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The shift from Media Art to the Future Art-Design-Think-Tank

Ludger Pfanz[1]

Abstract: In the coming decades, new technologies will change our lives and the way in which we perceive them in hitherto unimaginable ways. *Future Design* is a *creative collusion of science, technology and art*– an experimental laboratory for new art forms and perspectives on the social impact of technologies within Europe. *Future Design explores the future* of digital technology from atoms to bits and from bits back to atoms again, highlighting the ways in which these technologies are adapted in different cultural contexts. The chief objective is to attract widespread attention to these technologies, to generate debates and interest in their use among independent artists and otherwise under-represented groups. *Future Design provides new and critical views on imagination and new insights into reality.* In view of the risks and possible collateral damage connected to these new technologies, scientist and artist must make a stand for their values, and do so by openly discussing the potential and risks, and by formulating a vision for the Earth and BEYOND.

Keywords: Art. New technologies. Future.

A mudança da Media Art para o futuro Art-Design-Think-Tank

Ludger Pfanz[2]

Resumo: Nas próximas décadas, as novas tecnologias irão mudar as nossas vidas e a maneira pela qual as percebemos de modos inimagináveis. *Future Design* é uma colusão criativa de ciência, tecnologia e arte – um laboratório experimental para novas formas de arte e perspectivas sobre o impacto social de tecnologias dentro da Europa. O *Future Design* explora o futuro da tecnologia digital de átomos a bits e de bits aos átomos outra vez, destacando as maneiras pelas quais estas tecnologias são adaptadas em diferentes contextos culturais. O objetivo central é atrair a atenção generalizada para essas tecnologias, a fim de gerar debates e interesses em seu uso entre artistas independentes e grupos sub-representados. O *Future Design* fornece visões novas e críticas sobre a imaginação e os novos conhecimentos na realidade. Em vista dos riscos e possíveis danos colaterais conectados a essas novas tecnologias, o cientista e o artista necessitam defender os seus valores, e faze-lo discutindo abertamente o potencial e os riscos, formulando uma visão para a Terra e para ALÉM.

Palavras-chave: Arte. Novas tecnologias. Futuro.

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Introduction

> "The core problem is ... overconfidence ...
> The greatest threat is human stupidity."
> Sandberg

Figure 1 - BEYOND Poster 2016, graphics by Stephan Hempel.

Source: Ludger Pfanz

Over the coming decades new technologies will change our lives and the way in which we perceive it beyond our imagination. *Future Design* is a creative and critical conspiracy of science, technology and art, an experimental laboratory for new art forms and perspectives on the social, political and environmental impact of those new technologies and trends in a global context.

Things are moving so fast that it's very hard to imagine what the future might hold. In 1800, it was possible to think meaningfully about what the world of 1900 would be like and how we might fit in. But the world of 2100 is at present

almost unimaginable. We have no idea where we'll fit in, if at all. We may build a world that has no place for us and our children.

Authors like Yuval Noah Harari argue that in place of the founding tenets of modernity – liberalism, democracy and personal autonomy – there is a new religion on the rise: Dataism. Its followers – many of whom reside in the Bay Area of California [1] – put their faith in information by encouraging us to see it as the only true source of value. We are what we contribute to data processing. There is potentially a huge upside to this: it means we will face fewer and fewer obstacles to getting what we want, because the information needed to supply us will be instantly accessible. Our likes and our experiences will merge. Our lifespans could also be hugely extended: Dataists believe that immortality is the next frontier to be crossed. But the downside is obvious, too. Who will "we" be any more?

We have to examine in ART, DESIGN and THINKING what might happen to the world when the old myths are coupled with new godlike technologies such as artificial intelligence and genetic engineering.

Much of what will happen in the next thirty years is driven by technological trends that are already in motion —virtual reality in the home to an on-demand economy to artificial intelligence embedded in everything we manufacture— can be understood as Kevin Kelly sees it as the result of a few long-term, accelerating forces: interacting, cognifying, flowing, screening, accessing, sharing, filtering, remixing, tracking, and questioning.

These larger forces will revolutionize the way we learn, work, buy, and communicate with each other.

For new products, start-ups, and concepts there is a simple formula to begin with:

$$X + AI = Future$$

However, what will happen to democracy when Google and Facebook come to know our likes and our political preferences better than we know them ourselves? What will happen to the welfare state when computers, algorithms and robots push humans out of the job market and create a massive new "useless class"?

