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How to reinvent

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Welcome to Digitalis

September 2016. If we were to believe the press, a countless number of jobs are threatened by the digital evolution. A shock wave rattled Belgium when Caterpillar announced the shut-down of its local factory, leaving 2200 workers without a job. All throughout Europe we are aware of long series of bad news related to restructuring operations and layoffs. Every employee termination plan makes the front page of the newspapers for days on end. "Digitalization threatens employment," is what we are repeatedly told. Yet, in most European countries, more people than ever before in history have a job to go to. This means that the number of jobs being created is greater than the number of jobs being lost. The employment market is doing a lot better than we are made to believe due to the number of planned layoffs. But, positive information gets lost in the flow of bad news. And this contributes heavily to the fact that 500 million Europeans are worried about their futures and blaming digitalization.

Personally, I've felt totally at ease in the digital world for over twenty years now. For the last six years I've been directing the Belgium and Luxembourg operations of Google, one of the most innovative companies operating in the digital arena. Before joining this company, I worked for fifteen years for the Belgian media group Corelio (now Mediahuis), which publishes daily

newspapers such as *De Standaard* and *Het Nieuwsblad*. Digital projects rapidly became the core of my missions. These different experiences have allowed me to become a privileged observer of the upheavals in the world around us. The subject matter of this book doesn't concern Google, but represents my personal view based on my experience and deeply held beliefs. I strongly believe that digitalization offers opportunities to Europe and its citizens and that it is very important to seize these opportunities now.

As digitalization intensifies, unfortunately I feel that many people are overcome by anxiety, causing populism, nationalism and protectionism to resurface. This could be explained by the huge lack of understanding of the society in which we live and of the way it has changed profoundly over a very short time. It's all linked to the speed of digitalization, but we shouldn't fear it. Don't get me wrong: risks do exist. The digital revolution can make us immortal, but it can also have disastrous consequences if we don't deal with it properly. It's the characteristic of every great technological evolution.

Welcome to Digitalis, a land in which 4 billion people are connected thanks to the internet.

Nuclear technology made it possible to revolutionize medicine but it also created the atomic bomb. If we want to fully seize the chances that digital technologies are offering us, it really is necessary to get the right information about what's happening in the world to as many people as possible. That's why I invite you to follow me to Digitalis, a land in which 4 billion of people are connected thanks to the internet. Digitalis, like every other country, has to face social issues such as health, mobility, education, the economy and many others. The question now is whether we want it to

be a wonderful country or one dominated by obscurity, pessimism and stagnation. The choice is ours. Personally, I prefer the first solution and I'm going to take citizens, entrepreneurs and decision makers on a trip through Digitalis to show them everything that's possible. And what stops Europe from becoming the capital of Digitalis? Europe has always been at the forefront of previous industrial revolutions and there is no reason at all for it to stop while things are going so well. The aim of this book is to propose an optimistic alternative solution. Without being naïve, but in a constructive way: technological progress offers a unique opportunity to approach society's fundamental issues. There are no miracle solutions; it's up to us, both women and men, to make the right choices. I call it "possibilism": understanding what's possible increases the chances of making it happen. We shouldn't be guided by fear but rather by the conviction that it is possible to build a better world. Sundar Pichai, Google's CEO, said it best: "I'm optimistic about technology, not because I believe in technology, but because I believe in people and humanity."

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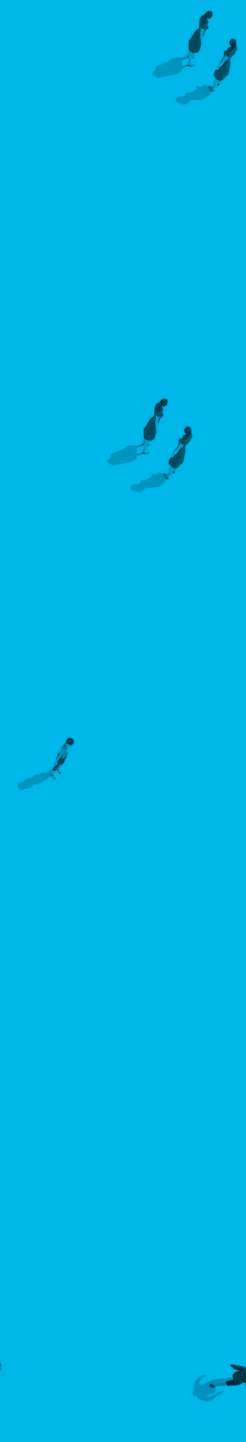

