

“The Banquet ” or the art of management

Feature

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Abstract

Purpose: Whence management, whither management.

Methodology: Socratic

Findings: management has to be, and will be, re-founded

Practical implications: “managers not MBAs”

Originality/value: testimony for future generations

Type of paper: historical, prospective, philosophical

Key word: management

“*Est autem amicitia nihil aliud, nisi omnium divinarum humanarumque rerum cum benevolentia et caritate summa consensus: qua quidem haud scio an, excepta sapientia, quidquam melius homini sit a Diis immortalibus datum*”. Cicero.

« Οὗτω δὴ ἔγωγέ φημι Ἐρωτα θεῶν καὶ πρεσβυτάτων καὶ τιμιώτατον καὶ κυριώτατον εἶναι εἰς ἀρετῆς καὶ εὐδαιμονίας κτήσιν ἀνθρώποις, καὶ ζῶσι καὶ τελευτήσασιν. »

Plato.

A number of philosophers, entrepreneurs and students are lying around low tables and sharing exquisite dishes and drinks. They debate about various topics when at one moment a dialogue is established between an old professor, Akademikos, and a young entrepreneur Managerios, about the art of management over centuries.

Managerios: Tell me, Akademikos, you are an old wise professor with centuries of experience and I am a young entrepreneur with some knowledge but no experience, could you tell me what management is about?

Akademikos: Managerios, have you got a horse?

Managerios: Yes, I have.

Akademikos: What do you have to do to be able to ride this horse and use it for going places, doing what you want to do, carrying out your business, and keeping him in good shape?

Managerios: Well, first I have to find one that fits what I intend to use him for, then I have to train him, then I have to get him to do what I want him to do - not always easy - then I have to make sure he actually did what

I wanted him to do, and finally I have to take good care of him so that he can continue to do what I want him to do, and better if possible.

Akademicos: Very good, Managerios. You have answered your question yourself. This is what management is about.

Managerios: But, Akademicos, I do not quite understand. What I said is about dealing with my horse, as you asked me. But what about the business that I am starting?

Akademicos: It's exactly the same thing. You have to decide what you want to do with your business, you need to have the people and a number of other things suitable for what you want to do, like your horse, you must check if what you achieve is what you wanted to achieve and strive to do better the next time.

Managerios: Oh, I understand better now. But this is not what I learnt in my MBA. The professors used strange words and expressions and we couldn't see how we could use all that in real life.

Akademicos: For sure. They all use some jargon - they think it sounds scientific - but, when faced with reality, you don't know what to do. What you want to do with your horse or your business, they call it 'strategy' for the implementation of which you are supposed to carry out 'diagnostics' and assess the 'external and internal resources required'. Among those resources, you have the 'human resources' - your horse! - that you need to 'train and develop'. Then there is 'control', that's to check if what you get is what you wanted (because 'you don't always get what you want!'). And then when you try to 'make it better all the time', they call this 'continuous improvement'.

Managerios: Oh, I see clearly now. I wonder why we spend years and a lot of money to learn things that we don't know how to use when it can be simply explained in a few words!

Akademicos: (sigh)

Managerios: I have another question, Akademicos. When did this management appear?

Akademicos: How long have men had horses? How long have men had to pick fruit and hunt, then to till the soil to grow crops, to raise families, to run a village and eventually a country, to exchange goods?

Managerios: I don't know how long they've had horses, a very long time I suppose and they've always had to produce food in some way and raise their families and exchange goods.

Akademicos: So again, you found the answer yourself. Management has always existed, at least since homo sapiens appeared on earth, and maybe even before.

Managerios: That's wonderful! During my studies, I thought that management was something new, 100 years at most. However I believe that it has evolved and changed a lot over centuries and even millennia. Can you tell me about that.

Akademicos: Of course, it's a very long story. For a very, very long time management did not evolve much. People produced little, in fact just what they needed to feed and house themselves. Their economic activities - and remember that economy means 'managing the house' - were quite ecological, durable and sustainable as we say today. So they may have been

wiser than we are, at least than we have been until now. Management became more developed when trade between different populations and countries in the world expanded. This growth of exchanges started about 25 centuries ago through various trade routes between the Middle East, Europe, Africa and the Far East. People and countries slowly but surely specialized in the production of goods where they were better, more competitive as we would say today, exported them and imported those they could not make or for which they were not competitive. This was the beginning of 'globalization', which is not at all a recent phenomenon as many people think.

