

THE FUTURE OF WORK IN THE ERA OF EMERGING TECHNOLOGIES

LAURA PALAZZANI
Lumsa University, Roma

ABSTRACT: There are three main intersections between transhumanism and the future of work, related to the different meanings of transhumanism: 1. the radical meaning of the transformation of the human condition towards perfection beyond humanity conceived as a limitation (technologization of the body and artificialization of the mind through robotics and artificial intelligence (AI)) in the context of the devaluation of the human being¹: towards perfection «beyond» the human range in the workplace; 2. the intermediate meaning of enhancement as the quantitative and qualitative increase of human capacities (physical, mental, emotional)²: towards perfection «in» humans in the workplace; 3. the use of emerging technologies (as the most recent fast and complex advancement of technologies)³ in order to enhance «human work».

KEY WORDS. Transhumanism; Work; Emerging technologies.

El futuro del trabajo en la era de las tecnologías emergentes

RESUMEN: Existen tres intersecciones principales entre el transhumanismo y el futuro del trabajo, relacionadas con los diferentes significados del transhumanismo: 1. El significado radical de la transformación de la condición humana hacia la perfección más allá de la humanidad concebida como limitación (tecnificación del cuerpo y artificialización del mente a través de la robótica y la inteligencia artificial (IA)) en el contexto de la devaluación del ser humano: hacia la perfección «más allá» del rango humano en el lugar de trabajo; 2. el significado intermedio de mejora como el aumento cuantitativo y cualitativo de las capacidades humanas (físicas, mentales, emocionales): hacia la perfección «en» los seres humanos en el lugar de trabajo; 3. el uso de tecnologías emergentes (como el avance tecnológico rápido y complejo más reciente) para mejorar el «trabajo humano».

PALABRAS CLAVE: transhumanismo; trabajo; tecnologías emergentes.

1

1. In the first meaning the scenario of transhumanism is the possible replacement/substitution of humans by machines in the workplace (joblessness), in the context of a future world without humans.

¹ World Transhumanist Association, *Transhumanism Declaration*, <http://humanityplus.org/learn/philosophy/transhumanist-declaration>.

² JUENGST, E. T., «What does Enhancement Mean?», in E. Parens (ed.), *Enhancing Human Traits: Ethical and Social Implications*, Washington D.C. 2000, pp. 1-28.

³ STRAND, R., KAISER, M., *Report on Ethical Issues Raised by Emerging Sciences and Technologies*, Council of Europe, Committee on Bioethics, Strasbourg 2015; European Parliament, *Digital Skills in the EU Labour Market*, European Parliament Research Service, January 2017; European Political Strategy Center, *The Future of Work. Skills and Resilience for a World Change*, EPSC Strategic Notes, 2016, Issue 13, 10 June; Citi GPS, *Technology at Work*, February 2015; BENEDIC, M. A., FREY, C., *The Future of Employment*, Oxford Martin School, Oxford 2013; The National Academies of Sciences Engineering Medicine, *Information Technology and the U.S. Workforce. Where are we and Where do we go from Here?*, The National Academy Press, Washington DC 2017.

The crux of the question is: is it good or bad for humans to be replaced by machines? The answer depends on the the meaning of work, on the meaning of human being and of human activities, conceived as a value or a disvalue.

The perspective of radical transhumanism is techno-optimist. Transhumanists expect a better future through technology in a utopian approach. In this sense they are in favour of the technological replacement of humans/of human work⁴.

If humans do not exist anymore (as transhumanism desires), only machines will «exist» artificially, and will work. The only possibility of residual humans maybe the one to be slavery of machines: will humans perhaps be the slaves of machines? This could be the utopian scenario of a «perfect future»: a perfect existence/the perfect activities of perfect machines without humans.

Robotizing humans/tasks and activities, also in work-place, and/or maximizing human-machine hybridity is part of the transhumanist program. Technological innovation in a flourishing capitalist economy, the promise of social general welfare and enhancement is the main aim⁵. Smart machines and robots, are/will be more efficient, precise, rapid and less costly than humans, better contributing to the realization of this objective.