Part 1 The world we live in

CHAPTER 1

An era of abundance and knowledge

Every era has been marked by technological innovation. This current period points to unusual issues that are at stake. With this digital revolution we are in the midst of a new industrial revolution. Fears are also fueled because each new technology encounters resistance. The very first trains couldn't go any faster than 100 km/hour. People thought that crossing this symbolic limit could be mortal. In the beginning, a person had to walk in front of the train waving a red flag. Today, we are constantly bombarded by these kinds of innovations. To illustrate the pace of evolution, the French philosopher Michel Serre refers to the dictionary of the *Academie Française*. In the past, an average of three to four thousand words were added or deleted from each edition (every 20 to 25 years). In the most recent edition this has increased to 37,000 words. The same is true for other languages, e.g. for Swedish.[1] Never in history has language experienced such evolution; and language reflects our society. It's precisely because we are subject to so many new developments that it's important to understand what's happening and how to approach it. It's the only way to make sure Digitalis is peaceful country where one can live well.

The future is brighter than we think

If I were to mention a book that has changed my life, it would be: *Abundance: The Future Is Better Than You Think*. *The Economist* qualified this worldwide bestseller as a "a godsend for those who suffer from Armageddon fatigue." I read it in a single sitting during a flight to the United States in 2012. The authors, American journalist Steven Kotler and entrepreneur Peter Diamandis, predict a near-term future marked by abundance. That was all that was needed to generate my interest, as I've grown up in a world that was dominated by the fear of not having enough. I have very clear memories of the oil crisis in the seventies, when people and government leaders alike were obsessed with fuel shortages and its effect on oil prices. In school, our teachers taught us about the horrifying conclusions of the Club of Rome, especially about when the oil supply ran out. By extension, the entire industrial era economy revolves around raw materials: prices are driven up because of their limited availability and how they're used should be thought through thoroughly. The shortage causes limitations and an unequal distribution of wealth. Oil countries are rich and all the others are dependent on them.

Humanity is now entering a period of radical transformation in which technology has the potential to significantly raise the basic standards of living for every woman, man, and child on this planet.

When reading *Abundance*, many pieces of the puzzle started to fall into place. Every fiber of my being knew instinctively that technology could make the world a better place, but I didn't yet grasp to what extent.

In *Abundance* we read: "For the first time in history, our capabilities have begun to catch up to our ambitions. Humanity is now entering a period of radical transformation in which technology has the potential to significantly raise the basic standards of living for every woman, man, and child on this planet. Within a generation we will be able to provide goods and services, once reserved for the wealthy few, to any and all who need them. Or desire them."

Steven Kotler and Peter Diamandis don't pretend that the world will be a place where all of us will be swimming in money or luxury. They describe an endless scope of unfolding possibilities to resolve all of the world's major problems. Let's take energy as an example. All over the world, the task is to move away from oil as the primary energy source. The supply of this resource is running out, it's unequally distributed and it pollutes. The big challenge consists in replacing oil with, for example, solar energy. Skeptics claimed that solar energy would not suffice to make the world and the industry turn. But things have changed. The sun is able to provide, in a single day, more than enough energy to meet our needs for a year. It's abundantly present, its distribution is a lot more equal and the sun doesn't pollute. Not having enough solar energy isn't the problem. No, the challenge is to capture and store all this energy. As soon as we've overcome this difficulty, we'll have access to an endless supply of energy and the energy shortage problem will be a thing of the past. If ten years ago this seemed inconceivable, meanwhile the significance of improved technology is such that that dream is on the verge of becoming a reality. Also, Google's global activities have been completely CO_2 neutral since 2007. And since 2017, the internet company has been operating using 100% renewable energy. Given the fact that data centers are huge consumers of electricity this is a major milestone. All of

this is to say that the energy problem is not impossible to solve. Of course, solar energy is not the answer to everything. Thanks to technological progress, wind, hydraulic and geothermal energies can also help us. All of this cannot happen by itself: huge investments are required as well as innovation and infrastructure projects. But when all is said and done, we'll live in a world where there is an abundance of energy.

