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EUROPE FACING THE DIGITIZATION OF WORK

The Political Risks

Julien NOCETTI

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Abstract

The nature of work has been remarkably transformed in a short period of time through the combined effect of globalization and technological disruptions. Ongoing technological breakthroughs, carried by increasingly digitalized and automated economic activities, and the “democratization” of artificial intelligence, heighten fears of massive job destructions and the deepening of social inequalities, to the detriment of downgraded and pauperized middle classes. For Europe, the strategic consequences of the risks of social and political instabilities linked to the transformation of work are multiple: democratic malaise which intensifies domestic socioeconomic challenges, threat looming over Western political and military alliances (transatlantic relations, European “solidarity”). Above all, current breakthroughs make education and lifelong training high-politics stakes, feeding “updated” power relations between states.

Résumé

Sous le double effet de la mondialisation et des bouleversements technologiques, la nature du travail a été transformée en un temps très réduit. Les ruptures technologiques en cours, portées par la numérisation et la robotisation croissantes des activités économiques et la « démocratisation » de l’intelligence artificielle, attisent les craintes de destruction massive d’emplois et de creusement des inégalités sociales, au détriment de classes moyennes déqualifiées et paupérisées. Pour l’Europe, les conséquences stratégiques des risques d’instabilités sociales et politiques liées aux transformations du travail sont multiples : malaise démocratique accentuant les défis socio-économiques internes, menace sur les systèmes d’alliances noués entre Occidentaux (relation transatlantique, « solidarité » européenne). Surtout, les ruptures à l’œuvre font de l’éducation et de la formation des enjeux de « haute politique » en devenir, alimentant des rapports de force renouvelés entre États.

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Introduction

In a 2013 article, the American historian Walter Russell Mead identified the future of employment as one of the five most pressing challenges facing the United States, attributing “responsibility” for the dual progression of job shortages and job precariousness to increasing automation and the rapid digitization of this automation.¹

We should not find Mead’s proposition surprising, with disruption caused by the technological revolution currently resurrecting the issue of the labor market of the future and its transformation – but this is nothing new. Leaving aside the tensions created by the industrial revolutions of the past two centuries,² the last 40 years have been marked by a radical change in the labor market: the expansion of the tertiary sector, the increasing feminization of jobs, the raising of skills levels and polarization of jobs, flexibility and dualization of the labor market, in an economic context characterized by intensified global competition, worldwide integration of value chains and business production processes, and an accelerated pace of technological change.³

The new factor is the speed and magnitude of the changes – or rather, breakthroughs – in operation, which should be considered first from the “global” perspective. The upsurge of the “fourth technological revolution”, or the convergence of the data economy – based on data that becomes ever greater and more diverse⁴ – robotics, the Internet of Things and artificial intelligence (AI), is in the processes of unsettling the world economy and the life of societies. Unlike the previous two industrial revolutions which were based on coal and oil, the digital revolution does not give us a new source of energy (or distribution method), but a different concept of the way in which organizations function – governments, societies and businesses⁵. Unfolding at an exponential and non-linear pace, another distinguishing factor of this revolution is its breadth and its depth, since the convergence mentioned above is compounded by other aspects of growing interconnection between computer science, nanoscience and

1. W. Russell Mead, “The Jobs Crisis: Bigger than You Think”, *The American Interest*, May 10, 2013.

2. R. Allen, “Lessons from History for the Future of Work”, *Nature*, Vol. 550, No. 7676, October 2017.

3. C. Jolly and E. Prouet (eds.), “L’avenir du travail : quelles redéfinitions de l’emploi, des statuts et des protections ?”, France Stratégie, *Working Paper*, March 2016.

4. 90% of the data currently circulating in the world has been produced over the past two years.

5. D. Cohen, *Le Monde est clos et le désir infini*, Paris: Albin Michel, 2015, p. 178.

biotechnology.⁶ Add to these features a systemic impact, since global equilibriums cannot but be “disrupted” by the universality and the speed of this wave of innovation – the first in history to be fully globalized.⁷

The “speeded-up” age in which we live, or the combination of technological breakthroughs, globalization of trade, and climate change,⁸ logically raises the issue of the capacity of human and economic organizations to adapt. Sundar Pichai, CEO of Google – this being a company that is at the heart of the ongoing changes – expressed doubts over mankind’s acceptance of such fast and far-reaching change.⁹ Coming from the director of one of the leading global brands and market caps, this comment is symbolic and should invite us to analyze the desynchronization between our democracies and technology, and also the causes of “the disenchantment of the world” which in the West is reaching a peak.

Part of the dissatisfaction of North American and European societies has its roots in the seemingly out-of-control globalization: the end of the Washington Consensus and the absence of leadership is making people worry about their future.¹⁰ Ongoing technological breakthroughs are heightening fears of massive job destruction and social inequality, resulting, in the short to mid term, in the splitting of Western societies into, on the one hand, a population of “haves” with access to high added-value jobs and high purchasing power, and on the other hand, a population of “have nots”, with no job or having access only to low-paid jobs and dependent on welfare benefits for survival.¹¹

This kind of situation could lead to major social unrest or potentially to serious internal conflicts. Indeed, the middle classes – the bedrock of democratic societies – who suffer the highest cost in relation to the transformation of the labor market, may manifest their insecurity and their loss of confidence in the Western political system and its values through increased recourse to populist rhetoric and voting, even potentially a demand for authoritarianism. The risks of social instability related to labor market transformation thus illustrate a point of convergence between traditional geopolitical risks (territorial disputes, economic wars, failed

6. The “NBIC revolution” (nanotechnology, biotechnology, information technology and cognitive science) is often associated, by transition of ideas, with the transhumanist school of thought. See M. Atlan and R.-P. Droit, *Humain : Une enquête philosophique sur ces révolutions qui changent nos vies*, Paris: Flammarion, 2012.

