



## **THE GROWING MORAL CHALLENGE IN THE FACE OF TECHNOLOGIES: INTERNET, SOCIAL NETWORKS, IOT, BLOCKCHAIN AND ARTIFICIAL INTELLIGENCE**

*O crescente desafio moral em face das tecnologias:  
Internet, Redes Sociais, IoT, Blockchain e Inteligência Artificial*

Patricia Huelsen, Marcelo A. Vieira Graglia, Noêmia Lazzareschi  
Pontifical Catholic University of São Paulo - Brasil  
Email: [phuelsen@pucsp.br](mailto:phuelsen@pucsp.br), [mraglia@pucsp.br](mailto:mraglia@pucsp.br), [nlazzareschi@pucsp.br](mailto:nlazzareschi@pucsp.br)

### **ABSTRACT**

The study evaluates five technologies or technological arrangements: internet, social networks, internet of things, blockchain and artificial intelligence. These technologies are in different degrees of maturity and make up the new wave of technological innovation, the effects of which will cause severe changes in the economy, in labor relations, in employment and in society in general. The objective of this research is to carry out a basic assessment of these technologies in terms of their characteristics, implications and impacts on human and social relations, expanding the analysis to understand the ethical issues and human values involved, with an emphasis on the Brazilian reality. The method used is an exploratory, multidisciplinary research, which uses as references, among others, articles from the social sciences and philosophy, the basis for ethics. The first topic discusses the ethical helplessness in which we live today, followed by the analysis of the contexts of technologies and the moral dilemmas involved. The final topic presents the assessment of human values and virtues present in the interaction with the technologies analyzed.

**Keywords:** Human Values; Ethics; Artificial Intelligence; Blockchain; Internet of Things; Social Networking.

**ACEITO EM: 24/08/2020**

**PUBLICADO: 30/05/2021**



## O CRESCENTE DESAFIO MORAL EM FACE DAS TECNOLOGIAS: INTERNET REDES SOCIAIS, IOT, BLOCKCHAIN E INTELIGÊNCIA ARTIFICIAL

*The growing moral challenge in the face of technologies: Internet, Social networks, IOT, Blockchain and Artificial intelligence*

Patricia Huelsen, Marcelo A. Vieira Graglia, Noêmia Lazzareschi  
Pontifical Catholic University of São Paulo - Brasil

Email: [phuelsen@pucsp.br](mailto:phuelsen@pucsp.br), [mraglia@pucsp.br](mailto:mraglia@pucsp.br), [nlazzareschi@pucsp.br](mailto:nlazzareschi@pucsp.br)

### RESUMO

O estudo avalia cinco tecnologias ou arranjos tecnológicos: internet, redes sociais, internet das coisas, blockchain e inteligência artificial. Estas tecnologias encontram-se em diferentes graus de maturidade e constituem a nova vaga de inovação tecnológica, cujos efeitos irão provocar mudanças severas na economia, nas relações de trabalho, no emprego e na sociedade em geral. O objetivo desta pesquisa é realizar uma avaliação básica dessas tecnologias quanto às suas características, implicações e impactos nas relações humanas e sociais, ampliando a análise para compreender as questões éticas e os valores humanos envolvidos, com ênfase na realidade brasileira. O método utilizado é uma pesquisa exploratória e multidisciplinar, que tem como referência, entre outros, artigos das ciências sociais e da filosofia, fundamento da ética. O primeiro tópico discute o desamparo ético em que vivemos hoje, seguido da análise dos contextos das tecnologias e dos dilemas morais envolvidos. O tópico final apresenta a avaliação dos valores e virtudes humanas presentes na interação com as tecnologias analisadas.

**Palavras-chave:** Valores Humanos; Ética; Inteligência artificial; Blockchain; Internet das coisas; Rede social.

## INTRODUCTION

The issue of ethics in the face of the expansion and use of new technologies has provoked an intense debate, especially for the advance of Artificial Intelligence. This debate involves central issues that are still unresolved, as we are a society built on racial, gender and economic differences. Despite the immense contribution to ethics and morals brought by Aristotle, Plato, the illuminists Kant and Hegel, for example, these thinkers of morality and ethics, coexisted and were not opposed to the slave society, as Freitag (2013) recalls. Algorithms, increasingly present in the contemporary world, are replicating prejudices based on the use of databases impregnated with human vices. The internet, in turn, has been an environment characterized by freedom. However, it is still an unsafe and inaccessible environment for many people. Social networks, a remarkable phenomenon at the beginning of this century, bring interesting benefits to society. On the other hand, it is a field for the propagation of lies, hate speech and disinformation. Monitoring technologies increase security, but contribute to a lack of privacy and exaggerated surveillance. The increasing interaction between people and technologies and their growing application by companies and other organizations reinforces the need to revisit ethical precepts and reinforce certain moral values.

## 1 THEORETICAL ARGUMENT

Postmodern man has lived helplessly by ethics and lives with limited morals, that is what important thinkers of our time report, such as Morin, Bauman, Lipovetsky. Bauman (2011) believes that ethical values are lost in fragmented society and that solutions depend more than ever on individual morals. Lipovetsky (2009) demonstrates that the fantasies of consumption helped in the pursuit of happiness as the ultimate end, leaving duty to the background. Morin (2005) clarifies that the ethical challenges are great, as the individual ethics was stifled by self-centeredness and the community no longer finds the deserved solidarity.

