A BETTER PLACE

towards a collective
intelligence for Europe

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Brussels, March 2019.

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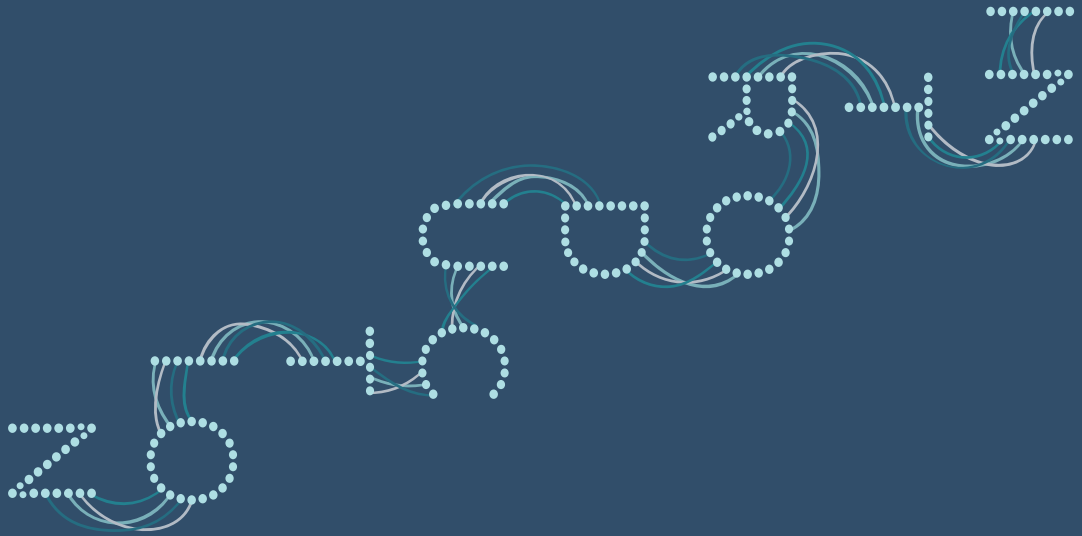
"It seems inevitable now that our lives will be more and more interwoven with intelligent machinery.

As worded in Big mind, 'the question is not whether this will happen but how can we shape these tools so that they shape us well – enhancing us in every sense of the word".[1]

[1]"From artificial intelligence to collective intelligence", in "Ten issues to watch in 2019", European Parliament research think tank.



Making space for a non-technocratic vision for Europe

The ambitious goal of the Next Generation Internet initiative launched by the European Commission in 2016 is to support the development of a human-centric internet. In the words of Roberto Viola, DG Connect General Director, the human internet "should be designed for humans, so that it can meet its full potential for society and economy and reflect the social and ethical values that we enjoy in our societies." The values promoted are European ones, such as openness, inclusivity and equality.

The definition is broad, but it serves the objective well: Intuitively, we all know what is at stake. The "commercial internet" visions dominate the development, and the "human internet" vision has become hampered by commercial successes and an excess of naivety among consumers and policymakers. Europe is emerging as a global regulatory superpower, and this is likely to be its main role in the geopolitical theatre in the coming years. But the visions for a "human internet" must not only be defensive; these visions must create spaces for creativity and imagination and open new possibilities for businesses and citizens to thrive without it being at each other's expense. Otherwise, the "human" and "for the common good" extensions – increasingly present in conferences, products and policies slogans – risk becoming the public image of just another form of radical surveillance and disempowerment in disguise as frictionless services.

In order to gather the most impactful group of constituencies in a community, build a shared vision, inspire policymaking and streamline possible alternatives, the NGI Move project toured Europe (and

the world) with 80 salons and co-creation workshops, reaching over 5,000 people. The events aimed at rethinking the internet's assumed functioning (in terms of technology, governance, sustainability, values, citizens' agency) and debating existing and desirable alternatives. The discussions were held with policymakers, engineers, artists, researchers, start-uppers, investors, cryptographers and students ranging from middle school to PhD, just to name a few. The project also launched the NGI Awards, rewarding excellence in the domains of research, start-ups and culture: The eight winners range from communities advocating for a novel personal data paradigm, to open source encrypted software, to researchers exploring gerontechnologies.

Public programme names, technology trends and decision-makers come and go. But in our discussions with a very diverse set of experts and citizens, some requirements and concerns emerged together with a strong sense of urgency. This publication compiles them and presents a conceptual framework for rethinking how Europe engages with a reality permeated by interconnected technologies. Spoiler: It is not a matter of technology alone. In the first part, Policies of everyday Europe, we go past the distressing dichotomy technology/society to highlight changes in the very structure of reality and subject creation: We thus propose novel concepts to steer the European ecosystem in a way that better serves the collective interest. In the section Conversations on a probable future, the proposal is supported by interviews hinting to a novel ecology and to the civic role of experts and citizens in getting there. Renegotiating the present: Rebooting the system from a Millennials' perspective reads the current situation with the lenses of the generation between the analogue and the digital world, the Millennials.

In the coming years, we need to work on infrastructures and visions of society in order to create a common ground for action. We do not lack the technological means; what we lack is a coordinated approach balancing regulation, experiments and citizens' engagement. Acknowledging the impossibility of tackling the current complex situation from one single perspective becomes

our biggest resource to kick-start a European movement of citizens and professionals, each differently engaged in ensuring a desirable outcome for what looks like the last moment in history where humans are fully in control.

"Too often we yearn for neat forecasts that aim to tell us exactly how the future will play out ('X million jobs to go by 2040').

In fact, we should be contemplating and preparing for multiple eventualities. The humility this requires may not come easily to those used to making confident predictions, but it is the only sensible way of readying ourselves for the future."[2]

[2] (RSA, A field guide to the future of work)

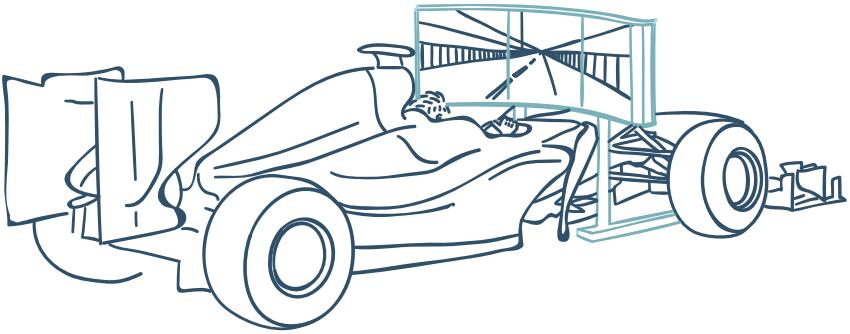
Policies of everyday Europe

Since the beginning of the internet, the digital world has been developing like a disembodied space subject to its own rules, parallel when not conflictual to those of the world as it was known before. The tensions around topics like algorithmic bias, net neutrality, technology environmental impact, surveillance capitalism or personal data management are all different manifestations of the impossibility of this original dichotomy. Today, as the number of people and objects interconnected increases exponentially, there is no such thing as governing “the digital”: It is an indistinguishable part of the infrastructure of reality for most of us. At the same time, if the internet made us more connected, it did so at the expense of the trust underlying our social infrastructures: Algorithm personalisation and the amount of information we can access through the web are not helping us making better choices or being a community. The internet is making us lonelier, more individualised and unable to reach out for help and support by other people. It has reinforced information bubbles and created a context that makes it easier to believe fake news than the documented opinions of experts. The societal tragedy of the digital age is that it has put the pressure of adapting to its unprecedented speed onto individuals and not onto communities. Here we are, struggling to find collective solutions to individualised problems, with individuals who cannot cope with such amounts of information and public powers that seem to have lost their capacity to drive the transition in the common interest. Thus, the first step is to bring back the problem into the societal sphere, to create a context where technologies are at the service of communities, strengthening bonds, sense of belonging and reciprocal understanding.

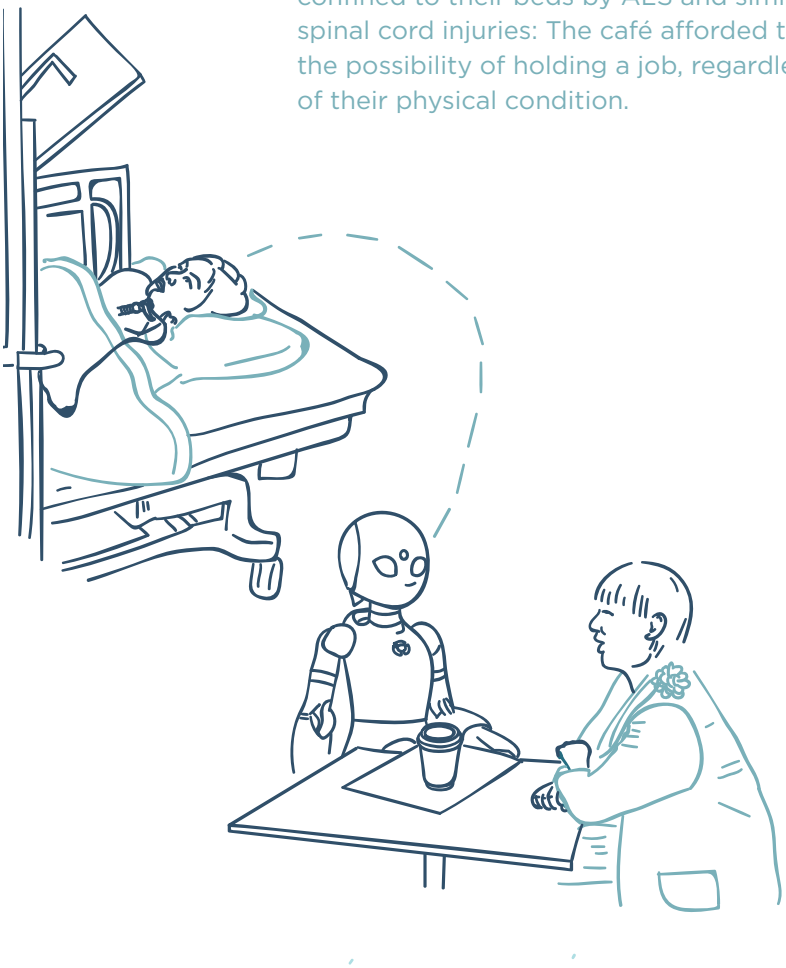
Glimpses of a present that looks like a remote future

On 19 January 2019, the 23-year-old Enzo Bonito beat Lucas di Grassi, a Formula E and ex-Formula 1 driver on a race track in Mexico. It was the first time on a real circuit for Bonito, who otherwise is a champion of Esports and races from the safety of a console. Since 1988, the Race of Champions has seen the best drivers from all kinds of motorsport coming together, but only from 2018 were virtual racers allowed into the competition.

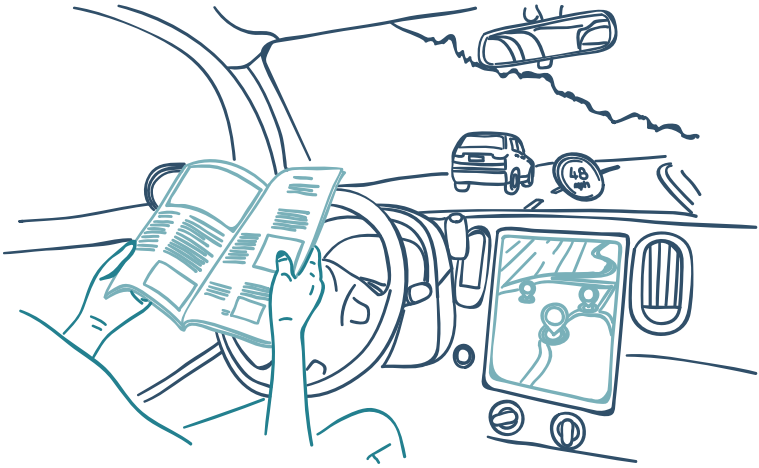
Earlier, the Red Bull Formula 1 pilot Max Verstappen set the fastest time on the on-line racing platform iRacing on the Charlotte 'Roval' and the Brands Hatch Grand Prix track. His driving skills and his capacity to translate them from real-world circuits to virtual ones are a case study.



