Criticism of technology: key to the development of artificial intelligence?

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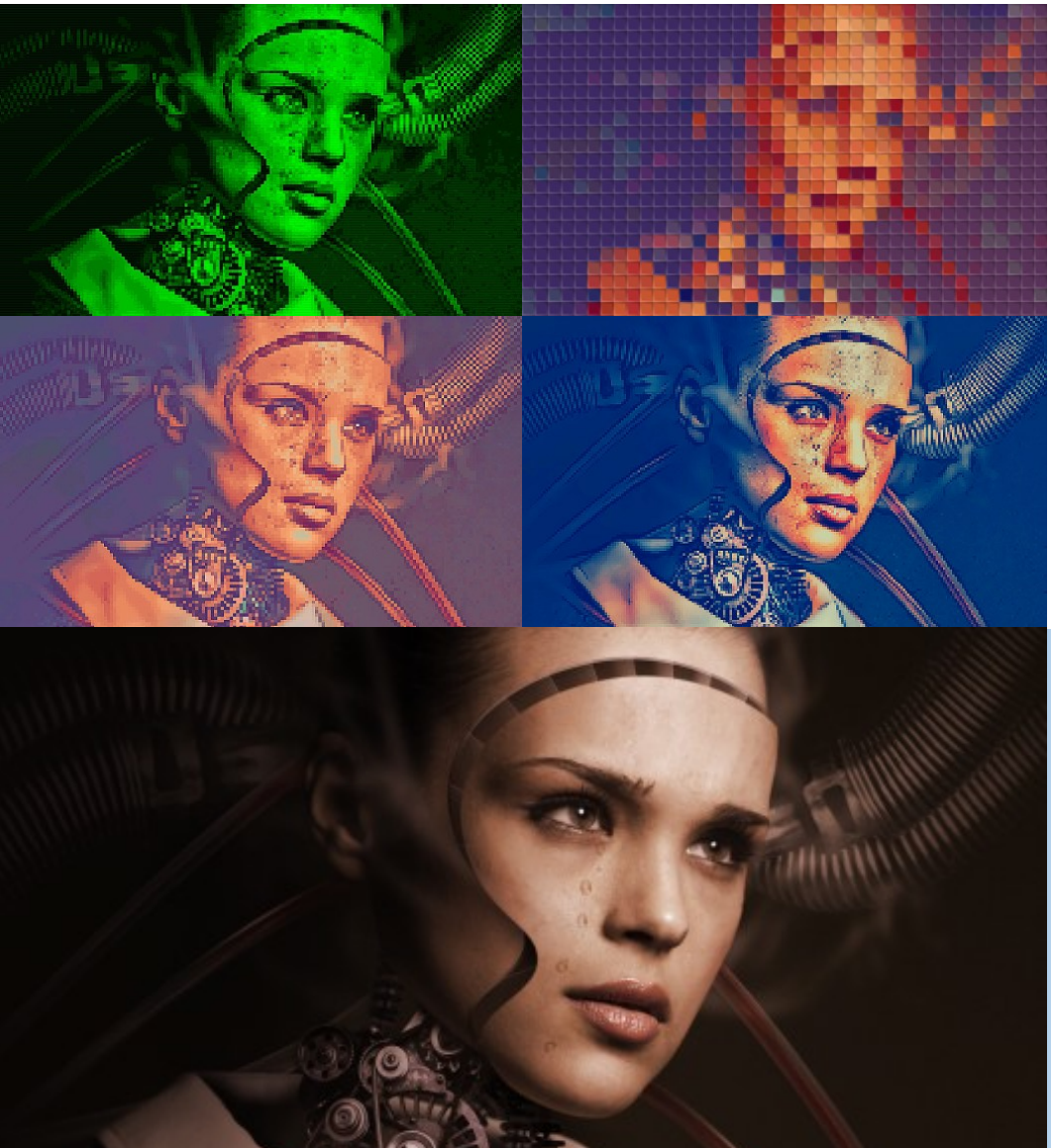

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Les temps électriques

"The concept of progress must be based on the idea of disaster. Let things continue as before, that's the disaster."

Walter Benjamin, Essay on Charles Baudelaire

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Introduction

If the year 2018 was the year of the acme of principles, charters and declarations on artificial intelligence ("AI[1]") , the year 2020 has started well to be a turning point towards more binding texts, finally able to protect individuals and the whole society from various abuses, already concrete. Virtually all the international organisations started working in 2019[2], within the framework of their respective mandates, to make their contribution to what could constitute in the coming years a global architecture for the regulation of "AI", which would have to reconcile different imperatives such as innovation, economic growth and the protection of fundamental rights. On a local level, many States have adopted (or are about to adopt) strategies on "AI" aimed at ensuring their scientific, technological and moral leadership on the same global stage, sometimes including a regulatory or regulatory component [3]. New Zealand thus claims to be the first State to have adopted standards, in the form of a charter, for the regulation of algorithms[4]. In this context of a real race to establish the rules of the game first, a consensus is being expressed regarding the potential benefits of this "AI" for humanity and the need to create trust among the billions of users on the planet in order to reap the expected benefits.

However, digital industry lobbyists are working, particularly in Brussels, to try to defer these ambitions under the pretext of the necessary recovery in the midst of the economic crisis following the pandemic[5]. At the same time, a light autumn breeze is beginning to be felt on the various uses of this technology; faced with disappointed promises, investors are well aware that the potential of many applications has been overestimated[6].

In this context, it seems quite surprising that this beginning of awareness is not accompanied by a serious inventory on the part of the regulators, which would allow a precise distinction to be made between justified uses and those that are purely speculative, nor by an even more rigorous examination of the social and political implications of this technology, other than through the prism of innovation and progress[7]. The New Zealand Charter does promote transparency in algorithmic decisions, but without calling into question the very principle of certain applications such as the assessment of the risk of recidivism in criminal matters .

This observation can be explained if we place this "AI" within a much broader and global dynamic of the conception of progress through technology[9]. In the dominant discourses, notably relayed in the generalist media, there is in fact no in-depth study of the real capacities of new complex technologies to go beyond commercial discourse, so much so that novelty has become synonymous with progress in our representations. Everything that seems technically feasible even seems to become desirable[10], especially if it is profitable. Science, moreover, is too often confused with belief, and many biases lead to giving credit

to authoritative arguments or common sense rather than evidence[11]. The transformative power of ever more invasive technologies is treated only from the perspective of a perpetual balance between expected benefits and feared risks, thus removing a whole series of "zero questions": are we sure above all that it works the way we imagine it will? Are there no other, less sophisticated, simple and inexpensive solutions to deliver the desired service? Doesn't this ultimately create more serious problems than those we are trying to solve?

One should therefore not be totally satisfied with the assumptions that take for granted the benefit of this "AI", even if it is "human-centred", and to develop an "AI" in a sustainable manner, regulators should be able to take a step back in order to lead, through a contradictory and enlightened debate, a reflection on its exact capacities. It would also seem appropriate for them to be able to question the underlying causes of this situation, which is essentially the result of a mercantile conception of science.

But it must be said that the myth of the neutrality of technologies, and therefore of "AI", has become extremely tenacious (first part) and that decades of governance of the critique of technology have succeeded, quite substantially, in reducing its scope and effects as in many other fields (second part). What was already played out with criticism of computers in the 1980s and the Internet in the 2000s is now being played out again with 'AI', with the same tone of argument, and there is a fear that violations of human rights, democracy and the rule of law will eventually be normalised as a tribe of so-called progress (part three). There is a strong risk that efforts to regulate "AI" will become highly devitalised if it is taken for granted that only abuses of use will have to be controlled, without addressing the prior questions of the quality of science and the form of society being formed with the massive use of digital tools (fourth part).

Notes

[1] The acronym artificial intelligence will be presented in inverted commas for editorial convenience. The set of technologies covered by this term does not naturally constitute an autonomous personality and, in order to avoid anthropomorphism, it has been chosen to summarise the more appropriate terms "artificial intelligence tools" or "artificial intelligence applications" by the single term "AI" in inverted commas.

[2] , UNESCO International Expert Groupon Artificial Intelligence, OECD Expert Network on Artificial Intelligence, European Commission High Level Expert Groupon Artificial Intelligence, Council of Europe Ad Hoc Committee on Artificial Intelligence.

[3] For a review of AI initiatives, including these strategies, see the Council of Europe website dedicated to artificial intelligence: https: //www.coe.int/en/web/artificial-intelligence/national-initiatives - Accessed 14 August 2020

[4] C.Graham-McLay, New Zealand claims world first in setting standards for government use of algorithms, The Guardian, 27 July 2020

[5] J. Delcker, AI: Decoded: Cold winds are blowing around regulation, Politico, 5 juin 2020, accessible sur : https://www.politico.eu/newsletter/ai-decoded/politico-ai-decoded-cold-winds-are-blowing-around-regulation-the-ethics-of-contact-tracing-doubts-over-ai-to-treat-covid-19/ - Accessed on 14 August 2020

[6] See Artificial intelligence and its limits in The Economist (11 June 2020), especially. An understanding of AI's limitations is starting to sink in, The Economist, 11 juin 2020 et C. Mims, AI Isn't Magical and Won't Help You Reopen Your Business, The Washington Post, 30 mai 2020

[7] See the preambles and introductions of documents produced for example by the European Commission, OECD, UNESCO or the Council of Europe, developed in #4.1. The evolution of the notion of progress and its replacement by the concept of innovation will not be discussed here, although it also characterises the transition in our time from social to technical progress.