In *Moral Blindness*, Bauman (2013) recalls that the evil of our times is not restricted to totalitarian ideologies, but it is revealed when we fail to react to the suffering of other people, when we refuse to understand others or are insensitive to the pain of others. For him, an invisible form of evil is when a country's economic and political power is above the value of each individual, when financial interests outweigh the respect of each. For the sociologist, the individualistic and egocentric mentality of human beings is part of a process that took place with the Modern Age, as men distanced themselves from religions, they became individualists. Modern processes have forced them to take charge of their lives, dissipating their efforts. The void brought by distance from religion and modern life could not be filled by the rules imposed by legislation and by the State (Bauman, 2014).

Morin (2005) gives the moral concept a certain mystical, rational and also emotional identity. The thinker sees that morality depends on an act of rewiring with the other, rewiring with a community. It also shows that morality is somewhat natural, as it corresponds to the nature of the subject and society. Individual conscience is the intellectual and moral conscience. This awareness arises from the development of what he calls the individual - species - society relationship. However, there is an antagonism in this relationship: politics does not always obey ethics and the economy considers business ethics, following the imperatives of profit that, in turn, lead to the exploitation of human beings. Science itself sometimes puts knowledge for knowledge, or at the service of economics, of politics, leading them to immoral ends. This is what happens with wars or improper genetic manipulation. Thus, human activities need professional ethics. This professional ethics must always include the moral perspective of human beings. The ethical crisis that Morin (2005) narrates is a general crisis of the foundations of certainty, a crisis of knowledge itself.

Lipovetsky (2009) understands that postmodernity suffers a demoralization, a time when ethics is in darkness. The title of his work in french is *Le crépuscule du devoir*. This designation has the sense of weakened duty, a time when the notion of personal sacrifice lost its social justification, when morality is not devoted to a higher end and where subjective rights prevail over imperative commandments. Morality, to the extent of the sacrifice it implies, is run over by the desire for a better life, consumption, entertainment. The responsible for this dismantling of duty was the civilization of consumerist welfare, which no longer has the brakes for desire. The culture of happiness distances us from subjective introspection and usually triggers a dynamic that generates anxiety, as we are always looking for a happy future, the ideal appearance, we are never satisfied. Lipovetsky

reports with metaphorical adjectives the behavior nowadays where we are in search of happiness in small terms, but it seems to us more and more distant. Paradise is no longer in the other world, it is in this one and depends on the progress of the law and the material conditions of existence. Humanity does not accept suffering passively, but wants the ideal of happiness in comfort, in pleasures. He reports that in the post-duty society, evil is an attractive spectacle, there are no more heroes, there is no need to be virtuous.

## **2 METHODOLOGY OF ANALYSIS**

This work considered technologies or technological arrangements that have a relevant impact in terms of efficiency gains, cost reduction and improvements in processes, indirect benefits to human beings, but whose impact is strongly perceived in their lives: either because of the change in forms work, relationships, lifestyles, learning or social contact. It was decided not to consider technologies directly related to the preservation of life, that is, the technologies most linked to medical and health areas, such as biotechnology and genetic engineering, were not considered here. The work is exploratory and brings together, among others, references from works in the social sciences and philosophy to support the debate on ethics and moral values, brought about by the use of these technologies. There is a specific cut, but not restricted, to the Brazilian reality.

## **3 TECHNOLOGIES AND THEIR RESPECTIVE MORAL REQUIREMENTS**

### **3.1 Internet: the principle of freedom and the need for greater security**

The networks promoted changes in social and urban flows conditioned by the flow of capital flows, adding new structures and new services. There are at least two flows: the flow of electronic circuits, telecommunications, high-speed transport systems and the flows that make up the nodes of this network: communication centers - which have the function of coordinating the passage of information. The expansion and consolidation of resources in telecommunications and technology not only reduced the distance between people, but also changed their flow, influencing the process of globalization and local development (Castells, 2006).

With the change in the flow of information caused by the Internet, there was also a break in mass communication, whose flow was characterized by having a single meaning: from an interlocutor to several receivers. With the Internet, the flow of communication became multidirectional and this brought prominence to new actors. Long before social networks dominated the Internet, the Internet, as a technology in itself, was able to put human beings at the center of the communication process. Communication companies now have an exchange role shared with other Internet users. Many created their blogs, websites and started to produce content and disseminate information competing with media companies and creating a new space for freedom of expression. The Internet has made possible a structural change in the media, where some traditional media have been extinguished (such as the CD), others have been significantly reduced (magazines and printed newspapers) and others are being threatened, as is the case with TV, by online and on demand video solutions. Traditional media companies went for online, open, free and free communication, competing with the generation of content from ordinary individuals and other companies.

