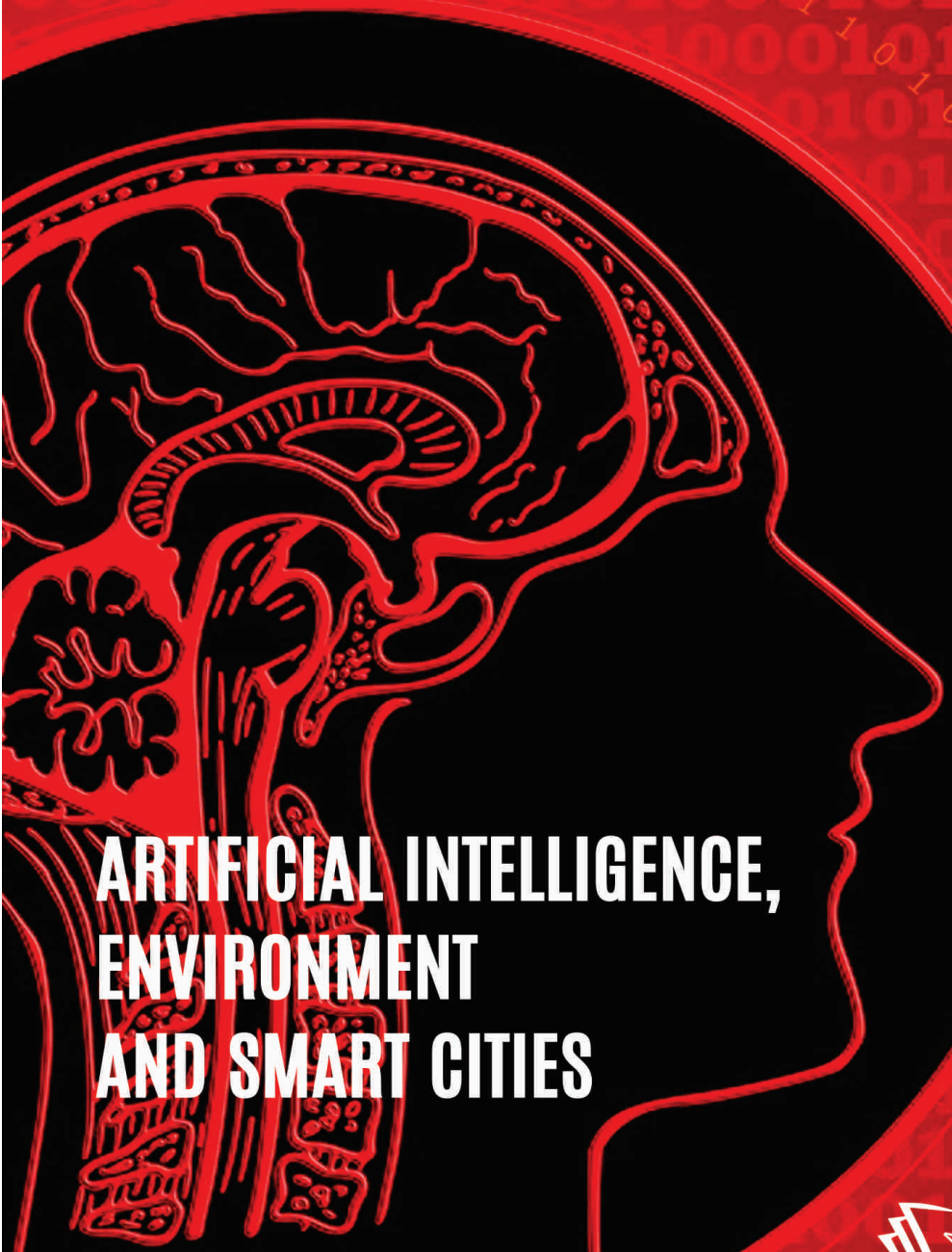
Adir Ubaldo Rech



ARTIFICIAL INTELLIGENCE, ENVIRONMENT AND SMART CITIES

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Artificial intelligence, environment and smart cities

Adir Ubaldo Rech

Tradução
Elsa Mónica Bonito Basso

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Summary

Preface
The human being wants to know and live well!

PhD Paulo César Nodari
PPGFIL-UCS and *PPGDIR-UCS*

The world in which we live has a value and meaning for human beings, not only for our psychosomatic being, but also for our spiritual being. Science has an incredibly positive value and meaning for life, because it corresponds not only to the spontaneous tendency, to the natural desire to know the world, as Aristotle says (*Metaphysics*, I, 980a), but also to the natural desire to know and understand it. While inhabiting, living and, by our ability to feel and reason, the capacity and ability to raise the pretension of our existence in this world, in which everyone is simply called to respond to the demanding responsibility to assume, we have no possibility of renouncing the convocation, preservation and life of all creatures, and the world as such.

As we are heading for the end of the first quarter of the 21st century, we perceive, however, that it is a Herculean task, especially at a time when, according to Dworkin – in *The sovereign will* – the human being wants to play God or, according to Guardini, human beings do no longer know what to do with so much power that is given to them, that is ultimately the "power of power". In this respect and purpose, broadly two extremes are recorded in history. On the one hand, there are supporters who exalt, in a loud and clear tone, science as the only and legitimate source of knowledge, capable of clarifying the arising problems and enigmas. It would therefore be the only justification in which science and the plenipotentiary reason,

consequent, and faithful squires, coming from the project of unfinished modernity, in the expression of Habermas, would be able to bring a world of full and total well-being. On the other hand, there are those who deny the value and the very possibility of science as such, contributing to extreme positions of pure empiricism and the denial of the value and importance of science, and contradicting the very human nature of admiring things. as they are and wanting to know things.

Between these two extremes, a more balanced position is placed, and, as it seems to us, the most important, or, so to speak, the most correct and just socio-political and culturally, one would seek, then, the recognition of human value of science, both from a theoretical and practical point of view and from the human awareness of their own limits and needs. That is, recognizing, nevertheless, the intrinsic limitations of every possibility of human knowledge and of experimental and mathematical science, it is urgent to recognize that science allows a progressive discovery of the forces and laws that regulate the course and the process of phenomena and events, and this, certainly, already constitutes, in itself, a noble and worthy end of men in their cognitive activity and in contemplation. It is necessary to recognize that science allows an important and progressive penetration and understanding of how and why things are as they are, and why they happen this way or another. But, on the other hand, it is urgent to realize that culture and civilization are not simply limited to science, even if it has an unspeakable importance and significance, so to speak. Culture and civilization must fully promote the human being and definitely consider, once and for all, not only the human being as such, but also all sentient living beings. In other words, culture and

civilization cannot, of course, identify themselves, quite simply, with science. In this sense, the excessive pretension of scientism, which reduces human values to science alone, must be rejected. Rather, on the contrary, it is necessary to carry out, among other factors, the properly humanistic aspects, worked on and articulated by art, literature, traditions and habits of communities and peoples, these volitional, affectionate, psychological, pedagogical, philosophical, moral, religious, political, economic, and so on, factors.

Technique, a direct fruit of science and its applications, has penetrated and profoundly transformed the world today in all its aspects and must therefore be the object of special consideration for a fair appreciation of its value in human civilization. Unlike other living beings, the so-called non-rational animals, which act by natural instinct and, consequently, in the same way, over the centuries, as they would say, both Hobbes in *Leviathan*, and Rousseau, in *Discourse on the Origin and Basis of Inequality Among Men*. In contrast, human beings are guided in their action by reason, through which they can know the ends that they aim to achieve and the means that lead to them. Human beings seek the means to reach the end and modify their action, according to the needs, circumstances and issues that gain sense for the well-being of human beings. But, speaking of technique or technical progress, at this moment in history, it is necessary to clearly understand that the progress of technique and all technology, and therefore of science, must be subordinated to scientific progress in the knowledge of nature and all its immanent forces, that is, in tune and in harmony with the purpose for coexistence, from a perspective of integral ecology.

In this sense, it is urgent to be open-eyed and critical, to see the good provided by the technique, as well as the possible evils, that is, technique and technology are not an evil in themselves; on the opposite, they are a good, but the use that human beings make of them can be an evil. So, technology and science can have a positive value, because they can and should incite humanity to develop its spirit and its moral and religious forces, in a proportional and appropriate way for the development of the technique itself, of technology itself and of science itself, so that the *homo faber* remembers, ever and again, that the *homo sapiens*, being, in the fair subordination of means to the ends, proper to humanity and integral ecology, directed to the realization and putting into effect an improvement of all human beings, societies, nations, and also of all sentient beings is a natural process.

All human action is opened, by definition, to an axiological dimension. In the case of a human act, its nature necessarily implies the intention of an end and the position of a value. No good or value is more precious to the human being than the search of and for truth, from the perspective of integral ecology. The discussions of contemporary science epistemology show, unequivocally, that the problem of the objective truth of the world cannot be declared meaningless to science, without science itself renouncing its deepest meaning as an activity of knowledge. This is precisely the search for the truth of things and human life, in analysis, in understanding and comprehension, both sciences of nature and of the spirit. And, in this sense, the problem of the relationship between ethics, science and technology, in the unfinished design of modernity, according to Habermas, oscillates between ethical heteronomy of science (the

ethical horizon is traced here, outside, and independently of the conceptual space of science) and autonomy of science to elaborate, from its own assumptions, a normative hermeneutic of human life, which would conceptualize itself as ethics of science. This path is still uncertain and confusing, although the possibility of an alternative that leads from the *logos* of science to a form of *ethos*, situated in the extension of scientific rationality, appears as the exit of this serious aporia, in which our civilization is. Therefore, only an intrinsically rational *ethos*, capable of subjecting itself to the conditions of demonstrability, proper of the objects of reason, would enjoy an effective universality and would be able to meet the moral imperatives of a civilization of *logos*. This, due to appeals, requests, and, by "irony of destiny and human pride", once and for all, for the first time in the history of human civilization, the human being takes responsibility for the perspective of integral ecology, running the serious and unavoidable risk of gradually and progressively witnessing the disappearance of the rational species.

The author is concerned with the procedural and finalistic way, often greedy, disorderly, and irresponsible of human beings to explore on the one hand, the resources of nature, which are limited and exhaustible, towards their desires for unlimited accumulation and benefit, and, on the other hand, to organize and agglomerate, in cities without planning and without care for the well-being of all and for all, in tune and in harmony with living beings. Among other questions, but, in the light of the elementary and fundamental subject of the background, that is, the relationship between science and ethics, Adir Ubaldo Rech, professor and researcher at the University of Caxias do Sul, writes and delivers to the public the text: *Artificial intelligence*,

environment and smart cities. We are thankful to him for sharing with us these significant and beneficent reflection and systematization of knowledge, about human action and the planning of today's cities.

Finally, following the line of Alberto Acosta, perhaps it is urgently necessary to assume, without paralyzing fear or without frustration, the way of return, that is, to face the challenge and the courage to take the "foot off the accelerator" and start to put a little more the "foot on the brake", that is, to have the bold attitude of passage and overtaking the conception of euphoric development to disenchant with ambitious progress at all price. Most likely, we need to think about "well-being", with its risks and threats, as an alternative for development, so that, as Hans Jonas proposed, in his book, *The principle of responsibility*, there is Humanity and, at this moment, it could be added here: that there is life for living beings.

Introduction

The preface by Paulo César Nodari, researcher and professor in the Master and Doctorate in Philosophy Courses, as well as in the Master and Doctorate in Law Courses at the University of Caxias do Sul, could be considered the first chapter, due to its meaning in the reflection entitled: **Human beings want to know and live well!** It summarizes the necessary concern involving the natural environment and technology, regarding a city of good living. In this sense, and for a matter of reasoning, we make this introduction first, so that we can then fully enter a reflection that begins with the preface but does not end with the last chapter, as only epistemological research involving nature and technology and its application is claimed. This more practical and effective construction of the *intelligent law*, as a foundation of the *smart city* should start by respecting the natural environment, as a habitat of life and supplier of environmental goods and services. At the same time, it should rely on technology and the so-called artificial intelligence, as complements and instruments of construction of well-living.

Our reflection begins with the expression *artificial intelligence*, created in 1956, but only recently dealt with by universities, bringing on an ethical and legal discussion on the subject. Researchers do not deny *artificial intelligence*, but very few of them go deeper into the nature of intelligence and its relationship with the natural environment or suitable habitat for the evolution of human life. Therefore, it is not a simple finding of the use of certain denominations, which seek to reinforce the importance of certain technological innovations, called *artificial intelligence*, but it involves care for the origin and

consequences of its use. In Environmental Law, when we do not know the consequences, we apply the precautionary principle. And even when we know these consequences, the principle of sustainability is recommended. In this sense, Descartes taught us that we can never accept anything as true, without evidently knowing it as such; that is, carefully avoid precipitation and treat its real nature, at least, with caution, with the epistemic-analytical method.[1] Given the researcher's scientific responsibility, we will address the nature of human intelligence, the habitat where its natural evolution took place, entering the created environment, the cities, space occupied by man, where technology and *artificial intelligence* are used, and conclude their utility is real for the effectiveness of smart cities.

The first pieces of research involving the so-called *artificial intelligence*, in the 1950s, explored themes such as problem solving and symbolic methods. In the 1960s, the US Department of Defense became interested in this type of technology and began training computers to imitate the basic human reasoning. These early works paved the way for automation and formal reasoning we see in today's computers, including their problem-solving facilities, elements that reinforce support for the decision to adopt and intelligent research systems, which can be designed to complement and expand human capabilities. The fact remains that machines, such as the automobile, the computer, the engine, among many others, have come to facilitate and assist human activities and quality of life.

While Hollywood films and science fiction novels portray artificial intelligence as humanoid robots, which dominate the world,

[1] DESCARTES. *Obra escolhida*. Trad. Guinsburg e Bento Prado Júnior. São Paulo: Difusão Europeia do Livro, 1962. p. 58.

the current evolution of the so-called *artificial intelligence technologies* is not that scary – or that intelligent. Instead, sophisticated machines with intelligence are used to provide many specific benefits for all industries and to facilitate human activities. In fact, we are denominating a phase in the advancement of technology, calling it artificial intelligence, precisely because it is an instrument that facilitates human life. Technology is a topic of the academy, but it cannot be dissociated from the natural environment, just as the law must be concerned with man and deal with the real nature of intelligence, the natural habitat where life happens, species evolve and, naturally, the first signs of human intelligence emerge. Law needs to be focused on human nature, the preservation of life in its natural habitat and its potential, with intelligence being our main quality or attribute. Human dignity, political citizenship, fundamental rights, and civil rights, conquered by man, are strongly associated with our intelligence.

Therefore, we will first make a philosophical reflection on the nature of intelligence because the term artificial intelligence and the concept used by everybody, university researchers included deal with the possibility of the machine to produce knowledge, to research, to create and to command its own destiny, giving rise to the process of creation, or potentially being the origin of knowledge. To deal with natural intelligence and artificial intelligence as elements of the same nature is equivalent to say that artificial life exists, ignoring that the real nature of intelligence is the same nature of life. It is not a question of not recognizing the importance of technological advances, of not abandoning human nature and its intelligence, the natural habitat of its evolution, but of the need to make a philosophical, epistemic

reflection of the nature of human intelligence, and its creation; this is technological innovations, with their uses and consequences, from the perspective of the principles: precaution, prevention, and sustainability, which will be implicit in the reflection.

The environmental nature of human intelligence is different from the nature of technology or the machine, as the first is the evolution of life and the second is the act of human creation, which reproduces, shapes matter, organizes and records its own intelligence. Man is the creation and evolution of nature, both in his physical composition and in the development of the brain and in his ability to think. Starting from Aristotle, who bases the first chapter of this work, intelligence is in potential in nature and, complementing with Darwin, man is the species that most developed intelligence.

We started with the Aristotelian thought, making a philosophical-rational syllogism that man has no power to create anything that is not potentially in nature, but only, as Darwin says, man is an evolution of nature itself. Therefore, we assume that human intelligence is a natural evolution, and its norms are limited by the laws of nature, while the machine is a creation of human intelligence and controlled by the norms and limits established in the act of creation, without the ability to evolve. But both are limited by the norms of nature, only intelligence is in the essence of the evolution of human nature, while artificial intelligence (the machine) is form and work of human creation. In this type of deductive reasoning, adopted by Aristotle, intelligence is necessarily in potential in nature, and man, as an element of nature, reveals this evolved intelligence by housing, storing, replicating in technology, in the machine, thus facilitating human tasks, because the machine has no intelligence; it is just a copy,

a photograph, an imitation, a recording of human intelligence. Therefore, we cannot mention the existence of artificial intelligence, just as we cannot mention artificial life, but forms, human acts, storage of the potential of natural intelligence, in a machine, on a computer, in a book, instruments that store and perpetuate ideas, intelligence, etc.

This leads us to reflect that the extension of human intelligence in a machine must, initially observing the precautionary principle, respect the natural environment, where human intelligence evolves and develops.

Moreover, in Kant we will find a reflection on pure knowledge, which comes from intelligence, which passes through reason, which is the faculty of unifying and objectifying knowledge, through a rational and scientific reflection. In this sense, reason is the faculty of unifying the rules of understanding through principles, simplifying the norms of man's relations with the natural and created environment. This is where law operates, unifying norms through principles, incorporating the laws of nature into the law, to ensure the preservation of life and the sustainability of the natural environment, habitat, where it develops.

This research and the epistemic reflection seek, in philosophy, in reason, in science, in ethics, in religion and in technology, foundations to address the real nature of intelligence; to strengthen its essence of element of the natural environment; to highlight its nature and reflect on the necessary conditions for its evolution, because technology and the machine are not its natural environment. This link between human intelligence and nature is knowledge that we have not yet mastered; so, caution is recommended in terms of the need to observe the laws

of nature and its potential, the preservation and development of this potential, to prevent us from simply storing intelligence on machines, and at the same time, destroying its nature, biodiversity, ecosystems, where life and intelligence develop.