Solving the energy shortage issue is a first step in the direction of solving other global problems, like the scarcity of clean water. In reality, there's no lack of water on the planet, because approximately 70% of our earth's surface is water. However, 97% of that is salt water and therefore unsuitable for consumption. Technologically it's possible to desalinate seawater, but a tremendous amount of energy would be needed to do so. Not too long ago, it was financially inconceivable, but in the near future when there will be an abundance of energy, it will also be possible to solve the issue of the clean water shortage. An adequate water and energy supply will allow food production for the entire world population and therefore put a hiatus on starvation. Ironically, this will also allow us to deal with the issue of overcrowding. Max Roser, economist at the University of Oxford wrote: "What we have seen in country after country over the last 200 years is that once women realise that the chances of their children dying has declined substantially, they adapt and choose to have fewer children. Population growth then comes to an end." This transition from a high mortality and birth rate to a low mortality and birth rate is known as demographic transition. This is how the number of children per family has undergone a major decrease worldwide over the last 50 years: from an average of five children per family in the early 1960s to the current average of just 2.5. Eventually, the day will come when the world's population will diminish or at least stabilize.

The knowledge economy

The book *Abundance* describes the technological and scientific context of movements operating throughout the world, but it doesn't explain what is happening economically. Despite all of the technological progress, many people feel that they were better off ten years ago. Economic growth is still limited and many businesses seem to be negatively affected by digitalization instead of being able to reap the benefits. It took a YouTube video by the French Idriss Aberkane, sent to me by Annick Vandersmissen, CEO of web agency blue2purple, to understand the importance of digital evolution for our economic model. Idriss Aberkane is a real jack-of-all-trades who manages to analyze the big evolutions in our society. In 2015 he wrote a work titled "Economy of Knowledge", in which he explains how we're moving forward into an economy of knowledge.

Unlike traditional raw materials, we can't run out of knowledge. It's an inexhaustible resource that will never dry up.

"Imagine an economy whose main resource is infinite. Imagine an economy endowed with an intrinsic form of justice, an economy that facilitates and rewards sharing, an economy where the unemployed boast greater purchasing power than those in work, an economy where 1 and 1 makes 3, an economy in which everyone is born with purchasing power and where, ultimately, each individual has total control over his or her purchasing power."[5] The resource Idriss Aberkane is speaking of is knowledge. Where oil was the principal resource of the previous industrial revolution, knowledge is now at the base of today's turning point. It is not oil that we need, but knowledge to imagine new sharing plat-

forms, open web stores or develop artificial intelligence. Consequently, a fundamental shift will occur within the economy, because unlike traditional raw materials, we can't run out of knowledge. It's an inexhaustible resource that will never dry up. "Fire is the perfect example of an economy of knowledge. I can share it, without losing it and I can multiply it without exhausting it. Even if the economy of knowledge has been around forever, today it is experiencing an acceleration, facilitated by new technologies. Today we are facing a historical turning point, similar to the Renaissance," says Idriss Aberkane.[6] We are combining an industrial revolution with a cultural revolution.

It's a direct consequence of the internet, which currently connects over 4 billion individuals. All these people are able to communicate with each other from every corner of the world and share knowledge on such an unprecedented scale that knowledge progresses at an exponential rate. For the first time ever, we're living in an economy where enrichment is made possible by sharing something. So, by sharing my knowledge with the readers of this book, they now have access to the same knowledge as I do. Sharing knowledge enables us to develop new perspectives together, which will take each one of us one step further. Compare this to the transactions during the previous industrial revolution: the seller gives oil in exchange for money and the buyer has given up his money, but has received oil. The industrial economy is based on this principle, which means that it revolves around scarcity and availability. From the outset it diminishes the possibilities of growth: an economy can't grow when it depends solely on available resources. "Infinite growth is impossible with finite resources, but infinite growth with knowledge isn't only possible, it's easy," argues Idriss Aberkane in his essay.

Knowledge as a basic resource not only enables endless growth, but also provides more equality in a certain way. We live in an era where everyone comes into this world with more or less the same starting capital: we have all received a set of neurons and thanks to the internet we all have access to the same information. Hence, we are less dependent on money, but time acquires a lot more value. To carry out a simple financial transaction, only money is required. A bank transfer just takes a split second, while transmitting knowledge takes a lot of time. This is why Idriss Aberkane doesn't think it's that bad to be (temporarily) unemployed: it offers time to increase one's level of knowledge, creating value for oneself.

Why isn't this good news on the front page?

