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*“The head is round so thoughts
can change their directions.”*

Francis Picabia

Pascal Morgan, technology pioneer, creative thinker and passionate speaker, cross-industry digital transformation advisor, looks back at over a 26-year career in IT, Technology, Media, and Innovation as an Executive and strategist for Fortune 500 companies and industry leaders such as Coca-Cola, Deutsche Telekom, AOL, and Pixelpark. Pascal studied philosophy at Goethe University in Frankfurt, while performing as an artist, professional dancer, choreographer and experimental musician. He is now the founder of think.speak.transform.: connecting, advising, researching, and internationally speaking on transformation, disruptive technologies, new business models as well as ethical challenges for a sustainable future. This includes guiding startups, companies, and corporations through times of constant change. He has also recently been appointed Advisory Council for ‘Digital Economy’ at the Foundation German Chinese Culture, helping to build the economic and cultural bridge between the two nations.

The art of asking questions – it’s always personal

My name is Pascal. I was born to ask questions. This concept of life dawned on me as a child when my mother told me she named me after the French philosopher Blaise Pascal. No pressure. With a PhD in History, a feminist and politician she always told me everybody is free to ask. Whether you’ll get a satisfying answer is another point - but you always had to try. And if the answer didn’t help to understand, find a solution or at least open another door... well, then I had the liberty to ask again. And again. She told me this was one of the driving motors behind science, exploration, and insights - giving me the crucial impulse for my life-long curiosity.

I started on my quest to ask. Spending my childhood in a US-American bubble, being relocated around the world, I usually only had a very short time to figure out the new cultural settings, make new friends, let go of dear ones, absorb as much as I can in the most limited time possible. Traveling from Germany to Asia, to USA back to Europe, visiting 10 different schools had me on my toes to ask, analyse, understand, empathise and absorb as much as I could, knowing that any day soon could be the last opportunity to ask. And then I had to move on.

So, what is it that I try to convey when I speak eg. to students on preparing them for an ever-changing society for the challenges they will be facing when entering a job market that no one currently can foresee? Yes, 65% of our children today will be working in jobs in the next 20 years that currently don't exist - a very popular quote from 'Shift Happens' over 10 years ago that goes on saying in a revised version: „(...) jobs that don't exist today with technologies that haven't been invented in order to solve problems we don't even know are problems yet.“

How to navigate through constant change

What are the challenges I see 20 to 30 years down the road? As a passionate technologist and futurist, my 2050 is not all glee - but not all dystopian either. I see it lying in our hands today on how we want to shape our future. Relating back to the students above, I ask myself what the classroom of the future looks like, and start with questions, like how can we teach children to master a more and more engineered and technologically advanced society by following a curriculum that's been outdated for at least two generations? And have them educated to be future doctors with by then commonplace nanotechnology and gene-editing therapies, autonomous robotic surgeries, 3D/4D printing of organs and limbs, hybrid neural chips and next generation brain implants... Will our class rooms be immersive mixed reality experiences? How will our children learn, how will that impact their social behavior, how will they acquire knowledge - different from the arduous path we took ourselves with handwriting, learning poems by heart or practicing foreign languages and ultimately having a valuable anchor of cultural identity sink deeply into a child's mind? I have no answer on solving the curriculum paradox, but an idea on dealing with exponential technology and transformation: build competence. A great example is the Danish 'Chaos Pilot' programme in Aarhus started in the early nineties, a then-visionary business school approach to shape future leaders by fostering generalist problem solving competencies - and to help future leaders navigate through a time of constant change.

Our working world is undergoing some larger fundamental changes that don't seem to have an end game - but are themselves gaining speed. I speak a lot with corporates and startups: a true clash of cultures. I ask myself if failure is inevitable or we can merge the best of both worlds? For industry corporates there is a desperate hope to leverage disruption and the lean and agile ap-

proach to reinvent themselves and bring customer experiences to life. And the hunt for the next unicorn. Experience says though, at least 8 out of 10 startups will fail. Over the last years, corporates have brought forth a plethora of accelerator, incubator, founder, and seeding programs. But there isn't that one killer app or a guaranteed formula from a corporate strategy presentation. There isn't a fig leaf for governments or institutions to declare an office that will lead 'Innovation' or 'Digital' and suddenly, the odds in the global race for innovation leadership have changed. What begins with a mindset, is an almost insurmountable cultural challenge.

If we don't get our innovation culture right, we won't succeed in disrupting and bringing impact that really matters. Then, rather than disrupting, we will be disrupted. Are we seeing the mega-corporations in USA and China, the famous 'GAFA & BAT' paradigm, shooting it out with Artificial Intelligence on a global scale? Will the rest of economy be doomed, and the majority left without work, to live off of their Universal Basic Income, food replicators, and escape into their VR home entertainment?