We move on to a reflection on cities, a created space, where most of the population of the planet lives, to deal with environmental chaos, its consequences and the need to create an ecologically balanced environment, conducive to human life and the development of its strengths, among which health, intelligence and human dignity. We approach, in the created environment, the cities, the appropriate necessary conditions leading to avoid serious problems of environmental imbalance, such as flooding, landslides, pollution, irregular occupations, diseases, such as Covid-19. Even if they should cause thousands of deaths, these problems lead man to persist in the idea that sustainability has only two feet, the social one and the economic one. The environment is a secondary element and, when discussed and analyzed, we do it poetically and hypocritically.

Finally, we will address the need for the adoption of intelligent laws in human occupation, that regulate and respect the laws of nature, ecosystems, as a habitat of life, of which man is a part. The organization of a smart city cannot neglect life and, therefore, rules of coexistence with the natural environment and value standards with the created environment should be established. This should be done through intelligent laws, resulting from an epistemic, scientific attitude, with technology as a complementary element of sustainability, and as a platform to be respected for planning, for the natural environment, for life, and for human dignity.

Chapter 1
Intelligence is in potential in nature

The discussion about *artificial intelligence* polarizes philosophical, social, and economic reflections. Since philosophy was the origin of science itself, we based this first chapter on a philosophical reflection. Teixeira affirms that, in this period, we are experiencing an even more curious phenomenon: becoming practically autonomous, technology starts to guide the themes of philosophy.[2] Teixeira complements by contextualizing the role of philosophy and affirming that science and ecology have not yet managed to get rid of philosophy and are stumbling over it. Certainly, science no longer needs to be preceded by philosophy. But philosophy reappears where science seems to end.[3] Paviani says that it is not possible to philosophize without a concept of philosophy that guides thought. And he concludes that to think is to question the first principles, the cause, the meaning of life and death, human nature.[4]

In the context of the discussion on artificial intelligence, we start from the following philosophical statement: there is no artificial life, just as there is no artificial intelligence, because if it is artificial, it is neither life nor intelligence. Intelligent life is a legitimate child of nature. Searle says that the machine does not understand the meaning of what it does, because it has no conscience, because consciousness and, with it, meaning, can only be produced by living brains and never

[2] TEIXEIRA. João de Fernandes. *O cérebro e o robô:* inteligência artificial, biotecnologia e a nova ética. São Paulo: Paulus, 2015. p. 19.
[3] TEIXEIRA, *op. cit.*, p. 18.
[4] PAVIANI, Jayme. *Uma introdução à filosofia.* Caxias do Sul: EDUCS, 2014. p. 16.

by a machine.[5] This statement reinforces the initial philosophical provocation that intelligence is nature, life, in potential. It would be necessary to create a human brain and replicate it in the machine, so that we can talk about artificial intelligence. But, if technology succeeds in doing this, we will be assuming that the origin of intelligence is nature, because the human brain is nothing but the natural evolution of species.

Science cannot simply be packed by statements arising from technological innovation or adopt results of human intervention, as being the nature of intelligence, even if this is just a matter of language strength, to name or highlight innovation and technology. This practice is not an exclusive issue of the denomination *artificial intelligence*, highlighting the technology, but it occurs in several other sciences. The test-tube baby, for example, is not of test tube nature, but of human nature, there was just no sexual act, and its fertilization was done outside the womb. Intelligence has a cosmic, environmental nature, inherent to life, and artificial intelligence is human work, which concerns life, as well as the test-tube baby; therefore, it cannot be dissociated from its creator and its nature. To consider means or results the origin or the source of life or intelligence is not a science-based act. The epistemic-reflexive deepening of what is announced by the advancement of technology is simply like waves of the sea that "die" on the beach, or like summer winds that dissipate in time and space. Artificial intelligence is a phase of innovation, of technology, and not a phase of intelligence. The academy must go far beyond the theme, contextualized in time and space, to make a scientific

[5] SEARLE, J. A. *Mentes, cérebros e programas*. Available at: http://www.fflch.usp.br/df/opessoa/Searle-Port-2. pdf. Accessed on: 17 jan. 2020.

reflection. Intelligence is linked to the natural environment. Law recommends precaution in everything we say about it, as a fundamental principle to avoid unknown consequences. All interventions on the environment can affect the evolution of life and intelligence itself. And the replacement of human intelligence by artificial intelligence can atrophy the brain itself and, consequently, human intelligence. The precaution must be even greater when dealing with acts of human creation, which always have a positive or negative impact on the natural environment, on life, species, and the future, including man.

Technology is just a consequence of intelligence. The important things are the causes, the origin, the nature of intelligence, which are not a problem of innovation and technology, but of science. Newton established the descriptive concept of science by comparing the method of analysis to the method of synthesis. The latter consists of assuming that the causes have been discovered, revealed as principles, and in explaining the phenomena arising from such principles, considering these explanations as a proof.[6] Science needs to spell out nature, the causes of what we call artificial intelligence and the right to adopt that nature as a rule and principle. There is no doubt that the main rule of Law, which should be expressed in any constitution, is respect for the laws of nature, as the origin and principle of Law itself.

he contextualized facts, the advancement in technology, to the level of being called artificial intelligence, are relevant in all senses, but lead us to numerous questions. The various reflections on the theme are important and necessary, as issues pertaining to Law: civil

[6] ABBAGNANO, Nicola. *Dicionário de filosofia*. Trad. de Alfredo Bosi. São Paulo: Ed. Mestre Jou, 1970. p. 128-129.

liability, personality, effectiveness, controls, inspection, employment, human dignity, and others. But Law cannot simply accept popular statements as absolute truth, because it also has the role of building principles, which are axiological, lasting norms and the result of knowledge, of the natural and cultural process that implies human dignity. Free will is still considered a human exclusivity, but artificial intelligence could lead to include other creatures. The topic has occupied researchers, but the social and scientific responsibility of universities transcends this or that science. As Japiassu states, everything possible must be said scientifically, from a logical and epistemic point of view.[7] Our reflection does not intend to be an absolute truth, but only to provoke an epistemic reflection on the theme.

Innovations and discoveries must be explained with their phenomena, considering Law, as a science, the duty to create fair, intelligent, lasting and legally secure norms. For this reason, the theme *artificial intelligence* transcends the results of technological innovation; it needs to understand the nature of these phenomena, to build intelligent, scientific laws, protecting greater and permanent interests and, fundamentally, respecting human dignity. Law has as its triggering event not only social conventions, but above all science and natural laws.

Braithwaite claims that

> the fundamental concept of Science is that of scientific law, and the fundamental objective of a science is the establishment of laws. To understand the way in which a Science operates and the way in which it provides explanations of the facts it

[7] JAPIASSU, Hilton. *Introdução ao pensamento epistemológico*. Rio de Janeiro: Francisco Alves, 1992.

> investigates it is necessary to understand the nature of scientific laws and how to establish them.[8]

For Law, this reflection is critically important because whenever we are not lined up with nature, in the construction of Law, we can put life at risk since, as Montesquieu states it, the laws of nature come before all other laws, and the established laws must observe the spirit of the laws.[9] Whenever this relation is not respected, established laws are simply revoked by the laws of nature or they affect their effectiveness and efficiency. Montesquieu claimed that there is a long way for the intelligent world to be as well governed as the physical world,[10] in allusion to the fact that we are nothing but a consequence of natural laws. The laws of nature are never changed by social convention. The natural environment needs to be respected by the created environment. And artificial intelligence is about the created environment. When nature moves, what is left to man is to appreciate or to fear. This ignorance of the laws of nature causes uncertainty and obscurity over the true definition of natural law.[11] When we do not know the natural man, it is unwise to want to determine the most convenient law.[12] Intelligence is an original result of the laws of nature itself, and its understanding stems from science that can effectively explain all the facts, acts and arising innovations.

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[8] BRAITHWAITE, R.B. *Scientific explanation*. Cambridge, 1953, p. 2.
[9] MONTESQUIEU. *O espírito das leis.* 2. ed. Trad. de Alberto da Rocha Barros. Petrópolis, RJ: Vozes, 1991. P. 11-13.
[10] MONTESQUIEU, *op. cit.*, p. 13.
[11] BRYANT, John Hope. *Como os pobres podem salvar o capitalismo*. Trad. de Lucia Brito. Porto Alegre: CDG, 2016. P. 35.
[12] BRYANT, *op. cit*., p. 37.

In this sense, we start from the statement that intelligence is not artificial and seek, in Aristotle's eternal classical thought, this pertinent reflection: “nothing is born from nothing”. Everything is in potential in nature. Man only performs acts giving form to what already exists.”[13] The logic and rationality of this thought lead us to conclude that artificial intelligence cannot exist by itself, but it is creation and will always be dependent on human acts and on the limits of the development of human intelligence itself, which, according to Darwin, is a natural evolution of species.[14] Therefore, it is a potential element in nature, which moves naturally , it is up to man to discover these movements and respect them. The theory of evolution rejects the idea that, in man, there is something indivisible, immutable, outside of biological evolution.[15] When we create transgenic soybeans, we question the interruption of the natural cycle of the species, but when we talk about artificial intelligence, we do not even discuss its nature, its limits and its consequences.

Therefore, for Aristotle, nature is the starting point of all human acts and of all existing and possible reality. It is what enables man to practice acts, to give forms and to remember ideas that potentially exist in nature. For Aristotle, man does not create anything, he just gives shape to what is in potential in nature, through acts.[16] What transcends human creation is nature itself, in which matter, and its

[13] SCIACCA, Federico Michele . *História da filosofia*. São Paulo: Ed. Mestre Jou, 1999. p. 95.
[14] DARWIN, Charles. *A origem das espécies, no meio da seleção natural ou a luta pela existência na natureza*. Trad. de Paul Mesquita. Porto Alegre: Lello & Brother – Editors. 2003. p. 95. V. 1.
[15] HARARI, Yuval Noah. *Homo Deus:* uma breve história do amanhã. Trad. de Paulo Giger. São Paulo: Company of Letters, 2016. P. 111.
[16] SCIACCA, *op. cit*., p. 95-96.

possibilities and intelligence and its potentialities are in potential. This is not an atheist attitude, as our aim here is not to reflect on the origin of nature itself, which implies research that goes far beyond science. As stated by St. Augustine, the soul is rational, intelligent and stems from a supreme intelligence.[17] Therefore, we are not denying the transcendence of man preached by religions.

Antunes reinforces, in his didactic attempt to find scientific forms of rationality and human learning, an idea which helps us in this reflection on the nature of intelligence. He says:

> Intelligence is existential, that is, it is linked to human nature itself and its ability to be situated on the most extreme limits of the cosmos and in relation to elements of the human condition, such as the meaning of life, the meaning of death, the final destiny of the physical world and other reflections of philosophical or metaphysical nature.[18]

Antunes reaffirms that existential intelligence is not dogma, religion, but man's ability to be aware of his own existence.[19] For Antunes, intelligence is existence, part of life and it is linked to human nature. But there is no way to take Planet Earth away from the very nature of the Universe. When man learned to write what crossed his mind, he described for the first time an ambitious dream: the day will come when we can know why we live on this earth and discover the reason for our existence and the existence of the Universe. Some believe that we come to this knowledge through mystical revelation;

[17] AGOSTINHO, Santo. *A cidade de Deus*. Trad. de Oscar Paes Leme. São Paulo: Vozes, 2012. P. 347.
[18] ANTUNES, Celso. *Inteligências múltiplas e seus jogos*. Petrópolis: Vozes, 2012. P. 19.
[19] ANTUNES, *op. cit*., p. 37.

others think that the key to everything would be in logic and reason. In the modern world, most people see science as the way to achieve this goal. But modern science has its origins "rooted" in medieval Europe and it was born from a double influence: Greek philosophers and Judaic-Christian theology. In the 13th century, however, the Old Continent rediscovered Plato and Aristotle, and the mixture of the two conceptions of the Universe formed the basis of new Western thought. But the contemporary world believes that technology and innovation solve everything, and that we can ignore the process of building thought and developing human intelligence.

The concept of artificial intelligence has neither a philosophical nor a scientific basis. It is not faithful to the evolution of Western thought, nor does it have any concern for the laws of nature. You cannot ignore the process of building Western thought, the philosophical foundations of modern science and go to a simple contextualized concept, constructed by innovation and market conquest. Likewise, it is not possible to conceptualize artificial intelligence, from technological innovation, adopting as its origin a machine, which is not aware that it exists, because it is not an evolution of nature, but human creation, a human act, which only shaped what already exists in nature. But, since man is an entity coming from the evolution of nature itself, intelligence is a simple awakening of nature in human consciousness; it operates a discovery of its own existence; it enables a reflection on itself and on the extreme limits of the cosmos, it is a realization or a revelation of its innate potentialities. Human thought is therefore not a creation of man, but a truth, an element of human essence and existence.

Descartes stated:

> I have noticed that there is nothing in *I think, therefore I am*, that assures me that I tell the truth, except that I see very clearly that, to think, it is necessary to exist, I thought I could take as a rule that the things that we conceive very clearly and very distinctly are all true.[20]

The philosopher makes it clear that the ability to think is linked to the human consciousness of one's own existence and not to the fact that man is the creator of intelligence. Intelligence was not created by man, but it exists in man, as in nature, but it does not exist in the machine, because it has no consciousness, it does not think, and it does not doubt of its existence. The consciousness of existence is intelligence itself. There is no way to think of artificial intelligence, having the same nature of human intelligence and intelligence in potential in nature, when the machine is depository, a recording, without ability to be aware of its existence. A thinking being, Teixeira says, knows how to unravel the very nature of thought,[21] which implies the awareness of the existence of intelligence. And he concludes that it is a crucial problem to address the nature of consciousness, as it has not even been possible to represent it.[22] He affirms that the television camera reproduces the image, but it sees nothing.[23] Artificial intelligence reproduces intelligence but does not know that it is intelligent. For artificial intelligence to exist, it must be aware of its existence and be able to evolve on its own. But, for that, it must exist, before being thought of, in its origin and in its nature.

[20] DESCARTES. *Obra escolhida*. Trad. Guinsburg e Bento Prado Júnior. São Paulo: Difusão Europeia do Livro, 1962. p. 67.
[21] TEIXEIRA, *op. cit.*, p. 89.
[22] *Ibidem*, p. 48.
[23] TEIXEIRA, *op. cit.*, p. 95.

Artificial intelligence is a recording of the evolution of human intelligence, which is in potential in nature and continues its eternal evolution. The machine is a form of the matter that exists in potential in nature, and of human intelligence in potential in man. It is not possible to shape or admit that something can be born out of nothing. According to Descartes, man is a substance whose essence or nature also consists of thinking, a capacity which is different from anything.[24] Man, as nature, is matter and potential, but for Descartes, in order to think it is necessary to exist, not only as matter, but as thought; he still states that intelligence has a nature outside of matter,[25] which is explained by Saint Augustine, in his conception that, despite everything being potential in nature, nature was created by God.[26] According to Nodari, the human being, even in his relationship with God, no longer wants to be limited by institutions and dogmas, and becomes aware of his own conscience and creative force.[27] It is unacceptable to confuse natural intelligence, whose creative force, scientifically proven, is nature, with questions of faith or God, which are of a transcendent nature. Artificial intelligence is a mere element of the act of human creation. In Aristotle's thought, intelligence is in potential in nature, and in Descartes, intelligence has a nature outside of matter, which is transcendent. But, in both thoughts, it is not possible to conclude that the machine (matter) is the origin of intelligence, and it could even originate new forms of thought, receiving, outside of matter, and beyond the limits of its

[24] DESCARTES, *op. cit.*, p. 67.
[25] *Ibidem*, p. 68.
[26] AGOSTINHO, Santo. *A cidade de Deus*. Trad. de Oscar Paes Leme. São Paulo: Vozes, 2012. P. 345.
[27] NODARI, Paulo César. *Ética, direito e política*. São Paulo: Paulus, 2014. p. 28.

creation, inspiration, intelligent lights; this is, at least, a reckless scientific statement and a religious heresy.

It is not possible to confuse matter with the evolution of potentialities existing in nature, such as life and intelligence. The first difference is that matter has no life, whereas life is potentially in nature. Intelligence presupposes life and not just matter and technology. Matter is present in technology, in the form given by man, but knowledge, thinking and intelligence are pure reason,[28] that does not originate in the material used to build the machine. Artificial intelligence, therefore, does not arise from the form or type of matter used to build the machine, but it is recording, reproduction, form without life and conscience.

Harari says:

> The fact that the autonomous car stops at red lights, overcomes obstacles, keeps a safe distance from other vehicles, walks without fear, without conscience, and none of them feel or want anything. Despite the vast knowledge we have acquired in the fields of mathematics and computer science, none of the data processing systems we have created need subjective experience to function, and none of them experience pain, pleasure, anger, or love.[29]

The fact that technology stores intelligence does not characterize its potentiality, sensitivity, ability to evolve, as this is the essence of living nature and not of dead matter. The material with which we manufacture the machine does not have the possibility to multiply, evolve and think. Artificial intelligence, therefore, has another nature that does not go beyond the recorded limits, unlike human intelligence

[28] DESCARTES, in his book *Critique of pure reason*.
[29] HARARI, *op. cit.*, p. 121.

that is not recording, but is in potential, with infinite possibilities of evolution. In this sense, Kant brings us a reflection: "Human reason continues its course irresistibly and, in all men, and since reason raises speculation in them, there has always been a metaphysics, trying to explain the nature of human reason".[30]

The machine does not have the possibility to continue its course, to increase its intelligence, to explain the nature of human reason or its programmed reflections. It is an object without the ability to think of another object. In this sense, Kant affirms that thinking about an object and knowing an object is, therefore, not one and the same thing.[31] Artificial intelligence was thought and stored in the machine, while natural intelligence is the original thought itself. The man thinks, and the machine is programmed or just concretizes what has already been thought. Those who are thought cannot reason but repeat what has already been considered. Intelligence is not in potential in the machine, so it does not expand the capacity to reflect, but to repeat what has already been programmed, stored, and thought in it. Intelligence is the possibility of mentally delineating beyond what has already been created, while artificial intelligence reflects what has already been considered.