Technological progress and the knowledge economy open up a wide range of possibilities. We are on the verge of resolving big global issues thanks to technology, while our current obsession with money must make way for another kind of wealth: the exchange of knowledge between individuals. And yet we seem to be convinced that the world is at its worst. This can be explained by the fact that the two evolutions create important changes in the economy and, by extension, in the whole of society. The world is changing at a rapid pace that we weren't prepared for. The digital revolution, this new industrial revolution we are currently experiencing is, by definition, a very turbulent period, because according to the concept developed by Austrian economist Joseph Schumpeter, each industrial revolution is linked to creative destruction. Creative destruction indicates the continuous process of innovation where new technologies

eliminate the old and where new businesses overthrow well-established companies. Economist Peter de Keyzer[7] declares: "If companies didn't disappear, our economy would become petrified and we would still be working in the mines." On the one hand, creative destruction allows well-being to continue growing, but on the other hand it creates great turmoil, which brings about fear and uncertainty.

Several physical phenomena explain our incapacity to overcome this anxiety. Most of it is due to our prehistoric brains, as they are programmed to rapidly detect danger. Fear derives from a strong survival instinct. Hunters who didn't inspect the hunting area for possible dangers, would quickly become prey themselves. Instinctively, humans attach greater importance to danger than to new windows of opportunity. In addition, technology is currently developing so fast that we are overwhelmed by one anxiety-provoking factor after another without ever having time to catch our breath. "We are interpreting a global world with a system built for local landscapes. And because we've never seen it before, exponential change makes even less sense. [...] Technologies are exploding and conjoining like never before, and our brains can't easily anticipate such rapid transformation. [...] This presents us with a fundamental psychological problem. Abundance is a global vision built on the backbone of exponential change, but our local and linear brains are blind to the possibility, the opportunities it may present, and the speed at which it will arrive," claim Peter Diamandis and Steven Kotler in *Abundance*.[8]

Our current obsession with money must make way for another kind of wealth: the exchange of knowledge between individuals.

Some even believe that the human being is not capable of dealing with rapid change and that the technological evolution is beyond our capacity to adapt, causing all kinds of illnesses, such as mental breakdowns. But humanity has already undergone similar processes: during the first half of the 20th century our grandparents experienced things, like the advent of automobiles, planes, telephones and the two world wars, which were much more radical than those we have to deal with.

According to professor Steven Pinker of Harvard University, three psychological prejudices would lead us to believe that the world is a much darker place than it really is. First, a negative event lasts longer than a positive event. Chances are that the memory of losing money will last longer than the memory of gaining money. On top of that, we consider critics (who, by definition, deliver negative messages) to be engaged people. When invoking problems, they send out a signal of caring for others and naturally we feel attracted by these negativists. The third prejudice is based on nostalgia for a bygone era, a time when everything seemed simpler and better than it is today. Regardless of the era we live in and independent of our degree of wellbeing, we continue to think that times were better before.[9]

Also, Daniel Kahneman, Israeli psychologist and Nobel prize winner, points out that people don't evaluate the probability of an event based on facts, but based on how easy it is to find examples. The more notable an event is, the higher we estimate the chances of it happening. A press release about lower crime rates will go unnoticed but the story of an intruder who killed an entire family will attract attention and will make us think it can happen to us. In the same way, widely reported layoffs lodge in our brains, making us believe that our turn will come, sooner or later. Even if the newspapers tell us that an increasing number of jobs are being created. It's easier for us to remember notable

events because they're reported a lot more. To give a typical example: people are more afraid of getting on a plane than in a car. And yet, the risk of being killed in a car accident much higher, but a plane crash is more spectacular and will get international media attention. The fact that more people die in car accidents in one day than in plane-related accidents in one year hardly interests the media.

All these elements converge in the way we consume information and the way media affects us. The main focus is on negative events, reinforcing the impression that we live in a world where things are bad and getting worse. Economist Max Roser of Oxford University[10] writes: "I do not think that the media are the only ones to blame, but I do think that they are to blame for some part of this. This is because the media does not tell us how the world is changing, it tells us what in the world goes wrong. One reason why the media focuses on things that go wrong is that the media focuses on single events and single events are often bad – look at the news: plane crashes, terrorism attacks, natural disasters, election outcomes that we are not happy with. Positive developments on the other hand often happen very slowly and never make the headlines in the event-obsessed media."

A new international movement is arguing in favor of constructive journalism intended to give the media another role. Ulrik Haagerup is one of the principal initiators. This former director of Danish public television speaks out against sensationalistic journalism in his book *Constructive News*. "It is time to get out of the straightjacket that the tabloids have put on even the so-called serious media. The focus of the yellow press on dallying entertainment, postulating drama, simplistic conflicts, haunt on everybody with power, and the claim to be the true defender against the evil system has for years been the key to success in the media industry. […] which also became the

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