

## The future of work and workers

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Why and how people work has called the attention of the human sciences for a long time. Back in September 2013- when “THE FUTURE OF EMPLOYMENT: HOW SUSCEPTIBLE ARE JOBS TO COMPUTERISATION?”, by Carl Benedikt Frey and Michael A. Osborne was published - the business community was compelled to join their analysis on the probabilities of certain job positions being substituted by robotics, automation and AI within the next 20 years.

By means of a Gaussian process classifier 702 positions were analyzed to estimate the probability of computerization, ranking from those with no risk at sight (examples of 0% probability of robotization being Recreational Therapists, First-Line Supervisors of Mechanics, Installers, and Repairers, Emergency Management Directors, Mental Health and Substance Abuse Social Workers, Audiologists, Occupational Therapists, Orthotists and Prosthetists, Healthcare Social Workers, etc. ) up to those threatened by a 99% probability of disappearing sometime during the next 20 years (Eg: Data Entry Keyers, Library Technicians, New Accounts Clerks, Photographic Process Workers and Processing Machine Operators, Tax Preparers, Cargo and Freight Agents, Watch Repairers, Insurance Underwriters, Mathematical Technicians, Hand Sewers, Title Examiners, Abstractors, and Searchers , Telemarketers).<sup>(1)</sup>

Parallel with this appraisal of job risk due to robot replacement, three critical bottlenecks were identified as more fitted to delay this substitution process, showing a safer path of career planning for 21<sup>st</sup> century workers: 1) Perception and manipulation tasks; 2) Creative intelligence tasks; 3) Social intelligence tasks.

Frey & Osborne identified nine variables under the mentioned categories after a survey on what really makes the difference in a job and the capabilities required to perform it, as shown in the following table of variables and their detailed description:

Computerisation bottleneck	O*NET Variable	O*NET Description
Perception and Manipulation	Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.
	Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.
	Cramped Work Space, Awkward Positions	How often does this job require working in cramped work spaces that requires getting into awkward positions?
Creative Intelligence	Originality	The ability to come up with unusual or clever ideas about a given topic or situation, or to develop creative ways to solve a problem.
	Fine Arts	Knowledge of theory and techniques required to compose, produce, and perform works of music, dance, visual arts, drama, and sculpture.
Social Intelligence	Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.
	Negotiation	Bringing others together and trying to reconcile differences.
	Persuasion	Persuading others to change their minds or behavior.
	Assisting and Caring for Others	Providing personal assistance, medical attention, emotional support, or other personal care to others such as coworkers, customers, or patients.

Source: Frey, C. B., & Osborne, M. A. (2013). The future of employment: How susceptible are jobs to computerisation?. Table 1. O NET variables that serve as indicators of bottlenecks to computerization. Page 31

At the same time, millennials joining the business world are making clear to everyone that they think and feel unlike preceding generations. A great deal has been written specially about those among them belonging to a new category, the so called "knowledge workers". Not so much attention has been given to those who did not get proper education but still are native digitals aiming for a lifestyle they watch on cable TV, though sentenced to fail under a pernicious form of illiteracy derived from low levels of reading comprehension, mathematical skills and cause-effect basic scientific reasoning; all to be blamed to low standards of the education systems.

HR specialists have starved in the last decade for practical tips on how to keep new generations engaged and devising ways to manage inter-generation conflicts in the workplace. Baby boomers and the Generation X have been productive through hard work and dedication, but Millennials

view the world in a different way, and when it comes to success, they expect to achieve it doing something they like and with a sense of contribution.

In the new economy, vocation is an essential ingredient to foster sustainable engagement at work. More than ever before in social history work is expected to provide more than mere job satisfaction and to pave the way to everyday happiness.

Having said that, the question would then be: is this a dream we can all afford? And if not, what is standing between reality and this aspiration of a job that makes the difference and unleashes people's to achieve the best they can do? The answer is complex because many constraints are blocking the way for meaningful and secure jobs, such as 3D jobs, golden cages, obsolete labor regulations and rear-view education.