Admitting the possibility that the machine can think or create thought, knowledge, intelligence is the same as accepting the possibility that the creature, or the material form, has the potential to create the creator. This has no logic nor rationality, as it would mean to invert the very order of nature or to admit that the machine

[30] KANT, Immanuel. *Crítica da razão pura*. Trad. de Kritik Der Reinen Vernunft. Lisboa: Fundação Calouste, Gulbenkian, 1997. p. 50-51.
[31] KANT, *op. cit*., p. 115.

constitutes an advanced phase of the evolution of species advocated by Darwin.

Darwin, in this sense, makes it clear:

> Nature can multiply, reproduce, and improve. Nature can act on itself. Man has only one purpose: to select for his own good; nature, in its turn, only for "that of the being which she tends". Natural selection can only work for the good of each natural living being.[32]

Reflecting on Darwin's assertion that nature can act on itself, we can conclude that nature is life that multiplies and takes different forms, adapting itself to time and space, while the machine has no life, it is dead, and it has no potential to remake itself. Artificial intelligence is not able to multiply and improve itself, acting on itself, making choices for the good of itself or making natural selections of adjustments to time and space. Man was not born intelligent, nor did he become intelligent because of acts of his own will or aided by a machine, but intelligence results from a natural process of evolution of species.

Darwin, in commenting on the meaning of the word natural and its relationship with intelligence, states: "The only distinct meaning of the word 'natural' is stated, fixed, or settled; since what is natural as much requires and presupposes an intelligent agent to render it so. This is, to produce it continuously or at certain intervals."[33]

Nature is intelligent because it has life and the potential to evolve, to produce continuously; the machine is still life, whose form

[32] DARWIN, *op. cit*., p. 95.
[33] *Ibidem*, p. 3.

was given by man and whose intelligence is only recording and repetition of the existing knowledge in human nature.

Man, when creating the machine intelligently, performs two tasks: the first one is to shape the matter already existing in potential in nature, and the second one is to record in it knowledge already existing in potential in human nature. The machine will no longer evolve, because, according to Darwin, man chooses his own good, that is, uses the machine as a choice, as a facilitating complement, with a view to his interests, while intelligence, in its origin, in nature, can evolve or make selections for the benefit of natural living beings themselves, while the machine is only on the limits of properly programmed human interests. Everything that is natural, has life, supposes a type of intelligence that evolves consciously or unconsciously, but all that is just matter that can have different forms from those it had as living nature only by human acts. Life is not transmitted to the machine, but it is composed only of what is already in potential in the natural environment. Life is not transferable, it evolves.

In the *a priori* knowledge that we have of the nature of intelligence is included the possibility of the use of pure reason, in the foundation and development of the theme.[34] Taking use of reason, Kant's reflection leads us to affirm that the machine, composed of matter of nature and recording of human intelligence, is *a priori* knowledge, which comes from experience, because it is a portrait of what already exists and what we know. It does not give rise to new

[34] KANT, *op. cit.*, p. 50.

knowledge, but repeats already programmed, known, and thought knowledge.

In this sense, Kant states:

> When eliminating, little by little the experience of a body, the color, the weight, and the body itself, the image occupied and fixed by it will remain, a priori knowledge, which came from the experience will remain. However, this knowledge does not require to be experienced to be known. But it is not pure knowledge.[35]

Natural intelligence produces pure, new knowledge, and can do other experiments, while artificial intelligence is an experiment with *a priori knowledge* or it is not pure knowledge, interpreting Kant. The domination of pure knowledge, according to Kant, implies a mastery of all sciences and even of a nature outside matter itself,[36] while artificial intelligence is due to a human act, manufacturing, technology, whose matter, and idea already exist in potential in nature, leaving only reproduced, *a priori* knowledge.

This all leads us to the need for a reflection on natural intelligence, consciously or unconsciously, in potential in nature in the various natural species. Man is part of this nature, an evolution of privileged intelligence, capable of using elements of environmental services, giving form to, experiencing, creating, and developing a machine to assist, to serve as an instrument to store already known knowledge or, even, to assist in experiments to produce new knowledge never experienced before. Therefore, technology is non-originating intelligence, with no possibility of going beyond what was

[35] *Ibidem*, p. 37-38.
[36] DESCARTES, *op. cit.*, p. 68.

stored or programmed. Only man can shape and reveal nature and use its environmental services by diversifying in a scientific way. The machine has no original ability to perform creative acts. Therefore, it is man who has the potential to dominate, not the machine. But we must not forget that the development of intelligence takes place through man, who needs to intelligently direct his evolution, his formation, discovering permanent values, creating intelligent laws, that protect his nature and dignity. Man is also constituted by potentialities that need to be preserved and cultivated, in an habitat under appropriate conditions.

There is no way intelligence can be born out of nothing but from nature or human natural potentialities. Man is nature, remaining the dualism of matter, for Aristotle; that is, in it there is the generating activity (potential), the propulsive, organizational (form) principle. In matter, there is the possibility of taking different forms,[37] but new forms or new technologies are not outside human consciousness but are thought by the conscious or natural intelligence of man, which has the existence of life as its essence.

Malman, in this sense, states:

> What is thought is in conscience. Everything that is represented of an object is in conscience; the "thing itself" must be as such, out of conscience. The given knowledge is incomplete knowledge; as such, it is not "data", but an "act" of thought. Conscience learns the thought being as its production.[38]

[37] SCIACCA, *op. cit*., p. 95.

[38] MALMAN, Salomom. *Versuch uber die Transzendeltal philosophie*. Berlin: Bocca, 1970. P. 48.

Artificial intelligence is an act of human thought, a creation, a production, given knowledge. Intelligence is immanent to human nature, that is, it remains in the agent, distinct from transitive action, artificial intelligence, which is what becomes a reflected transient element, such as water that heats up, but it is not heat;[39] that has no existence by itself, but it is a result, effect on an object outside of conscience, given knowledge, therefore, the result of an act of human intelligence. The machine is the product, a thought being, who does not think but who, even being part of the thinking being, does not subsist outside it. We can bring to law, in the construction of logical and rational principles, Kant's statement that the principles, whose application are up to everything and everything within the limits of possible experience, are opposed to the transcendent limits that overcome these demarcations.[40] The various elements of nature are susceptible to new forms, a wide range of diversified utilities, which are always linked to their nature.

The man himself who gives form to the machine, the robot, the technology, is not the product of external and mechanical causes, but he is the internal development of inner forms to matter.[41] Therefore, man's intelligent act of creating technology is only achievable because this possibility is already in potential in nature, which does not occur in the created objects, because they do not have this generating nature in potential. Following this reasoning, there is no way for the robot to perform intelligent acts by its very nature, because, unlike the man who is a natural being, the robot is a created object, with still nature.

[39] ABBAGNANO, *op. cit.*, p. 514.
[40] KANT, *op. cit*., p. 40
[41] SCIACCA, *op. cit*., p. 95.

Man maintains the generating nature (potential), which is not transmitted to the robot, which is only an image, a given knowledge, a copy of intelligence, out of conscience, and which has no ability to reason, beyond the limits of its creation. We reiterate that intelligence presupposes consciousness of its existence. The work, that is, artificial intelligence, is not aware of its existence, it has no evolutionary capacity and remains as it was created, because it is its nature, remaining immanent in its creation, in the sense that it does not go beyond nature itself.[42] The so-called intelligent acts of the robot, or artificial intelligence, are repetitions, memories of man, and this knowledge originates them.[43] We cannot confuse the faculty of thinking with technical activity, or the art of assisting what was thought. The word *art* means the whole set of rules capable of directing any human activity, with distinction between art and science. Artificial intelligence is a human activity, art, while intelligence is an activity of nature itself, whose essence is the existence of life, of which man is part of the process of evolution. Science is not art, although art can use science, not to build intelligence, but to build art forms. Therefore, to end this first reflection, it is necessary to limit the concept and sense of artificial intelligence, in its limits of art, human activity directed by human intelligence, immanent to nature, and which does not have the possibility to transcend.

The origin, power and evolution of intelligence are in the cosmos, from which intelligent norms that govern the world are born

[42] ABRAGNANO, *op. cit.,* p. 514. IMMANENT – term used by Kant in the sense that nothing goes beyond the limits of its nature.
[43] MALMAN, *op. cit.,* p. 99. Originating knowledge, which is in potential in nature.

and develop.[44] To ignore this is to distort, to reverse the origin of intelligence, in a pretension that it is possible, through dead matter, to produce, create, command, and evolve into an autonomous knowledge, having the machine itself as its origin. According to the theory of "chance and necessity", life can arise spontaneously in any favorable planetary environment and evolve to complex beings with intelligence potential, if it is possible to have large amounts of time and energy.[45]

By parodying Aristotle, we can conclude that intelligence is in potential in nature and, if there is a favorable environment, it can evolve. So, there is no way to be in potential in the machine and evolve. You cannot say that there's artificial life because life is life, and if it's artificial, it's no longer life. Likewise, artificial intelligence is not intelligence, but art, innovation, technology. Intelligence is the origin of life itself, which does not evolve in the machine, but needs energy, life, and time for its evolution. The machine does not have and will never have life nor the favorable energy to evolve. It is in life that intelligence is present, and it is in the natural environment that it develops. We cannot ignore this and lose ourselves in the affirmative of the existence of artificial intelligence capable of commanding the world and ignoring that man needs an environment conducive to living and developing. The deterioration of life, of the natural environment where it develops, implies environmental degradation: concern and sensitivity that the machine does not have.

[44] ARISTOTELES. *Lá metafisica di Aristótele*. Trad. de R. Bonghi. Milan Boca, 1945. P. 45.

[45] Valdemar Ferreira Ribeiro. Available at: www.valdemarferreiraribeiro.net. Access on: 15 Apr. 2020.

The reflection obligatorily leads us to conclude that there is dependence of the evolution of intelligence itself on nature, on the natural environment, as an element of nature, which makes relevant the reflection on the need to build norms of Urban Law (related to human occupation, respecting the natural environment of life) and Environmental Law (related to our ethical relationship with nature), otherwise, we could create serious problems in the natural evolution of life and undermine the evolution of human intelligence itself. The disrespect for biodiversity (spaces where life lives), the quality of life and socio-environmentally correct occupation of these spaces are guarantees of the natural evolution of species and of man himself. The preservation of life is the main environmental concern. Life is one, and its components, its characteristics are unique and dependent. There is, for example, a single water in the world,[46] one of the characteristics of life, just as there is a single potential intelligence in nature, another characteristic of life. The cycle of dependence of these elements on life is undeniable, but also difficult to control by man. The close relationships between the brain, vision, touch, hearing, taste, smell, communication languages, the ecological environment and its physical-psychic influences, intuition and other senses recorded in the genes, but still underdeveloped, are the set of "chances and needs", which can allow a deeper development of human intelligence.[47]

In this sense, Otsu argues:

> When drinking a glass of water, you don't just drink water, you drink all the memories of the water and the entire history of the planet. The water we drink today was once rain, river and

[46] OTSU, Roberto. *A sabedoria da natureza:* São Paulo: Ágora, 2006. p. 55.
[47] Valdemar Ferreira Ribeiro. Available at: www.valdemarferreiraribeiro.net. Access on: 15 Apr. 2020.

> ocean. It was ice from the Ice Age, blood from the Neanderthal Man, and it washed Pontius Pilate's hands. It was once locomotive steam and perspiration of a lion and a gazelle. It was once a cloud in Atacama and tomato sauce. It was baby pee and nectar that feeds the hummingbird. It was once an old lady's tear and rose sap. Because, as wise men said, there is only one water in the world.[48]

Man is nature, evolution of the species of the cosmos and must be permanently "hand in hand with them". Man depends on nature to live, just as nature expects not to be degraded, "violated" by man, under the risk of uncontrollable reactions.

https://www.google.com/search?q=foto+m%C3%A3os+dadas+com+a+natureza&tbm=isch&ved=2ahUKEwjpp7mw2sfoAhWbLrkGHdZ4CGEQ2-cCegQIABAA&oq=foto+m%C3%A3os+d (2/4/2020).
Man and the environment are of the same nature and feel the need to go hand in hand.

[48] OTSU, *op. cit.*, p. 55.

There is no doubt that human intelligence and its evolution are dependent on all elements of life, which are potential in nature. As Ehrlich says, people need all biodiversity, they need plants and insects more than they need leopards and whales (without meaning to belittle them).[49] We add, more than they need machines. The newly known Coronavirus paralyzed the Planet, despite the machines. All diseases are imbalances or a consequence of nature that we do not control, because we do not dominate nature.

Affirming artificial intelligence without considering the natural environment is like talking about death, without the existence of life. Ignoring this is not a paradigm to a new beginning, but the cause of human degradation itself. Nature takes different forms and moves along in interdependent cycles. Man is part of this cycle of the biodiversity of nature and the ecosystems that shelter life and are its habitat. Biodiversity is sacred. This cycle cannot be violated, otherwise the natural or historical process of living beings will be prevented. And in this cycle are the elements of life, including intelligence. At most, man is able to harvest the fruits of nature and give shape to the raw material that is no longer alive. It is what he does with the so-called artificial intelligence. But, just as the lion kills the gazelle to survive, man needs to occupy spaces and use nature's goods and services to guarantee his existence, his essence, his evolution. These ecosystems, which serve as a place for man to live, which provide environmental services, such as water, air, food, raw materials, cannot be degraded and one cannot extract from them more

[49] EHRLICH, Paul R. A perda da Diversidade: causas e consequências. *In*: OSBORNE, Eduard W. (org.). *Biodiversidade*. Trad. de Marcos Santos e Ricardo Silveira. Rio de Janeiro: Nova Fronteira 1997. p. 28.

than necessary. The absolute appropriation of these spaces, more than what is enough, beyond what is sustainable, and the objectification of nature generate imbalance.

In this context, Otsu's statement is wise:

> The problem is not the natural desire itself, but unrestrained consumerism and the lack of awareness of what is enough. In ecological terms, the one who wants too much is, directly or indirectly, a great predator. The one who seeks just what is enough, or something close to it, contributes to a sustainable and balanced world.[50]

Balance, or sustainability, is not a question of innovation and sustainable technology, but of the essence of preserving life and its characteristics, including intelligence. Sustainability is a natural principle of law, immanent to nature itself, which is revealed as a fundamental and mandatory rule to violate the life cycle itself. The strength and perfection of the laws of nature constitute something that is far from the human capacity to do the same. Nature takes care of everything, and the best thing we have to do is not to hinder nor try to control it, but always respect it. There is no way to create artificial intelligence capable of controlling natural intelligence. It is not possible to jeopardize the natural cycle of human intelligence itself. We need to highlight the nature of intelligence; seek to create an environment for it to develop, and respect the principle of natural intelligence, so that we do not deteriorate its nature and evolution. It is not a matter of regulating artificial intelligence, a need that Law has already pointed out and towards which it has advanced in research and debate, but it is a matter of respecting a principle of Law that neither

[50] OTSU, *op. cit.*, p. 71.

man nor machine dominates, but which must be recognized by it. as a principle of natural intelligence. Changing the evolution of natural intelligence is a scientific error, which can distort this evolution and spoil human nature and dignity It is also important to mention that we do not know the consequences of this. Man already has serious difficulties to exercise his intelligence potential, and our schools do not practice this exercise much. Technological facilities have made our intelligence lazy, with risks of stagnation and stunting. One of the most serious problems of human autonomy is the lack of reasoning ability to decide what to do. Bryant says one of the causes of poverty is that we are failing to teach people to think on their own.[51] The natural evolution of intelligence is an exercise of the natural potential of man in a favorable environment.

Otsu affirms that the human being, in spite of his intention, has control over almost nothing. One "is not born", " does not grow", or "does not get older"[52] We add, one is not more or less intelligent than what is potentially in nature, as possible to happen. Nobody controls the evolution of intelligence willingly, as anyone controls the seas, the seasons, the rain, the lightning, the storm, the evolution, or the multiplication of species. On the opposite, man at most can destroy this natural cycle. All the controls we have over everyday life, over nature, through science, mean nothing in the face of the natural power of the cosmos, the wind, the storm or the seas. Men are far from making balanced and intelligent laws like the laws of nature. The force of the laws of nature imposes itself on human laws. However, man has an unmatched ability to ignore all of this, to move away from

[51] BRYANT, *op. cit*., p. 76.
[52] OTSU, *op. cit.*, p. 17.

his nature. We all know the consequences of this attitude throughout History, which has also lost its essence, deviated from its purpose, and intends to explain everything on the basis of ideologies, without a scientific analysis of the facts and with unintelligent concerns. Social conventions do not change what is naturally right: nature, sex, the color of the skin, the evolution of species or the nature of intelligence. When a concept becomes prejudice, it is because it was not well defined or was ignored in its origin.

Finally, the concept of intelligence must be investigated based on its real nature. Kempf argues that the disappearance of species has as a major cause the degradation or destruction of their habitats, which, for half a century, have been experiencing a frenetic pace.[53] Man is not out of that possibility and his intelligence disappears with him. We must remember that the habitat of life is the natural environment; ecosystems being intelligent life, the legitimate daughter of nature, while the machine or technology are merely instruments that facilitate the storage and operationalization of human intelligence itself; therefore, they are not favorable spaces for its evolution. Natural habitats are being destroyed, as we will discuss in the next chapter; and its consequences are unpredictable. In addition, knowledge of the natural cycle of development of life and its relationship with human intelligence are poorly understood. It is recommended, according to Law, the application of the precautionary principle.

