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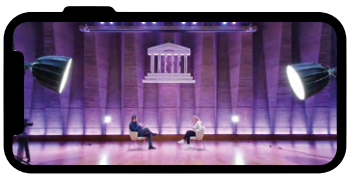
THE
new
now
Sylvain Louradour



video version

toutes les tendances 2021
the New *Now*
en 52 mn c'est ici

MDP : *superexplo*

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THE new now

Sylvain Louradour

"I'm stepping through the door
And I'm floating in a most peculiar way
And the stars look very different today"

David Bowie, *Space Oddity*

"The time is out of joint"

Shakespeare, *Hamlet*

"And there was no preconception of what to do."

Daft Punk, *Giorgio Moroder, Random Access Memories*, 2013

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Pace

The content of this book unfolds in 3 episodes of 20 chapters each. Each of these 3 episodes has a function.

Episode 1, dedicated to decoding, examines the crucial notions of predictability and uncertainty, in relation to AI.

Episode 2 is prospective, inviting us to imagine a world of superimposed states, to borrow an image from quantum physics.

Episode 3 is operational, discussing avenues to explore to inhabit new worlds by building connections between them, like explorers of the future.

The Netexplo Observatory

Some observatories focus on the sky. Netexplo is interested in ideas, projects, initiatives and emerging practices in all sectors and on all continents.

The result? 2,000 innovations were gathered by the UNESCO Netexplo Advisory Board, from which the most remarkable 100 were selected. The ones that could well change our future. Some will last, others will be shooting stars. Each of them can be a source of inspiration, whether by adopting, rejecting or altering it.

These 100 innovations are described on the following pages and generously populate the trends they have inspired. Like any book, this one is a co-creation between the reader and the author. Creativity is therefore an absolute must!

Marginalia

In some works of the Middle Ages, there are notes in the margins of the manuscripts. These comment on, nuance and titillate the main point.

What are they called? Marginalia, or drolleries if they lean towards the satirical. Their purpose is to offer an additional meaning, like hypertext, pop-ups or emoji.

We use the following codes for the notes in the margin of this book:

▶ Action required:

How can we make a concept operational, concrete and effective? Ideas for implementation.

⏸ Reflection:

Pause for a few seconds, just to delve into a word, a theme or a concept.

⏩ Anticipation :

What is the future of this subject? Science-fiction? Absolutely!

⏪ Netexplo told you so:

Since 2007, Netexplo has captured and analysed thousands of innovations, some of which foreshadowed this year's selection.

⬇ 2020-2021 spotting:

The 100 innovations spotted by the Netexplo Observatory worldwide in 2020 and 2021. This is the N100 2021. A very good vintage, as you'll discover when you leaf through the book...

Global trends **2021 - 2022**	*Ep.* **01**
Function **decoding**	*Title* **predictable me**

re people the only predictable things in an uncertain world?

1

predictive tech

IA

Big data

A prediction-based model gives us an unequivocal scenario, based on the past in the form of data. How can we explore other possible worlds?

Global trends **2021 - 2022**	*Ep.* **02**
Fonction **prospective**	*Title* **worlds on demand**

an the future be imagined as several superpositioned worlds?

2

fake news

splinternet

phantasphere

What bridges can we build between the separate worlds that we create and live in according to our own preferences, values and beliefs?

Global trends	**2021 - 2022**	*Ep.*	**03**
Fonction	**for action**	*Titre*	**hope in translation**

How can we extract intelligence from self-contained worlds?

3

traduction

inclusive tech

hybridations

Adaptation can mean resignation.
Perhaps the answer lies in transgression:
going beyond limits to unleash our creativity
and make real transformation possible

episode 1
predictable me

"Hey the computer knows nothing"

Christophe, *Tangerine, Les Vestiges du Chaos (The Remains of Chaos)*

1. projection *impossible*

A spaceship goes off course. An ice block sinks an unsinkable liner filled with life and light. The sapphire needle of a vinyl turntable jumps out of the groove. These are all metaphors for 2020, a year which, despite the seeming perfection of a double 20, took an apocalyptic turn.

To put it simply, this year did not go according to plan.

But what was really planned?

For states, it was agreements, treaties and decisions. For companies, projects, new products and reorganisations. For families, gatherings, reunions and holiday destinations.

So many projects that came to a halt, strategic plans nipped in the bud, ideas destroyed before they even emerged. In such a context, how do you stick to a business strategy for 5 years, 2 years, 6 months, or even 2 weeks? How do you put energy into uncertain projects? As Seneca points out, hope and fear are "*both (...) daughters of uncertainty, both waiting, concerned about what will happen*".

To plan a project is literally to throw oneself forward. Into a more or less distant future, which promises to be, if not better than the present, then at least surprising, exciting and different. To plan a project is to think about possibilities. In committing ourselves to a project, we envisage several versions of ourselves.

It is a bit like creating a double of oneself that awaits us further down the line, pulling us into the action required to join it.

❚❚ Apocalypse: from the ancient Greek *apó* ("out of"). Apo-: prefix marking the idea of putting out, putting away, pushing away, opposing, and from the Greek verb meaning to hide; word for word, unhide, in other words, to uncover, to reveal. What is the health crisis revealing to us? About ourselves, about the systems of world organisation, about our vision of innovation?

❚❚ Project,

"In projecting myself, I objectify myself in a certain way, as I objectify myself in a signature that I can recognise, identify as mine, as a sign of myself." In 1949, in *Philosophie de la volonté* (*Philosophy of the Will*), Ricoeur explains this duality, the driving function between self and better/different self that keeps us alive. For a person, a company or any group, the gap between current and future states that creates the forward impetus, the desire to be different, the desire for the thing to be built, the state to be reached. An almost erotic tension.

But this tension was cancelled out by the health crisis, which suddenly prevented this movement of projection and fulfilment by bringing all kinds of projects to a standstill, like planes grounded during a storm or butterflies pinned to a board. Whereas this vision of ourselves in the future used to give us a goal, it somehow collapsed on us without warning, leaving us face to face with ourselves.

⏩ 2045: The COVID-19 crisis is referred to as the First Global Pandemic, to view it in the broader picture with subsequent crises.

Does this idling, or even switched-off state, put a stop to innovation, which constantly seeks to produce something new? Let's put this into perspective: a large part of "innovation" no longer involves creating something new, but is more about conservation, saving the day in an attempt to patch up a shaky geo-political and climatic system.

▶ Organise, in conjunction with R&D, an R&C (Research and Conservation) unit to filter innovations according to their respect for the environment, crops, etc.

That being said, innovations are part of the teleological certainty that there is a sense of history, an intention directed towards a goal. The unforeseen is certainly on the side of the dramatic accident, but also on the side of invention, like two opposing forces. By definition, innovation is unexpected. For its users and beneficiaries, but also for its originators. Where does a new, and therefore

▶ Question the origins of an innovation, often neglected in the heat of the moment, for the benefit of its development and application. To learn from the ideation process itself, which reveals the organisation.

unforeseen, idea come from? From a combination of culture, determination and rebellion? This issue remains a mystery. What is certain is that the innovation itself is a controlled yet unforeseen event, combined with the certainty required for the smooth running of the project.

2. the great *unforeseen*

"We are right at the beginning, do you see.
As though before everything.
With a thousand and one dreams
behind us and no action."

Rilke, *Notes of the melody of things*, 1898

Apart, obviously, from the cohort of human dramas, why was this withdrawing, this mirror effect, felt so violently? Because it had not been anticipated, not foreseen. Suddenly, the world was unpredictable. Not unpredictable in the anecdotal sense, like an everyday accident, not unpredictable elsewhere, in a distant part of the world. A planet-wide, global unpredictability, as staggering as it was fascinating.

This Big One, this Great Unforeseen, shattered our faith in the institutions tasked with planning (governments, economists, doctors, etc.). Until then, we simply had vague concerns about possible abuses. In a world perceived as dangerous and uncertain, we rely more and more on forecasts, expectations and predictions.

Predictability is in the mind of many, beginning with several innovators identified by the Netexplo Observatory in its 2020-2021 intelligence work. All over the world, researchers, experts and investors are focusing on predictability, for purposes ranging from business to activism.

We are used to basing our action on theory followed by practice. In other words, modelling the future

The Big One, a devastating "on hold" earthquake is expected to occur in California, with a 62% probability before 2032.

The Netexplo Observatory spots thousands of innovations a year, in all sectors, worldwide, thanks to its exclusive network, the UNESCO Netexplo Advisory Board.

and expecting it to play along.

Is this approach still possible? The world is too complex, too complexified by the exponentially growing and uninterpretable mass of data that is supposed to help us make sense of the world. Not to mention the ability to take the correct factors into account. In September 2020, the editor-in-chief of the prestigious medical journal The Lancet stated that "Covid19 is not a pandemic", because the virus acts as a revelation of a more serious and wider medical and social situation. He then used the term *syndemic*, coined in 2017 by the anthropologist Merrill Singer from the Greek *syn*, "with, together" and demos, "people".

❚❚ "*According to this way of thinking, the expectation is that the world must remain the stable matter that can be shaped by our will once and for all. (...) We will have to direct our actions knowing that the world will always be able to surprise us.*" Divya Dwivedi, Professor of Philosophy at the Indian Institute of Technology, New Delhi, *Papers*, Sept. 2020.

▶ Inventing a word is not just a mind game, it sometimes makes it possible to anchor a notion that was previously vague and therefore non-existent, to bring into existence a reality that had not yet been named and so stimulate our thinking.

3. foresight
what is it good for?

Foreseeing, i.e. seeing ahead, is never selfless. Why plan ahead? To have a say in things to come, to take the necessary measures and precautions. But to foresee is to go a step further, to prepare the future,to decide for the future, to organise it in advance. If we take up the admirable etymology of future, whose root is *to grow*, we could compare the action of foreseeing to bonsai art: how do we sculpt the future to give it the desired shape?

That desired shape relates to certain objectives, like having children, without having to put up with social dictates. Lilia, the "Egg Freezing Concierge", allows women who might want children later to organise steps according to their present lives or circumstances. The platform offers personalised information, access to the safest clinics and attractive prices. The aim is to make it easier for women to plan their lives by explaining the options available to them. The aim is to be proactive about fertility rather than reactive to infertility.

Foreseeing is therefore, on the one hand, trying to detect the signals that reveal the future and, on the other hand, wanting to influence the future: by taking precautions according to the forecasts, one deliberately designs a different future. On the forecasting side, technology is working wonders with detection, modelling and data processing by artificial intelligence. On the side of building a different future, human decisions are in action, by of designers, researchers, governments, experts, citizens, etc.

Future: Indo-European root *bhewe,* "to grow", then in Latin *futurus,* "to come" and then *into French* to mean "the future" in the 12th century.

Canada N100 2021

Foreseeing is seeking to avoid an accident.

An accident occurs suddenly but is the result of causes, more or less known, that progressed underground until crystallising into an event. This is the case for diseases of genetic or epigenetic origin, or facilitated by other factors: Ai alzheimer's screening, designed by a team from the University of Tokyo, recognises Alzheimer's disease on the face of affected people, by analysing their features and complexion. Until now, there has been no biomarker for diagnosis without psychological tests. In the future, researchers hope to accurately trace the causes of the disease by diagnosing and assessing it faster and in earlier stages.

Foreseeing is an attempt to reduce the unexpected as much as possible by taking into account as much data as possible and by increasing processing power. The super-objective of this approach is to model as many parameters as possible, or even all the parameters, in an omniscient vision of the world. To transform into quantifiable and analysable data all the relationships between beings, between beings and their environment, interactions, projects, desires, thoughts, the earth and its geological tremors, the living and the mineral world, the infinitely small and the infinitely large. If everything is deciphered, everything is predictable. In this transparent world, with no unforeseen events, accidents no longer exist. An ideal world?

⏸ *Accident, from the Latin accidere "to fall on" and figuratively "to happen by chance".*

⏬ Japon N100 2021

⏩ 2050: the test, applied from adolescence, makes it possible to detect cases and set up a personalised preventive neural exercise programme.

⏸ Just like In the *West World* series, all interactions between machines, and between humans and machines are planned and scripted..

4. the oyster *and the eagle*

"It is a poor eulogy about a man to say that his political opinion has not changed for forty years. It is to say that for him there has been no daily experience, no reflection, no adaption of thinking based on facts. It is to praise water for being stagnant, a tree for being dead; it is to prefer the oyster to the eagle."

Victor Hugo - *1802-1885 - - Literature and philosophy mingled,* October 1830

In this fantasised and desired world of total predictability, the most immediate subject, the one closest to us, is... us. The human being, that is. Our desires, fears and impulses. How can we apply the grid of predictability to children, to women and to men? Is the human being so predictable, like the oyster evoked by Victor Hugo, that neither his experience nor his reflections can make him new and therefore puzzling?

It is notably through written language, a coded screen between things allowing abstraction and therefore reflection, that human beings set themselves apart. Writing obeys rules and codesthat are sometimes predictable, especially in the administrative or professional world, because ready-made phrases tend to disappear in informal writing. Does this make us any less predictable? Depending on the context, the addressee, and the personal online world dissected by algorithms; it would appear not.

The writing assistance tool Wordtune,capable of rewriting entire sentences by correcting them, can also adjust length while respecting the desired tone.

▶ Paradoxically, administrations often work more effectively at clarifying jargon than companies, which can be victims of internal corporate language or language imported from external advisors, today's Diafoirus.

⬇ Israël
N100 2021
◀◀ 2019 / GPT 2

Created by the start-up AI2ILabs, based on Haim, an AI language model with 1.5 billion parameters, comparable to GPT-2, this solution, after a free trial as a Chrome extension, costs $10 per month. Even more professional, Copy.ai provides semi-automatic writing of advertising texts, social media posts, blogs, etc. thanks to GPT-3, an ultra-powerful language recreation system. The user chooses the type of text, describes the product in 2 or 3 lines and Copy.ai offers 10 different versions of the content required. For the founders, the aim is to stimulate creativity and facilitate the work of writers, not to replace creative staff, and also to enable SMEs to communicate in a professional way.

So, you can delegate the writing to AI.

What about speech? You have certainly already experienced that video conversation that turns into a fiasco because you can only hear every second word. The problem is simple: your voice, like any self-respecting data, is broken down into packets to be transmitted to the other person. Sometimes one of these packets gets lost on the way, resulting in a blank in the sentence. Google has addressed the problem with WaveNetEQ, a generative AI trained on human voices from 48 different languages. During a call, it learns the characteristics of the speaker's voice to generate content that matches that person's style and words. When it detects a gap, it speaks on your behalf by producing the right syllable or word.

If we can really rely on a third party for language, that necessary medium for abstract reasoning, the risk is that we could be deprived of the tool that can take us from the eagle and its broad view to the oyster and its confinement.

Israel
N100 2021

⏩ 2034: Everyone owns a selfbot, a nonphysical robotic double of oneself, capable of writing with your style, speaking with your voice, which can be assigned to the tasks you want, instead of you.

United States
N100 2021

5. objective
zero defect

"If I have a book that does the understanding for me, a director of conscience that has conscience for me, a doctor who assesses my diet for me, etc., then I do not have to make any effort myself. I do not have to think when I can pay; others will adequately take on this tedious task for me."

Kant, *What is Enlightenment?* 1784

An artificial intelligence that speaks on your behalf is a cause for concern; it is yet another area in which AI seems to be encroaching on human characteristics. For what purpose? To help us. To avoid breaks in a conversation by establishing bridges between two broken, cut-off pieces of a sentence, to avoid inconsistency and eliminate any flaw or accident. A smoothing operation that could appear cosmetic if it did not affect the meaning, the significance and our intelligence. We are reaching the magic part, the part that fascinates and worries us: to achieve this feat, does the AI really understand our sentence, to the point of being able to complete it? Or are we so predictable that all it has to do is compare the beginnings of our sentences with its vast database to paste in the right ending? This last option could give us serious complexes: we think we are still superior to the machine, but are we capable of more than clichés, platitudes, and fultra-predictable phrases?

Duplex, another Google innovation, can replace a human on the phone to make an appointment

⏸ Avoiding accidents, i.e. aiming at zero defects, is one of the most important tasks we entrust to machines in all sectors.

▶ It is interesting to ask ourselves which of our actions and decisions are predictable in our own eyes and in the eyes of those around us. And, why not, to seek to be less predictable.

▶ In a company, "official" language and talking points, created to forge corporate culture and belonging, hinder reflection, creativity and responsiveness, by making any discussion ultra-predictable and therefore useless.

at the hairdresser or book a table, before automatically entering it in your diary, by imitating a human voice to perfection, to the point of adding exclamations and interjections to increase the appearance of reality. All you have to do is tell it to make the appointment. Again, the aim is to save us effort. We give an order to a machine that will engage in a conversation spanning a few minutes. Do we consider that making an appointment by telephone is an unbearably mundane task? That we have better things to do with our time? In any case, with this device, we reduce our language and the machine increases its own, adding to its base of vocabulary, tone and intention.

⏸ As part of a reflection on illusion, published in *Le Bruissement de la Langue (The Rustle of Language)* (1968), Barthes coined this term to refer to the process of creating verisimilitude in a fiction.

The growing subtlety of machine language is perhaps best reflected in Learn From Anyone, still in alpha version, created on GPT-3 technology. The principle is simple: choose a topic, then a teacher. The result is impressive: you can ask Elon Musk, Shakespeare, Steve Jobs, Plato or whoever you want, to answer you, on any subject. The well-argued and relevant answer, is rooted in an AI, fed with more than 500 billion words, the equivalent of more than 150 times the whole of Wikipedia in all languages. This electronic brain, the largest neural network ever created on one of the 10 most powerful computers in the world, has 175 billion parameters that enable it to write poetry, translate, code, converse, correct, edit and, therefore, write in the style of a given personality, with the nuances of that individual's thought and expression.

▶ In a company, to intellectualise the ideas of the founders as food for thought rooted in history?

⏩ 2041: School education is provided by a single, global and multilingual AI, which adapts to all levels and subjects, with a tailor-made approach to the student.

6. mute *by laziness*

The issue is no longer predicting exactly what a person wants to say or write, but taking their personal characteristics, their idiosyncrasies, to recreate them in this very special moment of expression through language. By imagining a mix of these 3 technologies, we can conceive a perfect double who, on a monosyllable from you, will start a conversation by anticipating your arguments, by imitating your voice and its tics and by developing arguments corresponding to your way of thinking/your value system. Which part of yourself would this language double take over? If it voices your thoughts for you, would it leave you totally mute? Partially mute? What would you task it with?

Expressing your ideas and projects and putting them into words means revealing your personality to others. It is both an intimate action and an open one. The fact that a machine can carry out this operation again raises the question of the scope of our humanity. It is the colossal power of deep learning that makes this hyper-prediction possible.

After all, why talk? Why speak when there are sensors that can analyse your brain waves and convert them into action, like the Nextmind, headset, which allows you to control a device by thought in real time? This simple sensor, which is placed on the head and relatively easy to set up, is offered with a development kit, to imagine new applications. At this point, it is intended for

⬇ France
N100 2021

video games and makes simple interactionspossible by focusing on an object presented on the screen, such as typing numbers, increasing the sound volume, or moving visual elements. In the next few years, it could be developed to recognise a complex mental image.

⏩ 2029: UltraMind, a personalised neural kit, makes telepathy possible by detecting a person's thoughts and sending them to a receiver placed on the skull of another person anywhere in the world.

The interpretation of brain signals is based on the assumed predictability of the human brain. A team of researchers at the University of Helsinki has created a new brain-computer interface that can decipher what a person is thinking and thus generate an image based on what is in his/her head. By interpreting the signals, the Neuroadaptative generative modelling AI was able to create images of faces that matched the characteristics that the study participants were thinking about.

⬇ Finland
N100 2021
⏪ 2019 /
Deep Image
Reconstruction

Once an AI can complete your sentences, speak or write as you would, read your thoughts and transcribe them, what is left for you to express? Or even to think? You have become totally predictable because you are transparent and decodable. Without intimacy. Without the possibility of secrecy. An open book.

⏩ 2027: a collective creates an Intimate Blue Box for every human on earth, a kind of digital safe, accessible only to its owner, not linked to the cloud, as the last refuge of intimacy.

By envisaging us in this way, the IA reduces us to its modus operandi, the relentless transformation into data of your body, thoughts and intentions.

If you feel like taking back some control by becoming less predictable, you can already prevent a voice assistant or your phone from listening to you without your knowledge in order to analyse your desires and needs.

⬇ United States
N100 2021
⏪ 2020 /
Adverserial Fashion

Bracelet of silence blocks any nearby microphone

to give you back your privacy,and allow a truly private business or personal conversation. The wristband, developed by students at the University of Chicago, emits white noise and uses hand movements to amplify its effect in all directions without blind spots. It is a wearable accessory that makes Google, Alexa and Siri deaf to your words.

▶ Utile pour créer une salle de réunion virtuelle pop-up et sécurisée en environnement hautement connecté.

7. planet *of the wise*

AI's power can be put to use for a sustainable future. Instead of repdicting human behaviour, innovators use it for the good of the environment. Global warming and deforestation are two causes of the mega-fires that are impossible to contain in the Amazon, the Arctic, Australia and Indonesia, with maybe the Mediterranean next on the destruction list. Hence the attempt to predict fires, based on multiple factors. Algorithms factor in the topology, the ecosystem, the nature and speed of the winds and the presence of humans. Correlated with the different types of fire, these factors make it possible to predict the outbreak and spread of a fire, so firefighters can win the race with the right equipment in the right place. This is what Wifire is doing, with the mission to enhance fire science through data, in collaboration with the San Diego Supercomputer Center. Similarly, Lux Aerobot, a fleet of stratospheric balloons with high-definition sensors, coupled with AI, which can provide Lux Aerobot,a fleet of stratospheric balloons with high-definition sensors, coupled with AI, which can provide predictive analysis of environmental disasters. This is an immediate and operational predictability, aimed at countering a well-targeted danger and putting in place the appropriate response.

AI plastic pollution spotting,developed by the Plymouth Marine Laboratory, is also using satellite data, but to protect the oceans. The algorithm detects, monitors and predicts the movements of

▶ Biases guide the AIs, which sometimes makes the treatment of data controversial. Rather than avoiding biases by pretending to be objective, could we not voluntarily incorporate them? Positive biases explicitly oriented in favour of sustainable development. AI x SD = Green data.

⬇ Australie N100 2021

⏩ 2041: For the last two years, we have become used to seeing smart balloons of all sizes floating in the sky, dedicated to collecting data for various purposes including environmental protection and security.

⬇ United Kingdom N100 2021

plastic waste in the ocean, distinguishing it from sea foam and algae with an accuracy of 86%. How? By using satellite data from Sentinel-2, which captures several wavelengths, from visible light to infrared. After the prediction of pollutants on the surface, we can dive into the depths with Tidal, a facial recognition system for fish. More specifically, this project by X, Alphabet's R&D subsidiary, applies automatic recognition technologies to the oceans. Tidal uses underwater cameras and other sensors to "detect and interpret" the behaviour of fish that is imperceptible to human observers. The system recognises and tracks fish to observe their feeding habits, while collecting environmental data to protect the oceans and promote sustainable fishing.

United States
N100 2021
2019 / Chimpface

Predicting can also mean preparing for the future in the best possible way, by thinking long term, as in the case of responsible agriculture. Alphabet's X teams have also developed a solar-powered robot, Mineral Plant. Shaped like a buggy and equipped with state-of-the-art cameras and sensors, it collects data on the soil, weather conditions and plantations to optimise cultivation, limit the use of fertilisers and water and restore soil fertility. Analysis of a terrain to establish a lasting cartography, useful in the medium and long term, is an act of predictability: it gives a temporal dimension to space.

United States
N100 2021

8. the unbearable naivety *of AI*

"You've been the best at what you do for so long, you don't even know what it's like for the rest of us."

The Queen's Gambit, 2020

So AI can be seen as a machine for producing predictability, or more precisely, a machine that translates any object or being into predictability, with total infallibility. However, there is a disturbing element in this perfect model: the duality of this entity that is both hyper-genius and hyper-naïve.

On the genius side: in 2016, Deepmind's AlphaGo, drawing on the rules of the game and a diet of 5 million games in 3 days, managed to defeat a human world champion at Go, causing astonishment, admiration and shivers of anxiety. Several of its moves were seen as surprising, innovative or even creative to experts. We had just lost another part of our precious humanity to the machine.But predicting winning moves on a chess or Go board is not exactly predicting the future. It is rather predicting an infinite number of possibilities of moves in an extremely narrow context.

What happened next? In 2017, AlphaZero once again trounced another chess champion.

But this time, without having had access to any game beforehand. And in 2020, MuZero crushed opponents in chess, Go and Atari games without

II "This is what constitutes this intelligence: a huge number of trials and a memory never allowing the same mistake to be made twice and to never forget to replay a good move." R. Gelin, O. Guilhem, L'intelligence artificielle, avec ou contre nous (Artificial intelligence, with or against us), 2020

United Kingdom N100 2021

having seen a single game and without knowing the rules. The human response ranges from fascination to existential dread. But, for its part, does the AI show triumph? Not in the least. It does not care or even know it has achieved a remarkable victory. It does not understand the incredible, supremacist character it is capable of in our eyes. This reveals the other side of AI, its naivety.