### **3D jobs**

High rise window cleaner, residential condominium doorman, underground coal miner, deckhand in deep sea fishing vessel, horse stall cleaner, elevator operator... Is any of these the job we want for our child? If not, why not?

They are 3D jobs. This neologism does not refer to a three dimension approach to job design. Instead, it was a term coined in Japan as 3 K to label certain jobs generally done by migrant workers. Those are jobs no one would do if there was a choice to avoid dirty dangerous and demeaning tasks which not only erode happiness aspiration but most worrying, - in some cases - threaten the lives of those performing them. We can think of many examples of jobs, and we can visualize the challenge for societies receiving migrants willing to take these jobs due to their desperate need for money and inclusion opportunities. In many countries, poor work conditions affect not only migrants but also local uneducated workers.

To be fair, these 3D Jobs can offer an honest path to earning a salary which can be essential for that person and even to his family; but when analyzed in terms of what skills these workers learn and develop, what kind of human interaction is nurtured and the severity of the safety risks involved; we may find ourselves welcoming robots and thanking them for leaving the science fiction dimension to enter our everyday lives by doing these tasks that are barely acceptable from an occupational health perspective.

When the balance between supply and demand in the labor market is affected either by structural high unemployment or by outcast workers

willing to accept lower than equilibrium wages; the employer side stays in the comfort zone. Working conditions are not improved and there is no investment in technology either. Cruel as it is, this chain of human exploitation portrays a form of contemporary slavery that turns down ROI justification to any kind of wage increase, occupational health and safety compliance and process automation. In the past, 3D jobs were very well paid due to the undesirability of the work and the need to attract and retain workers, even if they were uneducated or underperformers. However, as so many societies are going through a disintegration process, crowds are being left behind and desperate for inclusion in the system, willing to accept high risk low status work, sometimes under illegal terms as a way to escape poverty. When the education system fails and there is insufficient law protection, such vulnerable manpower grants the cheapest cost production to those who have learned how to take profit from the new economy.

### **Golden cages**

How much were you paid to give up your dream? This is the provocative question that Ryan Bringham—played by George Clooney- asks Bob, a white collar employee and one of many who have lost their jobs as a result of a restructuring process. The movie “Up in the Air” will be remembered for its successive layoff scenes more than for anything else. This case –Bob’s case- is one of hundreds portrayed and it highlights how brutal market adjustment can be when it strikes the so called “golden cages.”

The golden cages are the symptoms of an inefficient labor market that pays for some people to forget nothing less than their vocational dreams. It pays a very high price, questionably high indeed.

Ironically, people take these job positions considered to be attractive out of their own will and generally undergo long selection and admission processes freely and holding great expectations. Obtaining these jobs is very satisfying, so once inside the cage, the exit door is locked and the key is thrown away ignoring the fact that an agreement of luxurious imprisonment has been sealed. The prisoner sees himself as a lucky person, eclipsed by “irresistible” work conditions of security, comfortable conditions and high compensation. Time passes and one day the job is good but not that great, vocation that inspired young hearts is and outdated memory, routines make each day predictably similar to the day before, the cage no longer glitters but still is a safe comfort zone.

What is happening when your annual staff turnover is less than 4% and you know that this small figure is only fed by retirements? Most likely, the organization has become a golden jail.

Golden jails exhaust talent, they don't set it free. They work as an incentive for people like the many Bobs we might know who would chose a customer service position in the financial sector seduced by the conditions and salaries offered by the banking industry. Bad news is that - performed over time- these positions are not the roadmap to self-fulfillment. Worse news is that - according to Fray & Osborne- *Credit Authorizers, Checkers, and Clerks* have 97% risk of being substituted by robotization within the next 20-30 years, meaning that the job security Bob was promised no longer exists. <sup>(1)</sup>

Employers are to be blamed for overpaying routine tasks clearly not that sophisticated considering the cognitive and social skills they require. By doing so, the salary market nurtured a contradiction between the strategic value of work -given by its complexity and sustainability in the new economy- as opposed to the economic value reflected on direct and indirect compensation resulting from years of negotiations and wages councils.