[53] KEMPF, Hervé. *Como os riscos destroem o planeta.* Trad. de Bernardo Ajzenberg. São Paulo: Globo, 2010. p. 21.

Chapter 2
Artificial intelligence and biodiversity

The reflection in the first chapter leads us to the need to preserve the natural environment as a habitat for life; this includes biodiversity, forests, and other elements such as environmental services. According to Baird, these services are being rapidly destroyed and will probably disappear in the next century, taking with them hundreds of thousands of species[54]. Since intelligent life *is the legitimate daughter* of nature, we need to reflect on the risks of the degradation of these habitats, as well as which habitat is most conducive to development and evolution of human life. Certainly, the machine is not the habitat where intelligence is developed, or: Is the human brain an isolated element of nature capable of evolving, independently of natural habitats? Even if it is admitted that technology will copy the human brain, according to Teixeira, storing a replica of our brain in a machine is a tempting possibility,[55] but this is not yet the origin of intelligence, nor is it the proper environment, or habitat for its development or evolution. This would imply the domination of nature, which, according to Teixeira, would be a drastic intervention in its order, which results, almost inevitably, in the destruction of the natural environment.[56]

There is no doubt that the relationship of man with the environment must be an ethical relationship, of respect, while the relationship of man with the machine must be only of value, of utility,

[54] BAIRD JÚNIOR, Frank. A situação atual da diversidade biológica. *In*: OSBORNE, Eduard W. (org.). *Biodiversidade*. Trad. de Marcos Santos e Ricardo Silveira. Rio de Janeiro: Nova Fronteira 1997. p. 10.
[55] TEIXEIRA, *op. cit.*, p. 77.
[56] *Ibidem*, p. 56.

as a complementary and auxiliary instrument in the execution of his tasks. There is no point in saying that man should walk *hand in hand* with the machine, as the machine may even have hands, but the machine does not feel and is not aware that it is holding hands. Therefore, it will always be a one-way relationship, not a smart one.

The principles of environmental law, especially precaution, prevention, and sustainability, cannot be violated in these absolutely different relationships.

https://www.google.com/search?q=imagem+do+meio+ambiente+e+a+inteligencia+artificial&tbm=isch&source=univ&sa=X&ved=2ahUKEwjg2uH778noAhWQGbkGHZU (2/4/2020).

The machine may even have hands, but it feels nothing while holding hands.

In the relationship between man *versus* environment, man and machine, it is essential that the Law seeks to reflect on biodiversity, ecosystems and protection, especially in the face of human interventions and their consequences already perceived, since the

extinction of species, deforestation, pollution, the greenhouse effect, lack of drinking water, urban environmental chaos, as well as flooding, destruction, lost lives, disease, hunger, etc.

Biological diversity, which concerns the habitat and the evolution of human life and intelligence, is the subject of the next chapter. According to Baird, it undoubtedly has to be treated more seriously, as a global resource, in order to be reported, used and, above all, preserved.[57]

And the scientist continues:

> Three circumstances conspire to give this matter unprecedented urgency. First, the explosive growth of human populations is eroding the environment at a very accelerated rate, especially in tropical countries. Second, science is discovering new uses for biological diversity, which can alleviate both suffering and environmental destruction. Third, much of the diversity is being irreversibly lost through the extinction caused by the destruction of natural habitats, mainly in the tropics. [58]

Law has the role, by the principle of prevention, to legislate on public policies in the problems that have known solutions, and by the precautionary principle, not to adopt policies that can jeopardize development in the coming centuries, for those problems to which we do not have scientific knowledge to give precise answers.

It is important to note that, while man lived in nature, the population growth remained under control. But, from the moment life in the cities and the creation of a more comfortable artificial environment arose, together with new knowledge about the human

[57] BAIRD JÚNIOR, Frank. A situação atual da diversidade biológica. *In*: OSBORNE, Eduard W. (org.). *Biodiversidade*. Trad. de Marcos Santos e Ricardo Silveira. Rio de Janeiro: Nova Fronteira 1997. p. 3.
[58] *Idem*.

body and health, we had an increase in population. However, large cities are facing serious socio-environmental problems today; these are consequences that affect the planet, as an example we have diseases and economic crises.

Ehrlich, in this sense, states:

> Above all, the growth of the human population must be stopped, and it is obvious that if the escalation of human activities continues to grow, even for a few decades, the extinction of the Earth's biota cannot be avoided. In fact, since *homo sapiens* is basically living on its inherited capital, it needs to be careful not to destroy all of this.[59]

The city is the habitat of most of the population of the Planet, but it is an artificial environment, where the creation of forms given by man predominates. Technology, innovation, artificial intelligence are part of this context of the created urban environment and, as Murphy says, we cannot destroy the habitat where man lives.[60] The ideal habitat for human life has undoubtedly been neglected over time by Law. The forms given by man to all that is in potential in nature cannot jeopardize the natural cycle of human life or its dignity.

For Aristotle, the city represents the end of the evolution of society and human nature,[61] but there are signs that it is the beginning of environmental and human degradation, despite technology, artificial intelligence, and other urban forms. In this sense, Murphy

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[59] EHRLICH, Paul R. A perda da diversidade: causas e consequências. *In*: OSBORNE, Eduard W. (org.). *Biodiversidade*. Trad. de Marcos Santos e Ricardo Silveira. Rio de Janeiro: Nova Fronteira 1997. p. 34.

[60] MURPHY, Dennis D. Desafios à diversidade biológica em áreas urbanas. *In*: OSBORNE, Eduard W. (org.). *Biodiversidade*. Trad. de Marcos Santos e Ricardo Silveira. Rio de Janeiro: Editora Nova Fronteira, 1997. P. 91.

[61] ARISTOTELES, *op. cit.*, p. 10.

says there are reasons to protect biological diversity in urban areas, but the implementation of conservation programs in these areas is among the most difficult problems for environmentalists to face.[62]

The lack of socio-environmentally sustainable Urban Law standards has surprised city administrators. Flooding in Belo Horizonte, São Paulo and many other cities are examples of the environmental chaos of urban environments. New diseases and the decrease in the longevity of the population, which lives in degraded areas, is a reality. Recently, there has been an increase in the rate of onset or reappearance of infectious diseases. The factors that contributed substantially to this trend are intensification of human invasion in natural environments; reduction of biodiversity and destruction of natural habitats.[63] The political discussion about the solution to these problems has pointed to the simple lack of sanitation and, especially, rainwater channeling. There is no doubt that the lack of environmental planning in cities has not adequately sized rainwater channeling. But the problem is much more serious than the issue of simple sanitation works. It is a horizontal population densification, which occupies all spaces, including those necessary for the preservation of ecosystems and the natural permeabilization of rainwater, to prevent it from reaching the streets and causing flooding. But it is also not smart to opt for vertical constructions, without compensating natural spaces, green areas around these buildings. In

[62] MURPHY, *op. cit.*, p. 92.

[63] This study is part of the publication *Sectoral policies in the environment (Políticas setoriais em meio ambiente)*. Available at: http://bd.camara.gov.br/bd/bitstream/handle/bdcamara/21119/politicas_setoriais_ganen.pdf?s equence=1. Accessed on: 17 jan. 2020.

addition, urban occupation with inadequate human activities to the natural vocation of urban spaces is added.

Murphy states:

> Urban areas are effectively synonymous with ecosystem disruption and erosion of biological diversity. Natural habitats are directly replaced by houses, buildings, apartments, hotels, and *shopping malls*, as well as by streets, roads, sidewalks, and the facilities that support them.[64]

It is not just a question of complying with environmental legislation, such as the Forest Code, in the case of Brazil, especially preserving PPAs (Permanent Preservation Areas), such as riparian forests, slopes, etc., because this would not be enough to prevent flooding in large cities. But it is about creating green areas, ecological corridors, protecting ecosystems; establishing areas for permeabilization of rainwater, in private properties, duly delimited with the obligation to be registered in real estate records (such as the Rural Environmental Registry (CAR), provided in the Brazilian Forest Code). In the case of consolidated cities, the reuse of these waters, storing them in cisterns or still, gradually released on sunny days, would make the rain sewage system cleaner and more protected.

In this scenario, Mumford clarifies:

> Instead of considering man's relations with water, air, soil and all its organic components, the secular technology of our time is dedicated to imagining ways to eliminate autonomous organic forms, putting in its place ingenious (controllable, intelligent and profitable!) mechanical substitutes. The oldest and most fundamental of all relationships will not to be

[64] MURPHY, *op. cit.*, p. 90.

> constrained or erased, but rather, deepened and expanded both in thought and in action [65]

It is not, therefore, just an engineering, technology problem, but environmental problem, because the permeabilization of rainwater is a matter of environmental sustainability, which is reflected in the lack of drinking water in the tap, because rivers are no longer fed in drought, and the ecological environment is compromised.

Our urban laws reserve a small percentage of rain-permeabilization areas, which is only observed in the first construction or legal building, but which, right after *the occupation license*, all land is occupied with sidewalks, barbecues, unauthorized enlargements. The streets follow the same logic, everything becomes asphalt and sidewalks. There are no green spaces for gardens, trees, etc. on private property neither in the public space. Rainwater goes down the roofs and flows all the way into the street, like a river, which invades homes, destroys everything, and reaps lives. The result of this is negative not only for finances and for human lives carried by the waters and in landslides but compromises the health of the population in general all the time. Disrespect for ecosystems is urban environmental chaos and it leads us to the need to adopt an environmental, ethical and sustainable rationality. Leff, in this sense, states that " the environmental perspective is the construction of a new rationality that implies *not considering the world as an entity, a change in the objectified, technical* world, seen as a thing; it is a counter-identification of thought and reality, truth and being."[66]

[65] MUMFORD, *op. cit.*, p. 569.
[66] LEFF, Enrique. *Discursos sustentáveis*. Trad. de Silvana Cobucci Leito. São Paulo: Cortez, 2010. P. 76.

Another rationality, which is not based on the environment, breaks the essence of being, the natural order of the existence of life and staggers into environmental degradation, social inequality, poverty, violence, and the chaos of the artificially created by man environment.

According to Leff, "environmental perspective thus implies the deconstruction of the dominant rationality and the construction of a new rationality. A sustainable future cannot be based on the blindness that seized our existence".[67] The environmentalists' concept exceeds the questions of empathy, poetry and ideologies, and a scientific and ethical approach is necessary, together with what is important to be protected.

Man, in fact, continues to make laws that seek to dominate nature and not to live with it. In addition to trying to confine nature in a far away, distant conservation unit, man tries to automate life, with the idea that he was made for the city of stone, of machines, of technology and cannot live together with living nature. The idea that economy and technology solve the future of the Planet is not a proposal for a sustainable economy, if it does not consider the natural environment in a more ethical way. A sustainable future, according to Leff, "implies setting goals that will lead to foresee changing trends, to restore ecological balances, and to establish a sustainable economy."[68]

Confirming the same dominant logic, Farias states "that the ecological thought is predominantly conservationist and preservationist, based, therefore, on the idea that nature must be

[67] LEFF, *op. cit.* , P. 79.
[68] *Idem*.

conserved or preserved and, therefore, isolated from the human population".[69]

Our urban legislation reinforces the understanding that the city is incompatible with nature, and in the name of building an environment for man to live, of development, of innovation, and of artificial intelligence, he is authorized to devastate everything, creating a human confinement in the city, far from the jungle, as a way to protect him from other "wild" species. Streams and rivers need to be grounded to avoid bad odor, elevations need to be flattened to make way for human settlements, which we call allotments, and the forest, in turn, is cut so as not to disturb and keep animals out of man's vicinity. The natural ecosystem, or the biotic community, is replaced by an artificial environment, which moves away other species of life and eliminates the landscape, the natural course of rivers, ripe forests, jungles, mountains and alters the atmosphere and quality of the air. You can't call this a smart city, even if, in this created environment, technology facilitates human tasks; that's not enough, you need to preserve life and its potential, which includes human intelligence.

Unintelligent urban sprawl in vast areas is the cause of serious problems in large cities, such as São Paulo, Rio de Janeiro, Belo Horizonte, etc., which, in rainy seasons, turn into real uncontrollable and devastating rivers running in the street, while, however paradoxical, there is a lack of drinking water in taps. There is no doubt that when large water reservoirs, intended for energy production or water supply, are empty; when the slopes collapse, or when human

[69] FARIAS, André B. Etica e meio ambiente. *In*: TORRES, João Carlos Brum (org.). *Manual de ética:* questões de ética teórica e aplicada. Petrópolis, RJ: Vozes; Caxias do Sul: EDUCS, 2014. p. 611.

degradation is the rule in the peripheries, the environmental issue is the first cause, resulting from the way we plot and occupy the soil in our cities, and a mistaken concept of urban occupation and sustainable development. Farias confirms that it is naïve to believe that we will be saving nature by simply implementing a conservation unit, far from man.[70] Even less are we saving man in cities that are far away and isolated from nature. The statement refers us to the need for conservation of ecosystems, no matter where they are, whether in urban or rural areas. The allocation of squares of green spaces, at the time of urban land parceling, spaces have no effective utility, because they do not preserve ecosystems nor ensure an ecologically balanced environment. This is a practice that transforms our cities into environmental chaos, with lack of clean air, of drinking water, of health assurance, with flooding, landslides, pollution, and human degradation.

The reasons for protecting biological diversity in urban areas seem obvious, but it is a difficult problem to face, especially in consolidated cities. It is an immediate theme for urban sprawl planning and demographic densification in progress, but with regard to the consolidated city it is a planning that must be transformed into law, to be put into practice in the long term. There is no solution in the short term, in cities such as São Paulo, Belo Horizonte, Rio de Janeiro and many others, because the environmental problem is much more serious than social and economic issues. But it is a mandatory path if we are to save sustainable development and the health of cities and their citizens.

[70] FARIAS, *op. cit.*, p. 613.

Science, as Baird puts it, is discovering new uses for biological diversity, and this can alleviate both suffering and destruction of the environment.[71] In this sense, the author states that it is possible that the evolution of species can take place in isolated geographical environments, provided that they offer conditions for the development of life.

See his contribution:

> There is a second important way of evolution and formation of species, which is the geographical process, but which takes much longer. It begins when a population (or series of populations) is divided by some extrinsic barrier to organisms, such as a river, a mountain range or a sea arm. Isolated populations differ from each other in evolution because of the unavoidable differences in the environment where they are located.[72]

The man of the big cities lives geographically isolated from the natural environment; however, the created environment is not very healthy for the preservation and evolution of life. Therefore, we are not sure that we are facing a situation where we can have some relief concerning environmental destruction. Environmental degradation in cities is certain, but the consequences on *sapiens man's* health and his intelligence are still unanswered questions.

In fact, the geographical process requires a natural environment conducive to the development of life and intelligence. In this sense, Baird says that in modern biology, species are conceptually considered as a population or series of populations within which free

[71] BAIRD *op. cit.*, p. 3.
[72] *Ibidem*, p. 7.

genes flow under appropriate natural conditions.[73] The city, where environmental chaos has been established, is certainly not an adequate condition for human life.

The situation of tropical forests, which constitutes an environment under natural conditions of evolution and development of living species, can be compared to other environments, habitats of different species of life, including the life of man in cities. According to Baird, tropical forests are being destroyed so quickly that they are likely to disappear within the next century, leading hundreds of thousands of species to extinction.[74] The destruction of the suitable habitat is the cause of the extinction of the species. The concern of scientists is how man will adapt to the urban environment with so much environmental degradation. And the question that arises is: Will technology be able to provide conditions for a properly created environment for man's life? There is no answer to this, as Baird puts it, because of lack of knowledge and the little research done in this area.[75] This scientist concludes that there is no prospect, now, that the scientific task will be completed, before a large part of the species disappears.[76] Therefore, Law must apply the precautionary principle.

Baird confirms that much of the diversity is being irreversibly lost, through extinction caused by the destruction of natural habitats.[77] The issue of natural habitat, with special conditions for the evolution of species, should also include the habitat where man lives, cities, and

[73] *Ibidem*, p. 6.
[74] *Ibidem*, p. 10.
[75] BAIRD *op. cit.*, p. 18.
[76] BAIRD *op. cit.*, p. 116.
[77] *Ibidem*, p. 3.

where technology is developed, themes that we will go into further in the next chapters.

Baird, in this sense, points out that,

> although improvements in the technologies used to sustain human life and abundance can evidently help to ameliorate the species extinction crisis, in the face of the destruction of enabling natural habitats, and, even if to a limited extent, technologies can replace services that were lost with ecosystems, it would be a dangerous miscalculation to believe that technology is the answer.[78]

Leff, in the same sense, states that technological development opens spaces for the field of biosafety, and the construction of sustainable societies implies goals to reestablish ecological balances.[79] Robinson, on the other hand, affirms that the destruction of habitat is caused by ignorance or the non-development of human intelligence.[80] The fact is that there is no doubt that the development of artificial intelligence, of technology, is an advance, that helps man in his tasks. But it is necessary to bear in mind that cities are spaces, habitats, where this happens and leads us to a reflection on smart cities, which cannot be dissociated from the need to balance the negentropic processes that generate life, from the necessary ecological conditions, to develop man's potential.[81] Artificial intelligence is undoubtedly an instrument for planning, policies and solutions to the serious problems faced by our cities. But, remembering Baird, we can add that this

[78] *Ibidem*, p. 33.
[79] LEFF, *op. cit.* , P. 79.
[80] ROBINSON, Michael H. Existem alternativas à destruição. *In*: OSBORNE, Eduard W. (org.). *Biodiversidade*. Trad. de Marcos Santos e Ricardo Silveira. Rio de Janeiro: Nova Fronteira 1997. p. 455.
[81] LEFF, *op. cit.* , P. 79.

alone would be a dangerous miscalculation, if we believe that technology, artificial intelligence, has answers to the essence and cause of the problems faced by cities. The scientist adds, about the doubts of the urban environment:

> We have to initiate a formidable effort to raise public awareness of the urgent need for action. All people everywhere must understand the importance of loss of diversity, not only in tropical forests, coastal zones and other climatically defined regions of the world, but also in demographically delineated regions such as urban areas.[82]

And the author concludes: We must rush to acquire knowledge on which to base a wise policy of conservation and development for centuries to come.[83]

The conservation of natural habitats is undoubtedly the key to the problem and the solution to ensure life and quality of life.