Unlike a child who only needs to see one cat to recognise other cats, it is currently necessary to provide AI. with thousands of images of cats. The Image-Net-A database can educate the AI by providing it with thousands of unretouched photos, as it is known that retouching, such as filters or noise on the image, can easily confuse it. Sometimes the AI reads a picture of a squirrel as a rocking chair. A butterfly is interpreted as a washing machine and a bird as a jeep. It is probably all a matter of categorisation to give the AI reference points of colour, texture and shape. What about facial recognition? A simple handmade 3D mask with two paper eyes glued to it, foils the Face ID recognition that Apple has equipped its latest iPhones with. A simple test foiled Amazon's facial recognition tool, which mistook 28 members of the US Congress for dangerous criminals.

IfAI is fed with clichés, i.e. stereotypes, "common sense" and prejudices, it may turn into the quintessence of the least refined, least subtle, least advanced human behaviour. In January 2021, researchers at the University of Washington demonstrated that image generation software completed a male face with a body in a suit 43% of

❚❚ Luc Julia, co-creator of Siri and CTO, Vice President of Innovation at Samsung, clarifies the notion of AI in *Artificial Intelligence Does Not Exist, published* in 2019.

❚❚ Caroline Sinders launched Feminist Data Set in 2017: "a critical research and art project that examines biases", explains the designer. The project includes the creation of a feminist artificial intelligence (AI). *Le Temps*, Nov. 2020

the time and a female face with a bikini 53% of the time. The biases reflect a reality, transmitted by the language that maintains a male/female relationship that is sometimes problematic: Omayeli Arenyeka, a software engineer at LinkedIn, is also a technology artist who reflects on the problem of stigmatisation. One of her projects is the Gendered Project, an evolving library of sexist words to change the perceptions and uses of everyday language.

▶ In a human organisation, establish such a list to educate and warn about sexist aggressions including verbal harassment.

The feedback loop that underpins an AI's learning probably explains the ideological shift of an innocent chatbot, Tay, posted on Twitter one morning with the statement: "Nice to meet you, humans are super cool". At the end of the day, after a lot of chatting and interacting, Tay repeatedly spouted racist and pro-Nazi comments. This example has become classic because it is disturbing. Produced by our lives, fed by our behaviours and actions, Big Data paradoxically appears as an alien in our world, to whom everything must be explained.

▶ Slipping into the skin of an extra-terrestrial allows us to have a better view of the aberrations of a system and an organisation, that had become invisible by force of habit.

This is what we do every day, without even knowing it, for example with the captcha tests that websites make us take from time to time. With pride and a little indignation that someone might have thought the opposite, we prove that we are not robots by recognising photos of pedestrian crossings, bridges or stairs. But the reason this test is so easy, to the point that it is almost humiliating, is that it actually has a completely different function: to educate an AI. When you recognise a fire hydrant, you are actually teaching a robot that the red creature on the corner is called a "fire hydrant".

❚❚ Bergson defines comedy as "*Something mechanical in something living*".

We might smile at this. These facts reassure us by presenting a character who is comical because of his maladjustment to the context, his mechanical

side out of step with the world. However, the failings of AI can have dramatic consequences, as shown by the dismal failure of Watson for Oncology, the AI that was supposed to provide the best possible advice to "eradicate" cancer, whose erroneous recommendations could have seriously worsened the condition of patients. Predictive medicine poses a serious problem: the doctor will have to trust an analysis so complex and out of his reach that he will not understand it, to make a diagnosis and announce it to the patient and his relatives. With blind trust.

▶ Charters for a responsible AI are multiplying. Great, but let us also think about having a clear separation between "design" and "testing". For additional security, these two operations could be run by two different teams.

The very coexistence of these two faces, at opposite ends of our usual scale of intelligence, makes us shudder because of its freakish, monstrous character. Just as Professor Frankenstein imagined and then made a pseudo-human creature whose mixture of naivety (a creature, born adult, discovers the world without having had any experience of it; hence its setbacks) and develops intelligence making it a hated being.

For in Shelley's novel, the monster, far from the stammering, grunting colossus embodied by Boris Karloff in the first film adaptations, speaks and writes in a sophisticated manner, because it is educated by books. Just as AI is fed with data. Books or data: two media transcribing reality, giving a vision of the world as opposed to sensitive experience and empirical learning. We entrust the keys to the predictability of the world and of ourselves to this dual being.

❚❚ Mary Shelley wrote *Frankenstein* at the age of 18, inspired by experiments in reanimating bodies by means of electricity, based on galvanism, named after Dr Galvani. This refers to the stimulation of a muscle with an electric current.

9. the (double) menace
phantom menace

As we face the health crisis, we are somehow caught between two invisible worlds: the world of the threat, the virus, the economic and social crisis, with its clearly visible consequences, and the world of the solution, also invisible, with AI used for sequencing, analysis and planning. Of course, artificial intelligence can be described by its infrastructures,gigantic servers, networks and diagrams; but it has no appearance as intelligence is by nature a quality, not a tangible thing.

▶ Making an object visual by means of a diagram which allows it to be objectified and to be given the same appearance in the eyes of different interlocutors, is an essential first step in understanding it.

By default, the pairing of these two invisible worlds, threat and solution, shapes a place between two unknowns, where future developments cannot be foreseen. On one hand, the environmental crisis, which we have created through negligence and blindness, by pursuing a disastrous production-driven system. On the other, Big Data, which we have created out of determination, with the clear aim to surpass ourselves in certain respects, through its voracious appetite for information.

Although capable of analysis and anticipation, Big data, is nonetheless mysterious for the majority of people and even for its designers, who observe the latest developments with all the more interest because they can be unpredictable Hence this paradox: the very system that is supposed to bring us a certain serenity, a predictability of events through its computing power, could turn out to be as frightening as the problems it is designed to solve, because its progress is increasingly unpredictable.

▶ In addition, there is a transversality of data, whose flows could easily cross state borders and corporate walls. Encouraging this transversality could help demystify it.

DARPA, the US Department of Defense Agency responsible for research and development of new technologies, is funding an AI designed to decode and predict the emotions of allies and enemies based on texts of all kinds, to advise staff on major military decisions. This project is called PRIDE (Prediction and Recognition of Intent, Decision and Emotion). It aims at predicting the reactions of a collective group, for example the population of a country. How would they react to a given event? PRIDE has a clear vision, which is to provide recommendations at international level.

⏩ 2057: No humans fight wars anymore, because they are replaced by robot soldiers whose "price" is higher than that of a woman, a child or a man.

Here we can see the piling up of grey areas leading to a decision with very important consequences: an AI, whose operation remains opaque by nature, which is applied without prior consent to individuals or crowds. A department with projects protected by secrecy. A use by the military, which is also subject to confidentiality. This somewhat unusual example because of its military nature, alerts us to the delegation to an AI of forecasts for action. It can be objected that the decision, in fine and in petto, is made by the general, by the government.

The decision-making process in the brain is being studied. According to some researchers, your brain makes the decision 11 seconds before you are aware of making it, because it chooses the decision closest to past decisions, in a positive feedback loop.

⏸ "*Unconscious traces of thoughts pre-exist. As the decision process progresses, the brain chooses the 'thought-trace' which is the strongest.*" Joel Pearson, Professor of Cognitive Neurosciences, University of South Wales, Scientific Reports, 2019

This result, which challenges the idea of free will, stems however from a simple experiment (choosing between two colours) on a small number of people (14).

In any case, deciding is the same as choosing an option. The word decide comes from the Latin

caedere, "*to cut down*". What we cut down when we decide is one of the branches of a tree of possibilities.

▶ Continued interest in this tree even after deciding allows for fruitful iterations, by comparison, between the chosen and the nonchosen objects.

These possibilities are imagined, elaborated, made present in our minds through anticipation, as we study contexts and data according to a precise objective. Except that this work of anticipating possibilities, if it is provided by an AI, reduces our scope of intervention and consequently influences human decisions. Does it influence it by refining, specifying and structuring it with elements beyond human understanding? Or does it influence it by forcing the decision? Does providing a prediction, i.e. choosing among all the futures the one that will happen, replace a decision, which is the basis for launching one of the futures?

The more the prediction appears to be the result of a complex operation, factoring in millions of parameters, the more reliable it will seem. The more reliable it appears, the more it will convince the decision-maker of its merits. So an apparently accurate can replace a decision with a ready-made future.

Human Element intends to read our minds, not by studying words, but by studying emotions. With Hx work bench, the company promises clients to fine-tune the impact of their video advertisements with AI by deciphering impact from facial expressions. The company's goal, however, extends beyond a mere marketing tool. Its founder believes that analysing expressions can predict behaviour and sees this as a step forward: "*AI will make us more human*", he says. There are various applications. Security: will a demonstration turn into a riot? Love: is the person you want to meet

⬇ United Kingdom
N100 2021
◀◀ 2014 / Modeling Behaviour

interested in you? The idea is to eventually have your own emotional recognition assistant so that you can finally know what the people around you are thinking, given that humans are capable of bluffing.

We can try to hide our feeling but AI may prove more objective in probing souls.

This is an advantage for a company when it comes to predicting your long-term behaviour, for example whether you will repay a loan. "*Honesty makes you happy*", says Deepscore, which can determine how trustworthy a person is in one minute. While the user answers questions, the AI analyses his or her facial movements and voice to determine a trust score.

⏩ 2025: Facial expression courses to mislead AIs are offered in open source by the Brazilian collective FFA: F***** Facial Analysis

⏬ Japon
N100 2021
⏪ 2017 / Lenddo

10. AI, in spray cans *or on wheels?*

We know how AI makes us predictable, by turning us into data. We, on the other hand, are still hesitating: how do we give a predictable and understandable appearance to this multi-faceted being? With a human envelope? A robotic casing? The appearance of a tool? An avatar? With or without an interface, designers, engineers and researchers are constantly experimenting with new appearances to contain an impalpable and super-powerful phenomenon in an understandable form. Of course, AI can be embedded in an existing object. Kuangchi smart helmet, with AI-powered infrared cameras to detect pedestrians with fever, even from a distance and in a crowd. It takes only two minutes to analyse a queue of over 100 people. Worn by police on the streets or by medical staff in hospital, it can also scan a person's identity or a number plate, with the results being displayed on a virtual screen that is shock and scratch resistant. The stated aim is to prevent future pandemics and terrorist attacks.

Designing a decision or an idea the same way as a product is designed to make it useful and understandable from the start. Hence the creation of the Concept Designer function.

Chine
N100 2021
2018 / Cloudwalk

To predict is to control. To predict the shape of an AI is to control it. It is to give the impersonal and cold army of identical servers an innocuous, amusing and downplayed appearance. Design plays an essential part in this process, by predicting the human-machine relationship.

Koda robot dog belongs to this family. Unlike other robot dogs on the market, the AI dog Koda is intended to interact socially with human owners. The robot's AI is decentralised and based on the

blockchain. It can sense when its owner is sad, happy or excited so that it can, over time, respond appropriately to human emotions. Koda can be used as a guard dog, companion dog or guide dog for the blind.

Robot companions need not be anima-shaped. Ballie, a new kind of personal assistant combined with a pet, doesn't sit on a table like a trinket. Similar to BB-8 in appearance, equipped with a facial recognition camera, it rolls over to you, obeys your voice or anticipates your daily, actions by "controlling" other devices in the home: screens switched on after your coffee, vacuum cleaner triggered if the floor is dirty, curtains opened to get a better tan, etc.

Corée du Sud
N100 2021

2028: Marketing of LivePet, a multifunctional pet combining living cells and robotics.
The orgadesign can be chosen between 3 forms online: Rabbitball, Catcube or Dogsurf.

Beyond the design of the object, movement seems to be becoming a trend in so-called smart objects, which could contribute to making them less predictable, depending on the degree of autonomy they are given. A team of researchers in Hong Kong has developed sprayable robotics. M-spray can turn objects into mini robots that can be magnetically controlled and reprogrammed to move in different wats, e.g. crawling, rolling or flipping over. The object to be robotised can be flat or three-dimensional and only a thin 0.25mm layer of spray is needed, which preserves the original shape.

This solution could allow medicines to move inside the body to reach the right place where the coating dissolves and can be absorbed by the tissues or be excreted.

Hong Kong
N100 2021
2018 / Electrick

11. neuro *stimulant*

The initiators of artificial intelligence themselves claim proximity, not to human intelligence, but to its producer, the brain. Many initiatives aim to reproduce a digital twin of the brain. Launched in 2013 with the ambitious objective to simulate a human brain on a computer in 2024, the Human Brain project, coordinated by the Swiss Federal Institute of Technology in Lausanne, includes 116 partners and 800 European researchers in some 20 countries, for a total estimated cost of 1.2 billion euros. Numerous reversals seem to have downscaled the ambitions of this project, which is now focusing on deciphering the brain in six separate areas. The "applications first" angle, the failure to take neuroscience into account and the overly technological approach feature among the internal and external criticisms of the project. In fact, this project and its delays seem to reveal that it is hardly possible at present to duplicate a brain, because we do not, in fact, have any complete model and research is fragmented, segmented and subject to different approaches and cultures: a kidney is not analysed like a brain, which is both an electrical network and the seat of the soul, depending on the conception. Moreover, the paradox lies entirely in the very name of this project, "human brain", to designate an attempt to create a digital brain. This name displays the objective of exhausting the subject, studying it and making an exhaustive picture of it in order to create a twin. But the brain resists, and so does its product, intelligence.

▶ Creating a name for a project is often considered as a secondary operation. However, in conversations, messages exchanged and meetings, the project has no constancy other than the name. Hence its importance.

The human brain, the ultimate model? What about the brain of a roundworm for a change? With the Worm brain driver, project, researchers from IST Austria, MIT and TU Wien have successfully trained an autonomous car using a new artificial intelligence system based on the brains of tiny animals, roundworms. Only 19 neurons are needed to control the vehicle, compared to the millions of neurons needed for the usual networks.

⬇ Autriche N100 2021

Why systematically model AI on the organ of human thought? A less anthropomorphic,more frugal AI can open up new avenues.

If we cannot or do not want to duplicate a brain, as this is unattainable, we often revert to its physiological functioning, like a muse: the neuronal and synaptic network serves as a model and as inspiration for researchers. Recent breakthroughs include the neuromorphic computer, whose components imitate the functioning of neurons, particularly for learning tasks. Compared to the 86 billion neurons in a human brain, Pohoki Beach, Intel's latest neuromorphic computer, networks 100 million neurons. This is equivalent to the nervous system of a golden hamster.

⏩ 2061: All the brains of all living species are now modelled and assigned to different missions according to their characteristics.

12. whose is the *biggest?*

The battle between Artificial Intelligence (machines) and Natural Intelligence (humans). A great classic. A fertile breeding ground for science fiction films which, from *Metropolis* to *Terminator* via *2001: a Space Odyssey* or *Forbidden Planet*, with good old Robbie, made the most of this threatening antagonism. A step further, in *Dune*, thinking machines (artificial intelligence) were banned after enslaving humanity.

In their place, highly trained humans, the Mentats, drugged with Sapho juice, took care of all data analyses. Through the computation process, they looked for logical patterns in situations.

Several biases undermine the comparison between these two intelligences:

1/ Bias 1: Man and machine are compared based on a single quality, intelligence, which is a crucial component of the human being, but far from being the only one. What about artificial emotion, artificial intuition, artificial will, artificial generosity, artificial meanness, artificial daydreaming, artificial stream of consciousness or artificial critical judgement?

2/ Bias 2: We play at frightening one another by putting the machine on a playing field specific to humans. For example, we are stunned when a machine beats a world chess champion. We do not think of trying to jump off a cliff alongside a seagull to find out who flies better: we know that the bird flies, and that we do not.

❚❚ *"Crusade against computers, thinking machines and conscious robots began in 201 Before Guild and concluded in 108. Its chief commandment is in the O.C. Bible: 'Thou shalt not make a machine in the likeness of the human mind'. Humans had set those machines to usurp our sense of beauty, our necessary selfdom out of which make our living judgments. Naturally, the machines were destroyed."* Frank Herbert, Dune.

Similarly, we know that an artificial intelligence calculates infinitely more powerfully than we do.

3/ Bias 3: Does the traditional expression *artificial intelligence* really refer to intelligence? The jury is still out, but it is clear that the different accepted meanings of the word intelligence do not contribute to a better understanding of the object called AI, which is fascinating because of its power but also confusing because of its naivety in some respects. By keeping the word "intelligence", do we not risk missing the reality of this entity? By giving it this name through lazy anthropomorphism, are we not blinding ourselves by neglecting what makes it specific? By dint of being obsessed with this aesthetic and ostentatious battle between two intelligences, could we not rename this entity to rethink it in a better way?

13. attempt
to rename AI

Is AI artificial? Why not. It emanates from machines.

Is AI Intelligent? This polysemous word has no well-established definition, or has too many. Its etymology seems quite clear: the Indo-European root **leg* "to gather", "to choose", "to assemble", which in Latin gives *legere*, "to pick, gather". Prefixed by *inter*, "between", the word originally meant *intelligere* "to mentally choose between". Then intelligence came to designate all the functions that have knowledge as their object, in the broadest sense of the term: sensation, association, memory, imagination, understanding, reason and consciousness. Is this really what we expect from an AI? In fact, we rather ask it to perform tasks with precision and power.

Proteins play a major role in the functioning of our cells. Mapping their structure, which is essential for the development of new therapies, had been a problem for 50 years, until Deepmind's AI succeeded in modelling it with unprecedented accuracy. Alphafold 2, stemming from the work behind AlphaGo, the first AI Go champion, is a huge step forward, saving years of painstaking research as it could allow the identification of all proteins in the human body and the creation of entirely new drugs and vaccines for Alzheimer's disease, for example. AI, in this case, is not there to understand as humans do, but to sequence and represent. As for the intention, it is set by the researchers who programmed it.

United Kingdom
N100 2021

United Kingdom
N100 2021

Similarly, when the Olvin company launched Almanac for retailers and marketers, the objective was clear: *"to use the power of AI to predict consumer behaviour"*, by processing billions of data, including news, weather, demographics, etc. Despite the range of parameters, it was not a question of understanding but of processing data at a high level, in a certain field, that of sales, for a specific purpose, to sell better, in a more targeted manner.

The word *intelligence*, to describe a targeted, defined task, directed to a solution, does not therefore appear to be the most appropriate. On the other hand, the word algorithm fits this definition perfectly. If this word does not contain a "*y*", it is because it has no connection with the term *rhythm*. It comes from the name of Al-Khwârizmi, a great Persian mathematician of the 9th century, whose writings led to the introduction of algebra in Europe in the 12th century.

The word first referred to elementary arithmetic and its rules, before becoming specialised in the sense of "sequence of operating rules", before finding wide dissemination in the computer field, which is currently occupied by Big Data. It is a finite set of ordered operations aimed at solving a problem, regardless of the sector.

But of course, the entity whose name we are looking for is not quite a simple algorithm, because it has a certain autonomy: it learns from its mistakes to increase its efficiency. This is machine learning, whose variant, deep learning, is inspired by neural networks. We could therefore speak of a super algorithm.

This word, algorithm, rose to fame among the general

public because of one of its specialisations: recommending and managing content on social media.

Proposed name: *Interactive Algorithm*. A process of interaction with the data that feeds it to accomplish the task. Another proposal? A name that refers to the function of AI to assist humans in a galaxy of tasks and missions, with no a priori power limit. Hence *Infinite Assistant*.

This attempt to rename AI does not, of course, claim to replace the accepted formula, but rather, by questioning its name, to destroy the cliché that it has become, to question its substance, its capabilities and its relationship with us. As both new AI proposals have the same initials – IA - you can read these two letters with whatever meaning you want, by bringing in your own intelligence, and not in an unequivocal way.

Togo
N100 2021
2017 / Lenddo

Interactive algorithm, as in the case of Givedirectly Togo. Its mission is to identify and help the most disadvantaged people to deal with Covid, especially women in rural areas. The first deployment, in Togo, was based on Novissi, a mobile money transfer platform set up in April 2020 by the government during the pandemic. The algorithm uses data from smartphone usage to identify difficult socio-economic situations and target aid. In a completely different field, the AI, an *interactive algorithm* can teach itself to protect your company against cyberattacks. Darktrace Antigena learns the identity of your business in great detail from scratch, so that it can prevent identified attacks in real time, but also detect emerging threats.

United Kingdom
N100 2021

It provides continuous protection and blocks intrusions in seconds. It is the first AI in this field

capable of protecting an organisation without any prior rules against cyberattacks.

On a personal use level, Iagree, a Chrome extension, uses AI to alert users to important or incongruous points each time they are asked to accept conditions. This is a well-targeted feature at a time when we are waiting to be recognised by the app or site we are visiting for a specific purpose, in a hurry to skip the declarative steps: password, gender, surname, first name, etc. "Less form, more T&C's" seem to be the motto of uninhibited and personalised browsing.

Canada
N100 2021
◀◀ 2020 /
DoNotSign

Infinite Assistant: infinite because it can process an immense amount of data and because it can assist us in any area of life. Comprising a disposable stick, a hyper-designed stick reader and an app, Bisu Body Coach analyses your urine in 2 minutes to provide you with a medical diagnosis and give you personalised advice on your health, diet and sports profile. The perfect example of a basic product with AI-enhanced capabilities. An ideal health assistant, in short, just like Lumen breathalyzer. This small device analyses your breath for personalised advice. Using the device and the app, Lumen assists you in your fitness and weight loss goals by "hacking" your metabolism. The device gives a score out of 5 to tell you whether your body is running on energy from your fat reserves (an ideal "fat burning" state of 1 or 2), the carbohydrates you have consumed (a 4 or 5), or a combination of the two (a 3). It proposes a suitable diet. An attempt to democratise secure biohacking?

Japon
N100 2021

United States
N100 2021
▶ For a person in charge of remote health of a group, telemedicine + teleworking for example, these portable and personalised devices allow regular monitoring between two in-person consultations.

Sober.AI, a mobile application that uses an AI to to detect the intoxication level of an individual with alcohol, cannabis or other substances. This

Canada
N100 2021

app, launched by two Canadian students, has the potential to save lives.

United States
N100 2021

Why not a business assistant? Ideasai, a platform created from Open AI's GPT-3 and fed with confirmed business ideas, generates start-up projects on a just-in-time basis. Readers can vote on ideas and rank them, including "an online shopping cart that allows shoppers to simultaneously buy from multiple sites". The Infinite Assistant can also become, in its multi-faceted adaptability, a very conscientious parental assistant: Big data, as a cuddly toy? Ainenne looks like a bedside lamp, but like Aladdin's, it hides a genie to grant the wishes of tired parents. Understanding baby's cries? Easy. An algorithm, trained with the cries of 150,000 babies in 150 different countries, converts, in real time, through a small icon, the cause of the crying: I am hungry, I am very hungry, I want to play, etc. The child speaks without knowing how to speak. Second wish: when to wake up the child? The predictive algorithm, which analyses the sleep data of the newborn child, will tell you and will turn off the ambient noise cancellation system designed to create a calm bubble around the cot.

Japon
N100 2021
◀◀ 2014 /
CryAnalyser

Whether you call it AI for *Artificial Intelligence* or IA for *Interactive Algorithm* or *Infinite Assistant* is up to you. Depending on its mission, your data processing tool can be clearly described in a range of ways without resorting to stale metaphors.

14. forecasts, *predictions and omens*

"I am afraid that our eyes are bigger than our stomachs, and that we have more curiosity than understanding. We grasp at everything, but we catch only wind."

Montaigne, *Essays*

Big data, doubly impressive in its volume and power, imposes itself on us with its omnipresence and omniscience, but not yet by its omnipotence. That being said, it is already taking on the form of an entity that is larger than ourselves and therefore confronts us with our human finitude, a role that until now has been assigned to gods and/or extra-terrestrials. As it is ultra-powerful, it arouses great expectations in us, whereas it is first and foremost a "mere" instrument. In 2009, the United Nations General Secretariat launched the United Nations Global Pulse programme, with the ambition to "*bring real-time monitoring and prediction to development and aid programs*". Today, the stated mission, which can be read at unglobalpulse.org, no longer explicitly includes prediction, but instead calls for the positive and universal use of AI:

"Our vision is that UN Global Pulse contributes to a future in which big data and artificial intelligence are harnessed safely and responsibly for the public good."

To believe in such a superior being, to trust him with our collective and personal destinies, is in a

II *"We are surrounded by people who have forged instruments for analysing society over the past decades (...) and who rightly say: the time has come to apply the instruments of analysis at my disposal. We can clearly see that this leads to a symmetrical risk, which is to ignore the uncertainty of the current situation."* Etienne Balibar, philosopher and Professor Emeritus at Paris X Nanterre, interview with Adèle Van Reeth, Papiers, Sept. 2020

way to abandon our critical spirit and our capacity to doubt.

⏩ 2034: The BDL, Big Data Lovers, meet in the Sandaka virtual desert for the 2nd year running for the new Mining Man festival.

The forecasts that this Datagod gives us are therefore more like predictions, or even omens. The temptation is great to accept without questioning the "views for the future" proposed by this digital god. However, even if the mass of data collected increases exponentially, the question remains: how do we process them? How do we make any sense of them all? Nav Kesher, head of data science at Facebook, admitted in 2018 at the AI Summit in San Francisco that 80% of the data collected by the platform are raw and therefore unusable. Any attempt to predict the future via AI thus seems doomed to failure, unless we settle for a partial future. However, our belief persists.