In Tokyo, in November 2018, a temporary shop unique to its kind opened the door to a third way in the debate on work automation. Clients of Café DAWN (Diverse Avatar Working Network) were served by robot waiters. However, this is not a materialisation of our deepest automation fears. The real employees of the café were people, controlling the robots remotely. Such disintermediation was required by the physical conditions of the employees who were confined to their beds by ALS and similar spinal cord injuries: The café afforded them the possibility of holding a job, regardless of their physical condition.



Skills and activities are becoming uncoupled from our sense of place. Abilities developed in a fully virtual environment can be seamlessly replicated in the material one, and vice versa. Material presence can be linked to another quality of material capabilities elsewhere. Meanwhile, automation takes an increasing role in our everyday decision-making and task-execution mechanisms. Responsibility, agency, self-awareness: There is a fault line between human and technology. The notion of "embodying" future problematics and scenarios becomes astutely literal in the case of wearables. In an environment of extreme quantification, measurability and traceability, made possible by the replacement of politics with engineering, the human body acquires a mechanistic dimension that strips it from mutuality and its inherent, complex relationship to identity, selfhood, sociability, autonomy and desire for authentic engagement. This kind of binary abstraction will soon no longer be possible, since the digital is hitting back into presence. Who should be held responsible in a self-driving car accident? The person? The driving system? The occurrence of a natural landslide, escaping the predictability of the digital ecosystem? In a mediated environment – where everything is connected to everything – it is no longer clear what is being mediated, and what mediates. We are reaching the operational limits of law and politics' definition of subjects and responsibilities.



The situation is further complicated by the pace of adoption of interconnected objects. The Internet of Things' initial vocation was supporting industrial automation and optimisation. The same approach has been slowly but steadily embedded into everyday experiences, interactions and bodies. Nothing seems to escape: Each tangible element of the world can be a remote controller, a sensor, an entry door to an information set. There is a built-in dishonesty in digital interfaces: They are easy to use, but they are poorly explained. Any owner of a smartphone will know how to use it, but not how it functions. People evaluate their degree of knowledge of the digital by their capability to navigate it, not to understand it. Secondly, an interface is not just engaged in a circumstantial and explicit one-to-one exchange, but also in a long-range opaque one. Hence, each configuration of the same interface includes or excludes utilisations and subjects twice: In the circumstantial moment where the interaction happens (the experience) and in the way the interaction is stored, communicated, processed and utilised further (the information).

Ultimately, two attributes of presence are showing the limits of our current approach to the digital: The hybridity of entities and responsibilities, and the opacity of the interfaces operating the world. We can't keep operating reality with the terms and mental schemes of the information age. The digital world has exploded out of screens and networks, invading any domain of human interaction, self-definition and operation. Welcome to the experience, situational age.
Will we be able to keep human agency in the picture?

The GDPR is buying time, the European digital sovereignty goal is set. eIDAS is creating a unique European authentication system. But how do we balance the need to reaffirm a collective interest over technology efficiency with the fact that the very representatives of the collective interest (national states) are losing legitimacy?
We need to embed collective interest in the very operation of our intertwined infrastructures, so that they can be operated independently from the circumstantial moods of the political infrastructures of the world. There will be no one-size-fits-all collective interest: The most desirable one allows multiple realities, selves and objects to coexist and thrive. It is an inclusive ecology. One that bears a certain

degree of anonymity, a key element shaping our society and selves, opaque not in its functioning but in the granularity of the details it collects.

Our proposal: new protocols reflecting a new culture

The only logical role that seems to be left for States and institutional actors is to regulate and fine, and to incentivise with public funds promising research avenues as well as businesses bridging the existing gap between research and market. But these tools have run their course and do not serve enough risk-taking innovators and the backbone of European economy, Small and medium-sized enterprises (SMEs). According to the European Investment Bank, small businesses are the engine of the EU economy, employing 2 out of 3 Europeans. DG Growth (2015) states that SMEs represent 99% of all businesses in the EU and in the years 2010-2015 they have created around 85% of new jobs in the EU. Europe is a 500 million people zone which at the moment is a victim of its own diversity instead of employing it as an asset. Nobody is expecting a top-down intervention, or the ultimate solution: Even in the hyper-centralised China, it all started by leveraging successful enterprises and coordinating them in a unique single system. We need orchestrated principles that enable experiments at the edges; a set of centralised protocols – like those of the internet – that can be operated in a decentralised way; a sense of belonging, coupled with meaningful appropriation of everyday experiences.

In NGI Move, we propose to think in terms of infrastructure, services and entitlements. Infrastructure needs to be balanced between capabilities in the Cloud (data lakes and AI) and edge (5G), between intricate and complex semi-autonomous to autonomous self-healing systems on one side and local reparability to ensure everyday resilience on the other. Infrastructure supports services. A service is any operation that supports either machines or people in their wellbeing and their ability to build a meaningful and cooperative existence. This thus entails the entire trajectory from Body Area Networks to Local Area Networks to Wide Area Networks: BAN (body, wearables), LAN (home, smart services to the home),

WAN (mobility in general from bike to connected car and plane) and VWAN (the very wide area network; the smart city). Blockchain as well as connectivity itself has become a commodity and is thus a service in this view. Services support everyday activities and are supported by entitlements. Entitlements are new entities, as synchronous and fixed identities cannot support services in a hybrid infrastructure. A balance between anonymity (in federated sets of identities that are tied to services such as shopping, dating, recovering from illness ...) and accountability (in stable sets of relationships of behaviour and activity) for processes, machines, products and people is vital to create popular support for a new type of governance from all generations.

In NGI Move we propose a three-step process to build a political inclusive democratic internet ecosystem. The first step has been accomplished: regulating data in GDPR. With it, Europe has created space for data sovereignty and acknowledged the existence of digital rights for its citizens. It has created a global standard for basic digital commons rights in a space that was left to the private initiative.

The second is regulating digital signatures for persons: eIDas creates a European common framework that acknowledges the international dimension of businesses and the mobility of citizens. Within this framework, as far as NGI Forward strategy development is concerned, three taskforces set out to take into account the new qualities of the experience age and elaborate:

1. Future internet services composition
(to be achieved in Taskforce Services)
2. Resilient architectures (Taskforce Infrastructures)
3. Hybrid and situational identities (Taskforce Entitlements).

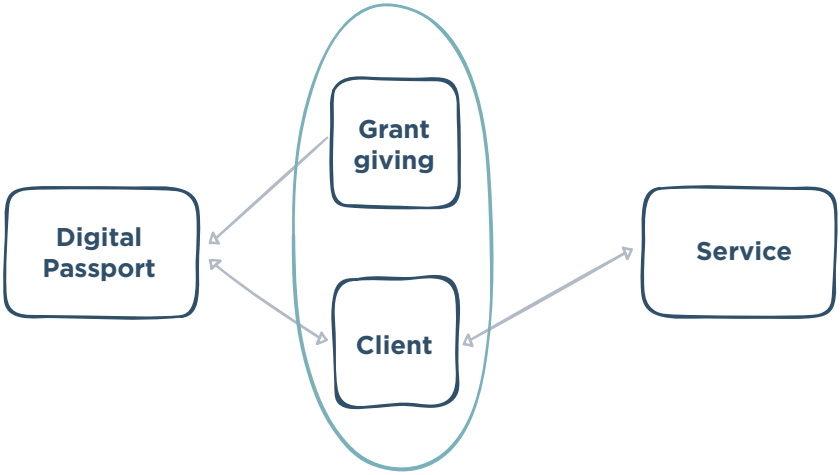
The third step is to embed these into a framework (systematic approach) for access, identity and operation. This could be brokered by substituting the passport with a device (running Estonian e-card, containing a personal data management dashboard) talking to servers, platforms and Clouds that agreed to comply to

European privacy and personal data standards, as well as to ethical AI and open source principles. Service providers must sign terms with the users and not the other way around: compiling with the terms would be a competitive advantage for European businesses, in terms of fidelisation, design and usability, soundness and platformisation of the software. Furthermore, it would set a global standard as GDPR is doing.

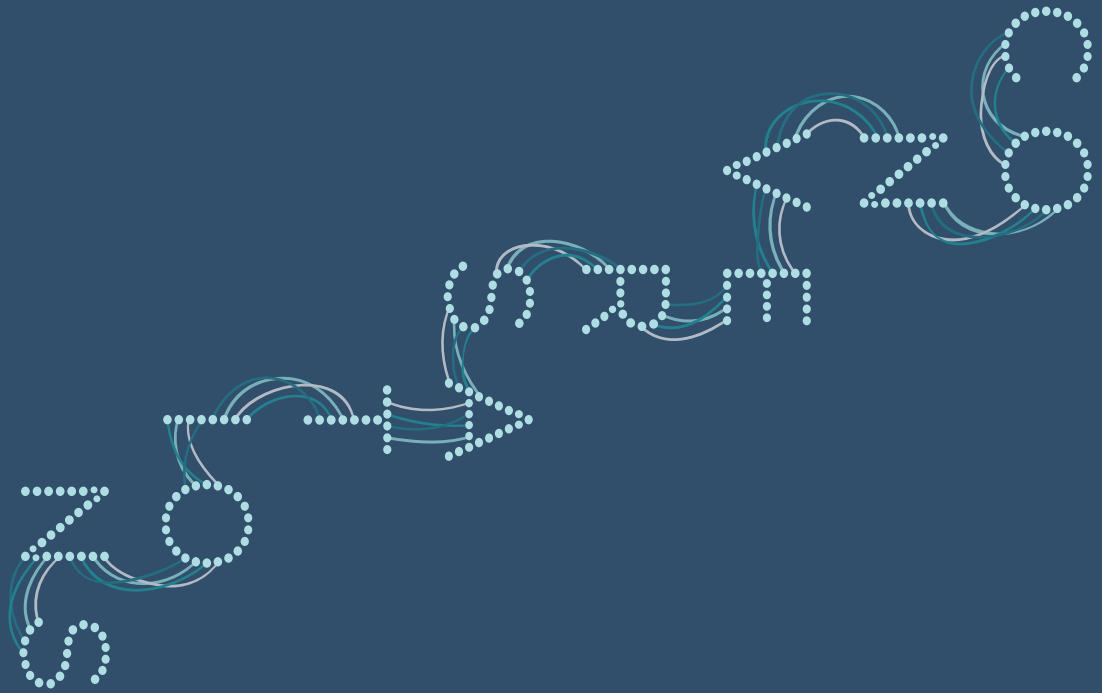
We find ourselves in a time where the big utopian dreams for the good that the internet can do for humanity tend to fail – not because they are irrelevant, but because they get consumed by the market and governance they are originally aiming to deconstruct and subvert. The dominant public narrative is lack of trust, machines taking over, a total Panopticon dominated by American big corporations or the Chinese state. We have been mapping out the middle ground between this optimism and pessimism, between the two prevailing models of government-owned and controlled cybernetics (including social credit systems for citizens) of China and Asian countries, commercially-owned data lakes (GAFA) in the USA and emerging hybrid forms in South Africa and Saudi Arabia. We now understand that cultural hegemony is intertwined and interlinked with technological hegemony. We are at a time when we need a cultural shift. To make that happen, we need to create a common ground where people coming from the private sector are not scared off by the academic jargon, where different generations can dialogue and where each perspective counts towards a larger goal, setting an interesting role for humanity and its agency in the future. Narrowing the debate to a technologist one is not only completely disempowering for the average citizen, it is also precluding all the existing alternatives that have been simply formulated out of engineering and sales departments. It all comes down to a new vision of society.