Brady states:

> Habitat conservation is the key to effectively conserving the world's biological diversity. The usefulness or necessity of a species from a human point of view is not necessarily due to the adaptability of a species. Therefore, conserving biological diversity for human benefit means conserving enough natural habitat for species which are unable to survive elsewhere.[84]

Furthermore, the scientist adds, because we lack complete knowledge of the identity and quantity of all species and their suitable habitats, we need efforts to achieve high levels of organization of

[82] BAIRD *op. cit.,* p. 34.
[83] *Ibidem*, p. 3.
[84] BRADY, Nyle C. Desenvolvimento internacional e a proteção da diversidade biológica. *In*: OSBORNE, Eduard W. (org.). *Biodiversidade*. Trad. de Marcos Santos e Ricardo Silveira. Rio de Janeiro: Nova Fronteira 1997. p. 524.

these habitats or ecosystems,[85] which includes human habitat, especially the cities.

There is no doubt that cities are the main habitat of man in modern times and that these spaces also presuppose an ecosystem diversity for human benefit, to ensure an ecologically balanced environment, which implies respect for the natural biodiversity of certain urban spaces, which must necessarily live side by side with man, observing the ethical-ecocentric relationship.

Historically, the urban habitat provides socialization to man, quality of life, well-being, human development, to improve relationships, adopting the law as an instrument of social regulation; development of intelligence through schools and universities; innovation with never imagined technologies, etc., but the question remains: How will technology, artificial intelligence, solve the environmental chaos of our cities, and build adequate conditions to ensure an ecologically balanced environment, for the development and evolution of human life and intelligence?

The isolation of cities from the natural environment is a reality with its known consequences. Urban Law needs to recover this relationship; it needs to be built intelligently, to make feasible what art. 225 of CF/88 states.

Krell defends: "A pragmatic reflection on Environmental Law in Brazil is essential, which goes beyond the bordering of the legal norm and examines the complex legal, political and socioeconomic

[85] BRADY, *op. cit.*, p. 524.

phenomena, which condition its social and local viability and usefulness".[86]

As a matter of fact, in our cities nature is objectified, green spaces are more valuable when occupied by buildings and factories. This culture does not admit any ethical relationship with nature, because the urban space is a place for human creation, and the city is a place for "civilized" men and not for wilderness and animals. This mistaken relationship with the environment makes our cities the result of an anthropocentric ethic, which places man at the center of the universe and of all interests and ignores the importance of ecosystems and other forms of life. The urban or rural space, occupied and exploited by man, are not exclusive, nor are they only at the service of man. There are always natural spaces, but the coexistence of man with the environment almost always follows an anthropocentric ethical relationship, with the result, over time, being an unbalanced environment, a habitat that is inadequate for the evolution of life.

Pope Francis, in his encyclical on the environment, references:

> 36. Caring for ecosystems demands a perspective that goes beyond immediacy, since no one looking for quick and easy profit is truly interested in their preservation. But the cost of the damage caused by such selfish lack of concern is much greater than the obtainable economic benefits. [87]

[86] KRELL, Andreas J. *Discricionariedade administrativa e proteção ambiental*. Porto Alegre: Livraria do Advogado, 2004. p. 90.

[87] Carta Encíclica – LAUDATO SI' (Sobre o cuidado da casa comum). Papa Francisco. Disponível em: http://w2.vatican.va/content/francesco/pt/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html. Acesso em: 17 jan. 2020.

Bosselmann states that natural habitats are indispensable to the protection of human life, its well-being and integrity.[88] Human intelligence is the most valuable element of human integrity, which cannot be put at risk.

The projects of our cities, without exception, do not prioritize life, human integrity, precisely because they do not build an ecocentric ethical relationship with nature. Urban Law does not solve the conflict between the urban environment and the natural environment, because it destroys the essential conditions for man's quality of life but prioritizes merely profitable and competitive urban occupation. The laws of nature are not competitive, but establish a harmonious process of evolution of life, in an interdependence, respecting natural habitats, the life cycle, whose rules are sustainable to coexistence.

In our cities, we do not have the domain of nature anymore and, for a long time, man himself has been dominated by technology.

Teixeira states:

> From the modern era, technology began to determine the relationship of the human being with nature, making it, more than at any other time in history, ubiquitous in civilization. We are confined to an exclusively technological world that has been increasingly rehearsing its self-determination. This domination of nature demands a critical intervention in its order, which has as an almost inevitable result, the destruction of the natural environment.[89]

The city is no longer a natural habitat for man, the height of civility, of well-being, and becomes a space dominated by technology,

[88] BOSSELMANN, Direitos humanos, meio ambiente e sustentabilidade. *In*: Sarlet, Ingo Wolfgang. *Estado socioambiental e direitos fundamentais*. Porto Alegre: Livraria do Advogado, 2010. p. 91.
[89] TEIXEIRA, *op. cit.*, p. 56.

a warehouse for machines. The nature is only one supply of available resources the service of the man. Teixeira claims that nature is no longer our habitat to become just a means, an instrument to be manipulated and dominated by technological strategies.[90]

Technological production, in the capitalist view, does not need the environment, except to remove raw materials from it. Teixeira says that living has become incompatible with preserving life, and these priorities will clash soon.[91]

The question is whether artificial intelligence will be able to meet this need, this dependence of man on the natural environment. Scientists, according to Teixeira, claim that vital phenomena are not necessarily restricted to living matter, but to their special type of combinations; vital processes can be artificially replicated.[92] Harari says that, in the 21st century, we will have to do better than simply ensure ecological and economic stability if we are to avoid catastrophe. The supreme contemporary culture is the appreciation of human life.[93] Therefore, we are not neglecting the role of technology, but there is no way to think that artificial intelligence can ignore the environment, especially as the natural habitat of life and its forms of evolution. Searle follows the Aristotelian line, not against the role of artificial intelligence, but that life and consciousness are inseparable, because there is an unbridgeable gap between humans and machines.[94]

[90] *Ibidem*, p. 56.
[91] *Ibidem*, p. 59.
[92] TEIXEIRA, *op. cit.*, p. 100.
[93] HARARI, *op. cit.*, p. 34-35.
[94] SEARLE, *op. cit.*, p. 132-133.

Artificial intelligence can optimize natural resources, but neither fully recompose them nor create them. If they are finite, so are we.[95] All the natural resources are potentially in nature, according to Aristotle; that is why there is a necessary interdependence that the Law needs to address, in addition to ethical, moral and religious issues. The laws of nature must be respected, and the limits of technology must be regulated for the benefit of human life, to avoid catastrophes. The limits of technology are the laws of nature. When there is a clash between nature and technology, we will always be facing a technical impossibility, an ethical violation and, fundamentally, disastrous consequences for life, the species of life, including man. Man's control over artificial intelligence is a challenge because, according to Teixeira, a super-intelligent machine can always break laws or any other type of restriction imposed by human beings.[96] We would be facing the total subordination of human beings to artificial intelligence, which, according to Teixeira, would occur when the machine could supplant our capacity to reason and manipulate data.[97] But by the time that happens, we will have already atrophied our intelligence from non-use. Therefore, technology cannot only generate technology, but must be used as an instrument to protect life and bring benefits to man. It is not about not using technology or being against artificial intelligence, but about using it with caution, not neglecting the habitat of life, the natural origin of intelligence and ensuring facilities, quality of life for future generations, without losing the control.

[95] TEIXEIRA, *op. cit.*, p. 153.
[96] *Ibidem*, p. 112.
[97] *Ibidem*, p. 116.

In the next chapter, we will deal with artificial intelligence and the created environment, cities, without detaching from the reflections made so far, but having them as a concern and foundation. At the same time, we will address the need to adopt smart laws as instruments for planning and effectiveness of sustainable urban environments; to use artificial intelligence, technology, etc. to help and change the environmental and social chaos in which most large cities live.

Baird says:

> Only an intensive effort to make improvements and replacements, combined with a revolution in attitudes towards biodiversity, population growth, urban occupation, in view of human life and the intrinsic values of organic diversity, can be able to prevent the worst. catastrophe ever to the human race.[98]

The signs of disasters are already being felt in urban environmental chaos, serious social exclusion, unemployment, social mobility, health, well-being, etc. We cannot neglect the protection of man's main habitat, the city; the spaces in which all human potentials are developed, including intelligence. Jordan states that ultimately, we need not only to save what we have, but also to remake the leftovers, after something has been altered, damaged or even destroyed,[99] especially when we know the causes and consequences, as it has occurred in cities.

In reality, we need to establish limits of coexistence between man and nature, between technology, artificial intelligence and man,

[98] BAIRD *op. cit.*, p. 34.
[99] JORDAN, William R. Ecologia de restauração. *In*: OSBORNE, Eduard W. (org.). *Biodiversidade*. Trad. de Marcos Santos e Ricardo Silveira. Rio de Janeiro: Nova Fronteira 1999. p. 399.

avoiding the reduction of man to simple nature, or confusing man with technology, artificial intelligence. In this sense, Castells states:

> The problem for ecologism is that by making nature a subject either ethically or, more radically, in the legal plane itself, the idea of the existence of a bond is recovered (according to which humans are part of nature and depend on it), but the idea of limit (that the human element cannot be reduced to its natural element) is lost.[100]

Man cannot be reduced to a machine or transform the city, its created habitat, into a mere economic or profit instrument, moving away from the real objective of the cities, as a place of coexistence, well-being, civility and citizenship. It is not a question of reducing man to nature, nor of reviewing ideological, liberal, conservative, capitalist, socialist, communist, etc., discussions monopolized and used with merely political concerns of power. But this is a new rationality, both scientific and of values capable of uniting us, ensuring well-being, and providing human dignity. Reducing everything to political discussions disaggregates. Politicians are not able to unite even in disgrace; the Coronavirus pandemic is an example of this. Law needs to have an intelligent, epistemic, sustainable attitude to recognize what we effectively need to do when editing urban norms. We need to define the ends and review the means used for their effectiveness.

[100] CASTELLS, Manuel. *A questão urbana*. São Paulo: Editora Paz e Terra, 2000. p. 79.

Chapter 3
Artificial intelligence, created environment, and the city

Cities are artificial spaces created over time that have facilitated coexistence, human survival and provided development. But the city foolishly drove man away from the natural environment, artificialized over time the human habitat with norms which are against the laws of nature and must deal today, with the most serious environmental and social problems.

Mumford says:

> Within its historical enclosures, the city clashes with time: time defies time, because its structures last longer than the functions and purposes that ordinarily shaped it, but the city sometimes preserves for the future ideas that have been foolishly put aside or rejected by past generations.[101]

The artificiality of cities, an important attribute for their development, as a social capacity to realize human longings, was not enough to preserve the quality of life, being surprised by time and the way it sought to structure its created environment, without much concern for the natural environment. It is not a question of finding another model of coexistence, because the structures of the city, as Mumford says, are durable and go far beyond the original forms, but it is about preserving for the future ideas that have been set aside, by the enthusiasm and success of the new forms created.

Rousseau already stated:

[101] MUMFORD, *op. cit.,* p. 113.

> It is not good business to separate what is original and artificial in the present nature of man, and to know properly a state that no longer exists, that may never have existed, that will probably never exist, but about which it is necessary to have fair notions to evaluate well our present state. This ignorance of the nature of man that casts so much uncertainty and obscurity on the true definition of law, is closely related to the nature of man. But as long as we do not know the natural man, it will be a vain attitude to want to determine the law that he has received and the one that best suits his constitution and organization.[102]

And Rousseau concludes that development stifles human nature.[103] The laws of the city reflect the true ignorance of human nature, affecting survival, health, sexuality, spirituality, coexistence, dignity, among others. Actually, man has lost the natural sense of the word *law* and creates social conventions against his own nature. It is the economy, the technology at the service of the economy and not at the service of man. It is to ignore that the tripod of sustainability has as its platform the natural environment. But we persist in the eternal ideological discussion between what is most important, whether social or economic issues, without any scientific concern and with respect to the principle of sustainability.

The city is undoubtedly the peak of civility, but it is also the peak of environmental and human degradation. The city cannot artificialize or create behaviors that go against human nature. The city cannot keep man far from his natural and necessary habitat for his evolution, health and dignity. These elements put aside or ignored by past generations need to be taken over as we think the city of the future.

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[102] ROUSSEAU, Jean-Jaques. *Discursos sobre a origem e os fundamentos da desigualdade entre os homens.* Introd. de João Carlos Brum Torres. Trad. de Paulo Neves. Porto Alegre: L&PM, 2017. P. 36-37.
[103] ROUSSEAU, *op. cit.*, p. 37.

Artificial intelligence has been advocated for the solution of the urban problems of our future cities. The theme has been treated as *smart cities*, with technology as the planning tool of the current problems faced by cities. However, it is a theme that requires an epistemic stance, at the risk of neglecting, once again, the fundamentals of planning a sustainable city. This issue must be taken into question: Who are we building a smart city for? There is no doubt that the entrepreneurial spirit of man speaks, manifests itself, while nature has been silent for a long time, appearing normal, but when it reacts, we have no control over it. Stevenson and Haberman make us aware of the different conceptions of human nature, leading us to different ideas about what we should do and how we can do it.[104] But denying the biological conception of man, his ideal and necessary habitat, is not a highly intelligent attitude, in the face of disasters and known consequences.

Therefore, we cannot forget that the city is where most of the planet's population lives. It was not built to be the habitat of the machine. And, as a habitat for man, elements necessary to protect human life and dignity must be prioritized. Therefore, the sustainable protection of the natural and created environment, indispensable to provide a healthy environment and protect the fundamental rights of man, is a premise for sustainable development. We are not defending a rich land in biodiversity together with starving people. Man does not live on bread only, nor on nature, but he must use his intelligence to build habitats that do not put his future at risk. Technology, artificial intelligence, is undoubtedly a valuable tool to assist man in this task.

[104] STEVENSON, Leslie Foster; HABERMAN, David, I. *Dez teorias da natureza humana*. Trad. de Adail Ubirajara Sobral. São Paulo: Martins Fontes, 2005. p. 7.

But it is necessary that the law establishes norms which can protect the ecologically balanced environment, in the urban environment, neglected by past and present generations, but indispensable to the protection of life and necessary for the development of its potentialities, including intelligence.

Laws cannot make life on Earth impossible, just as they must protect ecosystems and biodiversity, where life and intelligence itself develop. The most serious problem affecting sustainable development is not the lack of technology, but, fundamentally, the lack of intelligent, scientifically correct laws that aim to ensure life on the planet and human dignity, and it cannot continue to be only an instrument of protection of immediate, thoughtless, unintelligent interests. We ignore the human capacity to propose scientifically correct solutions of occupation, we do not use human intelligence nor artificial intelligence, technology, to develop projects of smart cities. It happens that collective interests, common spaces, the environment will only be respected with intelligent laws.

The occupation of man on the planet, without concern for life, for ecosystems, is one of the most worrying themes, because its consequences are evident, in the form of serious epidemics, disasters, rains and floods, destruction, insecurity, deaths, etc., which affect the quality of life of man in cities and the planet and, at the same time, cause enormous social and economic damage.

All this is happening, despite technology or prioritization of smart cities. The fact is that the socio-environmental function of the property, the land parceling, the occupation in respect of its natural and created diversities dispense with rules of Law, as an instrument of planning, in the medium and long term, on behalf of the Democratic

State of Law, as provided for by the Brazilian Federal Constitution (CF/88), in its art. 37. Therefore, well planned smart cities, are not those that adopt only artificial intelligence, technology, but an intelligent Master Plan, which respects the laws of nature, the natural cycle of life and human dignity and uses technology as an instrument that comes to help and benefit man. Smart laws should indicate guidelines, concrete planning instruments and public policies and drive socio-environmentally sustainable development. Artificial intelligence, technology, must be increased with norms of law of a sustainable city, which are rare, especially in environmental terms, because a city is not only a political organization, but also a epistemic organization, having, in the natural environment, the space where it is based.

For Fabiano Melo, biologist, post-doctor by *University of Wisconsin* (USA) and member of the Network of Nature Conservation Experts, the environment is essential for a city to be considered smart.

> There are a multitude of benefits and advantages, on a larger or smaller scale. The various benefits this can bring include human well-being; quality of life tied to a healthier routine; ecosystem services provided by nature, such as maintaining air quality at good levels (minimally tolerable and adequate), pollination of orchards and gardens (especially fruit trees that we keep in our backyards), among others.[105]

Modern technologies, artificial intelligence, advocated as an innovative solution to *smart cities*, is just an addition, an important and unavoidable complement that should be used to increase the quality of life of citizens. The guarantee of an ecologically balanced environment, of preservation of natural ecosystems, of social

[105] Available at: https://ciclovivo.com.br/arq-urb/urbanismo/meio-ambiente-cidades-inteligentes/. Access on: 13 Apr. 2020.

inclusion, of work, of civility and human dignity are issues that need to be protected by law, so as not to compromise human survival itself.

