and TOR2 are very similar, while the Z-curve of BCoV is significantly different from the former two. This forms the basis of the present method. (D) A sketch of the three eigenvectors for a certain genome (TOR2), which illustrates the relationship between the three eigenvectors and the Z-curve.

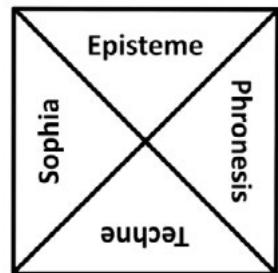
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SHAPE

SHAPE

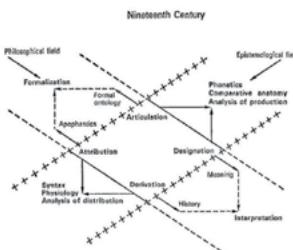
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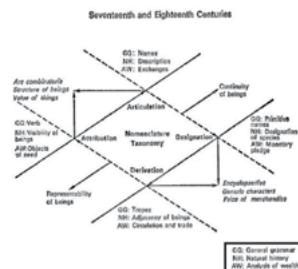
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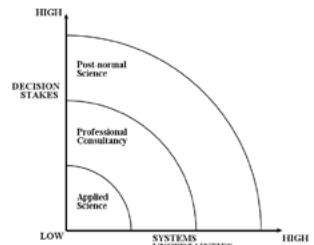
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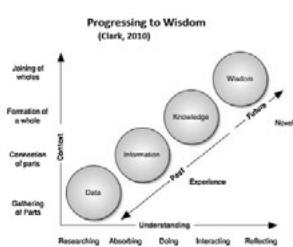
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	Key Aspects of the Traditional (and Collected) IR	Key Aspects of the New Model (Dipper, 1995)
1. Action dimension	1. Force/governance/IR problem	
2. World view	2. Value basis: Consider why it is worthwhile to use your time, energy, and resources to answer the focus question. Why do you care?	
3. Philosophy-Epistemology	3. Theoretical basis: This continues epistemological aspects of specific theories relevant to answering the research problem.	
4. Theory		
5. Principles		
6. Concepts		
7. Events and objects		
8. Records		
9. Transformations		
10. Knowledge claims		
11. Value claims		

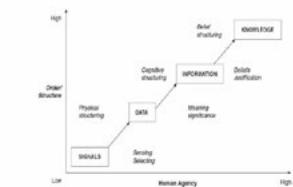
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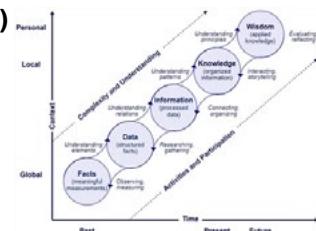


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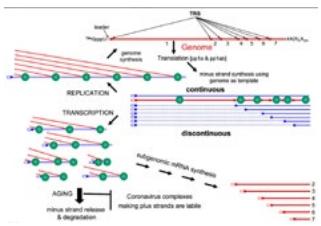


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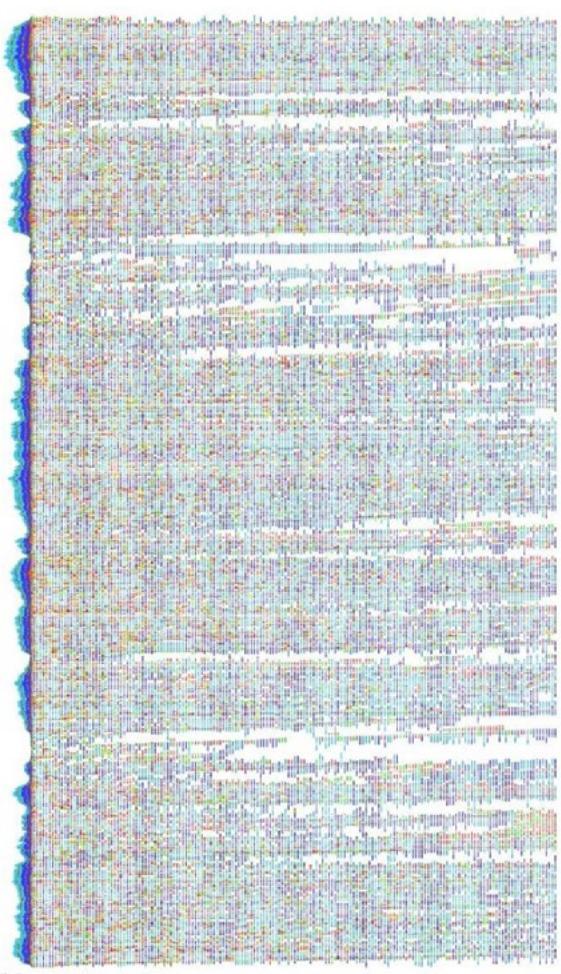
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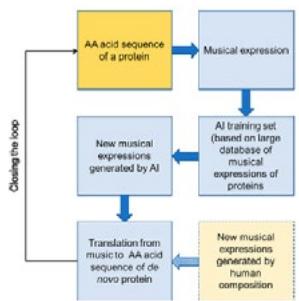
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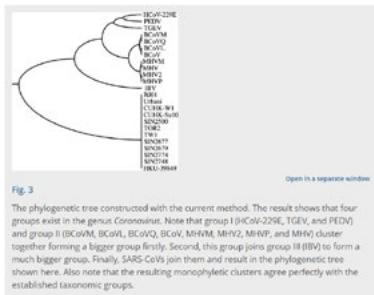
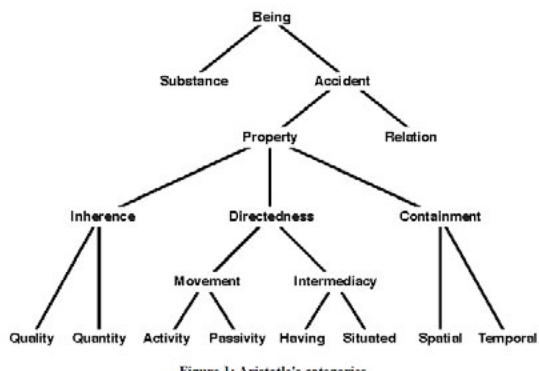


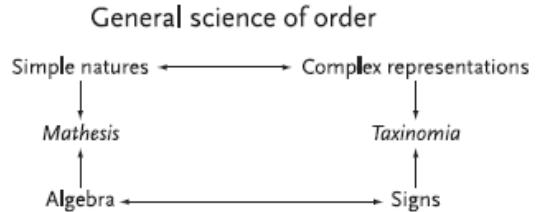
Fig. 3

The phylogenetic tree constructed with the current method. The result shows that four groups exist in the genus Coronavirus. Note that group I (CoV-229E, TGEV, and PEDV) and group II (BCoV, BGCoV, BCoV, MHV, MHV, MiHV, and MiHV) cluster together forming a bigger group firstly. Second, this group joins group III (IBV) to form a much bigger group. Finally, SARS-CoVs join them and result in the phylogenetic tree shown here. Also note that the resulting monophyletic clusters agree perfectly with the established taxonomic groups.

(31)



(32)



(34)

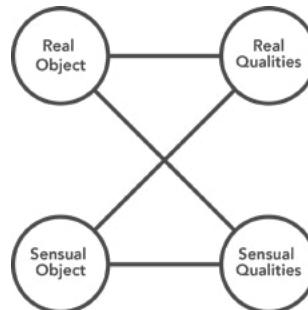


Figure 1: Harman, G. (2011). The quadruple object.
Winchester, U.K. Washington, USA: Zero Books.