Managerios: And when did management really change?

Akademicos: In the 18th century with the 'industrial revolution' which knew various phases until the end of the 19th century. It is during this period that what is usually called 'modern management' was born. A number of inventions disrupted the long-established mode of production and made way for new production processes. We can mention the steam machine, then electricity and telecommunications.

We moved from a limited volume of production to mass production. This mass production required a lot of workers. The only place where they could be found was in the countryside. So thousands of people were displaced from the countryside to the new factories, new towns were built to house them. We can still see the remnants of this period today in many places in England, America, Germany or France.

Managerios: But there is something I do not understand. How could these peasants, who knew nothing about industrial activities, suddenly work in factories?

Akademicos: That is a good remark, and that is why management had to change radically.

Managerios: Can you tell me about this revolution.

Akademicos: It was indeed a revolution. The "Industrial Revolution" implied a "Management Revolution", a complete re-thinking and re-organizing of production processes. Two men played a particular part in this revolution; Henry Ford and Frederick Taylor. Together they invented and applied what is known as "scientific management", meaning by the way that management before was not 'scientific'! As we have just seen, because the new workers were not trained to perform industrial tasks, these tasks had to be made as simple as possible so that everybody could do them. So, Taylor pushed the division of work, which had been advocated more than a century before by Adam Smith as a source of productivity and competitive advantage, to its limits. Taylor "broke down work" (hence the technique of WBS still used today) into easy and simple tasks requiring no particular training, that could be repeated endlessly, thus increasing productivity tremendously. This approach of work, however, implied that the organization of these tasks be linked one to another in a sequential way from the raw materials and parts to the finished products. This is how the assembly line was invented. Another phenomenon that went hand in hand with the assembly line was the development of mechanization. Thanks to steam machines first, then to the use of electricity, more and more powerful and sophisticated machines - the ancestors of today's

industrial robots - were invented to boost the volume of output and reduce lead times. This mechanization multiplied the strength of the workforce and greatly contributed to increasing productivity. But this organization of the production process required a different way of managing people. The time of the Master working with his apprentices in his workshop was over. Workers had to be supervised and tightly controlled. It was the machines on the assembly lines that gave the pace and the workers had to follow. So we could say that the workers helped the machines and not the machines the workers.

Managerios: You are talking about a management style that is more than a hundred years old, but when I travel around, what I see in most places is still very much the same.

Akademicos: You are quite right, Managerios. Still in a lot of production units around the world the organization of work is basically the same. Taylor is not dead! But as we will see later, he is probably dying.

Managerios: I am impatient to hear the story. But for now, I get the feeling that this new 'scientific' organization of work and the management of people they imply, also had an impact on the whole structure of the organization.

Akademicos: You are right again, Managerios. Let's have a look at that. We have seen that the workers on the assembly line needed to be supervised. Who could supervise them?

Managerios: Some foremen, I believe.

Akademicos: Yes, and what about these foremen?

Managerios: What do you mean?

Akademicos: Some people had to organize the work 'scientifically'.

Managerios: So you mean that the foremen had to be supervised?

Akademicos: Exactly.

Managerios: Then, the company needed people to do that.

Akademicos: Indeed. What do you call that they did?

Managerios: I gather they "managed" the system.

Akademicos: You think well, Managerios. So, "managers" were needed.

Managerios: And these "managers" needed to be managed too?

Akademicos: You are right again. They had to organize the system according to some strategic direction and policy choices. What do we have then?

Managerios: "Top managers"?

Akademicos: Right. What does the structure look like then?

Managerios: Well, we have workers, on top of them we have foremen, on top of them we have managers, on top of them we have top managers.

Akademicos: Exactly. That is why the firm is structured along a hierarchical line and, if you draw it - let's do it here on the sand - what does it look like?

Managerios: A pyramid!

Akademicos: Indeed... Now, do you have only people making products in a company?

Managerios: Of course not. We have people in charge of selling the products, we have people in charge of running the financial resources of the company, we have people in charge of keeping the accounts, and what

not. There are many different functions to accomplish in the business.

Akademicos: You said the word! "Function". The division of work we discussed earlier does not only apply to the making of products, it also applies to all the other functions inside the firm.