Smart laws cannot be restricted to guidelines only; they must be effective, with the adoption of scientifically proven legal planning instruments. Environmental zoning, for example, is a planning instrument that safeguards the *essence-principle,*[106] foundation on which fundamental rights are organized and structured, and which concerns the base-source that guarantees life and human dignity in cities, because where an ecologically balanced environment is not ensured, environmental and human degradation is the rule. Environmental zoning is the planning platform of a city, where human occupation is based, and where spaces of natural environment must be preserved (either in public areas, such as Parks, PPAs, Legal Reserves, Green Areas, etc., or in private areas, especially the Areas of Permeabilization – PA); sufficient and necessary areas to contemplate all other human needs will be available to guarantee fundamental rights, such as housing and economic activities. In this scenario, environmental zoning has the function of ensuring the sustainability of the natural environment, as a habitat for the evolution of life and human intelligence itself. As a result, the serious environmental, social, and economic problems faced by cities, such as diseases, flooding, environmental and human degradation, lack of employment, social and environmental exclusion, etc. will be avoided. What we are doing is using technology to fight diseases, but we are not preventing

[106] The *essence-principle,* according to Derani (*Direito ambiental econômico*. Florianópolis: Max Limonad, 2014. p. 28) concerns the source, the basis on which fundamental rights are structured. The *basic-principle* structures the organization of society and gives rise to fundamental rights with a view to the dignity of the human person.

diseases or preventing new diseases from arising. Every year, millions of resources are spent to recover cities from environmental disasters, ensure health, but we are not planning or re-planning the definitive way to prevent, nor to create urban and environmental standards that establish a socio-environmentally sustainable occupation in our cities.

Currently, when building and expanding his city, man has no ethical relationship with nature; he does not even observe environmental standards, sustainable and scientifically correct development; he suffers with flooding, landslides, lack of water, health problems, epidemics, scarcity and high cost of energy, hostile and violent environments, human degradation, loss of lives and enormous economic damage, etc. Our cities are not spaces in which an ecologically balanced environment is ensured, as provided by our Federal Constitution, in its art. 225, because, when we zone the soil, we adopt a purely speculative attitude without worrying about the quality of life and environmental issues.

Fensterseifer states:

> The social right that presents greater convergence of its scope of protection with the protection of the environment is the fundamental right to health, highlighting the constitutional prediction of the caput of art. 225 that places the balanced environment as "essential to the healthy quality of life". The balance of natural life (non-human animal, plant, mineral, etc.) must be taken as an elementary condition for human health, thus recognizing the existential bond between all living beings in the composition and maintenance of the web of life.[107]

[107] FENSTERSEIFER, Tiago. *A dimensão ecológica da dignidade humana:* as projeções normativas do direito e (dever) fundamental ao ambiente no estado socioambiental de direito. Porto Alegre: Livraria do Advogado, 2008. p. 24.

Urban Law, which deals with the occupation of man in local terms, is an instrument that needs to be more intelligently built, based on Environmental Law, to make feasible what art. 225 of CF/88 states, which seeks to ensure ecosystems, biodiversity, environmental zoning, as a platform for human occupation.

Krell defends:

> "A pragmatic reflection on Environmental Law in Brazil is essential; it should go beyond the bordering of the legal norm and examine the complex legal, political and socioeconomic phenomena, which condition its social and local viability and usefulness".[108]

In fact, in our cities nature is objectified, green spaces are more valuable, when occupied by buildings and factories, without any respect or need for it to be part of the spaces to be occupied by man. This culture does not admit any ethical relationship with nature, and human intelligence, distorted by thoughts of another order, committed to a purely economic rationality, sees that urban space as a place of human occupation, and the city as the dwelling of "civilized" man and not of bush, animals, or nature.

Confirming the same dominant logic, Farias states "that the ecological thought is predominantly conservationist and preservationist, based, therefore, on the idea that nature must be conserved or preserved and, for this, isolated from the human population".[109] It is how we think intelligence, something dissociated or distant from nature, from life, but a process of evolution of the city

[108] KRELL, Andreas J. *Discricionariedade administrativa e proteção ambiental*. Porto Alegre: Livraria do Advogado, 2004. p. 90.
[109] FARIAS André Brayner. Ética e meio ambiente. *In*: TORRES, João Carlos Brum (org.). *Manual de ética:* questões de ética teórica e aplicada. Petrópolis, RJ: Vozes; Caxias do Sul: EDUCS, 2014. p. 611.

or technology. This thought puts at risk the habitat of man, the natural evolution of intelligence, without any precaution with unknown environmental consequences, which come from this, when done without intelligent norms of law.

Our urban legislation reinforces the understanding that the city is incompatible with nature, and in the name of building an exclusive environment created for man to live, and of development, it is authorized to devastate everything, creating a human confinement in the city, far from the jungle, and from ecosystems, without caring about a form to protect the other so called "wild" species. Nature is moved away from the city and from man´s coexistence with it. Streams and rivers need to be grounded to avoid bad odor, elevations need to be flattened to make way for human settlements, which we call allotments, and the forest, in turn, is cut so as not to disturb and keep animals out of man's vicinity. The natural ecosystem, or the biotic community, is replaced by an artificial environment, which moves away other species of life and eliminates the landscape, the natural course of rivers, riparian forests, jungles, mountains and alters the atmosphere and the quality of the air. Man and intelligence were not born nor evolved from cities, but from nature.

Human occupation of the Planet must first pass through an ethical attitude, an "awakening of the awareness that the issue of ecological crisis, the exhaustion of nature coincides with the issue of exhaustion of a model of economic rationality"[110]. In other words, in the face of the unintelligent way, without scientific and ethical concern with relations with the natural environment, man has created an urban

[110] FARIAS, *op. cit*., p. 605.

environment of economic exploitation and social interaction that he thinks is sufficient to ensure sustainability. But he ignores that sustainability is the balance between the environmental function and the social function of spaces, between the need for environmental services (such as air, water, sun, ecosystems, biodiversity), and social services (housing, work, interaction, food, etc.).

On the other hand, with regard to social sustainability, policies to overcome the informal city, which generates thousands of irregular buildings and slums, excluding a large part of the population that cannot acquire housing in legal cities are necessary, because urban laws are not intelligent and do not contemplate human diversity.

By the way, the socio-environmental function of urban property, guaranteed by the Federal Constitution, in its art. 225, does not work in practice because, in the name of a mistaken concept of development, which has as a platform of planning the economic and not the natural environment, the need for an ethical relationship and coexistence with nature is ignored.

In this sense, Mumford claims:

> Much of the thinking about the prospective development of today's cities has been based on the ideological assumptions currently in vogue regarding the nature and destiny of man. Beneath its superficial appreciation for life lies a deep disdain for the organic processes that imply the maintenance of a partnership of all organic forms, in a friendly environment for life in all its manifestations.[111]

The distortion of the constitutional principle of the social function of property, in favor of a culture of property, with a purely

[111] MUMFORD, Lewis. *A idade na história*. Trad. de Neil R. da Silva. São Paulo: Martins Fonte, 1998. p. 569.

economic function, does not allow the rationalization and distribution of spaces, nor a decent place to the different social classes to live, in a planned way, with appropriate and accessible zoning to cultural, social and economic diversity. The lack of effective and intelligent urban and environmental legislation is the cause of the chaos found in cities; it is a problem that, of course, also requires, in a complementary way, the application of technologies or financing for infrastructure. But intelligent legislation should indicate how, where and in which manner the environmental and social functions of urban spaces should be improved. When we talk about intelligent legislation, we refer to the need of considering that intelligence is essentially dependent on nature and therefore it is not artificial, but natural. Changing concepts justified by mere economic conventions and formalizing a new rationality is imposed as an epistemic concern, to ensure an urban habitat suitable for human life and the development of its potentialities, intelligence included.

Urban zoning and land parcelling will give the intelligent destination of natural spaces, in an ethical, ecologically balanced relationship that guarantees quality of life. The social function of property is primarily linked to an environmental ethics and then, to a social and economic function of human coexistence. This is also decisive for the definition of the value of land, property over time, because properties where there is environmental degradation, constant floods, etc. tend to lose economic value and compromise physical and mental health, including the degradation of intelligence and self-esteem of the human person. When the city does not define natural spaces to be preserved, the consequences are environmental chaos and human degradation. However, when the city does not offer enough

living spaces for all citizens, including those who have lower purchasing power, there are, as a consequence, serious social problems, such as unplanned growth of the periphery, which is more a problem of the use of intelligence and planning, than an economic issue.

The social problem becomes more critical with the lack of appropriate zoning for the different economic activities which are necessary to guarantee jobs. This zoning gives legal certainty to the entrepreneur because he plans consistent infrastructure and logistics. The poor distribution of economic activities allows thousands of people to live in a single neighborhood, without commerce, industry, and services. This is the first cause of drug trafficking in the hills (favelas/communities) and informal space in large Brazilian cities; there is also a need for distant commuting to work, which installs traffic chaos. This is not solved with technology only, but it is a matter of intelligent urban norms.

In this context, intelligent and appropriate urban zoning is therefore the *basic principle*[112] that should protect the diversity, sustainability, and fundamental and social rights of those who live in the city. We report here an episode occurred during a lecture on the autonomous car, in the Chamber of Industry, Commerce and Services of Caxias do Sul, which, according to the speaker, would solve the problem of traffic congestion. When asked about the absolute effectiveness of technology, it was exemplified that, thirty years ago, someone left a certain neighborhood of the city on horseback and took an hour to reach his destination. Twenty years later, this same person

[112] DERANI, Cristiane. *Direito ambiental econômico*. Florianópolis: Max Limonad, 2014. P. 28.

took only 15 minutes to get to the same place by car (a beetle he had bought). Today, he drives a fast car that goes 200 km per hour, and he still takes an hour to travel the same distance. This is the same time he took on horseback 30 years ago. Examples of cities, such as São Paulo, Rio de Janeiro, Belo Horizonte, etc., in which the worker takes longer to get home than the time he stays at home with his family. The speed of the cars, at certain times, is 9 km per hour, and there are cases where the worker spends six hours a day commuting to go and return to work.[113] The examples make it clear that urban law must organize urban occupation, which will not be solved by technology only. We do not mean the autonomous car should be discarded, it will certainly make life easier for people; but there is the need to organize the created environment, through long-term planning instruments, which are intelligent laws.

The mere availability of resources or the increase of technologies cannot ensure an intelligently created environment, an ecologically balanced environment, nor guarantee urban inclusion for the rich and poor or generate jobs for all. The intelligent zoning of spaces, associated with the use of intelligent technologies, should be a concern to Urban Law.

On the other hand, human command over technology, through norms of social interest, prevents technology from monopolizing urban spaces of coexistence and well-being, in favor of the machine, as has happened in our cities, with smooth black carpets, without holes, destined to cars, and increasingly narrow, bumpy sidewalks intended

[113] Research conducted by the author in the municipalities of São Paulo, Rio de Janeiro and Porto Alegre. Source: Municipal Traffic Departments.

for people. If the car that is not intelligent has taken over the spaces of man in the cities, imagine what will happen with intelligent machines.

The city, which is a space of surface soil, or of created soil, should have a regulated space to meet all human needs, because there is no technology that works miracles, when occupation occurs without intelligent urban norms.

Increasing the speed of the car does not solve the problem of mobility, without an intelligent road structuring of spaces, highways, etc., where the car must drive. Just as the simple channeling of streams does not solve the environmentally incorrect occupation, or the availability of resources, "Minha Casa, Minha Vida" (In English, My House, My Life, Program of large-scale housing promoted by the government of Brazil) does not expand accessible spaces to the poor classes, restricted by an urban legislation focused only on real estate speculation, without concern for the social diversity and social function of urban spaces.

There is no way to simply increase *smart cities*, using only technology, artificial intelligence as an instrument, neglecting serious problems that have not yet been overcome, such as access to decent housing in informal, unplanned, and not included in Urban Law outskirts, in urban areas or in specific zoning. The lack of adequate housing zoning for everyone is the first cause of destruction of the natural environment, urban environmental degradation, and serious problems of social and cultural exclusion in the outskirts of the cities. It is not only the unintelligent urban occupation that degrades the environment, but the hypocrisy, or the ideological and unscientific attitude, with which we deal with environmental issues. The most serious environmental problems are on the outskirts of cities, due to a

carefree housing occupation with those with less purchasing power and, fundamentally, due to the lack of planning of urban spaces, in accordance with human diversities and needs. But nobody treats this as an environmental problem, with social and economic consequences, but it is seen as a mere political problem, which is solved by the election of this or that candidate, without the need for planning according to long-term State policies. It takes research, intelligent, effective, and efficient laws on how to do it, because legislation is aware of what to do, and we are tired of listening to speeches, lectures, conferences, etc. in that regard. Sandel says it is necessary to do the right thing, but doing the right thing is not always easy, as it is not about persuading others, but about results.[114] A scientific attitude also presupposes scientific practices, so that the results are effective.

The environmental issue is so complex and serious that our big cities see streets turn into rivers every time heavy rains occur, but there is still no drinking water in taps. However, instead of focusing on the cause of this problem, which is the disrespect of the laws of nature, we believe that draining rainwater is the only thing necessary, together with policies that were not adopted by previous or current governing authorities. Not providing for lasting solutions or not doing the right thing is necessarily accepting disrespect for nature, which cleverly penalizes aggression. We are involved in great time-consuming discussions, and we lose energy by not intelligently directing ourselves to do the right thing. We cannot give up making intelligent decisions, otherwise we will need no other faculty than to imitate the machine, or follow politicians with easy speeches without scientific rigor, which

[114] SANDEL, Michael J. *Justiça:* o que é fazer a coisa certa. Trad. de Heloisa Matias e Maria Alice Maximus. 23. ed. Rio de Janeiro. Civilização Brasileira, 2017. p. 32-33.

makes us increasingly mutilated intelligence slaves in our degraded environments.

The discussion about the preservation of the Amazon is important, but the right question is which the environmental, social, and economic role of the Amazon is, and which of them is the most important; this theme should be the object of our research. Not least because it is not enough that the Amazon is preserved, distant from man, to save man from environmental degradation in the place where he lives and dies from diseases resulting from an ecologically unbalanced environment. The laws of nature cannot be violated, especially where we live. However, our cities are endorsed with many social conventions, of innovation, technology, artificial intelligence, and we move away from natural laws, from the sensitivity of human nature, from life and we ignore the nature of intelligence itself. Man, when traveling to space, cannot live only on technology, but he takes oxygen, food, etc. elements of nature, which are essential for him to continue living. Likewise, we cannot ward off nature of cities because it is the main human habitat that provides us with what is indispensable to live. We cannot ignore that the quality of life of man and all living beings is in potential in nature, and that there is no way to be far from it if we want to continue living. The city forgets this, in its urban planning.

Planned cities are made not only with money, but with thoughtful heads, with natural intelligence, capable of creating also intelligent laws, which ensure a sustainable socio-environmental environment, in order to provide spaces that preserve life, health, work and human dignity. Urban laws cannot only be legitimate, they need to be intelligent, scientific, natural and sustainable.

The current Master Plans (Planos Diretores) are laws that define concepts, principles, guidelines, but which are still unable to make concrete what they intend, because of lack of legal instruments on how to do it. It will not be the technology that will dictate how to do it, but the existence of zoning that respects the natural vocation of the environment and that define what is the social function of property, according to the needs of the citizen, which is neglected by Master Plans.

The Federal Constitution (CF/88), says Dallari, states the social function of the property, which must be defined in the Master Plan.[115] The intelligent construction of legal instruments, capable of making environmental, social and economic sustainability effective, is the great challenge that needs to be overcome in the preparation of Master Plans. Modern technologies alone do not constitute relevant innovation, until the need for housing spaces for all and for economic activities that meet the great diversity of work and service needs is addressed.

Therefore, human intelligence, sensitiveness which is characteristic of those who value life, is necessary to realize that there is a context to be overcome, so that we can confirm, in first place, socio-environmental innovation and move towards the use of innovative technologies that facilitate people's lives, the former being the basis of the latter. The use of technology is a facilitating resource for the quality of life that a city must provide.

This reflection explains not only some legal instruments, provided for in the legal system of Brazil, which seeks to ensure the

[115] DALLARI, Adilson. *Direito urbanístico ambiental*. Belo Horizonte Fórum, 2007. P. 27.

protection of the environment with sustainable occupation and development, but also makes an analysis of the effectiveness, efficiency and scientificity of the profusion of existing norms on the natural and created environment. It also sheds light on the simplest but most effective construction of sustainable and smart cities. The observation of the environmental function of the urban space is the platform of sustainability. It is the principle of the right of guarantee of life, of harmony between man and the environment. Legal instruments such as environmental zoning, green areas facilitate the permeabilization of water and must be located, from the lot, private property to public spaces, which aims to comply with what CF/88 states, when it advocates a fundamental right, a Law- structuring essence-principle, which is an ecologically balanced environment.

These instruments, such as zoning, will ensure the preservation of ecosystems and biodiversity in the city. On this environmental platform, urban zoning is based as an instrument of social and economic diversity. Technology, or the so-called artificial intelligence, should be used as a complement, as a facilitating and optimizing instrument of the city project adopted by intelligent legislation.

In this sense, Caragliu, Del Bo and Nijkamp[116] explain that *smart cities* are those that, in addition to making investments in human and social capital, develop intelligent communication infrastructure, transport modals, i.e. Information and Communication Technologies (ICTs), with the purpose of supporting sustainable economic growth and improving quality of life , performing the rational management of

[116] CARAGLIU, A.; DEL BO, C.; NIJKAMP, P. Smart cities in Europe. *Journal of Urban Technology*, v. 18, n. 2, p. 65-82, 2011.

natural resources, through participatory governance, which more than listening to the population is to meet their needs.