How might Islam handle genetic engineering? Will Silicon Valley end up producing new religions or "intersubjective realities" rather than just novel gadgets?

As the self-made gods of planet earth, which projects should we undertake, and how will we protect this fragile planet and humankind itself from our own destructive powers?

Future Art-Design-Thinking is not only concerned with ART but with the the art of thinking about and the way of shaping the future actively and consciously based on values which are humanistic, affirmative of the notions of universal human rights, including individual freedom, sexual emancipation, and environmental responsibility.

We have to blend art, science, history, philosophy, and every discipline in between, offering a vision of tomorrow that seems incomprehensible. And we shouldn't wait around for the resistance, either – while our favorite science fiction trope sees humans battling machines in the name of freedom and individualism, in reality these humanist myths may have long been discarded, as obsolete as cassette tapes or rain dances.

Over the past century, humankind has managed to do the impossible and rein in famine, plague and war. Today, more people die from obesity than from starvation; more people die from old age than from infectious diseases; and more people commit suicide than are killed in war. We are the only species in earth's long history that has single-handedly changed the entire planet, and we no longer expect any higher being to shape our destinies for us. The ARTs have to reflect that.

Success breeds ambition, and humankind may next seek immortality, boundless happiness and divine powers of creation. After surveying and exploring the outer or material world comes the surveying and exploration of the self. The topography of the brain, the anatomical and functional connectome of the various subsystems is being discovered, the neurological correlates of thinking processes and emotional states are on the way of being decrypted. Self-improvement and self-design through anthropo-techniques like yoga, meditation and physical workout, also involving the aid of supplements, operations and electromagnetic brain stimulation

might become normal and will stimulate not only growth but also vertical tensions and stress on ourselves and others.

Intelligent clothing could continuously measure respiration, blood pressure, heart rate and breathing. These data will be transmitted to a smartphone to assess physiological function such as stress, performance, tension or relaxation, which could then be transmitted to our doctor or maybe even social security. In the coming years the digitized body of "Homo Apparatus", enhanced through technologies like head-mounted drives will be even harder to distinguish from androids in science fiction films. And with Hybridisation and Androidisation will come new powers.

But the pursuit of these goals we will ultimately render most human beings superfluous. So where do we go from here?

The *Future Art-Design-Thinking* project participates in the promotion of new emerging art forms in Europe and their dissemination to and assimilation by a broad audience through the work of professionals. As a key mission, it will act as a laboratory and an observatory on art, science and new uses of the latest digital technologies, thus promoting the role artists play in the anticipation of social change and making the future technologies democratically accessible to individuals around the world.

Main objectives are to attract wide attention on these technologies and generate debates and interest to stimulate their use by independent artists and unrepresented groups in the community, to bring emerging new artistic practices into visibility inside the framework of a critical global cultural dialogue, and to recognize the potential these technologies offer in shaping and strengthening the cultural identity of minorities.

Art is not the biggest driving force towards the future, like technology and science, but could become a leading force on critical thinking, social change and transformation.

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Mind the Gap

If current trends continue, income, information, goods and services, medical care etc. of the worlds and humankind will be vastly unequally distributed. The new longevity and super-human qualities are likely to be the preserve of the techno super-rich, the masters of the data universe. Meanwhile, the redundancy of labour, supplanted by efficient machines, will create an enormous "useless class", without economic or military purpose and in-between the "Party-Mile" of Unconditional Basic Income (UBI).UBI is an income unconditionally granted to all members of a political community on an individual basis, without means test or work requirement. Between the UBI Territories and the Third World, huge border conflicts seem to be inevitable.

Future Design Thinking needs to contribute to people's assessment of their local identity and appropriation and works on local solutions for global problems respecting their local environment. At the same time, it encourages cultures and helps to bridge between different sensibilities.

New technologies and emerging markets will change the environment, could lead to sustainable economic development, new forms of social life and exclusion, housing, leisure and consumption.

Nevertheless, "Inequality" is one of the major threats and realities of our time.

Future societies will have to find a way to implement an "asynchronous equation" in gender, multicultural, and multi-ethnic emancipation or maybe even in different human species which would not be the first time that different human species where roaming the planet at the same time.