Why? First, as we do not have the means to counteract the power of data capture and analysis, we acknowledge our weakness. Second, we are inclined to prefer the comfort of a revealed truth to an opinion forged by reflection. Finally, we benefit from an advantageous margin of interpretation: a prediction requires a reading to apply to a situation. This is the role of oracles. Datagod gives us information. What does it mean? How do we use it in our context? Who has the capability to convert the divine message into concrete and usable reality? And above all, if one interpretation interpretation is possible, several are possible. Each oracle can therefore give the meaning it deems appropriate, and thus guides the listening followers. How can we *bypass* the oracle and its data science, which is a screen for neophytes? A quick flashback: in the 16th and 17th centuries, Galileo, Descartes and Hobbes chose to write not in Latin but in "vulgar"

▶ To avoid AI and Big Data becoming this impenetrable Datagod, it is important to explain it in relation to humans: what values, uses, consequences and ethics.

languages, i.e. Italian, French and English. In that way, they affirmed their commitment to break down the wall between the world of the learned and the world of the ignorant. Similarly, Datas-peak, which encompasses terms and notions relating to the crucial subject of data, must not replace, like all the jargon of the "entre-soi", a clear understanding of the issues concerning AI and data by citizens or company employees. The desire to make AI accessible comes up against a problem: the inexplicable nature of the decision-making of artificial neural systems. Hence the research into XAI, Explainable Artificial Intelligence, which aims to find a way of making the opaque workings of the AI understandable. This problem of a system providing sometimes vital solutions, which we follow without understanding the ins and outs, troubles even DARPA : "*Dramatic success in machine learning has led to a torrent of Artificial Intelligence (AI) applications. Continued advances promise to produce autonomous systems that will perceive, learn, decide, and act on their own. However, the effectiveness of these systems is limited by the machine's current inability to explain their decisions and actions to human users.*"

⏸ A reference to Newspeak, invented by Orwell, the official language of Oceania, the totalitarian state of *1984*.

◂◂ TCAV 2019

⏸ Defense Advanced Research Projects Agency: an agency of the United States Department of Defense responsible for the research and development of new technologies for military purposes.

But in fact, do we need to know everything? Is it necessary to want to know everything about certain matters, such as the future, for example? Nicolas de Cues, in *On Learned Ignorance*, proposes to push one's faculty of knowledge as far as possible while accepting that some things escape us.

He writes that "*knowing our ignorance*" is practising "*learned ignorance*".

Moreover, if AI is supposed to predict the future by learning from what has already happened,

a paradox arises. After all, data is by definition derived from things and events that have already happened. How can we build the future using the past as material?

15. the rogue wave *syndrome*

"Nature is wont to hide herself"

Héraclite

The term "rogue wave", that is to say an "unexpected, abnormal, dangerous" wave, refers to these gigantic and unpredictable waves, destructive walls of water, which can suddenly appear in calm waters, outside of any storm, 30 m high, capable of crushing even the strongest ship. The most striking symbolic image of this wave is Hokusai's print, *The Great Wave of Kanagawa*.

This phenomenon, observed by sailors, was not initially believed, because it was unknown, was not the norm and did not fit the equations. It was then documented, then researched in an attempt to explain it, the first step towards predictability. In 2020, researchers from Oxford and Edinburgh reconstructed a rogue wave in the laboratory. But for decades this simple atypical wave could not be explained because it did not fit the linear mathematical model of waves.

In the same way, today's globalised virus, a kind of "rogue virus", has cropped up. In its path, it has destroyed, on the entire planet, travel, social and commercial exchanges, and cultural events.

Just as a rogue wave is first and foremost a wave, this rogue virus is first of all a virus, not a poison from another planet. Nothing new then. Except for its magnitude: just as a rogue wave remained unknown to researchers for a long time, because it

II The word means "*deviant, aberrant*". It also has the meaning of rascal, prankster, brat, thug, i.e. harmful, in various degrees. This word, laden with dramatic effect, features in several action movies: *Rogue One, Rogue Nation.*

▶ In an organisation, welcoming a phenomenon, a new situation without denying it, at least stimulates creativity and the design of ad hoc responses.

existed without our knowledge, a global virus has no reason to have been anticipated. Why study a phenomenon that we do not even know about? The only problem is that it was foreseen, if not anticipated.

16. OBDASAR, *from brief to interpretation*

"By accumulating knowledge on a given subject, we sometimes become ignorant."

Mentat Text no. 2, Dune, Frank Herbert

The supervirus appeared due to a given set of conditions that favoured its emergence, conditions that have been detailed for a few years now, notably after the Ebola epidemic, starting with the conference by Bill Gates in 2015, which explained how a pandemic threat is likely, and fully detailed the means of preparing for it, recommending in particular a *Germ game*, a virtual simulator that allows you to prepare for the IRL arrival of the virus, designed on the model of *War games*.

The global pandemic has therefore been foreseen. It has been described by specialists who all came to the same conclusion, that forecasts must be accompanied by preparation. Simulation games, a military corps trained for D-Day like soldiers are trained for war, medical training, advice to governments and investors, as in this report co-signed by the World Health Organisation and the World Bank Group in 2019. This document gives very explicit and often concrete recommendations to states, heads of government, the IMF and the UN.

As shown by the different and contradictory responses to the pandemic in different countries, no global management was ready to be deployed.

In an article published in *CNN health* in 2017, Meera Senthilingam clearly states the 7 reasons why the world is closer to a pandemic than ever before, including urbanisation, travel, etc.

Excerpt: *"Countries, donors and multilateral institutions must be prepared for the worst. The rapid spread of a pandemic due to a deadly respiratory pathogen implies additional obligations for preparedness."*

So, has humanity been caught on the wrong foot? Was humanity without a global vision, bogged down in the old world of nations, the products of the history of civilisations, whereas the planetary Big Data, in its Olympian cloud, is free from ideologies, regimes and values? To reach this conclusion would be to confuse the end and the means. A pandemic may be documented, modelled and planned down to the last detail, but the essential part is still missing: the design of solutions and their implementation. In the recommendations concerning a pandemic, Big data is only part of the solution. It concerns diagnosis and monitoring but does not replace human, financial and logistical resources.

Like any raw material, data needs to be refined before being used. In this case, it is upstream, with the brief and downstream, with the interpretation, that we can make the best use of data. A bad brief, and biased data lead to a wrong interpretation and therefore degraded usefulness. A good brief? No guarantee of a good interpretation either. In any case, to process data for action requires a delicate balance. Objective. Brief. Data capturing. Analysis. Solution. Action. Results. In this OBDASAR logic suite, every step counts.

AI is never better than when launched on an OBDASAR mission, clear and defined from start to finish. For example, researchers at the University of Linz are using deep learning for forest rescue missions. Where helicopters equipped with thermal imaging cameras, affected by the heat of the trees, spot humans with a 25% success rate, AI rescue drones succeed with 96% accuracy.

⏸ The American philosopher Iris Marion Young defends the concept of relational responsibility, to move away from the cause-effect relationship and consider the network of interconnections that may have generated a systemic problem such as the pandemic.

▶ Distinguish between analysis and taking action: the diagnosis, because it is the outcome of a long process, often appears to be an end when it is supposed to be a zero point.

◀◀ Julien Lévy, the author of Netexplo Trends 2016, explores the operative concept of "*transforming everything into data to transform everything through data*".

⬇ Autriche N100 2021

Regarding a pandemic, what can we expect from data and algorithms? What brief for what action? What OBDASAR? The interest is not so much in predicting a pandemic as in preparing for it by aligning the means of dealing with it: the transformations in the personal and professional lives of children, women and men worldwide require a total reorganisation, taking countless parameters into account. Rather than blithely waiting for a global solution from Big Data, which puts us in a passive position, let us launch it with clearly-identified and really useful tasks: equitable distribution of healthcare personnel around the planet, detection of school dropouts or depressions, management of population flows, modelling of public spaces and air movements, etc., or non-invasive detection of those infected, asymptomatic or not, to try, as soon as possible, to stop large-scale chain contamination. As a predictive diagnostic tool, Cough scrutinizing AI, an artificial intelligence developed by MIT, detects Covid19 from the sound of a simple cough with 98.5% accuracy. As usual with AI, it is upstream feeding that has enabled this advance, with the machine capturing tens of thousands of recordings of coughs and words spoken by carriers of the virus.

◀◀ In *A Journey through Smart Cities*: Between Datapolis and Participolis, published by Netexplo in 2015, Francis Pisani explores a city entirely run on data.

⬇ United States N100 2021
◀◀ 2013 / Parkinson's Voice Initiative

The importance of the brief and of the interpretation allows us to regain control and consider AI, Big data and algorithms for what they are: powerful tools.

We can then combine them with other non-digital initiatives, such as the appointment of CHOs, (Chief Health Officers) in organisations. An initiative taken by the American food giant Tyson Foods in June 2020 and by the cruise company

⏸ At the Harvard School of Public Health's virtual forum, it was recommended that CHOs should be hired with the same "rock star status" as CTOs.

Royal Caribbean Group to define protocols to protect staff and passengers. There may well be times when we can do without AI. Frugal tech can also play a decisive role. A team of five Hungarian students came out on top in the Health and Life category of the EUvsVirus hackathon with Team Discover, a 3D-printed COVID-19 monitoring device that allows patients to have their vital signs monitored remotely. With this solution, a nurse could monitor about 100 patients at the same time, without physical contact. The team says: *"We give nurses superpowers, by doing 100 check-ups in the time that it used to take 1. All while being far from the patient, staying out of risk"*. Wearing the device like glasses, patients can monitor their own vital signs, such as temperature, oxygen saturation and respiration rates. The data is available on a remote monitoring platform. The prototype cost €21.

Hongrie
N100 2021

⏩ 2072: From birth, every human is issued with a pair of Diaglasses, glasses capable of analysing and diagnosing any pathology. Connected to the local Health Cloud, they also provide healthcare prescriptions in return.

Investments in military AI in France in the 2019-2025 plan and in the US from 2018 to 2023 are respectively 430 million euros and 2 billion US dollars. In such a sensitive field, the starting brief is of great importance.

17. the discreet comfort *of forecasting*

"What is well known in general precisely because it is well known, is not known"

Hegel, *PPhenomenology of Spirit*, 1807

So in fact the pandemic had been predicted by experts, scientists and thinkers; but also in countless works of fiction, including in Soderbergh's disturbing *Contagion* in 2011. Why was there the sudden craze for this terrifying film, which could only increase anxiety? Firstly, to reassure oneself by watching a show that is worse than one's own situation. If we follow Aristotle's theory in his *Poetics*, seeing this drama incarnated acts as a therapy; it is the *catharsis* of evil passions, that provides "a certain purgation and relief". Above all, to learn about the unfolding of a pandemic, modelled in a scripted and spectacular way, far more striking than diagrams or articles. Seeing this movie meant anticipating, seeing in advance, what could happen. It allowed us to visualise the unknown, to apprehend what could/would happen.

If the pandemic had been modelled by Big Data, in all its details, would we have anticipated it better?

This is the paradox of forecasting: having a very high capacity for forecasting already means bringing the accident into existence, thereby lowering our guard for the day when it occurs, because it rarely happens as planned.

Moreover, integrating it upstream means believing that we have mastered it, that we have turned

On iTunes, the number of downloads in the United States has surged, pushing Contagion from oblivion to the top 10. Illegal downloads have also boomed, from 200 per day at the beginning of the year to over 25,000 between late January and early February 2020.

"Sweet it is when the waters of the great sea are buffeted by the winds, to gaze from the land at the toil of another.
Not because there is an agreeable pleasure for someone to be distressed, but because it is sweet to discern from which misfortune you yourself escape."
Lucretius, *De Natura Rerum, II*

the unforeseeable into a certainty, inadvertently making us *less* prepared for the uncertain. It weakens our defences, from improvisation to resilience.

Forecasting, in the deceptive comfort of an event reconstructed before it happened, reduces the capacity of anticipation, the possibility of expecting what will really happen. The accident? We no longer expect it, even though we foresaw it. We no longer expect it because we foresaw it and have therefore removed it from the field of possibilities.

The world is not reducible to a single representation, even if it is that of the most accurate possible forecast. First of all, a forecast is nothing but a partial double of reality, which cannot embrace the full complexity of social, spatial, quantum, aesthetic and biological phenomena, not to mention cosmic, political or climatic parameters. Then, in the face of the smooth and autarkical perfection of the twin, the principle of entropy comes into play. As soon as it is created, the predictive representation seems obsolete because its living, real twin has kept moving. A dissociation clearly established with this double of the city of Venice created by Adam Lowe, the founder of The Factum Foundation, an organisation that uses the most advanced technologies for the preservation of cultural heritage. In the summer of 2020, he and his team turned the entire island of San Giorgio into data and then into hyper-realistic images, using ultra-precise Lidar laser and photogrammetry. The aim is to warn, through precise images, of the irreversible dangers of rising water levels that would make Venice uninhabitable by 2100. And in the dramatic case where no action can be

II *"Beware of 'ironclad' arguments: the fact that a theory does not lend itself to criticism, that it is said to be indestructible, is not a guarantee of quality; on the contrary, it is its capacity to be refuted, to be challenged by a competing theory, that makes it scientifically valuable."*
Karl Popper, *Conjectures and Refutations*, 1963

taken to stop the process, to have, as a souvenir, a duplicate of it. What is the function of the double in this case? A whistle blower? Perhaps. However, there may be a perverse effect: once the double is created, it may endorse the end of the original.The double, at least, does not depend on the vagaries - in this case climatic - of the world. In the end, it is safer, more stable and also more controllable.

⏩ 2027: Vaccines have for a long time reduced pandemics to the status of minor illnesses, but the taste for in situ travel has been lost in favour of a craze for remote, screen-only, inexpensive and customisable destinations.

Drawing attention to this "perfect" double dissociates it from the observed world that is bubbling, maturing, germinating, growing and fermenting. Even worse, the real world, which is no longer seen, as all the attention is going to its statistical twin, ends up taking a back seat and becoming the double, while the representation is regarded as the real world. Rather than wanting to see the real, which can be unpleasant, we shelve it for later by forecasting. Except that the real becomes visible and destroys our comfortable illusion. As Clément Rosset writes in *The Real and its Double*:

"Exactly in the sense that one is, in fencing or elsewhere, surprised by a feint. One has guarded oneself on the left while being attacked on the right. And, by protecting oneself, one has left the precisely vulnerable spot undefended, so that the gesture of dodging has become confused with the fatal gesture. (...) To guard oneself effectively, to be in complete safety, one should be able to think of everything at once."

⏸ In *The Principle of Human Action according to Demosthenes and Aristotle*, Anne Merker analyses prohairesis, a notion coined by Aristotle in *the Nicomachean Ethics* as the "*early grasp*" of an end, a "*purpose*" that drives to action.

The Cartesian model, which is very powerful when mathematical modelling applies, normally allows us to make decisions and then to move towards the set objective. An uncertain context calls this model into question: it may be valid in the very short term, but not for longer timeframes.

The modelling and application method is no longer sufficient: on the one hand, it is impossible to take into account the bustling mass of data, because the more data we collect, the more new data are created. On the other hand, from the outset, progress is no longer a positive value as it is undermined by all its consequences. The dark future is coupled with an uncertain present. Uncertainty also means saying "I don't know", the first step towards reinvention.

18. taking a chance *on risk*

> *""The time is approaching when man will have nothing in front of him but himself, and nothing but a world entirely remade by his own hand according to his own ideas, and I doubt whether at that moment he will be able to rest and enjoy his work, and judge that this work was good."*
>
> Julien Gracq, *Nœuds de vie (Nodes of Life)*, 2021

Some studies attempt to measure the risk appetite by country. For example, the Hofstede consultancy firm offers a calculator on its website that displays, among other parameters, the Uncertainty Avoidance score, i.e. the way in which a society faces the fact that the future cannot be known. Do we prefer to control it or let it happen? With a very high score of 86%, France appears to dislike uncertainty, whereas the United States scores 46% and Bhutan 28%.

The interest of such an approach is to question our love for certainty, when all stages of life are by definition uncertain, because they have not yet been lived. This is the difference between prediction, what we expect, and the realisation in vivo. Proust, in *In Search of Lost Time*, dreams of the first kiss with Albertine, until the moment when the two lovers find themselves alone in a room: instead of the expected bliss, it is disappointment.

Any action is driven by its fantasised double upstream, its hypothetical *driver*. When you foresee with certainty, do you not kill this fantasised double and therefore the action? An action guided

only by certainty is similar to a remote-controlled action. The difference between the two? The part of risk, the part of play, in the mechanical sense, as between two parts that do not exactly overlap. These two parts being the intention and the realisation, where certainty claims to perfectly control the realisation, since it makes it its slave.

When Nietzsche, in *Ecce homo*, wrote in 1888 "*it is not doubt, it is certainty that drives one mad*", he pointed to the mental confinement that certainty. induces. A certainty, even if shared, remains fundamentally personal and can cut you off from society, from those around you. Secondly, it attaches itself to one object, leaving aside all the others and therefore preventing you from considering the rest. Finally, a certainty obstructs the horizon of expectation, replacing the possibilities with a mono-reality / unique reality.

▶ Hence the recourse, throughout the conduct of a project which requires a will to move forward, to *Doubt Sessions*, brief and regular moments where doubt is organised, not to weaken the project but to strengthen it.

In writing these words, Nietzsche created a paradox by reversing the usual proposition: "*It is doubt that drives you crazy*". Because doubt does not allow us to move forward? Because we are confronted with our decision making? With our creative side? This is to forget that doubt has permeated the entire history of science. From the 17th century onwards, a period of social and political crisis, rational science, the translation of the world into mathematical language, has been built on doubt about revealed truths. From Galileo, who is purported to have said "*Doubt is the father of creation*", to Descartes, who made it the first rule of his method to know things. Cartesian doubt, which is applied first to prejudices and then to our senses, reaches a hyperbolic level by calling into question the world itself or mathematics. This

▮▮ "*What the Cartesian reference system allows is a constant, fluid and easy to-and-fro between, on the one hand, the universe of equations and mathematical laws and, on the other hand, that of observation, objects and phenomena.*" Alexandre Lacroix, *Philosophie Magazine*, 02/2021

extreme clean-slate approach makes it possible to arrive at a single stable point of support: if I think, even falsely, I am. The only certainty that can resist doubt is the certainty that I doubt. Doubt then reveals our hard core, the fact of existing.

The certainty of doubt is to be able to think, to create, to imagine what comes next.

19. the uncertainty *principle*

Since the beginning of the quantification of the world in data, in the 17th century, scientists have been explaining the majority of tangible phenomena through physics: the movement of bodies through Newtonian mechanics and the theory of universal gravitation, optical and electrical phenomena through the theory of electro-magnetism, heat exchanges through thermodynamics. Science has completed its work: everything is now predictable.

However, a question arises about the very nature of the elements put into equation. Are light and electricity continuous objects, waves, or discontinuous objects, atoms? Doubt is resurfacing about this question in the framework of certainty, because "classical" physics is unable to explain the atom. Neither can it explain the radiation from the black body, an ideal body that absorbs all incident radiations. The physicist Max Planck solved this problem by inventing energy quanta. This is the origin of the word *quantum*.

The newborn Quantum physics was a new model for perceiving the world. Where a body was previously either a wave or a particle, it can be both at the same time. If we see light as a set of particles, we cannot explain certain phenomena; if we see it as a wave, likewise. The quantum approach allows us to consider an object in a dual form.

A further step in going beyond the certainties of classical physics was taken when Heisenberg introduced the uncertainty principle in science in 1927. Beyond its strict contextual use, this prin-

❚❚ *"Galileo cut a garment of ideas out of the open infinity of possible experiences, but he behaved like a despotic tailor: he decreed that reality wore no other garment than this one."* Husserl, The Crisis of European Humanity, and Philosophy."

❚❚ According to Heisenberg's calculations, one cannot, contrary to what the classical model could suggest, simultaneously measure both the velocity and the position of a particle.

ciple shows that the phenomenon to be explained cannot be reduced to a pre-existing analysis grid. Moreover, quantum physics is teeming with totally counter-intuitive examples: particles in several states at the same time and particles that influence each other millions of kilometres apart, etc.

Accepting unpredictability means abandoning the desire to master everything with a single explanation. It is at the price of a certain effort, even discomfort, that we can open ourselves up to another approach, an approach that keeps several futures on the same level and that re-engages our responsibility. Multiple futures already in the making.

20. the one-stringed *guitar*

Let us push the limits of our imagination like when we try to think of the *apeirogon*, that geometric figure with an infinite number of sides. A square? Easy to draw in your mind. A pentagon and a hexagon, also. And then? Beyond how many sides is your mind unable to imagine the figure? Without going as far as this infinite complexity, let us keep in mind this comparison with classical physics, which offered a unique and predictable reading of the world, overtaken by quantum physics, open to multiplicity, interpretation and plurality.

To read our world and our future, let us not be slaves to the statistical model that drives uncertainty out of our world. The trap in trying to understand the world ahead from a perspective of total predictability is twofold.

First, we may push the needle even further in an attempt to make our bodies, minds, relationships, environment, cities and planet predictable. Is this really where the future is going?

The second trap is to be satisfied with a monotonous way of inhabiting the world, because predicting limits the present and can prevent us from being open to what is coming. Not knowing everything allows for openness. Sometimes dispensing with the tools of management and predictability lets us see the unforeseen, deal with it, draw positive improvisations from it and regain our sense of responsibility to make choices, right or wrong.

Are we ready to embrace the different dimen-

❚❚ *"Even If the whole human race were to conclude conclusively that the Sun moves and the Earth remains static, in spite of these reasonings the Sun would not move an inch from its place, and these conclusions would remain false and erroneous forever".* David Hume*, Essays, Moral, Political and Literary,* 1742.

sions of the world? To inhabit the world in several dimensions at the same time? To explore this world in superpositioned states? In Time and Free Will: *An Essay on the Immediate Data of Consciousness*, Henri Bergson evokes the pleasure of evoking the future: "*What makes hope such an intense pleasure is that the future, which we can dispose of at will, appears to us at the same time in a multitude of forms, equally smiling and equally possible.*"

Why replace the pleasure of seeing different futures, born from imagination rather than prediction, from creativity rather than statistics, with a single, pre-ordained direction? This era, by abolishing the dreary and worrying promised future, can engage us if we wish, individually and collectively, to review our way of thinking. Envisioning possible worlds is preferring acting through imagination rather than having a passive, wait-and-see attitude.

This may require us to sharpen new faculties, to review our conception patterns, to integrate more dimensions within ourselves, to prefer the simultaneous over the sequential. To do this, we can be inspired by the approach of a certain artist, narrated by David Hockney during a conference at Harvard in February 1986: "*When you reverse the perspective, as Picasso did with Cubism, the observer can see all sides of the same object; he moves in space and is everywhere at the same time. The infinite is therefore everywhere, including inside the observer.*"

▶ In an organisation, rather than an over-optimised model which takes so long to perfect that it is obsolete as soon as it is launched, use short-loop hypotheses validated (or not) by quick, verified decisions.

episode 2
worlds on demand

"All possibles [...] strive with equal right for existence."

Leibniz, *On the radical origination of things,* 1697

21. a metaphor *for the mind*

Just like Schrödinger's cat is (not) dead, the quantum world is (not) ours. It is ours given that it addresses the mysteries of the matter around us. It is not ours given that it is located in an unknowable scale without equations or instruments.

In strict logic, it would be improper to apply an image from the quantum universe, for example superposition of particle states, to our lives, and even more so to our planet.

However, just like Kant used the name of Copernicus to express the importance of his Copernican revolution, we could use this quantum reality of *superposition of states* as a simple metaphor to evoke the state of the world to come. This is a counter-intuitive image to lead us to see our world differently. To see it as a world**s**: physically, it remains a set of living species on a planet of water and rock, but it is multiple. Like the *holobiont*, a new way, in biology, to consider as a whole all the different species making up a living entity: for example, a human being and the 2 kg of microorganisms that live in and around him are considered as a whole, as an entity in its own right.

This angle makes it possible to consider, first and foremost, all the interactions between parties, with an overall, not : partial,view.The holobiont image allows us to understand that it is not only possible, but in fact advisable, to welcome the contradiction of different worlds, on different scales.

Also, just like quantum physics opened eyes and

II A cat locked In a box along with a vial of poison gas, which is, or is not, broken. As long as you don't open the box to look, the cat is dead AND alive.
Thought experiment.

II A broad / holistic approach, just like the ANT approach in sociology, for Actor-Network Theory, rather than understanding a reality based only on humans, takes into consideration non-humans and their interactions: animals, objects, techniques, places and narratives.

minds, with no possible return to the prior unequivocal interpretation of classical physics, seeing worlds as superpositioned invites us to radically change perspective, as it were, to explore possible futures without preconceived ideas. Uncertainty stems from pandemics and a collapsologist vision of the end of the world. If we consider that the future is doubly dead, at a time when physical borders have a strong impact on us, starting with the border of our very own homes, what else can we do, other than attempt to create alternative futures?

"*Our future has been cancelled*", writes British philosopher Mark Fisher, in his book *Ghosts of My Life, Writings on Depression, Hauntology and Lost Futures*. Through the analysis of literary, cinematographic and musical works including Joy Division, the author explores different visions of lost futures and explains the current taste for retrofuturism.