It is important to remember that the discussion about new rights has occupied jurists, however, they ignore the fact that these rights must also be ensured. Law has a relevant role that has not yet taken on, that is, the construction of legal instruments and policies to guarantee recognized, consolidated, but not implemented rights. It is not enough just to edit a law for a particular policy to happen. It is necessary to establish goals, legal instruments, allocate resources, deadlines, penalties for their fulfillment.

In this compass, the advent of Federal Law No. 10,257/2001, called “Statute of the City”, for example, changed extraordinarily little the Brazilian reality, despite its strength and importance. The Master Plans only repeat guidelines that have not yet been effective. It is necessary to adopt legal instruments in an intelligent and epistemic way, to make concrete the application of the precepts of the City Statute and the guidelines adopted in the Master Plans. There is a lack of intelligent laws capable of making concrete what has been idealized. The law exists. But when reality does not change, it's because it's not effective. Everyone knows what to do, but we need to dig deeper into how to do it. The construction of urban law rules on how to do it is what gives legal certainty, plans and ensures that, effectively, what was thought will happen.

When the law cannot be applied, it is because intelligent instruments for implementing the public policies advocated are lacking. All Master Plans, for example, establish housing guidelines for all, but do not define the effective legal instruments for this to happen. They do not define housing zoning for the different social

classes and do not diagnose the real proportion of urban space needs for each segment of society. As plans are for the real estate market, and as much of the poor population is not in these statistics, being excluded from the legal city, the informal, unplanned, environmentally degraded city is where diseases are born and proliferate. The epidemics that have emerged throughout history have almost always occurred from the large grouping of people who lived and still live in places without any environmental sustainability. Kempf states:

> Poverty is related to ecological deterioration. The poor live in the most polluted places, near industrial areas, near road corridors, in poorly served in sanitation neighborhoods. The environment has become a social issue that drives social and health contradictions.[117]

And referring specifically to China, where the Covid-19 pandemic originated, Kempf points out that in recent years there have been more than 51,000 records of conflicts related to the environmental issue and, especially, the emergence of diseases.[118] Pandemics, such as Coronavirus, are born independently of technology, because they are the result of some unruly laws of nature, not observed by man, because nature should not be controlled, but respected. But this is not treated as an environmental problem and we believe that science, through technology, chemistry, or physics, solves the disorder. So, we will continue to disrespect nature and soon we will have another disease or another environmental problem. And in a few months, we destroy an economy of years, with unemployment, serious social problems and spending resources to discover the cure,

[117] KEMPF, *op. cit.*, p. 57.
[118] *Idem*.

when the cure is in respect to nature. All this reinforces the need for an epistemic attitude towards the environment. We need not only to save the Legal Amazon, China or any other place, but to turn to the form of human occupation on the Planet, especially in cities.

Kempf, in this sense, reaffirms:

> To be an environmentalist, you must stop being naïve. The ecological crisis and the social crisis are two sides of the same disaster. Social issues continue not to be considered by environmentalists. Social issues signifying the relations of power and wealth within societies.[119]

The ecological crisis is at the root of the social crisis, and it will be an aggravating factor of the economic crisis, which has not yet been incorporated by politicians and has not had repercussions on law. Similarly, technological growth needs to be transformed into sustainable development, in which innovation, technology, artificial intelligence will have the environment as a planning platform.[120] We need to move forward in the discussion of ideological contexts about what to do, which has failed to do anything but discuss what has already been discussed, recognized and is unmoved. The law cannot be just the result of an easy speech, but of scientific research, which ensures how to make the law happen, because if it does not happen it is not intelligent. The laws of nature happen and punish their non-compliance. The river that crosses a city is not violent, but just wants to pass. We are the ones who put ourselves in the spaces where it must pass, so we suffer the consequences of nature which we cannot

[119] *Ibidem*, p. 39.
[120] RECH, Adir Ubaldo; RECH, Adivandro. *Zoneamento ambiental como plataforma de planejamento da sustentabilidade*. Caxias do Sul: EDUCS, 2012. p. 101-112.

control. Man owes nature an apology because he does not respect it. If we just respect the flow of the river, we will be respected. He does not invade our space; we invade the space of the river. Artificial intelligence cannot stop the river, it can only respect its flow. Intelligent laws are those that respect the flow of nature. Otsu notes that standing water rots, as does the blood that flows in our veins. Nature needs to be free to flow, as life only maintains itself because of the flow of nature.[121] Technology, artificial intelligence, will not make nature follow its natural course, but, as with the machines used in medicine, it can help this to happen. All laws are directly associated with human nature, its diversity and needs.

https://www.google.com/search?q=FOTO+DE+RIO+INVADINDO+AS+MARGINAIS&tbm=isch&source=univ&sa=X&ved=2ahUKEwiwiZWV9f7oAhXBIbkGHa.
The river is not violent, it just wants to pass. We are the ones who stand in its way.

[121] OTSU, *op. cit.*, p. 45.

Urban laws that allow the occupation of spaces which are exclusive to nature, such as riparian forests, natural biodiversity habitats, ecosystems, etc., are not intelligent. The implementation of sustainable socio-environmental policies is not a simple conceptual, ideological discussion, but it has an epistemic, scientific character, which must respect a natural and fair flow. Therefore, it concerns all men, and, because of this, it should unite and never separate us, as we all need and want sustainable policies to be implemented and guaranteed rights. The fact is that we discuss what to do and do not move forward on how to do the right thing. We discuss at the limit of our knowledge, political, social and economic interests, but we do not advance in the scientific solution, in the natural and fair flow, as this would conclude the discussion, divisions, political disagreements, which only persist in human difficulties and needs, but they do not move towards lasting solutions. Defending ecology does not distance us from the social element, from economy, from innovation. These themes are not conflicting, antagonistic, but they must coexist. Bobbio already stated this in relation to freedom and equality, which are not conflicting virtues, even if they are of human nature. They can and should get along well.[122] But we persist in the conflict. How to move ecology away from the social element and from economy, when the first one is the environment where the other two develop or generate chaos? The consequences of human occupation in conflict with the natural environment, in a given space (country or city), are felt in the health of human life on the Planet, and they destroy any economy, no

[122] BOBBIO, Norberto. *Direita e esquerda:* razões e significados de uma distinção política. Trad. de Marcos Aurélio Nogueira. 2. reimpr. São Paulo: Unesp, 1995. p. 20, 103.

matter how solid, and lead to social disaster. Covid-19 is just one example of so many that have already happened and that will still happen, if we persist that there is a conflict between the preservation of the environment, the economy and the social element. Therefore, it is not possible to separate artificial intelligence from its environmental nature, creating yet another antagonism, without any precautions. The created environment, including artificial intelligence, cannot obstruct the flow of nature, create environmental and human degradation.

The chaos experienced in cities, resulting from disordered occupation, can only be avoided with planning, which implies adequate and intelligent legal instruments, the result of a new rationality and a new culture that gives value to the natural environment, as the habitat of the man to be preserved, adding technology, innovation, development in a planned, sustainable way, respecting the flows of nature.

Silva states that planning, in general, is a technical-instrumental process to transform the existing reality, in the sense of previously established objectives.[123] Therefore, objectives and guidelines are not enough, there is a need for legal instruments that support how to do things and that enable concrete projects for the execution of welfare policies. The binding occurs just by the force of law. Therefore, the basis of smart cities is an equally smart Master Plan (Plano Diretor). Certainly, everyone wonders how to do this. In the book *Cidade sustentável: direito urbanístico e ambiental – instrumentos de*

[123] SILVA, José A. da. *Direito urbanístico brasileiro*. 4. ed. São Paulo: Malheiros, 2006. p. 75.

planejamento, EDUCS (2016),[124] it is possible to seek in detail some notions of these legal instruments.

Of course, this is an epistemic, intelligent construction. But so that the established objectives can be effectively achieved, so that there is legal security, certainty of sustainable human occupation, it is necessary that everything is translated into legal norms, through the adoption of legal instruments, for example, mandatorily inserted in the national, state and municipal zoning, more specifically, in the Master Plans of each municipality.

In practice, nothing happens in Public Administration that is not provided for by law. The law is the main planning instrument for public management. In the private sector, planning, to be carried out, only needs the sovereignty of the entrepreneur's will. In public administration, the manager's will is bound by the law. Therefore, planning is only effective if there are effective laws that guide the public and private agents' behavior. Therefore, the Law needs to go beyond the idea, according to which it will be considered a mere constructor of concepts, guidelines, doctrine production, new rights, and their affirmation.

As the sources suggest, the administrators of the Brazilian State, from the Union to the municipalities, demonstrate a total lack of knowledge of what planning is.[125] At the federal level, for example, planning is only concerned with monetary and financial matters. There is no national plan for the sustainable occupation of Brazilian territory. The National Planning Secretariat is normally the body that prepares

[124] Book by Adir Ubaldo Rech and Adivandro Rech. *Cidade Sustentável:* direito urbanístico e ambiental: instrumentos de planejamento. Caxias do Sul*:* EDUCS, 2016.

[125] Research carried out by the author in dozens of public entities.

financial projects. However, the space where the different human activities necessary for their well-being should take place is not a specific object of permanent planning by the State.

In another turn, it is common for mayors to say that the city is planned, as the Municipal Planning Secretariat has drawn up projects for the next twenty years and mentions some of them, such as: projects to remodel the city center, build a new water supply dam, a new avenue, Basic Health Units, etc. The mistaken concept of planning is evident, since, in these examples, no planning is characterized, but only the execution of isolated works, which do not result from an intelligent Master Plan. As mentioned, the administrator is not linked to projects, but to the law, nothing is guaranteed that it will happen. And when a project is just the work of a ruler or a technician, not linked to the law, it cannot even be carried out.

In no Planning Secretariat in Brazil is there a division or sector that has the permanent purpose of studying and adopting laws as intelligent planning instruments, precisely because, in the current culture of public management, the law is not seen as a long-term planning instrument, which goes against what is determined by the CF/88, in its article 37.

It remains evident that the planning process is a permanent work of reflection, construction and adaptation of public policies, monitoring and proving the efficiency of the plans and their results. The process is based on knowledge, while the plan also presupposes understanding, sensitivity, and political will. Governors need to establish action plans that give meaning to the commitment assumed in their administration, that is, to carry out stages of the State planning, whose way of doing is in the foreseen legal instruments.

From what has been said, we can conclude that the government plan does not derive from the party's program, but from State policies, which are institutionalized in intelligent legal instruments. The choice of this or that action is discretionary, and the set of actions is already expressed in the instruments. The party's ideology or program will give the people an idea of what institutionalized State policies will be carried out during a given term.

As a rule, what has been observed is that there is no long-term planning, because there are no State policies implemented in the Brazilian legal system. Administrators are committed to their ideas, but they are not contributing to a nation or city project. The rule is this: the entire Brazilian territory will continue to be occupied without planning and, after occupied and the problems created, the ideology, the party, or the candidate will be invoked to be the “national savior”.

In Brazil, cities urgently need long-term planning, legal certainty that what is planned will happen, that is, intelligent laws that guarantee an ecologically balanced environment, social inclusion and sustainable development, instruments to guarantee citizenship and the dignity of the human person, foundation of the Democratic State governed by Law, as provided for in article 1 of CF/88.

Chapter 4
Smart City

The concept of *smart city* (*intelligent cities*), as the pinnacle of ideal, organized, and resilient cities, has spread not only thanks to ongoing technological advances in recent decades, but also due to growing challenges imposed on municipalities. The population increase and the need for economic activities that generate work for everyone, housing spaces, urban mobility and adequate public policies have led the Municipal Administration to lose its control capacity and to meet all demands.

It is defended, above all, in this study, that the essential point for a city to be smart is to work with Intelligent Technologies (ICTs) of Cities, which aggregate information, making them an interconnected system, an organic and systemic set. Technology can ensure resilience and sustainability, which is why the *smart city* needs to interconnect several factors, such as: energy efficiency in buildings, integrated and multimodal transport, waste management, governance projects, sustainable zoning, among others, when the technology is a valuable and necessary tool or means to be added.

As stated, the basis of the *smart city* is an *Intelligent Master Plan*, but for this to be effective, instruments and guidelines that comply with the legislation are needed, as stated by Giffinger *et al*.:[126]

1) intelligent economy: includes attributes relevant to economic competitiveness, such as innovation, entrepreneurship, registered

[126] GIFFINGER, R. *et al*. *Smart cities*: ranking of European medium-sized cities. Vienna. University of Technology, 2007. p. 76. Available at: http://www.smart-cities.eu/download/smart_cities_final_report. pdf. Accessed on: December 27 2018.

trademarks and patents, productivity, labor market flexibility and integration with the international market;

2) intelligent people: this dimension is defined by the level of qualification and education of citizens, by the quality of social interactions related to public life and openness to the outside world;

3) intelligent governance: comprises aspects of political participation, services to the population and efficient functioning of public administration;

4) smart mobility: deals with issues about international and local accessibility, modern and sustainable transport systems and the availability of resources provided by ICTs;

5) intelligent environment: covers natural conditions (climate, green areas, types of vegetation, etc.), pollution, resource management and efforts for environmental protection; and

6) intelligent life: specifies the various characteristics of quality of life, such as: culture, knowledge, health, safety, housing, urban attitudes, entertainment, among others.

This new stage that is envisioned in the construction and organization of cities will not happen, without everything being provided for in the urban planning, as managers, in the Democratic State governed by Law, are bound by the law. Intelligent laws are essential to guide the actions of managers. The increase in qualified job offers in the public sector will necessarily have to abandon bureaucratic management in favor of professional and intelligent management, with goals and reliable legal instruments on how to carry out, evaluate and monitor the results. But, for this, it is necessary to limit Political Power with (also intelligent) rules of Urban Planning and Environmental Law. The adoption of norms from these branches

of Law, as a planning instrument, assures the city of the present and organizes the city of the future. Short-term politics and electoral interests need to be replaced by scientific, intelligent decisions and management, not just for a mandate, but in the long term, guaranteeing continuity, legal security, indispensable elements for sustainable development. The mayor needs to have political skills, and also be guided by technical skills for law enforcement.

Therefore, in this context, the first innovation that should be implemented in public management is the *intelligent law*, the result of research, science and the prioritization of permanent and ethical values, as an instrument of planning, environmental preservation, zoning the natural potential of urban spaces and the needs of the population, with urban social inclusion as a solution to the technical and economic complexity that prioritizes capital.

Silveira, in this sense, affirms:

> Science is no longer considered certain and infallible, which were characteristics of other times. Scientific controversies, ever more frequent and less comprehensive, result not only from the instrumentalization of research in favor of economic interests, but from the technical, economic, ethical, and political complexity of the dilemmas faced.[127]

In this sense, economic activity, in Urban Law, must be regulated in the sense that the city prioritizes the citizen and citizenship. Thus, in the private sector, there are changes and new jobs in hospitality and, mainly, in the creative economy, in innovation, an area that has grown exponentially, having as its main process result

[127] SILVEIRA, Clóvis Eduardo Malinverni da. *Riscos ecológicos abusivos*: a tutela do patrimônio ambiental nos processos coletivos e face do risco socialmente intolerável. Caxias do Sul: EDUCS, 2014. p. 258.

initiatives, among others, in the transformation of culture and the local potential in economic wealth aimed at the well-being of citizens.

According to Bryant:

> Cities do not prosper by the mere existence of law, although civilized cities demand intelligent rules. The fact is that planning requires legal instruments and concrete actions. Cities prosper when there is a high level of individual economic energy, and at least a perception of enough opportunities for everyone.[128]

It is gathered from the study that democratic cities, therefore, do not need intelligent rules. Technology can even replace man in many aspects, but it does not consume in its place. Consumption is the individual economic energy that sustains cities. The working class represents more than 95% of the indispensable consumption to generate jobs, wealth, and well-being.[129] There is no way to increase artificial intelligence and technology without consumption. Kempf states that the "environmental problem is not consuming what is necessary but consuming too many natural resources that unbalance the natural environment".[130] The consumption of what is necessary is, in practice, a natural right. It happens that the ecologically irrational, consuming occupation of the Planet's spaces, compromises, in the future, the necessary consumption itself. Therefore, spaces for human occupation, ethical coexistence with nature and production need to be defined in intelligent legislation, which prioritizes human well-being. The problem is not the occupation, but the inadequate, unintelligent occupation.

[128] BRYANT, *op. cit*., p. 41.
[129] *Ibidem*, p. 42.
[130] KEMPF, *op. cit*., p. 93.

Technology, according to Braint, will only leverage sociocultural evolution, with new needs, other forms of consumption and diversified desires, making the city increasingly a place of well-being and pleasure, promoting and enabling ideas of inclusion, rapprochement, connectivity, shared relationships, etc.[131]

It can be said that the great problem in the world – and especially in cities – is not just distributing income, as a way to achieve social justice, but, fundamentally, generating new job opportunities. There is no income without work, and there is no work without consumption. All the people on the Planet work to support six other people, who are excluded because they don't have the opportunity to work.[132] Inclusion for work is the main engine of freedom, of self-determination. Artificial intelligence, technology, complements and facilitates human life, but it does not subsist without observing the natural order; without observing the natural flow of life; without contributing to generate a created environment, of social and economic inclusion, with new jobs for survival and human dignity. Social inclusion is much more than an economic issue, of reducing poverty, as more serious than the lack of income is the inequality in social, ethical, evaluative and respectful human relations among different layers of the population, which do not feel belonging and participating in the life of the city, which could be regulated by intelligent laws, such as the Code of Postures of the City. There is a feeling of injustice on the part of the city's population, for not perceiving themselves as citizens.

[131] BRAYANT, *op. cit.*, p. 42.
[132] *Ibidem*, p. 49.

