How distributed design is changing the way makers and designers approach collaboration, tools and the market.

Edited by Kate Armstrong, Tomas Diez, Lisa Goldapple, Alessandra Schmidt & Christian Villum

PULL
CTRL+C
CTRL+V
EDIT
CTRL+S
PUSH

“The future is already here – it's just not very evenly distributed.”

William Gibson, science fiction novelist

The good news? It can be.

DESIGN REMIX SHAPE REPEAT

How distributed design is changing the way makers and designers approach collaboration, tools and the market.

Edited by Kate Armstrong, Tomas Diez, Lisa Goldapple, Alessandra Schmidt & Christian Villum

CONTENT

02 DISTRIBUTED DESIGN IN PRACTICE

03 PLATFORM ECOSYSTEM

INTRODUCTION – CONSIDER IT DD-DAY FOR MASS PRODUCTION AND GAME OVER FOR THE ‘TAKE, MAKE, DISPOSE’ MODEL.

Welcome by co-editors Tomas Diez, Christian Villum, Kate Armstrong and Alessandra Schmidt

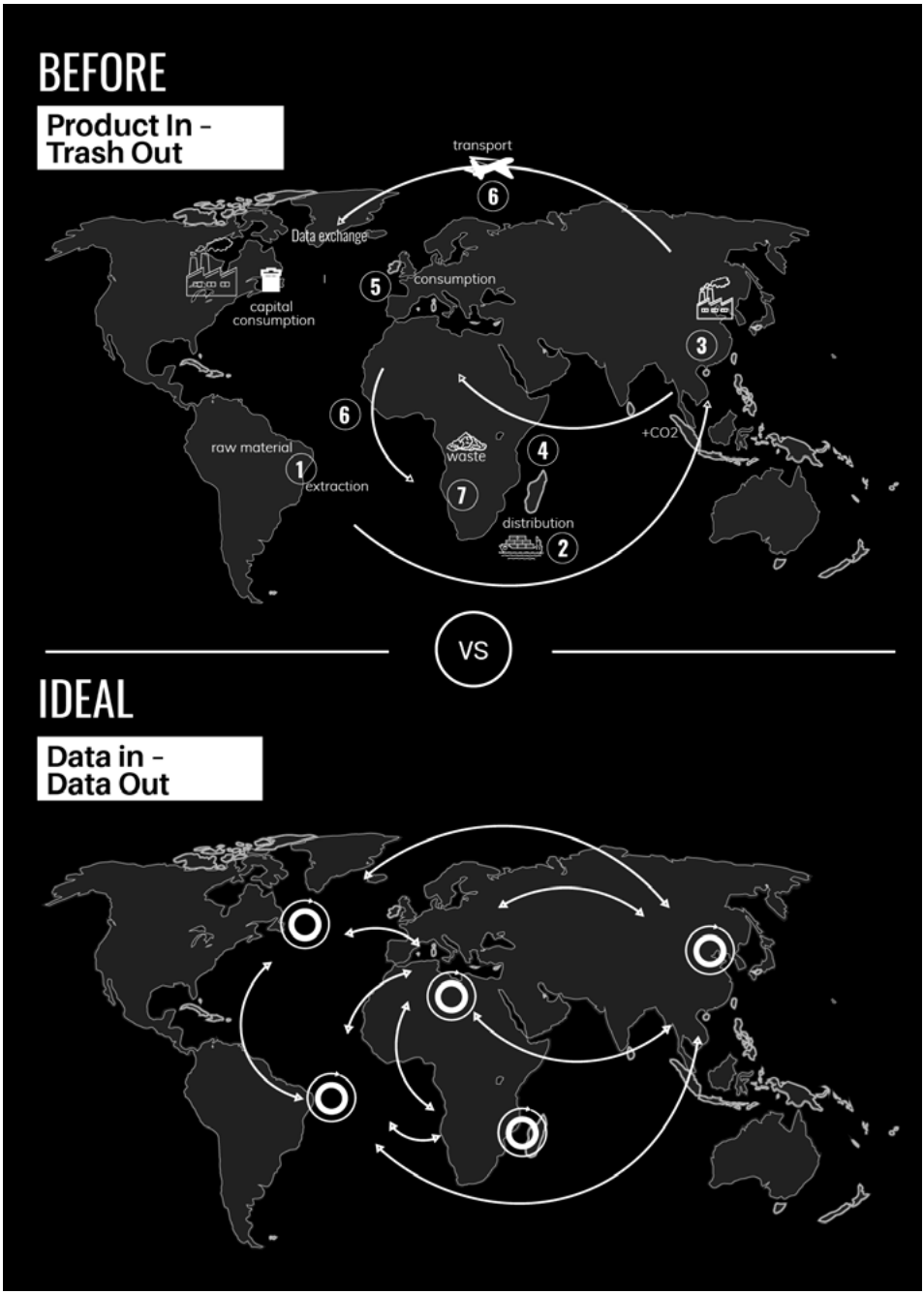


Figure 1 The shift from PITO to DIDO, Fab City Whitepaper

This is the second in a series of four books developed within the Distributed Design[1] platform. Distributed Design (DD) allows creatives, designers, makers and innovators to participate in the creation of a new model of production and consumption, in which "bits travel globally, while atoms stay locally".

The Distributed Design project is funded and supported by the Creative Europe program of the European Commission[2]. Each of these four books (published annually) will explore the advances of the platform. In our first book, 'Fab City: The Mass Distribution of (Almost) Everything' (2018), we introduced the overarching themes supporting the idea of Distributed Design as a new practice emerging from the digital revolution in fabrication, communications and computation. This book serves as an entry point into the state of the art.

The DD model challenges the existing linear paradigm of the First Industrial Revolution and its associated phenomena; patenting, access to fabrication tools, supply chain distribution, value chains and technological development. We live in a moment of technological and crisis convergence. The emergence of Industry 4.0 and the global shift away from fossil fuels; stress in natural ecosystems; climate change and over-consumption has raised questions about the nature of and culture around the products we buy, use and dispose of – as well as the support systems in which they circulate globally. Through the Distributed Design approach, we are promoting, implementing, researching and developing alternatives to mass production and linear consumption models after 200 years of Industrialisation.

Distributed design is one outcome of the intersection of two global trends: the maker movement and the digitisation of the design discipline.

Figure 2 Makers at Danish Design Centre, photo by Agnete Schlichtkrull under a Creative Commons BY-NC license

We contextualise this action-based research in a wider framework of the new urban model of the Fab City Global Initiative[3]. Created in 2014, it proposes a shift in the urban paradigm from 'PITO' (product-in, trash-out) to 'DIDO' (data-in, data-out). Fab City focuses on the movement of data, use of local material supply chains and digital fabrication as an alternative to the movement of materials and goods from production to consumer. In the case of design, this not only provides consumers with more control over their final products by allowing them a voice in the production process, but can also provide designers access to collaborators and tools across global infrastructure networks. This urban model can provide solutions to issues of social and environmental inequality by lessening our reliance on centralised systems and scarce resources to ultimately improve life.

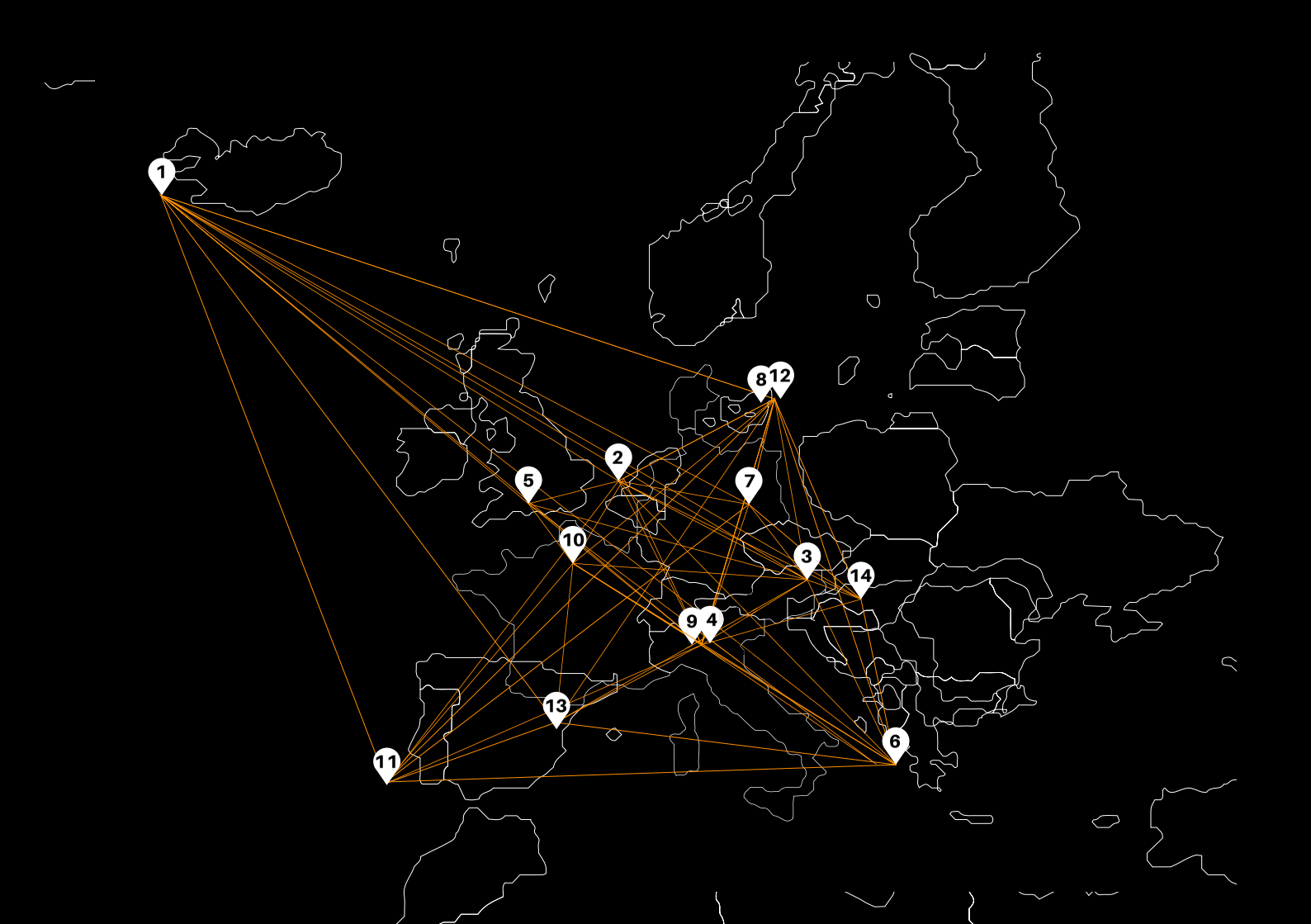
Distributed Design is a phenomenon that integrates design skills and the 'making' approach to enable the development of new entrepreneurial types of professional producers. On one hand, designers acquire more technological and practical skills. On the other, makers evolve their design attitude and capabilities. This convergence is generating new markets, which require new business models and distribution models. In turn, this breeds new ways of working, thinking and valuing, which are explored in the observations, research and case studies presented in this book. These accounts come from members and associated members of the Distributed Design platform, who gather from cultural organisations, industry and educational institutions to advocate for Distributed Design, and foster the role of European creatives in actively shaping this emerging field.