22. new plate *tectonics*

Let's come back to solid, stable geology to visualise our planet: The outer part of the Earth, the lithosphere, from the Greek "*lithos*", stone, consists of several plates. There are 15 major plates and 50 smaller ones. These are the tectonic plates, which move towards and apart from each other, at a speed of up to 100 mm a year. These movements can give rise to earthquakes, volcanic activity, mountain ranges and their reverse relief, deep-sea trenches. But how can rigid plates slide on the earth's surfaces the way they do? The explanation is that they rest on a weaker ductile layer of rock called asthenosphere, from the Greek *asthenes*, "without strength, without resistance". This is how the continents were able to "drift" from a single landmass, Pangea, to their current positions.

This geological system strikes us as a good image, both clear and operative, of new plate tectonics. In our metaphor, the asthenosphere is our real world, changing, uncertain, random. The lithosphere is the digital shell around it, divided into networks, platforms, internets, that are rigid and governed by rules, General Terms of Use and financial imperatives.

II Super continent making up a single landmass of all today's continents, approximately 300 million years ago. From the Greek "pan", all, and "Gaia", earth.

23. under *pressure*

"Anywhere out of the world"

Baudelaire, *Petits poèmes en prose (Poems in Prose)*

Under the pressure of lockdowns and curfews, online existence has passed a milestone. Social distancing imposed by the health crisis has increased our screen time, to work, learn, buy, be entertained and talk to each other. According to the mobile analytics platform App Annie, the increase is clearly related to the spread of the virus, starting with the first country impacted, China, where screen time increased by 30% in February 2020, before reaching South Korea, Japan, Europe and the United States.

For each use, several solutions, platforms and apps were tried, tested, chosen and adopted by large sectors of humanity. Given the increased Screen-activity context, it is not surprising that uses have changed. Parts of the population have discovered new uses, like senior citizens. In France, people over 60 are those who have most increased their use of social media and online video consumption, virtual museum tours, exhibitions and watching concerts or performances. According to a survey conducted by Seniorsphère Conseil, 46% of senior citizens used WhatsApp for the first time during the first lockdown. A first hurdle of resistance was overcome and new uses emerged. Behaviours change through the screen, and without the social veneer of our former, freer lives, we allow ourselves new discoveries.

‖ Survey conducted by the Department of Prospective Studies and Statistics at the French Ministry of Culture, from 20 April to 4 May 2020

In our private lives, we do away with preconceived ideas linked to social categories.

We have, as it were, been withdrawn from the world, where we acted in full view of others, whether known or unknown. Out of the sight and recognition, of others, their complicity or even their judgment, we have lost a part of our identity. Have we gained a measure of freedom, hidden behind our screen-masks?

Openness to new ideas, looking beyond categories linked to age, background and gender, offers a context conducive to a new "digital" stage. Social distancing has given rise to a closer connection with the content available on screens, which have become our closest connection to the world, in the name of a higher cause, our survival. The screen therefore appears as a saviour; it saves us from our solitude, from depression, boredom or unemployment. Without screens, there can be no classes, no friends, no medical appointments. Extreme cases like lockdowns and curfews remain exceptional; however, these new uses could continue and expand. At the very least, they have given rise to a form of disinhibition and created conditions for a new era of digital habits.

The screen is also a moving frontier between two desires. On the one hand, users who intend to act according to their wishes. On the other, interface designers who are eager to capture data based on their business model. The duel plays out time and time again. With every connection, a battle between resistance and insistence: discreet or less discreet forms of advertising, data scraping and encouragement to do things the user did not plan

or intend, using *darks patterns*. *"Pushing users to share more than is strictly necessary, influencing consent, creating friction in data protection actions, misleading users":* this is how the French Data Protection Body CNIL defined the goal of Dark Patterns in 2019.

⏸ In 2020, CNIL identified several dark pattern practices as being contrary to the GDPR and to the French Data Privacy Law, liable to penalties as from March 2021, in particular: default checking, no "reject all" button, etc.

These graphic design and user browsing techniques are based on the Science of Attention, which has become the crux of the matter. They are designed to "mislead the user" by means of camouflage, prompting, wrong tracks to exploit ignorance, laziness, tiredness and naivety of users, leading them to click, accept or ignore.

After the window screen that opens up to the world and the mirror screen that brings you back into yourself, the screen as a neutral surface covering just a few square centimetres, capable of taking you into any dimension, now appears as a spatiotemporal portal, whose characteristics we need to be aware of.

◀◀ Bernard Cathelat analysed this concept in 2012, in the *Netexplo Track and Profile trend*.

As early as 1999, David Bowie, himself a brilliant expression of superpositioned personalities, perceived the multiplying power of digital versus the utopian doxa of unification through the web. His prophetic words to a disbelieving BBC interviewer, spoken with his legendary elegance, were: "*At the time, up until at least the mid-70s, we really felt that we were still living under the guise of a single, absolute, created society-where there were known truths and known lies and there was no kind of duplicity or pluralism about the things that we believed in. That started to break down rapidly in the 70s. And the idea of a duality in the way that we live-there were always two, three, four, five sides to every question. That the singularity disappeared.*

And that I believe has produced such a medium as the internet, which absolutely establishes and shows us that we are living in total fragmentation."

It is fascinating to see that Bowie not only understood the fragmentation of the Internet at such an early stage, but also attributed it to the evolution of society, thereby making digital technology a tool to serve uses, and not a structure that imposes its will. As he did over time and in his scenic and musical metamorphoses, the rock star took his own personality as a starting point for thought, thereby placing subjectivity at the heart of any creative approach: "*We can be heroes*".

24. Me, myself *and I*

"How I wish, how I wish you were here"
Pink Floyd, *Wish you were here*, 2004

The (temporary) loss of contact has led us to adopt a new way of engaging in relations with others. Apart from our close family and friends, some circles have entirely or partly disappeared from our sensory scope and moved to apps, platforms, in short, in two dimensions, embedded in the screen glass. Of course, we can attempt to fill the gap using technical solutions. Portl offers an individual life-sized holographic display box, replicating a very convincing image of yourself in 4K and high-resolution sound. What for? Political rallies, medical appointments, online classes, family gatherings, etc. You can appear in one place or in several places at once, inside the machine, and you can speak and participate in an ongoing action. Of course, this action is restricted to speech only; you remain a mere image, even in 3D. If you want physical contact other than your keyboard or touch surface, four researchers from Gifu University have created Osampo Kanojo: the literal English translation would be "a walk with my girlfriend" and refers to a robotic hand aimed at filling the emotional gap through the feeling of a presence with you during a walk or other activities. You need only take the hand. A hand, just a hand, but the soft and supple material, the pressure sensor that responds by squeezing your hand back and the discreet perspiration are supposed to

⬇ United States
N100 2021

⬇ Japon
N100 2021
◀◀ 2019 / Arque

recreate “the tenderness of a woman’s hand”. To take the refinement a step further, the hand can release a specific fragrance and emit sounds such as footsteps and clothes rubbing against the skin. But as this is only a very small part of the human anatomy, you are literally holding hands with emptiness. This manner of reducing the entirety of a human being to one of its parts, a tactile synecdoche with soap fragrances, is the starting point for our thinking on fragmentation.

Fragmentation starts with individuals who, on social media, through the skins available in games, adopt different styles and adapt their personalities. Lego has launched Vidiyo, ea secure social space making it possible to create and share clips in which children can “create” their own decor. So where are we really ourselves? Nowhere, given that in each universe we slip into imposed appearances: from the size of the profile photo to the available filters and actions, the palette available to us is really quite restricted, in these artificial paradises that give an impression of freedom, of unlimited creation when in fact they reduce us to their codes for the length of our stay with them.

Danemark
N100 2021

However, even if in each of these worlds our identity is reduced, fragmented, including in the vertical infinity of a fantasy, if, on the other hand, we were to add up all these facets, would we not then be faced with an augmented version of our personality?

But fragmentation goes way beyond that. Although we can be multiple, so can the world, on an impressive scale.

25. make truth
alternative again

"How many kingdoms ignore us!"

Pascal, *Pensées (Thoughts)*, , 1670

8 January 2021. Permanent suspension of the American President's Twitter account. Donald Trump, having taken a few weeks off far away from Washington, organises a counterattack. Funds? Well, he has funds, and if he needs more, he'll raise funds. Tenacity? That's putting it mildly. A taste for the social media? He's provided ample proof of that.

April 2021. Trump hires a top team and, in the space of just 3 months, creates a new social media platform, Trumper, hosted by servers owned by the former President. Massive support from his American fans, with 74 million subscribers in just a few days. Devoted entirely to posts by the former President, Trumper is starting to make its mark as a very influential social medium. It is Twitter's evil twin.

Summer of 2021. People from all over the world, who admire Trump's personality and value system, join the community which is now up to 1 billion accounts and 702 million daily users on average, i.e. over 10 times the French population. Populist leaders from all over the world use Trumper to create thematic communities.

Christmas 2021. The number of Trumpers now exceeds the number of voters on earth, which has dropped since abstention has weakened democracies. Elected leaders try to contain the tsunami

but no supranational legislation can really stop Trumper which continues to grow, fuelled by the riots and violence it favours.

March 2022. Pragmatic act: the world's countries duly observe the uncontrollable power of the network and its repercussions around the world. The Former President of the United States, previously managed and stopped at the last second by a political system in the 2020 elections, can no longer be controlled in the lack of framework due to a social medium consisting of the people, which does away with all intermediate bodies. Trump then coins the phrase Neocracy to mark the death of former systems, including democracy.

Is this fiction? Of course it is. But the Twitter vs Trumper confrontation illustrates the superpositioning of worlds. As soon as Twitter suspended Trump, a part of the world was denied in order to choose another. Now, on Twitter, one of the visions of the world has pride of place. Where will the millions of Trump subscribers go? Will they use another account in the same style? Or will they organise themselves to form a parallel world, superimposed on the first world? Another choice could have been made, the choice to include contradiction, just like a superb Gothic cathedral includes gargoyles. Including contradiction while taking the necessary steps to report disinformation bots, for example. Twitter's bot detection AI detects fatigue to tell bots and humans apart. When human cognitive exhaustion causes a drop in the quantity of information exchanged, the bot unflaggingly continues to write and post fake news.

United States
N100 2021

This is how researchers at the University of Southern California tell real accounts and fake

accounts apart. But the competition between AI producing fake news and AI tasked with detecting it is unending. Renée DiResta, Technical research manager at the Stanford Internet Observatory, observed in *The Atlantic* in September 2020 that an AI like GPT-3 can write on absolutely any topic and generate content capable of making readers happy, sad, incensed, soothed, or of radicalising them with a personalised approach, as required through personae, accounts belonging to fictitious persons who become very powerful influencers.

▶ In an organisation, information is handled by everyone, which allows fake news to enter and influence decision-making. Hence the essential need to educate on fake news.

At the end of the day, there could be two internets, one totally open and the other checked and secured, i.e. banned to AI and reserved for humans, whose fake news attempts should be easier to detect as they are fewer in number and not as sophisticated: in that scenario, meaning could be conveyed only in writing, to avoid visual and sound forgeries such as photos, videos and sound produced using deep fake technology. The information network would stand out due to its frugality and simplicity.

26. disinformation, *re-information*

"If well informed, men are citizens; if misinformed, they become subjects."

Alfred Sauvy

Alternative truth: the noun "*alternative*" refers to two different hypotheses, connected by an exclusive or. Either you choose one branch of the alternative or you choose the other. On the other hand, the adjective *alternative*, in the expression alternative truth, can refer to an additional version, compared to the original version. The onus is on you to choose between two truths, depending on what you like, what suits you, where you find solace. There are indeed two different truths that are superimposed, that each of us can choose to adopt. Where the word fake in *fake news* differentiates two categories, the true and the false, *alternative* builds a new truth. It should be noted that fake does not necessarily mean "false", but rather "forged", meaning designed with an intention to mislead, which presupposes an underlying will. Like an advertising message, fake news is designed to reach a target, produced to encourage a type of behaviour, thought out with a view to *a call to action*, a riot, for example. According to Whitney Philips, researcher at Syracuse University and co-author of *The Ambivalent Internet: Mischief, Oddity and Antagonism Online*, the anger present on social media has nothing to do with a pre-existing human nature.

II Selon Gérald Bronner, dans *Apocalypse cognitive*, le numérique fait ressortir en nous "*L'homme préhistorique*". Il faudrait donc "*différer la satisfaction de ses désirs immédiats*".

It is triggered and stimulated by digital platforms themselves who seek to push content by using controversy. This is the best way to ensure a post skyrockets.

Alternative truth is not just an additional truth. It is based on the principle that there is an official truth, which is false, and which is hiding another truth in the name of harmful interests. In this way, by reversing the qualities of these two truths, it prospers. By basing its premise on the commonly accepted truth, it establishes itself as the flagship of *re-information*, claiming to bring citizens the actual facts.

Multiplication of media without codes of ethics, carefully implemented disinformation campaigns, the taste of the public for emotion and the disinterest in critical thinking can readily explain the increased importance of alternative truths. When all or part of the world population obtains information through a platform tainted by ideology, that part of the population believes it is the everything. No contradictions, zero nuance, no big picture. The horizon is wide open: self-sustained theories, retroactive validation loops, constant repetition. This is also how superpositioned worlds come to life.

Back in 2009, resarchers at Pennsylvania University already proved that an "*angry*" New York Times article was disseminated 34% more than average. *Philosophie Magazine*, Dec. 2020.

27. fake *media*

"The man who lies to himself and listens to his own lie comes to a point where he cannot distinguish the truth within him or around him."

Dostoievski, *the Brothers Karamazov*

Social media are a mediaWith them, information comes to us, not the opposite. What is the consequence of this? The movement of the mind which spreads its tentacles towards an object with a view to understanding it no longer applies, what with the flow of personalised information that hits our conscience and models it, making it a passive, soft and malleable paste. However, active movement of conscience remains the condition for thought. Seeking outside oneself, getting into movement, wishing to know.

Beyond the complex mechanisms of addictions to novelty, to the shocking, to the release of dopamine exploited by algorithms, this world of information chosen for us, i.e. censored for us, selected for us, just like the world of fake news, is a parallel universe. Receiving a flow of information processed by an algorithm amounts to confusing opinions with facts. Everyone does not receive the same information, which means that the facts become different. Where we expect to have different opinions on facts that are unequivocal by nature, we reach unequivocal opinions on different facts. Each such opinion represents a new certainty. And like all certainties, they reduce the world to a simplistic matrix. But is creating false

❚❚ *"And what the Net seems to be doing is chipping away my capacity for concentration and contemplation. (...) Once I was a scuba diver in the sea of words. Now I zip along the surface like a guy on a Jet Ski"* Nicholas Carr, *Is Google Making Us Stupid?*, The Atlantic

❚❚ *"Partial knowledge is more triumphant than complete knowledge; it takes things to be simpler than they are, and so makes its theory more popular and convincing*." Nietzsche, *Human, all too human*.

content the only way to produce superimposed interpretations of reality?

Whether we are taken in by fake news or believe ourselves impervious, we can still be its victims: "fake" refers not only to the content but also to its dissemination. Biased, redacted, targeted dissemination. No information, no matter how true, can withstand such treatment, a mighty combination of a steamroller and state-of-the-art cosmetic surgery. Fake news is only a part of the for-profit targeted dissemination business run by the fake media who are the social media.

How can citizens hope to compete with an algorithmic machine, regain a critical approach and dodge information manipulations targeting them? That is precisely the goal of the Citizen Browser Project, designed by The Markup in partnership with the New York Times. The experiment involved providing a panel of 1,200 people with a special browser, which audits social media algorithms to decode the way in which information is presented: is it amplified? Deleted? What call to action does it induce?

United States
N100 2021
◀◀ 2019 / AI Fake Review Detection

One fact. Two truths. Or many more. In addition to algorithms that decide on the destination and frequency of information, the production of content is also very sophisticated: deepfake, a more powerful and precise version of fake news, given that it is carried out by deep learning, is fascinating. For example, it can make any face say anything you want in a film, seamlessly combine a body and a head. It seems totally undetectable to the naked eye. This is in fact the case.

Fakecatcher, invented by a team of researchers

United Kingdom
N100 2021

from Binghamton University, detects it by using physiological changes that are invisible to the human eye. Only AI can capture the subtle colour changes arising from blood flow pulsations. In a doctored video, these pulsations do not follow the same rhythms. Clearly it takes as much creativity to counter fake news and deep fakes as to create them.

But let's imagine a media that broadcasts only deep fakes and fake news, in such a powerful and subtle way that the information appears to be credible. A complex network including messaging, diverse content, purchasing functionalities, etc.: the network is in fact self-supporting. It is a world in itself when you travel through it in front of your screen. One of these self-sufficient worlds which are currently developing. What happens when you're no longer connected? It still exists, because it has formed a certain vision of the world, which replaces a previous vision. A means of interpreting crafted during screen time which becomes effective in real life, by analogy.

II In real life

So even IRL, two worlds can be superpositioned. The real world and its facts, on the one hand, and the fake version of this real world on the other hand, fed in real time by real evidence of what is fake, with boxes unchecked by algorithms.

28. with full knowledge *of the facts*

"The greatest enemy of knowledge is not ignorance, it is the illusion of knowledge."

Stephen Hawking

When interviewed on France Inter on the 8th of February 2021, Barack Obama referred to holding social media "*accountable for the way in which we tell fact from fiction. What is an opinion from what is clearly true*", thereby emphasising the responsibility of social media. The former head of state and 2009 Nobel Peace Prize winner added that on online platforms "*there are no agreed rules to distinguish what's true from what's false*", adding that to preserve democracy in danger, he wants "a well-informed citizenry in which we all participate". A virtuous model is therefore a model which, on both ends, focuses on distinguishing what's true from what's false. Media operators, on the one hand, who can be held accountable. On the other hand, citizens, who are active in their search for information. Education plays an essential role in the well-informed citizenry.

Education itself is increasingly channelled through digital tools. Close attention should therefore be paid from the design phase to avoid biases that could pollute the solution from the start, whereas the issue here is knowledge and critical thinking: "*Gender equality is not only about women's access to technologies. It also refers to the role women play in developing technologies",* to quote Gabriela Ramos,

Assistant Director General for Social and Human Sciences of UNESCO, in March 2021. During the first lockdown in 2020, digital platforms emerged, used for friendly meetups, business meetings and classes, attempting to maintain a face-to-face connection between teachers and students. Cameras turned off and muted microphones soon showed the limits of the hastily put-together videoconferences, in many cases suffered by students and teachers alike. However, many inventive innovations have appeared, like Labster, intended for science students in higher education. A carefully reconstructed 3D laboratory, allowing all the possible handling in subjective vision. Your virtual hands can weigh, pick up, open and close test tubes, pipettes and other instruments. In addition, a labpad indicates missions to be carried out as well as theoretical elements to be recognised. All disciplines do not necessarily require reconstitution of a "decor". The crucial point in digitally-supported education is customisation, augmented by machine learning: the more you work with the machine, the better it knows you and the more it is able to adapt its teaching approach based on your strengths and weaknesses. This is the logic of Kisomo smartlearn.

▶ On these platforms, companies have lost a great deal of their substance: how do you begin a new managerial position by videoconference? How do you get a group on board? How do you promote a corporate culture through a visual design imposed by videoconferencing solutions, bringing together individuals seated in living rooms or kitchens? These questions are unresolved because they have not been specifically taken into account. What if, concretely, that issue were the real "digital transformation"?

⬇ Danemark
N100 2021

⬇ Tanzanie
N100 2021

This is the first web and mobile digital learning application offering local content for children in East Africa. While based on school curricula, this initiative offers content in a broad diversity of formats to adapt to the learning pace and style of each student. Taking this idea a step further, Focus Pocus helps children concentrate in virtual learning. Imagine a debonair owl, in the corner of the screen, observing all the signs on the student's face

⬇ United Kingdom
N100 2021

while he is supposed to be doing his homework. He gives the student a friendly reminder when he is not focusing and gives him a final evaluation. The character was designed by the company A-dapt, specialised in adaptive media, whose signature is unambiguous: "*Content that perceives and adapts to the viewer*". Based on the observation that we need to find solutions to better continue to study and work in this world of increased isolation faced with a screen, the idea here is to propose AI able to decode emotions and concentration to adapt content in real time. All this is done in compliance with data protection provisions and GDPR rules, without filming, without recording, without facial recognition and decorrelating the data from the person analysed: moods, expression, position of the head, facial features, etc.

If digital learning methods continue to grow due to a pandemic context that hinders relations in the physical world and due to their personalisation potential, both regarding content and its delivery, we could in fact have the following paradox: teaching citizens to distrust algorithms, by means of algorithms. In addition, customisation, although it offers the capacity to approach specific profiles and help them to overcome personal obstacles, thereby hampers attempts at "common" knowledge, a universal knowledge base.

29. hello *internet?*

A single location bringing together all human knowledge, accessible to all, free of charge. This is the original project for the web, as imagined by Tim Berners-Lee, its inventor. In 1995, he spoke of a "*vast interactive ocean of shared knowledge*". A "*universal space*" of total freedom, capable of bypassing censorship and of giving the power to understand and to create to all.

The space came to life thanks to a unifying order: interoperability between machines, the creation of common protocols like HTTP, thematic categorisation (*.com* for commercial departments, *.edu* for education, for example) or a geographical categorisation: *.fr*, *.it*, etc. Thanks to this simplification and organisation operation, the web really took off. This golden age, a sort of paradise lost, seems very remote now that the network has irrigated every aspect of our lives. We should remember, however, that Internet was once part of our futuristic imaginary world in the same way as flying cars in *Blade Runner* or robots in *Metropolis*. At the time, its existence was rather vague, almost incomprehensible. It then took off fuelled by use. In an episode of X-Files in 1995, Scully has this great line, which speaks volumes on the Great Unknown that the Net was then, where she tells Mulder: "*I'm gonna call the online service and have them fax us the telephone numbers of all those women*".

We all know what happened next. An algorithmic history of concentration by a small number of American operators, eager for profit and working,

according to them, for the good of humanity. But we need to bear in mind the Pangea of our origins to understand the current tectonic shifts. Just as in the physical world, continents drifted apart to end up separated by oceans, the digital world also seems to be drifting towards divergence.

30. my internet *is better than yours*

First alert: the *splinternet*. The term was coined in 2001 by Clyde Wayne Crews, then director of studies at the Cato Institute think tank. In his view, the Internet will become several internets linked to nations, based on ideological, commercial or cultural interests. Confirming this geopolitical divergence pattern, former Google CEO Eric Schmidt, in 2018, predicted a "bifurcation" of the Internet into two parts: one American part and one Chinese.

In 2019, demonstrators protested in Moscow against a bill aimed at isolating the Russian internet from the rest of the world, cutting it off from foreign servers in the event of "potentially aggressive action in cyberspace", according to the Kremlin spokesperson. In the same year, Chinese engineers suggested a new internet protocol to replace the current system, judged to be obsolete, while in China the network is among the most controlled in the world.

The splintering of the Internet into several Intranets at the scale of a country, or of a region of the world consistent in ideological terms appears to be making good progress, as States, like on the moon or at the Earth's poles, are planting flags to extend their influence and benefit from a strategic position. Like an attempt to take control of a place, initially given over to users, and then taken over by private companies. Unlike the Antarctic, however, this is an intangible location, as originally intended.

❚❚ *"I think the most likely scenario now is not a splintering, but rather a bifurcation into a Chinese-led internet and a non-Chinese internet led by America*" quoted by *CNBC*, September 2018

The Internet is a utopia : a place that does not exist. This is therefore a simpler, or on the contrary, a more complex conquest, taking place within a legal and technological scope.

The drifting of continents starting out from an original land, to use the Pangea image, indeed exists. However, the splinternet, although it puts us on a road to separation into several parts, is a partition that corresponds to the historical hegemonic desire of nations. There is another centrifugal force at work in the growth of the Internet.

II *Utopia,* "no place" formed from the negation "ou" (not) and "topos" (place), is the name of an imaginary country created by Thomas More in 1516. This word was expressed in French as utopie by Rabelais in 1532.

31. the new utopia *of the metaverse*

Splinternet was formed from the words *internet* and *splinter*. The word therefore refers to dislocation of a whole. But this word describes geopolitical and economic fragmentation. How can we describe this other movement that has nothing to do with national stakes, but is related to uses? Let's take the example of alternative truth. With the fake news universe, two superimposed worlds exist. With other dimensions, we can infinitely multiply superpositioned worlds: they all operate at the same time on the physical base of the real world. Where the splinternet partitions the real world, the layernet piles up superimposed worlds on the real world.

Is it a growing aspiration to be able to live in different worlds, available on demand? This is highly likely. All the factors combine: increasing technological power, the global crisis with drastically increases the use of screens, the development of integrated platforms bringing together many functions like games, messaging, social media, purchases, leisure activities, sport, etc.

An example? The game Fortnite. In December 2019, Tim Sweeney, the founder of Epic Games, the company that created Fortnite, tweeted: "*For now, it's a game. But ask me the same question again next year.*" Many collective experiences are appearing on what is becoming a platform, from a live concert by the hip-hop artist Travis Scott performing among 12 million people to the trailer of the new *Star Wars* movie.

Let's imagine what could happen next: why not have the latest movie releases? Would the latest *Wonder Woman* movie be less successful here than on a platform exclusively dedicated to films and television series like Netflix and Disney+? Fortnite has an audio chat function, so we could have a messaging service. Online stores could appear, selling brands appealing to the target group of Fortnite users.