The transhumanist movement has been criticized for defending a too narrow vision of the human being and of work, focusing on individualism and competitiveness, in a utopian scenario⁶. Techno-pessimistic positions hold a radically different vision, being suspicious about the implications of technological innovations, and fearing that technology will ultimately not bring a «brighter», but a «darker» future. That is why the theory of «massive jobs losses» (technologies will work, not humans) is generally classified as «techno-pessimism»⁷.

In this perspective technological replacement in workplace is bad, because human beings are valuable, and work is meaningful for human beings. The ethical reference is to human dignity, an intrinsic value that needs respect, and the dignity of work, as a practice that provides human beings with the means of existence and can/should bring self-esteem and recognition («decent/meaningful work» as personal/social flourishing)⁸.

In this sense anti-transhumanists do not want emerging technologies to «replace» humans in the workplace, but only to replace some jobs/tasks, the one humiliating, tedious, repetitive, dangerous for humans. New technologies

⁴ BOSTROM, N., «Welcome to a World of Exponential Change», in P. Miller, J. Wilsdon (eds.), *Better Humans? The Politics of Human Enhancement and Life Extension*, Demos, London, 2006, pp. 40-50.

⁵ SACHS, J., KOTLIKOFF, L., «Robots are us: Some Economics of Human Replacement», *The National Bureau of Economic Research*, February 2015.

⁶ FUKUYAMA, F., *The Post-human Future: Political Consequences of the Biotechnology Revolution*, Profile Books Ltd, London 2002.

⁷ OSBORNE, M. A., FREY, B. C., *The Future of Employment*, Oxford Martin School, Oxford 2013.

⁸ NUSSBAUM, M., *Creating Capabilities: the Human Development Approach*, Harvard University Press, Cambridge (Mass.) 2011.

or existing technologies should offer *more jobs* and *better jobs for human beings*⁹, considering some values: human dignity (decent/meaningful work as a way to express human capacities/capabilities); autonomy (not subordinating humans to machines); justice (guaranteeing access to decent work for all, as job loss could exacerbate existing inequality).

In this sense the European Group on Ethics in Science and New Technologies (EGE) in the report on *Future of work. Future of society* (2018)¹⁰ underlines: «Human dignity requires technologies to be deployed in ways that support or complement and assist, rather than suppress, subordinate, or replace humans»; «There should be clear moral standards about which tasks can permissibly be delegated to artefacts and tasks for which this is not permitted»¹¹.

In this perspective, there is an emerging ethical need to keep and to defend the area of «human work or activities non-replaceable by machines», as creativity, innovation, capacity of problem-solving in unstructured contexts, complex cognitive tasks (interpretation, judgement), interpersonal relationships, emotional involvement, empathy, sensing, special kinds of handicrafts. Technology may be a «companion» in the promotion of a more «dignified job». EGE recommends to promote further interdisciplinary reflection on the collaboration/«complementarity» of humans and machines (promoting work «with» rather than «against» machines)¹².

2

2. In the context of enhancement, there are a lot of ethical issues arising in workplace. Enhancers are generally used out of the medical context, and workplace is one of the possible applications in everyday life. Enhancement may be used to increase human capacities on a physical, cognitive, emotional level, both with pharmacological or technological means in order to increase their productivity of work (both of employers and employee), being work highly competitive in our society.

There is, unavoidably, a blurring line between restoring/enhancement: enhancers enable humans to work longer, more efficiently, in extreme conditions; enable cognitive restoration/maintenance for the elderly or the sick/the disabled (involving physical or cognitive decline).

⁹ BRYNKOLFSSON, E., MCAFEE, A., *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*, W.W. Norton & Company, New York 2014.

¹⁰ European Group on Ethics in Science and New Technologies, *Future of Work. Future of Society*, 2018.

¹¹ See also Italian Committee for Bioethics, Italian Committee for Biosecurity, Biotechnology and Life Sciences, *Developments in Robotics and Roboethics*, 2017.

¹² In the framework of the ethical analysis of challenges in this field, see: FLORIDI, L., in: *Technological Unemployment, Leisure Occupation, and the Human Project*, «Philos. Technol.», 2014, 27, pp. 143-150; FLORIDI, L., *The Fourth Revolution. How the Infosphere is Reshaping Human Reality*, Oxford University Press, Oxford 2014; FORD, M., *The Rise of the Robots: Technology and the Threat of a Jobless Future*, Basic Books, New York 2015; FREY, C., OSBORNE, M., *The Future of Employment: how Susceptible are Jobs to Computerization?*, Oxford Martin School, Oxford 2013.