BOOK PROCESS –
COLLABORATING ON CONTENT

This book collates opinions, thoughts, case studies and research from the emerging field of distributed design. The Distributed Design Platform is an initiative lead by Fab Lab Barcelona at the Institute of Advanced Architecture of Catalonia and co-financed by the Creative Europe Programme of the European Union. It collects 14 members from across Europe who collectively articulate the field of distributed design. The content of this book was created collaboratively by these members and other associated members of the Platform, using the distributed technology of GitBook[4]. Put together in this way, its development become another case study that explores how distributed technologies can aid traditional publishing and content creation.

You can read this any way you like, but we suggest you explore the pages using the following Glossary to feed your knowledge, and refer to the values to guide your understanding of our subject's far-reaching impact. This is how we, the collective of authors, editors and advisors, have produced a Distributed Design book in a distributed manner.

Yes, that’s truly meta.


1
8
12
2
5
7
10
3
14
9
4
13
6
11

MAP OF MEMBERS –
DISTRIBUTED DESIGN

We live in a moment of technological and crisis convergence. The emergence of Industry 4.0, the global shift away from Fossil Fuels, climate change, stress in natural ecosystems and overconsumption have raised questions about the nature and culture around the products we buy, use and dispose of and the support systems in which they circulate globally. Through the Distributed Design approach, we are promoting, implementing, researching, and developing alternatives to mass-production and the linear consumption models after 200 years of industrialisation.

01 – Innovation Center Iceland
Reykjavík, Iceland

02 – Pakhuis De Zwijger
Amsterdam, Netherlands

03 – Happylab
Vienna, Austria

04 – Polifactory
Milan, Italy

05 – Other Today
London, United Kingdom

06 – P2P Lab
Ioánnina, Greece

07 – re:publica
Berlin, Germany

08 – Danish Design Centre
Copenhagen, Denmark

09 – OpenDot
Milan, Italy

10 – Ars Longa
Paris, France

11– Politecnico de Lisboa
Lisboa, Portugal

12 – Copehagen Maker
Copenhagen, Denmark

13 – IAAC | Fab Lab Barcelona
Barcelona, Spain

14 – FabLab Budapest
Budapest, Hungary

GLOSSARY
ENTER THE WORLD OF DISTRIBUTED DESIGN

By Lisa Goldapple

Can't tell the difference between the Fourth Industrial Revolution and Industry 4.0? Going in circles when it comes to the circular economy? Get to know the Distributed Design terminology with this glossary of the most important terms in this book.

DISTRIBUTED DESIGN (DD)

That's why we're here. As a platform, we're exploring how, and in which ways, the distributed design concept has evolved, and how we might find a secure place for it in the world of design.

Check case on page 39, 53, 56,

3D PRINTING

A milestone in modern making history that comes under the umbrella of ‘additive manufacturing’: the process of building a solid object from a computer aided design model by adding materials, one thin layer at a time.

Check case on page 84, 88, 118

Check platform on page 173

ARDUINO

This tiny blue development board has revolutionised making – spawning a community where code, resources and advice are shared freely. The popular open source platform consists of a programmable circuit board and software to write and upload easy computer code.

Check case on page 41, 77,

BITCOIN

Don’t be confused by the gold coin pictures. Bitcoin is a decentralised virtual ‘cryptocurrency’. Without a central bank, it can be sent between users on the peer-to-peer network without the need for intermediaries.

BLOCKCHAIN

An incorruptible digital ledger of economic transactions stored in a distributed network, programmed to record not just financial transactions, but virtually everything of value.

Check platform on page 171

CIRCULAR ECONOMY

An alternative regenerative system prioritising the longevity of goods by sharing or recycling – in contrast to the linear economy’s ‘take, make, dispose’ model of production.

Check platform on page 146

COMMONS-BASED PEER PRODUCTION (CBPP)

New model of socioeconomic production in which large numbers of people work cooperatively, usually over the internet.

Check case on page 67

COMPUTER AIDED DESIGN (CAD)

What it sounds like: a method of design where a computer program is used to create 3D objects in the form of electronic files.

DIGITAL FABRICATION

Check case on pages 53, 58, 92, 124

A manufacturing process in which the machine is controlled by a computer. Common machines include 3D printers, laser cutters and plastic-squirting CNC (Computer Numerical Control) milling machines.

DIGITAL TRANSFORMATION

A radical rethinking of how to use digital technology, people and processes as we move from the physical to digital. Effects extend beyond businesses – to society as a whole.

Check case on page 83

DISTRIBUTED AGENCY

Check case on page 84

The actions or operations of a range of different individuals often with different motivations, interests and in different places combine to create an outcome they all want. Can be coordinated or by chance.

ETHEREUM

Global, blockchain-based platform that creates decentralised processes to protect against censorship, fraud and hacking. With it, you can write code that controls money, and build applications accessible anywhere in the world.

FAB CITY

A creative collective of pioneers and makers who use digital technology to make the world more self-sufficient – collectively – through opening Fab Labs in the hearts of cities, towns and villages. The aim is to provide citizens with resources so they can eventually produce everything they consume.

Check case on Page 114

Check platform on Page 146

FAB LAB

Local fabrication laboratory or urban micro-factory that aims to democratise access to personal and collaborative invention, using digital technologies to make ‘almost anything’. The first ever lab was set up in 2003 in Boston within MIT’s Center for Bits and Atoms.

Check case on page 92, 98, 132

Check platform on page 145

FORK

To make a copy of a repository and freely experiment on it, using a previous design to make something new. At the heart of open source is the idea that by sharing code we can make better, more reliable software.

Check case on page 41

Check platform on page 151

FOURTH INDUSTRIAL REVOLUTION

New technologies are fusing the physical, digital and biological worlds; impacting all disciplines, economies and industries. Previous industrial revolutions liberated humankind from animal power, made mass production possible and brought digital capabilities to billions.

Check case on page 51

GITBOOK

You're reading a book that was created with a tool for creating and publishing documentation of open source projects, physical and digital books.

GITHUB

Development platform to host and review code, manage projects and build software alongside 40 million developers – as they collaborate together openly.

Check case on page 10

Check platform on page 148

HACKER

Someone who uses computers, networking or other skills to overcome a technical problem, usually through unauthorised access. It's not just about bringing down systems, but participating in forums to exchange understandings.

Check case on page 39,

Check platform on page 149

HACKERSPACE

Community-operated physical spaces where hackers convene to share their interest in tinkering with technology, meet and work on their projects, and learn from each other.

INDUSTRY 4.0

The 'intelligent industry' fosters smart factories; machines are augmented with wireless connectivity and sensors, connected to a system that can visualise the entire production line and make decisions on its own.

INTERNET OF THINGS (IOT)

System of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with the ability to transfer data over a network without requiring human interaction. There are concerns about privacy and security; not everything is as ‘smart’ as it seems.

Check case on pages 85, 88, 130

Check platform on page 171

MAKER

Put simply, a person who makes or produces something. Today's makers are skilled in coding, embedded electronics, design and all things computer-related.

Check article on pages 42, 75, 92, 98, 105

MAKER MOVEMENT

The resurgence in making can thank the rise of the internet, as the sharing of ideas, projects and knowledge leads us to mass collaboration in the creation of a movement.

Check article on pages 48, 54, 56,

Check platform on page 155

MAKERSPACE

Collaborative work space inside a school, library or separate facility where makers, designers and innovators make, learn, explore and share.

Check case on pages 88, 92, 98, 123

Check platform on page 177

MISSION-ORIENTED INNOVATION

Fresh approach to questions that focus on the potential of strategic public sector investment to catalyse economic activity, spark innovation, solve public problems, and lay the foundations for future economic growth.

MOONSHOT

Ambitious, exploratory and ground-breaking project – sometimes deemed ‘crazy’ – designed to solve some of the world's hardest problems using breakthrough technologies.

MOORE'S LAW

In 1965, Gordon Moore, co-founder of Intel, proposed that the number of transistors on a silicon chip would double every year. Put simply: overall processing power for computers will double every two years.

Check platform on page 169

NON-RIVAL GOODS

Public goods that are consumed or used without reducing the amount left for others. Non-rivalrous good can be used again and again at almost no additional cost. Examples are designs, movies, television, fireworks, algorithms and patents.

Check case on page 67

OPEN SOURCE

Decentralised software development model that encourages open collaboration, with products such as source code, blueprints and documentation freely available to the public and made available for use or modification.

Check case on pages 42, 58, 68, 72, 89, 106

Check platform on page 154

PARAMETRIC MODELLING

Components are interlinked and automatically change their features with others. The designer only needs to edit one parameter in an equation for the other dimensions to adjust the geometry automatically.

Check case on page 92

PLATFORM

A group of technologies that are used as a base upon which other applications, processes or technologies are developed, or a network of organisations working together to progress a topic from multiple perspectives across multiple localities – like Distributed Design.

Check case on page 48, 111

PROTOTYPING

Creating an early sample, model or release of a product built to test a concept or process – from design to electronics to programming.

Check case on page 76, 83, 124

REPRAP

Shorthand for ‘replicating rapid prototypers’, the open source 3D printers use a fused filament fabrication process and are capable of printing out their own parts.