[8] A genuine resurgence of a deterministic conception of criminal matters, the findings converge to reveal their biases and dangers. See Y. Meneceur, L'intelligence artificielle en procès , Bruylant, 2020, p. 99 et seq. or recently: T. Burgess, Police built an AI to predict violent crime. It was seriously flawed, Wired 6 August 2020

[9] The concept of 'technology' refers first of all to a wide range of means used by humans to satisfy their needs. However, the increasing sophistication of these means and their omnipresence in our daily lives means that we must no longer consider this technique as a simple tool, but as a much more complex system, which also gives concrete expression to the social and political balances of power in our society. This is how the term will be understood in the present developments.

[10] D. Gabor, winner of the 1971 Nobel Prize in Physics, declared that "what can be done must be done, inevitably", characterising that everything that was technically feasible by humans would be done, even against morals or ethics.

[11] E. Klein, Le goût du vrai, Coll. Tracts, Gallimard, 2020, pp.4-5

Part 1 | The myth of technology neutrality

It is well known that the link between human societies and the technical system composed by all their artefacts is extremely close and each major (r)evolution has contributed to substantially shape our environment, sometimes over several centuries[1]. Thus, the scope of the invention of printing has gone beyond the mere mechanisation of the reproduction of books: the Reformation of the Church, the Age of Enlightenment and access to knowledge in general were all events linked to this invention. The advent of industrial processes in the 19th century profoundly reshaped the relationships between individuals as well as our living spaces and modes of governance[2]. Today we are at the stage of our 4th industrial revolution with the meeting of "the physical, digital, biological and innovative world[3]". This revolution would provide us with new means to try to cross new frontiers, even the one, absolute and imposed by Nature, which makes everything from order to disorder: entropy[4].

#1.1. The structuring effect of digital technologies

This link between humans and their brand new artefacts makes it more necessary than ever to decipher our environment from a socio-technical perspective, in order to grasp its new composition and discover its modes of governance and governmentality[5]. The transformation we are currently undergoing with the translation into data of the smallest corners of our lives, for the purpose of their algorithmic processing, is leading us towards a completely different model of society which perhaps carries within it some ferment of improvement of the human condition, but also its share of disenchantment, hold and even totalitarianism. And this is not just because of the way we would use these tools, but because of the structure woven by the generalisation of computer and statistical mechanisms that are supposed to be able to appreciate better than we do, and in all circumstances, an ever-increasing number of situations, from the most anecdotal (the choice of a restaurant) to the most delicate (the evaluation of the chances of success of a trial). It is becoming clear, however, that we are in the process of creating a terrible entanglement of logical cages, in which our double statistics are becoming more and more entangled, even though we think we are more free than ever to make our own choices. The exercise of power over individuals, this biopolitics theorised by Michel Foucault, is thus completed by an original mechanism, increasingly autonomous, whose functioning has nothing democratic about it and which even dismisses the political thing[6]. We should therefore not allow ourselves to be diverted by petitions of principle and various assertions about the supposed neutrality of technologies, such as "AI", where only uses would be likely to generate disastrous consequences.

By way of comparison, another area could be mentioned, such as nuclear power. If we only discuss civil or military uses, we fail to grasp a preliminary question: do we wish to implement a technology that we do not know how to treat waste today other than by containment or that requires very high technicality to be maintained without creating disasters? This type of arbitration cannot be the result of feelings, impressions or simple opinions emanating from an industry with an economic interest in the development of this technology. This is just as true for "AI", where most of the texts preparing a regulation take for granted the benefits of using this technology in very many sectors, relying on no other scientific basis than the very numerous authoritative arguments delivered by "experts", sometimes entangled in severe conflicts of interest[7]. The burden of proof has even come to be strangely reversed, and it would now be up to the detractors to first demonstrate the correct basis for their doubts, and not up to the producers of these services to prove first that they are delivering the expected service, based on rigorous results.

To take another example, the use of "AI" in support of the decision-making process in the courts raises the question of the meaning produced by the massive statistical processing of case law and the place of this information - which is extremely uncertain - in the normative scale[8]. But the debates are lost between the promoters of a more predictable justice and the detractors who fear a robotisation of tasks, leading today to a kind of middle way leaving the fundamental problems intact. The development in France of a tool that is supposed to assess the amount of compensation for bodily injury attests unambiguously to this inability to acquire a high level of expertise to acutely assess the viability of a system before even embarking on its design[9]. A major controversy has also arisen over the use of a 'predictive' algorithm to assign marks to International Baccalaureate students, given the difficulty of assessing them in the midst of a health crisis. While the administrators of this diploma hoped to adopt "the fairest approach for all students" in this way, the algorithm actually produced results that were contested and for which no explanation was possible[10]. The same situation occurred in the United Kingdom, resulting in the outright withdrawal of these assessments[11]. Again, the early use of a statistical learning device unsurprisingly produced unacceptable discrimination when other, not necessarily numerical, solutions were entirely feasible to produce an assessment.

#1.2 A market appropriation of science and progress

It is true that the debates on digital and "AI" seem most often to pit the Moderns of our time against their Ancients, i.e. the techno-prophets (accompanied by their techno-disciples) against the techno-skeptics (driven by a wide variety of motivations). The former would pass, in the eyes of their detractors, as unconscious innovators and the latter as retrograde.

This dichotomy has the merit of simplicity and is used in many speeches in recent years, most often to give substance to a word that declares itself sincere and balanced and that does not wish to fit into the tradition of the usual clichés of one or other of these camps[12].

But this distinction has a drawback, since it ignores another, much deeper and more significant fault line, that between those who advocate total neutrality of technology and those who try, on the contrary, to analyse its profound social impact. It also ignores the real face-to-face relationship between a science seeking objectivity and one plagued by deep conflicts of interest, driven by the financial and commercial influence of powerful companies seeking, less than the growth of a common good, the growth of their profits and their influence on the market.

The result is an appropriation of science, and of the very idea of progress, by a social project which aims to transform everything into a market, and where we no longer really know whether such and such an invention is presented to us with enthusiasm for its intrinsic qualities or whether we will consume it. The health crisis has particularly revealed this "epidemic of bad science[13]", and it seems that our era has lost time and the sense of scientific controversy. A healthy controversy, where it should be more a matter of exchanging solid evidence among peers[14] than beliefs, prefabricated opinions or punchlines. The figure of the engineer-entrepreneur in hoodies is a good illustration of the total confusion today between the scientific approach, which was conceived until the not so distant past as a project for the improvement of society and the common people, and the mercantile approach, whose aim is first and foremost the search for individual profit and self-realisation
.

#1.3. Technology as the only horizon for progress?

At the same time, this proliferation of artefacts has gradually constituted a whole new system, even going as far as the interconnection of objects (Internet of Things - IOT) and the almost permanent capture of information flows and constants emanating from individuals. The systemic and cumulative impact of all these developments on our society must therefore be taken seriously, with "AI" adding a new decision-making brick that now brings our capacity for action (agency) into this environment.

We should, however, be attentive to the way these new technologies already structure our world, even if we think we are fully aware of their transformative power and free to make our own choices. To take just a few examples, we can only note that the shape of our cities and countryside has been totally adapted to the generalisation of the automobile; the advent of the mass media, and now of social networks, has profoundly transformed access to knowledge and the exercise of democracy; trade has become globalised with the growth of air and sea transport, creating historically original specialisations and interdependencies between the different regions of the globe. And here again, it can be noted that the common feature of all these developments is the success of the economic model of free trade, which has been consolidated on a global scale and has appropriated a myth in passing: technology has become our only destiny and our only horizon for progress and development.

But it seems that this scientific utopia is less and less sufficient to impose new technologies, such as the famous "AI" or others such as GMOs (genetically modified organisms), into the debate. Invariably, the lobbyists of these industries and the supporters of economic growth through innovation, some of whom now find themselves in high political positions of responsibility, mobilise a series of reasoning that instrumentalise fear and maintain a widespread feeling of "backwardness": if we don't do it, others will; national brains will, for sure, flee to more clement places; by regulating, we would offer a competitive advantage to those who have not regulated[15] ; by stopping so far down the road, we would not have access to the new generation of technology which, of course, will solve all the problems of the previous one . In other words, a discourse urging us to adapt, for fear of becoming obsolete[16].

#1.4. The structural weaknesses of "artificial intelligence" minimised by the debates on uses

This crude observation of the functioning of industrial capitalism in our digital age and the alliances forged with science and politics explains the interest in promoting the concept of total technological neutrality and the difficulties in holding a truly in-depth debate on "AI" and its real capabilities. Add to this the interest of public decision-makers or academics who are keen to contribute to these debates and who, often due to a lack of technical culture, are refocusing on issues within their field of expertise[17], and the current consensus is that the regulation of "AI" should focus solely on the question of uses .