Managerios: So you mean that the people exercising the same function are put together?

Akademicos: Quite right. And this is how we have a "functional structure".

Managerios: It does not look very different today.

Akademicos: True. But here again, things are changing and will have to change quickly in the future. We will see that later.

Managerios: This "scientific organization of work" really looks great in fact and long enduring. But from what you are hinting at here and there, I suspect they were, and are, some drawbacks.

Akademicos: You suspect rightly! Let's discuss that. Managerios, you produce a lot of products. When these products are made, what do you with them?

Managerios: You sell them!

Akademicos: We hope so! But can you sell them all in one go?

Managerios: Obviously not.

Akademicos: So, what do you do?

Managerios: You stock them... and wait for some buyers.

Akademicos: Right. You produce, you stock, you sell. This is what we call "push production".

Managerios: I do not see the problem.

Akademicos: Think again.

Managerios: Well, what happens if there are not enough buyers? Is it a good question?

Akademicos: It is. To answer this question, we have to look at the supply and demand. If the demand matches the supply or exceeds the supply, of course there is no problem to sell the products. And this was globally the case for some time; Ford sold a number of his cars to his workers making them! But what happens if the demand is lower than the supply?

Managerios: Stocks will pile up. Or production will have to be reduced, which will cause other problems I suppose.

Akademicos: Right. And all these problems push up costs and consequently reduce the profitability. So we must find ways to convince people to buy our products.

Managerios: How is that? You run after people and con them into buying your products?

Akademicos: You may be exaggerating a little but you are not wrong! Managers invented marketing!

Managerios: So, it looks like the customer is becoming more important than the producer.

Akademicos: Oh, yes. There was a shift, and it is continuing, from the power of the producer to the power of the customer. Marketers usually say "the customer is always right". Well, not really always (laughs), but we have to make do! Anyway, this increasing power of the customer induced a lot of changes in the conception and practice of management.

Managerios: That sounds very interesting. Is it the (slow?) death of Taylor you alluded to? Tell me, Akademicos.

Akademicos: It is basically easy to understand. When customers have got the choice between many rather similar products – look around you -, they will “dictate” what they want to the producer. If the producer provides them with what they want, they will be satisfied. If the producer doesn’t, they will have a look at competitors. This is what quality is basically about: “give customers what they want”. Originally “quality management” was developed to fix a number of production problems that were costly for the firm, but within a couple of decades, here again there was a shift from the producer to the customer and quality management was oriented towards the satisfaction of customers. So, we can say that the supply chain is reversed. Instead of starting from the producer, it starts from the customer. And the production process is also reversed, we move from a “push” system to a “pull” system.

Managerios: And we do not need to pile up stocks then!

Akademicos: Quite right. Everybody is happy. This is what has been labeled “lean production”. A little fat, for men and firms alike, is necessary but too much fat kills you.

Managerios: Can we do that everywhere in the firm?

Akademicos: Yes, we can. Some have already done it, more and more are doing it, and everyone will have to do it if they want to survive.

Managerios: Then, can you give me some clues about what is going to happen to management in the years and decades to come?

Akademicos: As the philosopher says “Nowhere is the future written”. So the honest answer is “we do not know”.

Managerios: However...

Akademicos: However, we can hypothesize a couple of things if what we already witness happening is to develop.

Managerios: Tell me. I am impatient to hear about it.

Akademicos: Have you taken the Metropolis to go to the Agora lately?

Managerios: Yes, I do regularly.

Akademicos: Have you noticed anything?

Managerios: Let me think. Yes, there are no more drivers!

Akademicos: Quite right. And this is something that will have dramatic and far-reaching consequences for management and society as a whole.

Managerios: Can you explain?

Akademicos: Look back for a while. For millennia, in any business, activities were done by men. Men invented a product, men made this product, men carried the product to the market, men sold the product, men kept the accounts about the products made and sold. Men did everything and everything was done by man. And suddenly, if we adopt a long-term historical perspective, dramatic changes took place.

One day, a little Scot, watching his mother do the cooking, noticed that, when the water was boiling, the lid of the pan was lifted, and he invented the steam machine. By using the steam machine, production processes were radically altered, lead times were reduced, and mass-production became possible. Transport, logistics as we say today, was also completely transformed. Steam engines and trains appeared. Too bad for stagecoaches

and horses! This "mechanization" was the beginning of a new era, a change of paradigm as the philosopher would say. Later, closer to our time, production processes became automatic, and this automation - meaning in fact that machines were working alone - stretched further the revolution in practices.