There is a spectrum, from increasing participation in work among those who might otherwise be disadvantaged or excluded (having lower abilities, less chance to work), to improving the performance and efficiency of all employees beyond the limits of «natural» human capacity.

Also in this context, there are trends in the framework of a libertarian-utilitarian perspective¹³ that are in favor of the use of enhancers in workplace because of the continuum between restoration and enhancement, recalling self-determination (the only requirement being informed consent and awareness of possible risks), utility and moral duty to enhance (as a «shortcut» to enhance individuals and society and improve societal evolution), in the free market.

Other trends, in the framework of responsibility and precaution¹⁴, raise some ethical issues to be addressed in the specific use of enhancers in workplace:

- safety and efficacy (given the uncertainty of risks in the use of enhancers, without any trial and with no scientific evidence); enhancers may increase lower performing work, but may also cause also irreversible serious risks to health of workers, inhibiting their creativity; there is an unbalance in the comparison between risks and benefits. The risk/benefit ratio should be balanced for the worker: not solely risks on workers and benefits for companies¹⁵;
- medicalization of workers: the use of pharmaceuticals or devices in order to improve performance, under the pressure of competitiveness/efficiency, is used as a solution to increasingly challenging working conditions, without thinking about the alternative to change workplace conditions (that is environment); it would be better using technologies *to facilitate work, rather than* using technologies *to change the worker* to fit the work or the expectations of employers/society¹⁶;
- enhancement is a *biotech shortcut*, an external facilitation, that may allow workers to reach even excellent and better results (that is not certain), faster and more efficiently, but with the consequence of «fraudulent misrepresentation» to the detriment of oneself and the others; in this sense achievement may be the alternative way, the natural active effort and personal commitment that enables one's own capacities/capabilities to develop, allowing a virtuous «human flourishing»¹⁷;

¹³ SAVULESCU, J., MEULEN, T., KAHANE, G., *Enhancing Human Capacities*, Wiley-Blackwell, London 2011; HARRIS, J., *Enhancing Evolution. The Ethical Case for Making Better People*, Princeton University Press, Princeton 2007.

¹⁴ SANDEL, M. J., *The Case against Perfection*, Harvard University Press, Cambridge (MA) 2007.

¹⁵ Italian Committee for Bioethics, *Neuroscience and Pharmacological Cognitive Enhancement: Bioethical Aspects*, 2013.

¹⁶ *Ibidem*, see the critics to pharmacocentrism.

¹⁷ COECKELBERGH, M., «Human Development or Human Enhancement? A Methodological Reflection on Capabilities and the Evaluation of Information Technologies», in: *Ethics and Information Technologies*, 2011, 13, pp. 81-89; B. Froding, *Virtue Ethics and Human Enhancement*, Springer, Dordrecht 2013.

- *reduction of freedom* because of the hidden external pressure (called «social despotism») that brings to obligation/duty to enhance, above all for the weakest in the labour market; the social pressure of competitiveness in the market to use enhancing technologies becomes direct or indirect coercion impoverishing the authenticity of the person and reducing freedom annulling it in homologation to the exterior standard expectations of excellence¹⁸;
- there may be *new duties* for people engaged in jobs where the lives of other people are directly at risk (e.g. surgeons and pilots); this may impact on what we can (legally) demand these professionals to do in our society (legal duty, in specific circumstances), having no alternatives (e.g. other surgeons and pilots to help them), where the imposition of a legal duty to enhance, critically depends on the efficacy of enhancers, and the possible negative side-effects of these substances¹⁹;
- in the workplace, the use of cognitive enhancers *should be publicly disclosed, as a moral and socially relevant duty* (vs. privacy, non-interference), because of the potentially (unwanted) dysfunctional social consequences/damages of an undisclosed enhancers use (e.g. underperformance might put others at risk); transparency is needed vs. hidden enhancement, in order to ensure fairness due to «unenhanced» people²⁰;
- *enhancement divide* raises the problem of a new category of vulnerability of workers; the high cost of access to enhancement technologies makes it available only to those who can afford it, causing discrimination between rich and poor, enhanced-rich and unenhanced-poor (also on a global scale, between developed/developing countries)²¹.