The practical result is that any serious examination of the capabilities of this technology is left to expert controversy, making its content totally inaccessible to laymen. Even if there was no specific reference to "AI", the debates on proximity tracing applications[18] have perfectly illustrated this mechanism, where public discourse has taken for granted the capacity of these applications to deliver at least the hoped-for service and has treated all substantive criticism of the unsuitability of Bluetooth as a detail, even though this was at the heart of the problem[19]. The debates strangely centred on issues of privacy protection and mass surveillance when a necessary and precondition for any discussion was not met: Bluetooth-based contact proximity monitoring, even when adopted en masse, generates too many false positives or false negatives to provide real support to the health brigades[20]. It is as if a debate had been provoked on the benefits and dangers of using a hammer to break an egg when the question seems to be able to be evacuated fairly quickly by noting that it is not the right tool for this task. However, even when faced with this technical reality, many public decision-makers have not given up and have maintained that even if only one life were saved by these digital devices, it would be worth the millions of euros invested... but are we talking about the lives potentially endangered by overconfidence in these digital tools? In short, a whole series of purely circumstantial arguments, far from any rationality and only guilt-ridden, mobilised for the sole purpose of legitimising choices made in the

urgency of the moment. By fuelling the debates on the sole question of the uses of technology, we are helping to make what is far from being a factual reality accepted: no, "AI" is not necessarily capable of profoundly revolutionising all human activities, and the processing of masses of data by statistical models is not capable of rendering all the hoped-for services. Yes, by transforming the world into data, we interpret it and twist it to force it into algorithmic mechanisms. Yes, by considering that the models produced by "AI" are worthy of interest in most circumstances, one confuses the representation of reality with a certain form of its expression. Yes, "AI" and all types of algorithmic processing translate the world through the sometimes distorting prism of mathematics. An in-depth reading of the academic literature on the subject clearly shows that this "AI" is still far too controversial, unstable and fragile to be the subject of mass dissemination[21]. Effective regulation should therefore be able to break away from the dominant discourse and not consider as a detail what constitutes the heart of a vast technical problem [22].

Notes

[1] Even if some animal species manage to use tools in a simple way, the human species has been characterised by its appropriation of techniques and combinations of techniques that influence its own evolution - see F. Sigaut, Comment Homo devint Faber. Comment l'outil fait l'homme, CNRS éditions, 2013 quoted by F. Jarrige, Techno-critiques, Du refus des machines à la contestation des technosciences, La Découverte/Poche, 2016, p. 24

[2] On the emergence of statistics for governance purposes, see O. Rey, Quand le monde s'est fait nombre, coll. Les Essais, Stock, 2016, p.95 et seq.

[3] K. Schwab, The Fourth Industrial Revolution, Dunod, 2017

[4] E. Sadin, L'intelligence artificielle ou l'enjeu du siècle : anatomie d'un antihumanisme radical, L'Echappée, 2018, p.15

[5] A. Rouvroy and T. Berns, Gouvernementalité algorithmique et perspectives d'émancipation, Réseaux 2013/1, n°177, 2013, pp163-196

[6] E. Sadin, L'intelligence artificielle ou l'enjeu du siècle : anatomie d'un antihumanisme radical, op.cit., p.79 et seq.

[7] T. Metzinger, Ethics washing made in Europe, Der Tagesspiegel 8 April 2018

[8] To illustrate with a few examples what the promoters of a mathematical, probabilistic or statistical treatment of the case law intend to achieve, see in particular L. Godefroy, F. Lebaron and J. Lévy-Vehel, Comment le numérique transforme le droit et la justice vers de nouveaux usages et un bouleversement de la prise de décision, Rapport de recherche à la Mission Droit et Justice, July 2019, O-M Sulea M Zampieri M. Vela, J. van Genabith Predicting the Law Area and Decisions of French Supreme Court Cases, 2017 or N. Aletras, D. Tsarapatsanis, D. Preotiuc-Pietro V. Lampos judicial decisions of the European Court of Human Rights: a natural language processing perspective PeerJ CompSci, 2016

[9] Y. Meneceur, DataJust face to the structural limits of artificial intelligence, Les Temps Electriques 19 June 2020

[10] Hye Jung Han, An algorithm shouldn't decide a student's future, Politico, 13 août 2020

[11] C. Cohen, Au Royaume-Uni, un algorithme autour des notes d'étudiants crée la poémique, Le Figaro, 17 August 2020

[12] See in particular Y. Meneceur, L'intelligence artificielle en procès - Plaidoyer pour une règlementation internationale et européenne, Bruylant, 2020, p.5

[13] F. Goubet, Une épidémie de mauvaise science, Le Temps, 24 April 2020 and H. Morin, "The Lancet" announces the withdrawal of its study onhydroxychloroquine Le Monde, 4 June 2020.

[14] According to the philosopher Karl Popper, science is the result of the "friendly hostile cooperation of the citizens of the knowledge community" cited in K. Boucaud-Victoire, Etienne Klein : " La vérité scientifique n'appartient nullement aux scientifiques ", Marianne, 28 July 2020

[15] Contrary to popular belief, China is in fact in the process of putting in place a clear regulation of "AI": See the AI governance principles published in 2019, available at: https: //www.loc.gov/law/foreign-news/article/china-ai-governance-principles-released/ - Accessed 21 August 2020

[16] Ba .Stiegler, "Il faut s'adapter": sur un nouvel impératif politique, Gallimard, coll. NRF Essais, 2019

[17] We will not mention here certain pseudo-experts who intervene indifferently on any fashionable subject, victims of the " Dunning-Kruger" effect, a cognitive bias where ignorance gives a great enough confidence to speak about complex subjects with very little caution.

[18] It should be noted that some of these applications included algorithms assessing the risks of contamination, some of which were based on models derived from machine learning - see in particular Y. Bengio, Peer-to-peer screening of COVID-19 based on AI Yoshua Bengio's Personal Blog 25 March 2020

[19] See in this respect the particularly well-documented publication: X Bonnetain A. Canteaut, V. Cortier P. Gaudry, L Hirschi S Kremer S. Lacour, M. Lequesne G. Leurent L. Perrin, A. Schrottenloher E. Thomé S. Vaudenay C. Vuillot, Le traçage anonyme, dangereux oxymore Analyse de risques à destination des non-specialistes, 21 April 2020, to be placed in parallel with public discourse, in particular StopCovid: Cédric O refuse de reconnaître tout échec, "trop tôt pour faire le bilan", Challenges, 30 juillet 2020

[20] See for example J-M. Manach, Covid-19: Why contact tracking will (probably) not work, NextImpact 10 April 2020.

[21] See, for example S. Ben-David, P. Hrubeš S. Moran Shpilka, A. YehudayoffLearnability can be undecidable Nature Machine Intelligence 1, 2019, pp.44-48 or B. Georges, Le talon achille intelligence artificielle, Les Echos, 15 May 2017

[22] See Y .Meneceur, L'intelligence artificielle en procès - Plaidoyer pour une réglementation internationale et européenne, op.cit., p.43 et seq.

Part 2 | The consequences of decades of governance of the critique of technology

At first glance, the apparent consensus on the unquestionable benefits of the technique could appear to be weakened with the publication of substantiated and convergent studies in many areas, such as the environmental threat[1]. The success in France, and in other European countries, of environmentalist political movements in elections bears witness to this citizen awareness and the relative weakening of the discourse imposed by industrial capitalism. It is also interesting to note that today's strongest criticisms of technology do not necessarily come from ideologists or politicians, but also from the technicians themselves, who are fully aware of the stakes and the limits of the various means at our disposal[2]. Many publications today manage to go beyond the commonplace by demonstrating that behind the supposed neutrality of techniques, there are above all issues of power and that behind the prophecies, there are marketing artifices masking a much more modest reality[3]. In the end, it is not the technique itself that is called into question by some of these authors, but the enslavement resulting from a certain form of transfer from the sacred to the technical[4]. And this is exactly what is at stake for digital and "AI" which, as the latest fashionable (and potentially profitable) artefacts, are instrumentalised to nourish the idea of a revolution and a civilisation always in continuous "progress" by the sciences, while in reality we find ourselves in full confusion between ends and means[5].

#2.1. The discrediting of counter-discourse on technique

In recent years, the critical counter-discourse of techniques has had great difficulty in emerging, in participating in public debate and in irrigating coherent political thinking, particularly under the influence of private actors whose power has come to be quite comparable to that of the States[6].

It no longer even becomes conceivable to question the alleged qualities or the very usefulness of a potentially profitable technology. The chemical, pharmaceutical and tobacco industries have particularly distinguished themselves by multiplying false controversies in order to paralyse any political decision, using simple and popular arguments and the instrumentalisation of science[7]. Doubts or controversies are often mocked, compared to the gentle fantasists who think the Earth is flat, or referred to expert debates that are incomprehensible to the general media and public opinion. Slowing down is no longer even an option, as the stasis of enlightened reflection is systematically preferred to the flow of action: "Move fast and break things", the mantra of Silicon Valley, reveals the strategy of our time, when making quick profits is preferred to simply measuring things.

Sociologist Antonio Casilli even stated in August 2020 on a social network that their strategy would be more like "trying to break things, apologising for trying and then, when everyone has calmed down, breaking them for good". Specifically for digital technology, the resolution of any problem today seems to have to include a component involving this type of technology, as much by solutionism as by the search for new markets in a context of deep-seated industrial and political interests[8].

To complete this picture, it must be recognised that the quality and motivations of techno-critical discourse are extremely diverse, without any real ideological backbone, and that it is easy, in pure rhetoric, to weaken its content by amalgamating them all with the most extreme statements. In fact, one finds in it a jumble of both the "diminutives", whose sole objective is to create dissensus, and anarcho-primitivist terrorists such as " Unabomber[9] " or simple humanist heirs of a thought seeking to situate itself between Jacques Ellul and Gilbert Simondon.