Along with the web, a series of specific cyberspace behaviors emerged, a topic already studied by many researchers such as Santaella (2008), Lemos (2015) and Levy (2010) who raised issues such as privacy, security, excessive freedom and how life has been completely transformed with immersion in online. One of the typical tribes of this universe, is the tribe of hackers. The hacker movement practically emerged with the internet, and was characterized by individuals, programmers and adherents of the free web that created code exchange communities. Hacking has legitimate purposes, such as looking for flaws in systems and improving them and illegitimate purposes, such as hacking systems and stealing data for illegal purposes. Most illegal activities occur in the so-called deep web (Graglia, Huelsen, Cacciari, 2018). The deep web, also known as the invisible internet, maintains the anonymity of those who access it, but does not guarantee the user's security. This terminology is used to refer to addresses that are not indexed by search engines. There is also a subdivision of the deep web, a small part called the dark web, which is not indexed and where the most obscure transactions are carried out. In this environment there is a little bit of everything: closed information accessed by joint ventures, libraries,

confidential government data, access to prostitution networks, drug sales, human trafficking, counterfeiting, murder orders (Wright, 2017, Beckett, 2009) .

### **3.2 Social networks: acceleration of social interaction, the practice of truth and respect**

The phenomenon of social networks, as well as other technological arrangements and their applications, could only exist because of the existence of the Internet. Thus, part of the values and moral dilemmas reported below are also related to the web. Social networks are characterized by being a space for sharing information and social exchanges in an accelerated and intense way. Computer-mediated communications (CMC) led to the emergence of specific groups and communication networks, named by Rheingold (1996) of virtual communities. The word community translates trust and emotional connection, however, this does not seem to really happen, as Bauman (2004, p. 23) says: “Pure relationships are the portent, not so much of the mutuality of liberation, but of a mutuality of insensitivity”. Social networks show the challenge of respect and good human interaction, in an environment of relationships intensified by millions of accesses, guided by pseudo friendships and strong exposure of images. A recurring phenomenon reported as the bubble of networks, shows the formation of interest groups that are closed in their own prejudices. This is due to the use of artificial intelligence systems, the algorithms of the social networking platforms direct news, products and friendship suggestions according to the user's previous choices, leaving individuals restricted in their bubbles of intention and comfort. Bakshy, Messing and Adamic (2015) surveyed ten million American users on Facebook and found that users who were subject to the action of algorithms that recommended targeted news and who had no access to the opinions of others, with different views, were more likely to do not change your mind on the reported topics than those who have not been subjected to these conditions.

Among the negative aspects, there is not only the exacerbated individualism described by postmodern sociologists, but also exhibitionism, voyeurism, immeasurable fun, unpaid work, the practice of illegalities, constant lies. Social networks are an environment for freedom, but also a space for masks and false identities and a place for manipulating information. The manipulation comes from users, hackers, data companies, technology companies, governments. If, on the one hand, meetings and protests in favor of democracy are promoted, on the other hand they function as a mirror of human evil: pedophile networks, extremist groups, illegal sales, insecurity exists everywhere. Social networks promote freedom, but together with that, they cause fear, lack of privacy, insecurity and the spread of untruths (Huelsen, 2018, 2019)

Among the positive actions present in the networks, we highlight the exchanges of knowledge, typical of blogs and online communities or even groups of collaborative and solidary action that, through the so-called crowdfunding, are able to raise funds to finance projects. Castells (2006) reported the solidarity and the value of the possibility of expressing sincerity in networks, even if people do not have strong ties. Another aspect is that of social mobilization in translating the interests of groups from social networks to the streets through social mobilization, which was called by Castells (2013) as “networks of indignation and hope” and by Negri (2016) “multitude”. Brazil has experienced two great moments of social mobilization through networks in recent years. The first moment took place with the protests of June 2013, which marked the demonstrations of ordinary citizens, many masked, claiming the cancellation of the bus fare increase, the reduction of violence, improvements in living conditions, among other demands that began on the streets of São Paulo and spread across the country. The other moment was in May 2018 with the stoppage of truck drivers who met through social networks (especially WhatsApp) and stopped the country's transport for ten days. The consequences were serious: product shortages and fuel shortages, in addition to reduced economic growth that year. There is no doubt that organized groups are also part of these manifestations, but the form of organization was largely autonomous and spontaneous and took place through social networks (Lazzareschi, Graglia, Huelsen, 2020).

The political and social importance that these social platforms have acquired is unquestionable. On the other hand, the use of fake accounts, the use of algorithms and robots that direct and propagate hate messages and fake news, put Brazilian democracy to the test. More recently, Facebook, Twitter and WhatsApp have adopted control measures to contain abuses, such as account suspension, blocking posts and restricting the limits allowed for sharing messages. The phenomenon of fake news in the country has generated such an impact that investigations are being conducted by the Supreme Federal Court, by the National Congress, through a Joint

Parliamentary Commission of Inquiry, and by the Federal Court of Accounts (Graglia, 2020). There are accusations of injuries to government opponents, the formation of anti-democratic networks that spread news of hatred and misinformation through the dissemination of false and unsubstantiated scientific data about the pandemic of COVID-19, confusing Brazilians as to the reality of the situation, its risks, the efficacy of medicines and sanitary measures to fight coronavirus. These situations show that digital crimes, like technologies, go faster than justice.