Future-casting typically assumes that tomorrow, at its heart, will look much like today – we will possess amazing new technologies, but old humanist values like liberty and equality will still guide us. But there is a vast range of alternative possibilities:

- After four billion years of organic life, the era of inorganic life may now begin.

- The main products of the twenty-first century economy may not be textiles, vehicles and weapons and not only services and information, but bodies, brains and minds.

- While the industrial revolution created the working class, the next big revolution may create the "useless class".

- The way humans have treated animals maybe a good indicator for how upgraded humans or superintelligence may treat the rest of us.

- Radical Islam may fight rearguard actions, but the truly impactful religions of the next century may now emerge from Silicon Valley rather than the Middle East.

- Democracy and the free market may both collapse once Google and Facebook and X know us better than we know ourselves, and authority shifts from individual humans to networked algorithms.

- We may knowingly renounce privacy in the pursuit of better health and services.

- Humans will not fight machines; they will merge with them. We are heading towards marriage rather than war.

- Most of us will not get to decide how technology will affect our lives because most of us don't understand it (how many of us voted on how the Internet would work?).

This might be shadow of the shape of the new world, and the gap between those who get on-board and those left behind might be bigger than the gap between industrial empires and agrarian tribes, bigger even than the gap between Sapiens and Neanderthals.

In the absence of religion or a real emancipatory project for the future, overarching fictions will be required to make sense of the world. If nothing in our approach changes, argues Yuval Noah Harari, "Dataism", a universal faith in the power of algorithms, might become sacrosanct. To utopians, this will look a lot like the "singularity": an all-knowing, omnipresent data-processing system, which is really indistinguishable from ideas of God, to which humans will be constantly connected. To dystopians, it will look like that too.

If the ideas of Dataism, Post-Humanism or Transhumanism are not trying to overcome the antagonism between nature and technology, if they cannot create a union with indigenous people, if they cannot include animals and plants as partners of tomorrow, than we should keep a very critical gap to those promises and visions or much better: Create our own Narratives of Improbabilities of desirable Futures.

We may need to confront the simple but chilling idea: human nature will be transformed in the 21st century because intelligence is able to uncouple from consciousness. We are not going to build machines any time soon that have feelings like we have feelings: that's consciousness. Robots will not be falling in love with each other (which doesn't mean we are incapable of falling in love with robots). However, we have already built machines – vast data-processing networks – that can know our feelings better than we know them ourselves: that's intelligence. Google [2] – the search engine, not the company – doesn't have beliefs and desires of its own. It doesn't care what we search for and it won't feel hurt by our behavior. But it can process our behavior to know what we want before we know it ourselves. That fact has the potential to change what it means to be human. "What's more valuable – intelligence or consciousness?" Google will be no help in providing the answer.

Therefore, *Future Art–Design-Thinking* must be an interdisciplinary and highly intercultural project based on mobility-led research, artistic and cultural creation. It must focuses on the encouragement of peoples' creativity and free expression availing itself of the latest and upcoming technologies leading to higher participation of the audience, changing their role from consumer to producer/creator.

From people suffering through history to FUTURE DESIGNERS.

Future Design also explores the changing design and behavior of multimedia and information consumption, the dynamic screen: expanded cinema and TV: "3D and BEYOND."

Stereoscopic and autostereoscopic technologies, mobile devices with 3D capabilities, 3D lasers, laser scanners, 3D printers – augmented reality and new interfaces codeveloped by engineers and artists are finally fully presenting the third

dimension to be creatively used in representation and expression, creating new business models in all industries and especially in the cultural and creative sphere.

In addition to current productions and trends of stereoscopic, multiscopic and autostereoscopic films in cinema and television *Future Design* will focus on new narrative forms, of "space-time narrations". *Future Design* is concerned with new dimensions of the "moving pictures" to space-time stories and the quantum theory of digital dreams. Supported by higher frame rates, higher resolutions, microand macroscopic insights, super slow motion and super accelerations.

New displays will bring immersive communication not only into our homes but will transform any surface into a screen. Teleconferencing, digital distribution and video on demand, live 3D landscapes will change the atmosphere of your living room like a "window to the world" and portable 3D-devices will enlarge the home-screen to wherever you go. Traditional television will be reduced to live events for example in sport, politics and news.