#2.2. A consensus on the benefits of the technique limiting the construction of original trajectories

Criticism of the technique is therefore most often ignored, minimised or instrumentalised in political decision-making processes and in most regulatory work. Questioning the very principle of the functioning of certain technologies, because of the risks or their lack of maturity, is most often not heard, as other interests - political, economic and growth interests - seem to take precedence. Even the most solid and motivated arguments are drowned in expert disputes and struggle to emerge.

However, it is this criticism of the technique that would provide public decision-makers with a relevant reading grid for questioning and sharply analysing the “innovations” and thus to be able to design original trajectories for public policies. It is also this critique of technology that constitutes a democratic and civic imperative to govern the change towards a society concerned about its environmental footprint. But it is this critique of the technique that has been deliberately channelled over the last forty years to reduce its scope and effects, to the point where it is now devitalised and almost moribund. From the radical criticism of the 1970s, which concerned the use of nuclear energy or even computer technology [10], the various forms of protest have been gradually depoliticised through technocratic responses. From various expert committees and observatories to participatory strategies that bring about consensus, everything possible has been done to marginalise the most virulent oppositions and defuse any content that might call into question the adoption of technologies .

The result has been a real impoverishment of thought, where criticism, even if substantiated, has come to be regarded as mere "opinions" or "points of view". Surprisingly enough, it

seems that our era thus gives greater credibility to the promoters of an "AI" capable of dealing just as effectively with pixels as with court decisions than to its detractors, whose discourse naturally seems much less attractive from the point of view of digital economic growth. However, if we are content to encourage and feed only the dominant discourse, we risk real industrial accidents, which could permanently discredit the technology concerned; this attitude also leads to depriving ourselves of new perspectives and real discoveries. It is exactly in this context of rejection of criticism that Yann LeCun had the greatest difficulty in getting his work on deep neural networks to emerge in the 2000s when the whole community (and investors) was concentrating on another form of machine learning, support vector machines[11]. The researcher is now joking about it, aware of its success: "Now I have to be more careful not to say stupid things because nobody dares to tell me that I am wrong anymore "[12].

#2.3. The proliferation of ethical discourse on "artificial intelligence".

Scientific controversy is at the heart of the construction of knowledge and ideas. By making observations reproducible, we obviously provide the means for criticism and contradiction. But one also makes progressively more robust what is no longer intuition or assertion, but demonstration. This work is unquestionably in progress as far as "AI" is concerned, but two circles, at least, have been formed[13]. Alongside fundamental and applied research, which is still exploring the depth of neural networks and debating the respective advantages of self-supervised learning or the formalisation of causality, another bubble, much more speculative, coexists, debating the effects of this technology and the need to adopt ethical guidelines centred on the human being in order to prevent abuses.

The uninformed outside observer will assume a certain porosity between these worlds and hope that the progress (and doubts) of one will benefit the other. As with most of the complex technologies of our time, the reality is not only that there is a fairly tight seal between these two spaces, but also that there is a very strong hold of entrepreneurs using ethics to 'whitewash' a technology that is far from being as efficient as it is and to build a generalised agreement on machines, i.e. by excluding it from the political field and the democratic space.

While the pioneers of "AI" such as Marvin Minsky seemed to despise ethics[14], a discourse took shape in the mid-2010's in the "speculative" community of "AI" in order to import principles of conduct from other sectors, notably bioethics, which were supposed to guide the actions of "operative" actors. The result of this intense production has been quite severely criticised by part of the academic community, due to its lack of sanctions in case of breaches and its delicate operationalisation[15]. For Rodrigo Ochigame, a former student researcher at the MIT Media Lab, the discourse of "ethical AI" would even have been

strategically aligned with a Silicon Valley effort to avoid legally binding restrictions on controversial technologies[16]. The Silicon Valley television series will also illustrate in one of its episodes the hypocrisy of many of these efforts, with one of the protagonists, repentant of his entrepreneurial excesses, launching a new religion called " Tethics" - a combination of "Tech" and "Ethics[17]". Whether it is therefore a question of a 'practical' ethic, aimed at developers, or a 'governance mechanism' ethic, aimed at institutions, it must be admitted that many of the principles promoted prove to be ambiguous, even contradictory, that they are purely declarative and that most of them take for granted the capacities of 'AI' to function correctly if a certain number of precautions are taken .

#2.4. Removing the question of the appropriateness of the use of the technique

The emergence of risk-based management of the use of technologies, which starts from the premise that it is not the technologies studied that are likely to be defective, but only their use, has clearly led to a depoliticisation of the issue of the massive use of complex technologies. By focusing on how to implement a technology, instead of investigating - before any further reflection - whether we should do so, the strategy of industries that are concerned not to leave room for any criticism of the intrinsic value and qualities of their new products is effectively supported.

This diversion of public debate from opportunity to use, accompanied by pressure to implement only self-regulation, is however not specific to "AI" and it is well known that it is almost the entire scientific approach that is today contaminated by these methods of industrial capitalism. By way of illustration, we could cite the Heidelberg Appeal, published on the eve of the first Earth Summit in Rio in 1992. Bringing together nearly 70 Nobel Prize winners and other renowned scientists, this appeal proclaims their concern about the emergence of an irrational ideology opposed to scientific progress and economic and social development. Few critics have raised their voices in the face of this text denouncing an "irrational ecology", and only a few intellectuals like the philosopher Cornelius Castoriadis have been able to decipher this text, which was in fact orchestrated by the asbestos industry[19] and quite deliberately omitted to mention the negative repercussions of the false needs produced by such a scientific or technical "exploit"[20].

Many discourses, not necessarily conscious or coordinated, are therefore nowadays involved in removing the question of appropriateness from the field of critical examination and highlighting only a certain number of questions centred on use. By succeeding in imposing such a narrative, the industrial players have thus managed, with the support of the public authorities, to give the appearance that they are sincerely concerned about the societal consequences of their actions, while above all they manage to escape any substantive discussion of the alleged qualities of some of their innovations. The same

applies to the digital industry, since even if more and more people are fully aware that we have moved from a phenomenon of the living room to a tool of mass manipulation[21], questioning the appropriateness of using these new technologies to solve a problem is sometimes equated with extreme, ultra-left anti-technological or pessimistic postures. Yet it is precisely by questioning their appropriateness that we could establish keys to reading beyond commercial discourse and provide ourselves with the capacity to evaluate their real societal benefit, capable of preventing any " solutionism[22]". Questioning opportunity also means giving credibility to the tools that will have passed the filter of this questioning and providing the opportunity for a new politicisation of technological trajectories, consubstantial with all democratic pretensions.

Notes

[1] With regard to AI, it should be noted that the carbon footprint resulting from the calculation of mathematical models using machine learning is considerable. In 2018, OpenAI published a study showing that the computing resources needed to train large models were doubling every three to four months. In June 2019, another study revealed that the development of large-scalenatural language processing models could produce an exponential carbon footprint. At this rate, according to some experts, "AI" could account for up to one-tenth of global electricity consumption by 2025.

[2] As regards "AI", see for example M. David, C . Sauviat, Intelligence artificielle, la nouvelle barbarie, Éd. du Rocher, 2019.

[3] See the work of the team of the philosopher Daniel Leufer, for example, which has compiled the results of their research on the aimyths.org website.

[4] Continuing the observation made by J. Ellul, Les nouveaux possédés, Mille et une Nuits, 2003 (1973), p.316.

[5] See Y . Meneceur, L'intelligence artificielle en procès - Plaidoyer pour une règlementation internationale et européenne, Bruylant, 2020, p.397 et seq.

[6] C. Kang, J. Nicas and D. McCabe, Amazon, Apple, Facebook and Google Prepare for Their 'Big Tobacco Moment', The New York Times, 28 juillet 2020

[7] See Y .Meneceur, L'intelligence artificielle en procès - Plaidoyer pour une règlementation internationale et européenne, op.cit., p.182 et seq.

[8] See as an example S. Fay, Coût et soupçon de favoritisme : l'appli StopCovid dans le collimateur d'Anticor France Inter, 11 June 2020

[9] A nickname given by the press to the mathematician Theodore John Kaczynski, author of a series of parcel bombs between 1976 and 1982.

[10] The Data Protection Act was adopted in France in 1978 following a major scandal involving file cross-examination, see #3.1 in Part 3: The difficult emergence of a critical discourse on information technology and "artificial intelligence".

[11] For an account of these difficulties, see D. Cardon, J-P. Cointet, A. Mazières, La revanche des neurones. L'invention des machines inductives et la controverse de l'intelligence artificielle, Réseaux, 2018/5 (no. 211), p. 21.

[12] C. Moulas, Yann LeCun: "Creating machines that make as much sense as an alley cat", French Morning 3 June 2019

[13] Three ethical waves can be distinguished, the first coming from philosophers who laid down principles, the second from technicians who wanted to technically fix the problems, and the third, which is still in progress, which would manifest itself in concrete actions limiting the power of algorithms, such as the judgement of a Dutch court concerning a fraud detection system. See on this subject C. Kind, The term 'ethical AI' is finally starting to mean something, VentureBeat, 23 August 2020

[14] See R. Ochigame, The invention of 'Ethical AI', The Intercept, December 20, 2019 where the author quotes a former colleague of his from the MIT Media Lab who recounted that Marvin Minsky used to say that "an ethicist is someone who has a problem with what you have in mind".