(33)

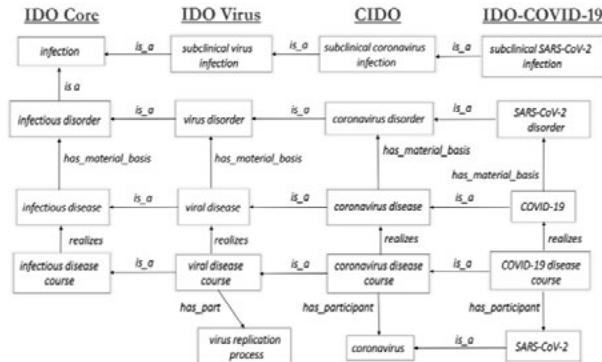
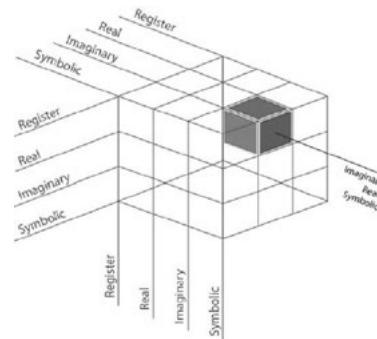
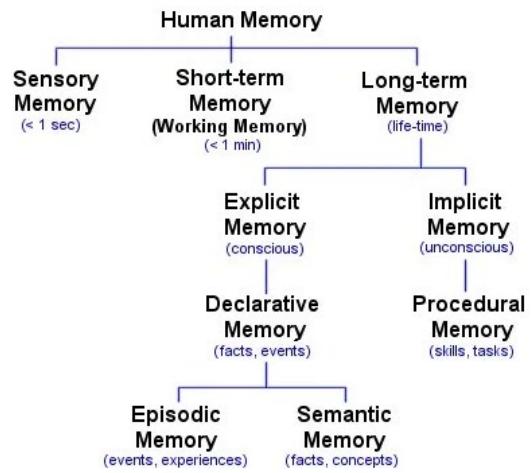


Figure 3 | Links between IDO Virus, CIDO and IDO-COVID-19

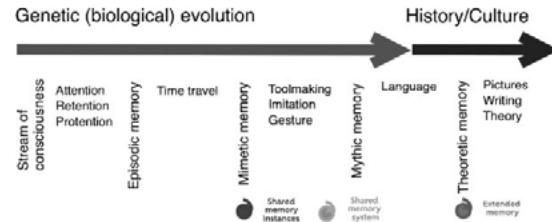
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(36)



(37)



(38) Memory Devices

A representation of the knowledge

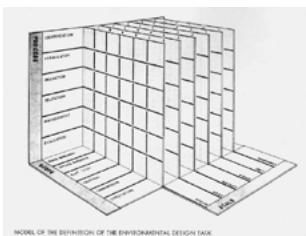
A recording of the building blocks of knowledge

A personal and social memory to record

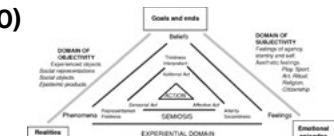
A perspective of objective information

A subjective expression of experience of a citizen outside of the professions of emergency public health, science and governance

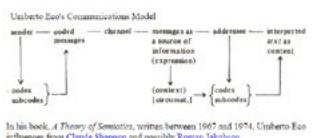
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(42)

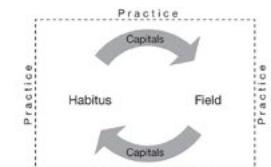
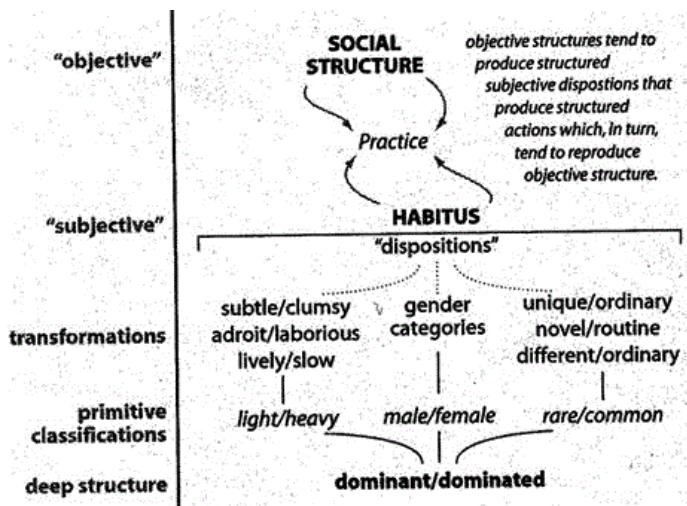


Figure 1.2 The interaction between field, habitus and capital through practice

(43)



(44)

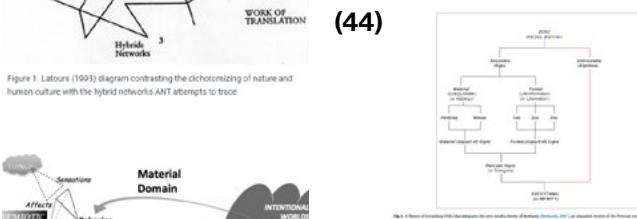
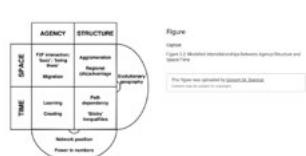
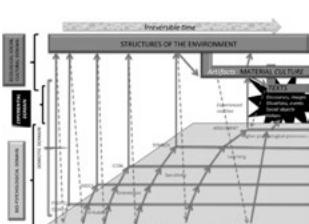


Figure 1. Latour's (1993) diagram contrasting the dichotomizing of nature and human culture with the hybrid networks ANT attempts to trace.

(46)



(47)



(48)

6 Spirited Psyche Creates Artifacts:
Semiotic Dynamics of Experience
in the Shaping of Objects, Agency, and Intentional Worlds

Alberto Rosa

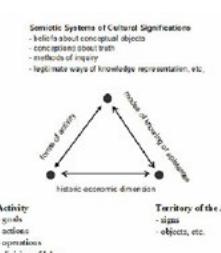
An obvious process of doing or making. This is at the level of technological art, an action-making of clay, shaping of metals, casting of bronze, laying of pipes, construction of buildings, singing of songs, playing of instruments, enacting roles on the stage, going through movements, etc. It is also at the level of making things with our hands, body or something outside the body, or through the use of existing tools, and with a view to production of something viable, audible, or tangible.

John Dewey (1994, p. 207)

This chapter is about how people produce artifacts of different kinds – tools to operate on material structures, symbols, rules and representations for social life, and so on – and how they use symbolic resources for the regulation of behavior. These artifacts, together with the elements pertaining to them, are what we call objects. They change things and the environment, and they change us. They are the means of action for the human agent. It is the iterative operation of these kinds of changes that transforms action and intentionality, and it is the iterative operation of material structures, social relations, and cultural resources that transforms the human agent and also a set of resources and conditions for survival, communication, and transformation of objects. This is the core of what we mean by the term "spirited psyche".

6.1 Psyche, Culture, and Things
Psyche and culture are peculiar creatures. Neither psyche nor culture can be seen, heard, touched, or made to speak. They are not objects. They are creatures of speech referring to the intangible dynamics of changing things. Without agency and symbolic resources, culture and psyche do not exist. They are the conditions for the transformation of the world. It is made of material elements and ways of acting that frame human behavior (practices, institutions, norms,

(49)



Semiotic Systems of Cultural Significations
- beliefs about conceptual objects
- concepts about truth
- methods of inquiry
- logic/math ways of knowledge representation, etc.

(50)

No.	Category	Name	Example	Ref. [20]
1	First	Rhythmic Ironic Gaspings	a feeling of "red"	2.254
2	Second	Rhythmic Ironic Gaspings	a rhythmic ironic gasp	2.255
3	Second	Spontaneous cry	a spontaneous cry	2.257
4	Second	Decid-ed Intercultural Songs	a waahehaha	2.258
5	Third	Decid-ed Intercultural Songs	a decidable song	2.259
6	Third	Rhythmic Ironic Lapsing	a demonstrative protest	2.260
7	Third	Decid-ed Intercultural Lapsing	a street cry	2.261
8	Third	Decid-ed Symbolic Lapsing	a street protest	2.262
9	Third	Decid-ed Symbolic Lapsing	a protestation	2.263
10	Third	Argumented after Symbolic Lapsing	a syllogism	2.263

Source – Adapted from Werts 2008, 198, table 10.2.

Note – It needs to be clarified that the parenthesized elements are specification/redundancy terms that were not included in Peirce's original account. In this article, however, all three elements are used for the success of our study.

INFORMATION	KNOWLEDGE	OBJECT
1. An Info Map Standford 2. Human Information Functions Li Liu Liu 3. Vigo Information 4. Meijer Multi-Layered- Structure-Of-Brain 5. Matter Info Energy 6. Shannon Communication 7. Brier Hierarchy Of Sciences 8. Huang Semiotics-Levels Rowley-And-Burton-Jones_ w640 9. Buckland Matrix Of Information 10. Meijer Information Energy Matter 11. Sutherest Pathogens 12. The-Act-Of-Communication- As-Construed-In-Sonesson- 1999-With-The-Addition-Of- The_w640	16. Concept Maps 17. 4 Toks Martin Jones 18. Order Of Things Foucault 19. Foucault-2 20. Wisdom Clark 21. Weichselgartner_Pigeon Knowledge 22. Nakamori Triad 23. Gowin Ahlberg Heuristic Vee 24. Gowin Ahlberg Heuristic 25. Gowins Vee Knowledge1981 26. Post Normal Science 27. Foster Non Linear Info Seeking Processes 28. Rowley Wisdom Hierarchy	33. Aristotlean Categories 34. Covid19 Ontology 35. Harman Tetrads 36. Ooo Recuperating The Real 37. Foucault Science Of Order 38. Atkinson-Shiffrin Human Memory Model
SHAPE	TRANSLATION	MEMORY
13. Coronavirus Geometric Phylogeny Zheng Wx 14. Knatelson Conflicts In Evolution Host-Parasite Interaction. 15. Abrescia Structure- Based Viral Lineages	29. Cov2 Genome Sequence 30. Coronavirus Transcription 2007 Sawicki 31. Yu MI To Translate Structure 32. Zheng Phylogenetic Treaa Covid	39. Donalds-Different-Types-Of- Memory-As-Reinterpreted- In-Sonesson-2007 2016 40. Memory Devices 41. 3d Chart 42. Rossa Spirited-Psyche- Creates-Artifacts-Semiotic- Dynamics-Of-Experience
		SOCIAL
		43. Bourdieu Habitus 44. Latour Culture Nature Networks 45. Emerald Practice Habitus Field 46. Spencer Agency Structure 47. Symbol To Artefact 48. Material Social Symbols 49. Neo-Semiotics Ji Rowlands Peirce Gnergy