STL FILE

The most common 3D printer file format. Generated by a CAD program, the ‘stereolithography’ file format describes the surface tiling or layering of geometric shapes and patterns of a three-dimensional object. Also referred to as ‘Standard Tessellation Language’.

Check platform on page 156

TRANSPARENCY

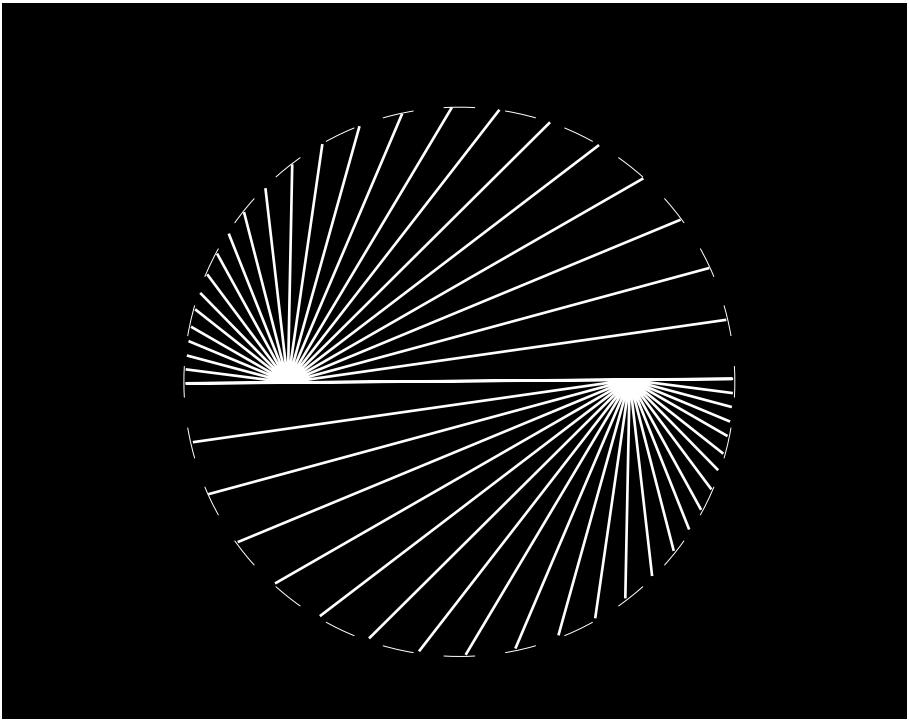
The resurgence in making can thank the rise of the internet, as the sharing of ideas, projects and knowledge leads us to mass collaboration in the creation of a movement.

Check article on page 48, 59,

VERSION CONTROL

A system of recording changes to a file or set of files over time so you can recall specific versions later.

Check platform on page 154

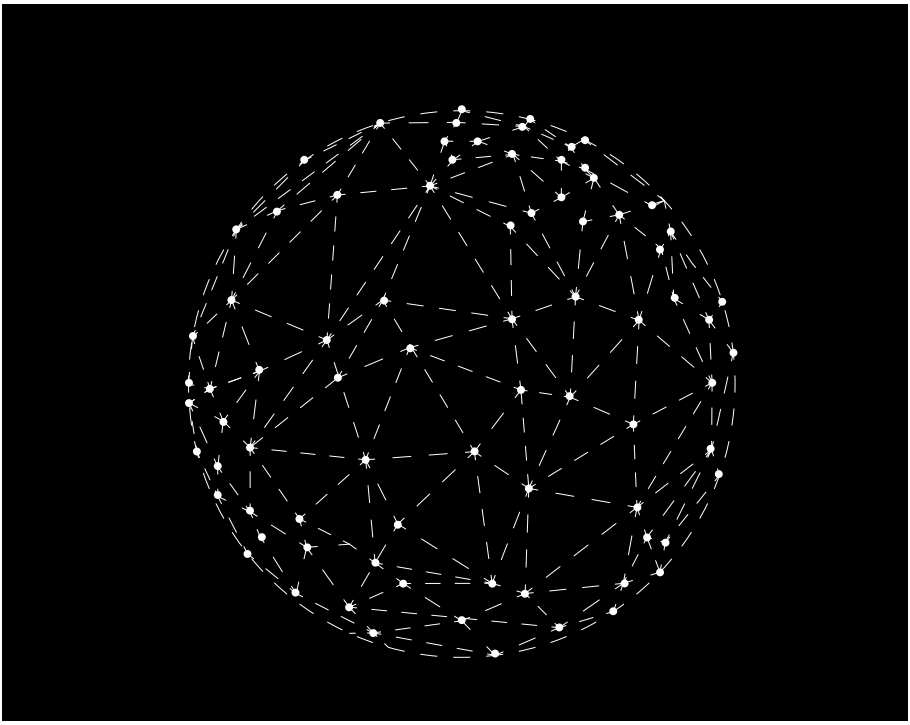


Value 01

SUPPORTIVE

We create opportunities for designers and makers who are working on new approaches to product development and commercialisation.

We’re making tools, resources, events and advocacy to help establish the distributed design field as a viable market for designers and makers.

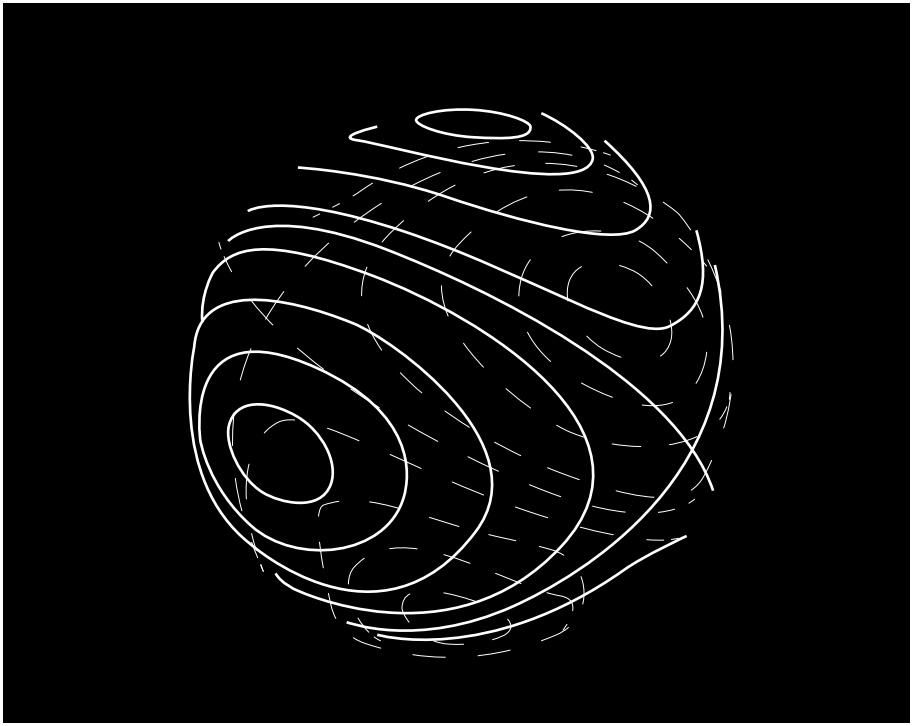


Value 02

ECOSYSTEMIC

We facilitate an online and offline ecosystem of tools and methods to connect designers, makers and manufacturers with new emerging markets.

We facilitate an online and offline ecosystem of tools and methods to connect designers, makers and manufacturers with new emerging markets.

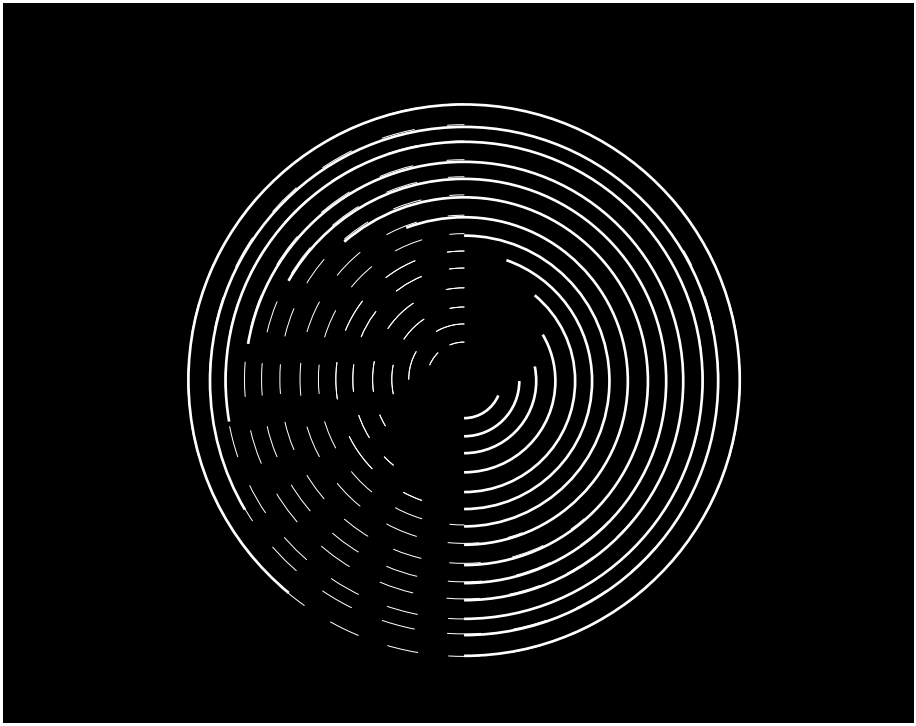


Value 03

OPEN

We’re into making design accessible by championing culture that benefits makers, designers and consumers to advance the design discipline as a force for change.

We believe in documentation and open source not only as a design practice, but as a community building tool; we collaborate, co-create and understand that transparency is important.



Value 04

REGENERATIVE

We're rethinking traditional production and consumption practices by considering design as a system. From fabrication to distribution, we're exploring low kilometre supply chains, open source distribution and thinking carefully about the materials we choose.

We want to make good quality products that last for people who will love them for generations, finding a use for their materials once their product life is over, not letting them go to waste.