7. Y. N. Harari, *Sapiens : Une brève histoire de l’humanité*, Paris: Albin Michel, 2015.

8. T. Friedman, *Merci d’être en retard. Survivre dans le monde de demain*, Paris: Saint-Simon, 2017, p. 181.

9. “Google CEO Sundar Pichai: ‘I don’t know whether humans want change that fast’”, *The Guardian*, October 7, 2017.

10. Speech by Gordon Brown at the “Rendez-vous de Bercy” economic debate, Paris, November 21, 2017.

11 The “hourglass” labor market created by digitization has been analyzed in depth, in the case of America, by David Autor. See “The Growth of Low-Skill Service Jobs and the Polarization of the US Labor Market”, *American Economic Review*, Vol. 103, No. 5, 2013, pp. 1553-1597.

states, etc.) and the new socio-economic risks related to digitization and automation (rise of populism, diversification of forms of protest, mistrust of elites, etc.). All these factors are converging within a volatile environment where global growth is unevenly distributed, the expectations of Western public opinion remain high, and governments' room for maneuver to implement structural reforms is still weak.¹²

This report, whilst taking care not to overdramatize the consequences of digitization and the automation of jobs, does however suggest that deepening inequality as a *systemic risk* in Western societies – particularly in Europe – is liable to lead to a profound destabilization of our social and political pact.¹³

12. "Inequality and Prosperity in the Industrialized World: Addressing a Growing Challenge", Citi, *Global Perspectives and Solutions*, September 2017.

13. Emerging and developing countries are also exposed to the risks of a form of technological unemployment, but the focus of the analysis here is on the West. For an overview of the challenges posed in developing markets, see S. Varkey, "Poor Education Leaves Emerging Markets Vulnerable to Automation Shock", *Financial Times*, August 15, 2017, available at: www.ft.com.

Digital Technologies Upset Jobs and Labor

Disruption as an operational model

Putting forward the idea that digital technology unsettles the traditional economic balances has become a commonplace. The digital revolution presents some unprecedented characteristics: it affects every business sector and blurs the dividing lines between industry and services; it is universal, it is happening in real time and makes speed into a key factor. The new dividing lines lie not so much in technology as in humans, with potentially vast consequences. Economic consequences, with the disruption of development models tipping them towards consumers and distributors at the expense of producers. Social consequences, with, as we will see, job polarization and shortages, in parallel with workforce erosion. Legal consequences, with issues raised by the ownership, protection and terms of use of personal data. Political consequences, with governments' powerlessness to regulate and tax certain digital platforms – although this idea should be tempered in the light of the European Commission's current proactive approach, encouraged by several of the Union's member states, to the issue of digital taxation.¹⁴ Strategic consequences, next, which, with the digital economy being dominated by the United States and China, are indissociable from other nations' loss of sovereignty.¹⁵ Finally, ethical consequences, with the proliferation of projects to alter or “enhance” humans through managing their genetic heritage and giving them bionic limbs.

The major digital platforms are upsetting the established rules. The integration of services into products will cancel out once and for all the division between industry and services, as for instance in automotive manufacture and the construction industry. Public services will be encouraged to break with the massification model and adapt to individuals (online education, predictive medicine, etc.). Compartmentalized, hierarchical chain structures are being rendered obsolete by open collaborative platforms.¹⁶ In parallel with this “uberization” of the

14. Speech by Bruno Le Maire and Margrethe Vestager at the “Rendez-vous de Bercy” economic debate, Paris, November 21, 2017.

15. J. Nocetti, “Souveraineté et gouvernance mondiale du numérique”, in: P. Türk and C. Vallar (eds.), *La Souveraineté numérique : le concept, les enjeux*, Paris: Mare & Martin, 2017.

16. N. Colin and H. Verdier, *L'âge de la multitude. Entreprendre et gouverner après la révolution numérique*, Paris: Armand Colin, 2015.

traditional economy, governments are being financially weakened by the tax optimization strategies of the digital economy's key stakeholders.

Are digital innovations a source of job creation and opportunities or, instead, will they destroy them on a massive scale? Technical progress has regularly been perceived as a threat to jobs. It is said that advances in digital technology – and its applications via robotics, automation and AI – threaten many occupations, including the most highly skilled.

Three main types of application are liable to have a significant impact on the job market, through the increased productivity they generate. The first is advanced or decision-making IT, which is based primarily on machine learning, the exploitation of Big Data and cloud computing, and is able to handle tasks that up to now have been performed by humans. The second is connected objects, which link digital and physical entities and make it possible to retrieve, store, transfer and process multiple data relating to them. The third is advanced robotics, including the development of autonomous vehicles, which will upset transport and cities. Most of these technologies are converging in the upsurge and increasing sophistication of artificial intelligence.