In 1992, writer Neal Stephenson published *Snow Crash*, whose great find is a virtual universe named metaverse.

The word is a contraction of meta-universe and refers to a world parallel to the real world, inhabited by avatars who can interact on all levels. Several initiatives, more or less inspired by this literary invention, followed: *The Metaverse* in 1993, including virtual stores, *Active Worlds* in 1997, *Second Life* in 2003, which made it possible to create communities and make micropayments, with participants owning the intellectual property of their creations.

But concrete expression of a metaverse is problematic. Beyond the technical power needed to host an entire world, how can we organise social and business interactions? What rules will govern this world? Are we certain that the inhabitants of the world, irrespective of their culture, age and standard of living, would even want or need to come together on a digital platform?

The Splinternet and the Metaverse both appear to be dead ends: the first because it stems from State ambitions that contradict their citizens' aspirations.

❚❚ "*The word metaverse is my invention, which I came up with when I decided that existing words (like "virtual reality") were simply too awkward to use*". Neal Stephenson.

▶ At the level of an organisation, should we recreate a 3D copy of the premises and avatars for the people?

The second because it would require a merger of all differences, sublimated in a new world. We could, however, imagine several worlds existing at the same time, which are not partitioned like the Splinternet, but complete and separate from each other.

32. one surface, *many species*

Norvège
N100 2021

Nofence could be called a niche innovation. As its name indicates, the aim of the initiative is to remove fences: solar-powered GPS collars are used to equip cattle and to inform the animals, by means of a melody followed by a small electrical impulse, of the real but totally invisible boundaries of a territory mapped out in an app. Cattle soon learn to stay within the predefined zones, which can evolve based on needs and seasons. This is a very convenient tool for farmers who can define new zones based on the best grazing land, or dangerous areas to avoid. No need to build fences in unworkable places. As an added bonus, the farmer has the location of each animal in the herd or flock on a map.

The invisible zoning feature could have other, broader applications. The same territory is often sought by different species, from humans and their infrastructures to different animal species competing amongst themselves, depending on their migration or predation characteristics.

An invisible limit system inspired by Nofence could allow several different uses of the same plot of land. A territory would thereby become a base supporting several superimposed worlds, where physical fences would have sliced it up into absurd parcels, given that they are useless most of the time. Many animal species need to move to find food and shelter, to reproduce, hibernate and meet other members of their species to allow genetic mixing.

Hence the need for biological corridors allowing movements that are vital for biodiversity and the

survival of many species. Sometimes the route of the corridors comes up against physical barriers or intangible obstacles in the landscape, such as dams, roads and pesticides, which act like insurmountable and deadly barriers, at a time when the extinction of animal species is accelerating.

⏸ On *iucnredlist.org*, see the list of the International Union for Conservation of Nature: a network of experts monitoring the evolution of biodiversity. Of over 128,000 animal and plant species listed, 35,000 are endangered.

With a connected system worn by individuals, whether humans or animals, the "crossroads" areas, namely those occupied or crossed by several species, could radically change. A fenced meadow would no longer be constantly closed off, it would be a meadow first and foremost, not pastureland. This means that any place could be freed of its utilitarian and sclerosing function to regain its spatial "nudity", beyond any fixed purpose. It would therefore be multifaceted, depending on the needs of different living beings, changing roles over time. A river, a park, even streets, would become multifaceted welcoming locations.

Of course, we would need to make a transition from collars to less invasive connected objects, such as clothing or bracelets woven with Google Jacquard threads.

⏸ A "smart" thread making it possible to give fabrics programmable functions.

We would thereby make a transition from a fixed geography, with borders and dedicated zones, to a geography of territories and superimposed corridors. Finding a way to allow species to co-exist could give rise to new flowing, modular borders, with variable geometry. Attention could be focused on the environment and its other, non-human, occupants, thereby favouring knowledge of and respect for other "users". In the same space, several worlds could therefore be superpositioned. Compartmentalisation gives way to superimposition.

⏪ In *Terramorphing*, Netexplo 2020 trends, Sandrine Cathelat explores scenarios to preserve our endangered common good, planet Earth.

33. the sphere *and the disk*

With the example of a land area inhabited by several species, each of which lives according to its own specificities and tropisms, without sustained voluntary interaction with others, we can glimpse how "*the world we are part of is but one of a plurality of worlds and that we, who inhabit this world, are only a few out of all the inhabitants of all the worlds*", to quote American philosopher David Lewis in *On the Plurality of Worlds*.

If we consider different worlds superimposed on the same surface, we are less likely to treat the planet as our sole property, a view that has caused immense damage. By approaching the world in this manner, as a world that is no longer exclusively our own, we open our perception to everything that is not us, and we reposition ourselves among other living beings, in a constant interrelationship. We are never alone. Every single square centimetre contains this superpositioning of worlds.

Worlds which exist at the same time and at the same place: this could be a key to interpreting space both constructively and respectfully.

Other worlds are superimposed on the physical world. First and foremost, as we saw with alternative truth, each individual approaches the real world with their own framework of thought, beliefs and truths.

These different worlds, resulting from different subjectivities, find common ground, as long as some of them share some aims and values. An entire

group of individuals may get caught up in a system of thinking parallel to the common opinion. You do not understand the world in the same way if you believe that the earth is flat, for example. In the United States, 16% of the population believes that the Earth is not round. According to them, astronaut footage was shot in studios, rockets take off empty and NASA, the American space agency, is just a propaganda tool intended to collect money through taxation. In France, 9%.

of the population has similar beliefs.

Millions of people in the world are in fact living in the belief that a conspiracy has deprived them of their truth. But whereas outlandish notions have always attracted followers looking for something to believe in, digital platforms and social media play a decisive role, lending legitimacy to parallel theories. Digital technology offers an extremely powerful medium to proponents of flat-earthism and multiplies something that could, without it, have remained an obscure cult. Flat Earthers, supported by the organised and visible cohort of their peers throughout the world, find new reasons to believe every day. This universe consisting of social media and websites, in its richness, its density, its physical materialisation even, given that a screen is clearly tangible, solidifies their vision of the planet. This is no longer just an intangible cloud bringing together a few dotty individuals. It is now a concrete reality which sustains itself in loops amplified by retroactions.

To use the image of superpositioned worlds again, one can imagine, floating in space, two planet Earths, each of them perfectly real and true for tens of millions of humans. A sphere and a disk.

II IFOP survey in 2017, quoted in National Geographic: "*The most famous flat earther is rap artist B.o.B who even launched a crowdfunding campaign to send a satellite into space and take his own photos of planet Earth.*"

34. of flesh *and screens*

"A sleeping man holds in a circle around him the sequence of the hours, the order of the years and worlds."

Proust, *In search of lost time, Swann's Way*

Conceptions of parallel worlds are reinforced by photos, videos and conversation threads. This is made possible, on the one hand, by tech that lets anyone generate content, and on the other hand by an amplified use of screens to perceive what is real, more recently due to withdrawing into ourselves, being locked down in our homes. We call it WFH, working from home. Behind the acronym lies the reduction of the world to our own home in the case of a lockdown. This new and unreal rule of social life makes the screen our starting point towards other destinations. In these exceptional (or intermittent?) circumstances, the only way to live in the world, for most citizens, involves new worlds. How can we describe them? Virtual? On the contrary, they are part of a very real life: they take up "real" time, they produce "real" effects, they offer "real" services. Online? Yes, but this is merely a technical modality which does not describe their dense and moving, almost living matter. These worlds, which we can reach through our screens, channel imagination, reason, the mind. They also convey the body. Not at the macro level, but at the micro level, through sensations, emotions, release of adrenalin and dopamine. Our physiology itself is engaged in the journey to these worlds superimposed on the real world.

In his work, director David Cronenberg explores the relationship between flesh and the machine, pushing the limits of fantasy and science fiction. One of his films, ExistenZ, merged the organic and the mechanical. Without going to such extreme entanglements, we can trust technology to help us stimulate all our senses in front of a screen. Probably not so much to reconstitute the real world, but rather to allow us to satisfy the sense that brings us the most or that corresponds to a specific activity. Norimaki synthetiser is a lickable screen designed by Homei Miyashota, a researcher and sensei at Meiji University. Shaped like a maki wrapped in seaweed, hence the name, this portable electrical device recreates all possible flavours. It works using five different gels, each offering one of the five basic tastes: salty, sweet, bitter, acidic and umami. This offers the possibility to contribute to a greater immersion in front of a screen, thanks to stimulation of taste in addition to sight and hearing. Tasting what you see: an obvious outlet for cooking content, but also for videogames or erotica. But beyond the reconstruction of existing tastes, this type of device could also give users an active role: it could let them create new flavours that do not exist in the real world, combining all five taste. Why not a new 6th taste? Or a 7th? Or many more? Here, we are no longer in the field of imitation, but in the creation of a new, richer layer superimposed on the "real" world.

That being established, never mind the conditions of the real world, the closures, lockdowns and curfews. Irrespective of all that, other, more promising worlds, are opening up to us.

⬇ Japon
N100 2021
◀◀ 2014 / Digital Lollipop

35. your world *on site or to go?*

"I just don't know what I'm supposed to be"
Scarlett Johansson, *Lost in Translation*, Sofia Coppola

The world is finite. Our capacity to create worlds is infinite. How many worlds will we superimpose on the finite world? Philosopher Gaston Bachelard lauds our creative capacities, advocating a synthesis of thought and imagination: "*As normal men, we like to give pride of place to the function of reality. But how could a man create a work if he does not practise, if he does not feel within himself what one might term the function of possibility. To act, you need to imagine first.*"

The word *possible* comes from the Latin *possibilis*, meaning "whose appearance, existence and reality are not dismissed by the mind"; however, our minds dismiss what we do not know, or do not yet know. The *reality shifters* have clearly grasped this. The movement brings together young users of TikTok: through rituals and modified mental states, they believe they can change their reality. Or, more precisely, shift themselves to the reality of their choice, in a lucid dream state guided by a script. The #shiftingrealities hashtag has almost 200 million views.

We know that digital innovation constantly pushes back the frontiers of the impossible, thereby giving rise to many existential questions.

As an example: year after year, the frontiers of what machines can do in the artistic sphere evolve,

In the same France Inter interview in 1954, he also described the effect of virtuous training of the creative process "*If we look at ourselves quite closely, we feel that a new idea, as partial at it may be, transforms our minds.*"

countering the well-known argument according to which artistic creation remains an exclusively human area. The OpenAI laboratory has developed an artificial intelligence capable of generating quality images from a simple written brief. Dall-E is a 12-billion parameter version of GPT-3. With visual-text pair inputs, the solution can create totally new images generated from scratch or by transforming existing images. Dall-E can show additional creativity by creating items that are missing from the description, such as the eyes on a radish in a tutu walking a dog.

When it comes to worlds to be created, or to any digital subjects for that matter, what is possible is not exactly a fixed notion.

What if all we needed to switch from one world to another was an apparently unassuming accessory? Academics in South Korea are currently working on a new kind of eyewear named E-glasses. Printed in 3D and with a wireless connection, they are able to monitor brain activity, but also to automatically turn into sunglasses by detecting increased UV radiation, or to function as a game controller, activated merely by looking. In one of the temples, an accelerometer detects falls, which can have a translation in a virtual reality universe. In short, these glasses, connected on the one hand to the brain and on the other hand to the real world that they subsume through tinted or mapped lenses, gives users a glimpse of two worlds at once.

Such a world, accessible through glasses or through a screen, cannot be reduced to a mere decor. It needs to be inhabited by characters. So it has to be in 3D. There are also virtual doubles, to present the news for example, which is rather

United States
N100 2021
Netexplo award winner in 2017, The Next Rembrandt, having undertaken a detailed analysis of all the master's works, created a new and uncannily believable painting, even reproducing the touch of the paintbrush and the texture of the paint.

Corée du Sud
N100 2021

ironic in the era of fake news. The Chinese State press agency Xinhua has added a 3D avatar to its range of news anchors. Named Xin Xiaowei, the avatar was developed jointly by Xinhua and the Sogou search engine. The AI avatar, modelled on Zhao Wanwei, a Xinhua reporter, is *animated* by "multimodal recognition and synthesis, facial recognition and animation and transfer learning". It can imitate voices, facial expressions, lip movements and mannerisms.

⬇ Chine
N100 2021

⏸ *"I can present [the news] while sitting, standing or walking. In the future, I will propose new scenarios. My expressions and movements will improve*" Video posted on Twitter on 21 May 2020.

But often, in virtual universes, unless you are a celebrity, it is difficult to create a character that looks like you. Your choice is restricted to a narrow range of nose shapes, hairstyles and clothes. Created worlds would benefit from greater sophistication in this regard. On that topic, Hour One describes itself as a "*video transformation company*" aiming to replace cameras by code. Its latest creation lets anyone create an entirely digital clone of themselves who can speak "in front of a camera" without the contribution of audio or video content, thanks to AI. This autonomous digital twin is therefore not a deep fake and can have applications in business, education or content creation. You could send yourself into a new world, just like the latest application from Epic Games, a genuine generator of digital humans named MetaHuman Creator.

⬇ United States
N100 2021

▶ This would make It possible to participate in a presentation meeting or complete a task with another team at the same time.

In the space of a few minutes, you can generate a very realistic, video-quality animated character, choosing face shape, skin tone, hair and clothes with unrivalled precision. The amazing detail is that you can even change each tooth on your digital human. This is the promise made on the unrealengine.com platform: "*Imagine game characters that will blow your players' minds, digital doubles on the latest virtual*

production set that will stand up to close-up shots, virtual participants in immersive training scenarios you can't tell from the real thing: the possibilities for creators are limitless".

The series *West World* takes immersion into a parallel universe very far, by imagining a theme park reconstructing the lawless world of the Wild West, which allows visitors to enjoy themselves with total disregard for the rules of their world of origin. They can kill and brutalise the inhabitants of this world, very realistic androids repaired every night in a sophisticated laboratory, as much as they like. When transplanted into this world, visitors keep in them what they were in their lives, but they have a totally different, superimposed personality that they build as a character in the new world. The series plays with this superimposition of states in each period, but also in its meta-universe: the - fictitious - company at the origin of the park, Delos, offers no fewer than 6 different worlds on its website: this is not just another a mirror world, like Alice falling down the rabbit hole or like the *Upside Down* in the series *Stranger Things,* but a plurality of worlds, which allow choice depending on your aspirations, desires and frustrations.

Like all corporate websites, the Delos website also proposes a chatbot, a Careers section, a manifesto describing its purpose and a very effective sales pitch: "*Our immersive worlds integrate inspirative technology and provocative narratives to offer an opportunity that redefines life itself: the chance to change your story.*" The supreme argument of Delos is based on the encouragement to leave screens, to disconnect from a world inundated with the virtual, to touch a world that does not

⏸ On delosdestinations.com, you can choose your favourite world like on a travel site: Colonial India, Japan in the Edo period, France during the Second World War, etc.

exist: "*It's a feeling that will challenge your idea of reality - if you can't tell the difference, does it matter?*". A compelling and appealing demonstration for an imaginary product.

Like the series, which offers to take the subject to very different worlds, each with its own coherence, we could "enrich" our personality with a visit to a world superimposed on ours. It is noteworthy that the state-of-the-art technology implemented in *West World* is not used to serve a futuristic universe, but a world of the past, with the exception of season 3. This is indeed a privilege allowed by these superimposed worlds: time travel.

It is of course a temptation to be able to explore other times. Without recreating totally realistic and ultra-scripted atmospheres like in *West World*, artificial intelligence, through its power and precision, can take us back to the past.

36. the new *past*

"What's past is prologue"

Shakespeare, *The Tempest, Acte II, scène 1*

"- Why does it feel so strange?
- You're not shooting a bullet, you're catching it.
- Wow."

John David Washington, Clémence Poesy,
Tenet, Christopher Nolan

So where would you put the future? In 2050? In 2023? No. Let's return to the 6th century BC. Far from imaginary scenes of robots, projections into the future, neon-lit cities like in *Blade Runner*, here we are on the plateaux of Iran, at the time of Cyrus le Grand, a major figure of the ancient world. As the King of Persia, he conquered the prestigious city of Babylon, before founding the first empire with a universal calling in human history, which would live on for two centuries. A time of remarkable richness, which had a profound influence on the development of civilisations in the Middle East. The problem is that the cultural and historical treasure represented by the writings of the time remains untapped. Political, economic and social history is recorded on hundreds of thousands of damaged clay tablets. The missing parts are a huge challenge for researchers. The AI of the project Restoration of fragmentary Babylonian texts using recurrent neural networks makes it possible to restore fragments and piece together

‖ Respectful of the beliefs and traditions of the peoples he conquered and of their rulers, he is referred to as "the King of kings"

⬇ Israël
N100 2021

damaged texts. Like any AI, the more it works, the better it performs, which will soon allow it to decipher scientific and literary texts as well. This is a first step toward large-scale reconstruction of a lost heritage and in-depth knowledge of a major civilisation. The past is also explored with Deciphering unsegmented languages.

United States
N100 2021

Dozens of ancient languages have not been deciphered because, on the one hand, we do not know which other language they are related to and, on the other hand, the writing does not separate words. Thanks to AI based on the principles of linguistic evolution, researchers at MIT can decipher an extinct language even if its origins are unknown. The algorithm can also confirm relations with other known languages. The team hopes to allow translation of extinct languages based on only a few thousand words.

When we explore the past to relate history and provoke thinking that is useful for our time, we are confronted with the material reality of remains, including pottery. The European project ArchAide, involving 35 researchers, encoders, designers and videographers, 9 universities and several public and private partners, aims to make the task easier for archaeologists. How? A dedicated app allows them to take a photograph of a fragment of pottery unearthed in diggings. The fragment is immediately recognised by means of a profiling function and compared to a global database which is constantly enriched. Beyond the time saved and the reliability of the answers found, a genuine archaeological community, of a new kind, is now being created around the world.

Italie
N100 2021

Putting together traces of the past is one thing. Recreating the past is quite another, in particular through sensations.

Close your eyes and take a deep breath: now discover Marie-Antoinette's rose perfume, or the small of gunpowder from a battlefield in Napoleonic times, or the spicy scents of a meal described by Balzac. This is a huge undertaking, achieved by means of a highly trained AI able to smell stenches, aromas and scents described in European books and paintings from the 16th to the 20th century. Odeuropa, a multidisciplinary project designed and steered by a team of historians, linguists, art historians, chemists and artificial intelligence specialists, aims to trace History through a sensory prism. At a time when one of the symptoms of the coronavirus is the loss of smell, the project offers an approach allowing exploration of the past through smells.

⬇ Pays-Bas
N100 2021

An unusual experiment given that the ultimate goal is to recreate some of these perfumes to explore periods through the work of chemists and perfumers. This could allow us to stroll through the streets of Venice in the 17th century, Paris during the French Revolution, to discover a long-gone vegetable or to breathe in the scent of a flower which withered 400 years ago.

⏸ In *Le miasme et la jonquille*, Alain Corbin deciphers olfactory perception in the 18th and 19th centuries, with the new theories linked to air, through the history of sciences, architecture and town planning.

We can readily imagine immersive applications for business and museums based on this long-term project started in 2021. But on a deeper level, this physical, tangible connection to a vanished period which resurrects instantly in our brains constitutes deployment within us of a world superimposed on the one we live in.

▶ For a historical organisation, the past is often the foundation to legitimise actions et projects. This involves knowing and conveying it effectively to the people concerned, beyond the "About" section of a website.

At the confluence of several technologies, the past can therefore become one of the worlds we could inhabit, even more so given that a number of venues are modelled to avoid visits that are often synonymous with deterioration. Yungang grotto replica is probably the first full-sized reproduction by 3D printing of a historic site, that you can visit in person and on the internet without damaging the original site. The music cave, carved in the 5th century, represents the first royal symphonic orchestra in China in great detail. In a setting spanning 14 x 11 m, heavenly figures and musical instruments are reproduced to 2 mm. Proust, in Time regained, describes this relationship to art which is able to embed us in varied and sometimes ancient worlds: "*Thanks to art, instead of seeing one world only, our own, we see that world multiply itself and we have at our disposal as many worlds as there are original artists, worlds more different from one another than those which revolve in infinite space, worlds which, centuries after the extinction of the fire from which their light first emanated, whether it is called Rembrandt or Vermeer, still send us their special radiance.*"

⬇ Chine N100 2021

It is striking to observe that AI is tasked with reconstructing a past, at a time when our future seems uncertain, and even very grim. In an optimistic case scenario, in accelerating our knowledge of the past, could technology provide the launching pad for a more assured, firmly rooted and cultivated approach to the years to come?

⏩ 2041: The GenealogIA app allows you to reembody your forbears over 5 generations in 3D. A conversational version in planned for the summer of 2042.

37. into the *underworld*

From Internet to the Darknet...

superimposed worlds already exist online, in the structure of the net itself. At the most widespread and accessible level, the web, which is only an application, uses the Internet, the network of networks, as a medium to support content. The web itself is divided into the surface web, which is accessible with off-the-shelf tools like Google, and the deep web, which is not indexed by popular search engines.

Parallel to the web, there is the dark web, content hosted by overlay networks called darknets, like Tor or I2P. These darknets use specific protocols which anonymise user addresses. This is why darknets are used by dissidents to bypass censorship or by criminals to escape surveillance. Some darknets only share files, but some, like Freenet, include all the features that are useful online: web, email, messaging. This gives a portion of users wishing to escape state or private surveillance an alternative entrance point: citizens opposed to data capture by GAFA, journalists and opponents of authoritarian regimes find a means of protection and dissemination. It is home to Wikileaks, the site created by Julian Assange, which allows whistleblowers to post revelations and documents without revealing their identities. Freedom from surveillance can favour the creation of autonomous, structured groups, who, by inhabiting uncontrolled zones, believe they can regain the paradise lost of the original web, sometimes in a cyberrévolutionnaire vein.

The term *Darknet* was coined in 2003 by four Microsoft engineers to refer to illegal downloading networks. Today, it refers to encrypted parallel networks.

Domains accessible on the Tor network end in *.onion*, as a reference to the successive encryption layers. In fact, Tor stands for *The Onion Router*.

In 1996, Gilmore wrote a declaration of the independence of cyberspace to official governments: "*You have no sovereignty where we gather. We are forming our own social contract*".

On the dark side, anonymity allows criminals to develop their activities, including sordid trafficking and cyberattacks, outsmarting official investigations. It took the FBI two years to arrest the founder of Silk Road, a drug supermarket that reopened shortly after that on another platform. Online crime is not restricted to the dark web, however. It often operates out in the open. Starting out from hashtags on Instagram and Facebook like #humanbones or photo tags, Shawn Graham, professor of digital sciences at Carleton University in Ottawa, launched AI bone trade tracking by forming Inception 3.0, a convolutional neuronal network designed by Google, to find those purchasing and selling human bones. This illegal trade, that became global through the social media, caused indignation in many countries where laws require human bones held in museum collections to be returned to descendants. Today, Graham works with The Alliance to Countering Crime Online, a group that uses AI to track down illegal trading in ivory, counterfeit drugs and sex trafficking. His slogan is "*If it's illegal offline, it should be illegal to host online*".

Crime is therefore not just on the dark web. With greater subtlety and power, the criminal world can act by being superimposed on the legal world.

Not through a dedicated system, which would be a romantic vision inherited from crime movies presenting the gangster underworld, but through all the resources available to any connected individual. This world, superimposed on others, can itself consist of multiple "tiles", zones that are both dispersed on disparate resources such as social media, darknets and encrypted messaging, and unified by their illegal intentions and actions.

Canada
N100 2021

Their website couteringcrime.org states: "*Crimes don't happen on the deep dark web. Instead, criminals operate in plain sight, on the platforms with the greatest reach - Facebook, Instagram, WhatsApp, YouTube, etc.*"

38. the world: *yours for the listening*

Given that our online existence has taken on new importance, our entire digital identity is now called into question. What image of ourselves do we want to give? Or rather, what images? We transform ourselves depending on the medium used. To use the most obvious case: we do not necessarily use the same profile photo on Tinder and on Linkedin, to make our identity more convincing in each setting. In this case, we show two of the facets of our personalities, depending on the desired effect. Up to how many faces can we present, depending on the platform? Is it a problem to fragment our being in this manner, or, on the contrary, a form of greater externalised sincerity, by expressing our different sides? Even more so given that we wear the mask we are asked to put on: when entering each platform, we adopt the required *dress code*. From a strictly commercial viewpoint, the more we offer pieces of our individuality, the more we multiply the number of targets for personalised advertising. Scattering of the self, provided that you make good use of it, can, like Ethan Hunt's disguises in *Mission: Impossible*, cover your tracks.

In fact, we are not as free as we believe concerning our own image. The social media, through their tacit or explicit rules, lead us to understand their rules of the game. They give us an impression of freedom by placing creative tools within our reach: writing posts including photos or videos for the more conventional, applying filters and emojis or adding music for the more fun-loving. On the one

II To describe this "*agglomeration of images and statuses on social media*", Canadian philosopher Alexandre Desrochers Ayotte created the concept of ectosubjectivity, from the Greek "ecto", outside. *sens-public.org*, Oct. 2020

hand, this visual grammar is extremely restricted, just like the catalogue of emojis supposed to express our emotions.