European policymaking is facing an impasse that is threatening its own existence: Separating technology and innovation policies from social ones would prove as fallacious as separating the digital and the material. We are experiencing the last potential zone of transition with humans in full control and planning agency.

This implies that patterns of change still follow forms that are set by deeply rooted human fears, hopes and dreams. Change requires radical ideas that are marginalised, turning into messy zones of conversation, ending up in relatively more moments of perceived 'normality'. Then 'all of a sudden', the ideas that once were threatening seem logical and acceptable. This pattern, underlying the Gartner cycles, is the defining moment of the Anthropocene. As machines, machine learning, Big Data and AI are beginning to deliver scenarios on which business decisions are being made in all domains, except for now the political, the window of opportunity for anchoring human agency in what is rapidly becoming a blurred connectivity of humans and machines is … now, real-time. And now means now, today. Not tomorrow. The facts are not negotiable. The next iteration will not follow our pattern of change. This is the most important insight from which consequent planning of Europe's future must develop.



New European Agency



The debate on technology can be intimidating, narrowed down to a duel between enthusiastic technocrats and defendants of the human role. The interviews reflect a span of perspectives of entrepreneurs, data scientists, artists, designers, philosophers, hackers and community builders. The aspiration was to engage in conversations about the current tensions surrounding technology and get past defeatism in favour of an empowering outlook.

Each interview is a possible access door to the goal of negotiating an empowering role for the European society in the next wave of technology developments. Interviewees were asked to reflect on what a high-level goal can even be in a time of crisis of the unifying visions underlying the European project. With their own definitions, they propose a better balance between technology, humanity and the planetary environment. They then articulate their ambitious goal into viable long-term roadmaps and actionable points. Finally, they state the role that professionals like them can play in getting there and reflect on personal engagement.

#1

Interview with Ghislaine Boddington

Ghislaine Boddington – Creative Director, body>- data>space / Women Shift Digital. Award-winning curator and director, specialising in the future human, body responsive technologies and immersive experiences. In the past three years she has co-curated Nesta's FutureFest events (2015-18). A Reader in Digital Immersion at University of Greenwich, she sits on the Editorial Board of AI & Society (Spring- er), is a Fellow of the Royal Society of Arts, a trustee for the Stemettes and spokesperson for the Deutsche Bank Women Entrepreneurs in Social Tech accelerator. Ghislaine co-presents bi-weekly for BBC Click.

Can you describe your notion of "a better place"?

Prior to dealing with tech, we desperately need to reinstall some trust among us humans, as trust is a resource that can be easily manipulated and is quickly destroyed. Concretely perceiving our role in a greater ecosystem is a powerful element of resilience: Society can survive any political and economic changes and readjust for good, if a sense of trust, inter-independency and collectiveness is rooted into people. We can use the language of human-centric, body-centric … but in fact, to truly thrive, we need to see ourselves in perfect balance with all the other elements of our daily life – including other living beings and the environment around us, but also human relationships, artefacts, technology – all of which are supposed to help us.

In this hybrid ecosystem, we need genuine encouragement to take micro-actions (from recycling to smiling

at people in the street) and to understand that these multiple individual tiny actions are what contribute to and create the overall equilibrium. By holding on to our liveness, the human-to-human connection in the now, we can create positive dynamic energies for the future. It is very trendy to be negative nowadays, and especially male writers, journalists, business leaders and politicians seem to be constantly stating that everything that can go wrong will go wrong, whilst coming up with very few solutions. I believe it is much braver to have a positive and proactive predisposition towards the future and to act accordingly.

Can you illustrate a concept/approach/solution you think is crucial in order to get there?

I am making a case for body-led tech, as it is the most graspable at a personal level; our bodies (unlike tech objects and devices) cannot be turned off, as our hearts continue to beat and we breathe in and out all day and all night. I also support social tech, of course, employed for collective purposes. For anything that concerns the individual sphere, we need technology, with its digital emanations and tangible tools, to be much more attached to and holistically integrated with the living body. Let's start first and foremost with personal data ownership and control. The current separation of data from ourselves, from our personal bodies, has made an abstraction of our bodies, separating us from a fundamental part of our identities, and consequently, has made us start to lose sight of our personal responsibilities.

Everything that comes out of your body will belong to others; corporations, public authorities, any surveillance scenario are stripping our biometric data through highly nontransparent permissions and creating a new surveillance capitalism based on using our emotions and our experiences. This will end up with us having no responsibility for our actions in the world: "It wasn't me; it was my data". By removing individual responsibility from data, we disenfranchise people from understand-

ing that their actions are part of a bigger picture. Having the control to take decisions on small everyday uses of our data would help us understand that we do indeed contribute to a larger scale of decisions. Let's call it an internet of bodies that can work together to make positive solutions. This would give us a bigger sense of agency, as otherwise we are running fast towards a giant identity and responsibility crisis.

On a societal level, we need collective action driven by collective embodiment. These days, a lot of people in different European countries use the web and social media to organise street protests, following patterns similar to those of previous movements like the Arab Spring or Occupy Wall Street. I think we need to couple that with a more intimate scale. People move forward when they gather in smaller groups. We need investments for environments where we can meet, collaborative, shared spaces in which to connect. Today, we focus the debate on social media, fake news, echo chambers and all that, which are boring even in terms of tech. Being physically together but using these disembodied means is useless. The full living body is rarely involved. Tech can be a way to complement and create positive physical spaces, immersive environments where we can create positivity, where we can exchange hope, even joy and love. We were there in the mid-nineties, before the big tech takeover: Meeting, hacking, sharing and learning together. And you can see many people who were there, like Tim Berners-Lee, trying to reboot the system and bring back the debate to what the internet was meant to be.

What is a small actionable change in this direction that we could start doing from tomorrow?

Policymakers tend to grossly underestimate people. We are sold the idea that people wouldn't be able to manage their own data, and so we live by fake consensus policies and a complete lack of transparency. But people fill in their tax returns, their forms for social housing requests and their passport requests. Being citizens requires them to cope with these

procedures, alone or with the support of dedicated experts. Why shouldn't it be the same for personal data? We each need a personal data dashboard, across Europe, across the world. Actually, Google and the other big personal data hoovering companies could solve a lot of liability problems by giving data back to the people.

What role do you think people like you (your profession) can play?

Making sure to take this debate out there, with as many means as possible: That's why I am always producing live events, curating debates, enabling gatherings. It is a complex debate, which requires us to be fluid and accessible. I don't want this mystification – a set of 'in the know' people using jargon made on purpose to make citizens feel stupid. It is a tragic error to underestimate the critical thinking and the heart of people. I believe our mission is to demystify a lot of scary and dystopian discussions around tech and enable positive actions onwards.

And European citizens at large?

Being present in and responsible for their everyday little acts and being empowered to take individual and collective action through the ownership of their own data.

#2

Interview with Christian Nold

Dr. Christian Nold is an artist, designer and researcher that analyses and constructs participatory models and technologies for collective representation. Over the last decade, he created the world-renowned and award-winning public art projects 'Bio Mapping' and 'Emotion Mapping', and experimental currencies in Holland and Finland. These projects were staged in more than a dozen countries and engaged thousands of participants. He has written the books 'Mobile Vulgus', 'Emotional Cartography: Technologies of the Self', 'The Internet of People for a Post-Oil World' and 'Autopsy of an Island Currency' as well as numerous journal articles. He has given 40 public lectures and presented at 32 art exhibitions. His work has featured on CNN, New Scientist, BBC, Guardian, Discovery Channel, Washington Post and USA Today.

Can you describe your notion of "a better place"?

Whatever the future holds for us, it won't be stability. Every moment, we experience a conflict between multiple realities, which is something we can intervene with. I tend to think that methods are more useful than utopias and values. A desirable process involves observing the different realities unfolding at the same time and intervening to create and support the most preferable one. As soon as you realise that there are different realities, it creates an imperative to pick up which one you believe best serves the situation. Technology serves as a tool to transform reality.

Can you illustrate a concept/approach/solution you think is crucial in order to get there?

Ontological design. I am supporting a new understanding of ontology based on science and technology as well as design. It is all about acknowledging

the conflicts of everyday reality. Design thinkers like Tony Fry and Arturo Escobar suggest the need for new ontological commitments to create a new form of engaged design. I agree, but I think ontology should not be about moral values but about observing everyday sociomaterial practices. Ontologies and realities have infrastructures, and these can be redesigned. That's an actionable and powerful point. There is a growing body of literature on "infrastructuring", which is focusing on the process of making infrastructure, yet much of this is still based on a human-centric approach. Personally, I prefer to focus on reality infrastructuring, which considers realities as large, encompassing things that involve a diverse set of beings and objects. Focusing on multiple realities taking place at the same time is very different from just thinking about multiple viewpoints. Multiple viewpoints leave the observed object unchanged, while acknowledging multiple realities means that there are actually multiple objects and realities that are not the same.

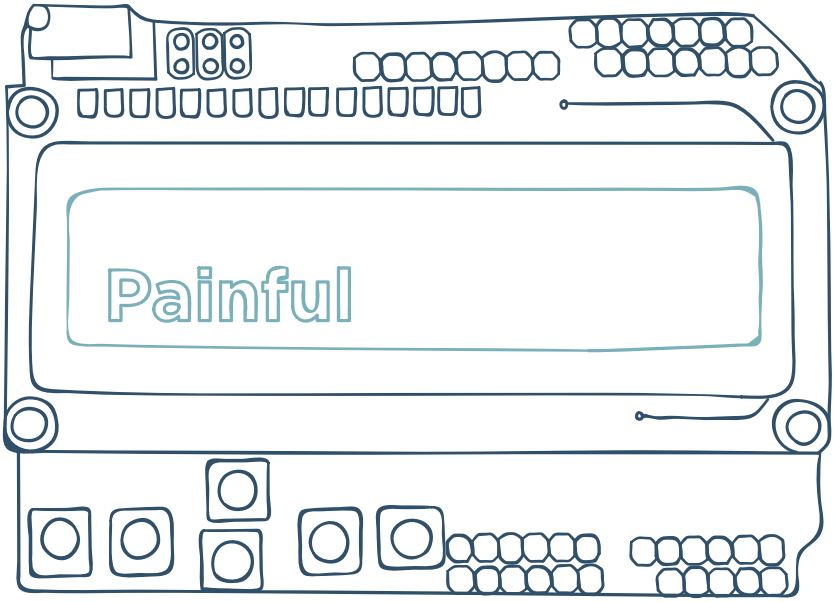
Annemarie Mol, a Dutch philosopher, coined the idea of ontological politics. She was conducting ethnographic research inside hospitals, observing how different therapies and technologies are changing the realities of participants. Indeed, every way of interrogating the body is creating multiple bodies: They are often in conflict with each other, but they still have to function together. We need ontological politics to decide which of these realities takes over in precise circumstances. A patient may complain about stomach ache, yet clinical exams may find nothing. How do we proceed? I believe Mol's work is very important because she talks about situations that people recognise from their everyday lives, such as being a patient whose reality is not being accepted in comparison to a particular scan or test.

Designers have the power to create new ontologies. They have the responsibility of creating different realities that involve people. Technologies embed and enact different realities. Think of the new IoT air quality sensors that are currently

being created, they are often little better than random number generators. Yet, their influence in the world is extremely concrete, as people shape their reality around them, such as people not leaving the house when the readings seem to be too high. I have been working on a project that involves participatory prototyping of alternative metrics for Heathrow Airport that capture the impact on the surrounding area. Creating new devices can create new metrics and new realities for local people and other living entities. Ontological politics is a different kind of politics that is about processes and practices. That's why I prefer not to talk about a better place or discussions about values and rights, but focus on methods that enable people to materially intervene in the controversies they face in their everyday lives.