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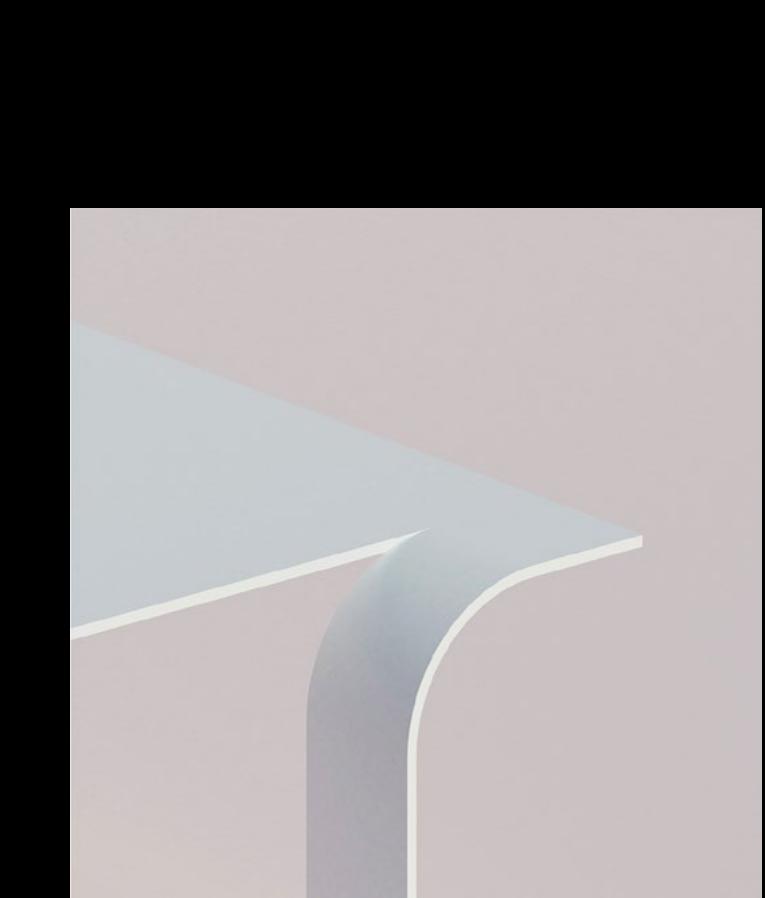
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A Space for Critical Reflection

MINA MINA

A CONVERSATION WITH MINA
MINA, EDITED AND REDACTED
BY LINK AND MINA MINA

Experi- mental Ap- proaches towards Furniture Design



LINK Can you introduce yourself and your current practice?

Mitch I'm Mitch, I was born and raised in Melbourne and currently working as an architect in Melbourne. I met Nancy at university and from there we started working on some small projects together under the banner Mina Mina. That was for projects outside of our regular kind of day job as architects. But Nancy's got a bit more of a varied background than me.

Nancy I was born in China, grew up in New Zealand, and came to Melbourne to study architecture where I met Mitch at Melbourne University. Upon graduation, I started working at a local architecture firm, Bates Smart Architects, working my way towards registration. I think it was interesting to compare my experience working in large-scale practice and Mitch working in a small practice with five people. I was working on larger projects such as residential towers in the city which was exciting but at the same time usually took at least a few years until you see the building completed. It was when I moved into my first apartment after living in shared houses that we started to do some little DIY projects as we needed to furnish the apartment. The skills that we had gained from studying and working in architecture was directly applicable to smaller scale projects. It was fun to come up with an idea and then make it with readily available materials, usually over the weekends after a trip to Bunnings. It was satisfying to see the results so quickly. We started to enter some design competitions both in architecture and furniture design, and that's how

Mina Mina started, in a very informal and organic way.

After we had a few projects, we made a website and continued to participate in exhibitions and competitions.

Mina Mina wasn't our job that we depended on for money as we both had our main day jobs, it is more of a hobby on the side and a way to motivate us to work on things that we would be proud of. Because we had more creative freedom compared to 'real' projects at work, it also helped us formulate our design thinking and approach to design. When you make a website and you see everything together and have it on Instagram, we kind of naturally started to critique our own work and try to think about how to explain and convey ideas in relation to what we stand for as designers. It also gives us a chance to rethink and ask ourselves where we are heading towards. For example, by giving this interview, I think that's really helped us try to interrogate what we're doing and why we're doing it because it seems we've just been focused on the doing part, not really expecting it to earn us a living or trying to do something greater. We're just glad that people are interested in our work though the output is slow, we have about 1–2 projects a year that have arisen from exhibitions and other opportunities. We have recently just moved into a new apartment and thinking about new projects for the apartment So it's kind of cool to have the option of designing something bespoke ourselves when you want or need something rather than go shop at somewhere IKEA. That's how the practice started!

LINK Sounds like it's been like a very fluid kind of journey. Is this work feeding into your day jobs, or is it quite separate?

Nancy It is and it isn't. While both are concerned with design, the work is different. When we're at our day jobs, we have our own clients, and it's, well, for me, it's special, it's about working in a team, revising the design based on what your client wants and responding to real life constraints such as site and budget. For Mina Mina we're quite lucky because our clients for our own projects are ourselves. So you have so much freedom to explore what you're interested in, in whatever colour you want, and whatever we think looks good. But I think all the thinking and the environment at work can be inspiring for example there is a material library at work, and we'll have access to all these samples of little pieces of timbers and stone, and get ideas for materials from there. So I think it's related, but the work itself, where it comes from and who its for as well as the end goals are very different, Mina Mina is a passion project and a chance for us to experiment more.



LINK And from your work experience is that similar or different for you [Mitch]?

Mitch I think working at this fine furniture scale translates into my day job. It's not like I'm designing for my day job all the time, but I definitely have a better understanding of materials and just thinking about how things go together. I research everything that goes into that, so it does transfer in that sense. For Mina Mina, our projects usually

start because it's something that's missing in our life, or we feel like we need an outlet or are invited to contribute to an exhibition. It is probably occupying that in between space, between being quite tangentially related to our professional day jobs, but we probably do it more so because we enjoy it.

I think as a designer, when you start working, maybe for a firm, you love the project and the work, but at the end of the day, there are also frustrating things that you can't control. There's just a lot of things that are not up to you. But then a lot of the skills from that, you realise you actually have the skills to start your own projects. It's also more than the technical skills, being able to know how to deliver a project from start to finish really helps. The results are very different, though.

LINK

And have you found any challenges or any past failures that fed into the work at Mina Mina?

Mitch

I think the challenge is that because we're trained as architects or designers, we're not fine furniture makers. If you ask for our full portfolio of projects that we've done, it's three to four times the size of what's on our website because a lot of them haven't been made to the level of quality to be shown. I guess they've been products for ourselves, and so I think that our biggest limitation we find is making, and the cost associated with getting a fine furniture craftsperson to realise an idea. The things that we have been able to fully realise have been where there's been a grant for competition or where we've had

a collaboration with a supplier. So, for example, Lily Table is commercially available because it was a collaboration with Tait Furniture and they are the ones producing it after providing them with the design. Archie was a collaboration with a tile stone supplier in Melbourne who were kind enough to supply us with the materials. And Brut shelf was made for the AFDA Australian furniture design award. Those are sort of the pieces that have been physically realised, because we've been able to link up with a maker, but one of our biggest limitations is having the tools and technical/production skills to produce the product.

A lot of our design only exists in that digital realm, until someone wants to commission it to be made. There is that limitation of you being able to make ideas that manifests due to resource and cost constraints. We have spoken a lot about just having our own space in the future, or our own workshop and being able to invite other people to work together and be creative.

Nancy

Yeah, that's like the dream for all designers, right. But reality is you get out of school, and realise you need to pay rent, and make money to live. You kind of have a commercial mind. I think to be a full-time furniture designer or maker is actually very hard. They either make custom designs for other people, of which I can only think of a handful of people in Australia who can earn enough from commissions by selling their designs for someone to make, and they get a small percentage of the selling fee. I think right now in Australia we don't really have that culture or knowledge of valuing design

especially furniture unlike say the big Italian furniture brands who have a long history and reputation, hopefully we will in the future!