The contentious debate on the “destruction” of jobs

Fears about “the end” or “the destruction” of jobs have become keener than ever due to the density and speed of the technological and economic changes we are experiencing, reviving anxieties over mass technological unemployment.¹⁷ Some experts argue that the next wave of automation will leave many workers in a situation analogous to that of horses during the revolutions of mechanized agriculture and transport – in other words, unable to remain economically competitive compared to machines, or to acquire new, useful, marketable skills.¹⁸

Prevailing thinking at present is a mixed appraisal of the impact of technological breakthroughs, and this must have a connection with the emphasis placed on the risks of AI in popular culture and public debate, in both Europe and the United States.¹⁹ In an interview on an American radio station, former U.S. Secretary of State Hillary Clinton expressed her alarm at the unpreparedness of our societies in the face of the rapid development and growing sophistication of AI:

17. This term was coined by John Maynard Keynes in 1931, the British economist expressing his alarm at the replacement of workers by machines.

18. E. Brynjolfsson and A. McAfee, “Will Humans Go the Way of Horses?”, *Foreign Affairs*, September 2016.

19. Statements made at the time of the author's hearing at “Mission Villani IA”, Paris, October 20, 2017.

“What are we going to do when we get driverless cars? It sounds like a great idea. And how many millions of people, truck drivers and parcel delivery people and cab drivers and even Uber drivers, what do we do with the millions of people who will no longer have a job? We are totally unprepared for that.”²⁰

The words of the former presidential election candidate join the less alarmist words of Barack Obama, whose primary concern was the rise in inequalities resulting from massive job losses.²¹ Similarly, most of Silicon Valley’s successful entrepreneurs anticipate massive job destruction due to the exponential sophistication of smart robots. In May 2017 the founder of Facebook, Mark Zuckerberg, in his speech to Harvard students, for example, spoke of the tens of millions of jobs about to be destroyed by AI.²² Bill Gates, Elon Musk and the Google executives also fear that entire industries will vanish, because they do not think Schumpeterian adjustment, the destruction of old jobs quickly followed by their replacement with new activities, will work.

Beyond the public debate, the differences in analysis can be explained to a large extent by the variation in methodological approaches and by the difficulty inherent in any prospective action taken in this extremely fluid area: often, personal convictions take precedence when making an overall assessment of the future effects of automation, robotics and AI on the labor market.²³

Studies and books published in recent years often focus solely on the job losses aspect, and find themselves facing a delicate question of methodology as regards assessing the separate impacts of digital and robotic technologies on employment, as compared with other technological advances or, above all, other evolutionary factors of the labor market. The basic statistical data to facilitate this is not always available, and this kind of assessment inevitably includes an element of convention.

The debate on the anticipated threat to employment by automation was strongly influenced by the publication in 2013 of a study by two researchers from the University of Oxford.²⁴ According to their research, 47% of jobs in the United States (and 35% in the United Kingdom) were at high risk of being automated over the next 10 or 20 years, and 19% at

20. November 22, 2017, transcript available at: www.hughhewitt.com.

21. “Barack Obama, Neural Nets, Self-Driving Cars, and the Future of the World”, interview with *Wired*, August 24, 2016, available at: www.wired.com.

22. “Mark Zuckerberg’s Commencement Address at Harvard”, *Harvard Gazette*, May 25, 2017, available at: <https://news.harvard.edu>.

23. Author interview with Nicolas Mialhe, co-founder of “The Future Society”, Harvard Kennedy School, Paris, November 9, 2017.

24. C. B. Frey and M. Osborne, “The Future of Employment: How Susceptible Are Jobs to Computerisation?”, University of Oxford, Oxford Martin School, 2013.

medium risk, making in total almost two thirds of jobs potentially set to disappear. In 2014, a report by the consultancy firm Roland Berger estimated, for France, that 42% of occupations have a high probability of automation due to digitization of the economy, and that three million jobs could be destroyed by digitization by 2025. This study argues that, from that point on, it is not only manual occupations that will be automated but that more and more intellectual tasks will be taken over by digital tools.²⁵ Other studies, transposing the findings of the original work by Frey and Osborne, arrive at a similar order of magnitude: 49% in Japan²⁶ and 54% in the European Union (EU).²⁷

Without actually speaking out against technology, some experts, mostly Americans, argue that the increase in productivity and automation of tasks will massively cut jobs to the extent of creating a world without workers, or very nearly. Jeremy Rifkin, as early as 1997, postulated that this trend will only increase: ultimately, only a few very highly skilled jobs will still exist. The labor market will experience a radical dualism, with on one side the elites handling abstraction and value creation, and on the other side the working masses in a very precarious situation or simply unemployed.²⁸ Martin Ford's view is that technological change is leading to polarization of jobs; in other words, mid-range jobs are proving unnecessary, and we are just left with, on the one hand, a small minority of highly skilled people who are comfortable with technology, and on the other, low-skilled individuals, limited to the tasks that can still not be automated to any extent, such as the human services sector.²⁹ Following this line of reasoning, Justin Reich, professor at Harvard, depicts the near future of employment:

“There will be a labor market in the service sector for non-routine tasks that can be performed interchangeably by just about anyone – and these will not pay a living wage – and there will be some opportunities created for complex non-routine work, but the gains at this top of the labor market will not be offset by losses in the middle and gains of terrible jobs at the bottom. [...] The jobs that remain will be lower paying and less secure than they are now. The middle is moving to the bottom.”³⁰

25. Roland Berger Strategy Consultants, “Middle Classes Facing Digital Transformation”, October 2014.

26. Study by the Nomura Research Institute, 2015, reported by *Motherboard*, December 3, 2015, available at: <https://motherboard.vice.com>.