What is a small actionable change in this direction that we could start doing from tomorrow?

Trying to demonstrate the impact of ontological design by articulating it in tangible technologies for specific contexts and demonstrating how it can do things differently. For instance, moving from public controversies around noise pollution, at Heathrow, I have been working with a group of people to build an environmental sensing network. In another pilot, we built a "town toolkit" for a small town in Denmark that tried to answer the question "how would cybernetic governance work in a small town?" In that case, we set up air and noise pollution sensors attached to lamp posts, coupled with a voting system on every lamppost that asked a variety of questions such as "is this area dirty today?" This system allowed people to compare hyper-localised environmental and opinion data and create a forum for bottom-up proposals for transforming the town. In this case, the system allowed the residents and local government officials to articulate their different realities of the town.



What role do you think people like you (your profession) can play?

A designer is a person that opens or closes certain realities: How spaces and objects are designed frames people very differently. We shouldn't be embarrassed about being positive with regards to the future, as shaping things is what we do. But I believe we need to get away from human-centred design: Realities are bigger than people, and we need to see how they involve all sorts of beings and things in everyday practices. The use of personas and scenarios as simulations of reality is dangerous: They are so precise and abstract at the same time (e.g., a white man in his 30s with a certain income and educational background) that they preclude actual observations and don't offer alternative ways of imagining or creating reality. There is a lot of visionary and speculative work out there, but we should be aware that if it only ends up in galleries, its reach and potential will be limited.

And European citizens at large?

We need to build new kinds of solidarity around the shared realities people live in. People feel isolated and that their realities are being constantly marginalised. And it's hard to be sympathetic when the language you are being given is so disempowering. It's important to follow one's gut feelings and translate them into languages that can build networks of solidarity and create new realities. For instance, in regard to the Heathrow Airport noise pollution, the issue is framed as individuals, and if they protest, they are framed as "individual troublemakers". The proposed solutions to the problem are individualistic, such as noise isolation for their own home. What is missing is a means of building collective solidarity around the realities of the local residents. So, to change things means that we need to observe and tackle the mechanisms and technologies that define our reality, such as these noise metrics that allow the airport to keep increasing the number of flights. That means building new tools, but also talking to others and coming up with new metaphors and terminologies to create new realities. The act of defining collective notions such as the 'precariat' is important, since it becomes a way to build ontological solidarity when many classic organisational structures are dropping away. We live in times of massive problems, yet resilience is often framed as an individual problem; it's time to change that and start building collective, sociomaterial responses.

#3

Interview with Manon Den Dunnen

Can you describe your notion of “a better place”?

A liveable future should be more inclusive, not just for people but in a planetary context. We should extend equal rights of identity and representation to the environment, as biological entity (individual organisms) and as context (the ecosystem). Switzerland has rights for plants in their constitution; New Zealand granted personhood to a river in 2013. Long-term wellbeing should be based on equality and on preserving different interests at once. That’s why we need to go past economic indicators to determine what is a desirable progress. And be ready to negotiate as contrasts emerge: Recent studies about the environmental impact of ramming for a windmill park in the North Sea found that it is affecting the reproduction of seals in a range of 50 km. Slowing climate change while preserving nature will require that we take tough choices. The more inclusiveness we design within our systems, the better we will serve different

Manon den Dunnen works at the Dutch National Police as a strategic specialist on digital transformation. She collaborates with various (semi)public organisations in DI020, a programme contributing to building a safe (privacy, security), transparent, resilient and accessible digital infrastructure, including independent trust frameworks and a transparent IoT register. She is part of the Next Generation Internet Initiative from the European Commission and, as such, member of the NGI Awards Jury. In addition, she is involved as an organiser and community builder with IoT-Sensemakers Amsterdam and part of the Permanent Future Lab movement. Both communities focus on the sharing of knowledge, new technology, hands-on experience and human networks.

interests. Today's decision making is still influenced by like-minded economic lobbies, but in the future, power is in people with hybrid bodies and selves, and that's why we need to guarantee the representation of a multiplicity of voices. The role of technology should be empowering all these entities in their individual needs, rights and wellbeing. Take somebody with a walking disability: Technology is already being used to take this into account by adjusting the traffic light duration in a test in Tilburg (The Netherlands).

Can you illustrate a concept/approach/solution you think is crucial in order to get there?

We need to translate inclusiveness and equality into infrastructures and regulation. Recently, we have become much more aware of how technology can and is undermining many of our fundamental values. Information is collected 24/7, but rarely used for wellbeing. We need a new perspective on the use of data; transparency, trust, inclusiveness (not just of humans, but in the holistic sense described above), privacy by design and the possibility to correct or delete should be the guiding lights there. Otherwise, we just end up creating new forms of exclusion and bias. The initiative of Amsterdam, Barcelona and New York is an example of an approach that will help.

What is a small actionable change in this direction that we could start doing from tomorrow?

We need to put our money where our mouth is. We talk about change and different approaches, but we are not integrating them in our everyday actions. The European Commission could easily make a precondition for every project funded to live up to fundamental principles like privacy by design. I hear a lot of talk about tech for good, but (generalising) it's mainly focused on supporting some best practices instead of adopting them straight away. Systematic change starts by acting differently. When governmental bodies will take the lead and,

for example, change their tenders accordingly, the private sector will follow.

What role do you think people like you (your profession) can play?

I believe public powers have a large margin of manoeuvre on tenders: As representatives of the collective interest, that's the place where we can start to trigger radical change, public funds are always in high demand and extremely competitive. For instance, instead of mere GDPR compliance, we should make compulsory requirements like accountability or algorithms transparency. But it goes beyond funding: We have precise regulations on electricity, why not do the same in regard to IoT, making privacy & security by design mandatory? We tend to have a negative notion of regulation, but actually it can create new spaces of possibilities.

And European citizens at large?

For me, there is no such thing as EU citizens at large. They comprise a large variety of people, and long-term consequences are opaque and out of their sight. It's easier to just be a consumer. If you buy a smart TV, nobody will tell you about the terms and conditions, what is being tracked, how the data will be used and how it will affect you in a different context. Most people cannot figure out in first person how things work, because of a lack of interest or of know-how. There should be regulation to protect them and offer alternatives.

We all have a tendency to follow short-term convenience. We need to make convenient things matter, or the other way around, make better choices convenient. There is a lot we can do in term of education, awareness and empowerment to orient people to a better notion of convenience. To make better choices part of their daily operations by awareness and inclusiveness.

#4

Interview with Ciro Cattuto

Dr. Ciro Cattuto is the Scientific Director of ISI Foundation (Torino, Italy / New York, NY, USA), a 35-year-old non-profit research institute that pursues foundational and applied research in Data Science and Complex Systems. Dr. Cattuto's research focuses on using big data and advanced analytics to measure and model systems that entangle human behaviours and digital platforms. He is a founder and principal investigator of the SocioPatterns international research collaboration.
Dr. Cattuto holds a PhD in Physics from the University of Perugia, Italy, and has carried out interdisciplinary research at the University of Michigan, USA, at Sapienza University in Rome and at the RIKEN Institute in Japan. He is an adjunct professor at the University of Torino and at Sapienza University, an editorial board member of the EPJ Data Science and Nature Scientific Data journals.

Can you describe your notion of "a better place"?

It sees us going past the existing gap between our technical ability to manipulate data and models and the way we use these capabilities to understand the world and to drive change. This is not only a technical challenge, but a political and cultural one, too. There is a sort of market failure in generating public value from big data, especially from privately held data sources. Put differently, there is asymmetry between the data-driven strategic ability of industrial organisations and that of the non-profit and public sectors. Here, I am referring to insurance companies, banks, energy providers, telecoms; entities that provide services to citizens at scale, and in doing so, they build real-time, high-resolution maps of our world, which are legitimately used for their purposes. However, those data can do so much more for our society. Sure, sharing data for public interest use poses a number of challenges, and

we have to ensure that this is done in accordance with the highest data protection standards and with full respect to the dignity of the citizens. So my first point is that a "better place" entails a stronger collaboration between the private and public sectors on data collection and exploitation.

For what concerns culture, we need a stronger awareness of how we got here. The digital transformation was largely made possible by a culture of openness and enabled by a host of public digital artefacts. Most of the instruments we use today in artificial intelligence and data science were born from open source projects or were made open source to further their reach and impact. I have always found disarming the comparative lack of specific funding instruments to support crucially important open source projects and citizen science projects. The popular narrative about data science tends to neglect that we are where we are today because of Linux, Python, the Jupyter project, the GNU project and so much more. We seldom stress enough how important is the work of the communities backing these projects that are at the heart of our digital society, providing libraries, software, documentation – in a word, our shared digital language and a very valuable platform for the digital skills we need.

Can you illustrate a concept/approach/solution you think is crucial in order to get there?

We have the space to experiment with new equilibrium points between different actors, and this will require a combination of top-down and bottom-up initiatives. I hope we will see incentives for sharing data for public purposes, and also maybe more regulation to enforce sharing in specific situations. I think that citizens are left behind in less regulated systems, like the US, or in systems with poor protection of civil rights, like China. Secondly, we need to capitalise on successful early experiences. The GOVLab at New York University launched Data Collaboratives, a study of viable cross-sector cooperations generating public value from data sharing. They

mapped which patterns work the best and the drives and policies that might generate more collaboration. We need more support and visibility for bottom-up innovation: I don't think that in Europe we have done enough to support pre-competitive innovations and to accelerate successful early experiences.

What is a small actionable change in this direction that we could start doing from tomorrow?

We could start from cities as contexts to experiment and create learning opportunities. Building partnerships between municipalities and private entities handling relevant data sources and put them at work on concrete problems. The smart city narrative often hinges on technical infrastructures, while we should focus much more on knowledge and data-driven policies. I also think that there are untapped opportunities for upskilling: Bringing problem owners and data scientists into contact, creating a mix of cultures and fostering more social cohesion around data. The purely technical part is the easy one.

What role do you think people like you (your profession) can play?

We need to go above and beyond our job description. Unfortunately, most of us have a purely technical background. We need to add a more humanistic perspective to our education. Most of the problems we are dealing with today aren't new; they come up in every historical transition, and they have a lot in common with the First Industrial Revolution. The only novel fact is the speed at which this is happening, namely within the span of a single generation. Personally, I am trained as a physicist: We are educated with the ghost of nuclear disasters in our mind. I guess computer scientists would need a dose of the same awareness around the non-technical effects of their work. Technology is never neutral.

And European citizens at large?

They need to take advantage of the connectivity provided by digital tools. Not long ago, people with a rare disease were completely isolated; today, they can easily find an online community of reference. Connectivity is empowering in allowing people to gather and to give visibility in the public sphere to issues that would otherwise be absent from the public discourse. European citizens also have the opportunity to voice more concern about data and challenge how data about them is used. With GDPR, we can now expect more accountability, and on the long run, hopefully, more awareness around digital identity. The very existence of data is often dangerous, especially in the current centralised paradigm, where data often tends to give more power to those who already hold power. There are many opportunities for technical progress in the name of data minimisation, but we first need to promote awareness of and discussion about these issues and also the opportunities, without slipping into a negative mindset about the digital transformation: We are indeed navigating towards a “better place”.

#5

Interview with Beatrice Fazi

Dr. M. Beatrice Fazi is a philosopher whose primary area of interest is the interfacing of philosophical thought and computational technologies. She is a Research Fellow at the Sussex Humanities Lab and a faculty member of the School of Media, Film and Music at the University of Sussex in the United Kingdom. Beatrice researches the ontologies and epistemologies engendered by contemporary technoscience, particularly in relation to issues in artificial intelligence and computing, and their impact upon culture and society.