[15] B. Mittelstadt, Principles Alone Cannot Guarantee Ethical AI, Nature Machine Intelligence, novembre 2019

[16] R. Ochigame, The invention of 'Ethical AI', The Intercept, 20 décembre 2019

[17] Silicon Valley, season 6 episode 5 - Summary available on : O. Henderson, Silicon Valley Recap: We Are Experiencing Tethical Difficulties, Vulture 24 November 2019

[18] Numerous meta-analyses have been written to analyse the profusion of ethical principles - see for example A. Jobin, M. Ienca and E. Vayena The global landscape of AI ethics guidelines, Nature Machine Intelligence 1, September 2019, pp.389-399

[19] S. Foucart, L'appel d'Heidelberg, une initiative fumeuse, Le Monde, 16 June 2012.

[20] C. Castoriadis, L'écologie contre les marchands. Sauvons les zappeurs abrutis, Le Nouvel Observateur, 7-13 May 1992, p.102 quoted by F. Jarrige, Techno-critiques - Du refus des machines à la contestation des technosciences, op.cit., p.333

[21] F. Joignot, Sherryl Turkle the shrink of new technologies. Yesterday a technophile, today worried about the drying up of human relations, Le Monde, 25 February 2019

[22] E. Morozov, Pour tout résoudre, click here, Fyp éditions, 2014, p.18

Part 3 | The difficult emergence of a critical discourse on computer science and “artificial intelligence”

Emerging in the wake of the Second World War and military research, information technology has emerged as the disruptive technology of recent decades. While nuclear power has created disorder and chaos, information technology is the tool of order and reason. It first accompanied the new calculation needs of States seeking to automate certain calculation or storage tasks, then in the 1970s it invested in private individuals' living rooms, in a context of major economic, political and cultural reconfiguration. The ever-increasing miniaturisation of components has led to the generalisation of the uses we know today with smartphones and to the in-depth redesign of means of communication, service offers and access to information. Since the beginning of 2010, "AI" has been presented as the latest major development in this technical trend, with its share of promises, disruptions and prospects for a better future. However, there has been no shortage of criticism of this "AI" and it warns us of the most diverse dangers, from the most fanciful to the most substantial. From a scenario of the extermination of man by machines[1] to a careful examination of the concrete impact of the algorithmisation of our world on humans[2], no majority doctrine seems to emerge from the abundant literature produced on this subject. One constant, however, seems to be emerging: it is the rejection of this criticism by public authorities, either by ignoring or minimising it, or by institutionalising it. The development, in some of the international organisations, of texts to create a 'trustworthy AI', 'ethical' or 'human-centred' is certainly to be read in this sense.

#3.1. The early criticism of computer science

Let's take a brief look back at the history of computer science and the way in which it has been criticised. From the very first successes of computers, their duality of use was fairly quickly perceived: as a tool of libertarian utopias in California, offering the possibility of unlimited access to information and the world to emancipate oneself from an oppressive state, and as a tool for controlling populations, filing, numbering, monitoring on a continuous basis [3]. Faced with the surge of micro-computers in the late 1970s - early 1980s, impact analyses will focus on three main areas: work, particularly with the risks of job losses linked to automated data processing, the threat to the quality of social ties and the surveillance society. With regard to the latter aspect, it is exactly in this context that the first laws on the protection of personal data appeared in Europe, in awareness of the still vivid memories of the massive filing of people during the Second World War. But this technological groundswell on society is not only marked by the proliferation of increasingly miniaturised and supposedly "intelligent" objects, it is also remarkable for the production of

a discourse, which has become permanent, designating information technology and its avatars, such as "AI", as the main factor of progress in our time.

In Canada, Marshall McLuhan prophesied his famous concept of the "global village"[4] as early as the 1960s, sensing that the interdependence resulting from these electronic tools would shrink the world. Jacques Ellul, though an uncompromising critic of technology, was enthusiastic in 1982 when he believed that microcomputing offered a historic opportunity to reorient the technical system in an emancipatory direction [5]. In the same year, the Times magazine named the computer as man of the year. However, the popular story will be written mainly from the western part of the United States, steeped in the culture of conquest of individuals believing in their manifest destiny, with the firm intention of starting the world over with new values. Films such as War Games, Tron, or series such as "*Whiz kids*", will feature teenagers controlling these mysterious machines by punching cryptic lines of code on monochrome screens, demonstrating that this technology could be as much the instrument of a new form of totalitarianism as it could be a form of liberating instrument for those who knew how to use it.

But whether it is a question of the commercial speeches of the manufacturers or the tales conveyed by Hollywood's soft power, the distrust in the population will remain rather strong in the face of these instruments which are supposed - already - to bring a solution in a world in crisis after the oil shocks. In the European institutions, the idea of the old Europe being cautious about innovation in the age of globalisation will already emerge at this time, as will the presumption that, by treating the issue from the point of view of uses, one would succeed in overcoming the sterile opposition between the promoters of IT and their critics[6]. At the same time, the social sciences would gradually focus on examining in depth the behaviour of individuals in relation to computer science, less than on its impact on structures. This "school of uses", although aware of the consequences of the generalisation of computer science, will gradually come into line with the consensus that it is not the technology itself that is to be blamed, but the way in which economic and political powers pervert it. This explains, at least partially, the difficulties in constructing an alternative discourse disconnecting technical evolution from progress. This was a decisive victory for an industry which had succeeded in making its production indispensable and which, after successfully installing its computers in offices and living rooms, was going to succeed in interconnecting them globally in the 1990s to become firmly rooted in every corner of our lives.

#3.2. The advent of the internet and the web, drivers of a new economy... without new regulation

The 'bubble' created by the emergence of the Internet and the massive interconnection of these personal computers during the 1990s has given rise to hopes and utopias. Critics of IT

have been replaced by the prospect of widespread access to knowledge and, above all, a completely new economy. This has led to a lasting dwindling of mistrust. The power of the simple "hypertext" link, already imagined by Douglas Engelbart in the 1960s and concretised by Tim Berners-Lee in the 1990s, which succeeds in creating links between knowledge, seems to provide a scathing response to the concerns imagining a computerisation of society worthy of 1984[7]. The benefits of the web and its technical support, the Internet, seem so obvious that very few in-depth criticisms will emerge and garages in California will once again begin to populate themselves with young entrepreneurs ready to seize their chance. Technically, the logic of the portal is obvious, like the one created by Yahoo! in 1995, which became the first major digital company. The principle was then to integrate on the same page as many services as possible in order to retain the Internet user as long as possible: news, weather, announcements, a search engine, an e-mail service... and advertising. At the same time, investment in information technology is increasing substantially, from $50.1 billion per year worldwide in 1980 to nearly $154.6 billion in 1990; at the height of the "net" economy bubble, it even reached a peak of $412.8 billion.

In Europe, the regulation on the protection of personal data in this context still reveals its robustness and relevance. It manages to reassure on the main abuses and is translated within the European Union by a directive in 1995[8], inspired by Convention 108 of the Council of Europe[9]. The resulting legal construction, until the adoption of the GDPR[10], will be the keystone of the protection of individuals in this brand new digital environment which, from the 2000s onwards, is beginning to aggregate considerable amounts of data. But, paradoxically, it is perhaps this success that will contribute to the neglect of other binding rules, whether it is a question of framing the market (the market will moreover correct itself dramatically on 14 April 2000, followed by the stock market crisis following the September 11 attacks) or of intervening in the face of new players that are difficult to categorise, with one central question: what are their exact levels of responsibility? But, here again, this question will lead to neglecting other, much deeper questions, such as the consequences on our perceptual capacities when we use several hours a day applications that are doubly ingenious and play on our cognitive biases to hold our attention ever more[11]... to thepoint that the dopamine released with each gratification received for a publication leads us to experience withdrawal effects comparable to other addictions when disconnected[12].

The very concept of an information and communication society, promoted with the generalisation of the Internet and designating the post-industrial era, has taken note of this technological determinism and has irrigated a public action that is wary of hindering innovation and slowing down very important growth prospects[13]. It is not, of course, a question of denying the growing and preponderant place of digital technology in our time, but rather of questioning whether it seems appropriate to unconditionally link the improvement of our living conditions and the maintenance of social ties to the sophistication of tools whose designers are capturing an increasingly large share of power

over the organisation of our lives outside of any democratic control[14]. This also raises the question of how regulatory policies have served much more to consolidate new dominant positions than to protect individuals and society from substantial infringements.

#3.3. The resurgence of a profound critique of computers and the internet entertained by the resurrection of the term "artificial intelligence".

It is justice that will be the first to intervene in a context where regulators are reluctant to confront the digital giants. The Google Spain ruling of the CJEU of 13 May 2014[15] will thus enshrine a right to oblivion (or, at least, a right to erasure) and will contribute, in a context where Edward Snowden had just revealed the previous year a mass surveillance system run from the United States, to temper the public perception of a beneficial impact of the "web" and digital tools. Although they had not completely disappeared since the 1980s, critical approaches to these "new technologies" (which are no longer critical) are finding a new audience in the mid-2010s. Refusal to use certain objects will develop, as will the public manifestation of voluntary disconnections. These attitudes will testify, less than to technophobia, to an ideological and political choice that refuses to contribute to the hold on our lives of industrial groups and a desire to regain control over a daily life that is increasingly synchronised with the rhythm of notifications from the various applications populating our mobile phones. The idea of a new biopolitical era is supported by authors such as Lawrence Lessing[16] ("code is law "), Antoinette Rouvroy[17] (who notes the emergence of algorithmic governmentality) or Adrien Basdevant[18] (who denounces a "data coup").