27. “Automatisation et travail indépendant dans une économie numérique”, *Synthèses sur l'avenir du travail*, Paris: Éditions OEDC, 2016.

28. J. Rifkin, *La Fin du Travail*, Paris: La Découverte, 1997.

29. M. Ford, *L'avènement des machines*, Limoges: FYP, 2017.

30. J. Koebler, “If Schools Don't Change Robots Will Bring on A Permanent Underclass”, *Motherboard*, August 6, 2014, available at: <https://motherboard.vice.com>.

At its meeting in Davos in January 2017, the World Economic Forum also publicized a worrying prognosis, taking the view that the “fourth industrial revolution”, that of AI, the Internet of Things and 3D printing, is creating new global risks and is tending to destroy more jobs than it will create, which it suggests will result in a net loss of 5.1 million jobs in 15 national economies, including France, by 2020.³¹ Its next meeting, in January 2018, re-stated these fears, especially on artificial intelligence, and stressed the urgent need for a “skills revolution” in order for us to adapt to changes in the job market.³²

The Oxford study, often cited in the media, does however suffer from a bias that many experts and organizations have sought to expose. On the one hand, the study deals only with the “destructive” side of creative destruction. On the other hand, it expresses confusion between tasks and occupations; in fact, technology can make tasks disappear inside an occupation that survives.³³ History also teaches us that the majority of the jobs can be only partially automated. A study by the McKinsey Global Institute on 46 countries representing 80% of the global labor force found that less than 5% of jobs were likely to be fully automated, and that around 60% included 30% of automatable tasks.³⁴ Pursuing this line of thought, the Organization for Economic Co-operation and Development (OECD) reached the conclusion that investment in digitization and robotization has no negative impact on jobs in the 18 countries analyzed, taking into account the compensatory phenomena. For the future, the OECD study estimated that on average “only” 9% of jobs in these member countries are threatened by automation.³⁵ In 2018, the Organization currently estimates that the number of jobs that could be automated in the future stands at 14% (in 32 OECD countries). Of that percentage, the study estimates that the probability of them being automated is at least 70%.³⁶

The wide gulfs between employment specialists’ projections demonstrate in themselves that there is real uncertainty that cannot be resolved. Thus for instance, the United Nations, through the work of the International Labor Organization (ILO), avoids making any definitive

31. World Economic Forum, *The Global Risks Report*, January 2017.

32. World Economic Forum, *The Global Risks Report*, January 2018.

33. N. Bouzou, *Le Travail est l'avenir de l'homme*, Paris: Éditions de l'Observatoire, 2017, p. 43.

34. McKinsey Global Institute, “A Future That Works: Automation, Employment and Productivity”, January 2017.

35. M. Arntz, T. Gregory and U. Zierahn, “The Risk of Automation for Jobs in OECD Countries: A Comparative Analysis”, OECD Social, Employment and Migration Working Papers, Paris: OEDC, No. 189, 2016. In France, a major study by the Conseil d'orientation pour l'emploi has come out in support of the OECD findings, showing for instance that fewer than 10% of existing jobs present a set of vulnerabilities liable to threaten their existence in a context of digitization and automation. See: “Automation, numérisation et emploi”, Conseil d'Orientation pour l'Emploi, January 2017.

36. “Putting Faces to the Jobs at Risk of Automation”, OECD, *Policy Brief*, March 2018.

statements on the future of work.³⁷ Two factors in this uncertainty should be highlighted. The first concerns the structure of jobs and the content of occupations: the Californian think tank Institute for the Future estimated that 85% of the jobs that will exist in 2030, were not yet in existence in 2017...³⁸ Furthermore, some prefer to talk about the “displacement” rather than the destruction of jobs, stressing that the essentially “human” aspects of work are of fundamental importance.³⁹ The second factor relates to the time-lapse that is always possible between the pace of rolling out innovations linked to automation, digitization and AI within the economy and society, and the timing of adaptive reactions on the labor market.⁴⁰ Special attention should therefore be paid to the potentially destabilizing transition phases.

37. “The Future of Work We Want: A Global Dialogue”, report of the conference of that name, Geneva: International Labor Organization (ILO), April 6-7, 2017.

38. “The Next Era of Human-Machine Partnerships: Emerging Technologies’ Impact on Society & Work in 2030”, Institute for the Future/Dell, 2017.

39. “Skill Shift: Automation and the Future of the Workforce”, *Report*, McKinsey Global Institute, May 2018.

40. Author interview with AXA, Paris, November 24 2017.

Risks of Instability in Europe

Deepening inequalities and erosion of the middle classes

The identified risks of work transformation are as much consequences of the Schumpeterian acceleration we are experiencing as of technology's capacity to change economic and social hierarchies. Two main risks – which are interrelated – will be dealt with here.

Growing inequalities

The risk lies less in the disappearance or the transformation of jobs than in the growing inequalities arising from this. This approach has been developed particularly by the American economist Jeffrey Sachs,⁴¹ whose view is that the two phenomena in operation – the increased gains in productivity made possible by robotization and AI, and the destruction of jobs and consequent impoverishment of the population – are not exchangeable but coherent.⁴² These two trends may indeed happen simultaneously: robotization and AI will benefit those with capital, whilst the employees whose jobs are being lost or contested by machines will become poorer.