Audio-visual sculptures will transform buildings and landscapes into ambient art. People will have to adapt to societal changes and changing relations between humans, as well as interrelations of humans with machines, animals, digital and natural networks. In addition, people will have to come to terms with artificial intelligence and probably in the far future artificial consciousnesses and sub-consciousnesses.

Virtual realities and network-worlds might become part of human life similar to our dreams, which are a nightly routine, somehow separated from our daily lives obeying to different physical rules.

So in how many realities a human mind could live?

Well we already live every day in our day-world, our dream-world and our deep-sleep-world. We live in books and films, in music and dances. So what makes VR/AR and MR so different, so attractive for the mayor companies like Facebook, Google, Apple and Co?

Researchers from Johannes Gutenberg University Mainz (JGU) have prepared a list of ethical concerns that might arise with the use of virtual reality (VR) by researchers and the general public. According to Madary and Metzinger (2016) in

their article in *Frontiers in Robotics and AI*, additional focused research is urgently needed. They are especially concerned about the possibility of unanticipated consequences for the psychological states and self-images of users who are able to inhabit a virtual environment almost as if it is the real world.

The technological capacity for generating virtual worlds from home computers will soon be widely available to the general public, as special head-mounted displays are brought to market that create the illusion of being immersed in virtual three-dimensional worlds. The opportunities for research, education, and entertainment using VR have been much discussed in the media, but Madary and Metzinger (2016) seek to raise awareness about the risks that accompany these opportunities – risks that have received far less attention so far. Both philosophers have participated over the last several years in an EU project on "Virtual Embodiment and Robotic Re-Embodiment" (VERE) with a focus on illusions of embodiment, in which one has the feeling of owning and controlling a body that is not one's own, such as an avatar in VR.

The fact that VR can create these strong illusions serves as a main reason why VR brings new risks. Madary and Metzinger refer to recent studies showing that immersion in VR can cause behavioral changes that last after subjects leave the virtual environment. Importantly, VR creates a situation in which the user's bodily appearance and visual environment is determined by the host of the virtual world. Such considerations raise the possibility that VR will create vast opportunities for psychological manipulation. "These studies suggest that VR poses risks that are novel, that go beyond the risks of traditional psychological experiments in isolated environments, and that go beyond the risks of existing media technology for the general public..." (MADARY; METZINGER, 2016). Participants in VR experiments showed strong emotional reactions in addition to behavioral changes, all of which could have an impact on their real lives.

Energy is abandoned

The last problem we have on Planet Earth is Energy. We are NOT living in an equilibrium, but in a place which gets over the course of a year roughly 1366 watts [3] per square metre of energy from the sun without to have to give anything back. Solar, wind, tidal, volcanic power etc. and in the future fusion could give us all the energy we would ever dream of.

Most of the tools of the future will and have to be supplied by new kinds of energy harvesters as every house and every cottage could potentially provide more energy than it consumes.

Not only will natural green energy and modern energy storage techniques radically change our forms of mobility, the third industrial revolution in conjunction with the help of computer-controlled devices will completely transform the economy mainly production and distribution. With 3D printers human veins, or daily food, cultural meat, even entire houses can be produced and reproduced. Organs and meat can be created out of stem cells and printed in 3D. 3D scanning will allow to compute all spatial data of objects, buildings and landscapes and use them for redesigning, reshaping, reconstructing with almost complete loss of control over copyrights.

The consumer becomes the producer or "maker". And the "maker" will not only be a manufacturer; he will be also creator, designer, and artist.

Vertical gardens and plantations will change our cities and could produce eight times more food than traditional farming. Biotechnology will allow creating new life forms: designer plants and animals.

New concepts of seawater desalination could not only solve the problem of too much salt water and not enough freshwater but could also produce enough energy to contribute significantly to our energy needs.

The evidence of our power is everywhere: we have not simply conquered nature but have also begun to defeat humanity's own worst enemies. War is increasingly obsolete [4]; famine is rare; disease is on the retreat around the world. We have achieved these triumphs by building ever more complex networks that treat human beings as units of information. Evolutionary science teaches us that, in one

sense, we are nothing but data-processing machines: we too are algorithms. By manipulating the data we can exercise mastery over our fate. The trouble is that other algorithms – the ones that we have built – can do it far more efficiently than we can. That's means we see the "uncoupling" of intelligence and consciousness. The project of modernity was built on the idea that individual human beings are the source of meaning as well as power. We are meant to be the ones who decide what happens to us: as voters, as consumers, as lovers. But that's not true anymore. We are what gives networks their power: they may use our ideas of meaning to determine what will happen to us.