Beatrice is also an expert in new media theory, cultural studies of technology, digital studies and digital aesthetics, and has published extensively on these topics. Currently, she is researching and writing on issues pertaining to the mechanisation of thinking processes in the twenty-first century.

Can you describe your notion of “a better place”?

Something like a “better place” can only be a working concept: A moving target or a horizon, so to speak. For me, a “better place” does not correspond to a specific locus or result. Rather, I would like to address a “better place” in terms of a better space for engaging with technology, humanity, ecology and their ever-changing definitions and relations. This space, in my view, can be created and cared for only via a renewed attention (and also an unapologetic concern) for knowledge. I should clarify that when I talk of knowledge, I am not referring to the mere collection of facts or information, but to the exercise of critical and speculative faculties. In this sense, I talk of knowledge because, in my opinion, we need an adequate epistemological framework for interpreting – and also changing – those crucial aspects of our historicity that appear to have situated humanity at a crossroads between sustainability and

extinction (whether by environmental disaster or technological saturation). Put in other terms, we need to be epistemologically ready for the world we are creating. We need new knowledge structures and new concepts. So, the "collective intelligence" that a publication such as this intends to consider is not, for me, so much the expression of consensus on decision-making and neither the harvesting of mass cognitive activity. Rather, it corresponds to shared infrastructures of and for thought. These infrastructures, in turn, can be conveyed or instantiated via policies, institutions and communities or common actions of different kinds. However, as all infrastructures, they must have solid foundations (that is, outside of metaphor, we need to engage with forms of foundational and systemic knowledge) in order for them to truly sustain and carry us forward.

Can you illustrate a concept/approach/solution you think is crucial in order to get there?

I propose two concepts, indeterminacy and autonomy. I want to present these notions not as solutions (I am wary of futurology's discourses about "fixing" or "solving" the future), but as conceptual tools to address human-machine relations. Undoubtedly, artificial intelligence is today at the forefront of corporate and governmental agendas. This is partly due to the success of machine learning: A set of AI technologies that endow software with the capacity to modify itself. Computer programmes are said to "learn" insofar they can teach themselves to change their own instructions when exposed to large amounts of data. Traditionally, digital computational systems do not deal very well with uncertainty. Yet, with machine learning, we witness an important change in the way in which indeterminacy is addressed computationally. Computer programmes are designed to be themselves more akin to empirical variation, de facto learning from "experience" (I use the latter term in a broad sense, of course). What I wish to stress here, however, is that the operations of machine learning still remain largely algorithmic. It is then interesting to note that

this evolving computational relation between empirical indeterminacy and algorithmic determinism is predicated upon old cybernetic assumptions about prediction and control. As IT experts agree that the improvement of this relation is the key to greater future technological advances, asking to what extent the computational capture of "real-word" indeterminacy can or should be pushed is not only a technical question, but also a sociopolitical one, involving issues related to the quantification of social and individual agency.

The second concept that I wish to propose – autonomy – is strictly related to this issue. In the twenty-first century, we think through increasingly cognitively capable machines: Machines that thus are, in a sense, already thinking. In my view, it is important to consider the ways in which machines can be said to be operating "alongside us"; on the manner in which they function both in proximity to us yet also in autonomy from us. Assessing the "autonomy of automation" is an urgent task for obvious ethical reasons, for instance concerning the algorithmic automation of information selection and decision-making (what are the implications of algorithms that decide, for example, what news or search results to prioritise for us?). In my opinion, however, assessing the autonomy of automation is also important for any type of fruitful approach towards computational agents that cannot be any longer understood simply in terms of extensions or enhancements of human cognitive faculties.

What is a small actionable change in this direction that we could start doing from tomorrow?

I can be brief here, as I wish to consider the smallest and yet most powerful of actions: We should think, and never take occasions for thought for granted. We can also consider how problems (of which our present has plenty) always ask for the creation of concepts, but that concepts, in turn, also need to follow adequate problematisations of the world we live in.

What role do you think people like you (your profession) can play?

I am an academic: Answering your question inevitably involves considering the role of universities in a world where the function of experts is increasingly challenged and higher education is increasingly commodified. In this respect, I wish for my profession to affirm, and keep affirming, its sense of civic responsibility in the context of a public discourse and vis-à-vis a constructive pedagogical practice. As my disciplinary background is philosophy, the second aspect that I should address is the role of the humanities within academia and society at large. In recent decades, the humanities have assumed a defensive position, always explaining and justifying their raison d'être. Yet the humanities are in a unique position to develop that infrastructure of and for thinking that I was discussing earlier – to develop, in other words, that epistemological assessment of contemporary relations between technology, ecology and humanity. The humanities can do so because a consideration of thought in relation to different categories of existence (including technological and ecological existence) is at the core of any humanistic endeavour worth the name.

And European citizens at large?

The role that European citizens can play is connected to the scopes and aims that they envisage for the European Union itself. It is evident that Europe (as a political concept and a social, cultural and economic entity) faces many crises. However, a crisis is always as much an opportunity as it is a threat. While some of the external and internal dangers for Europe have already been given a name (e.g., the rise of populism, unsteady world scenarios with unclear allies, a volatile Eurozone), the opportunity is, in my view, more implicit. This concerns the possibility of rethinking the relation between the universal and the particular in the European context. Arguably, such a proposition might seem abstract

(and, to an extent, yes, this is a fascinating and never resolved philosophical problem at the core of political theory). Yet, in my opinion, this is also a quite pragmatic issue, which can be tackled by mobilising European citizens' decennial experience of living together. The universal and the particular have always been entangled in the way that the EU operates by mixing direct representation and the coordination of national governments or in the manner in which integration is built on the notion of individual participation on an equal basis. The issue, in this respect, is to redefine not only the powers and the instruments of Europe, but also its objectives, its shared agenda, and to ground the latter on new conceptualisations of the many forms of agency that populate the third millennium. My hope is then that European citizens might want (and work for) a sustainable Europe that can be that "better place" (or "space", as I argued earlier) where both the indeterminacy and the autonomy of technology, ecology and humanity find expression, recognition and solidarity.

#6

Interview with P2P Models

Can you describe your notion of “a better place”?

We believe a better place is one where we have solved the “care crisis” we are in. A world where natural resources are not decimated and the time and bodies of women are respected. Invisible work is no longer invisible and we have achieved egalitarian relationships. It would be a place built participatively, listening to the most silenced voices and promoting sustainability and quality of life. There would be a better understanding and appreciation of different cultures. There would be an expanded sense of identity as people would care and respect diversity, not only within humans, but also with other animals. A better place is where power has been power reassessed and we have converted most of the “power over” into “empower”. Technology would be developed to achieve these goals, taking into account people’s well-being. People would not only learn to use new tools, but also to understand them and to be critical about

P2P Models is a research project that combines social research and free/libre technologies to foster social and economic justice. Our challenge is to co-create inclusive decentralised tools and theories. We are focused on building a new type of collaborative economy organisations, harnessing the potentials of the blockchain.
We are a multidisciplinary team: the principal investigator is Samer Hassan, faculty associate at Berkman Klein Center at Harvard University and associate Professor at Complutense University of Madrid. The other team members are: Jordi Burguet-Castell, Silvia Díaz-Molina, Sara Gil-Casanova, David Llop-Vila, Genoveva López-Morales, Elena Martínez-Vicente and David Rozas-Domingo and Antonio Tenorio-Fornés.

how they fit better in our lives. In order to be empowered, people would no longer just be customers, but active agents adopting technologies that respect their digital rights, such as promoted by the free software movement.

As for getting there, most of the advances would come naturally if nothing interferes with the individuals' opportunities to live in harmony and protect their well-being. For that, we would need active suppression of the efforts to control the thoughts of the population and force them in ways that serve particular interests. We would also need a system of education that allows for free thought and experimentation, so people can explore and share their ideas and find better answers than our current ones. It is also important that people have reliable communication channels to obtain relevant information about the world. Those channels could rely on secure and distributed technologies that ensure the autonomy of individuals and enable them to participate as citizens in their society.

Can you illustrate a concept/approach/solution you think is crucial in order to get there?

We believe the more important concept is empowering the citizens. To allow them to be more active in the decision-making processes that affect their lives. To ensure people can freely pursue their wills, not be tied to slave/wage labour, captured by debt that allows powerful/rich players to make them move wherever they want. To give them access to reliable information about world affairs, to ensure they have access to the basic elements that would allow them to form opinions, express them freely and discuss them with others. To have mechanisms to stop censorship. To force transparency on the decision-making process and find better ways to integrate people in them. We think it's key to use the tools we have to monitor governments. It should be a priority to reduce the influence that lobbies have over politics and to promote equality through sharing, either through a welfare

state or communal collective property initiatives. Cities, using collective intelligence, could be able to develop tools to solve the care crisis so a more sustainable life is possible. To facilitate new city networks, limit our ecological footprint and build new care and cohabitating spaces.

As ecofeminists and feminist economists say, we should reorganise our world so everything revolves around life: Urbanism, education, politics, economics ... Currently, capital and life are in conflict and our well-being is constantly endangered. That conflict should be replaced by the acceptance that we are all interdependent and eco-dependent: Resources are limited and we need each other.

What is a small actionable change in this direction that we could start doing from tomorrow?

We should be aware of the environmental impact of our consumption habits and rethink individually and collectively what we buy, people we exploit for labour and who we benefit: As consumers, which economic models are we supporting? And from our individual habits, rethink what we can do as a collective to reduce our ecological footprint and labour exploitation. Change cannot be solely individual but must involve institutions and larger structures and systems.

We believe it is also especially important to increase awareness about surveillance capitalism that enables big corporations to amass data and turn it into money and power to influence political issues. Some other actionable changes could be to start experimenting with a system of universal basic income. “Small” measures to reconcile work and personal life, such as shorter workdays and work weeks, flexible schedules and telecommuting. Also, to incentivise education through TV/radio/internet channels and the direct creation of relevant educational content.

What role do you think people like you (your profession) can play?

People like us could co-design with organisations tools that allow the empowerment of people via decentralised, censorship-resistant channels. We could help increase awareness about the importance of such tools and how to make use of them. More generally, we could participate in outreach in our areas of expertise as a form of education and letting the public be up-to-date on what are the big recent advances, what is being researched and why. We could help to identify the weakness and limitations of conventional institutions. New models of organisations are emerging thanks to new technologies, and they are creating a whole new way to do things in society, and we can help citizens to be part of them in order to have a say in our collective destiny.

Researchers such as us have the privilege of observing and then use these observations to study problems from several points of view, the more diverse the better. Fortunately, we are a multidisciplinary team, and we want to make the most of it. We'd also like to involve as many people as possible to make our project as participative as possible. Design for usability and accessibility is also very important for us. We consider design as the ability to solve problems. It can be very useful to improve the functionality of the physical and virtual tools used by people. And as such, to improve the well-being of the people. Our goal is to design people-centric tools which are people-friendly and attractive to communities, so they can be used to create new citizen services and public policies. We use and promote free software because we'd like our project to go beyond us and belong to everyone.

We believe change could be scalable: "Small is beautiful", said E. F. Schummacher. Small changes that can be replicated to generate a global change. It is not so much about professions or individuals, but network fit. We study and empower communities so they can have the tools to generate impact and change. To generate "leverage points", points within a com-

plex system (a corporation, an economy, a living body, a city, an ecosystem) where a small shift in one thing can produce big changes in everything, as proposed by Donella Meadows.

And European citizens at large?