Nancy There is an exciting new wave of Australian furniture designers who are making a name for themselves. It will be interesting to see how they shape the design identity of contemporary Australia, and hopefully we can be a part of that.

LINK Have you found that from travelling, that you were able to learn about tradition and craft of others? How is furniture in different countries and how does that affect the work?

Nancy That's interesting for us, we lived in Japan last year (2019) and have made a shelf and desk for our apartment in Tokyo. After being in Japan for a while we appreciated the contemporary as well as traditional architecture. All of the joints inspired by traditional timber construction usually found in temple design. So that's a really tangible example of how that culture translated immediately into something that we were doing. And the material was a readily available piece of timber that we could just pick up — it was from a timber merchant on our street. So we brought a whole lot of timber and put it under our arm and carried it up this little Tokyo street and then built it on the floor of our apartment.

In our studio, when we were teaching a design studio at Melbourne University last year, one of the exercises we got students to do was translating some Japanese traditional joints into furniture. So I think it might be

something that appears in our work going forward. And certainly a lot of our research at the moment is into craft introduced in Japan.

Mitch In our studio class, when we were teaching a design studio at Melbourne University earlier this year, one of the exercises we got students to do was translating some Japanese traditional joints into furniture. So I think it might be something that appears in our work going forward. And certainly a lot of our research at the moment is into craft especially those from Japan and other Asian cultures like China which have been preserved for many years. The interesting for us is how to interpret this traditional wisdom for our modern day life and taking inspiration rather than directly appropriating.

LINK How was your teaching experience?

Nancy We teach at Melbourne Uni in Architecture Design Studios. It's a class where you develop and present a hypothetical project through architectural drawings and models. We find that the strongest students are the ones who have a strong concept and they are able to translate that in a really clear and direct way in their final project. Because you only have so long it's quite a compressed design process relative to a real-life project. So in a way, you must have a lot more clarity in your design process at university and be able to effectively communicate your ideas. This clarity somewhat translates to a Mina Mina project where I think the concept of the piece or the question it's asking, or what it's trying to say, is quite



clear and crystallised in each piece. Or if we explain what the concept behind it was, you would be able to see it immediately, as opposed to more classically trained furniture manufacturers who may be more concentrated on showcasing a refined technique. Whereas I think where we're coming from is more conceptual and playful, maybe a more naive approach and not taking it too seriously, because we don't have to! I guess that's an advantage. I think everything has a little bit of personality.

Mitch

Yeah. I think we try to teach students that it's not really a case of a design being right or wrong, because everyone has their own stance and viewpoint. We really encourage them to explore their own interests. But at the end of the day, you do need to be able to sell the idea, you got to tell the critic, or your teacher, and convince us why your project deserves a good mark. So I think how that translates is also evident in how we present our projects. To make the idea or the concept clear to the audience and communicating to them how it can enhance their daily life or bring them some kind of surprise or joy.

LINK

Regarding tools and methodologies, what do you use within your process and kind of how do you utilise them? How do you pick and choose? How does it define projects? And how does that fit into the experimentation part of the process as well?

Nancy

I think most of the projects either lean more digital or more manual means, but the actual process is quite

similar. You start with this idea that you have, I'm drawing from either a conditional brief or just something you're interested in, and then start sketching before modelling it up in digital space. I'm sure you've all used programmes as well, where you try to visualize your idea without having to spend money, to have a render or some kind of drawing on the computer to represent the idea. And then it's about thinking, okay, decide a point where I'm happy and then you make it or spend the money for someone else to make it. So I guess that's the main method and then tools - we use Rhino to model and produce drawings and renderings.

On the manual side we make basic physical models. I usually use chocolate boxes or cereal boxes or whatever else we have at home, and start to cut and fold it intuitively which was how the Archie and Paper Table were conceived. Both are based on the idea to use a single sheet of material. Physically models are more fluid and free. You can get stuck on the computer sometimes and it's a good break from the screen to use your hands in a more intuitive way to test ideas. So it's a bit of both manual and digital methods. We like to do a lot of manual model making and sketching in the initial exploration phase, and then the digital is really to fine tune the design, the proportions, and produce some images to explain the details of the project enough for us or someone else to make it in real life.

Mitch

I guess a lot like architecture, you have to really make clear drawings to convey your idea. But before you get there, I think there's a lot of merit to more

old school physical model making ways to explore form and iterate your ideas. For example you may quickly make a few different options and it's useful having them in front of you to compare where you can instantly alter proportions or add/subtract parts. With some students, we find when they go straight onto the computer, they may not really grasp what kind of result they want and get lost in aimlessly changing the design without really developing it. I think regarding the tools, the importance is with striking a balance between manual and digital in a way that works for you in your design process. Some people may be more into computers and digital design, but at the moment I still find value in simplicity and making form that can be easily constructed by hand but maybe optimised by the digital rather than using digital means for form generation. That's the interesting 'in between' space for us.

LINK

We've asked many others about this 'in-between'. Be it in between career pathways, jumping from one job to another. Or about the sense of time in between materials, the process of decaying, everything. Do you find that the idea of translations makes its way into the workflow?

Nancy

I imagine it as translating this idea in your head, forming something shapeless into something in real life that you can touch and use. With furniture it is the idea of expressing a concept or an idea into a product that you can use. The piece of furniture can then explain itself. Similar to when we teach students that drawings should

convey what their concept is without even necessarily having them talk about it. And so I think with some of the clearest designs, it's great when the idea is translated or conveyed to the user or the next person without the designer necessarily needing to explain it. So hopefully, to some extent, some of our pieces translate that concept themselves and engage with the user on a deeper level rather than being purely functional or purely seen as a piece of beautiful sculpture.

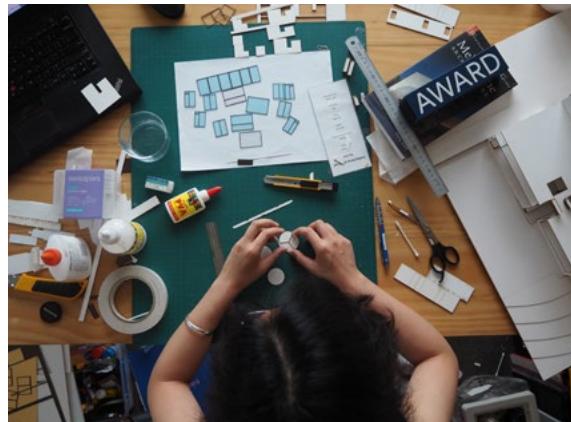
LINK

We were also curious, in what ways do you explore material design and circular economy?

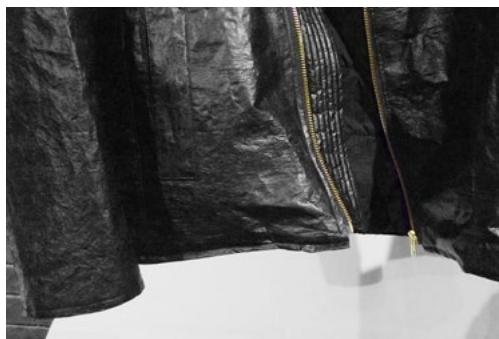
Mitch

I think there are two really good examples of this - one shown in the design and one through the choice of material. With design, Nancy should speak about Paper Table and Archie which were based trying to be no waste designs. The second is the materiality itself. Last year, we were invited to contribute to an exhibition titled alt.material that explored materiality in design. We decided to upcycle some plastic bags into a faux leather jacket. So I guess, about the circular economy, it was at the time that Australia had just moved to ban plastic bags. And so we were trying to elevate an everyday material to an object of value through design.

We were considering plastic bags as a material which is quite common and mundane, and a leather jacket as being quite a premium product, and decided to make a jacket from plastic bags inspired by a highly crafted approach. We found that if you iron layers of black garbage bags, they take on this sort of leather quality



with its own unique texture and pattern. We sewed a leather jacket from this plastic fabric we created for the exhibition. So that was looking at taking something that's maybe considered a waste product or something of no value, and upcycling it. At this current moment in time, everyone is thinking, 'Oh, we need to upcycle', or turn waste into usable things, which is good, but I feel like we're not there yet. In this case, we weren't necessarily trying to say everyone should be turning plastic bags into other objects, but that it just perpetuates the problem. It was more trying to say 'Look at the value of design' and asking how can design elevate ordinary things into something more by looking at materials in a new way? The idea is that design itself is the value adder, with the material itself being pretty worthless. But the way you treat the material, which is the role of the designer, elevates and gives more value to that work.



Mitch I just had an interesting thought on the table, when we first saw it and made it, it does look quite surreal, because it's so thin, and perfectly pure, that it almost looks physical, that you are sucked into the real world in a real way. It's sort of like, you know, there's no screws or texture or anything, really, it's just this white, flat, sort of object. It looks quite strange sitting in like a very sort of rich, physical world when it's such a basic object.