This wage gap does not grow overnight, it is the cumulative result of bargaining between good intentioned employers and unions who were willing to treat their people well but ended up giving the wrong sign to the marketplace and encouraging workers to make the wrong decisions. Golden cages will eventually break and betray those who thought them to be sustainable in terms of employability.

In the new economy, vocation is an essential ingredient of motivation rooted in a sense of personal mission and reinforced by the spontaneous pleasure felt by the person carrying out a task. This kind of passion is of the essence in positions requiring the social and artistic skills that defend them from robotization and is critical for long term commitment with a job. Can we imagine a social worker or a nurse with weak vocation and strongly motivated by extrinsic factors, such as salary? Highly unlikely, isn't it? The less automatable a job is, the more it calls for most developed human skills and human motivations, being vocation no more and no less than the articulation of intrinsic and transcendent reasons to do a job.

Golden cages are putting these motivations at risk as we often see smart teenagers troubled at the moment of making a career choice between such contradictory alternatives as in the following example, having to decide either to obtain a four-year degree in nursing to enter the health sector, with

the enormous responsibility that is required by the practice of a medical profession, rotational work schedules and a low salary (approximately USD1.000 a month); or applying to a bank and, with that same university degree level, climb the administrative ladder, with less worries, extremely firm working procedures and unmatched working conditions. While the nurse can be pretty sure about her employability because her job it is under no risk of being replaced by a robot, bank clerical jobs have 97% of risk of becoming robotized within the next 10-20 years, but the monthly income after 4 years of work experience would be around four thousand dollars. So there is a remarkable contradiction between the strategic value of the job and its economic market salary.

Going back to Bob and many like him, having lost a well-paid job, are they still employable in this era of automation and artificial intelligence?

The answer can be shocking. It all depends on the path Bob has travelled strengthening the bottlenecks of task replacement caused by automation. If losing this clerical job causes the crisis that kills a family project or does in fact bring promising professional projects will boil down to a) the intensity and the speed at which Bob has acquired new knowledge, b) the extent to which he has developed problem-solving abilities to cope with ever growingly complex situations, and c) the potential uniqueness of his productions when creating artistic work.

### **Obsolete labor regulations**

The so called forth industrial revolution brings hope of productivity gained thanks to robots, artificial intelligence and automation. While in some cases machines are faster and better performers, in many others they are just easier to manage and bear no risk of legal claims. In other words, in many countries where labor regulations are blocking new organizational formats, employers are beginning to view people as a problem and leaving behind the “our most valuable asset” speech.

On the one hand, companies need to adapt to the new economy, changing organization charts towards cellular structures and fewer hierarchical positions, shortening production set up times, reducing costs per transaction, leaning processes, enhancing customer effective response 24/7,

moving warehousing facilities to logistic centers, outsourcing non critical processes, etc.

On the other hand, and in the name of job security some countries bent to union's pressure and have built a rigid frame of regulations over the years, making it very hard for organizations to evolve towards a new economy that emphasizes flexibility in the marketplace and in employment relationships.

After WWII many laws were enforced in the line of setting limits to work hours in factories, inspired in a progressive view of how much could someone work and the right to have decent time to rest (at least for health and safety reasons). This triumph in the process of humanizing working conditions paved the way to other regulations that are now obsolete or inapplicable to knowledge workers.

Seen as a non-renounceable conquest by unions and as a practical constrain for employers, rigid labor regulations are a strong driver of process automation. We have to face it, robots will eventually substitute these positions, but the speed of technology introduction could be delayed if companies were less emotional about their HR management frustrations.

A very high rate of collective bargaining coverage and a clear set of rules in industrial relationships can be very helpful, providing both parties of the certainties needed to make long term commitments with each other. However, experience says that whenever employees' representatives (from trade unions or staff associations) push too hard to defend their interests, they are not only rising current manpower costs but also the perception that a cost reduction solution must be found apart from collective bargaining agreements.