We believe European citizens can find new ways of organising themselves and demand and use decentralised tools that enable them to be empowered. Also, to transcend nationalities and focus on what we have in common, regardless of our country of origin. Most of the problems we have to solve to get to a better place are common to all of us. We live, more than ever, in an interconnected world. And, more than ever, we need interconnected solutions.

#7

Interview with Delfina Fantini

Dr Delfina Fantini van Ditmar holds a BA in Biology. Delfina completed her PhD at the Royal College of Art with a thesis entitled The IdIoT. Her research focuses on questioning and critically analysing the embedded epistemology of Internet of Things (IoT) in the context of the 'SMARTNESS'. Currently Delfina is a tutor at the Design Products Programme at the Royal College of Art.

Can you describe your notion of "a better place"?

Everybody is declaring "better". Restaurants propose better food, politicians better systems, digital companies better services ... nowadays better is a very popular word. But there is no defined meaning of it. If you look up in the dictionary, "better" is something "more desirable". Desirability embeds values and ways of seeing the world. "Technology is not really about hardware and software any more," said Google CEO Eric Schmidt in 2011, "It's really about the mining and use of this enormous volume of data" in order to "make the world a better place." What is Google offering? It profiles consumers, it stores their behavioural data. Their "better" is related to control and consumerism. Similarly, Chinese politicians argue that their social credit system is creating a better social system.

I believe a more desirable scenario for us has two pillars: Avoid technolosolutions and the algorithmisation of

life. The first one refers to the idea of creating technological solutions for problems that don't really exist (Morozov, 2013). The second touches on the idea of the impossibility of translating human characteristics into an algorithmic logic. When we look at complex systems (e.g., the environment, cities, the society and our bodies), it becomes even more evident: Numbers are not enough to tackle all the challenges they pose, they don't have the qualitative capacity of human expertise and negotiation between disciplines. To preserve the planet, we should learn to use more effectively what we have already (maybe technology has a role here, but not always) and reduce consumerism (invented needs). It's easy to say "let's go digital and make the world better", but the elephant in the room is the materiality of digital objects and services: They need power, devices, servers, cables under the sea, all of which come with a very material footprint. With this comes human reductionism; an integral part of the belief in digital 'smartness' is that we are being evaluated and controlled by algorithms: Agency and reflection are being taken from us. Critical examination of relevant complex matters still needs human analysis; some subjects should not be automated or dictated by algorithms.

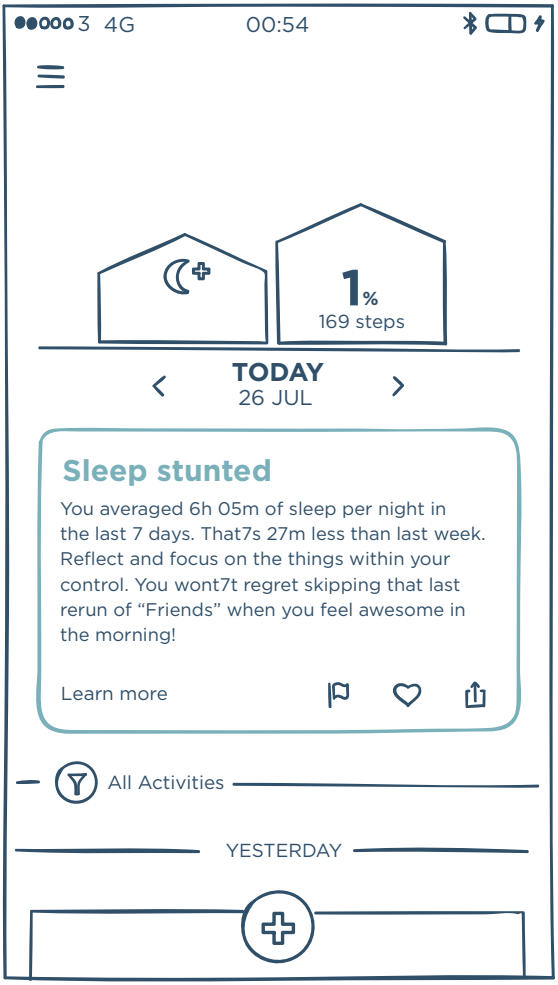
Can you illustrate a concept/approach/solution you think is crucial in order to get there?

Overall, we need to reinforce research showing the limitations of 'smart' technology, while also indicating the potential socio-political implications of algorithms when they come into play in complex systems like bodies and cities. Here, it is important to bring attention to accountability and privacy. Design research is a very good tool for generating new knowledge and bringing new questions into the world. A classic conception of 'smart' objects is that they will do things for you, such as perform tasks and make choices. However, their 'smartness' is extremely consumeristic (most of them guide you to buy things) and based on a deterministic approach to the problems you may have. I did the experiment myself in

the project “Becoming Your Smart Fridge”, playing the role of a fridge algorithm, trying to understand what is needed to perform its supposedly “neutral/’smart’ decision-making”. It was an important step towards raising research questions about what is smartness beyond the American innovation rhetoric that sees it so bundled with Moore’s Law. Once you pick up the relevant questions, you can make up your mind about the future, which for me was redefining what ‘smartness’ is. For instance, use everything we have at our disposal in the community instead of impulsively consuming and requiring endless amounts of new digital devices.

What is a small actionable change in this direction that we could start doing from tomorrow?

The internet is not neutral. The Internet of Things’ first application was an industrial one, and this has had enormous bad repercussions now that it got out of the factory and into our everyday lives. The values it embeds, optimisation, efficiency, quantification of success, cannot be patched into daily objects and our lives. That’s why we need to implement and discuss ethics and values along which algorithms are operated. Algorithms must manifest and assume their impossibility to incorporate human complexity. Hence, ‘smart’ systems shouldn’t be deterministic; instead of serving just one solution, we could start designing them to increase the choices. Today’s wearables utilised for self-quantification (devices tracking sleep, heart rate, etc.) give us as feedback standardised decontextualised metrics and a lot of pseudoscience. They assume behaviours and articulate standard recommendations that are not helpful, because they do not take into account the context where and why the behaviour took place. We need to design systems that are transparent in their functioning, that enable multiple choices and that make us reflect on rather than dictate what we should do.What role do you think people like you (your profession) can play?



The content of the messaging itself included in the accompanying app is laced with pseudoscience and research soundbites taken out of context (I was not sleeping because I was delivering my PhD thesis). Also I realised the internationalisation of shared experiences (Silicon Valley) – why, for example, does it assume I watch Friends?

What role do you think people like you (your profession) can play?

Definitely, public engagement (in my case from a design perspective): Creating design interventions, raising problems and

awareness. In the project "What Your Kitchen Thinks It Knows about You?" displayed in 2014 at the London Natural History Museum, visitors were asked to prepare a cup of coffee (they had plenty of ingredients to choose from), receiving in return a receipt of their behaviour in real time (choices and a description of what they were doing) associated with Amazon's outcomes (if you like this then ...). People may haven't heard of IoT, but interactive installations like this can make many processes otherwise opaque tangible and understandable. In this way, the public can become aware of and reflect on the technology.

It is also very important that we carry around seeds from one discipline to another: I was trained as a biologist, specialising in neuroscience, and then I moved to design. My background makes it natural for me to see diversity and interrelation all around us (with this comes the limits of understanding); for instance, a large part of the brain it is related to an irrational, unconscious and emotional sphere (rationalising human behaviour and attempting to predict it is very problematic).

And European citizens at large?

We should make them an active part of the discussion by making accessible knowledge about the black boxes of their digital life. Once you create debate and awareness, once things are transparent, discussions can escalate and large-scale change can happen. Citizens can engage.

#8

Interview with Teemu Ropponen

Teemu Ropponen is the General Manager of MyData Global, an award-winning international non-profit. Previously, he was the Executive Director of Open Knowledge Finland. The purpose of MyData Global is to empower individuals by improving their right to self-determination regarding their personal data. MyData Global, which has just recently formalised into a non-profit, has over 500 members, including over 70 companies and other organisations, from over 40 countries on six continents. Teemu's personal mission is to help build a fair and open digital society. He is particularly interested in how personal data and open data can be combined to empower citizens and how data and open collaboration create new business, tools for democratic participation and transparency.

Can you describe your notion of "a better place"?

A better place is a future where technology is managed in a way that respects humans as live beings as well as their civil rights. Tech and fundamental human rights are in harmony, and we have an understanding of human rights in the digital age, which remains unclear today. It is a context where you are empowered to control your personal data and use that data for your own needs. We have to go from this sentiment of us individuals as objects, people who need protection, or even puppets pulled by the strings of tech, to seeing ourselves as autonomous and empowered human beings in the domain of digital services.

Can you illustrate a concept/approach/solution you think is crucial in order to get there?

Personal data management is a fundamental issue for the future of the

internet, and it is thus not going to be solved in a year or a decade. The arrival of the GDPR was a "tectonic plate" that moved, it had a tangible global impact and made the EU emerge as a regulatory superpower. Nonetheless, to make the vision of GDPR real, we have to move from formal to actionable rights: How do we exercise them in our daily lives? We need an easy way to transfer data across services, easy to understand and control. We need building blocks, standardised ways of handling data and informing users about how their data is used. Our challenge is: If people have complete control of their data, aren't they going to be overwhelmed by all the services and controls they have to look into? Therefore, we bring up the concept of a "dashboard of consent", one single place that gives you a better understanding of where your data is flowing and for which purpose. Of course, we realise that having people start using an intermediary software is a big behavioural change. How do you make that understandable, how do you avoid that people just tick the box like in current consent mechanisms? We envision a mix of public and private effort around this, as it would be hard or possibly even harmful to implement with participation from only one of the two sides. In Finland, we are exploring the idea with the public sector, and the authorities have responded favourably. We can make EU companies competitive because they are respectful of users; a value which we believe people are willing to pay for. The challenge is how the EU can support this kind of company.

What is a small actionable change in this direction that we could start doing from tomorrow?

A recent study asked 8,000 Europeans about their use of digital services. The study revealed that lack of trust in the use of personal data can be a bottleneck for the data economy. And what increases trust?: Transparency, clarity and ability to control one's own data. People DO care. Many have acted already by changing their privacy settings and ceasing to use certain services. One in ten have requested organisations

to hand over their data. There is room for change, people do want that. We can start by bringing the equivalent of fair trade into the data economy: Making transparent the value chain of digital services.

What role do you think people like you (your profession) can play?

MyData Global, our network and myself, we are community builders, bridges between different types of organisations and people, who work towards data empowerment, digital human rights and transformative business. Right now, the MyData community is an expert one; what we say is backed by years of research and development, and much innovation is yet to come. There is a lot of wisdom out there. We are about uniting and turning ourselves into a bigger and louder voice. We also want to engage with people who don't care about us. They will understand when they realise what this means in their own terms. Therefore, the ethical use of personal data can be a business driver: It increases trust and improves customer experience. Symmetric power relationships increase loyalty.

And European citizens at large?

We encourage people to be aware of their personal data and also to look out for alternative players. Be curious! Ask what kind of data organisations gather about you, as you have a right to do so. We don't need to stop the flow of data, as the data is important for service delivery, but people must be truly aware of how data is used.

#9

Interview with Alex d'Elia

Alex d'Elia specialises in mesh networks and smart grids. A member of CETRI-TIRES, Alex is part of the IoT council and is actively involved in R&D on network, energy distributed and decentralised infrastructure technologies.

D'Elia founded and was the president of Mangrovia.net, a company developing mesh technologies. He developed the DAJIE toolkit solution. Today DAJIE is known as Prosume, a platform implementing energy interactions onto the blockchain, and is under Mangrovia Blockchain Solutions, a systems integrator and software house that d'Elia helped found with a group of other industry professionals. D'Elia's experience includes 15 years in ISP, wireless technologies, mesh networks, system administration, renewables, and efficiency and resilience models.