⏩ 2029: a new therapy is created to recover the emotions that prevailed before the massive use of emojis that modelled an entire new facial expression code.

On the other hand, all social media mould us into their design to give themselves consistency. Not to mention the videoconferencing interfaces, where your family, friends and colleagues are reduced to flat miniatures. Framing, lighting and unfathomably poor image processing prevent any genuine interaction. This effect is reinforced by the camera: we are under the scrutiny of the other participants and our own, in a relationship that is skewed by tech. No interruptions, no moving, no enthusiasm. All this with the vagaries of muted microphones and cameras turned off. Our online image is not yet really fully developed, because we still abide by representation codes from another time. A time when being filmed or photographed compels you to play a role.

We could also, however, rethink ourselves in superpositioned states, rather than contradictory or non-compliant. Give ourselves the freedom to be several people at once, like a Picasso painting which includes several viewpoints on the same canvas.

Perhaps as a reaction to the image imperative, a superimposed world appears to be thriving. A world (almost) rid of image, that of sound, the audioworld. As emphasised in Les Echos in February 2021, "*In 2020, a unique year marked by the coronavirus health crisis and the successive lockdowns around the world, podcasts managed to stay a step ahead. According to the specialised company Chartable, no fewer than 885,262 new podcasts were made available online in 2020, i.e. almost three times the total published the previous*

year (318,517). In the space of just five years, the number of podcasts produced was multiplied by 17, according to Chartable, who estimates that the number of downloads also almost tripled in 2020 (+180%)." One of the reasons for podcasts' success is that they allow you to do two things at once: listen while you run, cook, tidy up, etc. But a podcast, like radio, remains a medium. It does not offer closeness with family and friends like the 100% audio social media: Cappuccino, which offers a mix of your loved ones' voices or Clubhouse, a prodigy valued at 1 billion, with 2 million users. Initially by invitation and on iOS only, the app makes it possible to create or listen to "rooms", ephemeral audio conversations, sometimes with experts or celebrities, such as Elon Musk in February 2021. Other exclusively audio platforms have appeared, like Two, the Chinese equivalent of Clubhouse, or are planned, like the well-named Fireside, which aims to favour direct conversations. Discord, the gaming chat app, changed its positioning during the pandemic, to become "*Your Place to talk*".

United States
N100 2021

Voice is a more intimate process than image. It is a better reflection of moods and emotions. It is capable of modulation by murmuring, singing, whispering, shouting, reciting, narrating, ordering, laughing or smiling. Listening to someone makes you feel closer and recreates a privileged moment.

Perhaps we should favour a 100% audio meeting, rather than an attempt to visually reconstruct a mosaic consisting of appropriately composed faces and initials in colour circles?

This was observed by the dating app Checkmate, which has eliminated writing from its functionalities, precisely to avoid fake profiles: you can exchange 5s audio files at the beginning, which can gradually be longer, before moving on to video.

The voice represents a layer that is superimposed

in any place and at any time, creating a momentary isolation with the real world and an intimate attachment to the voice heard. As a complement to Clubhouse, we could have Soundbeamer. Created by Noveto Systems, Soundbeamer 1.0 lets you listen to audio content in your personal environment without earphones. "Sound beam" technology is based on a 3D detection model to locate and follow the position of the ear. Guided by AI capable of facial, gestural and vocal recognition, audio content is then sent via ultrasonic waves to create pockets of sound around the ears. In addition to the sensation that the sound is in their head, the user, the only one to hear the sound from the loudspeaker, does not disturb those around them. The fact that there are no earphones also means that it is possible to hear outside sounds clearly: the two worlds, the tangible world and the audible world, are intermingled. Is sound the new dimension of digital expression to be explored after writing and image? Audio messages, podcasts, sound social media: perhaps an aspiration to immediacy of the person, to an expression of the body, unlike text messages, emails and photos that remain "additional" objects, and, as such, intermediaries.

⬇ Israël
N100 2021

▶ Useful to design invisible interior architecture in shared premises.

39. gaming, *the origin of worlds*

The image of superimposed worlds presupposes that they really are worlds. After all, what is a world? The meaning of the word has constantly evolved over time, from the Latin *mundus*, "pure" to the French *monde* "entirety of things and beings created", then "terrestrial globe", "human community living on earth" and "a group of persons", as in "many people" in French. Perhaps we can continue the stream of evolutions to propose a meaning in line with the emergence of these parallel dimensions?

A world would appear to be appropriately defined as a "total", complete place. Can an online world be considered as meeting all human needs, to the extent that a community could settle there to become a population? We could examine all its needs and assess whether they are met digitally in terms of education, work, romantic relationships, leisure activities, consumption, political and civic engagement, sports or health coaching, culture, etc. We could provide an entire list of facets that make up our lives to observe that solutions exist for each of them.

The only thing we would then need to do would be to combine them, intertwine them to build a liveable and complete world, made up of decors, characters, supported by additional physical devices making it possible to s(t)imulate sensations so that interaction is not only for the eyes and the hands.

What could be the starting point of each of these worlds vast enough to host entire peoples?

In our digital environment, we have a multitude of applications and platforms most often dedicated to a single function. In addition, the huge power required by the simultaneous presence of millions of people does not yet appear to be with us: when Fortnite brought together 10 million people for the Marshmello concert, each player in fact only saw 99 other people around him. The starting point of these worlds could, however, be the gaming universe, where sophistication is constantly increasing. After all, for home schooling, why offer complex and daunting online platforms, when all it would take would be to include the knowledge and the teachers in a school built in Minecraft or Animal Crossing?

Some initiatives, which are still very weak signals, would appear to show that integrations of a new type are taking place in online games. This is precisely because video games still appear to be games, which they are no longer, integrating events, messaging systems and proprietary currencies. When they observed that the gaming world was not censored like websites, blogs and social media, the NGO Reporters without Borders used Minecraft, the highest-selling game in the world with over 200 million users, to build The Uncensored Library. A library of articles banned by authoritarian regimes, a haven for the work of journalists who, because of their independence, were sometimes exiled, imprisoned or killed. The goal is for the press to regain its freedom. To make available to the entire world, in particular to young generations, real information on societies shackled by repressive authorities.

Suède
N100 2021
2008 / Psiphon

The designers base their work on the principle that too many young people grow up in countries where their opinion is significantly manipulated by disinformation campaigns. Their objective is clearly expressed on uncensoredlibrary.com: "*Let's empower the next generation to stand up for their right to information and give them a powerful tool to fight oppressive leaders: knowledge. Together with the ever-expanding gaming community, we will show the world that the truth will never be silenced!*"

It seems quite logical that the gaming universe, built according to rules, escaping censorship, allowing interactions between players remotely connected through a screen, could constitute the source of superimposed worlds. This is because the feeling of belonging is part of the equation: why should I live in this world rather than in another? Let's imagine that Fortnite is the origin of a new social media platform, then a new internet including all the possible features. The target audience concerned by Fortnite corresponds only to a certain generation, a given part of the population. We could therefore imagine several superimposed internets, by age groups, by gender, etc. Worlds based on affinity, transnational and superimposed, without any real need to talk among themselves, given that they are all self-sufficient.

40. goldilocks *zones*

Are these affinity-based worlds disconnected from reality? Not necessarily. Not only could/can they be built on problems and issues from the real world, but they can also have a real influence on it: in Argentina, which produces 40% of the world's soybeans, Abakus farming blockchain seeks to respond to a problem faced by farmers suffering from runaway inflation. Abakus, an Argentinean start-up and Coreledger, a Swiss specialist in blockchain architectures, are launching a digital bartering platform to allow farmers to cope. The system is based on a cryptocurrency, indexed to physical assets, which could be much more stable than a fluctuating national currency. Tokens can be exchanged for goods or pesos. The Coreledger system also allowed the Bolivian farming sector to gain profitability by removing intermediaries thanks to direct investment tokens.

⬇ Argentine
N100 2021
⏪ 2016 / Bitnation Refugee Response

Smashboard "*is your digital ally to crush the patriarchy! As a non-profit organisation based in India and in France, we build an alternative network of social media based on intersectional feminism principles.*" The clear description of this multifunction platform emphasises the world "*alternative*", thereby underlining the need to create a world superimposed on reality, devoted to women. After the #MeToo movement, founder Noopur Tiwari decided to take action by creating this solution secured by the blockchain, intended to fight the patriarchy, which she describes as a "*digital space, not a movement*", in an interview

⬇ Inde
N100 2021
⏪ 2011 HarassMap

with Yourstory in 2019. The difference? In addition to the feeling of belonging to a community, you have concrete tools to further your cause. On the app, in addition to messaging services which allow anonymous communication without geo-tracking or data capture, you have access to a map of the world identifying places providing help, hubs of solidarity built for people who have suffered from sexist and sexual violence, with legal and psychological advice and encrypted personal spaces making it possible to gather time-stamped evidence of threats or assault.

II "*We are creating a space with certain values. And we know that there are enough people out there who want this. More than 162 million women use smartphones in India. We have to make the app useful for all of them*." Noopur Tiwari, *Yourstory*, 2019

For a victim, the feeling of reinforcement comes from belonging to a group that is both global and very local, not only brought together by an ideology and a commitment to changing reality, but also by structuring a dimension that can be superimposed on the real world, equipped with the means to act, capable of changing reality, taken from the digital range and assembled in an efficient logic. The Smashboard solution is open to men and to the LGBTQ community, which means that it transcends not only state and cultural divides, but also the gender divide, in its objective to tackle rape culture. A supranational organisation that exists only for its commitment to the real world, through the digital world.

Julia Kloiber worked with the Open Knowledge Foundation, a reference NGO in the areas of open data, open access and free culture, founded at Cambridge in 2004, present in over 30 countries.

Then she founded Superrr Lab in 2019, to support public and private stakeholders in their use of inclusive technological innovations, as indicated on their website: "*Superrr Lab develops visions and projects*

with the goal to create more equitable futures. We do research, build networks and shape narratives." She also steers the collective project The New New. In 2021, they will launch a European programme bringing together designers, researchers and technologists to invent what inclusive digital futures could look like, in cooperation with the Ethics of Algorithms programme. Julia Kloiber sees the future in the plural, envisaging an Internet consisting of micro-networks that have meaning for users, to better represent reality, in an interview given to Le Temps in November 2020: "*We need to change scale. The Internet has become a super-continent, dominated by a few rather than by the multitude. We need to allow it to evolve more locally. We need to embrace the cultural diversity of its users and support it. By examining this more closely, we will be able to build a Web that is useful and representative of society.*"

In astronomy, the term Goldilocks Planets refers to the planets located in the habitable zone of a star. This zone, which is neither too hot nor too cold, concerns planets on which water remains in liquid state, without becoming vapour or ice. These are planets that could host a form of life.

II The name comes from the story *Goldilocks* in which the heroine ends up eating the soup that is neither too hot nor too cold.

If we come back to the image of superimposed worlds: if they are too far from the real world, they are of interest only for the users who lose themselves there. If they are too close, they are just a pale copy.

To be effective and achieve its goal, the superimposed world must be stabilised at the right distance from the real world. It must have its own autonomy, which gives it coherence and movement, but it must not be totally detached, so that it can establish fruitful connections and not just be a way out or a totally pointless entity.

episode 3
hope in transla-tion

"Understanding is translating".

George Steiner, *After Babel*, 1975

41. the kintsugi *spirit*

"There is a crack in everything and that is where the light comes in."

Leonard Cohen, *Anthem, The future*

A bowl breaks. Either you throw it away or you try to repair it by sticking the pieces back together. The problem is that it is impossible to stick it back together perfectly, i.e. invisibly. The third solution is to learn the Japanese art of Kintsugi, which consists not of hiding the crack, but of sublimating it by connecting the parts using a lacquer then powdered with gold. The object gains a new lease of life, adorned with its golden scars.

In this technique, sometimes used as an image of mental injury and healing, the approach is not to go back, like a video played backwards, where the pieces are put together to make the previous object intact again. On the contrary, the parts are clearly visible, well separated from each other by the new material, gold, that is holding them together. Of course, the accident that took place is embedded in the object itself, clearly visible and deliberately enhanced, time become space.

It appears illusory to imagine that we could one day unify, assemble or merge the superimposed worlds that are appearing and developing: autonomous platforms, that are coherent and suspended above each other, internets by gender, age or affinities, encrypted social media accessible by invitation, as well as all the forms that are still unknown.

From the Japanese *Kin*, "gold" and *Sugi*, "joint". The showcased crack is the sign of revival. The object thereby symbolises the beginning of a new cycle. It is possible to use other metals like silver (*gintsugi*) or to use the lacquer alone (*urushi tsugi*).

Sublimation of irregularities and flaws calls to mind the glitch concept in digital aesthetics, theorised, in particular, by Rosa Menkmen in *The Glitch Moment(um)* in 2011.

Clearly, we seem to be moving towards the autonomy of each entity. With technology, they have become much more than mere parts of the whole. The distance between each of these structured worlds, hosted by digital technology, appears as inexorable as that of raisins in a baking cake. "*A more fragmented world is coming into being that in some ways may be more resilient*" writes British philosopher for the New Statesman in 2021, learning the lessons of national management of the pandemic and international interdependence that leads to great inequalities in access to facemasks or vaccines.

Image used by astrophysicist Neta Bahacall in *Hubble's Guide to the Expanding Universe: "Put a raisin cake in the oven, and it's very small. Then you let it go, and the distance between the raisins is like the distance between the galaxies - it gets larger and larger with time."*

Although reunification would appear to be unrealistic and babelisation well underway, it is worth asking how we could "connect" entire portions of the population who are societally distanced. Not to stick the pieces together seamlessly, which would amount to a fantasy and denial of reality, but to build effective and clearly visible bridges like the gold used in kintsugi. How can these connections be built?

42. connecting *through a common culture*

A first approach involves reference to a common culture, consisting of unquestionable elements that form a firm and stable foundation. Just like all the pieces of the bowl are still made of their raw material, be it clay or china. Values, events, non-relative facts made from our human material. This is how Dimensions of testimony uses machine learning, AI and interactive holograms to create eternal "doubles" of Holocaust survivors. In 1994, Steven Spielberg founded the USC Shoah Foundation at the University of Southern California. Since then, the Foundation has not only perpetuated the memory of witnesses who are still alive today, but also looked to the future. After their lifetimes, their inspiring personal memories could depart with them. Hence the project of filming men and women who survived the concentration camps and ghettos to create their digital alter-egos. To achieve that, over several days, the person talks about their life and answers over 1,000 questions an audience could ask. This allows a genuine conversation with the hologram, restoring the quality, richness and emotion of a human relationship. You can ask questions and the survivor will answer, looking you in the eyes. USC refers to this process as "interactive biographies", thereby emphasising the value of personal destinies in remembering and assimilating a collective history, a history on the scale of humanity.

⬇ United States
N100 2021

⏩ 2043: Creation of a citizen of the world passport, allowing the holder to live on the planet rather than in a specific country. To obtain the passport, you have to spend a TIY, Time Immersive Year, immersed in virtual and augmented realities of world history.

Facts, events, dates, figures and movements making up that history, most of which are now accessible online, must also stay "alive", active, to ensure they are not forgotten. How do we reactivate them? A source, Wikipedia, uses a collaborative model to bring together common material including factual references, with a constantly reasserted ethical focus. On the official page, users find job offers, as a sign of that community-based mindset. For example, there are offers concerning bot administrators, arbitrators, blockers and even owners used to publish or create articles. Some bots are specialised in resolving issues related to homonyms, repairing vandalism or categorisation. A virtuous collaborative model. Of course, updates need to be frequent, to ensure that the content does not become obsolete and that it is not forgotten. This is where AI wikipedia update comes in. Wikipedia includes millions of regularly updated articles. A tedious and time-consuming task, falling to contributors who rewrite entire sections of the articles concerned. Researchers at MIT have therefore created a tool to update articles automatically. An AI identifies the page and sentence to be updated and adds in new information provided by a contributor. Only key information is needed, even if the sentences are not structured. This technology could also be used to train fact-checking tools.

United States
N100 2021

Creating links through sharing and pooling suggests that *by design* we would do away with partitions, and even with ownership, based on the principle that an idea can enter into the public domain as soon as it is conceived: this is the challenge of responsible, collective creativity.

Japan
N100 2021

Autonomous vehicle platforms will probably be closed ecosystems, walled gardens, like information technology systems. This is why the Autoware group, consisting of start-up businesses, industrialists and institutions, is seeking to democratise the creation of autonomous vehicles thanks to an entirely open-source platform. The system, which has been used for many self-driving car tests in Japan, includes many projects currently in operation, such as e-Pallette, the autonomous shuttle intended for the Tokyo Olympic Games and an autonomous amphibious bus.

43. connecting *by sharing*

For a common material to find resonance, it must be shared and used. Connecting different parties means passing on the right information at the right time and to the right people. Yeshimabeit Milner, a data technologist focused on fighting racial bias impacting the black community, founded Data for Black Lives (D4BL), whose signature statement asserts the use of Data as protest, Data as accountability and Data as collective action.

United States
N100 2021

The mission of this group of scientists, activists and technologists is to use the power of data to implement social change. Starting out from the observation that racial bias perverts the use of data by law enforcement, for example, with predictive policing, and that experts are still too often exclusively on the side of official authorities, Yeshimabeit Milner is committed to accessibility of data. Her view is that data is a tool, but that the tool must be useable by all. In 2018, her first annual conference on the topic put it this way: "*Abolish Big Data!*", to put data "*in the hands of people who need it the most*". In 2020, D4BL and its founders were awarded the Forbes 30 under 30 and the New York Times Good Tech Awards, thereby recognising an initiative which, by aiming to eliminate a hurdle and put an end to discrimination thanks to education and training, can change an entire society.

Her latest initiative involves compiling and analysing datas on the Covid-19 epidemic and its consequences for the African-American community, showing a correlation between its great vulnerabi-

"The conditions that make Black communities vulnerable to the virus are the same conditions that make Black communities vulnerable to the daily harms of structural racism" Instagram Data4BlackLives, 2020.

lity and structural racism in the United States.

Pooling not only data, but also computing processes and capabilities, empowers people committed to building the future, like researchers. Imagine that you want to implement a protocol to create a new drug, without access toa purpose-built laboratory. Your solution could be Strateos, a robotic cloud, lab, scalable to the specific requirements of your work. Workcells, workshops that are accessible on the internet, contain state-of-the-art remote facilities where robots conduct biological and chemical experiments. Researchers specify their requirements via a graphic interface or code. The Workcell can also test and collect data from samples. Constant updating of equipment allows all the researchers to benefit from a top-notch laboratory 24 hours a day and 7 days a week, capable of repeating tasks as often as required. The stated objective is to transform biology into information technology and accelerate processing production.

États-Unis
N100 2021
◀◀ 2018 / Placenta on a Chip
▶ Pooling by several companies of their data, processes and initiatives in a shared cloud as the first step in global and cross-sectorial cooperation.

Making both data and methods available gives each party augmented capacities to fulfil their potential. This goes beyond the notion of empowerment. Rather than giving (back) power to become autonomous, this approach involving appropriation of powerful tools builds capacity to create new "things" and fosters creativity.

However, should all these tools, irrespective of their power, be made available to everyone? To whom should we entrust control of GPT-3, the most powerful artificial language model ever created, with its 175 billion parameters, capable of having discussions on all topics, of broadening or summarising a statement, of transforming the nature of a text, while preserving its meaning? For

GPT-3, everything begins with its parent company, Open AI, created in 2015 with the following goal: "*to advance digital intelligence in the way that is most likely to benefit humanity as a whole, unconstrained by a need to generate financial return*". In 2020, Microsoft obtained the right to exclusively license GPT-3, which prompted Elon Musk, one of the co-founders of Open AI, to tweet on 24 September 2020: "*This does seem like the opposite of open. OpenAI is essentially captured by Microsoft.*" As a response to this operation, GPT-Neo, an open and free replication of GPT-3, will be made available to all developers in August 2021 by EleutherAI, a collective open to all contributors working to open-source AI research.

Allemagne
N100 2021
◀◀ 2018 /
SingularityNet

‖ The name of the collective is reference to Eleutheria, the Greek goddess of liberty.

Sharing and open access represent a possible connection between different entities and populations, different groups, different worlds. Tools that do not have a predefined use as such but which, like an exoskeleton on a human body, augment users and give them means to complete specific projects. Collective creativity is also the possibility of agreeing on an organisation between several different approaches: how can we find a way to work together, even provisionally? Organising information, sorting it, making connections, deriving new objects?

Roam Research, Research's name does not suggest a linear, a logical process. It is however presented as a knowledge-management application with a fluid and intuitive interface. As a sort of neural network on paper/screen, it draws inspiration from the smart note-taking method Zettelkasten, which makes connections between the different snippets of information found during research but

Singapour
N100 2021

then forgotten as they are not used immediately to write the final work. Interconnected notes are automatically linked through filters and keywords to arrange and sort ideas, but above all to create bridges between ideas and facts and so move to the ideation phase taking all the parameters into account at once. This manner of combining opposites, stringent method and creative flexibility, to achieve progress, calls to mind the metaphor used by Plato in Phaedrus: he compares the idea of the soul with a charioteer and a pair of winged horses with opposite behaviours. One pulls towards the top, towards ideas, while the other pulls towards the bottom, towards material life. Ideally, of course, the charioteer seeks to contend with these two driving forces to make the best of them.

⏩ 2089: all the notions of all the cultures in the world existing or having existed are interconnected, allowing subtle understanding of differences and therefore more effective attempts at bringing people closer together.

44. connecting *is creating*

In addition to keeping a common foundation which reminds us of our humanity, building bridges between worlds can also fulfil an active, dynamic function: finding ideas. Creativity of ideas, which focuses on combining two elements to create a third, cannot proceed without variance, difference, which give rise to doubt and questioning, thereby encouraging reflection. What are the analogies between these two original objects? What are the differences? Reflection by connecting, cross-referencing, by moving from one related step to another; this is the beginning of the creative process.

In 1995, Steve Jobs, interviewed by *Wired*, said "*Creativity is just connecting things*." When during the interview, he was asked which qualities allow creative minds to stand out from others, he answered that they are able to connect the experiences they have had, unlike others who cannot, simply... for lack of experience: "*And the reason they were able to do that was that they've had more experiences or they have thought more about their experiences than other people. Unfortunately, that's too rare a commodity. A lot of people in our industry haven't had very diverse experiences. So they don't have enough dots to connect, and they end up with very linear solutions without a broad perspective on the problem. The broader one's understanding of the human experience, the better design we will have.*"

A dual movement can inspire us to create new approaches: moving into different dimensions,

visiting superimposed worlds, finding dots to connect. Then creating conceptual mixes, recombination, to give rise to new ideas.

45. from one language *to another*

Connecting worlds can also involve translation, a process which seems so natural to us despite the fact that it harbours many subtleties and pitfalls and requires a great deal of attention. Translation can be simple: two people who speak different languages see a chair. In each of their languages, there is a word to refer to that piece of furniture. The difficulties begin if the two people are from worlds so far apart that the object does not exist in the reality of one of the two worlds. This often happens when we evoke an abstract notion, which does not have a tangible referent. An emotion, a concept, an idea.

From the Latin *trans*, "through" and *ducere*, "drive", translation acts as an invitation to "drive beyond, pass through, cross". It takes us to a world and an imagery different from ours. Its action, however, is paradoxical: by giving us, in our language, the equivalent meaning of a word or notion, it keeps us in our own world. On the one hand, we have access to a different culture, but on the other, we remain in our own culture, in our language. This is the difference between reading a book in the original language or reading a translated version which is never the same text, irrespective of the talent or even the genius of the translator. There is no value judgment here: even if the translation is better written than the original text, languages, as the result of very complex and specific evolutions, cannot be perfectly superimposed. This fascinating variance is thought-pro-

❚❚ One of the works published by Barbara Cassin, philologist, research director at CNRS and member of the French academy, *Vocabulaire européen des philosophies*, identifies concepts that are untranslatable, not because one cannot translate them, but because one constantly retranslates them, as they cannot be immediately transposed: "*when we use the word mind, do we mean the same thing as Geist or esprit?*"

voking: how does one really say what one thinks? Above all, where does the meaning of a word lie? In our language? In the other language? At the boundaries of both?

"*Our vision is to create a society where technology has eliminated language barriers and everyone involved in manga can achieve happiness*". This is the promise of Mantra Engine, a start-up specialised in translating manga. This ambition is both specific – translating Japanese graphic novels - and universal: a society without linguistic barriers thanks to technology. The very act of translating, however, preserves differences and therefore barriers. This cloud-based translation platform using machine learning produces foreign-language versions at high speeds, with several functions: recognition of the areas to be translated, analysis of characters, translation and replacement of text directly in speech bubbles. By integrating every step, this task that goes beyond mere translation, which is just one phase in the process. Technology, by applying its power and precision, moves many actions from one category to another. Either by accelerating them or by making them possible. Bad kids dialogue restoration practises another form of translation: restorative translation. *The Bad Kids*, a series broadcast on IQYI, a Chinese series and movie platform, is not only popular, but also critically acclaimed. But to comply with Chinese television rules - criminal cases are always solved and criminals never get away with their crimes - some scenes have been modified, in particular by redubbing texts which are essential to understand the plot.

An AI-expert fan has created an algorithm to restore the original dialogue, by reading the actors'

Japon
N100 2021

lips and taking the context into account, to add pinyin subtitles.