At the same time, however, a term that was thought to be out of fashion for a long time has returned to the landscape at the beginning of 2010. As a true zombie concept, "AI" has resurfaced from the depths where it had been carefully buried in the late 1980s to re-enchant the entire digital industry. Three musketeers (or rather conspirators[19]), Yann LeCun, Youshua Bengio and Geoffrey Hinton will be able to demonstrate that particular algorithms based on a statistical approach to the data, which are a few decades old, are able to work remarkably better than others that were fashionable at the time. Machine learning and especially deep learning prove to be extremely effective for recognising images and sounds. Buoyed by these successes, research and the digital industry will give lower priority to most of their other work to generalise the use of these algorithms in all fields of activity. Even in the absence of solid evidence showing that the models that have been established do indeed reproduce what they are supposed to establish, "AI" is being marketed not only in industry or services, but also in fields such as justice or health. The vertiginous growth prospects[20] of what is only one application, not entirely new, of computing[21] will contaminate the entire community, public and private . There will be no shortage of ambassadors to convince sceptics of the major benefits of instruments that are supposed to

be able to make decisions more reliably than humans, not on the basis of empirical knowledge, but on the basis of a statistical representation of any environment [22].

Since the same causes produce the same effects, critics of "AI" are given the same answers as critics of other technological innovations. To those who denounce in particular the dehumanisation of activities transformed by this technology, the aggravation of discrimination, the contribution to the advent of a surveillance society and the reduction of autonomy of action, it is replied that to resist the generalisation of this technology would be to fall behind other nations that are less concerned about regulation, it would also be to miss an opportunity for major economic development and it would be - above all - to resist progress. Efforts to regulate therefore initially took the form of various forms of regulations with very little binding force, such as guidelines, ethical principles or declarations. The surge in the production of such documents, which will reach its peak in 2018, has also been accompanied by a gradual mobilisation of international organisations, such as the United Nations, including UNESCO, the OECD, the European Union and the Council of Europe, to listen to the public's fears. The attention paid to the digital transformation of society has, however, focused on the promises and opportunities of this "AI", even if the definition is relatively vague, and the debates stabilised fairly quickly on the question of uses - which would be the only ones to be governed by more or less restrictive provisions. On the basis of success in highly specialised sectors, it was considered, without much scientific rigour, that a fairly generalised use was possible. Once again, the few who resisted were relegated to the ranks of the neo-Luddites of the 21st century.

Notes

[1] R. Cellan-Jones, Stephen Hawking warns artificial intelligence could end mankind BBC news, 2 December 2014 and E. Musk, interview in the documentary "Do you trust that computer", 5 April 2018.

[2] See, among others, developments by Bernard Stiegler, Dominique Cardon, Antoinette Rouvroy , Evgeny Morozov or Eric Sadin.

[3] Already in 1964 in Berkeley, demonstrators displayed punched cards around their necks and denounced the potential alienation of a transformation of humans into data.

[4] G. Tremblay, De Marshall McLuhan à Harold Innis ou du village global à l'empire mondial tic&société, Vol. 1, n°1, 2007

[5] J. Ellul, Changer de révolution - L'inéluctable prolétariat, Coll. Empreintes, Seuil, 1982.

[6] See the speech of the Minister for Foreign Affairs of the FRG, Hans Dietrich Genscher, to the Parliamentary Assembly of the Council of Europe - 37th session, 1985, quoted by F. Jarrige, Techno-critiques, Du refus des machines à la contestation des technosciences, op.cit., p. 293.

[7] The computer industry had already appropriated this image in... 1984, with the Apple advertisement, broadcast on 22 January 1984. Directed by Ridley Scott, this advertisement took up the universe of George Orwell and promised a year 1984 that would not resemble the book 1984 thanks to the Macintosh computer. Accessible on: https: //youtu.be/axSnW-ygU5g - Accessed on August 17, 2020

[8] Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data.

[9] Convention ETS No. 108, for the Protection of Individuals with regard to Automatic Processing of Personal Data.

[10] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of individuals with regard to the processing of personal data and on the free movement of such data, repealing Directive 95/46/EC.

[11] B. Patino, La civilisation du poisson rouge, Grasset, 2019

[12] T. Ong, Sean Parker on Facebook: 'God only knows what it's doing to our children's brains', The Verge, 9 novembre 2017

[13] E. George, Ending the "Information Society ", Vol. 2, No. 2, 2008

[14] E. George and F. Granjon (dir.), Critiques de la société de l 'information, Paris, L'Harmattan, 2008, p.10.

[15] CJEU, Grand Chamber, 13 May 2014 , Case C-131/12, Google Spain SL and Google Inc. v Agencia Espanola de Proteccion de Datos et Gonzales

[16] L. Lessig, Code is Law, Harvard magazine, 2000.

[17] A. Rouvroy and T. Berns, Gouvernementalité algorithmique et perspectives d'émancipation, Réseaux 2013/1, n°177, 2013, pp163-196

[18] A. Basdevant, J-P. Mignard, L'empire des données, Essai sur la société, les algorithmes et la loi, Don Quichotte, 2018.

[19] Term used by Yann LeCun himself, reported by J. Markoff, Machines of Loving Grace - The Quest for Common Ground between Humans and Robots: Harper Collins Publishers, 2015, p.150

[20] For financial projections for the development of AI, see the European Commission's fact sheet, Digital Single Market: http: //ec.europa.eu/newsroom/dae/document.cfm?doc_id=51610 - Accessed 17 August 2020

[21] Indeed, a distinction should be made between the initial project of computer science, which is computational, and the use of computer science for the purpose of reproducing reasoning and learning mechanisms, which can be described as "artificial intelligence". However, some currents have assimilated thought and calculation, through logic, notably the "symbolist" current, thinking that the modelling of thought could only be achieved through the writing of a computer code that signifies, linking together logical rules.

[22] To discover a courageous argument, transforming against all evidence the weaknesses of automatic learning into strengths, in order to convince prospects of its power to "predict" events read for example: AI in manufacturing: Do umbrellas cause car accidents? accessible on: https: //cosmotech.com/resources/do-umbrellas-cause-car-accidents/ - Accessed on 17 August 2020

Part 4 | Revitalising the content of a regulation on "artificial intelligence"

Surprisingly enough, the systemic benefits of the generalisation of IT, particularly in terms of productivity, have yet to be demonstrated. In 1987, Robert Solow, winner of the Nobel Prize in Economics, announced that "we see computers everywhere, except in productivity statistics". This paradox revealed the absence of an observable link, at the microeconomic level, between IT investment and business productivity. This observation still appears to be relevant today, since the Internet and its bubble, or the generalisation of smartphones and "AI", the economy is struggling to take off[1]. The economic crisis resulting from the health crisis caused by COVID-19 is unlikely to reverse the situation, since we have seen that this "AI", although promised to solve the widest range of problems, particularly in terms of health, has in reality had little operational impact[2]. It seems that we are still inheriting the influence of fairly old analyses, such as that of Daniel Bell, who believed that the key to the transition from industrial to post-industrial society would be in increasing productivity linked to information activities [3] - this famous "information society" - or of Simon Nora and Alain Minc, according to whom the economy would have to be computerised to produce growth[4].

#4.1. Regulatory initiatives acknowledging the link between technological innovation and economic growth

The preambles to the work carried out in Brussels, notably by the group of high-level independent experts set up by the European Commission, or in Paris within the framework of the OECD do not deny this line of thought. The "Ethical Guidelines for trustworthy AI[5]" of the experts mandated by the Commission acknowledge that AI systems raise risks (paragraph 10) but state above all that "We are convinced that AI has the potential to significantly transform society. AI is not an end in itself, but rather a promising means of increasing human prosperity, thereby enhancing individual and societal well-being and the common good, and bringing about progress and innovation" (paragraph 9). The European Commission's White Paper on AI[6] also identifies a number of risks, but opens with a number of assertions : "[AI] will change our lives by improving healthcare (e.g. more accurate diagnosis or better disease prevention), making agriculture more efficient, contributing to climate change adaptation and mitigation, increasing the efficiency of production systems through predictive maintenance, enhancing the safety of Europeans and in many other ways that we are only just beginning to see ". She added: "The Commission therefore advocates a regulatory and investment-based approach, with the dual objective of promoting the use of AI and taking into account the risks associated with certain uses of this new technology". Similarly, the OECD's "Council Recommendation on Artificial

Intelligence[7]" begins: "Artificial Intelligence (AI) is a generic technology that promises to improve the well-being of individuals, contribute to dynamic and sustainable global economic activity, stimulate innovation and productivity, and help address major global challenges". For both organisations, the issue is first and foremost the need to create a trustworthy AI, human-centred and human rights-based to support innovation and progress, as well as promising economic growth. In its "Preliminary study on the technical and legal aspects relating to the desirability of a standard-setting instrument on the ethics of artificial intelligence[8]", UNESCO for its part stresses that: "The emerging new digital economy presents immense challenges and opportunities for societies in Africa and other developing countries. From an ethical perspective, AI should be integrated into national development policies and strategies, building on endogenous cultures, values and knowledge to develop African economies" (paragraph 10). The Council of Europe also refers in the preamble of its Recommendation on the Impact of Algorithmic Systems on Human Rights: "Bearing in mind the significant potential for socially beneficial innovation and economic growth that digital technologies hold[9]".