LINK I think, nowadays, some visuals, we can't know if it's been made, or if it's digital. And it's interesting to see that we are completely confused or sort of have this illusion that it is actually existing in our world, or in our digital world. And I find that quite fascinating as well.

Nancy I think yeah, there's some really interesting work by like, digital artists. There's like one in Copenhagen. I really like Wang and Soderstrom because people go the other way as well. Like, I know, people who create tools. And then he would try to make it look like a render afterwards. That makes sense. Photoshop and then make, remove shadows and kind of make areas flat colour, I think it's just, it's just playing with representation. This idea of virtual space and physical space and how it's so fluid these days, especially when everyone's on video calls now, right?

Mitch It is true now that when you look at product photography, for example furniture design, it's almost like rendering and the product photography is always quiet. When you look at those vintage catalogues of the way furniture and

interiors used to be presented, it used to be so much more romantic than it is now.

LINK So interesting that the communication of the piece, and the design of the piece itself, it projects that idea, but while you're working on it as well.

What values do you try to communicate through your work?

Nancy The value is to elevate an object from being more than a piece of art that is just beautiful to look at, or a purely functional product that you don't really value, and imbue it with a sense of fun and personality with the ability to convey a broader message or agenda. And what we mean by that is, it hopefully inspires you in some way. One of the examples is this idea of using one sheet of material to make something, then, you start to think about things like sustainability and hopefully inspires a conversation. And to make sort of a statement. I think that's a value to us at least to create something that combines art and functions to spark deeper conversation

LINK And find lots of happy accidents in the process.

Nancy Yeah, exactly.

LINK I'm going to talk about experimenting and making; and the next question is about how it helps in your self learning and how you'd take in information from the

process of experimenting itself. And do you transfer this knowledge as well? You've touched on it with education and working with students.

Nancy

A lot of experimentation has happened when we've had the chance to make prototypes and work with makers. Like we said before, we're not makers, but I guess it's like being an architect working with your builder. It's the same as when we're working with the manufacturers, we find a lot of experimentation happens there. When we have an idea we need to talk to the makers and manufacturers and work together to realise it in the most efficient way. For examples the Paper Table, when we presented it to the maker, we didn't know how thin we could make it or how tight we could bend the legs.

Mitch

Another example was when we did Archie in the concrete terrazzo, the next thing we wanted to try and do was do it in a timber terrazzo and make our own material. We're trying to use wood chips from other pieces of furniture or furniture makers around Melbourne, bind them together with resin to create a flat sheet. Also, we're fusing some techniques like architectural design with some of the furniture makers that we work with. For example when the Brut shelf was made, the furniture maker was based in regional Victoria and hadn't used the CNC machine before. But to achieve some of the shapes in that piece, I was able to model that digitally and send a file over to the maker to cut on a CNC machine. And then he was able to do the joinery and the finishing with those pieces to realise the piece

which was a combination of traditional techniques and digital fabrication. I think in an ideal world there's more collaboration in this experimental process between the designer and the maker to bring in new ideas and different points of view, but it just costs time and money to do that.

LINK

Can you talk about the process of the table projects, with Paper, and Archie in particular, the collaborations as well?

Nancy

Sure, the first table project was the Lily Tray Table. That was designed for an open call design competition held by Broadsheet, Tait Furniture and Mercedes Benz. It was a fast process with the design concept done in a day, prototyping over one summer and final product available for purchase within a few months of the competition. I feel like often, at times, the best idea is your first one. I wanted to draw on nature as a starting point and considered the natural shapes of lily pads an ideal form for a tray as it naturally drains off water. After some quick sketches it was modelled up on the computer to test proportions. We then made drawings and renders to submit for the competition and were lucky to be selected which gave us the opportunity to work with Tait who had a fully equipped factory. Tait streamlined the making process and worked out how each component could be made in the most efficient way before assembling them together. They made a jig to make it easier for the staff to make the table legs faster and more precise. It was great to learn about the manufacturing process and visiting the

LINK

factory to see how this was done. We've talked to some other local designers and they said it could take years for a project to be ready from conception to market.

Nancy

The two projects after that, Archie and Paper Table were also projects where we worked with people who helped us make the products after discussing the design with them. They were made for exhibitions so it was good to have a goal to work towards and a bit more freedom to experiment as we were not too concerned that they would sell but more interested in materializing an idea.

For Archie the idea came about after seeing all these tile samples I had at work. Most of the time the tiles come in standard sized which people usually use for floors and walls, and I thought what if you could make something out of these standard, readily available materials. The idea also came pretty quickly. I was cutting cereal boxes and created a little model that could slot together. Then we worked with a local tile supplier who donated the materials and they helped us cut the pieces with a water jet cutter in return we showcased their product through our design at a local furniture festival.

And then the Paper Table, which builds on the same conceptual thinking as Archie but this time exploring a steel and the limits of this industrial material. The idea was still motivated by thinking 'okay, I only want to pay for one piece of material' and therefore I want to make the most out of it. In addition to maximising value it was also driven by sustainability concerns and a desire to reduce waste. Another consideration was to simplify

the making process, which I thought was in the reducing the number of steps in the making process by eliminating joints and only needing to cut and bend to shape a flat sheet into a 3D product. After the maker tried to make it became apparent that the material itself was challenging and a lot of more R & D was needed but we managed to make a prototype for the exhibition to convey the idea. The collaboration here gave us a lot of valuable information on how the material behaved, how to bend it, how thin can we get it without warping and so on.

I think the interesting thing with Archie and Paper is that constraints can often make a project stronger, and can be used to drive the design. Because the projects are based on standard material pieces, if you wanted it to be at a standard table height, then it kind of determined the rest of the dimensions and guided the design rather than designing with infinite possibilities.

LINK

Where would you like to work on in the future and what kinds of collaborations are you interested in?

Mitch

We want to collaborate more with makers who have a more collaborative process who are open to experimenting, especially with craftsmen who are really skilled in their craft. I think that is something I really appreciated, living in Japan, that you have generations of people continuing the same craft, they just do one thing and they just do it so well. I'm sure there are people like this in Australia, but I feel they're not well known and you have to seek them out.



LINK And a final question! What is your interpretation of an in-between space?

Mitch We are thinking more about the “in between” itself. I think a lot of our projects and comments today have revolved around this issue of when there’s the idea, and then there’s the final product, but there’s a lot of things that happens in the middle. This in-between space is not physical but refers to the exciting, unknown and experimental phase in the design process when translating an idea into the real world. I think that designers could be a lot more aware of the choice of materials and processes, waste, resources, transport, and all these considerations in-between the time they have an idea to the time of someone engaging with the final product.