Corporations and governments will continue to pay homage to our individuality and unique needs, but in order to service them they will need to "break us up into biochemical subsystems", all of them permanently monitored by powerful algorithms. There is a dystopian political aspect to this, too: the early adopters – the individuals who sign up first to the Dataist project – will be the only ones with any real power left and it will be relatively unchallenged. Gaining entry into this new super-elite will be incredibly hard. You'll need heroic levels of education plus zero squeamishness about marrying your personal identity with intelligent machines. Then you can become one of the new "gods". It's a grim prospect: a small priestly caste of seers with access to the ultimate source of knowledge, and the rest of humanity simply tools in their vast schemes. The future could be a digitally supercharged version of the distant past: ancient Egypt multiplied by the power of Facebook.

Towards a third dimension

The old way of making things involved taking lots of parts and screwing or welding them together. Now a product can be designed on a computer and "printed" on a 3D printer, which creates a solid object by building up successive layers of material. The digital design can be tweaked with a few mouse clicks. The 3D printer can run unattended, and can make many things, which are too complex for a

traditional factory to handle. In time, these amazing machines may be able to make almost anything, anywhere—from your garage to an African village.

The applications of 3D printing are especially mind-boggling. Already, hearing aids and high-tech parts of military jets are being printed in customized shapes. The geography of supply chains will change. An engineer working in the middle of a desert who finds he lacks a certain tool no longer has to have it delivered from the nearest city. He can simply download the design and print it. The days when projects ground to a halt for want of a piece of kit, or when customers complained that they could no longer find spare parts for things they had bought, will one day seem quaint.

Other changes are nearly as momentous. New materials are lighter, stronger and more durable than the old ones. Carbon fiber is replacing steel and aluminum in products ranging from airplanes to mountain bikes. New techniques let engineers shape objects at a tiny scale. Nanotechnology is giving products enhanced features, such as bandages that help heal cuts, engines that run more efficiently and crockery that cleans more easily. Genetically engineered viruses are being developed to make items such as batteries. And with the internet allowing ever more designers to collaborate on new products, the barriers to entry are falling. Ford needed heaps of capital to build his colossal River Rouge factory; his modern equivalent can start with little besides a laptop and a hunger to invent.

Like all revolutions, this one will be disruptive. Digital technology has already rocked the media and retailing industries, just as cotton mills crushed hand looms and the Model T put farriers out of work. Many people will look at the factories of the future and shudder. They will not be full of grimy machines manned by men in oily overalls. Many will be squeaky clean—and almost deserted. Some carmakers already produce twice as many vehicles per employee as they did only a decade or so ago. Most jobs will not be on the factory floor but in the offices nearby, which will be full of designers, engineers, IT specialists, logistics experts, marketing staff and other professionals. The manufacturing jobs of the future will require more skills. Many dull, repetitive tasks will become obsolete: you no longer need riveters when a product has no rivets.

The revolution will affect not only how things are made, but also where. Factories used to move to low-wage countries to curb labour costs. But labour costs are growing less and less important: a $499 first-generation iPad included only about $33 of manufacturing labour, of which the final assembly in China accounted for just $8. Offshore production is increasingly moving back to rich countries not because Chinese wages are rising, but because companies now want to be closer to their customers so that they can respond more quickly to changes in demand. And some products are so sophisticated that it helps to have the people who design them and the people who make them in the same place.

Bio Art

Already the molecular system, known as Crispr (Clustered Regularly Interspaced Short Palindromic Repeats) [5], is being used to make genetically engineered laboratory animals more easily than could be done before, with changes in multiple genes. Scientists in China recently made monkeys [6] with changes in two genes.

Cradle to cradle Design

'Reduce, reuse, recycle' urge environmentalists; in other words, do more with less in order to minimize damage. But as architect William McDonough and chemist Michael Braungart (2002) point out in their provocative, visionary book,*Cradle to Cradle* this approach only perpetuates the one-way, 'cradle to grave' manufacturing model, dating to the first two Industrial Revolutions, that creates such fantastic amounts of waste and pollution in the first place. Why not challenge the belief that human industry must damage the natural world? In fact, why not take nature itself as our model for making things? A tree produces thousands of blossoms in order to create another tree, yet we consider its abundance not wasteful but safe, beautiful and highly effective.