### **3.3 Internet of Things - IoT: opportunities to control resources and the fear of surveillance**

The Internet of Things is not in itself a unique technology, as it depends on a series of existing technologies to happen. This technological arrangement prospered with the arrival of cloud computing, big data and web analytics, systems capable of collecting a lot of data, evaluating them statistically and predicting future actions (Patel, Patel, 2016). A major advance for the progress of IoT was made with IPv6, the most current version of IP. The release of IP control numbers to the world is centralized in the Internet Number Administration Authority (Iana) and, until recently, version 4 of IP (IPv4) was used exclusively, which allows a combination of 4.3 billion protocols. This number of IP addresses would not be enough to support billions of objects with the potential to be connected. With the deployment of IPv6, a combination of  $3.4 \times 10^{38}$  addresses is possible, that is, it has sufficient capacity to create an IP-type identity for every existing device or equipment. This new protocol version will still live with the old one for many years (Oliveira, 2011). IoT depends, in addition to the need to protocol each device with an IP, on the existence of a comprehensive and efficient data transmission network, such as the existing 4G, 5G, GSM, RFID etc., wireless sensors, as well as systems and control and data storage platforms, as well as intelligence systems capable of handling the collected data (Patel, Patel, 2016). The Internet of Things is expected to gain scale in the coming years with the increase in devices and devices connected by IPv6. IoT applications involve different areas and sectors, such as agriculture, transport and logistics, civil construction, retail, industry in general, energy and environmental control.

For Brazilian export agriculture, the use of IoT has a lot to contribute, 70% of large farms already apply soil amendments at variable rates, but still have a lot to do with the use of automatic sowing, crop monitoring, pilots automatic, and the large-scale application of IoT. The arrival of this technological arrangement and networks in the field means better use of resources (Teleco, 2020). But it is not just in the countryside, the Internet of Things makes it possible to control and monitor entire cities with cameras, sensors and intelligent systems in various applications, such as intelligent traffic lights, electricity management, emergency centers, atmospheric controls, energy consumption management. water, public services, among others, collaborating to apply the concept of smart cities or smart cities.

The security and control benefits brought by this technology are enormous, but, together with this, the question already raised by Foucault (1987) arises of the disposition to a life under surveillance and subject to punitive actions. The surveillance of citizens could, for example, exclude good and bad payers, act in favor of social segregationism or undermine human rights. On the contrary, these systems must guarantee the coexistence of autonomy and heteronomy, in a society of respect and tolerance. The moral code made by modern man, and for him, advocates that freedom must be “taken care of” so that men do not act for evil. A freedom “guarded” if not by the individual, by what is outside, by the agents of justice and thinkers who guarantee the best judgment, capable of showing that it is not worth doing evil. The individual's autonomy and the heteronomy of rational administration could not be without one another, but their existences necessarily imply conflicts. This is an aporetic contradiction, without overcoming. The conflict between the best adjustment of the individual and common interests is a landmark of modernity that tried to seek solutions via universality and reasoning, but without much success (Bauman, 2013).

### **3.4 Blockchain: de-bureaucratization, transparency and the growth of inequality**

Blockchain is a distributed ledger type technology. Its principle is the organization of records in blocks (groups of records that have a fixed number), one by one in a chain, following a mathematical logic that relates them to a distributed database system in log and that is managed in a decentralized way through a P2P (peer to

peer) network (Formigone Fo, Braga, Leal, 2016?). The technology can be applied in different types of industry to reduce bureaucracies and increase control, it is even used in conjunction with other technologies and technological arrangements, such as Artificial Intelligence (AI) and Internet of Things (IoT). Blockchain technology has great potential for use in the public sector, for example, in applications for citizen registration systems (documents in general) and benefits control. Also for the private sector, as in banking transaction systems, supply chain management, logistics, retail, among others.

In Brazil, blockchain technology has been applied mainly in the financial system and the means of payment industry, which is undergoing a major transformation. The arrival of this technology allows the direct transfer of values with much more security and potential for reducing intermediaries. The current gains made by companies that benefit from the high complexity and artificially created borders between payment networks, are impacted by blockchain technology. For example, due to the unified record keeping in the blocks, financial clearing and settlement services may no longer be necessary due to the possibility of reconciling statements and amounts to be fully automated. will also cease to exist (Holotiuk, Pisani, Moormann, 2017). In this way, entire parts of the payment processes are eliminated and the links in the chain no longer make sense: like distributors, called acquirers and sub-acquirers, card brands and the bank itself. In fact, this technology, which was marginalized because it is a technology linked to cryptocurrencies (not recognized by governments) today receives the attention of major banks and governments and has the potential to offer greater equity to players and reduce costs for customers, leading transactions costing cents. In addition to cost savings, one of the biggest benefits of technology is security against fraud, errors and hacker attacks. The reshaping that banks and the payment methods ecosystem will undergo is compared to what the media industry underwent with the arrival of the Internet. One of the biggest challenges in the implementation of this technology will be the gain of scale. Brazil has more than 45 million individuals (about 1/3 of the economically active population over sixteen years old) who do not have accounts with bank institutions, either because they prefer cash payments or because they work in the informal economy (Locomotive, 2019). The potential positive impacts of applying this technology are clear: less bureaucracy, shorter processing times, more access to finance and loans. An important aspect to ensure security in the use of sensitive data and information from users is the entry into force of the General Data Protection Law (LGPD) scheduled for the second half of 2020 (Huelsen et al, 2020).