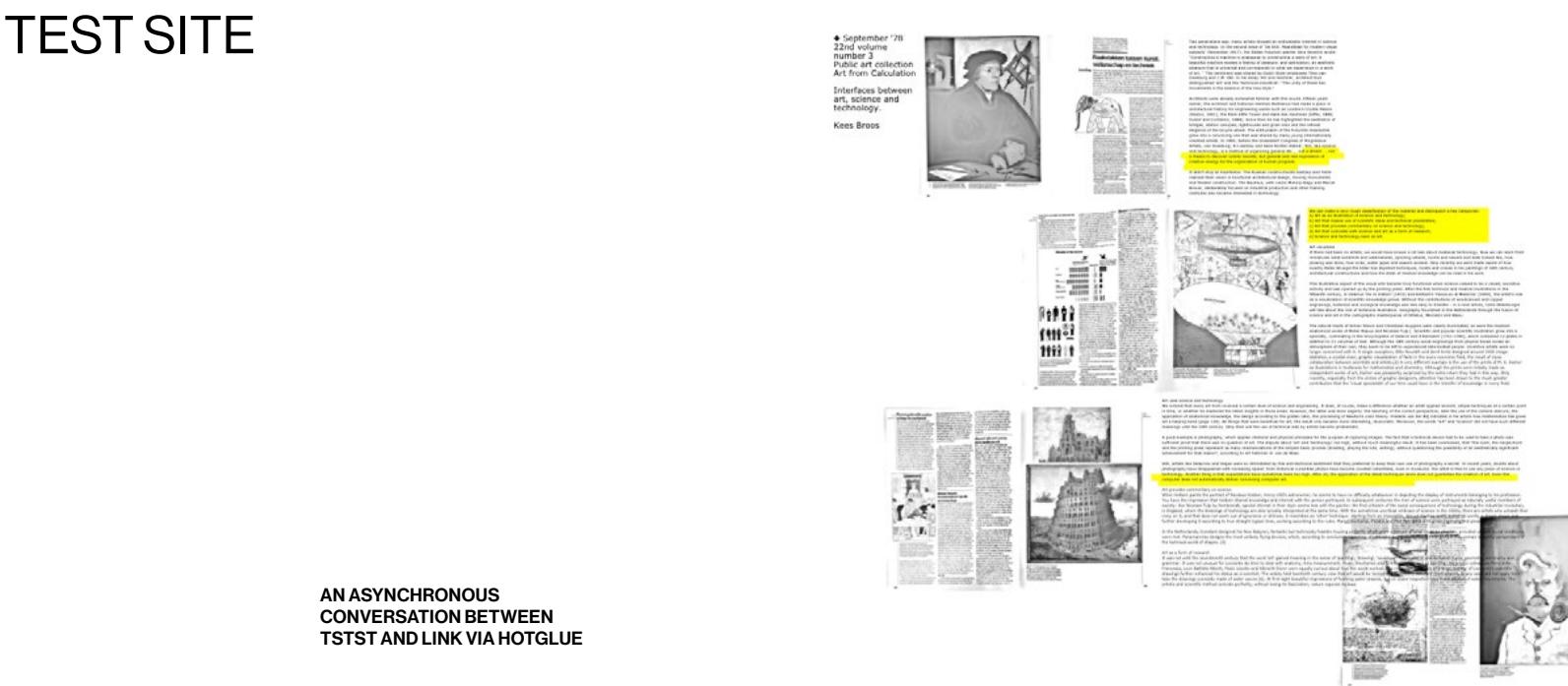
A Space to Define

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TEST SITE



AN ASYNCHRONOUS
CONVERSATION BETWEEN
TSTST AND LINK VIA HOTGLUE

An Open
Space

1. All contemporary art is made in the context of the post-internet era.
2. Power is embedded not only in functioning technologies but also in dysfunctionality.
3. History is not linear, it has not "been". Old technologies lie beneath the surface serving as building blocks for modern developments.
4. Hacking and repurposing old technology is a viable alternative to throwaway consumer culture, planned obsolescence is a sin.
5. With a DIY mentality any space can be utilized in a variety of ways.
6. Art and science (and thus technology) exist in overlapping fields, as they have always done.
7. It is pertinent that technology is critically assessed through art.
8. As with scientists, artists should strive to see the world in new ways, and communicate that vision.
9. A popular saying is that "everything in art has already been done" but through new technology new artistic expressions become possible, so this statement cannot be true.
10. But even so; nothing is made within a vacuum.

Media has transformed or what does it as a form respond? As Caleb Everett's electronic book – as represented by a version for the Kindle – imagined a design, a read, 'written to avoid of writing next publishing, truly apply offer? How can digital publishing open even thinking?

♦ ♦ YOU ARE THE SOURCE
PROJECTION AND REFLECTION
by Sophia Bulgakova

♦ ♦ Exhausting a Crowd

♦ ♦ Gustav Metzger
thinks about nothing

♦ Erased Dots and Rotten Dashes ♦ "The Dead Media Project"

♦ Jeanine Verlooy,
Dissected Timeline

♦ ♦ Maggie Orth
100 Electronic Art Years

♦ ♦ Threads That Speak:
How The Inca Used Strings
to Communicate

♦ Temple OS, Terry A. Davis ♦ ♦ Arseny Avraamov - The Symphony of Industrial Horns

♦ Art from Calculation,
September '78

♦ I Will Say Whatever You Want In Front Of A Pizza
Sebastien Schmieg

♦ Trevor Paglen,
Seeing Machines

♦ Vilém Flusser,
philosophy of
photography

♦ Sanne Schilder,
Making Meaning of
the Sun

♦ Weirdcore
Aphex Twin

♦ ♦ Plant Fiction, Seifeler
(Agava autorora)

♦ ♦ Purkyně -
Subjective vision

♦ Marshall McLuhan, The
nemesis of Creativity

♦ Ted Chiang,
The Great Silence

♦ Peter Struycken (artist) &
Pieter Padimus (physicist)

♦ The serious
relationship of art and
technology (external
link)

♦ ♦ Multi Machine Performance,
collaborative experiment at
Testsite Meent ♦ ♦ RGB.VGA.VOLT
James H. Connolly

♦ ♦ Lucky People Center
International (1998)

♦ Leonardo da Vinci
showed how art can
advance scientific
progress
(external link)

ART AND DESIGN PUBLICATIONS

KEY NOTION: RELATIONS
A call for new forms of publishing has been I recently, and this is a response to that call! Currently, there is ample talk of a loss of reflexivity or of a shared understanding of facts. What does this mean? Can we move back to an imagined time when those might be seen as crucial? Or should we try to find other ways of working? We believe that there is still more agency on the part of the reader, that no the monoliths any longer, and that they must interact with each other in a more seeking way. We propose the latter. In our thinking about a publication, we have been inspired by ideas that were inspired by authors such as Umberto Eco, Tessa McHaffie, and Paul Stoddart (see on the right). This is a call for a new form of publishing From Modularity to Relationality. Other first of Writing Thinking & Publishing.

To get a better understanding of the structures of content, we decided to work primarily on the beginning stages of the publishing process and therefore focus on the structure of content rather than on the perception of the reader. How can different modes of structuring content and linking arguments help us to better understand our own and others' work? We also believe in the hypothesis that applying modular processes, such as is common in software development, could be a good way of structuring each publication's form and workflow. What both such modular strategies have to offer will be

tststhotglue.me

LINK's Key Values are

[Experimental]
LINK is experimental, purposefully meandering. It is a space to bridge ideas, generate new thoughts, engage in conversations and reflect on those intricate connections easily overlooked amidst the process of creation.

[Open]
With the aim of making our thought process an open book, we communicate the design process with total transparency for the readers to gain a holistic understanding of how this medium is explored.

[Design-Led]
Design today is no longer a discipline, a movement, or a language, but an engine to communicate information and communicate knowledge to society. It will make a projection of tomorrow's in-between spaces by sharing emerging topics within the areas of design practice and material futures.

[States of Matter]
The ancient Greeks translated the natural science of physics as "knowledge-of-nature", it studies matter, its motion, and behaviour in relation to space and time. The 'state' of an element refers to the structure and form of its materiality within a specific moment in time. It is a temporal mode of existence, when introduced to a new environment.

Hence, the state of the particles that make up one matter is not the same as another. In the same way that physics studies matter, the first issue analyses the nature of information and its physical embodiment and behaviour across multiple disciplines. States of Matter explores the changing materialities of digital systems and the impact of the interdependency between physical and digital spaces.

It questions the possibilities for what is matter, with the aim to provoke our current understandings, perspectives and expectations about what is matter. Is matter a form of energy? Can we hold it? Can we interact with it? How can we further unpack the definitions of matter?

[Paul Klee, THE THINKING EYE]

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• Jean Trinhnay, Metarobotic
• Poetry Computables by Tokevian Chat
• Shipping Organ of The Tripartite Society and Aesthetics of Translation
• Yester Than the Past! Trichon Till Journal
• Digital Photonics and Ion Architec
• The Medium is the Message Marshall McLuhan
• An Infinito Silence I
• Louise Erdrich, Critical Mass of the Afterword
• What Fountain makes a robust and efficient storage architecture

[LINK游學之餘言語錄 3, DNA Letters, (external link)]

The whole letter on stage... responses to the field, action, and intent. So far I've been writing letters to the world that are 3D in nature, and in some cases of late I've attempted, along the lines of communication, to write letters that are in some ways 4D. I'm not sure exactly what that means, but I do know that I don't like writing letters in earnest, unless they're highly interactive. Having images, coordinates, specific objects, that sort of thing, allows the reader to have more experiences, and more options than just reading words, which is nice because the reader is left to their own devices to interpret what is said. The writer should not leave the letter to the reader's imagination, though.

'Better Than the Real Thing' Franch Till Journal
Digital in the real world [link]
Digital in the real world [link]

Artists, designers and brands are turning to digital realms to create compelling experiences both online and offline.

CONTINUE TOPIC
Plant Fiction, Selfeater (Agava autovora)

[Digital on the Road] (external link)

Following the theory, plastic becomes organic and physical, man-made and organic become organic and physical. Even the most organic of organic things are plastic. It's a theory of reduction, in which the simulation of physical qualities of light and material allow for a trajectory of thought towards something that might seem, now, to be the opposite of a theory. This is a theory of reduction, but not the kind that is often talked about, which is the reduction of art to a series of marks or the reduction of art to a series of ideas. This theory is the reduction of art to a series of molecules. That they come with us, and that they are organic, but that they are not organic in the sense that organic substances are what we eat at all about. Thank you! -Siegfried Zielinski

[Lucky People Center International] (1998)
She has been a political theorist since her early work on the logic of revolution in 1970s France and on the role of media in politics in the 1980s. Since the 1990s she has focused on the politics of the Internet and on the politics of communication. Her book *The Luckiest People on Earth* (Routledge, 2012) won the British Politics Book Prize in 2013. She is currently teaching at the University of Manchester. Her research interests include the politics of the Internet, the politics of communication, communication theory and political philosophy.