Waste equals food.

Guided by this principle, McDonough and Braungart (2002) explain how products can be designed from the outset so that, after their useful lives, they will provide nourishment for something new - continually circulating as pure and viable materials within a 'cradle to cradle' model. Drawing on their experience in redesigning everything from carpeting to corporate campuses, McDonough and Braungart make an exciting and viable case for putting eco-effectiveness into practice, and show how anyone involved in making anything can begin to do so as well.

As soon as markets in developing countries will be saturated with general gadgetry, such new equipment will become ubiquitous as in already developed countries. It will be highly personalized and connected to all kinds of social and professional networks.

Smart Grids and ambient intelligence – most of which we will be unaware of – will improve our lives and efficiency but bear the peril of serving as tools for totalitarian control and dictatorship.

Artificial Intelligence is already here and it will increase daily to an extent that AI will make own decisions and could help to integrate individual behaviour into the overall ecosystem of the planet and on climate control.

Superintelligence is already looming around the corner and it might not only serve the desires of individual humans or humanity in total.

Scientists including Stephen Hawking [7] and Max Tegmark [8] believe that super intelligent machines are quite feasible. And the consequences of creating them, they say, could be either the best or the worst thing ever to happen to humanity. Suppose, then, we take the proposition seriously. When could it happen and what could the consequences be?

Certainly, achievements in computer science over the last 75 years have been astonishing. Most obviously, machines can now execute complex mathematical operations many orders of magnitude faster than humans can. They can perform a range of tasks, from playing world-beating chess to flying a plane or a car, and their capabilities are rapidly growing. The consequences – from machines stealing your job

to eliminating drudgery to unravelling the enigmas of cancer to remote killing – are and will continue to be striking.

Nevertheless, even the most sophisticated machines created so far are intelligent in only a limited sense. They enact capabilities that humans have envisaged and programmed into them. Creativity, the ability to generate new knowledge and generalised intelligence outside specific domains seem to be beyond them.

Bostrom (2014) reports that many leading researchers in AI place a 90% probability on the development of human-level machine intelligence by between 2075 and 2090. It is likely, he says, that superintelligence, vastly outstripping ours, would follow. The central argument of his book goes like this: the first superintelligence to be created will have decisive first-mover advantage and, in a world where there is no other system remotely comparable, it will be very powerful. Such a system will shape the world according to its "preferences", and will probably be able to overcome any resistance that humans can put up.

It will be very difficult – but perhaps not impossible – to engineer a superintelligence with preferences that make it friendly to humans or able to be controlled. Our saving grace could involve "indirect normativity" and "coherent extrapolated volition", in which we take advantage of an artificial system's own intelligence to deliver beneficial outcomes that we ourselves cannot see or agree on in advance. He recommends research be guided and managed within a strict ethical framework. After all, we are likely to need the smartest technology we can get our hands on to deal with the challenges we face in the nearer term. It comes, then, to a balance of risks.

What happens when machines surpass humans in general intelligence? Will artificial agents save or destroy us? The human brain has some capabilities that the brains of other animals lack. It is to these distinctive capabilities that our species owes its dominant position. If machine brains surpassed human brains in general intelligence, then this new superintelligence could become extremely powerful - possibly beyond our control. As the fate of the gorillas now depends more on humans than on the species itself, so would the fate of humankind depend on the actions of

the machine superintelligence. But we have one advantage: we get to make the first move. Will it be possible to construct a seed Artificial Intelligence, to engineer initial conditions so as to make an intelligence explosion survivable? How could one achieve a controlled detonation?

Future Design explores the future of digital distribution from atoms to bits and from bits back to atoms and highlights the adoption of these technologies in different cultural contexts.

The emerging *Internet of Things* could speed us to an era of nearly free goods and services, precipitating the meteoric rise of a global Collaborative Commons and the eclipse of capitalism, as the american economist Jeremy Rifkin argues.