Managerios: If you say that "machines were working alone", does it not mean that men became less useful, or not useful at all, and lost their jobs?

Akademicos: Indeed. Just like horses lost their jobs, a number of workers also lost their jobs. But with the expansion of production and new economic activities, new jobs appeared for new workers.

Managerios: Didn't some people resist this evolution?

Akademicos: Yes some did and described a world where machines first, then robots would replace men, rule them and in a way turn them into machines, a sort of up-side-down world, an instance of the relationship between the master and the slave. At first, man is the master and the machine is the slave, and later the machine becomes the master and man the slave.

Managerios: And, where are we now?

Akademicos: It seems that we are moving to a new paradigm again with the emergence and development of what is called "intelligent robots". Go to a factory nowadays. What do you see? A very limited number of men, and a huge number of robots. These robots do almost everything, they recognize the different products they make, they pick the right parts of course, they make no mistakes, they are never tired, they never complain, they even control the quality of products themselves; should anything go wrong - a very small probability - they correct the process by themselves. The men are only here to supervise that operations unfold according to plans. But they also disappear little by little, as robots become smarter, and will be gone for good soon. This is what has made management approaches like CAD-CAM first, then Flexible Manufacturing Systems possible, opening new opportunities for firms. While producing on a large scale, it has become possible to customize the product 100%. And so, as we said before, each customer can get exactly what each customer wants; absolute satisfaction! We can combine the advantages of mass-production and the advantages of individual production. You remember what Henry Ford used to say: "You can choose the color of your Model T as long as it's black". Fifty years later, you could choose among a dozen colours, and the price was not higher. Fifteen years ago you could choose among dozens of colours. And today you cannot choose, in a way, because the number of colours knows no limits!

Managerios: I can understand that in industrial production processes. But what about the provision of services? You need to be in contact with someone.

Akademicos: Yes, this is something that most people still believe in. But the answer is absolutely not.

Have you purchased a train or plane ticket lately?

Managerios: Yes, I have.

Akademicos: have you been to a travel agency? There are not many left anyway; this being explained by that. Have you talked to anyone?

Managerios: No, I booked my ticket on-line.

Akademicos: Were you happy with it?

Managerios: Yes, it was quick, easy,... and cheaper.

Akademicos: So, you see. The service was provided without the intervention of a human being and you were satisfied with it.

Managerios: This is frightening in fact. Are we really going to be managed by these intelligent robots... and be happy? But have nothing 'productive' to do.

Akademicos: In theory, yes. In reality, nobody knows. As things stand now, and we are at the beginning of the so-called artificial intelligence, various studies conclude that between 40 to 60% of present jobs are doomed to disappear in the rather near future. Some analysts argue that new, still unknown, jobs will appear. This was true in the past, though much more slowly than usually assumed. But now, if we really are embarked on a new paradigm, there is no guarantee at all that new jobs will replace the lost ones. So, it is quite possible that the classic production function will have to be radically re-considered as the labour factor will have disappeared, and everything that is linked to it such as the notions of productivity, the division of labour - the very structure of an organization -, human resource management, if there is any left. So we will probably have absolutely flat structures without any permanence, that we could call flexible multi-structural organizations depending on customer wishes and the products and services they expect. We will have ephemeral structures, 'flash organizations' as they are already sometimes called, that will appear and disappear, and co-operate in partnership strategies here again depending on customer wishes. New and renewed business eco-systems will come and go, customer-oriented (from one customer to a good many), supply chains will come and go.

Managerios: Oh, that goes beyond my understanding! But what about us, human beings, as 'productive workers'?

Akademicos: When you said 'nothing productive to do', you may be right in the traditional sense. Men have to work (because of Adam and Eve!) to earn a living and be able to afford what they need to live. So for longer than we can remember men have been characterized as 'working creatures' (a number of animals, however, also work!), hence work, though originally a curse in the Biblical tradition, has been given a positive value, and economic and personal life has been organized around work. So, if man came to stop working, another notion that would disappear is unemployment! Do we count babies in the number of unemployed people? Yet, they have no work. A little bit of humorous statistics!