The growth in inequalities is a challenge that becomes all the keener as the inequalities become systemic. The major beneficiaries of the “fourth technological revolution” are the providers of intellectual or physical capital: innovators, investors and shareholders; this factor widens the gap between job-dependent individuals and holders of capital – a politically-sensitive topic in the United States, for instance, and one that enabled Bernie Sanders, during the Democratic Primaries in 2016, to put up serious competition to his rival Hillary Clinton.

This consideration is one of the idiosyncrasies of the digital economy, characterized by the formation of global and asymmetric oligopolies that raise significant problems in terms of wealth and power distribution – and thus great challenges for public policies. The major platforms, in effect,

41. This is also the view put forward by Masood Ahmed, president of the Center for Global Development and a former senior official at the International Monetary Fund (IMF), World Policy Conference, Marrakesh, November 4, 2017.

42. J. Sachs, “The Best of Times, the Worst of Times: Macroeconomics of Robots”, Jeffsachs, May 26, 2016, available at: <http://jeffsachs.org>.

reward a tiny minority; the “winners” are those who manage to integrate fully into ecosystems dominated by innovation, providing new ideas, business models, products and services, rather than those who can only offer low skills or “ordinary capital”.⁴³ These dynamics partly explain why technology can be regarded as one of the chief causes of wage stagnation – or even reduction – for most the population of the most developed countries.

This kind of economic growth, dominated by the principle of “winner takes it all”, generates a growing sense of disillusionment – as expressed in recent polls on perceptions of living standards and wages⁴⁴ – and frustration. The harshness of the patterns imported from Silicon Valley is compounded by two other major issues that illustrate deepening inequalities affecting the world of work.

Firstly, the transition from an industrial economy to a knowledge-based economy has profoundly altered the social geography – and urbanization – of developed countries. In other words, an issue such as the digital divide becomes a vector for powerful socio-economic inequalities and encourages increasingly radical political behavior. In the United States, most of the key topics of the presidential campaign – jobs, globalization, immigration – shared the common factor of being deeply rooted in the concerns of a significant part of the electorate with regard to the consequences of technological upheaval. A San Francisco geek has more in common (including his worldview, his confidence in the future, etc.) with a programmer in Bangalore, a venture capitalist in London or even a hacker in St Petersburg, than with his less switched-on fellow citizens in the Midwest. This particular aspect can also be found in Europe – especially in the United Kingdom – although regional inequalities and social classes are less marked in continental Europe, notably France.⁴⁵

Secondly, the issue of education is more significant than ever: 90% of jobs will require digital skills by 2030.⁴⁶ The correlation between education (primary, secondary and higher) and the requirements of jobs created by new technological breakthroughs will be a major factor for Western political classes in their youth relations. On the European and international levels, the abruptness of the economic transition, combined with efforts towards this correlation, will boost already palpable trends in the field of

43. K. Schwab, *The Fourth Industrial Revolution*, London: Penguin, 2016, p. 92. See also on this subject J. Lanier, *Internet : qui possède notre futur?* Paris: Le Pommier, 2014.

44. For example, a survey by France Stratégie conducted in 2016 revealed that a third of French respondents were worried about eventually falling into poverty, and a corollary of this was the insidious rise of anti-globalization and anti-European sentiment. See “Lignes de faille. Une société à réunifier”, France Stratégie, *Report*, October 2016.

45. The French case was analyzed specifically by Christophe Guilluy - without however dwelling on the role of technology - in *La France périphérique. Comment on a sacrifié les classes populaires*, Paris: Flammarion, 2015.

46. J. Chambers, Cisco Chief Executive, at the “Rendez-vous de Bercy” debate, Paris, November 21, 2017.

attracting the most able and cutting edge candidates, even to the point of waging a “skills war” between major powers.⁴⁷

The disengagement of the middle classes

A central cause of the rise in income inequality is the polarization of the labor market in many advanced countries, in other words the destruction of intermediate “routine” jobs. At the same time, demand for very highly skilled labor has increased and demand for very low skilled work (sometimes not easily automatable) has held up globally, with differences between countries, directly resulting in a reduction in the jobs held by the “middle classes”. Technology, as we have seen, plays a substantial role in these changes, although it is not the only factor responsible for the changes in jobs. Secure employment, which had slowly established itself and become the norm at the end of the 20th century, is slipping back;⁴⁸ job insecurity is growing in parallel with the boom in large digital platforms.