However, reading these presumptions through the prism of the "Solow paradox", and even if the absolute poverty rate seems to have declined in the world over the last few decades[10], it should be noted that we have not witnessed a reduction in inequalities and that the promises of growth revitalised by massive investment in digital innovation are not quite there. Many applications of "AI", presented as a solution to often very complex problems, are not only not very mature, but above all unsuitable to produce the service they claim to provide. For example, recognising an image or winning at the game of go with the help of machine learning is one thing but thinking that one can use the same technology to assess an individual's alleged dangerousness or predict compensation awarded by a court is quite another. Not only because there is a clear resurgence of a deterministic conception of individuals[11] in criminal matters or an absolute ignorance of what a legal system is in civil matters[12], but also because, structurally, manipulating quantifiable data, in closed environments, is not the same as manipulating qualitative data, in open environments. People also seek to amass considerable quantities of all kinds of data, thinking that they are thus capitalising on an essential resource, whereas, qualitatively, not everything is worthwhile[13]. This lack of rigour therefore supports the production of necessarily disappointing, even dangerous results, potentially undermining the credibility of any form of application and then weighing on the confidence of investors and users.

Designing regulation of technologies such as "AI" should therefore admit, as a preamble, that our way of quantifying and analysing innovation and progress may not be the right one. Should technological innovation necessarily be seen as progress for humankind? Is economic growth an unconditional factor in improving living conditions? Or should well-being be defined and measured differently than through the prism of GDP alone? Through effective and strict regulation of "AI", we should therefore be able to consider what we should do with it rather than speculating on what we could do with it. In this way, progress

could be born not from vague ethical principles, even transformed into legal texts, which are supposed to guarantee abuses, but from the pure and simple exclusion of commercial or public applications that are far too risky.

#4.2 Refocusing the work on the regulation of "artificial intelligence" with knowledge of the real state of the art.

It therefore seems urgent to get rid of language elements and repeated catchwords, which are not unique to "AI", in order to take an objective look at the digital world and design regulations capable of dealing with the real issues facing society. It is of course essential to prevent discrimination of all kinds, to escape the progressive constitution of a surveillance society and to preserve privacy, to guarantee our autonomy of action and to ensure our freedom of expression. However, these objectives must be achieved by reinvesting in a serious scientific approach, excluding from the outset the use of techniques and technologies that are too immature or simply unsuitable. The scandal provoked by the publication of an extremely approximate study on the effect of a drug on the coronavirus by The Lancet is unfortunately representative of this "epidemic of bad science" mentioned in the first part of this study, the editor of this journal acknowledging that "this episode represents a complete failure for science[15]".

Regulators, both national and international, need to be informed about the precise state of the art and not simply receivers of discourse forged by an industry anxious to establish its hegemony over our times[16]. The economic crisis, which is already affecting us, must not give us the opportunity to increase the mesh of the digital hold on the pretext of a completely hypothetical search for economic growth (it was not there before). It should, on the contrary, invite us to get our act together to evaluate exactly the quality of what is being sold to us and the consequences of a transfer of governance, already well advanced, between States abandoning many of their prerogatives in favour of private operators, whose vocation is neither to guarantee nor to reinforce the general interest.

Effective regulation of "AI" should therefore be based on high-level expertise that is free of economic interests or state sovereignty, based on sound and reproducible evidence. It is the entire evaluation process that should be drawn from these influences in order to create a network of multidisciplinary experts, representing a common conscience, whose compass would be firmly anchored towards human progress, so dear to the Enlightenment, and not towards "technology". Guaranteeing, upstream, the quality and neutrality of scientific production, particularly public research, is therefore a guarantee that the production of standards, downstream, makes sense.

#4.3. The challenges and opportunities of effective regulation of "artificial intelligence".

However, the political, economic and social context is not conducive to such a recovery, even if the health crisis has blatantly confirmed the structural weakness of the scientific-industrial complex. Add to this the weakening of the primacy of the rule of law in favour of self-regulation mechanisms in addition to the transfer of governance, already mentioned, to private operators, and it is easy to understand the difficulties for regulators to impose strict views on the regulation of "AI", breaking with the prevailing consensus on the irreducible conception of progress through technology. It must be said that the widespread feeling of generalised backwardness into which we have been plunged over the last few decades[17] imposes on us a forced march towards a saving technological progress. This same feeling enjoins us to adapt at all costs, as quickly as possible, without giving ourselves time to problematise... and with a view that is in fact fixed in the short term. It even makes us wonder whether, after the long era of the temporal primacy of religion and then the advent, with the Enlightenment, of the rule of law to organise human affairs as well as possible, we might not be entering another era: that of a true primacy of an interpretation of the world by algorithms (and of a "State of algorithms "[18]), whose operational instrument would be "AI ". With a concrete result: the delegation, de facto, of the bulk of the administration of the affairs of our society to private operators, without any democratic control.

However, in view of the impact of this veritable doxa, we will have to manage to overcome the dialectic being imposed on us, irremediably linking these digital technologies with economic growth, in order to escape from the ultimate stage of a techno-centric evolution, creating both the conditions for evil and its terrible remedy: transhumanism. For what should be considered in the years to come is as much the sacredness and drifts imposed by a specific technology, such as "AI", as the drifts resulting from the conjunction of technologies such as nanotechnologies, biotechnologies, information technologies and cognitive sciences (NBIC). Here again, there is nothing inevitable about Gabor's famous law, and it will be the conjunction of a rigorous and truly ethical scientific approach, allied to a legal framework based on human rights, democracy and the rule of law that will set the course for an improvement in the condition of humanity. Paradoxically enough, it is even the genuine consideration of critical discourse that can become their best guarantee of the longevity of a capitalist and neo-liberal project.

Indeed, strict regulations have already been introduced on a massive scale in industrial fields such as the automotive industry (with the proliferation of active and passive safety measures in vehicles) or medicines (with pre-market certification). These frameworks have in no way slowed down innovation and, on the contrary, have been a guarantee of consumer confidence[19]. While this same confidence is sought for "AI", it seems surprising that part of the digital industry is still trying to stifle criticism, however substantial, or to slow down the

adoption of strict standards, capable of surpassing the mere incantations calling for "trustworthy AI". The foundations and axes of a regulation that would be effective and not cosmetic have yet to be determined.

#4.4. The foundations and the main axes of an effective regulation of "artificial intelligence".

Among the foundations identified by most international organisations, human rights or fundamental rights are consistently listed as one of the essential building blocks of their legal instruments. Although criticised rather severely, both by the promoters of a free market and the critics of hyperinvidualism[20], human rights indeed appear sufficiently general, cross-cutting and reassuring to form the basis of a regulation that seeks confidence . It is moreover on this basis that the first international text on the protection of personal data, Convention 108 of the Council of Europe[21], was based in 1981 by joining the corpus of the organisation's treaties, which already included the Convention for the Protection of Human Rights and Fundamental Freedoms[22]. With regard to "AI", and again with reference to the European Convention on Human Rights, it contains substantial guarantees with regard to the right to respect for private and family life (art. 8), the right to freedom of expression (art. 10), the right to a fair trial (art. 6), the prohibition of discrimination[23] (art. 14) and, by jurisprudential construction, dignity[24]. All these guarantees are of major interest in preventing well-documented abuses in the use of "AI" or algorithms, such as claims to assess the risk of recidivism of an individual in criminal matters, for example[25] or attacks on democracy through attempts at mass manipulation[26].

First of all, a whole series of arguments will be refuted here that seek to dismiss, attenuate or instrumentalise human rights with the sole aim of "whitewashing" AI or creating a very artificial sense of security. Thus, it could be argued that it was useless to create new texts specific to this technology, because of its innovative and shifting nature, or that only highly specialised regulations would be needed, with the sole aim of leaving gaps into which to slip to escape the rules enacted. Reference could also be made to vague concepts ("human-centred") or principles that leave sufficient room for interpretation to falsely create a sense of trust without real guarantees. It will therefore be a question of focusing on potential lines of regulation that do not consider human rights as a universal key, but as a necessary and insufficient condition to fulfil alone this function of providing a legal framework for "AI". This is why other sets of principles will also be called upon, which, in order to be fully effective, should also be accompanied by monitoring mechanisms.

Such a regulation should first adopt a technologically neutral and sufficiently broad definition of "AI" in order to build a global and coherent legal mechanism capable of apprehending the essence of computer applications likely to have a significant impact[27] on individuals or society. The notion of "algorithmic systems", developed in particular in a

Council of Europe Recommendation[28], could in the end be preferred to the term "AI". The motivation behind such an approach is to manage to apprehend the greatest possible number of specific situations resulting from the use of information technology, particularly those relating to decision-making or decision-making assistance. This regulation should then lay down a number of principles[29], among which we could cite the following :

- **A precautionary principle**: Where there is a risk of serious or irreversible damage resulting from the use of algorithmic systems, lack of full scientific certainty should not be used as a reason for postponing the adoption of effective measures to prevent harm to individuals, society and the environment. Placing on the market or use by the public sector should be purely and simply deferred or prohibited, this not preventing research into perfecting socially acceptable tools with a sound ethical framework[30].
- **A principle of proportionality in the use of algorithms**: The use of algorithmic systems, in particular decision-making (or decision support) systems with a significant impact on individuals and society, should be considered only if it is demonstrated that there is a need for them, a particular added value and if there are no other equally efficient modalities that are less intrusive and less energy consuming to perform a task or provide a service. This proportionality will be particularly sought in order to protect human rights and fundamental freedoms, by prohibiting the systematic use of highly intrusive technologies in public spaces, such as facial recognition, except in exceptional circumstances and under strict supervision of the judicial authority. This proportionality should also be considered for public services in order to limit the effects of the digital divide between different parts of the population. It could also be sought in any other sector of activity in order to encourage direct human interaction, when necessary, without digital intermediation.
- **Respect for human dignity**: In convergence with nanotechnologies, biotechnologies and cognitive sciences, the use of algorithmic systems interfaced directly on human beings for the purpose of increasing their capacities should only be envisaged in particular situations of disability compensation. Research and development of such systems should be guided by the same guiding principles as for biomedicine.
- **Strengthening solidarity**: The benefits resulting from the use of algorithmic systems should be redistributed equitably so that innovation contributes to the strengthening of social cohesion, to the well-being of populations and individuals and to harmonious human development, as envisaged in the United Nations' sustainable development objectives.