But in the situation we mentioned earlier when you booked your ticket on-line, in fact you were 'productive'. In the present digital world, continuously developing, there is no more real frontier between the producer and the customer. There is constant interaction in the production process. In your relationship with the robot you exchanged information which was understood and taken into account by the robot to develop together a process leading to the expected result. Whether between human beings, between human beings and robots or between robots, we have now entered a system where there is co-production of value for the achievement

of some objective. And this looks like it will develop more and more. We could even imagine that a human being suggests some idea to a robot and that the robot develops it in a dialogue with the human being, and conversely that a robot suggests some idea to a human being and that they jointly develop it. Therefore the process of innovation will also be a co-production between 'natural' intelligence and 'artificial' intelligence.

Managerios: I can agree to that, though it is hard to conceive for me. But if we imagine that people, at least a big number of them, have no jobs because they have been replaced by robots, how can they be 'customers', even co-productive, as they will have no revenue to pay for the products and services they need? Will it be all free for everybody?

Akademicos: Why not?! I understand your worries. Let's analyze the situation and see what it implies.

As you know, in the traditional production function we have two main factors: labour and capital. In other words, we have workers and investors, the former receive a salary, the latter receive an interest or dividends (for this matter we can disregard capital gains). One of the key decisions to make for corporate boards is about the balance between the two, which can ensure the better performance for the company. Now, if we imagine a business world where the (human) labour factor has disappeared, it means that only the people who hold capital will get a return on economic activities. This is certainly not sustainable. The mass of ex-workers will revolt and destroy such a system.

Managerios: What can we do then?

Akademicos: We need to imagine a new way of distributing and sharing the returns. And this is a huge challenge. It goes far beyond a question of management. It involves political decisions with a different vision of society from the one we have been living with for centuries. Long ago already people like Thomas More or Thomas Paine advocated the distribution of some income to everybody so that they could meet their basic needs whatever their 'professional' situation. Organizations, particularly companies whose aim is to generate economic value from the use of production factors cannot do it themselves as on the one hand labour has almost disappeared from the production function and on the other hand most of this labour is in fact idle, making the use of the word labour in its classic sense meaningless. Then it would be the duty of governmental authorities to organize the distribution of income to the whole population on the basis of the value created by automation. Some experiments are already taking place in some countries.

Managerios: What will all these 'idle' people do then?

Akademicos: We will have to move from an economic vision of social life to a social vision of social life. This may sound evident but until today it has not been the case. The social life of people and their contribution to society has largely been determined by economic factors. The aim of (human) society would then be to focus on the creation of 'social value' rather on the creation of 'economic value' (the robots will take care of that). In this way the 'economic jobs' will be replaced by 'social jobs' with the purpose of improving the well-being of every member of society. This could be a way, maybe the way to reconcile the intensive 'intelligent

automation' of activities with the well-being of people. The latter would be disconnected from direct economic factors, but in fact indirectly connected to them through the use of the value created by artificial intelligence for the benefit of all. It is the modalities of appropriation of value that would be changed. It could be done so that people enjoy their time being together without any 'productivity stress' put on them, just looking for a happy and relaxed life.

Managerios: All this sounds attractive, but it seems to me to be totally utopian.

Akademicos: Yes, you could say that it is utopian, but if our way of looking at the economy, at management, at the social organization does not change, we are certainly heading to a catastrophe. And look at the society we are living in at the moment. What is the proportion of people 'working' in the classic economic sense? If we have a global look at OECD countries, which are the most economically developed, we have around 70% of the population who do not 'work' (young people, unemployed people, retired people), and this proportion is increasing, disregarding the phenomenon of intelligent automation. Yet, all these people are not starving! This means that there is already some sort of disguised 'income', but it would be better to say 'incomes' in the plural, which are not directly connected to, and often totally disconnected from any 'economically productive activity'. Therefore it is first a question of change in mentality that is required, to face the challenges of this intelligent automation.

Managerios: You have opened my eyes to a number of things that I did not suspect, Akademikos, and which are not, at least not in this way, taught in management programmes.

Is there anything else that will have a great impact on the way we manage and consequently on our social life? I want to hear more from you.

Akademicos: There is. Have you observed the weather these last years?

Managerios: Yes, more or less.

Akademicos: Have you noticed anything?

Managerios: I think, as my grandmother used to say, that "there are no more seasons". It rains when it shouldn't. It's dry when it shouldn't. It's cold when it shouldn't. It's hot when it shouldn't.