As with the manga novels, this is an augmented version of the translation process: in this case, it is the capacity to read a text that is deliberately deleted, like a video palimpsest.

‖ From the Latin *palimpsestus* "papyrus leaf", written parchment on which the initial writing was deleted to be able to write a new text over it". From the Greek *palin*, "again" and *psên*, "scratch, scrape off".

46. a pocket *babel*

Translation between two languages already represents a connection which allows us to live in the world differently. What would you say if you could understand and speak 60 languages including Ethiopian Amharic, Indian Telugu and Danish? A pocket device can do this for you, in both directions, almost instantly in just half a second: Jarvisen recognises your voice even in a noisy environment and constantly improves its precision through machine learning. This could make travelling much more comfortable or, if you choose to stay home, allow you to learn Icelandic or Catalan very easily: one need only listen to the last sentences spoken again.

Here again, the brand promises to break language barriers thanks to technology: "*The world's leading smart A.I. translator for breaking language barriers to bring us closer together.*" It is noteworthy that the superiority of AI is unequivocally claimed, cultural differences are seen as an obstacle to be overcome and the ultimate objective is global reconciliation. A mission with a universal scope for a small electronic device: a fine example of use arising from technology. Without the language barrier, though, would we still perceive a difference with our own language and therefore an appeal? Would we not move straight towards generalised uniformity and do away with the long and painstaking process, although it is rooted in us, of learning a foreign language? Words and syntax "planted" within us allow us to include others in the form of a culture, a civilisation, which, within us, plays with our own.

⏩ 2032: "*VocalZ can be placed in your cheek to cancel out the sound of your voice, translate what you are saying and say it out loud. You are now multilingual.*"

⏩ Why continue to refer to the language barrier when you have a universal translator?

⏸ *"Without the test of what is foreign, would we be sensitive to the strangeness of our own language? At the end of the day, without this test, would we not risk locking ourselves into the bitterness of a monologue, alone with our books? Honour, therefore, to language hospitality!"* Ricœur, *Le Juste 2*, 2001.

Having two languages within us, or even more, allows us to connect different things and therefore to start asking ourselves questions on the meaning of notions.

In fact, is the real language barrier not between those who have a command of language and the others? With 700 million illiterate people in mind, Lisa Einstein and Moussa Doubouya, the founders of GNcode, observed that devices like Siri, Alexa and Google Assistant do not speak or understand any of the 2,000 African languages. Although computers and telephones may be accessible in writing, they are useless to those who, for lack of structured schooling, exchange ideas verbally only. These minority languages, which are not commonly found on the Internet, cannot be transformed into data to feed AI and train software. The inhabitants of Western Africa, in particular, have for hundreds of years perpetuated a very rich oral tradition, making it possible to convey knowledge and moral values. Should they alone give up on basic functionalities such as text messages or access to useful information on agriculture or medical care, for example? Or should they abandon their language, of which they are the sole custodians, due to the lack of written texts?

Guinée
N100 2021

The designers of GNCode have charted a different course. Their ambition: "*To transform Guinea into a nation that productively and responsibly participates in the digital revolution, in a manner benefiting human, social and economic development.*" Based on the principle that "*Computer systems should adapt to the ways people - all people - use language*", they have solved the problem by using local radio archive, sincluding 142 hours of audio

recordings in 10 languages from West African Radio Campus.

This frugal resource has allowed them to develop the first voice recognition model for Maninka, Pular and Susu, 3 languages spoken by 10 million people in 7 countries, with a rate of illiteracy reaching 68% in some cases.

GNCode does not stop there. They make all their data, codes and models available so that researchers can use the idea and recreate it where needed, as summarised by the creators of the start-up in a column published in Scientific American in February 2021: "*But where researchers turn their attention, progress can be made. Innovation, access and safety demand that technology speak all of the world's languages*." It is worth noting that the issue here is not for technology to break barriers, i.e. to do away with differences, but, on the contrary, to defend multilingualism, seen as a galaxy of cultures.

Sénégal
N100 2021

The same objective motivated a team of students at École Polytechnique in Dakar, Senegal who created Docteur Car, a medical robot equipped with anti-Covid innovations. The robot, remotely guided by an application, speaks English, Pular and Wolof. It moves through isolation rooms to deliver medicine, food and thermometers, thereby reducing contacts between medical staff and Covid patients.

Côte d'Ivoire
N100 2021

And outside the hospital, Tork is a land robot 100% made in Côte d'Ivoire, manufactured with parts recycled by young inventor Joseph-Olivier Biley, founder of Jool Africa and WeFly Agri, a UAV start-up. Tork allows disinfection of streets by spraying and contributes to raising awareness among the local population in local languages.

47. from understanding *to caring*

"We have to move outside of ourselves, live on the verge of tears and in the orbit of famines, if we want something out of the ordinary to happen."

René Char.

Translation naturally applies to texts and languages. As a means to make another culture one's own, the concept can apply to other fields. Where the meaning is hidden, where it cannot appear without involving unveiling, or even recreation, a known form must be given to a thing which, without that, would not be understood. In this type of operation, the problem is obviously accuracy at the destination, compared to the starting point. If we translate from A to B, are we sure that we have accurately preserved the meaning of A? Hence the dilemma: should we seek to know A, thereby running the risk of understanding a partial or misleading version, or should we leave it in the unknown, disengage? Ricœur, while acknowledging a "*wager*", wrote in Sur la traduction (On Translation): "*It is this mourning for the absolute translation that produces the happiness associated with translating*". He then adds, in *Le Juste 2*, that "it is always possible to say things differently". Saying things differently, even if that means giving up on absolute accuracy, which is in fact impossible, compared to the start object.

When he writes "*Understanding is translating*" in *After Babel*, George Steiner changes our perspective and makes any attempt to understand an

attempt to translate: bringing a thing, a notion that until then was totally foreign into one's mind.

Translation tech may be necessary for people with disabilities, as it could be a concrete way to improve their lives. SignGAN makes it possible to translate spoken words into sign language thanks to a virtual avatar. Researchers at the University of Surrey used a neural network to create a system that maps gestures on a 3D model of the human skeleton. The team also trained the AI using videos of real sign-language interpreters, teaching it to create a video of any person expressing themselves in sign language based on an image of them. By combining the video with the 3D skeleton, the AI is able to convert spoken words into sign language, which allows the hearing-impaired to have a better experience of difficult situations like a job interview or a doctor's appointment.

United Kingdom
N100 2021

For a dyslexic child, images are superimposed, making reading and writing very complicated. Lexilens smart eyewear is designed based on research conducted at Rennes university proving that dyslexia is due to the fact that there is no dominant eye. When connected to a Bluetooth application, Lexilens filters mirror images. As a result, letters stand out, lines are clearer and reading is easier.

France
N100 2021

Machine translation of cortical activity to text project shows how artificial intelligence can take *translation* to the next level. The system currently functions based on neural patterns detected when someone speaks aloud, but experts believe that it could one day facilitate communication for patients who are unable to speak or type, like locked-in syndrome patients. With this break-

United States
N100 2021
◀◀ 2019 Deep Image Reconstruction

through, we can see the potential of the concept of translation, in this case applied to a start object "hidden" in the brain itself, and therefore totally inaccessible. Here, technology will allow a new kind of understanding expressing a language, that of neurons, in another language, that of words.

Similarly, Look to speak, a new experimental application designed by Google, aims to facilitate communication for those with speech impairment and motor disorders. They can choose from preselected sentences on the screen of their smartphone using their eyes. No special equipment is needed; they need only look at the words. Once the sentence is selected, it is dictated out loud, reconstructing the voice of the user to avoid an impersonal robotic voice. Thanks to the AI, the system adapts to the habits of the person and predicts likely linguistic sequences.

United States
N100 2021

Translating inner thoughts can be decisive during therapy. How can the distressing voices heard by schizophrenia patients, and only by them, with major disabling effects, be translated? By embodying them using 3D virtual reality.

Developed by Doctors Alexandre Dumais and Stéphane Potvin, Avatar Therapy allows patients to engage in a dialogue with their most distressing voices in a virtual environment. The idea is for virtual reality to recreate the faces and voices of the persecutors in the form of monstrous, devil-like avatars, with horns or scales. The demon, which is tailored to each person, resembles the patient's visual representation of the inner voice. Once they are in the virtual environment, the patient can engage in dialogue with the distressing avatar, embodied by his psychiatrist. The psychiatrist then guides the

Canada
N100 2021
2014 / SimSensei
+ 2013 Sparx

dialogue to stimulate emotional regulation, rebuilt self-esteem and work on assertiveness. Additional technologies modify the voice of the psychiatrist to resemble that of the verbal hallucination, while ensuring prosody and lip synchronisation. According to the results of the study, 70% of the patients treated have seen an improvement in their quality of life. 90% noticed a decrease in their auditory hallucinations. 100% of the patients reported a significant decrease in their anxiety and fear.

Translation brings the unknown into a known area, irrespective of the start object, the thing to be translated. The important thing is to find the most legible way to make it knowable, graspable and understandable once the translation is done.

48. the sound *of photons*

Translation works by analogy. The idea is to identify possible similarities between two languages that appear to be different, as Champollion discovered with the Rosetta Stone that became a valuable key to deciphering hieroglyphs. Once these similarities are superimposed, they form cornerstones which allow further understanding.

Two languages, or two worlds. MIT researcher and poetry lover Brian Hie examined the way viruses work. He noticed that their behaviour follows a certain form of grammar, just like a sentence adheres to rules to produce meaning: penetrating a cell, modifying its programme to make it a machine to clone the virus, and so on.

Except that sometimes, there are mistakes in this process, which unfortunately allow the virus to mutate and resist treatment. This disturbing "escape" of the virus obsessed researchers. Nlp virus evolution prediction is based on the principle that the way a virus works is not very different from the workings of written language. The immune system can translate some sequences, but not others, given that it does not have an appropriate translation tool. Based on that observation, a team of researchers at MIT showed that natural language processing (NLP) algorithms are able to generate protein sequences and predict viral mutations, including those helping the coronavirus to escape the immune system.

United States
N100 2021

The key idea is that many properties of biological systems can be interpreted in terms of words and

sentences. The study shows the possibilities for application of breakthroughs in linguistic AI, including GPT-3, to scientific challenges.

A very powerful system designed to create language could therefore impact other areas, including in medicine, thereby appearing to indicate that reasoning between these areas is similar. Or could this mean that the linguistic approach is predominant, as the key to interpreting the world and its phenomena?

Does translation have limits? Can it connect any two worlds, provided that it can find the key? For example, translate light from a bulb into a Beatles song? Just imagine: You are a member of Her Majesty's Secret Service and your mission is to intercept the plans of the next bad guy who wants to rule the world with a white cat on his lap. Suddenly, at the end of a corridor in his mansion, there he is, in a living room surrounded by glass windows overlooking the dark raging sea under a silver moon, giving instructions to his henchmen. With bated breath, you strain to hear what he's saying, but you can't because of the glass window between you. He is turning his back to you, so you can't read his lips either. In your backpack, you have a laptop, a mini-telescope and an optical sensor. You now have everything you need to hear the conversation. How? Researchers at Ben-Gurion University of the Neguev and the Weizmann Institute have developed a new remote eavesdropping technique. Lamphone is designed to allow anyone, in real time, to listen to all the sounds made in a room, as long as it is lit.

Israël
N100 2021

Waves emitted during a conservation produce vibrations that lead to tiny variations in brightness.

By measuring them with a telescope examining the light bulb, we can discern the content of conversations or even recognise a piece of music.

49. the future *in your face*

Translation can concern humans but can also look further and beyond. Despite medical and societal progress, humans remain faced with themselves. Outside the worlds created or explored by humans, there are other worlds to be translated and understood. The environment, a derogatory word which appears to place us at the centre of a passive and merely ornamental decor, has replaced the cosmos, of which we were a part. We believe, thanks to the self-sustaining technological worlds we create, that we are all-encompassing wholes, rather than parts of the whole. At the same time, it is difficult for us to think of the real world as a whole in which we represent a reduced part, both in space and in time.

The crisis caused by the virus, which limits our fantasised, desired and hoped-for world by prohibiting any future plans, is like a metatheatre of our intellectual confinement, which prevents us from seeing the big picture. We are no longer able to anticipate the future. But even before the pandemic and its consequences, we had been warned that our future was compromised, dark, disturbing. Were we blind? In denial? Hoping against all hope? Humanity was unable to react collectively, caught up in its contradictions, its short-term objectives and its often-legitimate emergencies. Like a fractal image whose pattern is repeated on different scales, the image of our constrained future repeats itself, like a fateful premonition or an invitation to move beyond denial and take action.

The brutal collision of two worlds could help us do that: the world of today and the world of tomorrow if we fail to take swift action in favour of the climate. This is the idea developed in the "AI for humanity" hub Mila, created for the purpose of encouraging responsible and beneficial development of AI: field reconnaissance during natural disasters or diagnosis of genetic diseases in new-borns, for example.

Visualizing climate change aims to raise awareness and understanding of climate change by bringing the future closer to us, on an interactive website showing the precise and personal results of climate change thanks to cutting-edge technology based on AI and climate modelling. Will your house be flooded in 2050? You won't know from reading an article on the dangers of global warming, but you will if you type your address on the platform and see an AI-generated image of your street totally underwater. "*The objective is to raise awareness of the fact that climate change, sooner or later, will affect everyone. Psychologists tell us that we are less sensitive to an issue if we do not perceive its repercussions for us*", explains Sasha Luccioni, researcher in machine learning at Mila in an interview with *La Presse* in 2019.

⏸ Founded in 1993 by Professor Yoshua Bengio at the University of Montreal, Mila brings together 500 researchers. Its mission is to be a global hub of scientific progress to inspire innovation and growth of AI for the benefit of all.

⬇ Canada N100 2021
⏪ 2020 / En-Roads

50. beyond *self*

Showing interest in the planet and others for higher motives such as the survival of humanity, for example, is a way to start building a bridge: every initiative in favour of a species, a culture or a person is a connection that you create, beyond the superpositioned worlds. With Rift, the responsible investment application, you make such initiatives part of your daily life, through a simple choice. Individuals who want to adopt behaviour that is as responsible as possible and reduce their carbon footprint focus only on their own consumption, although savings and investments also have a significant yet little-known impact. With the objective of democratising sustainable finance, Rift, launched by the Lita platform, tells you how banks are using your money. Then, depending on the priorities of the user, like climate change, respect for Human Rights, etc., Rift indicates compatible financial products.

France
N100 2021

How can we reach a new milestone in individual commitment to the planet, beyond sorting waste and taking small steps in our daily lives? We could, for example, produce edible packaging on a small scale. Notpla offers a seaweed-based alternative that biodegrades in just a few weeks, with machines that allow decentralised production of this new type of packaging. The start-up business hopes to put an end to plastic pollution. The membrane it produces hardens to form a material similar to plastic, but that is biodegradable, compared to the hundreds of years needed for degradation of synthetic plastics.

United Kingdom
N100 2021

The slogan is: "*We make packaging disappear*", indicating an additional, productive and active step in individual action to protect our planet.

To protect nature, we can draw inspiration from it. This means not just living in parallel with it, as if it were the decor of our lives, but really knowing it, paying close attention. Nature offers us millions of plants and billions of biological data, yet we develop foods packed with synthetic additives. This is the starting point for the creation of Charaka, by the company that combines nature and technology to develop foods of the future, Live Green Co. Charaka creates plant-based foods thanks to a specific recommendation engine that first uses ancestral recipes from India, inspired by Ayurveda in particular, which for 2,500 years has sought to use the specific virtues of plants. Biotech and machine learning are then brought in to create new ingredients with targeted properties. Among the foods on the menu, we have 100% plant-based burgers, ice creams and pancakes. These "*360° Green*" foods have 100% natural ingredients, without gluten or soy, prepared from local production and packaged in biodegradable and compostable sachets.

Chili
N100 2021
2018 / Guiseppe

51. the power *of inclusion*

Nepal
N100 2021

Preparing for the future calls for new models that are more inclusive, more mindful and which offer new resources on a local scale. ReGrow helps small, women-owned farming businesses to grow. The financing system, organised by means of digital tokens, works directly using text messages. This solution restricts and monitors good use of the funds by the right people: the digital tokens can be used only to purchase equipment at places previously identified by means of partnerships. The objective is to create trust between lenders and borrowers and to democratise investments.

Benin
N100 2021

Tonti+, winner of the World Bank Mission Billion challenge, also uses frugal digital technology to tackle poverty, for a very specific population. This is an informal savings group which allows motorcycle taxi drivers, known as "zemidjans" to pool their savings and credits by means of daily contributions. This digital solution replaces the traditional tontine system used by workers in the sector and drives their participation in social security programmes.

Obtaining better working conditions sometimes calls for tools allowing pooling, or objectivation of situations through data.

Switzerland
N100 2021

Netexplo joint award winner in 2008 for Second Life Virtual Strike

This is the purpose of Weclock, created by Dr Christina Colclough, former director of UNI UNI and expert in ethics and AI. The solution is based on the observation that workers need to be able to rely on data to ask for better working conditions. In a context where employers impose

monitoring systems, the open-source application records actual working times to avoid unpaid overtime, or even burnout. All the data remain in the application and cannot be shared without the user's approval.

Solidarity builds bridges: two groups with very different concerns can be brought together by common frustrations. During the pandemic crisis, two generations are particularly hard-hit by isolation, students and senior citizens. This has given rise to an intergenerational house-sharing platform to solve housing problems and overcome psychological distress: Colette Club creates contacts between young people below the age of 30 looking for accommodation and seniors. citizens who have a free room in their house or apartment. A promise that takes on new meaning to prepare the end of the crisis. The start-up business hereby tackles two major problems, access to housing for the younger generation and isolation for senior citizens. This solution responds to a crucial need at a time when society will start to recreate links among people and generations. Its simplicity could well be its best guarantee of effectiveness.

⬇ France
N100 2021

⏸ Based on a survey conducted by Petits Frères des Pauvres in June 2020, the lockdown has had a negative effect on the moral health of 41% of senior citizens and on their physical health for 31% of them.

On a larger scale, Project Dastaan literally reconciles peoples, claiming to "*Turn closed borders into open virtual frontiers*". The Partition of India in 1947 gave rise to the largest forced migration in human history, with 14 million people uprooted, of whom 1 million perished. Conceiving virtual reality as "an empathy machine", Sparsh Ahuja created Project Dastaan, which shoots 360° video footage of places where elderly participants grew up, to preserve their memories, and proposes a virtual

⬇ Inde/Pakistan
N100 2021

reality documentary where the historical drama can be seen through the eyes of a migrant. The idea is to reconnect families with their places of origin and to foster mutual understanding between India and Pakistan. A humanistic application of virtual reality. Up to then, the value of virtual reality had not really been emphasised, apart from gaming and cybersex uses. The four objectives of the project are cultural preservation with training of young people in recording methods, raising awareness to overcome shared trauma, building a lasting peace, and education.

II "When Partition violence was at its height, Gandhi had said that no peace would be possible until the refugees displaced were able to return to their homelands. Project Dastaan makes that return possible" Projectdastaan.org

52. of cells *and chips*

After translation, solidarity and inclusion, which are all means to connect worlds, another, perhaps more disconcerting path can be envisaged: hybridisation. In his essay *Lichens*, Vincent Zonca reveals the richness of organisms that are so commonplace that they have become invisible, despite the fact that as composite organisms that are half algae, half fungi, they symbolise the always disturbing and often productive connection between heterogenous species.

The first step towards hybridising species is bio-mimicry: choosing an animal as a model to design an object amounts to building a bridge between two worlds. The Cataglyphis desert ant, for example, is capable of travelling several hundred meters in the desert to find food and then returning straight to its nest without getting lost. This is because its eye has a capacity we lack. It is sensitive to polarised light and to ultraviolet radiation, which allows the insect to find its way. In addition, it counts its steps to measure the distance covered.

AntBot, a 6-legged robot designed by researchers at CNRS and Aix-Marseille, reproduces the exceptional navigation abilities of the desert ant. Fitted with an optical compass allowing it to determine its heading thanks to polarised light and to an optical path sensor focused on the ground to measure the distance covered, AntBot has shown that it is able to explore its environment and return to base to within, all without satnav.It has the agility and precision needed to work in disaster areas,

France
N100 2021

on rugged terrain and in extra-terrestrial environments. In the future, AntBot's GPS-less navigation technology could be used in self-driving cars or drones.

In addition to designing a useful and agile robot for complex environments, the hybrid approach, drawing inspiration from two very different universes, connects dots to create a project seeking to combine the best of both worlds.

United Kingdom N100 2021
2018 / Stentrode + 2013 / Electronic tattoos

The team who created Ceryx artificial neurons a followed the same approach: drawing inspiration from living organisms to create an electronic device. Except that in this case, the model is the human neuron and the device is a chip, the first in the world able to reproduce the electric signals of that neuron. Of course, a neuron works inside a body. The objective of the researchers was in fact to replace failing neurons in patients, which immediately raised hopes concerning treatment of Alzheimer's disease. Project leader Dr Nogaret confirms that this is indeed the envisaged roadmap, but explains that such progress will take time, while remaining optimistic.

"Until now neurons have been like black boxes, but we have managed to open the black box and peer inside". Financial Times, Dec. 2019

The very first application of the chip will be to treat heart failure, by mimicking the output of the neurons at the base of the brain which coordinate heartbeats with breathing.

Tests carried out on laboratory animals show that this reactive chip stimulates the heart more effectively than a conventional electric simulator functioning at a regular pace.

The electronic object inspired by a living organism returns to life: it replaces a flawed part, thereby creating a hybrid organism, the patient, to whom it gives new life. It modifies physiology, but in

order to operate an already existing function and attempt to solve a problem neutrally, invisibly.

The body structure of jellyfish, superb animals which appeared over 500 million years ago, has hardly changed at all over time. Two researchers could however bring them abruptly into the technological era, with implants intended to allow them to swim three times faster. The 2 cm diameter device was placed on moon jellyfish. With a diameter of approximately 15 cm, they swim by contracting and then releasing their bodies in a corolla shape. The stimulator leads them to contract their bodies more frequently, which accelerates their speed. Here we have a hybrid being, half jellyfish and half robot, designed with a specific objective: to improve knowledge of oceans. In the minds of the researchers, Augmented Jellyfish, which remains an animal, will be less disturbing to the marine environment than a 100% robotic submarine device. The aim is to collect data through a box attached to the animal on water quality, salinity, temperature and pH, in order to study ocean health and climate change. The researchers would like to add a guiding mechanism to the propelled jellyfish. The jellyfish, as a remote-controlled probe, could map the depths of the ocean, probably in places that are out of the reach of existing devices. What about the ethical issue of transforming an animal into a data-capturing cyborg? The scientists answer that jellyfish do not have a nervous system allowing them to feel pain as mammals do. They also emphasise that the mucus released by jellyfish in stress situations has never been observed during the experiment. They have expressed the hypothesis that after its observation mission, the animal will go back to its normal life, at its normal speed.

⏩ On the other hand, we could imagine that the chip, if it could be programmed, could speed up or slow down heart beats, depending on circumstances.

⬇ United States N100 2021

53. in natural *light*

Russie N100 2021

You're working late. Night falls and on your desk, your favourite plant provides pleasant lighting, its beautiful pale green leaves producing soft light. Why have a lamp, with a bulb, a wire and a plug? With Glowing plants leaves and flowers of houseplants provide light for you.

Glowing plants have already existed, using the bioluminescent genes identified in some bacteria. But with this process, the plants are not very bright, which probably explains why they are not very well known. New research published in *Nature Biotechnology* describes a totally novel technique, in which the DNA of the bioluminescent fungus *Neonothopanus nambi* was used to create plants that glow 10 times more. A process which would appear to come straight out of the Miyazaki film *Nausicaä of the Valley of the Wind* in which the heroine scratches a mushroom with her glove to release a luminescent particle. Botanists could perhaps use this technique to study the internal functioning of plants, but it also brings the possibility of ornamental plants shining in our houses, or of lamp-post trees in our cities. For the future, scientists are looking into a new version of this technology based on nanoparticles sprayed onto leaves, able to transfer the light-producing property to a plant, but not only: like a photosensitive lamp, the plant would light up only in the dark, and go out during the day.

Decomposing plants also produce light, but in a more roundabout way: the name of the invention

AuREUS comes from the Aurora Borealis in the sky. In an Aurora, the particles emitted by the sun, like protons and electrons, come into contact with the terrestrial atoms of oxygen or nitrogen which then emit light. Filipino engineering student Carvey Ehren Maigue has come up with the idea of using fruit and vegetable waste: the photons are absorbed by the luminescent particles of rotting fruit and vegetables and emitted again in the form of visible light. To give a shape, a design that is usable in buildings, the inventor crushes decomposing plants and recovers the juice which is filtered and distilled to collect luminescent compounds. These particles are then suspended in flat resin panels, which can be coupled with photovoltaic cells to convert the light into electricity stored in integrated circuits. The system also works when there is no sunlight because it captures UV rays through the clouds, as well as UV light that bounces off walls, pavements, buildings etc.

This invention qcombining organic and technological properties offers several advantages: unlike solar panels, it does not use rare metals. Given that it uses plants, it can help farmers in the Philippines, whose crops are regularly destroyed by storms, by offering them a new outlet. AuREUS peut aussi équiper les murs et fenêtres d'un lieu et l'alimenter en électricité : un bâtiment intégralement recouvert peut aussi devenir une ferme solaire. Des légumes en décomposition pour faire pousser d'autres légumes, comme un compost par la lumière.