These parameters – the technological and economic infrastructure of modern-day capitalism – are launching a head-on attack upon the foundations of the middle classes,⁴⁹ in other words, in particular, a society based on paid employment, which enables individuals, via their salaries, to achieve a predetermined standard of living, to access social security, to aspire to upward social mobility, and to make progress from the point of view of reducing social inequalities in the face of educational success. These foundations, which had begun to be undermined in the mid-1970s, were further unsettled by the phenomenon of globalization and the accompanying rapid rise of the emerging middle classes,⁵⁰ accentuating still more the fragility of the working classes and lower middle classes in the developed countries.⁵¹

The theme of the “decline”, the “misery” or the “crushing” of the middle class has been at the heart of recent electoral debate, controversially, in the US⁵² and more indirectly in Europe. Particularly in France, this topic has been the subject of many works by sociologists feeding the theory of the “widespread downgrading” of the middle classes, or in broader terms, of the erosion of the historical roots of democratic societies. Indeed, perceived from its inception by the German philosopher

47. S. Kampeter, president of the German employers, at the “Rendez-vous de Bercy” debate, Paris, November 21, 2017.

48. P. Flichy, *Les Nouvelles frontières du travail à l'ère numérique*, Paris: Seuil, 2017, p. 7.

49. Author interview with the CEO of a French media organisation, Paris, November 28, 2017.

50. On the rise of the emerging middle classes, see H. Kharas, “The Unprecedented Expansion of the Global Middle Class”, Brookings Institution, *Working Paper*, No. 100, February 2017.

51. L. Chauvel, *La Spirale du déclassement. Essai sur la société des illusions*, Paris: Seuil, 2016.

52. For a historical perspective of the debate on the erosion of the middle class in the United States, see R. Beauchard, “Entre citoyenneté et classe moyenne : les défis du futur président”, *Potomac Papers*, No. 25, Ifri, February 2016, p. 15-24, available at: www.ifri.org.

Georg Simmel as the pillar of modern societies that should be the means of avoiding confrontation between capitalists and proletarians,⁵³ the middle class sits at the heart of adhesion to the democratic – and thus the European – project, and ensures its sustainability.

The rise of populism and social tensions

If a united, numerically-significant middle class plays a role in strengthening both the level of trust between citizens and the State and also the capacity of the former to embrace the future, a disintegration of this middle class is liable to nourish various forms of political and social instability.⁵⁴

Historically, the middle classes, favorable to the European construct, established democratic Governments as their heads of state, rarely departing far outside the centre-left to centre-right spectrum. Now in distress, the middle classes are moving more toward populism and protectionism: the slogan of Donald Trump during his election campaign, *Make America Great Again*, clearly expresses the idea that the middle classes are turning instinctively toward nationalism. A destabilized, disillusioned middle class will be easily swayed towards protectionist, anti-elitist policies, a phenomenon referred to by Joseph Stiglitz as far back as 2012 in relation to the present day⁵⁵.

The populist wave to which a number of democracies have been subjected, primarily the US and European countries, shows in particular public opinion's rebuttal of the reality of a highly complex, multilateral and technologically dizzying world: thus "a large section of the electorate has a more or less confused feeling that a world is being built where they no longer have a place".⁵⁶ In other words, the pace of technological change is faster than the capacity of humans and societies to adapt; institutions and technologies are now evolving in two separate time zones.

In fact, political impotence potentially nurtures a growing demand for authoritarianism, and simultaneously a decline in commitment to democracy. In France, a 2015 survey found that 67% of the French wanted leadership of the country be entrusted to unelected experts, and 40% would support an authoritarian political power "freed from the constraints

53. C. Peugny, "Les classes moyennes déclassées? Les limites d'une analyse globalisante", *Les Cahiers français : documents d'actualité*, No. 378, La Documentation française, 2014, p. 52.

54. "The Squeezed Middle Class in OECD and Emerging Countries: Myth and Reality", OECD, *Issues Paper*, December 2016, p. 5.

55. J. Stiglitz, *The Price of Inequality: How Today's Divided Society Endangers Our Future*, New York: W.W. Norton, 2012.

56. Y. Caseau, "Le futur du travail et la mutation des emplois", Frenchweb.fr, December 5, 2016.

of democracy”.⁵⁷ In the United Kingdom, an opinion poll conducted between 2011 and 2015 suggested that half the British adults surveyed had a “populist and authoritarian” vision of the world.⁵⁸ In Germany, a survey conducted in 2016 reported that nearly half of respondents were skeptical about the functioning of democracy in the country, with 20% of them supporting of the notion of a “single party representing the people”.⁵⁹ Behind these figures, the idea that democracy is in retreat amongst the middle class is not only realistic, but also forecast in short-term and medium-term scenarios.⁶⁰

The deepening of inequalities that have become unsustainable is traditionally the catalyst for political conflict, or even revolution. An extreme concentration of wealth is liable to fuel conflict between those who control the resources. In the present situation, that of major technological breakthroughs, the system of representative democracy is being directly targeted, because in practice the fate of billions of humans lies more in the hands of private operators than of officially elected representatives. The United Nations could thus make way for Company-States whose sphere of influence would not be limited to a unified geographical territory, but much more to a network of “affiliates”. Some feel that the gap between the research and development work of GAFAM (Google-Amazon-Facebook-Apple-Microsoft) and the laborious progress of our democracies is becoming more and more striking: the former, thanks to the AI, “will provide better health and education than public services can”.⁶¹

If AI, within a still unknown timescale, leads to the permanent replacement of workers, the technologically more developed countries could face the “paradox of plenty” – an analogy with oil, in a pattern where, in most of the producing and exporting countries, the owners of capital are too closely concentrated and the political context is frequently unstable.⁶²

57. Ifop opinion survey (with Atlantico), “L’attrance des Français pour un gouvernement technocratique ou autoritaire”, November 2, 2015.

58. YouGov poll, April 2016, cited by the BBC.

59. Data cited in: R. Foa and Y. Mounk, “The Signs of Deconsolidation”, *Journal of Democracy*, Vol. 28, No. 1, January 2017, p. 9.