Governments, unions and even individual workers should be aware of the part they can be unknowingly playing in fertilizing automation strategies: minimum wages set at the industry level that cannot be afforded by family business and small companies, rigid job classifications that prevent workers from learning and temporarily performing higher ranked task, supplementary social protection that fosters opportunistic behaviors and limiting conditions on professional training are the beads of a necklace that will ultimately strangle job positions. As much as we must fight precarious work as an example of 3D contracts to be suppressed, we must strive for a new balance in work regulations after both parties sit around the table to

agree on feasible plans to start training workers right away for the jobs of the future and reinvent the organizational model to satisfy stakeholders.

Following an innovative course of action, the Danes are the creators of flexicurity, a model of pro-active labor market policy aiming at successfully managing the challenges of globalization and securing steady economic growth and employment. Flexicurity is a compound of flexibility and security<sup>(2)</sup>. Under the required flexicurity model part-time employment, self-employment, fixed-term work, temporary work, home-based workers, and telecommuting are not necessarily bad words and install the right set of values: putting employment security over job security.

### **Rear-view education**

The Hofstede Culture Compass analyzes six dimensions believed to represent independent preferences for one state of affairs over another that distinguish countries (rather than individuals) from each other. One of these dimensions tells us about our approach to life goals: do we envision the future and create what we “see” designing solutions for problems we merely hint today? Are we the skeptical type who affirm “seeing is believing” and can only trust what was seen and worked in the past?

“Every society has to maintain some links with its own past while dealing with the challenges of the present and the future. Societies prioritize these two existential goals differently.” (Hofstede insights., s.f.)<sup>(3)</sup>

Those with a culture which scores high in this dimension of the culture compass, have a pragmatic approach that encourages thrift and efforts in modern education as a way to prepare for the future. They see the future before it is here and they find the right way to get there and succeed.

Opposite to future-oriented pragmatics, some countries still have a rear-view of education and search in the past for the solutions to walk towards the future, no matter how drastic the difference between the old days and the digital era can be. These resistant-to-innovation societies score low on this Hofstede cultural dimension and view societal change with suspicion. Education policies therefore have tremendous difficulty in creating educational environments that suit children evolving interests and abilities. The curricula is focused on classical general culture topics which are no longer useful for life, methodology is frozen in a time when the teacher