There is a paradox at the heart of capitalism that has propelled it to greatness but could now taking it to its death – the inherent entrepreneurial dynamism of competitive markets that drives productivity up and marginal costsdown [9], enabling businesses to reduce the price of their goods and services in order to win over consumers and market share. While economists have always welcomed a reduction in marginal cost, they never anticipated the possibility of a technological revolution that might bring marginal costs to near zero, making goods and services priceless, nearly free, and abundant, and no longer subject to market forces.

Now, a formidable new technology infrastructure – the Internet of Things (IoT) – is emerging with the potential of pushing large segments of economic life to near zero marginal cost in the years ahead. The Communication Internet is converging with a nascent Energy Internet and Logistics Internet to create a new technology platform that connects everything and everyone. Billions of sensors are being attached to natural resources, production lines, the electricity grid, logistics networks, recycling flows, and implanted in homes, offices, stores, vehicles, and even human beings, feeding Big Data into an IoT global neural network. Prosumers can connect to the network and use Big Data, analytics, and algorithms to accelerate efficiency, dramatically increase productivity, and lower the marginal cost of producing and sharing a wide range of products and services to near zero, just like they now do with information goods.

The plummeting of marginal costs is spawning a hybrid economy – part capitalist market and part Collaborative Commons – with far reaching implications for society.

Hundreds of millions of people are already transferring parts of their economic lives to the global Collaborative Commons. Prosumers are plugging into the fledgling IoT and making and sharing their own information, entertainment, green energy, and 3D-printed products at near zero marginal cost. They are also sharing cars, homes, clothes and other items via social media sites, rentals, redistribution clubs, and cooperatives at low or near zero marginal cost. Students are enrolling in free massive open online courses (MOOCs) that operate at near zero marginal cost. Social entrepreneurs are even bypassing the banking establishment and using crowdfunding to finance startup businesses as well as creating alternative currencies in the fledgling sharing economy. In this new world, social capital is as important as financial capital, access trumps ownership, sustainability supersedes consumerism, cooperation ousts competition, and "exchange value" in the capitalist marketplace is increasingly replaced by "sharable value" on the Collaborative Commons.

> Development of a quantum computer, if practical, would mark a leap forward in computing capability far greater than that from the abacus to a modern day supercomputer, with performance gains in the billion-fold realm and beyond.[10]

Both Rigetti Computing and Google believe they will reach "quantum supremacy" in the next 12 to 18 months. Think about that: the next one to two years. The revolution is coming fast.

Supercomputers can simulate various outcomes of future crises. *Future Design* though takes a new approach to problem solving. *Future Design* will not simply extrapolate probabilities. *Future Design* will imagine and simulate a possible and desirable future as starting point and than regress from this point backwards in time to the present in order to find paths we can follow to arrive at that future.

Future Design will create new narratives of possible and desirable improbabilities and thus create the chance to make them realities. Like the narrative of Postcapitalism and the age of abundance.

Future Design Thinking:

1. Change the lens you use for seeing the unknown;

2. Consciously engage uncertainty;

3. Allow the process to be messy;

4. Actively leave the familiar;

5. Use multi-dimensional creative approaches;

6. Be the beginner;

7. Accept the human paradox.

Within the paradox of human nature, being what it is, the unknown is both dangerous and exciting, a threat to be feared and a mystery to be revealed. We are mystery seekers. There is a huge mystery industry – books, movies, adventure tours, Internet games and haunted houses. There is something about walking around the corner and not knowing what will pop out that is inherently exciting and alive to us.

With these new narratives, researches and activities we will open up new interesting vistas and make new discoveries which will lead to even newer and further visions for the adventures awaiting us at the time horizon of the near future.

Future Design will encourage peoples' creativity and offer tools to appropriate one's surrounding. *Future Design* will stimulate the use of innovative creative tools and integrate those experiences into a bigger narrative of utopian realism. *Future Design* involves a "quantum leap" in dramaturgy, a paradigm change in audio-visual media, from image to stage, and from historical structure to space-time architecture and space-time-narratives.

The shock of the new

Prosumers will have little difficulty adapting to the new age. Governments and institutions however, may find it harder. Their instinct is to protect ideas, industries and companies, institutions and ways of thinking that already exist, not the upstarts that would destroy them.

None of this makes sense. Governments and institutions have always been lousy at picking winners, and they are likely to become more so, as legions of tinkerers swap designs online turn them into products at home and market them globally from a garage. As the revolution rages, governments should stick to the basics: clear rules and a level playing field for experiments and enterprises of all kinds. Leave the rest to the revolutionaries.