Akademicos: Good observation. That is something else that will change our way of life.

Managerios: I suppose so. However I do not see the connection with management.

Akademicos: Yet there is. But you have to titillate your mind a little to find it.

Managerios: That sounds very exciting. Can you tell me about it.

Akademicos: Well, I think that we have had a long discussion already. We can dispute about it another day. It's time to have a rest, share a good meal and some drinks.

Managerios: Served by robots?

Akademicos: (laughing) You got it!

References

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management

- ARISTOTELES (384-322 BC), *Politika*.
- ARNTZ M., GREGORY T., ZIERAHN U. (2016), "The Risk of Automation for Jobs in OECD Countries: A Comparative Analysis", *OECD Social, Employment and Migration Working Papers*, n. 189, OECD Publishing, Paris.
- ASIMOV I. (1942), *Runaround: The Three Laws of Robotics*.
- BLACKNER J. (1811), *History of Nottingham*.
- BRYNJOLFSON E. (1993), "The productivity paradox of information technology", *Communications of the ACM* 36, n. 12.
- BRYNJOLFSON E., MCAFEE A. (2014), *The second machine age*, WW Norton & Company, New York.
- BUTLER S. (1872), *Erewhon, The book of machines*.
- CAPEK K. (1920), *Rossumovi Univerzální Roboti*.
- CLARK J.B. (1907), *Essentials of economic theory as applied to modern problem of industry and public policy*, MacMillan, London.
- CICERO M.T. (106-43 BC), *De amicitia*.
- CYERT R., MOWERY D.C. (1987), *Technology and employment: innovation and growth in the US economy*, National Academies Press.
- DAVENPORT T.H. (2016), "Wall street jobs won't be spared from automation"
- DOBBS R., MANYKA J., WOETZEL J. (2016), *No ordinary disruption*, Public Affairs, Perseus Books.
- EPICUROS (342/341 - 270 BC), *Letter to Menoeceus*.
- FORD M. (2015), *Rise of the robots*, Basic Books.
- FREY C., OSBORNE M. (2013), *The future of employment, how susceptible are jobs to computerization?*, Oxford University.
- GOD (?), *Genesis 3.19, King James Bible*, 1611.
- HEGEL G.W.F. (1807), *Phänomenologie des Geistes*, Jena.
- KARABARNOUBIS L., NEIMAN B. (2013), "The global decline of the labor share (N° w19136)", *National Bureau of Economic Research*.
- KEYNES J.M. (1930), "Economic possibilities for our grandchildren", in *Essays in Persuasion*, WW Norton & co, New York, 1962.
- KING M.L. (1967), *Where do we go from here: chaos or community?*, Harper and Row, New York.
- LEONTIEFF W. (1983), National perspective: the definition of problems and opportunities", *The long-term impact of technology on employment and unemployment*, National Academy of engineering.
- MARTIN J., WEILL M. (2002), "Is there a life after Taylor?", *Proceedings of the 5th Toulon-Verona Conference*, Lisbon.
- MARTIN J. (2014), "Robot: ban hay thu?" Doanh Nghiep, T.P Ho Chi Minh.
- MARTIN J. (2017), "Who's afraid of Virginia Woolf?", *Sinergie*, vol. 35, n. 103.
- MORE T. (1516), *Utopia*.
- PAINE T. (1797), *Agrarian justice*.
- PLATO (~ 428-348 BC), *The banquet*.
- RICARDO D. (1817), *Principles of Political Economy and Taxation*, Works and correspondence of David Ricardo, Cambridge.
- SMITH A. (1776), *An inquiry into the causes of the wealth of nations*, The Glasgow edition of the Works and Correspondence of Adam Smith.
- SOLOW R. (1987), *New York Times Book Review*.

- STIGLITZ J.E., SEN A., FITOUSSI J.P. (2010), *Report by the Commission on the Measurement of Economic Performance and Social Progress*
- SYVERSON C. (2013), "Will history repeat itself? Comments on 'Is the information technology revolution over?'" , *International Productivity Monitor* 25.
- TALEB N.N. (2010), *The black swan*, Random House
- TAYLOR F. (1911), *The principles of scientific management*, Harper & brothers, New York
- THE ECONOMIST (2016), automation and anxiety

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