[WiFi Tapestry, Richard Villegas]
Digital Memory and the Archive [external link]

Media archaeology as a transnational bridge

[Perfumes That Speak, How The Incas Used Strings to Communicate]
The use of the Andean system of recording on strings, and the different ways it is used throughout the Andes. From the Incas to the present day, a wide range of communities in the region still use the quipu as a way to record, store, and pass on information. The quipu is a system of knotting cords made from cotton or wool. The cords are usually grouped together and each group is associated with a specific digit or symbol. These symbols can represent numbers, letters, or even simple ideas. The most common symbol is the knot, which is used to represent a single digit. Other symbols include loops, dashes, and points. These symbols are arranged in a specific sequence to form a code. This code is then read by a person who knows the language of the quipu. The quipu is used for a variety of purposes, such as keeping track of inventory, recording historical events, and passing on oral traditions. Today, the quipu is still used by many communities in the Andes, and it continues to play an important role in their daily lives.

[Maggie Orth 100 Electronic Art Years]
The use of the Berliner project and its unique ability to merge Berlin and its history with electronic art. The Berliner project is a unique blend of traditional craftsmanship and modern technology, creating a space where people can experience the past and future of Berlin through a variety of interactive installations and performances.

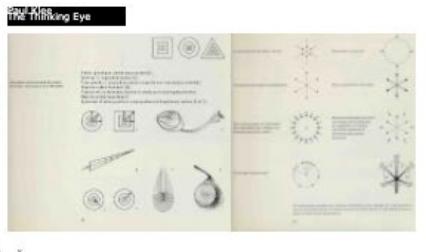
[deadmedia.org *click]
Introducing you to the web in issues that the people think alongside.

[AUTO DNA SWS: DNA Fountain efficient storage]
Transferring from Microsoft and the University of Washington, Microsoft's DNA fountain technology is the latest breakthrough in data storage. It is a new way of storing data in a way that is more efficient and reliable than traditional methods. It is a game-changer in the world of data storage, offering a new level of efficiency and reliability.

[Microsoft demonstrate first fully automated DNA data storage]
DNA storage is a promising new technology that offers a way to store large amounts of data in a compact, durable, and cost-effective manner. It uses DNA molecules to encode data, which is then read back using sequencing techniques. Microsoft has demonstrated the first fully automated DNA data storage system, which can store up to 200TB of data in a single vial.

[Online Tour of Dublin's Tech Infrastructure (external link)]

- The interface is a space charged and used to facilitate the relationship between
[1] The interface is a surface, an object, or a channel for the exchange of information.
[2] The interface is a (real) interface, i.e. interface to the user.
[3] The interface needs to be created between space and time; it is a driver and connector, an interface that links the past and the present, the (applied) past through memory and memory (writing into memory and memory).
- [4] The interface creates teams, teams and teams of all agencies/agencies, which converge in a single point of communication.
[5] The interface is the life of the body of a complex system of agencies/agencies, of technologies, of spaces, of times, of people. It is a complex system of interfaces, which includes, sounds, spaces, histories, cultures, political histories, times, affects, affects...
[6] The interface is designed within a cultural context and in time design cultural contexts.
[7] The interface requires and mediates the economic logic of the system in which you live, work, act, and produce.
[8] The strategy of the interface is always embedded in the interface itself. But it is not always visible.
[9] Can we imagine the mobile citizen? The more present interfaces are in our lives, the more we are mobile citizens.
[10] The interface uses indicators that measure (how can I say it) how I live my life. I have indicators of my behaviour, of my life, of my actions, of my life, of my life... It's a simple, it's a simple, it's a simple. Because of lifelines!
- [11] The interface is a system that receives and generates messages of fragmentation, but reduces the complexity and density. Access to lifelines is a fundamental right.
[12] Users are entitled to know what the interface does. Access to lifelines is a fundamental right.
[13] In the design of the interface, not only will the user receive a feature, but the user will also receive a feature that makes the user's life easier, more comfortable, more secure, more efficient, etc.
[14] The user uses the interface preferential agency. Any operation such as other and therefore they have the ability to define, reduce and control them by action or command.



Starting with an initial conversation between TSTST and LINK, our little experiment evolved into a very playful yet ambient space filled with references and projects from many different artists and groups. I found the process of an asynchronous, continuous, yet very open way of having a discussion - not through words but through associated thoughts, between multiple people, really interesting and approachable. Sometimes I find it hard to put things into words or form my own opinions when talking about complex topics, and to be able to borrow the voices of many different projects, references, and styles, using space and approximation to connect a thought and create a link educational and accessible - maybe I won't read this piece just yet, but I've made a mental connection and pathway that will allow me to refer back to a certain reference I saw. I wonder, how we could open up this platform even more, in order to allow for these peripheries and floating associations to take up their own space, and become its own body (perhaps it has already done that). Variables of response time, language, and imagery, auditory, all up to the person creating the reference, how can we allow contextual conversations that adapt to our individual levels of focus, filtering, and consuming information? How does the interface and tool of hotglue morph that? How can we develop a mode of communication that allows for adaptation shifting variables depending on type of media and time of the person participating? My mind is currently thinking of haptic and embodied forms of digital communication

Found within this space is the essence of this conversation, able to form an open and endless space in which the many definitions, interpretations of art, design and sciences can be discussed. LINK worked together with TSTST to bring life to a mesh of knowledge, once limited to one's mind, now unified by the many inspirations used to open the doors for further explorations. This in-between space is here to guide you through this complex representation and composition of thoughts and references. This process has allowed for new connections to create and others were rediscovered within a different form or context. This mesh of knowledge has allowed me to find more clarity of thought and pinpoint feelings, intuitions, and ideas with specific examples based on research and experience. Until now, this conversation has allowed us to essentially explore time and dimension as tools to create a form of archive. Because of its current nature, this space could give possibility to explore new tools which can respond more precisely to those various materials. In this sense, we could further explore ways to materialise these ideas and references within a new dimension and provide a new perspective to such connections. How can we define a new environment for this information to be processed within another level of our minds? How can our minds synthesise all of this information and create a clear and useful mesh of knowledge? How can we share this knowledge without losing its essence? Can we discover new forms of communication that would work with our body, as one, to enable a deeper understanding of our environment and for one to be able to respond precisely?



[MANIFEST]

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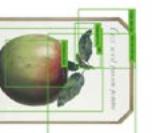
7. It is pertinent that technology is critically assessed through art.

8. As with scientists, artists should strive to see the world in new ways, and communicate that vision.

9. A popular saying is that "everything in art has already been done," but through new technology new artistic expressions become possible, so this statement cannot be true.

10. But even so, nothing is made within a vacuum.

Urgent Publishing Publications in



* Trevor Paglen,
Seeing Machines
LINK ARTICLE



LINK ARTICLE



* Alessandro Baricco
The Last Whole Earth Catalog
LINK ARTICLE



Covid makes it all the more relevant to think about the ways we share information. Talking like this was very refreshing. A conversation without answers, only content and remarks that follow the lines and intersections of each other's interests. Layering information and creating spontaneous links. Exploring and connecting our collective knowledge. Which is inherently human since we have built the world we live in today by tapping into the knowledge of previous generations and those around us. This way of sharing reminds me of the way our brain functions. As Alessandro Baricco puts it in his book *The Game*: "Left to its own devices, our brain continuously opens links; it keeps many windows open simultaneously and never gets to the bottom of anything, because it tends to make leaps sideways from subject to subject. All the while, it preserves, in a kind of hard disk, the memory and the map of the journey." In a sense navigating the World Wide Web works like our brain, you open windows, keep multiple windows open at the same time and jump between them at lightning speed. I want to conclude that reflecting on this hot glue experiment made me think about the wonderful term 'prosthetic knowledge', information that a person does not know, but can access as needed using technology. Which I think is most wonderful.

A Space for Information





A space for Critical Reflections

A large, empty rectangular box with a thin black border, occupying most of the page below the title. It is intended for the user to write their critical reflections.