AI is transforming more than we expect

I recall COIN, an AI project a few years ago by JP Morgan where 360,000 hours of human work were obliterated by an intelligent bot (Son, 2017). An Opimas study stated the impact of automation in capital markets will eradicate over 230,000 jobs by 2025, in asset management alone, 90,000 jobs while only creating 30,000 new jobs. At the same time the cost-to-income ratio of banks will improve by over 28% (Axel, 2017). Will the fate of people losing their jobs outweigh the market drive for rationalisation? In a recent study by McKinsey (McKinsey&Company, 2017), on average 80% of low-skill/low product complexity jobs, 70% of the mid-skill jobs and even in the high-skill bracket nearly 50% of jobs are automatable. Interestingly, the high-skill jobs are a multiple in value and cost, making these jobs just as susceptible to automatisisation, as you would expect for repetitive, low wage jobs. How are we preparing our future workforce for these impacts?

But AI is not just AI. It is not just about specialised vs. general AI, about leveraging synergies by automating, autonomising, and even exploring uncharted domains in data, research, production, and prediction. It's not just about Machine & Deep Learning libraries and frameworks, or its NLP expressions

as we've seen with Google Duplex. It's not just about the ethical dilemmas of self-driving vehicles needing to do a split-second decision to avoid an accident, by the price of another accident it has deemed less damaging. A highly debated scenario when human lives are part of the equation and we suddenly realise we are becoming commodity ourselves in the world of AI. A provocative thought: humans as calculable virtual assets in the real world of artificial intelligence?

No, I see AI as becoming a cornerstone for the future of society. Engaging at this year's THINK with e.g. IBM's AI chief architects or ethics teams, we explored and discussed questions around managing bias in data and self-learning algorithms. Yes, there are provisions for bias detection and user access to fine-tune, but maybe our basic assumptions are wrong. We are expecting to model AI to think within rational frameworks (and rapidly exceed by sheer computational power) while human processing itself is a multitude of intertwined layers of consciousness, subconscious, instincts, reflexes, endocrine systems, and semi-autonomic sensory sub-systems. We are hard-coded with instinctive empathy and protective behavior towards children or agonise in sympathy with another person's pain. How can we assume to be able to design a (general) AI to adhere to hard-coded human values when its core competence is to reprogramme itself for exponential optimisation? What is 'optimisation' in this context, how do we measure this, qualitatively? Laying the foundation today, what will the advent of the Singularity, Ray Kurzweil has proclaimed for 2045 (Kurzweil, 2005), look like? Asimov's three laws of robotics (Asimov, 1942) will definitely not suffice.

There are pressing challenges to be solved, and AI can give us the key to unlock some critical potential. Taking our global trend of urbanization into account - are we going to live in a network of global mega-cities as Neal Stephenson described in the mid-nineties in „The Diamond Age“? We have passed the tipping point in 2007 between rural and urban population with a trajectory of 6.7 billion urban to 3 billion rural inhabitants by 2050 according to WEF (World Economic Forum, 2015). This trend is magnified by the power of efficiency for urbanized resources (water, energy, supply, general resources, waste management, work & productivity), (World Economic Forum, 2018). Cracking the code on urban ecosystems, managing resources sustainably and providing functioning infrastructure in a highly complex grid will require computational power and smart algorithms. Here is where I see blockchain and AI playing

out their main advantages by supporting transactions in a relatively autonomous network governed by smart contracts.

Until we get there, we will have to endure an ugly AI era of deep fakes, risks of rogue specialised AI, biased AI reinforcing prejudice, consumers trapped in opinion bubbles, apologetic press releases from corporates for AI glitches, and daily reports of world-class chess and Go players being humiliated - or having a virtual assistant book haircuts with a clueless hair dresser for what it's worth. On the latter, I believe voice-enabled ubiquitous and spatial computing interfaces are here to dominate our technology experience for the next years. AI in itself, though, is a much more fundamental challenge to master.

Convergence, ecosystems, and disruption

An underestimated aspect is the power of convergence. Convergence of technologies. Convergence of industries. Convergence of economies. In stark contrast to the repelling forces of current nationalist populism. But convergence and globalisation remain unstoppable. One example with technologies: cloud architecture combined with now powerful enough sensory-embedded edge-computing to offload the pre-processing of vast amounts of raw data and signal input, and 5G infrastructure with nearly latency-free connectivity, is catapulting the IoT proposition into a new dimension (Kang, 2017) IBM's crypto-anchor program, as another example, has launched smart dust chips with 300,000 transistors, an IR communication unit, solar panel, and a battery packed on just 1 mm². The processing power of an x86 chip from 1990. IBM is expanding the disruptive potential of blockchain by chaining smart dust tokens as real-world network tokens or nodes. Another example is Future Mobility, going far beyond stepping into your autonomous vehicle in the morning already prepped with an immersive virtual reality workspace to kick off the daily commute to work (2025AD, 2018). Future Mobility is also about logistics, distribution, urban transportation design, technologically conquering the last mile, doorstep delivery, distributed networks, vertical airspace, drones in heavy construction, hyperloop commuting and the quest for common space travel. This convergence implies all industries as they overlap, connect, break down into completely new scenarios, business models, and experiences. The magic word looking into the future is ecosystems. We will only succeed in designing a desirable future if we embrace complexity and interdependencies, take the responsibility for the whole 'value chain' and bear 'total cost of ownership'.