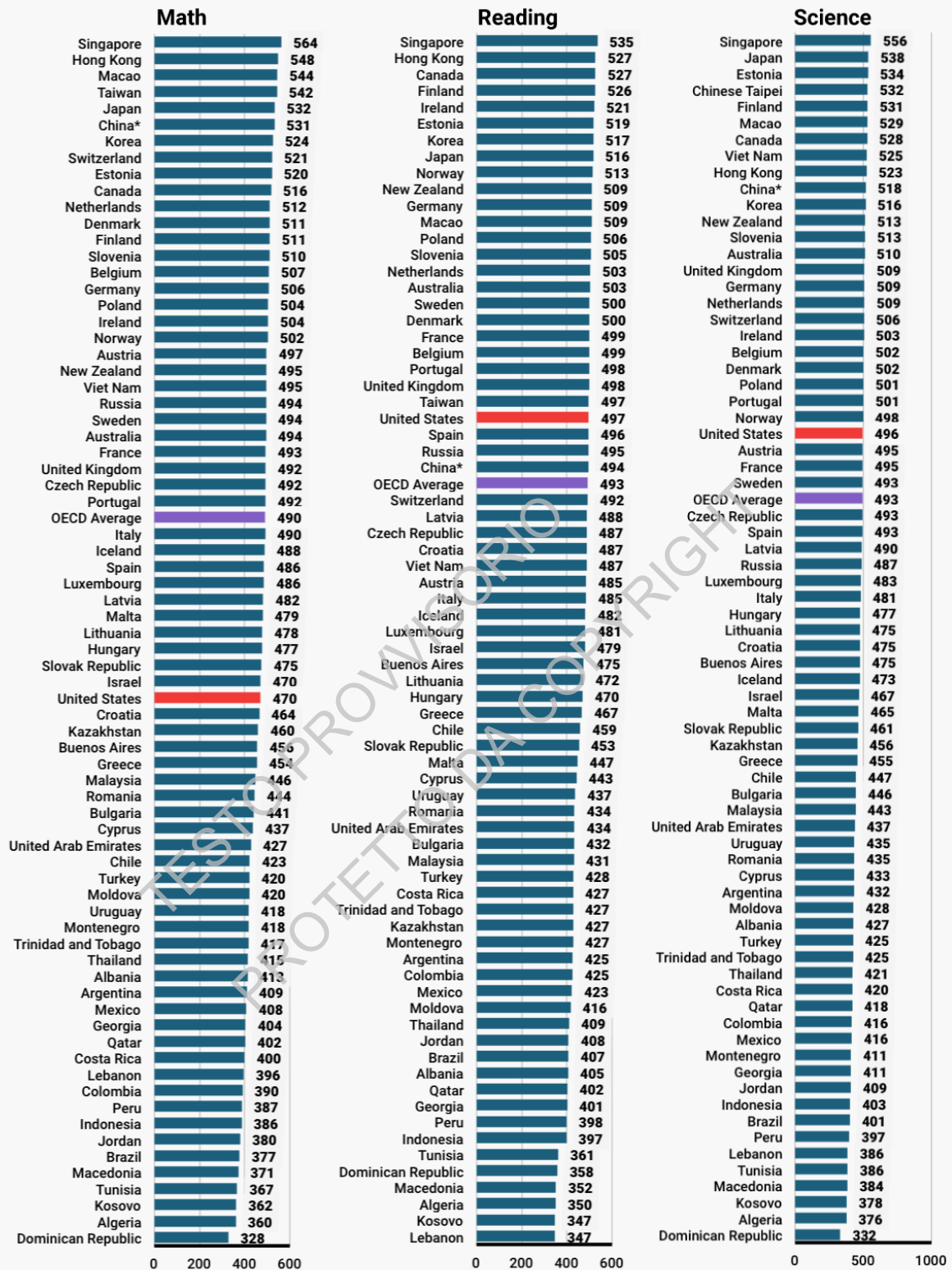
knows it all and lectures kids who should silently take notes, memory is an overrated cognitive skill and information is to be repeated by heart.

This logic seemed to work in the past, so there is no room for changes. No one is willing to deal with the risk of introducing new subjects and ways of learning, the number of bored kids at school grows, performance results get worse, teachers see their authority weakened both in class and facing a dissatisfied society, now their job has become less satisfying to their vocation, extrinsic motivations rise to compensate that and regain balance, unions claim for higher salaries that are fair given the challenges, increased salaries bring some smiles for a while but don't last for long, the class is still not working and everybody sees that, teachers see no way out – it's the system, there is no alternative job so they will stay, psychosomatic symptoms soar medical leave, number of applicants to become teachers drops year after year... the system is collapsing. All this chain of consequences are hard to perceive in a glimpse, the deterioration process is subtle in many cases and therefore difficult to target.

Assessing where we stand and projecting tendencies in education is very complex but still possible, at least partially. Every three years, the Organization for Economic Co-operation and Development (OECD) releases the results of its global rankings on student performance in mathematics, reading, and science, on the Program for International Student Assessment, or PISA.

The PISA is a worldwide exam administered every three years that measured about 540.000 15-year-olds in 72 countries (2015).

# 2015 PISA AVERAGE SCORES



SOURCE: OECD. \*China is represented by the provinces of Beijing, Shanghai, Jiangsu, and Guangdong

BUSINESS INSIDER

Source: Jackson, A., & Kiersz, A. (2016). The latest ranking of top countries in math, reading, and science is out - and the US didn't crack the top 10. Business Insider.

PISA results show whether or not a country is moving forward in terms of critical skills required for the jobs of the future and, - by doing so- raise hard questions about the global competitiveness of each educational system<sup>(4)</sup>.