In this direction the Italian Committee for Bioethics, *Neuroscience and pharmacological cognitive enhancement: bioethical aspects* (2013)²² and *Human enhancement and the future of Work*, report of a joint group hosted by the Academy of medical science, the British academy, the Royal academy of engineering and

¹⁸ SANDEL, M. J., *The Case against Perfection*, quoted, insists on the «social despotism»; KASS, L., *Life, Liberty and the Defence of Dignity. The Challenge for Bioethics*, Encounter Books, San Francisco, 2002.

¹⁹ SANTONI DE SIO, F., FAULMULLER, N., VINCENT, N. A., «How Cognitive Enhancement can Change our Duties», in: *Frontiers in System Neuroscience*, 2014, 8, pp. 1-4.

²⁰ GARASIC, M. D., LAVAZZA, A., «Performance Enhancement in the Workplace: how and when Healthy Individuals should Disclose their Reliance on Pharmaceuticals Cognitive Enhancers», in: *Frontiers in Systems Neuroscience*, 2015, 9, pp. 1-5; GARASIC, M. D., LAVAZZA, A., «Moral and Social Reasons to Acknowledge the Use of Cognitive Enhancers in Competitive Selective Contexts», in: *BMC Medical Ethics*, 2016, 17-18, pp. 1-12.

²¹ CORNELIUS, N., (ed.), *Building Workplace Equality. Ethics, Diversity and Inclusion*, Thomson, London 2004; DE NANTEUIL, M., *Rendre justice au travail*, PUF, Paris 2016.

²² Italian Committee for Bioethics, *Neuroscience and Pharmacological Cognitive Enhancement: Bioethical Aspects*, 2013.

the royal society, 2012²³, outline new challenges both in ethical and legal field, recalling in this context the right to safety; the right to autonomy (the right to resist social pressure); the right not to be discriminated, the right not to enhance/ the right to abstain from and to avoid enhancement.

3

3. The new scenario of emerging technologies (robotics, AI, ICT, big data) in a «technology-driven workplace» in the 4th industrial revolution provides the means to solve societal problems and to make a better future, opening new opportunities. The technological transformation of work (besides other drivers of change: globalization, economic growth, demographic change) affects where we work, how we work, what we work.

On the one hand, emerging technologies may improve the organization of work and work-life-balance, remove barriers, technologically monitor safety, security, efficiency, lowering costs/increasing performances, productivity, quality of work.

On the other hand, technologies also raise ethical challenges. «The way new technologies are used in our societies raises ethical issues that may impinge on human dignity in general and on the dignity of the human worker specifically. The dignity of each person should be recognized as a central moral consideration in thinking about the future of work»²⁴.

The main ethical issues are raised by the use of data and algorithms in the workplace; the need of high skilled workers; the flexibilization of work.

The use of advanced AI, data science and behavioral science (e.g. nudging) techniques in the workplace to select, survey, score, monitor and assess workers may be intrusive and pervasive.

The technological surveillance of workers may introduce non-transparent forms of discrimination under the guise of the «objectiveness» of technology: work surveillance may lead to a harmful change in the perception of work (quantification of efficient production), personal identity («quantified self») and interpersonal relations (monitoring).

Monitoring productivity may become a form of tracking of preference and habits, work-time or out of work (with no space or time limits); gathering data may be used for profiling workers; the worker may be not fully informed about the use of data (what, where, how, who), with a big challenge to privacy.

²³ Report of a Joint Group hosted by the Academy of Medical Science, the British Academy, the Royal Academy of Engineering and the Royal Society, *Human Enhancement and the Future of Work*, 2012.

²⁴ European Group on Ethics in Science and New Technologies, *Future of Work. Future of Society*, 2018.

EGE Opinion on the future of work calls for transparency of technologies in the workplace and awareness for workers (the right to be informed in workplace; the right to be offline, work-life balance; the right not to be monitored or profiled),

The duty of companies/firms to inform workers about the use of data and algorithms, the exclusive use of data for working purposes, and the exclusion of any use of data for surveillance of personal life. The limits of work surveillance should be defined and workers need to be informed.