STATE OF THE ART – OF DISTRIBUTED DESIGN

By Tomas Diez and Christian Villum

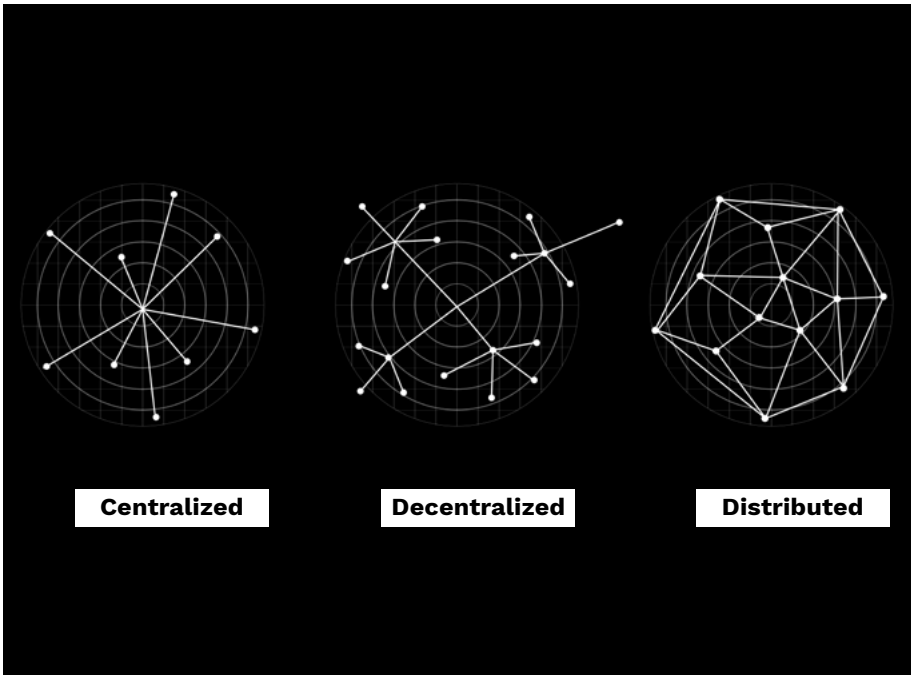


Figure 1 Centralised, decentralised & distributed network models by Paul Baran (1964), part of a RAND Institute study to create a robust and nonlinear military communication network.

You might recognise the spider web-like images above as some of the most widely used illustrations when it comes to explaining the topology of the world's computation and communications networks. The same images can be used to explain how the physical worlds of cities, products and supply chains are designed and manufactured by humans – and to show how the current paradigm of production operates somewhere between a centralised and decentralised model.

Centralised, decentralised or distributed?

- Radio and television models follow the model of a centralised or decentralised model.
- The Internet was designed as a distributed network.
- The World Wide Web (a way of accessing information over the medium of the internet) is in parts both decentralised and distributed.
- In industry, the current paradigm follows the decentralised model, moving towards a more centralised way of production while maximising benefits and capital.

Moving from centralised to distributed models

Medieval cities used to be independent centralised centres that were not considered communications 'nodes', as they were not connected with larger networks, at least at scale. After the invention of the printing press, cities could start to develop a sense of connection and exchange of knowledge. This renaissance could be considered a byproduct of the spread of knowledge that happened centuries before, but also the beginning of the industrial era.

Industrial cities operated as decentralised nodes of production, with their own capacity to satisfy most of the needs of local populations – but connected with larger networks of supply chains at a global scale. This explains the development of nation states as strong organisational powers. It was during the 20th century, and thanks to the globalisation process and efficiencies in time and profits, that cities were able to take the production of food and goods out of the cities, leaving the responsibility of supplying the needs of locals to the global market. As a result, corporations became stronger. Organisations could even establish and remove national governments.

The way we organise our production of knowledge, energy, goods, food and the resources needed to sustain life on this planet is directly related to the organisation of power – whether economic, political or social. It seems that we are on the verge of reorganising the way we produce almost everything,

Figure 2 Distributed manufacturing tools at Danish Design Centre by Agnete Schlichtkrull under a Creative Commons BY-NC license

thanks to the convergence of technological advancements and the need to solve the fundamental challenges of our times. We are moving to a more distributed model, with unexpected consequences in the definition of new roles of individuals, communities, organisations, political movements and even corporations.

The rapid drive of technological transformation sweeping the planet is underpinned by a range of what could be referred to as social undercurrents, or new norms for interaction and collaboration. One of these is arguably the global wave of digital collaborations that can be seen in the open source movement. Hundreds of thousands of people act as nodes in gigantic digital value creation networks that produce assets such as knowledge, science, software, services, virtual content and physical products. Above all, a rapidly expanding new commons of open design is available for anyone to build on. The classic models of design taking shape inside organisations are increasingly being supplemented – and will potentially eventually be replaced – by decentralised and distributed practices that dramatically accelerate development pace and innovation speed.

To understand the concept of **Distributed Design** go to page 20

Two parallel narratives define '**distributed design**' at this early stage:

To understand the concept of **Hacker** go to page 26

01. The maker/Fab Lab vision and global community: Builds on the bottom-up DIY movement and white hat **hacker** ethos of self-empowerment – and the co-creation spirit of tackling technology head on – in an effort to improve the world, one Arduino project at a time.

02. The web3/decentralisation/crypto crowd: Combines two very different arenas – on the one hand, the cyberpunks and tech-libertarians who originally dreamed of digital freedom utopias; and on the other, big money that has seen the light in new friction-less, unregulated and untaxed economies of scale.

Both narratives hold interesting visions for the future, and, arguably, find a shared denominator in the concept of distributed design – which is, in many ways, rooted in a more philosophical understanding of what super-connectedness and abundant computing power may do to improve the world.

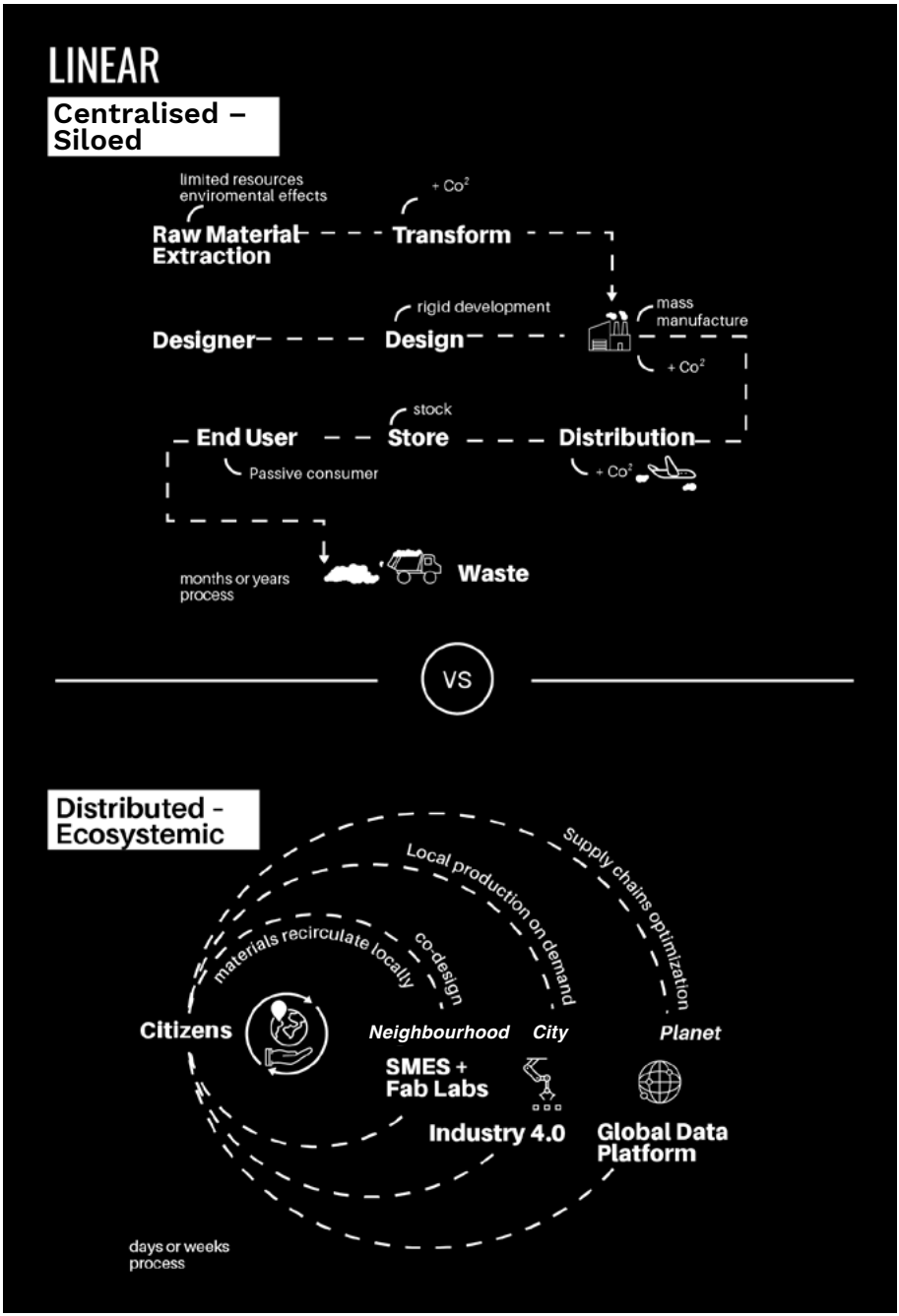


Figure 3 From PITO to DIDO, Inspired by Fab City Whitepaper

However, it seems that this techno-optimism has been plagued with unintended consequences of the digital revolution. Computers need rare minerals to be built, which are scarce and expensive to extract. When produced at scale, computers are causing both an ecological and a social disaster; these need to be reduced to its minimum, or to be hidden from consumers. Access to information lives inside another paradox. It can unleash the spread of knowledge and start a new renaissance, or it can create new mechanisms to manipulate entire populations to buy certain type of products or bring votes to political leaders. We live in a paradox of convergence, in which old philosophical understandings of the world and the ways to operate it live together alongside these new forms of production and distribution. While they are promising, they often seem to be held on hold as the old figures out how to deal with the new.