Can you describe your notion of "a better place"?

In this new century, we are witnessing a substantial paradigm shift; something I personally believe is similar to what was shown in movies like "Blade Runner" and the anime "Ghost in the Shell". And I think it was represented well, because we could see humanity and technology being connected, interconnected to one another. Still, this dystopian image not only seems to become more and more real, but it also gives us some hints on how things could evolve and how society could change.

I think nature is taking its course, and on this course, we might be excluded because of the mistakes we are making, so technology is probably coming to the aid of humanity, because we have already made many mistakes by not considering us as part of this planet but more as conquerors and governors. I believe time is short, and the only way we can survive is to start

assuming responsibility for what is happening to the planet and to society and really start doing something to change the course. A real paradigm shift also for us!

Can you illustrate a concept/approach/solution you think is crucial in order to get there?

I believe that we should remember the thermodynamic laws of physics and begin with an approach that is not "productivity-based" but rather sustainability- and resilience-lead. Our society is entering into what is called the "Third Industrial Revolution", which is presenting to us not only a new way of producing and distributing goods and services, but mostly a new way of distributing wealth. Thermodynamic efficiency is accounting for the gains in productivity and growth, and this makes the cost of producing an additional good or service nearly zero. This is true because of how we collect the energy needed to transform goods and deliver services. When using renewable sources, the only cost we have is the cost associated with building the infrastructure needed to collect this energy and transport it. Once the infrastructure is in place, we only need resources to maintain it.

This comes from the increasing thermodynamic efficiency with which energy and raw materials are converted into useful work that accounts for most of the rest of the gains in productivity and growth in industrial economies. That said, we have to consider infrastructures as what they are, a public good, just like the streets we walk and drive on, something needed to operate the daily activities. No business in an integrated market economy can succeed without an infrastructure.

So, because of how IoT permeates our daily activities and because of its decentralised nature, IoT constitutes a smart infrastructure which can be run autonomously and safely only if it becomes a common, real public good.

What is a small actionable change in this direction that we could start doing from tomorrow?

The distributed, peer-to-peer, laterally scaled economic activities are made possible by the Internet of Things. This infrastructure needs what we call a "networked common", a new governance model enabling the transition to a new collaborative economic paradigm.

The first action we should take to foster this transition should be to change how this infrastructure is governed. In general, we consider privacy and data protection and information security to be complimentary requirements for IoT services.

What role do you think people like you (your profession) can play?

Decentralised right preserving platforms and infrastructures preserving citizens' rights are a necessary step, and we should help governments and markets facilitate the transition to a common good-enabled infrastructure. We should help them embrace this change and understand that privacy has long been considered a fundamental right, but in reality, it has never been an inherent right for humanity. Until the modern era, life was lived more or less publicly, just like most of the social species on earth!

And European citizens at large?

Since the general public would greatly benefit from only having to pay for the marginal cost of what they are using, the best way to finance the fixed costs of creating the public goods is through general taxation to maintain these infrastructures. If we take this perspective, it would, if measured against the benefits for the general welfare, be a small burden for the nation's wealthiest members to embrace this model. Of course, this would lead us to consider the governing body as a public good as well, and this would mean that technologies like AI, IoT and distributed ledgers should, at a certain

level, become a common good; something open in the way that it belongs to the public and not only be the property of some company. I believe Europe has already taken this path, even if there are still some limitations and obstacles to overcome.

RESOLVING THE PRESENT

The digital world is quite new. In the span of 20 years, there have been exponential changes in our everyday lives. As when the car went through years of modulation (creating new traffic rules, installing airbags, seat belts and so on), ideas of how we use and should use online digital devices are only starting to be framed. If we want a digital future that reflects the needs of society and environment, we need to think, discuss and act NOW.

To build a narrative requires taking a pause in the flux of the events and look at how we arrived here – as individuals – to better think of how we can contribute. This section reads the internet's rapid evolution through the lens of the generation at the joint of digital absence and digital taken-for-granted: The Millennials.

At a young age, they have experienced the innocent and empowering era of the internet, an age of knowledge distribution and new opportunities arising with the mass diffusion of the web. Motivations, hopes, achievements: Digging into solutions for major societal challenges, this section sketches a Millennial's digital ethnography by reporting the hints and proposals that have emerged from a series of workshops aimed at rebuilding a Millennial's narrative that focuses not on how the internet has gone wrong, but how we believe it could be improved.

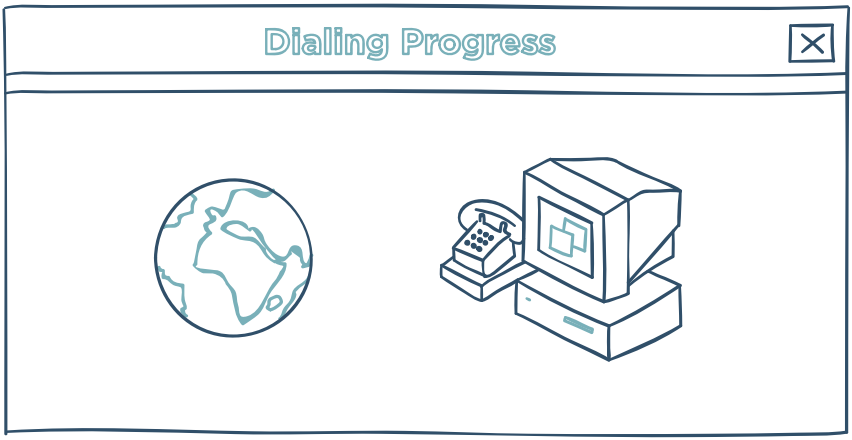
Rebooting the system from a Millennials' perspective

As a digital anthropologist, Jennifer Veldman is fascinated by how digitisation is influencing us as social human beings and therefore also as society. She has worked theoretically (research) and practically (producing and hosting workshops) together with organisations such as Amsterdam University of Applied Science, Dyne.org, Bits of Freedom and Next Generation Internet to reveal and create awareness of the consequences of digitisation of our very lives. In 2018, she founded DataWatchers : A project that creates a space for Millennials to work on a future where the digital is fair and sustainable and helps to make digital communication devices work for us instead of the other way round. DataWatchers starts from the premise that we do not want, nor can, return to a fully analogue world.

The future will forever be something unknown. The moment 'the future' has revealed itself, we no longer call it future, but present or even past. Therefore, the only tool we have to shape or even predict the future is the reflection on our present and past.

History is catching up on us. During WW II, Alan Turing and his team built the BOMBE, the machine that turned out to be the prototype for the computer. ARPANET, the first version of the internet was released in 1969. About 30 years ago, the world wide web was launched, and in 1998, it was made usable for the main public by search engines like Google. Not long after, laptops and smartphones (since 2007) replaced ungainly, stationary computers. Today, we can hardly imagine life without a computer within reach. Some of us already have implanted chips, making our physical body connect to the digital . We're not far from a future where every item in the embodied world, dead, alive or lifeless, will have a digital twin. Changes have followed each other so quickly, and with such immense impact, that it seems hardly possible to fully grasp

what is happening in the present. We can't, unless we deliberately take the time to stand still. Like a praying heron standing next to a quick-running stream, we should take the time not to act but to observe and reflect on our past and present and from this visualise what the future could hold.



Workshops

One would think the best way of approaching Millennials would be via social media; however, as the feedback from this generation underlines, we stress the importance of face-to-face communication. Therefore, a series of workshops or discussion groups have been set up in two directions. One is a basic workshop. We travel Europe (for now) to invite Millennials in different countries to reflect on our past and present and visualise what we believe the future should look like. So far, this has been hosted by Jennifer Veldman and Marta Arniani in Lisbon (at Web Summit 2018), Amsterdam and Barcelona (at 4YFN 2019). Future workshops will spread over Europe in 2019. The other is a series of workshops, initiated with the basic one, elaborating the topic with a steady group of participants in sub- theme workshops. This direction has full focus on

Dutch locations and is handled by Jennifer Veldman, the initiator of the project. Both workshops have a range of 10-30 participants, all Millennials, with different backgrounds, genders, ages, educations and ethnicities.

Talking to and being part of this generation, a pattern becomes visible. The first steps towards the internet were magical and at the same time a little intimidating. Worldwide connection, unlimited access to information! Then comes puberty: That time of feeling awkward most of the time, trying to make a stand in the world, discovering new ways of connection. The magic of childlike innocence slowly fading away when the real world reveals itself bit by bit. Being online became serious business: A phone call cutting short gaming, research for homework or hobbies and discovering not every person online has good intentions.

As we, and the internet matured, our relationship changed. Although the digital sometimes still seems magical and intimidating, it is no longer for the unknown, but for the seemingly endless possibilities to use it for either bad or good. As the practical solutions for the growing pains are stabilising, the ethical ones are stepping into the light: Issues of privacy, mass manipulation through fake news, increasing echo chambers inflaming polarisation, physical implications of too much screen-staring, bad posture from sitting still for too long and mental problems; issues that are turning into societal problems when burnouts and depression are becoming as

common as the plague in the Middle Ages. And this is not even to mention the energy and space all this new technology is requiring. Even though it can and will be part of the solution, at the same time, it is about time to consider the negative impact of all this technology on climate change. And so the list goes on with serious implications for the core of our society, for our everyday lives …

Where to start?

Our definitions of interaction, work, privacy, etc. are fundamentally changing. We feel and are concerned by our mass addiction and information overflow, but don't have the option, nor wish, to entirely withdraw from the digital. The one thing we all crave for are more real human interactions. To feel valued as a human being. Commercial tech companies seem reluctant, if not unwilling, to change software for the benefit of the people. Have we reached an impasse? No, but in line with the solutions to reduce climate change, we have to think bold, act fast and be willing to make sacrifices.

We have to stop looking for individual solutions, both in terms of topic and person, and start taking the road of non-dualism. Everything is integrated, and this is how we should treat problems and solutions. GDPR is a great step in the right direction, but still a single-issue regulation – that of privacy. In order to really move forward, instead of pasting patches, we need solutions that take into account both the social, political, economic and environmental implications of the digital. By now, we are far enough down the road to no longer be overwhelmed by what is happening, but to be able to predict and prevent (most) future challenges and benefits to society before the commercial companies. In every aspect of society, we should stop looking at numbers only and take into consideration what those numbers mean. What is the value of creating more jobs, decreasing unemployment, if working those jobs means giving up one's human dignity ? What is the value of digitising systems in the name of efficiency, if it means losing touch with the underlying current of the troubled citizen?

Solutions for the future will have to take human values into consideration. Software that supports authentic human interaction instead of replacing it. Efficiency is elemental, but should not become a cold instrument. Freedom and open communication will be valued, as will sustainability, all under strict quality control. Digital public space – such as social media platforms have turned into – should be governed and maintained by the public. Attention engineering techniques derived from addiction psychology should be bound by strict regulation. Caroline Nevejan and Frances Brazier argue that 'being and bearing witness is fundamental to human interaction and crucial to trust'. We need to design software that allows trust by handing the reins back to the user.

Individuals themselves also have a responsibility to help each other with 'digital hygiene' by acknowledging that not every message needs to be texted or answered right away. Education has to play a big part in this. An example can be taken from the Waldorf School of the Peninsula , where many Silicon Valley children are taught how to programme and the implications of software, but no digital devices are allowed at school.

Common values for the future, from a Millennial perspective, are freedom, human values, sustainability and open communication.

Glimpses of a different social network

In order to avoid a company with hidden agendas (such as creating addiction to gain attention) pulling the strings, there should be an open source, publicly funded and publicly owned social media platform used solely for communication. Instead of looking for a profit incentive, the platform should promote building authentic human interactions. This means that the platform would not need to sell advertisements. The platform would be void of brands, lobbying and state or professional journalistic intervention. This also excludes the possibility of buying a competing position by buying likes.
The platform would be governed by rotating teams.