Arguments stating that PISA tests traditional knowledge and fails to measure more sophisticated skills such as negotiation skills or artistic creativity have been presented, minimizing the fact that the mentioned bottlenecks for robotization – soft skills and creativity – build up on a basic structure of information and traditional skills. In other words, nobody can add value in a real estate sale operation by applying skilled negotiation techniques unless there is proper understanding of the purchase-sale contract and the total cost of the operation is calculated quickly together with an estimation of the amount of taxes to be paid. We must target excellence in strategic abilities – basically Science, Technology and Mathematics -, but ensuring a fair share of basic skills that apply to any field of action: reading and writing, systematic scientific thinking and mathematical logic.

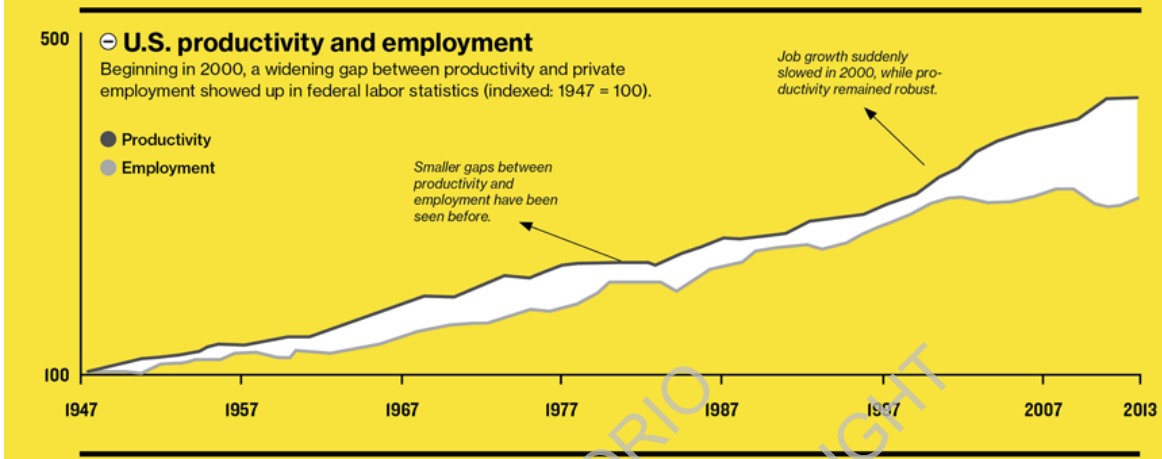
Education is clearly the top priority to fight this war on machines. As Gregory Mankiw - an economist at Harvard – indicates, “people need to learn new skills to work in the new economy”. Therefore, within family and formal education agendas, the development of skills that are suited for the requirements of future scenarios which are already foreseeable become of the utmost importance as the so called soft skill, as well as increasingly demanding minimums in STEM (science, technology, engineering, mathematics) will be drawing the line that separates countries that can from those that cannot create enough value through their people’s talent<sup>(5)</sup>.

### **The future of work**

The analysis of the jobs that have a high risk of being replaced by technology within the next 10-20 years is undoubtedly shocking, Brynjolfsson and McAfee’s believe that rapid technological change has been destroying jobs at a faster pace than it is creating them thus contributing to the stagnation of median income and the growth of inequality in the United States and other developed economies. The fact that economic growth has no parallel increase in job creation is referred to as the “great decoupling” and this graph shows an impressive spread between both lines.

## Decoupling Productivity and Employment

Digital technologies have boosted productivity in the United States without also spurring the expected job growth, argue Erik Brynjolfsson and Andrew McAfee. A result of this decoupling is that while gross domestic product (GDP) has risen, median income has not, and inequality has grown.



Source: Rotman (Jackson & Kiersz, 2016), D. (2013). How Technology Is Destroying Jobs. Automation is reducing the need for people in many jobs. Are we facing a future of stagnant income and worsening inequality? MIT Technology Review.