One thing that is becoming very clear is that this philosophical understanding embeds a strong fervour towards finding a more sustainable path – one that builds on the distribution of knowledge; and the capacity that 'bits' have to transform visions of the world and enable the articulation of collaboration at global scale. The relationship that humans have with 'atoms' that are extracted or dumped into ecosystems is also being redefined, and changing the many futures of humans and other species that share spaceship Earth. A distributed approach to design and manufacturing has implications both at local and global scale, and we have seen some of those effects already happened during the last couple of decades.

Here are a few examples that are referenced in later chapters:

— The Rep-Rap project[5] and 3D printers have made rapid prototyping of rapid prototyping machines accessible to millions of people, unleashing a huge global market of entrepreneurs around additive manufacturing. However, large corporations are trying to control this under the old patenting system and pushing to a centralisation of supply chains.

To understand the concept of **Arduino** go to page 20

— The **Arduino**[6] electronics prototyping board has made it possible for anyone to learn to program computers and understand the basics of electronics. The open source platform allows anyone to share their projects, but also enables anyone to '**fork**' the design of Arduino to create other new projects. The Arduino team has struggled to collaborate with

To understand the concept of **Fork** go to page 24

large electronics corporations, as they try to absorb an **open source** philosophy inside their very industrial mindset.

— Fab Labs[7] have been making digital fabrication accessible to everyone. We will dedicate a deep look to this network later on.

— Products such as OpenDesk[8], Kniterate[9], Smart Citizen[10], Nervous Systems[11], Ultimaker[12], OtherMachines[13] and Precious Plastic[14] are also becoming part of a new form of production and distribution.

To understand the concept of **Open Source** go to page 29

In this book we would like to extend the **makers**' approach to distributed design that was laid out in the first book, Fab City (2018), but also discuss current movements.

To understand the concept of **Makers** go to page 27

Figure 4 A maker takes to the tools in Denmark. Image by Agnete Schlichtkrull under a Creative Commons BY-NC license

We will focus on new business models that drive the most advanced distributed design

We will focus on new business models that drive the most advanced distributed design practitioners – makers, designers and crafters – showing how they represent a more equitable and sustainable way of producing goods; and how they are proof testing a new paradigm that may ultimately replace the current centralised and siloed norms.

To write about the state of the art of distributed design is quite challenging. As this book is written, edited and printed on demand, many practitioners are collaborating at scale within the distributed infrastructure of workshops – sharing files through open source repositories, and willing to be copied and remixed. This is in stark contrast to the industrial era's designer and creative, who would look for exclusive ownership of ideas and manufacturing capacity.

The challenges ahead rely on the capacity for distributed design and manufacturing to become the new industrial paradigm of the 21st century – based on values that follow a different type of growth; and relationships between each other, and with our ecosystems. In the face of huge social challenges and climate emergency, we believe that alternative models of production and consumption deserve to be tested and experimented with in cities around the world.

Over the last two years, Distributed Design has been enabling this process, starting with partners in Europe and scaling up collaborations in Latin America, Asia and Africa – as well as regions that have their own approaches to local manufacturing, but are struggling to not to be dragged back into the 20th century industrial paradigm. The story of Distributed Design needs to be written, developed and turned into a living repository of recipes on how to make our communities, cities and regions better places for humans and ecosystems to sustain life.

DISTRIBUTED DESIGN IN PRACTICE

OUR WELLNESS

DISTRIBUTED DESIGN FOR DISTRIBUTED CARE –

HOW IS DISTRIBUTED DESIGN BEING USED TO ENHACE THE PERFORMANCE OF PRODUCTS THAT HAVE A DIRECT EFFECT ON OUR HEALTH AND WELLBEING?

By Massimo Bianchini, Stefano Maffei and Patrizia Bolzan

Distributed design is enhancing the performance of products that have a direct effect on our health and wellbeing. It might seem surprising that an initiative that promotes the creativity of designers, makers and Fab Labs[50] can be concerned with health and wellbeing. Yet, over the past decade, a growing number of creators in Europe have been using **open** and distributed design-driven innovation to create solutions that really care.

To understand the value of **Open** go to page 34

Distributed design requires people to question themselves, to overcome their limitations and to experiment with new ways of making and doing things. Creators and innovators make use of digital-enabling technologies as digital fabrication platforms, **prototyping** spaces and community-based labs to make tools and tech accessible. Solutions are created on demand and on site, and are then shared with others. When it comes to using distributed design for health, wellbeing, prevention and lifestyle education, open source solutions directly involve medical-scientific research specialists and the health system, alongside users or patients.

To understand the concept of **Prototyping** go to page 30

Digital transformation increases innovation in designers. When that innovation is mission-oriented and mindful, it can support the autonomy and quality of life of elderly people, those affected by chronic and rare diseases or disabilities, as well as their families and caregivers. Prostheses, aids and tools can assist with eating, sleeping, walking, washing, working, hobbies, sports and therapeutic activities related to psychophysical wellbeing.

To understand the concept of **Digital Transformation** go to page 23

As well as spurring independent patient innovation and user-driven healthcare, today's digital transformation allows patients to access and exchange data and information; create a dialogue with health services and ministries; organise and participate in associations, and raise funds to develop scientific research. The health system is becoming increasingly advanced when it comes to monitoring the

body and its physical performance, with biometric data collected by interactive personal and environmental devices.

The development of eHealth and the spread of technologies, such as **3D printing** in hospitals or prosthetic centres, can offer new opportunities for creative professionals to design products and services. In parallel, the growth of spaces such as Fab Labs offers designers and makers an opportunity to independently realise solutions to improve quality of life, or reduce physical and cognitive gaps. This also defines a new field of opportunity, not only for users and patients, designers and makers, but for service and manufacturing companies, public bodies and institutions. '**Distributed agency**' between humans, machines and programs allows new communities to develop, as well as new potential markets.

To understand the concept of **3D printing** go to page 20

To understand the concept of **Distributed Agency** go to page 23

Nowadays, there is a growing demand for smart and personalised healthcare products. User innovation in health and wellbeing is a more complex process than mass-customisation, on-demand manufacturing based on biometric data, or digital participation through apps or social media. If not standardised, some solutions need alternative resources and facilities to be designed, prototyped and distributed. That's where open knowledge and design, open software and hardware, digital fabrication and co-creation processes come in.

Innovation processes are mostly driven by personal motivations, collective missions and social initiatives, either because the solution does not yet exist in the market, or is not economically accessible. The development of open source solutions for health and wellbeing is almost never linear, often characterised by the aggregation of people with creative and technical skills coming together with organisations such as patient, cultural and sporting associations, healthcare specialists and technicians.

What all this means is that solutions are becoming more personal, customisable and wearable. Prostheses, orthoses and aids can embed new functions or digital enhancements within fashionable garments and accessories, hybridise everyday objects or become add-ons. 'Augmented' tableware, furniture and furnishing accessories, sporting equipment and walking aids integrate prosthetic or auxiliary components – or 'parasitic' elements that hack existing objects – increasing its usability. Analogue and digital tools can be used for personal or environmental monitoring, prevention and health education, and specialised objects can be created

Figure 1 Render of personalised walking stick TWISTR from Next Steps 2019

to reduce physical or cognitive gaps, or stimulate training and rehabilitation.

For example, Next Steps[51] is a collection of open source walking aids and functional add-ons for crutches; **Internet of Things** (IoT) devices that augment the mobility of a rollator; and personal 3D printed walking sticks. Lorenzo's Bike[52] uses digital fabrication to create a personal object – a

To understand the concept of **Internet of Things** go to page 27

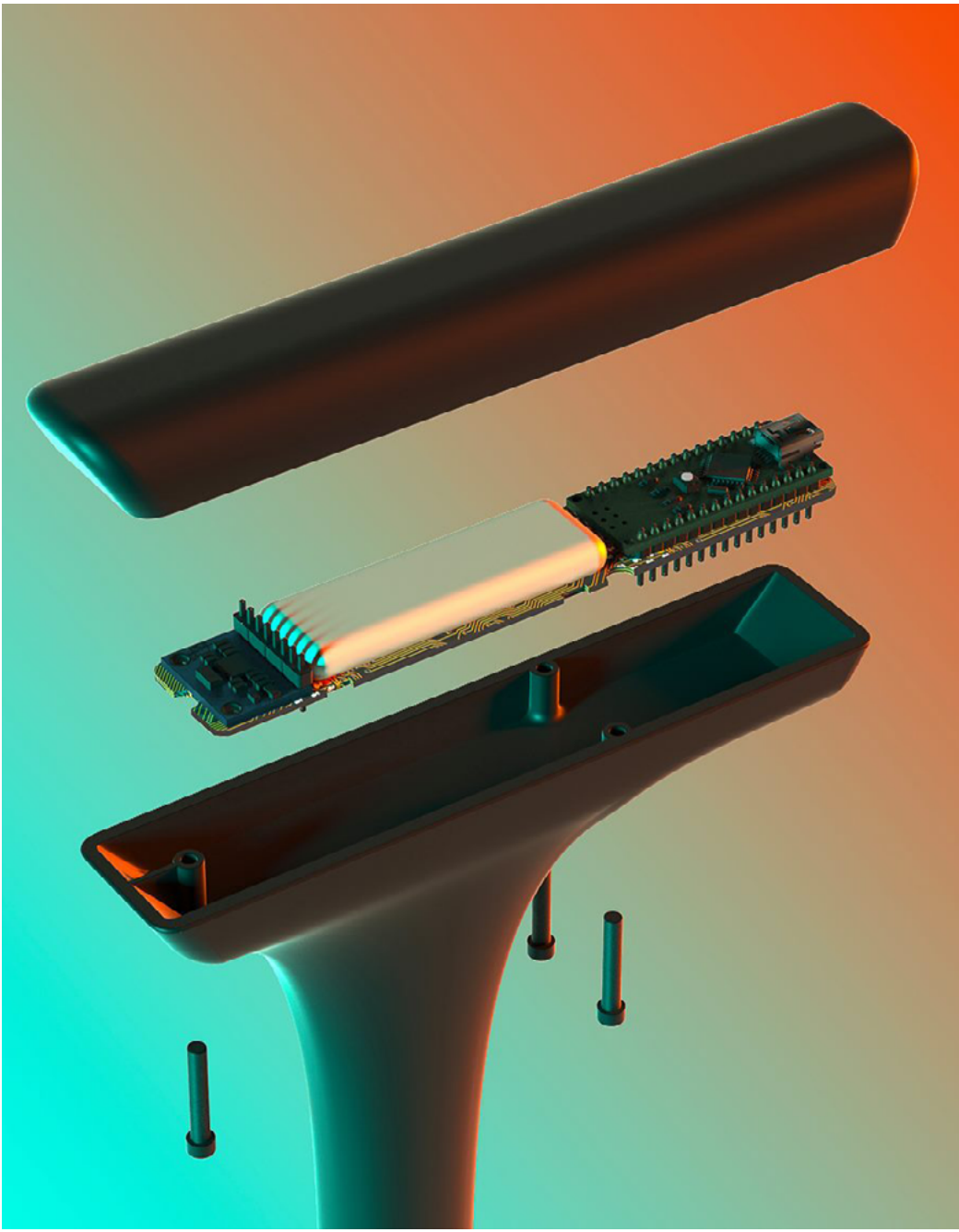


Figure 2 Render of personalised walking stick TWISTR from Next Steps 2019

bike – that supports rehabilitation. Mole Mapper[53] is what it sounds like, a small tool that monitors skin health. Digitally Speaking[54] is smart underwear equipped with safety tech to address the issue of women's safety across the globe. More about these later.