On the technical level, the platform should be built to allow P2P exchanges and adaptability for users over time. Data is ephemeral, that is, never stored permanently.

♥ 100 likes


NEW
ECOLOGY

Towards a collective intelligence for Europe

Marta Arniani is an experienced R&D manager, strategist and content curator with an expertise in technology's social impact and European Commission innovation funding frameworks. In 2017, she launched the consultancy futuribile / curating futures with the aim of building a meaningful and purposeful culture of innovation going beyond technocentrism. With this approach, she supports ecosystems of stakeholders and individual companies in designing R&D projects, innovation strategies and multidisciplinary gatherings. Her interests lie in digital social innovation, diversity and ethics in emerging technologies, and innovation management. These are also the main topics covered in the futuribile / curating futures newsletter , which provides resources for making sense of the digital transformation while combining social and technology innovation.

Early 2019. We are approaching the end of the world as we know it. Anthropocene is in full swing. Nothing seems to suggest that we will coordinate to reduce earth temperature significantly and effectively in time to avoid global catastrophe. Already, social, political and economic changes are affected by climate change. Economists predict a huge recession starting from 2020. Similar to the crisis 12 years before but one without any back-up. The circle is complete: Our digital twins reshape very concretely our rights and everyday lives; cameras and data cross-check are turning the embodied world into a simulacrum of the digital one. The very notion of reality wavers.

We thought reasoning in terms of human-centric design and technologies would have helped in subtracting human subjects from technology efficiency laws. But human subjects don't live in a vacuum: Contextual design and ecosystem thinking emerge as valuable alternatives. The separation of science and culture, technology and humanities, body and soul proved to be a big collective Western illusion: The tools we invent and use shape our physical and mental

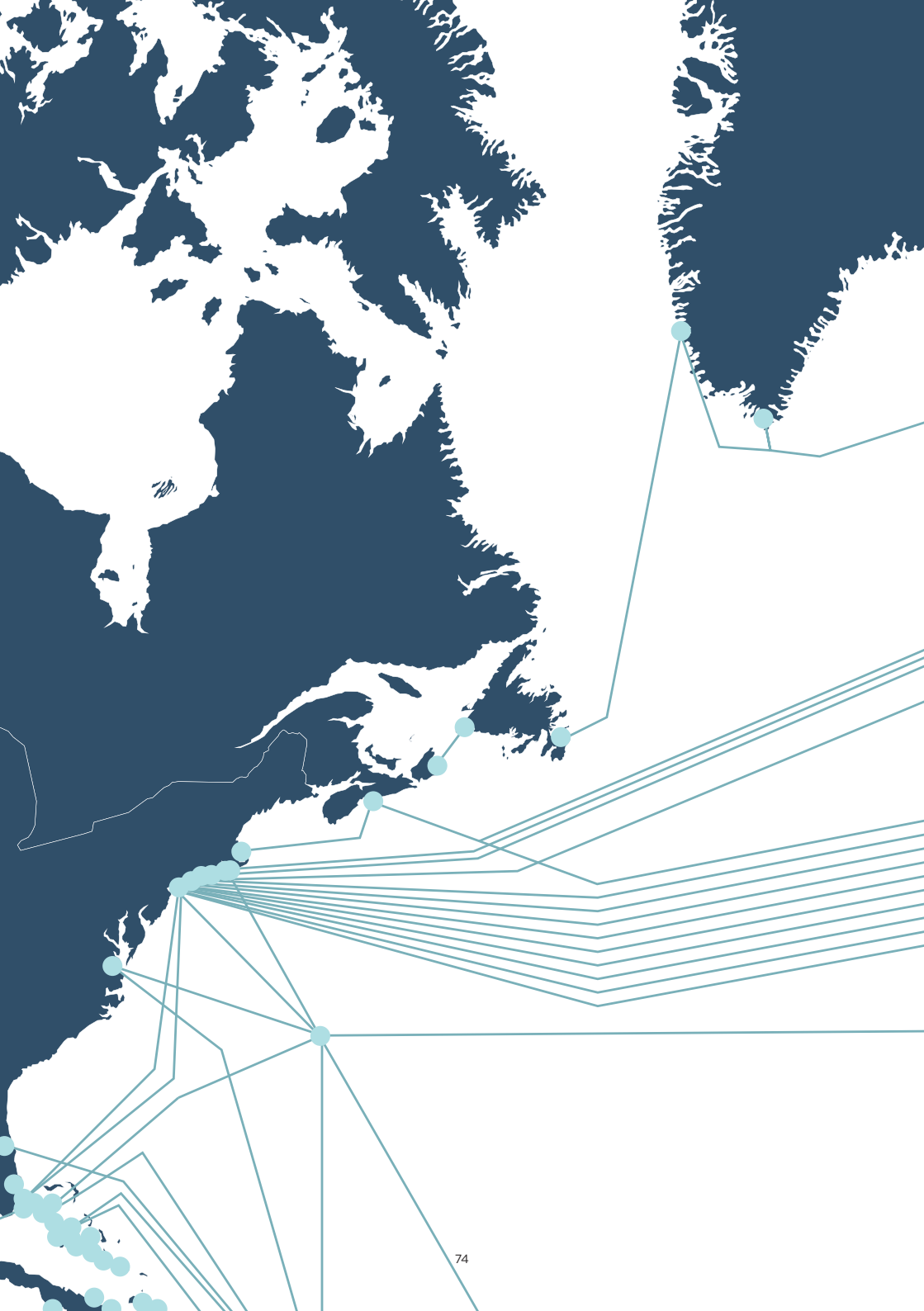
body. They change our culture, society, starting from the club and the wheel. They change how we relate to our environment. They change our environment. The earth itself. Our future is inherently digital, technologic, interconnected, because these are the defining elements of our time. Our future, the one of the generations forward we can imagine, is on planet earth. If these generations don't thrive, there will be no colonisation of so far inhabitable planets. We need to buy time on this planet if we ever want to get elsewhere.

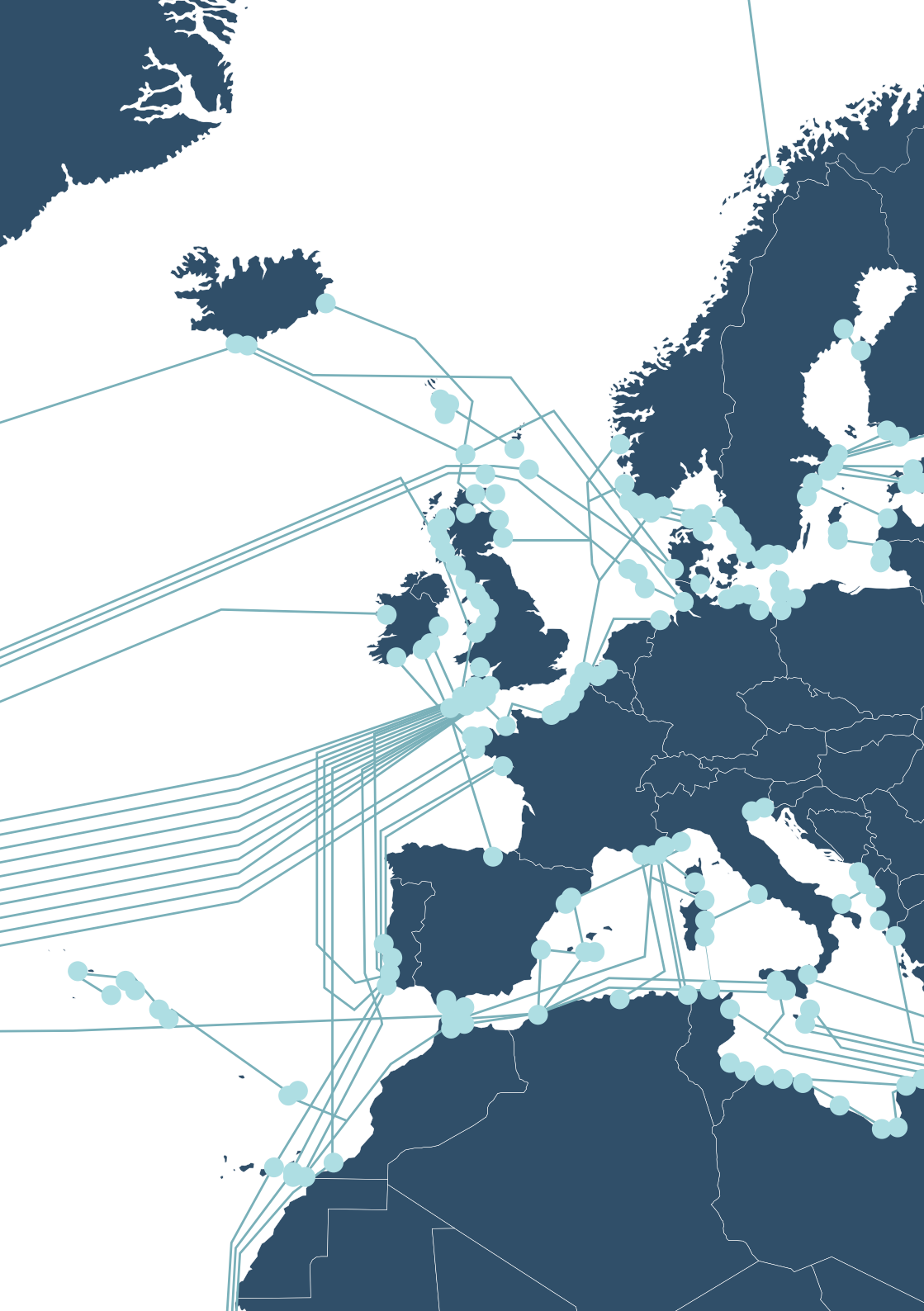
There are thus two matters of fact to be made explicit. One, human society's destiny is still tied to that of the earth. Two, technology is not neutral and it never has been; it is a societal factor that expresses beliefs, hopes and ambitions as well as bias, privilege and fears, and it is run by a small selected elite group of people. The sooner we appropriate these evidences, the sooner we can invest resources, efforts and intelligence into a desirable future. We need to improve our interaction with technology – making technology work for society and not the other way around, and go beyond human-centric systems to embrace ecology. This requires two main shifts: Building an informed society that has some degree of choice, participation and imagination in collective matters and acts upon it actively and with responsibility, and updating systemic forces (governments, corporations) functioning accordingly. What is at stake in the coming years is collectively defining the priorities and supporting those alternatives that are already embodying a different future.

It is undeniable that we are navigating troubled waters. There is plenty of evidence to suggest that humanity is simply running towards self-destruction (which might actually be a good thing for our host planet). However, rather than focusing on technocentric predictions and easy demonisation of big corporations, this publication proposes radical systemic thinking along with pragmatic viable alternatives. Too much collective energy is invested in predicting the future and running after the latest technology trend or, the other way round, trying to get back to the world before digital technology. By refusing to depict humanity's role in this era as a

purely negative one and by highlighting instead alternative versions of our society, we refuse to be victims of history and act on a self-fulfilling prophecy of annihilation. “A better place” is a probable future where technology, humanity and ecology are balanced, a working concept for rethinking the historical time we are living in and for assembling visions and solutions that can lead us towards a liveable future. This publication is meant to stimulate political and civic imagination. It will be handed over to the European Parliament and to any citizen who in her professional or personal capacity is willing to contribute proactively to a desirable hybrid and sustainable future.

Today, there are over 420 submarine cables in service, stretching over 1.1 million km around the world.





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How do women move around cities? Santiago is finding out - apolitical

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The use of digital services - a consumer study in four European countries - Sitra

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This company embeds microchips in its employees, and they love it – MIT Technology Review

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