The moral values that will be tested here will be honesty and transparency. There is a clear risk of greater surveillance and control by the State and companies over people. It is a technology that should reduce bureaucracies, avoid rework and remove intermediaries, but it will depend on the advantages offered by the Central Bank for the citizen to get out of paper money and informality in exchanges, otherwise there is a risk of creating more barriers for the individual. and increase social differences in the country, between those who are connected and those who are not. The ethics of differences is no longer a desired ethics for this century. Another aspect to be considered that corroborates the increase in inequalities is a greater destruction of jobs than the creation of new jobs, as reported by Graglia and Huelsen (2019).

### **3.5 Artificial Intelligence, criticality when dealing with robots**

AI correspond to systems capable of interpreting external data correctly, learning from that data and using it to achieve specific goals and tasks in a flexible and adaptable way. These systems are classified by three levels of maturity. Narrow AI corresponds to systems capable of having autonomy for simple and specific activities, such as voice recognition and basic communication systems. The second level corresponds to AI systems in general, so called when they can act in different areas, such as voice communication, writing or motor activities. The third level concerns super AI, where the skills of the machines are highly developed and begin to have their own conscience. This level is the most distant from the current reality and will probably not be reached anytime soon (Kaplan, Haenlein, 2019). Although the use of artificial intelligence is widespread and already used in the most diverse areas, such as health, military intelligence, autonomous vehicles, recruitment of people and even judicial evaluation (Livingston, Risse, 2019), in Brazil the technology is growing. The sectors with the greatest application of AI are retail, with service chatbots, banks, with risk and investment analysis applications and agribusiness, which uses AI solutions associated with Internet of Things applications, involving from intelligent systems of water irrigation to georeferencing using drones and image processing. In the cultural sector, there are

use cases for AI applications that interact with museum visitors in the city of São Paulo, answering questions and enabling visitors to interact with works of art (Graglia, Huelsen, 2019). In the area of education, innovations are mainly concentrated in the field of natural language processing - NLP, in speech and text and with collaborative learning linked to learning management systems. These AI systems contribute to more individualized learning, and can be applied mainly to active learning and its implementations, such as an inverted classroom. The use of AI in education is promising and includes the possibility of studying ethics (Vicari, 2017). The importance of using Artificial Intelligence in medicine is undeniable, especially as support for diagnostics and clinical research. The country has used AI to predict the spread of the disease, support in the diagnosis, development of new drugs and vaccines, management of hospital beds, detection of human agglomerations and combating pandemic fake news (Tunes, 2020).

The spread of the use of Artificial Intelligence systems revives the debate on ethics, essentially in two aspects. The first concerns how we, beings with moral capacity, must deal with machines, how we must respond to them. The second has been shown to be at the heart of current discussions, how machines should act before us. This disregarding the controversial issue of consciousness that these machines could acquire, hypothetically, in the third phase of evolution and then become morally capable of acting for themselves.

As for the first aspect, it is noteworthy that many people do not recognize that they are communicating with machines, or receiving messages from machines, not questioning whether the indications they are receiving make sense or are consistent. Harari (2018) mentions the case of a driver who fell over a precipice while trying to cross the ocean, as the indication of the geolocation application, which used AI, indicated a path that ignored geographical interruptions. Intelligent machines have chosen or induced the news that is read by people, the products that are consumed, the paths and routes that are followed in daily commuting. On the one hand, AI facilitates everyday life, on the other hand, it limits choices, induces errors, directs thoughts and also serves to manipulate public opinion. What will become of a people where freedom, free will, respect and encouragement of choices are limited? Carr (2008) already said that the Internet was making human society more stupid, but the arrival of AI can intensify the laziness of thinking and reflecting, when exactly the opposite is necessary: thinking even more, reflecting even more, to avoid deception, the manipulation. It is necessary to review values and seek the best way to act in the face of technological innovations and their implications.

As for the aspect of the machines acting according to some ethics, it is clear that this goes through human action, in many aspects. One concerns understanding how machines learn. There are models of machine learning, called machine learning, where the algorithms are parameterized to identify patterns (behaviors, images, etc.) and suggest trends or actions. For example, the identification of images by robots on the Internet uses these models and when an individual chooses the images on a website's CAPTCHA<sup>1</sup>, he is teaching the algorithms to recognize true images. There is also deep learning, or deep learning, where learning occurs in layers, in a structure similar to the neural networks of the human brain. Masses of data are used to feed the learning algorithm directly: the output data of a layer is the input data and each layer has an algorithm. This type of learning is used for speech recognition, writing and computer vision. There is also reinforcement learning, which happens when it is possible to improve the learning performance of the algorithm based on past data, constantly improving it (Livingston, Risse, 2019). But, regardless of the type of machine learning, when it comes to AI and moral values, one must analyze the interference of humans, whether in codes, in the parameterization process that occurs during the stages of learning artificial intelligence, in the choice databases or in the analysis of possible biases. In the case of databases, it is known that they normally contain historical records of human processes and decisions. Thus, they capture what is good and bad and can hide distortions: discriminatory actions of race, gender, social status, religious belief, sexual option, political affiliation and worldview. Technology and data companies have been looking for ways to address the ethical issue involved in the development of their products and services, including the creation of codes of ethics and oversight committees. One of the ideas that make up this debate is the encouragement and definition of inclusion and diversity policies even for areas of programming and development of artificial intelligence systems. The logic lies in the conviction that teams that are more