In light of the above, we can visualize technology as a threat, advancing so fast that we cannot keep up with it, and rejecting it as long as possible even if we know that there is no chance of actually stopping this global phenomenon. Or instead we can gather courage and start getting prepared to complement ourselves with technology and convert this threat into an opportunity to improve our society, design better jobs and be happier people who enjoy an enhanced quality of life.

A long time ago some experts predicted that the process of incorporating technology would allow us to reduce the working day and would even lead us to think of a society in which even after the development of new sectors of activity, there would not be enough jobs for everyone.

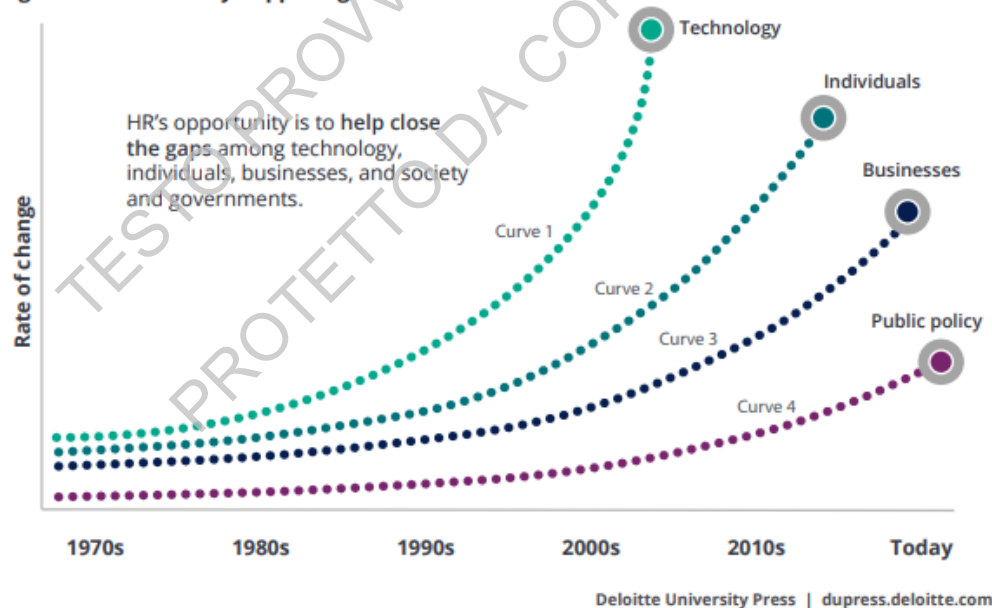
Several voices questioned that prediction, public opinion showed deep concern, governments passed laws and most influential world leaders are making their own assessments of the situation. As an example, Bill Gates, owner of one of the largest technology companies, is deeply concerned about this and has pointed out to governments on their role combating inequality generated by robotization<sup>(6)</sup>.

Though the idea that the end of work is inevitable has grown stronger these days, there are other views challenging negative forecasts. Lawrence Katz, a Harvard economist, says that “no historical pattern shows these shifts leading to a net decrease in jobs over an extended period” (7). Also, he leaves an open door for workforce adaptation and humbly recognizes that in this science fiction scenario technology disruption is so massive that we do not know what will happen, so he hopes that a solution we cannot foresee now will eventually arise.

Do we sit and wait for a miracle? Back in 1816 Jose Gervasio Artigas – Uruguayan national hero – concluded after an unsuccessful political battle “we cannot expect anything but from ourselves”. His words are still compelling and make us aware of our accountability in terms mitigating unwanted consequences of the increasing use of technology and its potential impact on work when we take a look at the following chart.

Rewriting the rules for the digital age

Figure 2. What is really happening



Source: Deloitte Global Human Capital Trends. (2017). Rewriting the rules for the digital age. Deloitte University Press.

As shown above, technology is advancing exponentially since the 1990’s and public policies are far behind – almost losing track of the whole revolution and its effects. This situation defers to companies and individuals the responsibility of coping with the new economy. Macro solutions are not “on their way”, most governments are entangled in an agenda of urgencies and

have no room for strategic planning in something that still sounds futuristic. We are on our own.