So, what can we learn from this promising direction in the innovation of distributed design for care and wellbeing?

— **Not only medical devices:** Distributed design promotes and stimulates a biodiversity of solutions, exploring the theme of prosthetics, orthosis, medical devices and a new generation of personal objects. Many solutions – especially in the field of healthcare – are influenced by the regulatory system, which is fundamental to protect users and patients. This is a bottleneck for distributed design, but it is also an opportunity. The development of non-medical devices can be complementary to medical ones. Distributed design can support users and innovators to create solutions that demonstrate how existing rules, standards and market barriers could be reconsidered.

— **Not only functional solutions:** Many solutions are designed following functional and technical requirements, but their aesthetic dimensions can be as important. Healthcare objects and aids tend to become physical extensions of people. Aesthetic personalisation is important, because it characterises the identity of objects and establishes a personal or familiarity for users.

— **Not only complex and expensive solutions:** Many objects and devices are complex and expensive. Distributed design can design solutions that can be adapted from objects already available on the market, taking into consideration open hardware and low cost technologies that are easily accessible for the everyday user and disadvantaged or vulnerable people.

— **Not only new products:** Many objects are unique and irreplaceable owing to a relationship that is established with their users and owners. Distributed design perfectly fits with hacking, repairing and upgrading practices and is compatible with remanufacturing and refurbishing processes.

So what's next? We could be at the beginning of an augmented concept of 'care' where people can develop a distributed awareness, responsibility and participation in the design of innovative open source solutions that work to take care not only of people, but also other living beings and the environment.

Milan, Italy
45.4642° N, 9.1900° E

NEXT STEPS – CO-DESIGNING OPEN-SOURCE WALKING AIDS

By Massimo Bianchini, Stefano Maffei and Patrizia Bolzan

Next Steps[54] is an experimental initiative to develop a collection of open source walking aids, co-created by patients with designers and makers from the **makerspace** Polifactory[55] with Sanofi Genzyme[56] and Associazione Italiana Glicogenosi (AIG)[57]. The team researched the use of walking aids to understand needs, and then held a co-creation workshop with designers and patient innovators to come up with creative solutions.

To understand the concept of **Makerspace** go to page 28

These four projects were presented for the first time at European Maker Faire Rome 2019[58]:

— **Crutch Skins** are removable socks, skins and covers for all kinds of medical crutches, that can be easily personalised using **3D printing**, laser cutting and recycled textile scraps.

To understand the concept of **3D printing** go to page 20

— **The Augmented Rollator** is an **Internet of Things** (IoT) device that can improve the control and mobility of walkers. Once installed on a roller's wheels, it can be activated to facilitate the overcoming of small obstacles, to push uphill, increase braking capacity downhill, and receive basic feedback on obstacles or unevenness of the ground.

To understand the concept of **Internet of things** go to page 27

Figure 1 & 2 Selection of pictures from the design stage of Next Steps, 2019

To understand the concept of **Open Source** go to page 29

— **Crutch Add-ons** are small functional **open source** components, tools and joints that allow patients to use their walking aids in many ways.

— **Parametric Stick** uses digital design and fabrication to create personalised walking sticks sticks with a 3D printed geometrical structure.

Milan, Italy
45.4642° N, 9.1900° E

FABCARE CHALLENGE – OPEN SOURCE HEALTHCARE

By Massimo Bianchini, Stefano Maffei and Patrizia Bolzan

Launched in spring 2018, the FABCARE challenge[65] demonstrates how designers, **makers** and independent innovators can design, produce and distribute open source healthcare solutions – like aids and prostheses with real market potential – by working alongside patients, caregivers and their associations. Then they can be created in **Fab Labs**, combining makers' skills with digital manufacturing technologies.

To understand the concept of **Makers** go to page 27

To understand the concept of **Fab Lab** go to page 24

To understand the concept of **Makerspace** go to page 28

Developed within the Distributed Design platform by the **makerspace** Polifactory[66], and technically supported by Centro Medico Santagostino[67], the challenge first ran from from July to October 2018. A group of over 60 designers presented 21 product ideas. Five of these were selected from an evaluation panel composed of healthcare experts, fab labs, designers and policymakers, in order to be prototyped, then presented at the European Maker Faire Rome[68] and released on distributeddesign.eu. These included medical devices, as well as solutions that provide support and help with prevention or monitoring activities.

Figure 1 & 2 Photo from Polifactory, Project Palpatine, by Francesca Poli and Daniel Sanchez

Figure 3 Photo from Polifactory, Project Dermap, by Mariana Accorsi, Giulia Sala and Giuseppe Valentino

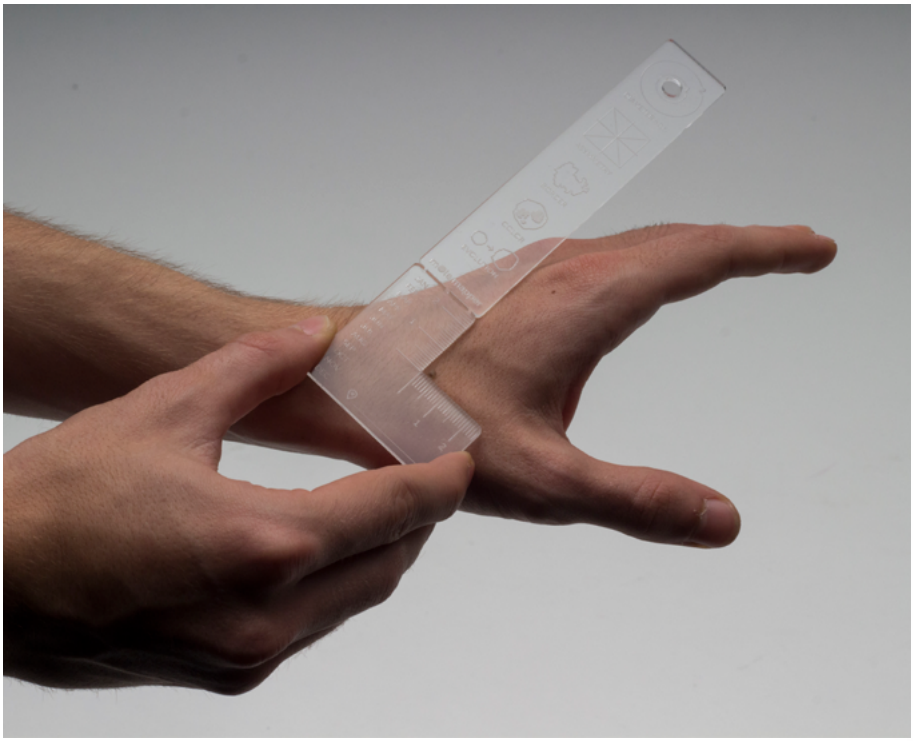


Figure 4 Photo from Polifactory, Project Mole Mapper, by Ilaria Vitali, Mila Stepanovic and Patrizia Bolzan

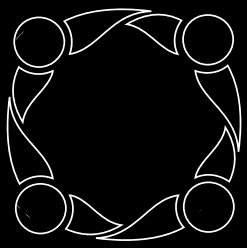
One of the five selected projects was Mole Mapper[69], a small tool that monitors skin health for skin cancer prevention. It was designed by Ilaria Vitali, Mila Stepanovic and Patrizia Bolzan, three young researchers in design from Politecnico di Milano[70]. Self-exams can help people to identify potential skin cancers early, when they can almost always be completely cured. It is important to identify moles that look or feel different than the others on your body, and to routinely visit a dermatologist. Mole Mapper looks for warning signs, what physicians call 'the ABCDE of melanoma', to help spot changes in all types of moles on the body, in particular if they are asymmetrical and bigger than 6 millimetres. It reminds users to look out for changes in moles, like their borders, colour and growth over time.

Mole Mapper can be fabricated in 30 seconds with a laser cut using PMMA (acrylic) scraps. Costing only one euro, it offers an inexpensive, tangible way to promote awareness about melanoma prevention, and can be distributed in 'alternative' (non-medical) places such as beauty centres and tattoo studios. For these reasons, this small object has been shortlisted for the Distributed Design Award 2019[71].

DESIGN REMIX SHARE REPEAT – HOW CAN YOU BE PART OF DISTRIBUTED DESIGN?

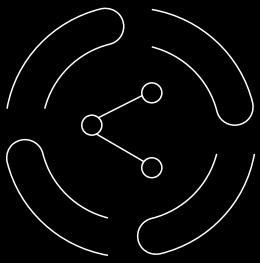
The content of this book should be for everyone. This print version is licenced under Creative Commons Attribution Share Alike 4.0 International.

You are free to:



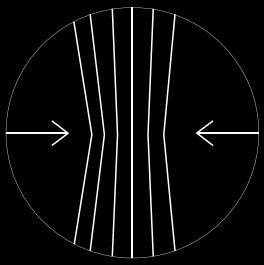
Contribute

Get in touch with our communities and find synergies for collaboration



Share

Copy and redistribute the material in any medium or format



Adapt

Remix, transform, and build upon the material for any purpose, even commercially.[167]

You could probably add to it, improve it, suggest changes or add additional case studies.