---

<sup>1</sup>Completely Automated Public Turing test to tell Computers and Humans Apart is an automated test for differentiating between computers and humans, used as an anti-spam.



heterogeneous and representative of the existing differences in society are able to improve the group's reflections in search of the right choices and, thus, ensure a more ethical performance for their teams and organizations. However, currently the systems development teams for AI are mostly composed of white men, trained in the exact area, specialized in information and communication technologies, systems programming and data science. There are additional difficulties, at this current stage of development of this technology: in the case of the most sophisticated learning algorithms, despite the possibility of controlling the input data and checking the assertiveness of the system by comparing them, in some way, with the results (output data), the programmers cannot explain how the system can learn. In other words, one can know the entrances and exits of the system, but it is not very well understood how the learning processes occur. This phenomenon is known as black box in AI. Thus, if any action subverts the ethical and moral principles, it can be discarded, but not so easily understood and therefore the mechanisms of transparency of companies do not help. The issue goes even deeper with Super AI, with the so-called awareness of the machines, which according to Livingston and Risse (2019) could become the moral agents.

In any case, the protection and protection measures seem to be under the exclusive care of the companies and technology teams involved in the development of AI systems, which end up becoming responsible for judging what is good or bad or what is right or wrong in terms of the results and actions of the machines. This poses a great risk as technology companies currently have enormous economic power, with the top five having the highest market value among all companies, as an example, which makes them more economically relevant than many countries in the world. Certainly, they are also interested in what they are willing to control, violating the principle of exemption. The interests become those of those who have the capital, the technology companies. The debate on the ethical issue grows as the technology itself develops and the possibilities of application multiply in several fields of human action. IBM (International Business Machines) has announced that it will stop investing worldwide in the AI market for facial recognition. Other tech giants, Amazon and Microsoft, have taken similar steps. The issue of the use of images and social monitoring is controversial in the West and is already debated in the face of the issue of individual privacy. The theme falls on the controversy between increasing monitoring and security and restricting the right to come and go, the right to privacy and the risk of these systems being used for some type of social control by the State or by companies.

#### **4 BRAZILIAN LEGISLATIVE SYSTEM, SLOWNESS IN LAWS, HOPE IN COMPANIES AND CITIZENS**

If the law is delayed, what to expect from its application and enforcement? This is one of the biggest dilemmas in the country's legal system: the combination of the lack of regulatory frameworks defined by specific legislation and the historic difficulty of monitoring and demanding compliance with laws in a comprehensive and equitable manner. From a regulatory point of view, the country has only the Regulatory Framework for the Internet, a document that establishes principles, rights and duties for the use of the Internet in Brazil, which encourages citizenship, education, culture and freedom of expression and values that the Internet be freely accessible to all Brazilians (Brasil, 2014)<sup>2</sup>\*. In August 2020, the LGPD (General Data Protection Law) will come into force, a regulation very similar to the European Data Protection Regulation created in 2018. In general terms, this law requires companies and organizations to be transparent in the use of data, not discrimination, security and damage prevention when using data from their customers or users (Brasil, 2018)<sup>3</sup>\*. The country is also discussing a bill against fake news, spurred by the various scandals involving the spread of hate messages and disinformation on an industrial scale, as well as attacks on the reputation of the Republic's policies, public officials and institutions. It is feared that the eagerness to regulate these harmful practices will end up putting at risk some principles that have hitherto governed the use of the Internet in Brazil, including the right to expression and the right to privacy. A regulatory text for the use of AI was also initiated, starting from an initial public

<sup>2</sup> [http://www.planalto.gov.br/ccivil\\_03/\\_ato2011-2014/2014/lei/112965.htm](http://www.planalto.gov.br/ccivil_03/_ato2011-2014/2014/lei/112965.htm)

<sup>3</sup> [http://www.planalto.gov.br/ccivil\\_03/\\_ato2015-2018/2018/lei/L13709.htm](http://www.planalto.gov.br/ccivil_03/_ato2015-2018/2018/lei/L13709.htm)

consultation phase: it is the Bill 21/20, which establishes principles, rights and duties and governance and transparency instruments ( Chamber of Deputies, 2020)<sup>4\*</sup>.