60. Author interview with France Stratégie, November 14, 2017, and AXA, Paris, November 24, 2017.

61. L. Alexandre’s foreword to the Journées parlementaires de l’intelligence artificielle, Paris, November 14, 2017.

62. G. Allen and T. Chan, “Artificial Intelligence and National Security”, Belfer Center for Science and International Affairs, Harvard Kennedy School, *Belfer Center Study*, July 2017.

Strategic implications for Europe

Risks to alliance systems

Growing instability within the OECD countries could result in a wave of “illiberalism” in the face of the democratic malaise being experienced, and in turn aggravating the internal socio-economic challenges. Such a situation could threaten the alliance systems forged between Westerners.

Two principal levels of analysis must be distinguished here: firstly, the future of the transatlantic relationship. Whilst Europe and the United States have virtually identical exposure to globalization and the same technological penetration – two factors put forward to explain the growth of inequalities – the two zones retain vast differences in terms of taxation, social model and degree of financialization of the economy (not including the United Kingdom). These differences in approach will be reinforced with the growing importance of the digital economy on each side, and especially of the policies adopted, in Washington and in Brussels, with regard to the major platforms. The example of the data issue – sharing, storage, processing by private stakeholders and governments – clearly illustrates the conceptual gulf between the EU and the United States.⁶³ Added to this are the protectionist and nationalist trends emerging in both areas – with Donald Trump’s United States taking the lead – which could result in a challenge, in the medium term, to the very core of the transatlantic relationship: defense and security cooperation. In terms of political leadership, the coming to power of populist leaders includes a frequently overlooked aspect of foreign policy: these leaders would be more likely to aggravate the escalation of conflicts and to subvert the international liberal order.⁶⁴

Secondly, in Europe, the differences in development model between the major powers of the continent will attract rivalries between the North and the South; thus Germany has integrated precarization – temporary or permanent – into its power strategy. The recent social conflict between the metalworkers’ union and employers over working hours is as much an illustration of the “two gears” of the German economy as of the differences between the French and German situations. Whatever the outcome of the conflict, the results will be a more intensive use of machines capable of making savings on work that has become more costly. This will favor employment and pay for highly skilled employees and accentuate the

63. H. Farrell and A. Newman, “The Transatlantic Data War: Europe Fights Back Against the NSA”, *Foreign Affairs*, January-February 2016.

64. D. Drezner, “The Angry Populist as Foreign Policy Leader: Real Change or Just Hot Air?”, *Fletcher Forum of World Affairs*, Vol. 41, No. 2, Summer 2017, p. 39.

middle classes' drift towards humbler, less congenial and less secure occupations – at the risk of weakening social cohesion.

This factor will be reinforced by advances in AI, and as a consequence will create rifts in political debate among Europeans, and potentially a hardening of attitudes. These differences will be fueled by a combination of factors differing widely in nature – an aging population (and decrease in number of assets), fiscal competition between member states jeopardizing the funding of the welfare state, erosion of progressive tax in some countries, etc. – which will impact on the relationship between the Continent's leading economic and industrial power, Germany, with the rest of the EU, starting with France. A pessimistic view thus suggests an asymmetric risk growing within the EU, which will intensify the centrifugal forces in it. As a counterpart to this, such a situation raises the question of a potential “return of anger” as a mode of governance in Europe, after long-term efforts by the continent aimed at restraining this kind of emotion in international relations.⁶⁵

Education rising up the chain of diplomatic value

More generally, issues that have thus far been deemed as falling within the remit of traditional socio-economic governance – education and training, social security, digital taxation and the taxation of robots – will start to be seen as “high politics” and will lead to the forming of new international power relationships.

On these matters, the political agenda of West, still weakly underpinned in some countries, will collide head-on with the increasingly forceful rhetoric of the major digital stakeholders. Thus, their CEOs will no longer have any hesitation in taking a public stance on the issues of education and employment.⁶⁶

The management of transition to new ways of working, new occupations and tasks, in constantly changing environments, will thus turn training into a strategic weapon for states. The pace of adaptation of human capital – or its “mental flexibility”⁶⁷ – will be key to growth over the next two decades, whilst representing a powerful catalyst for social tensions.

In terms of human capital, two levels must be distinguished. The “skilled sector” on the one hand: having a critical mass of intellectual potential is imperative – and will become increasingly so – as a

65. A. Linklater, “Anger and World Politics: How Collective Emotions Shift Over Time”, *International Theory*, Vol. 6, No. 3, November 2014, pp. 574-578.

66. Thus, M. Zuckerberg, in a speech at Harvard in May 2017, advocated universal income and extended healthcare.

67. Y. N. Harari, “Reboot for the AI Revolution”, *Nature*, Vol. 550, No. 7676, October 2017.

fundamental strategic basis for governments and big business. Three aspects must converge to achieve this: the “production” of talent in a higher education system that is responsive to new challenges; the “transformation” of talents, by the acquisition of new skills through a completely overhauled vocational training system; and the “attracting” of talent. The democratization of AI will compound all these elements by stepping up the talent race – states, tech platforms, start-ups and major traditional companies are struggling to attract the top experts, often to the detriment of public research.⁶⁸

On the other hand, education as a whole, both in its practice and in its teaching of understanding and mastery of technological change;⁶⁹ controlling the temporal pressures specifically connected with AI (its speed) whilst dispelling fears about its irruption – gradual or abrupt, according to sector⁷⁰ – can only be achieved via a massive effort in education.⁷¹

These issues lead on to a consideration of the role and the place of States in the changes that are happening. Between 1993 and 2015, the majority of OECD countries cut public funding for vocational training.⁷² In parallel, major disparities became evident between Western educational systems: those in which the state has a greater involvement – as in France and Germany, and also in the Scandinavian countries, for example – in contrast to highly liberalized systems, such as in the United Kingdom and the United States, seem to show a greater capacity for resistance to the political risks stemming from socio-economic upheaval.