This book was created with GitBook and will continue to live there.
This way, you can contribute your knowledge to our book and join the Distributed Design community.

REFERENCES

046
MOVING FROM AN INDIVIDUAL TO A COLLECTIVE WORLDVIEW

'Moving from an Individual to a Collective Worldview', Future of Good podcast, 17 July 2019. https://futureofgood.co/episode-2-moving-from-an-individual-to-a-collective-worldview-with-indy-johar/

046
FIXING EDUCATION AND LEARNING

Coughlan, Sean: 'Surgery students losing dexterity to stitch patients' in BBC News education, 30 October 2018. https://www.bbc.com/news/education-46019429

Schleicher, Andreas: 'Lessons from PISA outcomes' in OECD Observer No 297 Q4 2013. http://oecdobserver.org/news/fullstory.php/aid/4239/Lessons_from_PISA_outcomes.html

Spielman, Amanda: Speech at the V&A, 10 July 2019. https://www.gov.uk/government/speeches/amanda-spielman-speaking-at-the-victoria-and-albert-museum

Rosen, Michael: 'Dear Damian Hinds, so employers value rote learning? Excuse my bitter laugh' in The Guardian, 3 Apr 2018.

https://www.theguardian.com/education/2018/apr/03/employers-rote-learning-schools-michael-rosen

'Meeting technological challenges', HMGovernment report, 2011.

046
DISTRIBUTED DESIGN FOR DISTRIBUTED CARE

Kattel, Rainer and Mazzucato, Mariana: 'Mission-oriented innovation policy and dynamic capabilities in the public sector' in Industrial and Corporate Change, Volume 27, Issue 5, October 2018.

Weller, Christian, RobinKleer and Frank T.Piller: 'Economic implications of 3D printing: Market structure models in light of additive manufacturing revisited' in International Journal of Production Economics, Volume 164, pages 43-56, June 2015.

Examples of digital transformation include MakeHealth Lab by Waag Society, MakeToCare by Sanofi Genzyme and Polifactory, Open Care , Crew by Fondazione Cariplo, Hackability (hackability.it) and European research projects like Made4you and its platform careables.org, Digital Social Innovation and other platforms like patient-innovation.com.

046
DIGITALLY SPEAKING

Matthew Philip, Christin: '93 women are being raped in India every day, NCRB data show' in Times of India, 1 July 2014. timesofindia.indiatimes.com/india/93-women-are-being-raped-in-India-every-day-NCRB-data-show/articleshow/37566815.cms

046
UNDERBROEN

'Kreative erhverv og kreativ økonomi i København' page 4, July 2018. https://www.kk.dk/sites/default/files/edoc/Attach ments/21221866-28788494-1.pdf

Valente de Jesus Rosa, Paulo, Ferretti, Federico, Martinho Guimaraes Pires Pereira, Angela, Panella, Francesco & Wanner, Maximilian: 'Overview of the Maker Movement in the European Union', pages 14 and.17, Publications Office of the European Union, 2017. http://publications.jrc.ec.europa.eu/repository/bitstream/JRC107298/jrc_technical_report_-_overview_maker_movement_in_eu.pdf

046
PLASTIC FOR GOOD CHALLENGE

Goldapple, Lisa: 'Redesigning the future of plastic' on Atlas of the Future, 31 July 2019. http://atlasofthefuture.org/project/plastic-for-good

046
MATERIOM

Stevens E.S.: Green Plastics:An Introduction to the New Science of Biodegradable Plastics, Princeton University Press, 2001. https://press.princeton.edu/titles/7228.html

Warner, Becca: 'Nature's recipe book of the future' on Atlas of the Future, 29 August 2018. http://atlasofthefuture.org/project/materiom

046
FABERIN

Cánovas, Vicente: 'Can furniture design be Open Design?' on the Faberin blog, 28 November 2018.

https://blog.faberin.com/en/can-furniture-design-be-open-design/

046
DESIGNING 'EMERGENT FUTURES'

Bauman, Zygmunt: Liquid Modernity, Polity Press, 2000.

REFERENCES

Introduction

1. pg. 14, retrieved from distributeddesign.eu

2. pg. 14, retrieved from ec.europa.eu/programmes/creative-europe

3. pg. 15, retrieved from fab.city

Book Process

4. pg. 16, retrieved from gitbook.com

State of the Art

5. pg. 41, retrieved from reprap.org

6. pg. 41, retrieved from arduino.cc

7. pg. 42, retrieved from fablabs.io

8. pg. 42, retrieved from opendesk.cc

9. pg. 42, retrieved from kniterate.com

10. pg. 42, retrieved from smartcitizen.me

11. pg. 42, retrieved from n-e-r-v-o-u-s.com

12. pg. 42, retrieved from ultimaker.com

13. pg. 42, retrieved from othermachines.com

14. pg. 42, retrieved from preciousplastic.com

Moving from an Individual to a Collective Worldview

15. pg. 46, retrieved from futureofgood.co/episode-2

16. pg. 46, retrieved from darkmatters.org

Fixing Education and Learning

17. pg. 50, from 'Meeting technological challenges', a report by HMGovernment around design and technology in schools in 2011. It was also referenced by Amanda Spielman, Head of Ofsted, UK in a speech at the V&A, 10 July 2019.

18. pg. 50, Andreas Schneider and PISA, 2013

19. pg. 50, Imperial College professor Roger Kneebone hit the headlines with this in October 2018.

20. pg. 51, retrieved from fixing.education

21. pg. 51, retrieved from fixing.education/fixperts

22. pg. 53, retrieved from mouse.org

23. pg. 53, retrieved from girlsgarage.org

24. pg. 53, retrieved from waag.org

25. pg. 53, retrieved from ioi.london

26. pg. 53, retrieved from bbc.co.uk/news/world-europe-39889523

27. pg. 53, retrieved from weforum.org/agenda/2018/10/singapore-has-abolished-school-exam-rankings-here-s-why

A Quality Label

28. pg. 56, retrieved from distributeddesign.eu/exploring-the-possibilities-for-an-europe-an-makers-quality-label

29. pg. 57, retrieved from distributeddesign.eu/global-distributed-design-award-2019

30. pg. 57, retrieved from danishdesignaward.com

31. pg. 57, retrieved from theindexproject.org

32. pg. 57, retrieved from nextfood-project.eu

33. pg. 57, retrieved from vivihouse.cc

34. pg. 58, retrieved from assayofficelondon.co.uk/hallmarking

35. pg. 59, retrieved from bcorporation.net

36. pg. 59, retrieved from copyleft.org

Cosmo-local Work

37. pg. retrieved from tzoumakers.gr

38. pg. 67, retrieved from grouu.cc

39. pg. 67, retrieved from vivihouse.cc

40. pg. 68, retrieved from wikipedia.org

41. pg. 69, retrieved from cosmolocalism.eu

Tzoumakers: co-creating solutions for agriculture

42. pg. 71, retrieved from farmhack.org

43. pg. 71, retrieved from latelierpaysan.org

44. pg. 72, retrieved from tzoumakers.gr

Grouu

45. pg. 74, retrieved from grouu.cc

46. pg. 76, retrieved from arduino.cc

47. pg. 76, retrieved from habibi.works

Vivihouse

48. pg. 78, retrieved from vivihouse.cc

49. pg. 78, retrieved from tuwien.at

Distributed Design for Distributed Care

50. pg. 83, retrieved from fablabs.io

51. pg. 85, retrieved from polifactory.polimi.it/en/polifactory/next-steps

52. pg. 85, retrieved from opendotlab.it/portfolio-item/la-bicicletta-di-lorenzo

53. pg. 87, retrieved from distributeddesign.eu/talent/mole-mapper

54. pg. 87, retrieved from re-publica.com/en/session/digitally-speaking-women-safety-project

Next Steps

54. pg. 88, retrieved from polifactory.polimi.it/en/polifactory/next-steps/

55. pg. 88, retrieved from polifactory.polimi.it

56. pg. 88, retrieved from sanofigenzyme.com

57. pg. 88, retrieved from aig-aig.it

58. pg. 88, retrieved from 2019.makerfair-erome.eu

From Lorenzo's Bike to Everyone's Bike

59. pg. 91, retrieved from tog.org.tr

60. pg. 91, retrieved from opendotlab.it

61. pg. 92, retrieved from opendotlab.it/portfolio-item/la-bicicletta-di-lorenzo

Digitally Speaking

62. pg. 94, Matthew Philip, Christin: '93 women are being raped in India every day, NCRB data show' in Times of India, 1 July 2014. Retrieved from timesofindia.indiatimes.com/india/93-women-are-being-raped-in-India-every-day-NCRB-data-show/articleshow/37566815.cms

63. pg. 94 re-publica.com/en/session/digitally-speaking-women-safety-project

64. page. 96, retrieved from re-publica.com

Fabcare Challenge

65. pg. 96, retrieved from polifactory.polimi.it/en/polifactory/fabcare

66. pg. 98, retrieved from polifactory.polimi.it

67. pg. 98, retrieved from cmsantagostino.it

68. pg. 98, retrieved from 2019.makerfair-erome.eu

69. pg. 101, retrieved from distributeddesign.eu/talent/mole-mapper

Why we need to strengthen the business muscle of distributed design

72. pg. 105, retrieved from bfi.org

73. pg. 105, retrieved from wikipedia.org

74. pg. 106, retrieved from linux.org

75. pg. 106, retrieved from fab.city

76. pg. 106, retrieved from bfi.org

77. pg. 106, retrieved from redhat.com

78. pg. 106, retrieved from github.com

79. pg. 107, retrieved from 3dr.com

80. pg. 107, retrieved from opendesk.cc

Why we need to strengthen the

81. pg. 108, Get the free and ready-to-use REMODEL toolkit at remodel.dk

82. pg. 108, retrieved from danskdesign-center.dk

83. pg. 110, retrieved from danskdesign-center.dk/en/10-manufacturing-companies-are-ready-experiment-open-source