If the State is unable to keep up with reality and provide ethical parameters for the proper use of these technologies, there is hope that technology companies, either on their own initiative or under pressure from customers, advertisers and users and from civil society itself, will seek an appropriate positioning regarding the ethical issue. Although the legal signs are late, it is possible that the technology will corroborate with its own security and validation mechanisms. The proper use of artificial intelligence or even the de-bureaucratization of processes, made possible by blockchain technology for example, can pave the way and facilitate these mechanisms. Which may mean the possibility of having robots to fight fake news, robots that warn us of inappropriate “conduct” or even faster mechanisms for creating and applying laws for digital environments (HUELSEN, 2019).

## CONCLUSIONS

This article sought to demonstrate the urgency of the debate on ethical issues and the need for greater reflection in relation to the challenges of the moral values of men facing new technologies. Customs permeate networks and society lives with common moral dilemmas before the accelerated changes brought about by new technologies. This is experienced in all instances, from individual to collective: individuals, friendship groups and family members, organizations, companies, universities, schools and the State itself, which acts reactively to innovation, delaying the elaboration and application of laws. The COVID-19 pandemic has been provoking reflections, but Brazilian society still faces issues of the political game, such as the threat brought by the massive and malicious use of fake news that shocks by showing movements away from reason and common respect. A setback compared to the relevant values that are being demanded in the interactions of individuals with each of the technologies evaluated in this research (internet, social networks, IoT, blockchain and AI): freedom, respect, quest for truth, unattended security, careful exhibition of human harms, honesty and critical awareness. Chart 1 summarizes the human aspects in relation to technologies and technological arrangements, their benefits, impacted sectors, expected values and virtues or essential values for the coexistence among men and the analyzed technologies.

**Table 1:** Summary of technologies and required values

Technologies or Technological Arrangements	Impact	Benefits for humans	Major impact in brazilian industry	Human values often required	Fundamental human value
1 Internet networking	Structural impact on work arrangements, distribution and network formation	Reduction of efforts, changes in distribution networks and intensification of network relationships	All sectors: Retail, Consumer Goods, Industry, Services	Attention, efficiency, freedom	Freedom, Security
2 TICs/ Social Networking	Impact on lifestyle changes, image and media consumption	Intensification of interpersonal relationships, ease of access to others	Almost all sectors: Retail, Consumer Goods, Media, Advertising	Will (interaction, exhibition), Friendship	Respect, Truth, Solidarity
3 IoT	Strong impact on monitoring natural resources and impact on cities	Monitoring, combating waste, predicting natural disasters, urban mobility	Cities Management ( Smarts Cities), Agriculture, Industry in general, Retail	Security, prudence, surveillance	Individual Freedom
4 Blockchain	Impact on cost reductions and information security, reduction of interfaces, intermediaries	Reducing efforts, operating costs, time optimization, financial transaction costs	Banks, Payments Means, Logistic, Supply Chain, Government Support, Sanitation, Electricity, Registry	Transparency, self sufficient, individual freedom	Honesty
5 Artificial Intelligence	Acceleration of the man-machine relationship, influence on choices, formation of clusters.	Robot learning, interaction, socialization, increased life expectancy (health)	General services, Health, Banks, Agriculture, Retail, Industry in general	Open Spirit, Machine knowledge, Self-knowledge	Critical spirit, prudence

<sup>4</sup> <https://www.dataguidance.com/news/brazil-chamber-deputies-announces-introduction-bill-ai>

It is necessary to ensure that the relationships brought about by these technologies are productive, to direct attention so that they are able to teach, facilitate, allow better use of time, optimize natural resources, protect the environment, unite people and enhance human beings. If these technologies are partly being used in the opposite direction, it is a sign that adjustments are needed. We don't use AI to think less. We do not want to monitor crops with Internet of Things to degrade the planet. We don't want to save distances over the Web to simply have an even more intense work routine. We do not want to eliminate more and more jobs and accelerate structural unemployment and the increase in inequality. It is necessary to avoid misuse of data, violations of the right to privacy and a threat to democratic stability. We cannot rely solely on the use of individuals' moralss in the face of technology. The challenges that these technological mechanisms are instigating, depends on an effective participation of the State, Legislative and Judiciary Powers and technology companies.

## REFERENCES

- BAKSHY, E., MESSING, S. ADAMIC, L. Exposure to ideologically diverse news and opinion on Facebook. [J] In Science. 2015, 348 (6239).
- BAUMAN, Z. Community, the search for security in today's world. Plínio Dentzien translation. [B]. 1. Ed. Rio de Janeiro: Zahar, 2004.
- \_\_\_\_\_. Life in fragments. On postmodern ethics. Alexandre Werneck translation. [B] 1. Ed. Rio de Janeiro: Zahar, 2011.
- \_\_\_\_\_. Moral Blindness. [M] In: \_\_\_\_\_. DONSKIS, L. The loss of sensitivity in liquid modernity. Carlos Alberto Medeiros translation. 1. Ed. Rio de Janeiro: Zahar, 2014, p. 41-46, 52-56, 59-62, 68-88, 118-132,137-144.
- \_\_\_\_\_. Postmodern ethics. João Rezende Costa translation. [B] São Paulo: Paulus, 2013.
- BECKETT, A. The darkside of the internet [M]. In: The Guardian, 2009.
- CARR, N. Is google making us stupid? [M] The Atlantic. jul-aug, 2008.
- CASTELLS, M. The network society [M]. São Paulo: Paz e Terra, 2006.
- \_\_\_\_\_. Network of indignation and hope. Social movements in the internet age. [B]. Rio de Janeiro: Zahar, 2013.
- \_\_\_\_\_. Network of indignation and hope. Social movements in the internet age. [B]. Rio de Janeiro: Zahar, 2013.
- FOUCAULT, MICHAEL. Watch and punish [B]. Petrópolis: Vozes, 1987.
- FORMIGONE FILHO, JOSÉ R., BRAGA, A. M., LEAL, R. Blockchain, an overview. [M] CNPQ whitepaper.
- FREITAG, B. Antigone itineraries. The question of morality. [B] Campinas: Papiros, 2002.
- \_\_\_\_\_. Fake News: aesthetics and design. [M] 21/06/2020. In: Sociotramas.