In the context of the application of emerging technologies in workplace there is an emphasis on «skilling», «up-skilling» and «re-skilling» of citizens, to be attractive in the labor market. The narrative of «*skill polarization*» is ethically highly problematic, not only because it puts individuals with different levels of skills and talents against each other, but it also puts the responsibility for employment on the shoulders of individuals (what about people who are «low skilled» or who are not capable of ‘upskilling?’).

EGE underlines an ethical requirement: that *no one should be left «behind»* in the age of new vulnerabilities, exclusion and marginalization in workplace we need inclusiveness and new education policies²⁵.

It is necessary *to tailor education to technological change*, reflecting on how the education system and labor market respond to the new requirements in this technological era; education should develop capabilities (not only skills, and not only digital skills); in a critical use of technologies in the context of a promotion of «societal upskilling»²⁶.

Another ethical issue concerns flexibilization. Work on online platform, self-employment, on demand work, job-sharing are new forms of the so called «nonstandard work».

As the work itself becomes technologically more flexible, employees are expected to shoulder growing responsibility for (beyond skills development) for social security. The «traditional» concept of social security, as far as it remains tied to «stable» employment, should also «adapt» to the new scenarios, adapting to the new needs and creating the conditions for meaningful work²⁷.

In this sense EGE outlines that: employment rights need to strike the right balance between security, flexibility and innovation; people need transparency, information and advice about what their rights and legal position may be in any

²⁵ The Oxford Martin Program on Technology and Employment, *The Changing Nature of Innovation and Work. Addressing inequality Brought on by Technological Change*, Citigroup 2015.

²⁶ Acatech Position Paper, *Skills for Industry 4.0. Training Requirements and Solutions*, National Academy of Science and Engineering, 2015-2016; European Parliament, *Digital skills in the EU Labour Market*, European Parliament Research Service, January 2017; European Political Strategy Center, *The Future of Work. Skills and Resilience for a World Change*, EPSC Strategic Notes, 2016, Issue 13, 10 June; Science and Technology Committee, *House of Commons, Inquiry: Digital Skills Gap*, London, December 2015.

²⁷ KREMER, M., WENT, R., KNOTTNERUS, A., *For the Sake of Security. The Future of Flexible Workers and the Modern Organization of Labor*, The Netherland Scientific Council for Government Policy, The Hague 2017.

particular context and relationship; the relevance of fostering intragenerational and intergenerational justice and solidarity. There is an ethical need to reflect on «additional protections» for vulnerable groups of workers and stronger incentives for firms/companies to treat them fairly.

CONCLUSION

In conclusion. There is uncertainty in the prediction of the consequences of emerging technologies in the workplace; we should avoid unfounded fears, unjustifiable hypes and exaggerations of the technological future of work. It is relevant to outline a balanced realistic view, in order to elaborate an ethical reflection (expert discussion/public debate): the aim is to minimize risks and maximize opportunities in a «sustainable transition» of work in the era of emerging technologies, reminding that technology is not a destiny.

An «intelligent workplace» should use technologies to protect workers (health, safety, autonomy: *i.e.* prevention of accidents; collection and processing of physiological data in order to check workers' health, reducing risks and safeguarding health), not to carry out surveillance and monitor productivity. We need technologies that consider «ethics by-in design», with more critical awareness both by employers and employees.

The introduction of emerging technologies should be managed by *balancing the benefits* (efficiency, economic savings, technological competitiveness in the international market) *and the risks/harm* (loss of human jobs, pension and benefit issues, greater socioeconomic inequality).

Unesco Comest report on Robotics and roboethics (2017) in a recommendation on work affirms: «Robots will increasingly displace humans in a wide range of areas and so lead to a significant reduction in job opportunities in certain sectors. It will also give rise to new job opportunities. States, professional organizations and educational institutions should therefore consider the implications of this, paying particular attention to those sections of society likely to be most vulnerable to the changes, and make appropriate provision for retraining and retooling of the work force to enable the potential advantages to be realized».

Lumsa University, Roma
palazzani@lumsa.it

Laura PALAZZANI

[Artículo aprobado para publicar en febrero de 2022]

Este artículo responde a la ponencia tenida en las Jornadas sobre *Transhumanismo*, que tuvieron lugar en la Universidad Comillas, Escuela Técnica Superior de Ingeniería, Cátedra Hana y Francisco José Ayala de Ciencia, Tecnología y Religión, los días 29 al 31 de mayo de 2019.