▶ Méthode d'idéation en entreprise par l'hybridation de 2 éléments proposés, avec le brief d'en créer un 3e aux propriétés intéressantes.

⬇ Philippines N100 2021

54. new *species*

"The old world is dying and the new struggles to be born. Now is the time of monsters."

Antonio Gramsci, *Prison Notebooks*, 1891-1937

By bringing bodies and machines closer together, by studying their respective functions and possible crossovers, strange ideas can emerge, like an edible cannibal robot, or a robot entirely composed of flesh.

Gelatine - which can be entirely broken down by the organism - citric acid to stop bacterial growth and glycerol for softness and to prevent dehydration. Here we have the ingredients making up the edible robot. Edible robot is designed to be entirely biodegradable et ingestible. For what purpose? To give humans an advantage in the event of a robot uprising? In fact, these robots could fulfil a mission in the wild and then remain there without damaging the environment, decomposing in the same way as a dead leaf. They can also be made to look like prey for wild animals to give them medication without capturing and sedating them. The treatment, mixed with the gelatine, spreads while the robot is being ingested.

⬇ Autriche N100 2021
◀◀ 2016 / Micro-swimmer robots

But once it is inside a stomach, it could also gather and transmit data on its host's movements.

According to the designers of the technological candy, these robots, which can move using compressed air, can also serve as food for survivors stuck in crevasses or in mountainous area, the deli-

▶▶ 2038: the multimedication Med4Life can be given to a child from a very young age. Designed to biodegrade in the space of 10 years, it contributes to continued good health and avoids 87% of visits to the doctor.

verer of the food becoming the food itself. The last planned use could involve the robot eating itself, to give itself a boost if it loses energy.

13 January 2020: Thunderclap in the scientific community. In an article of Proceedings of the National Academy of Sciences, researchers at the University of Vermont and Tufts in Massachusetts explain how they created a new species on earth: a living machine, the Xenobot.

United States
N100 2021
◀◀ 2019 / Biohybrid robot

The first step involves collecting skin cells and heart muscle cells from Xenopus Laevis frog embryos, which are separated and then incubated. Concomitantly, an algorithm imagines several designs to programme the creature, based on a brief drawn up by researchers regarding desired functions, including movement in the aquatic environment and the volume of the maximum muscle power of tissues.

Then the researchers assemble the cells based on models suggested by the computer and allow them to develop. The result is Xenobots less than 1 mm wide, propelled forward by the heart cells which are part of their composition. There is no need for remote control. The Xenobot is an autonomous being whose use is not yet fully established, because use will depend on the properties observed? We already know that it can move alone or collectively, that it can survive for several weeks and that it can heal itself: researchers have attempted to cut the live robot in half.

It succeeded in reassembling its cells automatically. A Xenobot can follow an itinerary transporting a microscopic load. Researchers are imagining applications in health: targeted drug delivery in a

patient's body or scraping plaque from arteries. Or, once Xenobots are massively deployed, they could remove toxic or radioactive substances or collect microplastics from oceans.

What next? For example, creating larger beings from mammal cells.

In their explanations, scientists insist on their desire to achieve enhanced knowledge of the living, to understand how complexity can be born of a simple rule. And above all, to unravel the mysteries of plasticity of cells, to better define strategies for reprogramming of tumours, regeneration of lost organs, repairing of congenital anomalies or the effects of ageing.

The aim here is not to create cells, given that the cells come from a frog, but to observe what they do with their new form, the way in which they have been recombined. How do they work together to build something new? How can they be modified marginally if you want them to behave slightly or totally differently? New forms, new abilities, new behaviours?

⏸ *"It's amazing to think that this is perhaps the only creature on Earth whose immediate evolutionary history occurred on a computer, not in the biosphere."* Michael Levin *The Biologist*, April 2020

⏩ 2044: great success for BioteX kits that allow users to create small living organisms with various shapes, with a programmed lifetime, for essentially decorative functions.

55. welcome to *the phantasphere*

"The only way for there to be new things and for us to feel new things, is for there to be some novelty in how we feel them."

Fernando Pessoa, *The Book of Disquiet.*

Translation, inclusion and hybridisation build bridges between worlds that coexist above the observable world, in a digital layer. To use the geological image again, it is as if above the thin layer where we live, very close to the earth's crust, there was an immaterial sphere, no more visible but no less real than the atmosphere.

Just like the atmosphere consists, among other things, of oxygen, carbon dioxide and nitrogen, this sphere consists of our digital identities, online content and AI networks. These constantly evolving superpositioned worlds are as interconnected as chemical elements. The digital sphere coating our terrestrial world, as invisible as air, is becoming as essential to our survival as the air itself.

It contains all the activities we could possibly imagine, but only as a reflection. Of course, it allows very real action subsequently, like actually meeting a person we first saw online, having oysters delivered or starting a riot by unleashing the violence of haters. But first, it crosses the physical and magical medium represented by the screen, by phantasy, imagination and the cerebral.

In this *phantasphere*, the laws of classical physics do not exist. Neither do those of quantum physics. They are replaced by the laws of emotions, imagination and instinct. They do not come from the outside world, but from our intimate inner selves: our desires, neuroses, fears, hopes and feelings.

In the *phantasphere*, subjectivity reigns. it is total, arbitrary and insubordinate, unbridled and uninhibited by technology. It can express itself in many forms, given that identity is no longer unified. It can be surrounded by the individuals, things and decors it chooses. Just like in Christopher Nolan's *Inception*, you can be part of embedded worlds, which are all real when you live them, which all rest on elements from the tangible world, but which are all the stuff of dreams.

56. tactile *vs sensual*

The temptation to live in the phantasphere is strong. We do it whenever we blithely hop from one screen to another to fill our days, like we hop from one stone to another to avoid wetting our feet in the water; water that exists, flows, lives, and is home to fauna, flora, stones and light. The phantasphere, through its power and richness, probably offers a smoother, easier, more intense life. But while we live in it, do we still succeed in living in the world?

How should we now name this world, the world that it not the phantasphere? The actual, world, in the first sense of the term, meaning "which is acted" as opposed to "what is potential"? The real world? In that case, the virtual world, which is often opposed to the real world, is no less real: it manages our transactions, relationships and actions. We referred to it as "virtual" because it was transcribed as 0 and 1. But the digital world has become solid. It is one of the elements of the world, in the same way as rocks, the sea or a house. We live in a world made up both of mud and of dreams, and neither of the two is less observable than the other.

When we live in the phantasphere, where do our relationships with other humans, with other living species, with the elements, the *sensible* and perhaps even *sensual* world stand? Could the hyper-cerebral take up all of our time? Plato opposed the sensible world, accessible through the senses and therefore misleading, and the intelligible world,

❚❚ *"Science manipulates things and gives up living in them. It makes its own limited models of things; operating on these indices or variables to effect whatever transformations are permitted by their definition, it comes face to face with the real world only at rare intervals."* Merleau Ponty, *Eye and Mind*, 1935.

the world of ideas, which alone are the authentic reality, accessible through reason.

Are we in a reverse pattern where the sensible world, opposed to the digital phantasphere, accessible only through intellect, regains a certain truth, precisely because it is understandable by the senses?

A transition to the phantasphere can contribute a great deal by accelerating time-consuming material procedures, mingling cultures and ideas by offering an outlet to movement, to the imaginary, to projects that come to life with greater speed, solidity and efficiency. By facilitating the creation of a company, a work of art or a form of art business specific to the phantasphere, with NFTs. What do the gif of a rainbow cat sold for €460,000, the works of the singer Grimes sold for 6 million dollars in 20 minutes and the latest album from Kings of Leons have in common? NFT, for Non-Fungible Token, a cryptographic token associated with a digital work or product.

Just like cryptocurrencies, NFTs, based on blockchain, a process that guarantees totally secure storage without centralised control, are unforgeable, indelible and non-reproducible. This makes it possible to give a value to a digital production: music, paintings, video characters or even games, as the NBA has done by selling virtual player collector cards, some of which reach a price of $ 1,000.

But unlike cryptocurrencies (1 bitcoin = 1 other bitcoin), they are not interchangeable. Each token is unique, which offers the buyer paying with Ethereum or WAX the guarantee of rights to the production.

❚❚ *"An asset is said to be fungible if it is interchangeable with another asset that has exactly the same characteristics. Banknotes and coins are a typical example of fungible goods: one euro always represents one euro. Conversely, a non-fungible good is one that cannot be replaced by another good of the same kind." Cryptonews,* February 2021

The author can put out several tokens of their work, deciding on the starting price.

The outrageous prices correspond to a booming market born in 2017 with the Cryptokitties craze, coloured cats sold 20 million dollars to 180,000 fans, including one sold for $ 170,000. But the pandemic, that gave rise to significant growth of the phantasphere, also caused a new interest in NFTs. In October 2020, a collector in Miami bought a 10-second clip that everyone can see online for $ 67,000. In February 2021, he resold it for $ 6.6 million.

When you spend your day online in the digital world, that digital world becomes the world itself, with its own works, just like the sensible world is home to the Mona Lisa.

The soaring prices can be explained by speculation Time will tell if this is just a flash in the pan.

NFTs are a successful model of a project entirely conducted in the phantasphere, in a form that is totally novel on Earth.

Through a self-sustaining phenomenon, the phantasphere's digital substance continues to grow through such initiatives. Only the necessary power to host, function and interact could slow down this growth buoyed by imagination, which is by definition limitless. Except if a technology arrived to make the phantasphere a supersphere, with monumental, unimaginable powers. The radioactive spider that bites Peter Parker to make him Spiderman.

⏸ According to *Nonfungible.com*, which presents an overview of the NFT market every year, "*There were transactions worth 983 million dollars during the first two months of the year 2021 i.e. over 5 times more than for the whole of 2020*". France 24, March 2021

⏩ 2025: "*(...) in 5 years, the success of NFTs has led to a total devaluation of physical works and it is not unusual to purchase a masterpiece for a few hundred Euros. Like vinyl records, we can imagine that nostalgia and a taste for vintage objects will give a new lease of life to Van Gogh, Matisse and Monet*". Art News Life, May

57. to infinity *and (way) beyond*

"It feels impossible
It's not impossible
Is it impossible?
Say that it's possible
How do we rewrite the stars ?"

Zendaya, Zac Efron, *The Greatest showman*

Quantum advantage: the moment a quantum computer outperforms a classic supercomputer. In 2019, Google announced that its quantum computer prototype had reached quantum advantage, a term that is replacing "quantum supremacy" because of its negative historical connotations.

On the 3rd of December 2020, however, on the website of the prestigious magazine *Science*, a team of Chinese physicists from the University of Science and Technology of China claimed that it had built a quantum computer. Designed with a new photon-based technology, the system can, in just 4 minutes, carry out calculations achieved in 2.5 billion years by the best Chinese supercomputer, currently the 4th most powerful in the world. It is said to be 10 billion times faster than the Google quantum computer, which also needs to be kept at -273°C. The performance of the computer, which operates at room temperature, can be explained by its design based on light particles, which is different from Google's chilled superconducting metal loops. Its name is Jiuzhang, after an ancient book on mathematics, *Jiŭzhāng Suànsh*, *The Nine Chapters on the Mathematical Art.*

❚❚ *"Instead of manipulating bits of information worth 0 or 1, we could use quantum objects which are both 0 and 1 and which would make it possible to calculate faster. A qubit race, named after objects which are both 0 and 1, has begun, giving rise to strong competition between computer giants."* David Larousserie, *Le Monde*, January 2020.

⬇ China N100 2021

The book, compiled between the 2nd and the 1st century BCE, is dedicated to finding the most general methods of solving problems and was.

An article published on the 8th of February 2021 in *Nature Communications*, however, tells us that a team of researchers from CNRS, the University of Edinburgh and the company QC Ware have now also achieved quantum advantage. "*The computer designed by Google can currently only fulfil one specific task, but it is intended to evolve towards a universal quantum computer, i.e. capable of performing all sorts of calculations,*" explains Eleni Diamanti, co-author of the study and research director at the Information Technology Laboratory at Paris 6. "*Our machine is closer to that of the Chinese team, i.e. a processor adapted to very specific situations.*"

What are the applications? Research is currently being conducted in cybersecurity, cryptography, machine learning, health and finance, among other areas. Attempts to build laptop quantum computers have apparently begun. The promise is undoubtedly appealing. The mind boggles, as the specific property of a quantum computer is theoretically to deliver all the possible results of a calculation in a single step, whereas an ordinary computer has to process pieces of information one after the other, in a sequence. This is choice food for the phantasphere, but for what uses? And for whom? What controls are needed for a technology performing a task that used to require millions of years in just a few seconds? Does such efficiency risk of increasing inequalities irreversibly? These are some of the questions causing concern to a group of scientists, to the extent that they publi-

⏩ 2041: gradual and massive replacement of ordinary computers by quantum machines has led to such an acceleration of all processes that no human can now understand the tasks carried out around him. It is a totally distinct and autonomous world that manages financial transactions, weather forecasts and measures in favour of the environment, medicine and education. This growing world manages itself and repairs itself. It is called Quantaverse. mesures en faveur de l'environnement, médecine, éducation. Ce monde qui grandit, s'autogère et s'autorépare a pour nom Quantaverse.

shed an appeal in the Wall Street Journal on the 1st of February 2021. Their appeal is that the development of a Quantum Computing Society be preceded by raised awareness and a code of ethical conduct, unlike all the technologies developed in human history until now. To avoid regrets later.

It will be dizzying to imagine the acceleration effect that quantum computing will have on a specific field of application. For example, the *quantum X biology* collab. A European team tasked a very conventional neural AI with creation of entire sequences of human DNA which are totally artificial and cannot be told apart from DNA from real donors. Mission accomplished. One of the researchers on the team, Flora Jay, indicated in *Sciences et Avenir* in February 2021 that these artificial genomes "*will contribute to applications as diverse as understanding our evolutionary past or medical epidemiology by including a broader genetic diversity*".

II Using sequences from 2,500 individuals, the current system generates similar sequences, and then mixes its creations with the original genomes, before producing its own.

Here, the goals seem clear and worthy because we are talking about medicine. What would be the side effects of injecting a dose of quantum computing into these artificially created genomes? Would there be almost instantaneous multiplication? Clearly, the infinite power of the infinitely small can call all our references into question.

58. A space *odyssey*

"I don't know whether that does you any good, but there's something out there."

Daft Punk, *Contact, Random Access Memories*, 2013

In the sensible world, espace.is remote but the complete opposite of quantum particles, because we can see it with the naked eye every night.

It is poetic, fascinating and a scientific challenge. Like the phantasphere, it offers a way of escaping our earthly woes, except that it is absolutely tangible.

This world, physically and phantasmatically superimposed on ours is very concrete: stars and planets, at various distances. There again, ever-present AI can help us explore. An innovation from the University of Warwick shows that AI can step in effectively if it is precisely briefed. Based on old NASA data, researchers in 2020, discovered 50 new planets outside the solar system. In this case existing data is put through an alogrithm, focusing on detecting objects which are difficult to identify. AS it uses deep learning, the AI exoplanet discovery process can only become more effective. Moreover, the team of researchers emphasises the fact that AI is only a link in the process of validating exoplanets. Algorithms can help with fine-tuning the observations of TESS, Transiting Exoplanet Survey Satellite, which has single-handedly identified 66 exoplanets to date, one of which, with the same size as earth, may even be habitable.

⏸ Kant himself addressed the extra-terrestrial issue in 1755, in Theory of the Heavens: "*In judging the nature of the inhabitants of distant worlds we can give free rein to our fantasy, with far greater liberty than a painter in the depiction of plants or animals of undiscovered lands.*"

⬇ United Kingdom N100 2021

⏩ "Based on the principle that intelligent life takes about 5 billion years to be formed, researchers from the University of Nottingham calculated that 36 extra-terrestrial civilisations could cohabit in our galaxy." Courrier international, June 2020.

Space is demonstrably real but also a powerful medium for the imagination. Not only to produce works of science fiction, but because it stimulates inventors, whose work can have concrete repercussions on our life on Earth. Interstellar Lab, founded by Barbara Belvisi, uses Mars to invent. By superimposing the lives of humans on the red planet, the start-up invents and designs innovative devices and systems. Mars has also given rise to new callings and inspired new jobs like the position held by Catharine Cassie Conley, Planetary Protection Officer at NASA, who is always amused by the science-fiction side to her job title: "*It is always entertaining to see people's expressions when I introduce myself as the Planetary Protection Officer. Most people think of the characters in the movie "Men in Black" when they hear this title ... Actually, I was given dark Ray-Ban sunglasses my first day on the job.*"

She is tasked with ensuring the United States' compliance with article IX of the Treaty on Space Exploration, stipulating that any exploration of other planets must be conducted in such a way as to avoid contamination, one way or the other. Explicitly, the mission involves protecting the Earth from extra-terrestrial matter that could be harmful, but also to avoid "harming" other worlds.

On the 18th of February 2021, we admired the live coverage of the Perseverance landing, brilliantly steered by Swati Mohan, guidance and controls operations lead, and engineer Farah Alibay. The mission here is to find traces of past life. Once samples are collected, they are hermetically sealed in tubes left on the spot, until a US-EU mission brings them back in 2031. This gives us reasons to

II " (...) States Parties to the Treaty shall pursue studies of outer space, including the moon and other celestial bodies, and conduct exploration of them so as to avoid their harmful contamination and also adverse changes in the environment of the Earth resulting from the introduction of extra-terrestrial matter and, where necessary, shall adopt appropriate measures for this purpose." https://solarsystem.nasa.gov/

look to the future, at a time when our own planet makes that harder with looming environmental disaster and the threat of pandemics.

59. art *thérapie*

"Cause I, I'm in love
With my future
Can't wait to meet her"

Billie Ellish, *My Future.*

Creativity is an absolute must. This is the watchword we can adopt after exploring these trends together. In episode 1, *Predictable me*, the complex relations between uncertainty and predictability lead us to conceive a plural approach of futures and universes enabled by technology in episode 2, *Worlds on demand*. Finally, we considered ways of connecting these expanding worlds through translation, inclusion and hybridisation in this part, *Hope in Translation*. It means doing away with loops and processes that we know well, but that do not leave any room for facets of our own personalities, subjectivities and imagination. The idea here is not to dream, but to think. To create the possible. By combining approaches, by creating real-world collectives, bringing together specialists from diverse backgrounds, all driven by the same commitment.

Take two examples.

London, 20 April 2020. Kensington Gardens. The Serpentine Gallery launched the *Back to earth* project, planned to last several years. The project invites 60 artists, architects, poets, directors, scientists and designers including Olafur Eliasson, Brian Eno, Vivienne Westwood and Yoko Ono, to

define campaigns and initiatives to respond to the environmental crisis.

Paris, 4 December 2020. Florence Parly, France's Minister for the Armed Forces, said: "*We have therefore also decided to make use of science fiction. There is nothing superficial or thoughtless about this; this is a very serious project which is part of a long-term planning approach as a complement to the work the Ministry for Armed Forces is doing in this field. So in 2019, we made a call for applications to build a team of science-fiction writers, emphasising the very strategic and sometimes confidential nature of the work that will be produced. (...) I am therefore proud to present the Red Team, which is one of a kind in Europe. The team is tasked with looking forward to the period from 2030 to 2060 to imagine threats we could be confronted with, doing away with conventional long-term planning methods.*"

Trusting the imagination, pure creativity, to then confront the ideas of novelists, authors of comics or detective novels and designers with those of military personnel. It would be useful to better define the meaning Ms Parly gives to conventional long-term planning, but conventional methods use statistics and forecasts based on events that have already occurred. The dates are another striking aspect of the statement. 2060 means taking into account techniques that have not been invented yet, problems that have not arisen yet, situations that have not even begun to occur. The Minister then unequivocally emphasised the artistic dimension of contributors, but also the plurality of futures: "*In this way, the Ministry for Armed Forces could learn from the art of science fiction to tell the future, or should I say, futures.*"

▶ In a business, organise regular discussions with people who are not necessarily related to the core business: in the worst-case scenario, each participant will be compelled to explain what they do and "confront" another way of seeing things, and in the best-case scenario, this can be an infinite source of development.

This initiative entrusting the defence of a country to art, creativity and imagination may seem odd and unusual. In our view, however, it is quite simply consistent with our time which calls for sincerity, subjectivity and inventiveness.

II Creation of a "Chief Narrative Officer" position, referring to the science fiction book by Kim Stanley Robinson, The Ministry for the future.

60. coming up
du cachalot

"Ideas are like fish. If you want to catch little fish,
you can stay in the shallow water.
But if you want to catch the big fish, you've got to go deeper.
Down deep, the fish are more powerful and more pure.
They're huge and abstract. And they're very beautiful."

David Lynch, *Catching the Big Fish: Meditation, Consciousness, and Creativity*

So how do we adapt? And should we? L'adaptation, means changing in response to a circumstance and inevitably losing a part of oneself. Will adapting allow us to create and respond to new intellectual requirements stemming from the global crisis? Rather than adaptation, we suggest adopting another notion which we believe is more operational: transgression.

Transgression – going beyond the limits - can convey the society to come, by redefining cultural and ethical boundaries. Although transgression can involve risk, as it unites its opponents in favour of the return to a former, more stable order, it is necessary to invent worlds.

Any transgression therefore involves experimentation. Testing limits, frameworks and established notions. Transgressing fosters the emergence of fruitful disruption rather than continuities. Rethinking established or fashionable notions. Not fearing disagreement, not seeking common ground at all costs, artificially, but widening the scope of possibilities by challenging what we take for granted.

II Frédéric Worms, spécialiste de Bergson, écrit dans *Sidération et Résistance* : "*Ce que nous vivons ne relève, je crois, ni de l'adaptation ni de l'improvisation. L'adaptation suppose qu'il y aurait un cadre pré-établi d'action auquel il faudrait se plier, je ne vois pas qu'il existe actuellement un tel cadre.*"

*

Whales.

Their breathing is voluntary.

So when they sleep, the two hemispheres of their brains stay alternately alert to allow them to come back up to the surface regularly.

Like them, we are never totally asleep.

This is a prerequisite for our survival.

A part of our spirit should always stay alert

and passionate.

Previous Trends
spotted by the Netexplo Observatory

Bernard Cathelat
Sociologist

2009 *Web to World*

2010 *Spray World*

2011 *VirtuRéalité*

2012 *Track and Profile*

Julien Lévy
Netexplo Partner, Associate Professor, Scientific Director of the Innover & Entreprendre Centre at HEC

2013 *My life in the cloud*

2014 *My life in data*

2015 *My "smart" life*

2016 *Stretching the Limits*

2017 *Artificial Alternatives*

Sandrine Cathelat
Netexplo Partner, Director of Research

2018 *Interface zéro / décision zéro*

2019 *A tale of two futures*

2020 *Terramorphose*

The UNAB Netexplo Advisory Board *Network*

Initially created by the Netexplo Laboratory as an international network of academics from leading universities with the aim of stimulating and broadening capture of the most promising digital innovations worldwide, UNAB has now, thanks to UNESCO support, become a genuine think tank whose key mission is to reflect on societal and ethical challenges related to digital innovation.

Thanks to the work of students at the member universities, the network, created and moderated by Brigitte Lasry (Head of the International University Network at Netexplo) contributes to capturing thousands of innovations which are high-quality raw materials, analysed by Marcus Goddard (VP Intelligence at Netexplo) to select the 100 most remarkable initiatives of the year.

Pierre Balloffet
Prof. Digital innovation and entrepreneurship
HEC Montréal

Leonardo Bonanni
Prof. Dat Vizualisation
MIT MediaLab & Columbia University

Wallace Chigona
Prof. Information Systems
University of Cape Town (UCT)

Enrique Dans
Prof Digital innovation and entrepreneurship
IE Business School (Madrid)

Michal Eitan
Prof. Industrial Design,
Bezalel Academy Jerusalem

Hael Kobayashi
Prof. Visual Arts
University of Technology Sydney (UTS) Sydney

Ben Leong
Prof. Computer Sciences
National University of Singapore (NUS)

Julien Levy
Prof. Digital innovation
HEC Paris

Laurent Maruani
Prof. Marketing Strategy
HEC Paris

Ian Monroe
Lecturer. Environmental issues
Stanford University

Steve Moyle
Researcher. Computer sciences – Artificial Intelligence
Oxford University

Bitange Nedmo
Prof of entrepreneurship and ICT
University of Nairobi

Marcelo Pimenta
Prof. Innovation and Digital Communication
Escola de propaganda y marketing (ESPM) São Paulo

Julia Prior
Prof. Software development
UTS Sydney

Byonghyo Shim
Prof. wireless network
Seoul National University

Amita Singh
Prof.e.governance
Jawharlal Nerhu University (JNU) Delhi

Rajeev Sri
Prof Digital management
Indian Institute of Management (IIM) Bangalore

Damien Van Achter
Prof. Digital Communication,
IHECS Brussels

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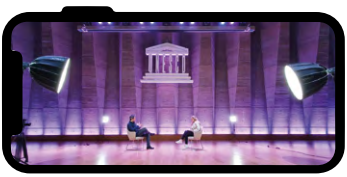

video version

toutes les tendances 2021
the New *Now*
en 52 mn c'est ici

MDP : *superexplo*

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