GRAGLIA, M., HUELSEN, P., CACCIARI, P. Fake News: aesthetics and design. [M] 21/06/2020. In: Sociotramas.

\_\_\_\_\_. Hacking attacks and noise generated on networks. [M] In: Santaella, Lucia. (org). Cacofonia nas redes. p. 157- 181. São Paulo: Educ, 2018.

\_\_\_\_\_. New technologies and the use of Artificial Intelligence in museums: attractiveness, registration, preservation and dissemination of memory. [M] in: Tictions of cities. 1ed.Rio de Janeiro: Gramma Editora, 2020.

\_\_\_\_\_. The sixth wave of innovation: artificial intelligence and the impact on work. [J] Risus, 2020 11 (1): 3-17.

HARARI, Y. N. 21 lessons for the century. [B] São Paulo: Companhia das Letras, 2018.

HUELSEN et al. Blockchain: Impacts on payment methods and their disruptive potential.[M] Santaella, Lucia. (org). Blockchain Expansions in Society. São Paulo: Educ, 2020.

\_\_\_\_\_. Cartographies of morals and ethics for the dilemmas of cyberspace. Doctoral thesis. Programa de Tecnologia da Inteligência e Design Digital (TIDD). [M]. Pontifical Catholic University of São Paulo, 2018.

\_\_\_\_\_. The code of ethics or the ethics of codes? [M] In: Santaella, Lucia. (org). Artificial Intelligence and Social Networks. p. 89-100. São Paulo: Educ, 2019.

HOLOTIUK, F., PISANI, F., MOORMAN, J. The Impact of Blockchain Technology on Business Models in the Payments Industry. [M] Proceedings of 13th International Conference on Wirtschaftsinformatik (WI 2017), St. Gallen 2017: 912-926.

KAPLAN, A., Haenlein, M. Siri, Siri, in my hand: Who is the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence. [J] Elsevier Business Horizons. 2019 (62): 15—25.

LAZZARESCHI, N., GRAGLIA, M., HUELSEN, P. The forms of resistance of workers in the context of industry 4.0 and artificial intelligence. [J] In: Revista Argumentum, 2020.

LEMONS, A. Cyberculture: technology and social life in contemporary culture [B]. 7 ed. Porto Alegre: Sulina, 2015.

LÉVY, P. Cyberculture. [B]. São Paulo: Editora 34, 2010.

LIPOVETSKY, G. The post-moralistic society. The twilight of duty and the painless ethics of the new democratic times [B]. São Paulo: Manole, 2009.

LIVINGSTON, S. Risse, M. The Future Impact of Artificial Intelligence on Humans and Human Rights. [J] Ethics and International Affairs. 2019 (33)2:141-158.

LOCOMOTIVA. One in 3 Brazilians, does not have a bank account. [M] Institute Locomotiva 24.09.2019.

MORIN, E. The method 6 Ethic [M]. Porto Alegre: Meridional Sulina, 2005.

NEGRI, A. Multitude, the democracy of the crowd, 2016. [N]. Viewed in 20 Jul 2019 (in Portuguese).

OLIVEIRA, M. The scientific and technological steps that made the great world wide web. [M] Revista Fapesp. 2011 (2).

PATEL, K., PATEL, S. M. Internet of Things-IOT: Definition, Characteristics, Architecture, Enabling Technologies, Application e Future Challenges. [J] International Journal of Engineering Science and Computing. mai, 2016 (6) 5.

RHEINGOLD, H. Virtual Community. [B]. Lisboa: Gradiva, 1996.

SANTAELLA, L. A ecologia pluralista das mídias locativas. In: Dossiê ABCiber. [J]. Revista Famecos. n. 37, p. 20-24, 2008.

TELECO. IoT Statistics. [R]. Jul 2020.

TUNES, S. Artificial intelligence against Covid-19. [M] Revista Fapesp. 14/04/2020.

WRIGHT, A. Exploring a ‘deep web’ that Google can’t grasp.[M] In New York Times, 23.09.2009.

VICARI, R. M. AI Trends in Education - 2017-2013. In: CNI (Confederação Nacional da Indústria) [R]. 2018.