Many other axes could be evoked to complete what could be integrated into the international legal order in the form of a framework convention for example[31], in particular with regard to data (in order to find a link with data protection provisions) or ex ante certification to ensure the conformity of systems[32]. Even if previous experiences with this type of high-level legal instrument show an effectiveness that could be discussed because of their lack of direct legal effect [33], the emergence of an ambitious international consensus on this matter can only be achieved gradually.

The integration of principles recognising that human progress is not inevitably linked to technology and, at the same time, a new impetus given to credible public research, disconnected from financial and market interests, are probably the keys to the sustainable development of our societies, which would deserve to be supported by a new political project that would draw, in a broad manner, all the consequences of the lessons of this health crisis.

Notes

[1] In a more sectoral way, a report of the Council of Europe (European Commission for the Efficiency of Justice - CEPEJ) concluded in 2016 that it was difficult to demonstrate a link between the computerisation of courts and the improvement of their efficiency - Thematic report: the use of information technologies in the courts in Europe, CEPEJ Studies n°24, 2016.

[2] J. Bullock, A. Luccioni, K. Hoffmann Pham, C. Sin Nga Lam, M. Luengo-Oroz, Mapping the landscape of Artificial Intelligence applications against COVID-19, UN Global Pulse, 24 avril 2020

[3] D. Bell, The Coming of Post-Industrial Society. New York: Harper Colophon Books, 1974

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[5] Independent Expert Group established by the European Commission in June 2018, Ethical Guidelines for Trustworthy AI, April 2018.

[6] White Paper on Artificial Intelligence - A European approach based on excellence and trust, February 2020

[7] OECD, Council Recommendation on Artificial Intelligence, OECD/LEGAL/0449, May 2019.

[8] UNESCO, Preliminary study on the technical and legal aspects relating to the desirability of a standard-setting instrument on the ethics of artificial intelligence, 206 EX/42, March 2019.

[9] Council of Europe, Recommendation of the Committee of Ministers to member states on the human rights impacts of algorithmic systems, CM/Rec(2020)1, April 2020.

[10] The World Bank has proposed two new poverty lines for 2018: the first, at $3.2 a day, which implies that 25% of the world's poor are poor, and the second at $5.5, which implies that almost 50% of the world's poor are poor. However, these international comparisons no longer focus on 'absolute poverty', with different thresholds, but on 'relative poverty', which counts households living below a certain fraction of median income. According to this reading grid, while absolute poverty is falling in developing countries (1.84 billion people in 1990 against 766 million in 2013), relative poverty is rising (482 million people in 1990 against 1.32 billion in 2013). In other words, total destitution appears to be decreasing while inequalities are increasing.

[11] In the 19th century, Italian forensic medicine professor Cesare Lombroso believed he could identify potential criminals on the basis of phrenological and physiognomonic studies, i.e. by examining the shape of skulls and facial features. Although his assertions have since been refuted, particularly in order to bring about penal policies centred on the reintegration of individuals, this current of thought is still active and has been revived by the statistical possibilities provided by "AI". See in particular the interview with Michal Kosinksi, a psychologist in computational social sciences, who thinks he warns of the dangers of "AI" and its ability, for example, to identify homosexuals on the basis of their facial features - UpNorth Production , iHuman, Accessible on: https: //youtu.be/20kV0CcFSKE (interview at 35mn20) - Accessed on 21 August 2020

[12] Current legal systems are far removed from the ideal of rationality that the 1804 Civil Code was intended to embody in France. There are a multitude of sources that do not fit together in a perfectly coherent manner and that relate to a set of rules whose meaning remains very indeterminate, what the legal theorist Herbert L. A. Hart described as the "open texture of law" - see in particular H. H. Hart, "The Open Texture of the Law". L. A. Hart, Le concept de droit : Facultés universitaires Saint-Louis Bruxelles ed. law school, 1976

[13] On the great ambitions of the European Union on this accumulation of data, see D. Perrotte Thierry Breton: "The industrial data war begins now and Europe will be its main battlefield", Les Echos 17 February 2020.

[14] See the dossier Artificial intelligence and its limits in The Economist of 11 June 2020 , op.cit.

[15] S. Delesalle-Stolper, "The Lancet": "The arrogance of the West is responsible for tens of thousands of deaths", Libération, 15 June 2020

[16] On how the media relays digital industry discourses on 'AI', see J. Scott Brennen An Industry-Led Debate: How UK Media Cover Artificial Intelligence University of Oxford, Reuters Institute for Study ofJournalism, 13 December 2018.

[17] Ba. Stiegler, "We must adapt": on a new political imperative, *op.cit*.

[18] R. Batko, J. Kreft, The Sixth Estate - The Rule of Algorithms, Problemy Zarzadzania, University of Warsaw, Faculty of Management, vol. 15(68), 2017, pages 190-209

[19] To take the automobile example, on 1 July 1973, the use of safety belts in the front seats of motor vehicles became compulsory in France. It was then the first European country to impose this measure, after a particularly deadly year in 1972 when 18,034 people were killed. Although initially poorly accepted, this measure led to a 30% reduction in the number of people killed from December onwards. Even though the population and the number of cars have increased since then, 3,259 people will be killed in 2018.

[20] For a critique of human rights, and its refutation, see J. Lacroix and J-Y. Pranchère, Les droits de l'homme rendent-ils idiots, Seuil, 2019.

[21] Convention ETS No. 108, for the Protection of Individuals with regard to Automatic Processing of Personal Data.

[22] Convention ETS No. 5, for the Protection of Human Rights and Fundamental Freedoms, known as the "European Convention on Human Rights".

[23] It should be noted that Article 14 of the HRE Convention is never applicable in isolation, but always in conjunction with another article setting out a right or freedom. See on this subject F. Edel, The prohibition of discrimination by the European Convention on Human Rights, Human Rights Files No. 22, Council of Europe Publishing, 2010.

[24] The Protocol amending Convention 108 (CETS No. 223) added an explicit reference to human dignity in the preamble to the Convention: "Considering that it is necessary to guarantee human dignity and the protection of human rights and fundamental freedoms of all persons".

[25] Concernant l'algorithme COMPAS aux États-Unis, voir par exemple J. Angwin, J. Larson, S. Mattu, L. Kirchner, Machine Bias: There's software used across the country to predict future criminals. And it's biased against blacks, ProPublica, 23 mai 2016

[26] See in this respect the website of The Guardian, The Cambridge Analytica Files, accessible at: https: //www.theguardian.com/news/series/cambridge-analytica-files - Accessed on 21 August 2020

[27] See Y . Meneceur, L'intelligence artificielle en procès - Plaidoyer pour une règlementation internationale et européenne, *op.cit.* , p.385

[28] Council of Europe, Recommendation of the Committee of Ministers to member states on the human rights impacts of algorithmic systems, CM/Rec (2020)1, April 2020 (Appendix, paragraph 2): "(...) 'algorithmic systems' means applications which, often using mathematical optimisation techniques, perform one or more tasks such as data collection, aggregation, cleaning, sorting, classification and inference, as well as selection, prioritisation, recommendation and decision making". For the purposes of this study, he used the following definition: "a system composed of one or more algorithms used in software to collect and analyse data and to draw conclusions as part of a process designed to perform a task".

[29] A more exhaustive list of the constituent elements of such a regulation has been set out in: Y. Meneceur, L'intelligence artificielle en procès - Plaidoyer pour une règlementation internationale et européenne, *op.cit*. pp. 383 et seq.

[30] A. Rességuier et R. Rodrigues, AI ethics should not remain toothless! A call to bring back the teeth of ethics, Big Data & Society, 2020

[31] See Y . Meneceur, L'intelligence artificielle en procès - Plaidoyer pour une règlementation internationale et européenne, *op.cit.* , p.383

[32] Y. Meneceur, L'intelligence artificielle en procès - Plaidoyer pour une règlementation internationale et européenne, op.cit. p.351 et seq. and Y. Meneceur, La procédure de certification : une régulation intelligente de contrôle... de l'intelligence artificielle, Revue Experts n°148, February 2020

[33] See the UN Framework Convention on Climate Change and the Council of Europe Framework Conventions on Transfrontier Co-operation or on Minorities.

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Criticism of technology: key to the development of artificial intelligence?

Artificial intelligence (AI) continues to raise high hopes for the coming years as a hoped-for driver of human prosperity and well-being. These generous promises emanating directly or indirectly from the digital industry are being met by growing public concern, particularly in the face of applications that are controversial or eternally on the verge of becoming fully functional. After years of ethical discourse, international and national regulators are starting to get their act together, but they risk missing the mark by proposing texts that are sometimes too little, or sometimes too ambitious. And what if the right balance is likely to emerge from the critical discourse on technology, the relevance of which is all too often underestimated by the entire community?

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