As has been already mentioned, the redistribution issue, closely related to the fiscal policies of States and to ageing populations, will raise tensions between northern and southern Europe and will crystalize within EU bodies and the Eurogroup. The major risk is that of the proliferation of Occupy Wall Street-type phenomena with the rise in power – and potentially increasing radicalization – of militant and political organizations such as the 5 Star Movement and the Lega Nord in Italy, Syriza in Greece and Podemos in Spain. Technology plays a peripheral role here in larger and more complex phenomena, but the speed of its spread will fuel a constant power struggle between governments and large platforms.

68. N. Silbert, “Intelligence artificielle : la course aux talents”, *Les Échos*, January 29 2018. Thus, many major private stakeholders have decided to set up AI laboratories in France (Facebook, Google, IBM, Microsoft, Fujitsu, etc.).

69. C. Villani (ed.), *Donner un sens à l'intelligence artificielle. Pour une stratégie nationale et européenne*, Report submitted to the Prime Minister, March 2018, pp. 185-189.

70. France Stratégie, “Intelligence artificielle et travail”, *Report*, March 2018.

71. Emmanuel Macron’s speech to the Collège de France, Paris, March 29, 2018.

72. “Jobs Lost, Jobs Gained: Workforce Transitions in a Time of Automation”, *Report*, McKinsey Global Institute, December 2017.

Conclusion

Two major views are in conflict about the consequences of the ongoing processes of work transformation. The first focuses on the gains in productivity generated by the exponential automation and robotization of economic activities, strengthened by the potential arising from the development of artificial intelligence technology (machine learning, deep learning, etc.). Without losing sight of the risks to the economic and social fabric, in particular the greater flexibility of employees, this approach posits that “this is not a crisis, but a transformation”,⁷³ essentially looking at the creative side of the Schumpeterian acceleration of recent years.⁷⁴

The second view sketches out the shape of a dystopian future from which political voluntarism is absent. Indeed, even countries enjoying full employment are experiencing a rise in inequality, marked by an escalation of the highest salaries and large-scale creation of poorly paid jobs. This configuration comes from the relationship between innovation and globalization, two mutually supportive phenomena. The “precarariat” described by Guy Standing – a new, troubled and fragmented social class whose common denominator is economic insecurity⁷⁵ – has only marginal access to the new jobs being created as a result of new technological breakthroughs, and is threatening governments with populist revolt and even revolution. The number of unemployable people, which will increase, subjects the state to a heavier and heavier financial burden, increased still further by attempts to institute a guaranteed universal income.

Clearly, the political responses are as diverse as they are complex to formulate. European States must quickly develop a range of tools to deal with the consequences of changes in the labor market. In the first place, substantial investment in education and vocational training will prove indispensable in order to bridge the skills gap and to support increased automation and robotization of jobs – no matter how they are viewed – and deal with the socio-political consequences described above. Externally, this effort will be necessary in order to avoid the loss of competitiveness and the technological lag that would result from under-investment, which would risk of downgrading the EU’s economy and strategy in the long term.

73. A. E. Brynjolfsson and A. McAfee, *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*, New York: W.W. Norton, 2014.

74. “What the Future of Work Will Mean for Jobs, Skills, and Wages”, *Report*, McKinsey Global Institute, December 2017.

75. G. Standing, *The Precariat: The New Dangerous Class*, London: Bloomsbury, 2011.

In the second place, as a corollary of the educational aspect, the EU must significantly strengthen its policies to attract the best brains. Changes in the labor market have already led to international competition for a new “scarce resource”: talent. Counterbalancing this, there is, on the one hand, the position of European universities in the competitive international environment of higher education; and on the other hand, the immigration issue, which is being increasingly marked by deep divisions within populations and elites on the Continent.

In the third place, European states will have to adopt proactive policies in normative and fiscal affairs in order to remain stakeholders of change rather than undergo the changes described above, by meeting the following challenges: What can legislation do to assist the accelerated erosion of employment? How can the social contract of our democracies be upheld in this highly mobile, and thus unstable, context?⁷⁶ Finally, how can taxation be adapted to this new type of work to avoid the erosion of State revenue, already curtailed by many factors? In short, how can the welfare state respond with these tools to changes that threaten its post-war foundations (generous redistribution systems, progressive taxation, relatively egalitarian educational system, etc.)? In the final analysis, the decisions that condition the development of technologies that will shape our future are now being taken in Silicon Valley and China: therefore, it is also through behaving diplomatically towards these stakeholders that Europe will be able to overcome the delicate transition period that is opening up. The power relationships of the 21st century will, without a doubt, depend to a large extent upon the political responses to these questions.

76. See A. Supiot, *La Gouvernance par les nombres*, Paris: Fayard, 2015.