84. pg. 110, retrieved from danskdesign-center.dk/en/remodel-expert-panel

85. page. 110, retrieved fromnovozymes.com

86. page. 110 retrieved from grundfos.com

87. page. 110, retrieved from thurmer.com

88. page. 110, retrieved from tekpartner.dk

89. page. 110, retrieved from stykka.com

90. page. 111, retrieved from creative-commons.org/licenses/by-sa/3.0

91. page. 111, retrieved from student.canopylab.com/public/course-preview/329

92. page. 113, retrieved from 19.re-publica.com

93. page. 114, retrieved from fab.cba.mit.edu/about/charter

Version_01 Lamp

94. page. 116, retrieved from londondesign-festival.com

95. page. 116, retrieved from distributed-design.eu/london-design-fest-the-distributed-design-challenge

96. page. 116, retrieved from other.today

97. page. 116, retrieved from machinesroom.co.uk

98. page. 116, retrieved from tala.co.uk

99. page. 116, retrieved from milomg.com/Light_00

100. page. 117, retrieved from makernetalliance.org

101. page. 117, retrieved from fablabwinam.org

102. page. 118, retrieved from kumasihive.com

103. page. 118, retrieved from nepal.communitere.org

104. page. 118, retrieved from fablabbudapest.com

105. page. 118, retrieved from eselx.ipl.pt

Underbroen

106. page. 123, retrieved from kk.dk/sites/default/files/edoc/Attachments/21221866-28788494-1.pdf

107. page. 123, retrieved from publications.jrc.ec.europa.eu/repository/bitstream/JRC107298/jrc_technical_report_-_overview_maker_movement_in_eu.pdf

108. page. 123, retrieved from underbroen.com

109. page. 123, retrieved from betamachines.dk

Gameboks

110. pg. 128, retrieved from gameboks.com

111. pg. 128, retrieved from underbroen.com

112. pg. 128, retrieved from copenhagen-maker.com

Testbed for a Better Future

113. pg. 130, retrieved from arduino.cc

114. pg. 131, retrieved from libelium.com

115. pg. 131, retrieved from reprap.org

116. pg. 131, retrieved from prusa3d.com

117. pg. 132, retrieved from happylab.at

118. pg. 131, retrieved from kajoku.at

119. pg. 132, retrieved from makerfaire.com

Plastic for Good Challenge

120. pg. 134, retrieved from atlasofthefuture.org/project/plastic-for-good

121. pg. 134, retrieved from preciousplastic.com

122. pg. 135, retrieved from davehakkens.nl

123. pg. 135, retrieved from wikifactory.com

Plastform Ecosystem

124. pg. 143, retrieved from summit.fabcity.paris

125. pg. 143, retrieved from fab.city

FabLabs.io

126. pg. 143, retrieved from nsf.gov

127. pg. 143, retrieved from cba.mit.edu

128. pg. 144, retrieved from fab.cba.mit.edu/about/charter

129. pg. 144, retrieved from gitlab.com

130. pg. 144, retrieved from github.com

131. pg. 144, retrieved from whatsapp.com

132. pg. 144, retrieved from slack.com

133. pg. 144, retrieved from fabacademy.org

134. pg. 144, retrieved from textile-academy.org

135. pg. 144, retrieved from bio.academany.org

136. pg. 144, retrieved from fabfoundation.org/getting-started

137. pg. 147, retrieved from vigyanashram.com

Precious Plastic

138. pg. 151, retrieved from preciousplastic.com

Wikifactory

139. pg. 155, retrieved from wikifactory.com

140. pg. 155, retrieved from github.com

141. pg. 155, retrieved from gitlab.com

142. pg. 155, retrieved from bitbucket.org

Make.Works

143. pg. 158, retrieved from make.works

Our Make Works Story: Derby and Derbyshire

144. pg. 160, retrieved from make.works/derby

145. pg. 160, retrieved from derbymuseums.org/visit/museum-of-making

146. pg. 161, retrieved from make.works/scotland

Our Make Works Story: United Arab Emirates

147. pg. 162, retrieved from make.works/uae

148. pg. 162, retrieved from tashkeel.org

149. pg. 162, retrieved dubaidesignweek.ae/programme/2017

150. pg. 162, retrieved from tashkeel.org/projects/tanween-design-programme-2019

Materiom

151. pg. 164, retrieved from materiom.org

152. pg. 167, Recipe sourced from Green Plastics by E.S. Stevens: press.princeton.edu/titles/7228.html

Faberin

153. pg. 168, retrieved from faberin.com

154. pg. 170, retrieved from faberin.com/en/javier-manas-designer-on-faberin

155. pg. 170, retrieved from openarms.es

156. pg. 170, retrieved from blog.faberin.com/en/can-furniture-design-be-open-design

157. pg. 170, retrieved from faberin.com/en/table-lamp-of-modern-and-contemporary-design-kenny-by-juanny-barcelo-1-made-by-carlos-masso

Fabchain

158. pg. 173, retrieved from bit.ly/2mAvvFZ

159. pg. 173, retrieved from fabacademy.org

160. pg. 173, retrieved from academany.org

161. pg. 173, retrieved from fab.city

162. pg. 177, retrieved from bitcoin.org

163. pg. 177, retrieved from ethereum.org

164. pg. 179, retrieved from blog.fab.city/fab-foundation-launch-in-e-estonia-4ece89d8ff5a

Outro

165. pg. 182, retrieved from iaac.net/educational-programmes/masters-programmes/master-in-design-for-emergent-futures-mdef

CONTRIBUTORS

Tomas Diez, Director of Fab City Research Lab Barcelona and Fab City Foundation

Christian Villum, Director of Digital & Future Thinking, Danish Design Centre

Kate Armstrong, DD Project Manager, IAAC

Alessandra Schmidt, Project Manager, Make Works, IAAC

Lisa Goldapple, Editor-in-Chief, Atlas of the Future and book co-author

Emily Whyman, Content Creator, IAAC

Indy Johar, Architect and Founder, Dark Matter Laboratories

Daniel Charny, Creative Director, From Now On

Dee Halligan, Founding Director, From Now On

Nadya Peek, Machine Agency Research Group Lead, Assistant Professor at Human Centered Design & Engineering, University of Washington

Massimo Bianchini, Department of Design, Polifactory, Politecnico di Milano

Stefano Maffei, Department of Design, Polifactory, Politecnico di Milano

Patrizia Bolzan, Research Fellow, Design, Politecnico di Milano

Federica Mandelli, OpenDot

Nidhi Mittal, Digitally Speaking

Avik Dhupar, Digitally Speaking

Chris Giotitsas, Core Member, P2P Lab

Nikos Exarchopoulos, P2P Lab

Alex Pazaitis, Core Member, P2P Lab

Vasilis Kostakis, Professor of P2P Governance, TalTech and Faculty Associate, Harvard University

Cristina Priavolou, Tallinn University of Technology and P2P Lab

André Rocha, Instituto Politécnico de Lisboa

Nikolas Kichler, vivihouse

Mikka Fürst, vivihouse

Paul Adrian Schulz, vivihouse

Dilay Türe, vivihouse

Michael Araujo, Fab City Store

Arnaud Delente, Fab City Store

Pauline Distel, Fab City Store

Sarah Goldberg, Fab City Store

Virginie de Labarre, Fab City Store

Soumaya Nader, Fab City Store

Lenaïk Née, Fab City Store

Quentin Perchais, Fab City Store

Aruna Ratnayake, Fab City Store

Nat Hunter, Other Today

Gareth Owen Lloyd, Other Today

Milo McLoughlin-Greening, Designer

Stine Broen Christensen, Copenhagen Maker Festival

Asger Nørregård Rasmussen, Underbroen

Leyla Jafarmadar, Happylab

Karim Asry, Espacio Open

Joseph Klatt, Business Guy, Precious Plastic

Christina Rebel, Co-founder, Wikifactory

Helen Voce, Event and Development Programme Producer

Laura Dudley, Coordinator, Make Works Derby and Derbyshire

Jumana Taha, Project Coordinator, Make Works UAE

Pilar Bolumburu, Materiom

Zoë Powell, Materiom

Vicente Cánovas, CEO, Faberin

Primavera de Filippi, Blockchain researcher and Director, Coala

James Tooze, Product Design course leader University of Brighton

Liz Corbin, Co-founder, Materiom

Mara Balestrini, Making Sense Project Leader and CEO, Ideas For Change

Oscar Tomico, Head, Design Engineering Bachelor programme, ELISAVA Design and Engineering school, and Assistant Professor of Industrial Design, Eindhoven University of Technology

Editor and co-author
Tomás Díez, Director Fab Lab Barcelona at IAAC

Editor and co-author
Lisa Goldapple, Editor-in-Chief Atlas of the Future

Co-editor
Kate Armstrong, DD Project Manager, Fab Lab Barcelona at IAAC

Co-editor
Alessandra Schmidt, DD Project Administrator, Fab Lab Barcelona at IAAC

Co-editor
Christian Villum, Director of Digital & Future Thinking, Danish Design Centre

Graphic and Editorial design
Manuela Reyes, Art Director, Fab Lab Barcelona at IAAC

Art Work advisor
Marcel Rodriguez

Made at Fab Lab Barcelona, Institute for Advanced Architecture of Catalonia, Barcelona, 2019.

ISBN: 978-84-948142-3-5

Co-funded by the
Creative Europe Programme
of the European Union

This book was co-funded by the Creative Europe Programme of the European Union, thank you!

The world used to be more predictable, as were the behaviour of markets, the demand for products and services, and human behaviour itself. On the contrary, today's world seems to be more and more fluid, or 'liquid' – and our reality consists of getting to grip with what we would have called fiction, or science fiction, some years ago.

Distributed Design is a phenomenon that integrates design skills and the 'making' approach to enable the development of new entrepreneurial types of professional producers. On one hand, designers acquire more technological and practical skills. On the other, makers evolve their design attitude and capabilities. This convergence is generating new markets, which require new business models and distribution models. In turn, this breeds new ways of working, thinking and valuing, which are explored in the observations, research and cases presented in this book. These accounts come from members and associated members of the Distributed Design platform, who gather from cultural organisations, industry and educational institutions to advocate for Distributed Design, and foster the role of European creatives in actively shaping this emerging field which is shaping the way we view design in our liquid reality.

Distributed Design Market Platform

FAB LAB BARCELONA

Co-funded by the Creative Europe Programme of the European Union

Iaac Institute for advanced architecture of Catalonia