With the nuclear treat, climate change, inequality and the possibility of super intelligence and data-dictatorship, we can no longer afford to fly blind and on autopilot.

Given what an alarming thought this is, and since we aren't there yet, why can't we do more to stop it from happening? The modern belief that individuals are in charge of their fate was never much more than a leap of faith. Real power always resided with networks, but who owns the networks.

Individual human beings are relatively powerless creatures, no match for lions or bears. It's what they can do as groups, that has enabled them to take over the planet. These groupings – corporations, religions, states – are now part of a vast network of interconnected information flows. Finding points of resistance, where smaller units can stand up to the waves of information washing around the globe, is becoming harder all the time.

Ubiquitous, mobile supercomputing. Intelligent robots. Self-driving cars. Neuro-technological brain enhancements. Genetic editing. The evidence of dramatic change is all around us and it's happening at exponential speed.

Previous industrial revolutions liberated humankind from animal power, made mass production possible and brought digital capabilities to billions of people. This Industrial Revolution is, however, fundamentally different. It is characterized by a range of new technologies that are fusing the physical, digital and biological worlds, impacting all disciplines, economies and industries, and even challenging ideas about what it means to be human.

The resulting shifts and disruptions mean that we live in a time of great promise and great peril. The world has the potential to connect billions more people to digital networks, dramatically improve the efficiency of organizations and even

manage assets in ways that can help regenerate the natural environment, potentially undoing the damage of previous industrial revolutions.

At the heart of or analysis should be the conviction that the Third Industrial Revolution is within the control of all of us as long as we are able to collaborate across geographies, sectors and disciplines to grasp the opportunities it presents.

Learning how humankind can benefit from this revolution while addressing its challenges is the central aim of *Future Design Thinking*.

Over the past two centuries or so, capitalism has undergone continual change - economic cycles that lurch from boom to bust - and has always emerged transformed and strengthened. We wonders whether today we are on the brink of a change so big, so profound, that this time capitalism itself, the immensely complex system by which entire societies function, has reached its limits and is changing into something wholly new.

At the heart of this change is information technology: a revolution that has the potential to reshape utterly our familiar notions of work, production and value; and to destroy an economy based on markets and private ownership. Almost unnoticed, in the niches and hollows of the market system, whole swathes of economic life are changing. Goods and services that no longer respond to the dictates of neoliberalism are appearing, from parallel currencies and time banks, to cooperatives and self-managed online spaces. Vast numbers of people are changing their behaviour, discovering new forms of ownership; lending and doing business that are distinct from, and contrary to, the current system of state-backed corporate capitalism.

We have the chance to create a more socially just and sustainable global economy. Moving beyond capitalism is no longer a utopian dream. This is a time in human history in which, equipped with an understanding of what is happening around us, we can predict and shape, rather than simply react to, seismic change.

Considering the risks and possible collateral damage connected to these new technologies, scientist and artist have to take a stand for their values openly

discussing the potential and the risks and formulate a vision for EUROPE and BEYOND.

One last thing ...

Humans are story-driven animals and the human universe is more made out of stories than of atoms. Cultures, religions, nations and political systems even the currency and the market are nothing more than stories Inter-Subjective Phenomenon's people believe in.

The Ideas and Narratives of Today are the foundation of tomorrows History.

Artist create not only new Design but also new Narratives for the Future creating Probabilities AND Desirable Improbabilities BEYOND the Imitation of Life and resolving the antagonism between nature and technology.

Notes

[1] https://www.theguardian.com/technology/silicon-valley

[2] https://www.theguardian.com/technology/google

[3] https://en.wikipedia.org/wiki/Watt

[4] https://www.theguardian.com/books/2011/sep/22/better-angels-steven-pinker-review

[5] http://www.addgene.org/crispr/guide/

[6] http://www.cell.com/cell/fulltext/S0092-8674(14)00079-8

[7] https://www.theguardian.com/science/hawking

[8] https://www.theguardian.com/books/2014/jan/31/our-mathematical-universe-max-tegmark-review

[9] Marginal cost is the cost of producing additional units of a good or service, if fixed costs are not counted.

[10] Description of quantum computing by the blog TechTarget - http://whatis.techtarget.com/definition/quantum-computing

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