Another disruptive driver is Quantum Computing opening a new realm of computational capabilities. This is not an evolution following Moore's law, and it is not a revolution, as classical computing is here to remain for quite some time. It is something completely new, that will expand our understanding in simulations, encryptions, and very specific challenges that 'classical' computer architecture would fail with (Suitor, 2018). Leveraging quantum states as Superposition and Entanglement, new processing structures with specific gates, and working with a different breed of algorithms such as Shor's Factoring and Grover's Search is opening doors for molecular simulations, medical and pharmaceutical research, nanotechnology and material design on atomic level, quantum physics as well as new unbreakable (at least for a while) encryption techniques.

Is the European voice being heard?

Speaking of medical research, a related hot topic over the last years was CRISPR at the helm of biotech with a novel technology - or better say, a rediscovered and extracted natural bacterial mechanism for effective gene-editing. While we have been prominently hearing about the patent disputes between the Broad Institute and Berkeley, it is widely forgotten that the initial groundbreaking research for the US teams to successfully build on, came from the University of Alicante in Spain (Fernandez, 2017). And this is where it falls apart for Europe. The GAFA & BAT paradigm mentioned before is just a symptom for a globally very asynchronous race.

While Europe is leading in policy making, governance, strengthening democratic values, we seem to have missed the beat on driving technologies and investing into educational and economic leadership. We all need to take a step back to see the bigger picture. If I have mentioned ecosystems before, we need to expand this paradigm onto all regions. We are in the middle of larger upheavals and transformations: the ramifications of climate change, global migration due to war, poverty, inequality, and oppression (World Economic Forum, 2017). We are struggling with getting medicine across the last mile in rural areas in developing countries and providing children appropriate educational care. The latter is a critical investment for a sustainable future - providing equal access to education, giving children the opportunities to learn and strive as they one day will be at the helm of navigating this world. We are increasingly at odds with the concept of free-market economies not

being sustainable without governance. Maybe even democracy is at stake - a political concept somehow shaken in the light of populist resurgence. New impulses, partially infused by technology, are rising up like liquid democracy, exploring new ways to delegate and to form actionable majorities. Another case for blockchain?

As I addressed at The Belt and Road 2018 conference in Chengdu, China, formulating some of the fundamental requirements for international collaboration in this trillion-dollar project, Europe needs to consolidate its voice on the international stage. This not only means aligning 28 countries concerning international trade relations - more substantially: deciding and acting on priorities where Europe wants to be a global leader. Be it in technology and innovation, infrastructure and environment, or as a role model for a striving 500+ million community built on diversity, shared values, relatively high societal standards in terms of education, safety, health, and equality. Europe has a great opportunity, if not a moral obligation, to bring its weight to the international table. According to the European Commission, we are speaking of a digital market worth 415 billion euros annually and the opportunity to create several hundred thousand additional jobs (European Commission, 2018). We not only need our own 'GAFA & BAT' paradigm. A single one of these companies is investing more than the 3-billion-euro commitment from Germany for AI. As the European Digital Single Market initiative was important groundwork, closing crucial gaps in infrastructure with 5G, aligning markets with mobile tariffs and content rights, or formulating new privacy guidelines (to leverage these as a European assets), we need to go further.

Change means taking responsibility

It's time to bold. It's time for a moonshot. Formulating a moonshot is my childhood dream come true. It is for once the chance to ask ultimate questions. No boundaries, no restraints, no political agenda, largest possible positive impact, touching the lives of millions if not billions, and making a sustainable difference.

It's time to make thoughts count. It's time to make your voice heard.

My vision of a 'Moonshot for Europe' is to help build a network of partners, foster a living ecosystem, all carried by the same mission. We need to consoli-

date the expertise in a multitude of areas. Tackling renewable energies means building intelligent infrastructures and smart grids. This implies investing into people, skills, and education - and this again won't be possible without providing equal opportunities, safe and clean environments.

At Futur/io I was able to carve out and formulate my vision for a moonshot, focusing on the UN SDG 17 'Partnerships', building and fostering an overarching extensive ecosystem. The next step is to start creating transparency in data, connecting the right people, and developing exemplary ecosystem use cases to evangelise.

As Steve Jobs said at his 2005 Stanford commencement speech: "Stay hungry, stay foolish". The journey has just begun.

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