NESS 1 IN ARCHITECTURE
NESS 1 IN URBAN CULTURE

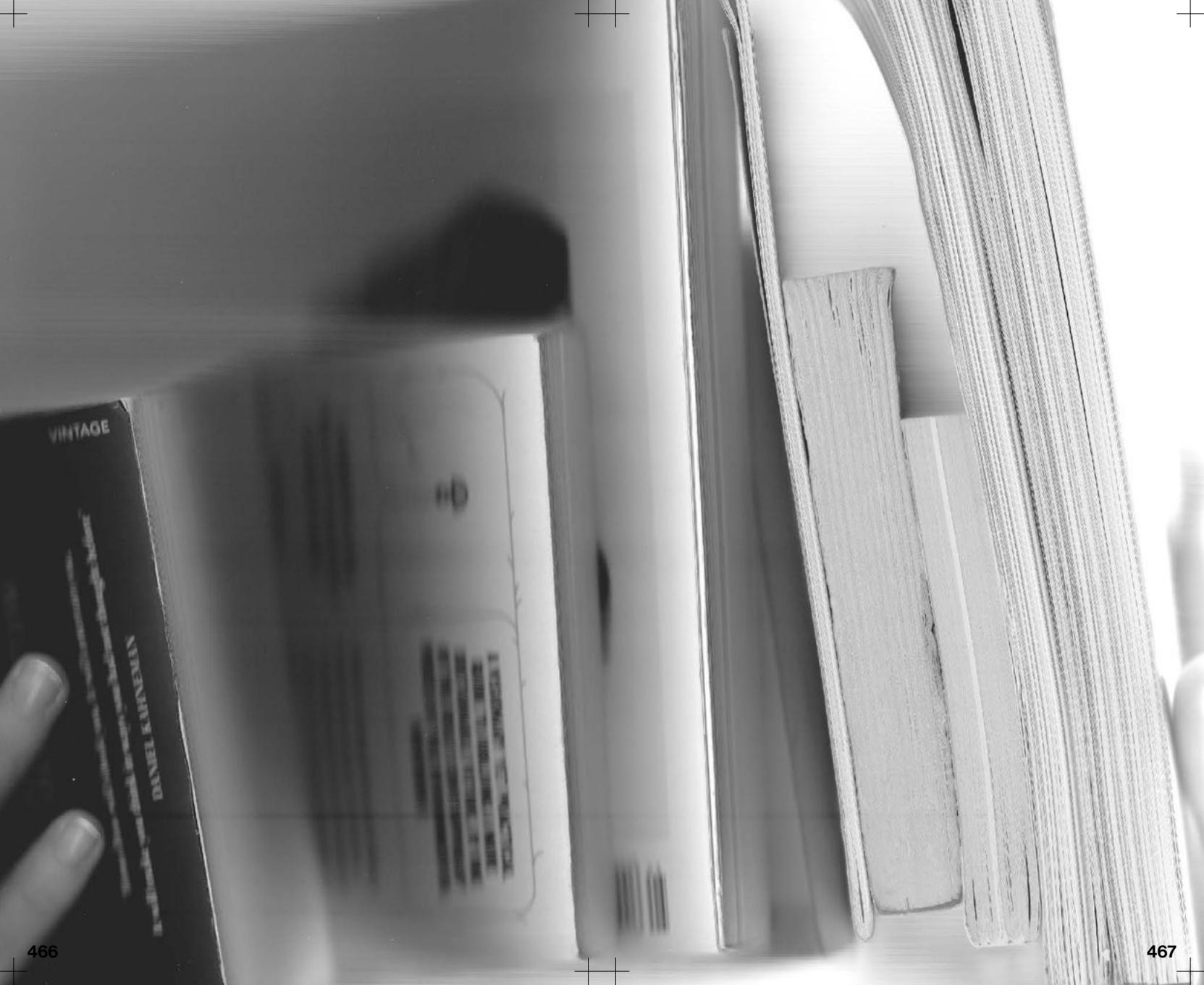
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TRANSLATION

A system of rotation of information used as a methodology, to convey information from one language to another, whether it be code, to spoken word, to non-verbal language, between machines, humans, and living organisms.

MODES OF COMMUNICATION

Intricately connected with language, modes of communication are defined by the tools which enable humans to mediate conversations between the online and offline.

HYBRID ENVIRONMENT

A space within which a radical change in behaviour and properties of matter can happen, redefining its meaning and role within its environment.

IN-BETWEEN SPACE

Is represented by the points of tension constantly forming, to give appearance on topics that are core to conversations around cities, people, design, and preferable futures. An in-between space is a middle ground.

CRITICALITY

Is a position possible to take when enough information is gathered together to give a holistic view.

ECOLOGICAL INTERACTIONS

Ways in which an organism interacts with its environment. These interactions are critical for the generation of a biodiversity.

DIGITAL INTERACTIONS

A reciprocal effect created by the use of digital devices.

LINK

A space to bridge ideas, generate new thoughts, engage in conversations and reflect on those intricate connections found in those spaces in-between.

LAYERS

Layers of visibility are created by a complex structure of information and used to translate between those layers.

SEMIOTICS

A study of the relationship of language, and other signs, to their meanings.

COLLABORATION

The investment in establishing a strong relationship between two individuals who seek to learn and share to build on each other's skills and knowledge. It is a form of exchange and symbiosis.

MORPHOLOGY

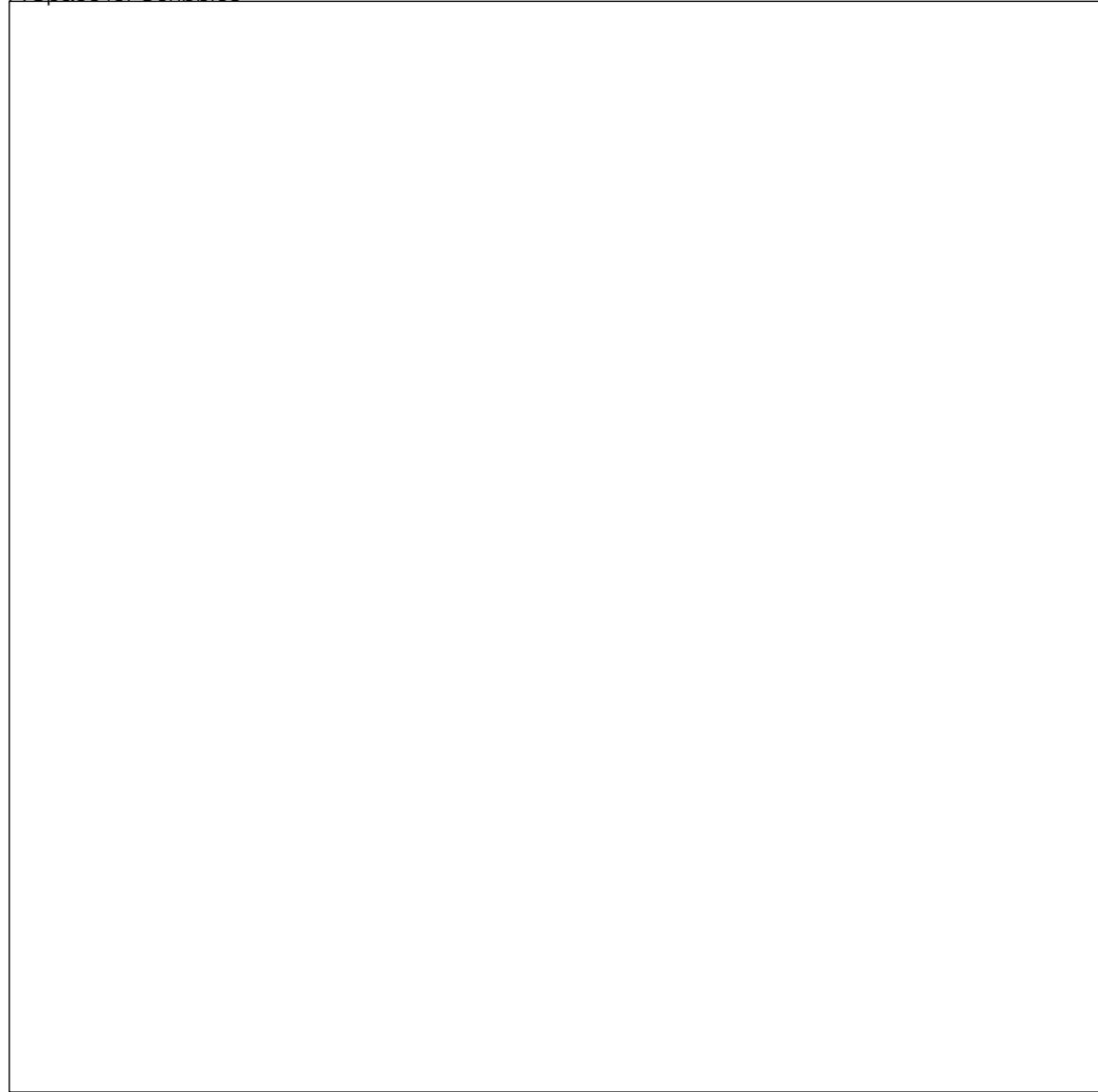
Defines the form and structure of an element, a word or a piece of information.

EXPERIMENTATION

A way to embody creativity.



A Space for Scribbles



We would like to thank everyone who has helped us in the process of making this project tangible. We are also immensely grateful for all the support we have been getting along the way from contributors, professionals, friends and family.

We would love to know what came into our readers' minds between the lines and pages of this book. If you'd like to contribute to this project with your own thoughts, scribbles, notes, questions and critical comments, please send to us scans of the 'in-between space' and we will share it amongst others reflections, in order to continue the flow of information.

TRANSCRIPT

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Julia Bertolaso

PUBLISHED

2021 by LINK

DIGITAL EDITION

[link-journal.com]

More detailed information will
be shared as part of the project
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Concept, designing,
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