Whichever estimation is finally proven right, for those who don't have the crystal ball it is wise to "hope the best but prepare for the worst". Not fully convinced to believe in the most pessimistic forecasts of robots with superhuman skills taking over a broad swath of human tasks, it is now advisable to work for a fair solution and make it happen.

In terms of the "happy ending" we wish to see, does it matter if people have jobs? In the event of social security providing universal welfare care, will jobs be that important? What difference does it make to have a job? Regardless of the fact that it's a means of obtaining the necessary income to cover a budget, when a job only means a salary, that job can be replaced by other sources of income, like external subsidies for example. But if a job involves other values, then we can conclude that not having a job is not positive for the person, for his family and - in turn- for society as a whole.

Taking the example of migrants, should recipient governments grant them a lifetime pension or is it a bad idea? Is there a better suited context than work for multicultural interaction under controlled conditions? Isn't the job the right place to quickly learn the language and even slang among coworkers? To understand how authority works in a society? To share achievements that develop sense of belonging to the community? To obtain money to take care of his family and by doing so set a role model based on values of dedication, loyalty and respect?

### **Work and happiness**

The evolutionary perspective shows that the path travelled by our species has involved dynamic adaptation to the environment within a survival scheme encompassing accommodation to the circumstances and transformation of reality, in a strenuous and sometimes titanic effort to dominate the environment. The Homo sapiens is characterized by the development of the most adaptive physical, cognitive and emotional resources, especially when it comes to bottleneck skills against robotization. Working and working hard is a necessary condition to achieve progress.

Also, Psychology believes that work is not only a task to be performed, that it has other connotations that contribute to happiness such as: underpinning our self-esteem upon achievements, providing a space for socialization,

boosting creativity applied to problem solving and nurturing a sense of belonging thanks to major group works.

The quality of a meaningful job and the positive experiences that derive from it correlates with psychological wellness levels and this goes beyond the personal level and spills onto our nearest surrounding environment; making it legitimate to defend the right to work as a shared happiness factor.

### **The future we wish to see**

Assuming that automation, computerization and artificial intelligence will increase, there is a potential opportunity of improving the quality of work thanks to the technological revolution. And, it is through a proactive and carefully designed complementarity between digital and human work that - in spite of the threatening scenario- that we will profit from the potential coincidence between the advance of robotization and the possibility of improving the quality of our jobs. Working fewer hours could be one of the ways, but hopefully these will be better hours.

Seen from an anthropological point of view, technology can come to replace activities that are simple, that can be memorialized and may even be physically and mentally exhausting. It is very likely that if a job can be replaced by a machine it is because it does not require the best of human beings in terms of reasoning, empathy, intelligence and creativity skills. Robots can be introduced to save us from those tasks that a person should not do or that would probably not want to do if he/she had a chance to choose.

The incorporation of technology is a time and effort creating tool that allows us to channel them towards much more valuable means. In this line, the desired goal would not be to stop unemployment per se, but to lead a progressive and sustainable migration towards better quality jobs, from an economic and anthropological point of view under the assumption that if we complement each other wisely, we will progress as a society and evolve into civilizations where work becomes concomitantly more human and humanizing.

Pope Francis recently gave a TED talk explaining that we can only build the future by standing together, including everyone and inviting the business community to dream of a wonderful world where the growth of scientific

and technological innovation would come along with more equality and social inclusion.

We face the challenge of making compatible the output driven productivity with our responsibility as designers of a just society in the global economy, assuming that work is essential in the person's purposeful life plan and therefore a universal value to be protected.

This is a responsibility we share with business schools educating leaders to make a positive and long-lasting impact on companies and society; with families providing guidance and setting examples for the youngest; with 21st century educators creating a curriculum that will help students connect with future work; with companies offering sustainable employment to collaborators through human centered job design; with workers who have made the decision not to be victims but to fight for a rewarding job; and with anyone willing to join Pope Francis revolution of tenderness and its empowering call for action.

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