Bryant says that job opportunities are a civil rights issue for new generations. The sense of self-determination starts with financial dignity.[133] Therefore, ICTs[134] can make human life easier, as long as they guarantee work and dignity. Being poor is not only measured by how much you earn, but, fundamentally, by not knowing what to do with what you earn. In our cities there are thousands of people who could ascend socially and economically, but are accommodated, as victims, because they place themselves in the situation of dependents and not protagonists. They need social empowerment, financial literacy, and replacing ignorance with knowledge, self-determination, and independence of ideas. An intelligent education enables us to do things Intelligent people depend on an intelligent education, which contributes to inclusion, which frees them from the links to the bureaucracy of an incompetent State and to their dependence on politicians whose preaching is only aimed at conquering power. An intelligent education builds values, virtues, dignity and freedom. The widespread corruption in our country is the result of the decay of education. But intelligent education also depends on intelligent laws that show us the way to do the right thing,[135] protect social and financial inclusion and human dignity, as they not only relate rights, but create an awareness of duties and instruments of effectiveness and teach how to conquer them, giving a fair and adequate social function to spaces for different environmental needs, social, economic, and

[133] *Ibidem*, p. 47.

[134] ICT – is a set of integrated technological resources, which provide, through hardware, software and telecommunications functions, the automation and communication of business processes, scientific research and teaching and learning. Available at: https://www.google.com/search?q=TIC&oq=TIC&aqs=chrome..69i57j0l7.4231j0j8&sourceid=chrome&ie=UTF-8. Access on: 15 Apr. 2010.

[135] Theme addressed by Michael J. Sandel in his book *Justiça*, widely addressed.

service activities in cities. Social equality, dignity and human relations are built by a planning process, which takes place by human occupation on the planet. Intelligent laws prioritize this, but also encourage innovation, technology, artificial intelligence, always respecting the natural environment and being at the service of human dignity. Intelligent laws are built in Parliaments, with technical-scientific advice and not just by political advisors. Intelligent laws require the election of capable, intelligent, ethical, honest and public-minded parliamentarians, who are not just concerned about their re-elections.

The new ICTs will undoubtedly encourage innovation, replace bureaucracy with intelligence and allow people to work from home, solve their problems without leaving and without long waits. Our house will be confused with our workplace and the places of leisure, meeting, gastronomy, sport, fun, etc. will be multiplied. Commercial buildings will undergo transformations, and residences will have a new concept and other functionalities. The intelligent urban law guarantees the balance between the use of technologies and the needs of the citizen, including financial inclusion, unless there is no sustainability.

This new phase of the use of ICTS will allow the verticalization of cities, with gardens and squares in the external environment of the buildings themselves, with sustainable practices, economic activities, housing and leisure, shortening distances and facilitating mobility. These will reduce working hours and increase leisure and coexistence time, but undoubtedly, they cannot reap jobs, because thus there will be no sustainability, nor leisure, nor coexistence, but conflicts. Intelligent ruling of all this is essential.

It is true that the coming years will be transformative and intense in large urban centers. This is due to the chaos installed in many cities, with increasingly degraded environments, with regard to the natural environment, which is necessary for quality of life, as well as to social, cultural, religious, political and ideological conflicts. *Smart cities* suggest shared inclusion in effective public services that can build opportunities to live in an ideal society. The organization of this type of city undergoes an *Intelligent Master Plan*s a legal planning tool.

This idea gives an overview of the need to use technologies, to build intelligent mechanisms, in order to improve and facilitate the organization of society. It is true that modern technology is part of a stage in the history of cities, which, in addition to being necessary, is unavoidable. But it is also certain that the law will increasingly have the role of planning understanding of this and sustainability.

Therefore, a reordering of Urban Law is necessary, with changes in attitude, with progress, in the sense that the municipal Public Government is more professional, endowed with technical, qualified, and capable staff to overcome bureaucratic management. In this way, an intelligent scientific management and planning requiring, increasingly, intelligent law standards will prevail. Laws cannot be just social conventions, but norms of scientific and intelligent indicators of an organized society, in which everyone contributes and benefits from well-being. Political decisions will be the basis of legitimacy only, and intelligent decisions will be an epistemic construction of the law, of how to do it properly. Here, artificial intelligence is an ally to help to intelligently organize the city and, fundamentally, execute intelligent public policies.

Chapter 5
Intelligent laws as a tool for planning smart cities

The Democratic State of Law is bound by the law. Medium and long-term public policies, which are not provided for by law, do not come true. However, Law is not literature, but action and reaction of nature and society. Nature always revokes norms that conflict with its laws and applies penalties, such as diseases, landslides, flooding, climate change, species extinction, destruction, hunger, etc. Likewise, society revokes norms that contradict human nature, its desires, wishes and feelings. Laws prohibiting the poor from living in the legal city are ignored, and thousands of homes are erected in the informal city. Laws that hinder or prevent a large part of the population from working and surviving because of over-bureaucracy increase the creation of informal work norms. The laws of nature, the natural evolution of life, survival and the well-being of man are the foundations of the very legitimacy of laws. Parliaments should only identify and implement them. The law that changes human nature by social conventions, or the law that tries to hinder the path of the river, through the occupation of the riparian forest by a highway or, even, the law that replaces human intelligence with artificial intelligence are not intelligent. In Law nothing happens without being grounded in the past, in the spirit of the people and with respect to the time and space to be occupied. The spirit of laws is based on the natural and created environment. The laws of nature are of the essence of man himself, while the norms of social behavior are the foundations of human coexistence. The former express natural feelings, such as: love, longing, anger, joy, sadness, etc., while the second stem from knowledge. Technology, artificial

intelligence, is the result of knowledge, but knowledge is in potential in human nature and stems from a human act, whose raw material is nature itself.

Montesquieu said:

> All beings have their laws. But it's a long way before the intelligent world is as well governed as the physical world. [...] They have natural laws, because they are united by feeling; they do not have positive laws, because they are not united by knowledge. Laws of nature come before every other laws. The laws are related to the people, the government, the physic of the country, the degree of freedom [...]. These relationships together form the spirit of the laws.[136]

Montesquieu teaches us that the occupation of geographical spaces, with respect to the ecologically balanced environment, stems from this inseparable relationship between the natural and created environment. The natural house is created in nature. Man can and must improve this natural home, but he cannot mischaracterize it, degrade it, cause harm to it , with positive laws, which try to divert natural evolution and ignore one's own human dependencies and needs. The urban norms need, fundamentally, to solve the conflict between the environmental function of the space to be occupied and the social function of the property, seeking to meet the fundamental needs and dignity of the human person. Diversity and natural and social human needs come before any law. The created environment, the city, cannot be far way from this spirit. Technology will only be an instrument to better organize the natural and created environment, which is suitable for human coexistence. The natural flows of man are incorporated into technology, assisting in human occupation, with respect to ecological,

[136] MONTESQUIEU, *op. cit.*, p. 11-13.

social, cultural, religious, economic diversities, etc., which are usually neglected in the urban planning of most cities. Sustainable social and environmental organization must be part of smart urban norms. Artificial intelligence must be aligned with the natural flow of man and as the foundation of the spirit of urban laws.

Nature has laws that need to be respected and contemplated in intelligent urban planning, because, according to Rousseau, "we ignore human nature and, because of this, there is so much omission, uncertainty and obscurity about the true definition of natural law."[137] Urban Law is a mixture of natural law and created law, because it must contemplate the potential of nature, the natural vocation of spaces and the need for human activities to be increased, in different urban or rural spaces, therefore a symbiosis of Environmental Law with Urban Law, which supposes intelligent norms to make development viable and sustainable , respecting the essential habitat for human life, as provided for in our Constitution, especially in the article 225.

Krell defends: "A pragmatic reflection on Environmental Law in Brazil is essential; it has to go beyond the bordering of the legal norm and to examine the complex legal, political and socioeconomic phenomena, which condition its social and local viability and usefulness".[138]

The relationship between Urban Law and the natural environment is misguided because, as a fruit of an anthropocentric ethic, it places man at the center of the universe, and the city, as a

[137] ROUSSEAU, Jean-Jacques. *Discursos sobre a origem e os fundamentos da desigualdade entre os homens.*Trad. de Paulo Neves. Porto Alegre: L&PM, 2017.
[138] KRELL, *op. cit.*, p. 90.

space of mere economic interests, which result in not very smart cities. Technology cannot solve simple problems, such as environmental disasters, uncharacterized natural environment, emergence of new diseases, environmental imbalance, impairment of the evolution of life itself, etc. The result is a degraded environment in several ways, because there is a lack of: green spaces, sanitation, accessibility, places of leisure and coexistence with nature, drinking water, clean air, natural landscapes (without human intervention), and there is excess of pollution, flooding, landslides, violence, diseases, etc., aspects that impair the quality of life, deteriorate human relations, since the degradation of ecosystems also results in human degradation , compromising balance, sustainability, well-being.

Kloepfer claims that "The environmental state is a State that strives for the balance between social demands and nature, on the one hand, and the preservation of the natural bases of life, on the other, and that helps [to] confer sustainability, form and [...] balance."[139]

The ecological crisis is the main cause of the social crisis, and it will be an aggravating factor of the economic crisis. The poorest class always lives in the most degraded spaces, which are not planned, but ignored by naïve environmentalists. There is no ecology, without economic sustainability, just as there is no social sustainability, without essential goods to human life, taken from the natural environment. Transformed by human acts, they are made available in the market, therefore they become economic goods. Kempf states that it is not growth that will solve social problems, but development with

[139] KLOEPFER, Michael O caminho do Estado Ambiental. *In*: SARLET, I. W. (org.). *O estado socioambiental e os direitos fundamentais*. Porto Alegre: Livraria do Advogado, 2010. p. 43.

wealth production transferred to all those who produce them.[140] This statement leads us to the need for intelligent legal systems, capable of making the inclusion of the population at work and the distribution of wealth, necessary for a dignified and better life. Development does not waive technology, artificial intelligence, but, according to Kempf, technology will certainly not solve all ecological problems.[141] Sandel points out that politics and laws exist to promote a good life and harmonious coexistence.[142] The city is the place of happiness. Intelligent urban laws are there to grant us happiness.

On the other hand, the construction of proper infrastructure for cities, which respects life and generates sustainability, results from scientifically correct, intelligent management, and that, in the form of Art. 37 of CF/88, is in accordance with the law. In the Democratic State of Law, there is no lawless long-term planning. And it cannot be any law, but intelligent laws, in tune with the laws of nature and the needs of human coexistence. A lonely man, in the wilderness, does not need laws or social conventions. He would just have to submit to the laws of nature. In the city, in addition to the conventions of social coexistence and citizenship, we add created forms, technology, artificial intelligence, as instruments that help in the fulfillment of intelligent norms, that organize the city, facilitate life, ensure a good and happy life, facilities and efficiency in the organization already established by the Master Plan.

The Urban Law should order the forms created and the use of technology, but fundamentally organize the intelligent occupation of

[140] KEMPF, *op. cit*., p. 11-112.
[141] KEMPF, *op. cit*., p. 120.
[142] SANDEL, *op. cit.,* p. 242.

urban spaces, foster social relations of belonging, and ensure citizenship behaviors. Cities do not have a citizenship code, or an education focused on responsible, participatory and inclusive citizenship. The "Code of Postures of the Municipality", for example, is a valuable instrument to Urban Law, which must be improved, worked, and made a code of citizenship, and disseminated as an instrument of education, in all municipal schools. This code should cover the standardization of correct postures of citizenship, which, unfortunately, is ignored as a legal instrument for the rule of relations and social inclusion, as well as to regulate the responsibilities of belonging to that city. It is of no use for a city to be beautiful, organized and with technology to facilitate the life of the citizen, if social, cultural, and economic exclusion generates conflicts, and the citizen does not comply with minimum rules of good coexistence.

In this sense, Mumford says that houses make a city, but citizens build civility, the ability to print in shapes the great mark of the city; this is the condition for encouraging the most complete expression of human capacities and potentialities,[143] that must be diagnosed and protected, in local terms, by Urban Law. Urban Law has built beautiful cities but has not worried about good citizens. Social and environmental urban norms are propositional and indispensable to human coexistence in an intelligent way.

Admittedly, authors have always referred to the need for intelligent laws to rule social coexistence and advance in civic behaviors, because, as stated, technology does not solve behavioral

[143] MUMFORD, *op. cit.*, p. 108.

problems and does not ensure sustainable public and environmental policies, as it has been presented.

Urban Law, as a primary element in the planning of *smart cities*, "does not impose a simple present behavior, which is restricted to the norm itself, but a behavior which safeguards the future".[144] The construction of a city is not a discretionary act, since it is linked to the directive of the City Statute, when it states that "urban policy aims at ordering the full development of the social functions of the city and property, safeguarding a socio-environmentally sustainable city for current and future generations".[145] The construction of a city must keep in mind the natural environment where it is located and the created environment, both are important elements of the identity of a population. The laws of nature are the foundations of the intelligent organization of spaces of human coexistence of the city; and the urban rule, the fair way of sharing the well-being and decoration of the natural house. Freitas understands that, in a trans dogmatic hermeneutics, it is always possible to declare the substantial unconstitutionality of an unfair law.[146] The positive laws that contravene the laws of nature are not only unfair; they are scientifically incorrect, because they are contrary to human nature itself. Therefore, they are not only unconstitutional, but impossible to enforce, otherwise there will be catastrophic penalties.

It is, therefore, a holistic view, in which individuals need and depend overall for their achievements. As Aristotle states, individuals,

[144] RECH, Adir U.; RECH, Adivandro. *Cidade sustentável:* direito urbanístico e ambiental: instrumentos de planejamento. Caxias do Sul: EDUCS, 2016. p. 135.
[145] Art. 2°, item I of the City Statute.
[146] FREITAS, Juarez. *A substancial inconstitucionalidade da lei injusta.* Porto Alegre: Vozes, 1989. P. 17.

families, and clans already existed before cities, but it was only in the *polis* that we could realize our nature.[147] The city offers forms of civility, human coexistence and establishes postures of intelligent citizenship, through Urban Law.

A smart city project, therefore, has in first place, intelligent laws as instruments, which are the result of diagnoses of reality, consolidated knowledge, and formulated theses, though ignored in the construction of urban planning. Planning and legal certainty, in the implementation of smart cities and their perpetuation in time and space, will only be possible with Master Plans intelligently constructed and complemented by the Code of Postures, which ensures an ethical relationship with the environment, and respectful relationship and solidarity with other citizens, all committed to the search for a common goal, a good and dignified life. Technology, as it has been said, must be at the service of the Democratic State of Law and citizens. Artificial intelligence is nothing but the evolution of life, of natural intelligence in potential in nature, life that needs to be respected, when occupying and plotting the ground.

The Democratic State of Law has Law as an instrument of planning, under penalty of promoting the empire of the machine, technology, economic power, etc. Mumford advocates that the city plays a local role, that of being the place of Law and Justice.[148] Sustainable and smart cities therefore assume *a priori*, naturally intelligent laws, as a safe planning tool.

It is important to remember that the discussion about new rights has occupied jurists, however, they ignore the fact that these rights

[147] ARISTÓTELES, *op. cit.*, p. 128.
[148] MUMFORD, *op. cit.*, p. 60.

must also be ensured. Law has a relevant role, even if it has not yet taken it on, that is, the construction of legal instruments and policies to consolidate and guarantee recognized but not yet implemented rights. It is not enough just to edit a law for a particular policy to happen. It must be effective, it must establish naturally possible goals, reasonable planning deadlines, legal instruments of implementation, penalties for non-compliance, etc. The advent of the Statute of the City, with general guidelines, for example, changed very little the Brazilian scenario, despite the law. Many Master Plans were drawn up, but nothing new was included. They are much more general guidelines than plans. The recommended guidelines, which are legal instruments, that operationalize and implement precepts of the law are lacking. As it is lacking the proper standardization on how to do the right thing. Man cannot move space nor control the natural environment, but just rule human occupation. Respect for the natural vocation of spaces, an ethical relationship with the environment and a valued relationship of the created environment, in order to prioritize human needs and social coexistence do not require rules of intelligent urban law.

Monteiro states that, in the reconstruction of Lisbon, legal issues preceded those of design and technology. Much of what was made came from the imposition of a good, intelligent legislation.[149] Projects and technology are used to perform what has been defined. And what was defined and executed was the human need for quality of life and good coexistence.

[149] MONTEIRO, Claudio. *Escrever por linhas rectas:* legislação e planejamento urbanístico na Baixa Lisboa. Lisboa: AAFDL, 2010. P. 14. Monteiro is a professor at the University of Lisbon and minister at the Constitutional Court of Portugal.

The eternal discussion about sustainable development: what is most important in this tripod, whether natural environment, economy or social issues, is very clear in human occupation, when we need to define the spaces that could be occupied and observe the needs of activities to be created in each space. The natural vocation of spaces, respect for ecosystems and intelligent forms of occupation are no longer a matter of precaution, but of prevention. But our interests and prejudiced convictions create obstacles, transforming this knowledge into urban norms. Sandel emphasizes that some of our discussions reflect disagreement about what it means to maximize well-being, respect freedom, and cultivate virtue.[150] There is no sustainability without intelligent Urban Law standards, which ensures socio-environmentally sustainable occupation of urban spaces, ensuring urban justice, a good and dignified life for everybody. In this sense, Sandel teaches us that the notion that a fair society affirms certain virtues and conceptions of what a good life is has inspired political movements and discussions, which go beyond the merely ideological aspect.[151] And he adds: Not only the Taliban, but the abolitionists and Martin Luther King based their concepts of justice on moral and religious ideals, which always offers risks to generate intolerance and coercion.[152] The implementation of socio-environmentally sustainable policies is not a simple conceptual, contextualized, partisan discussion. Actually, it is an epistemic, scientific, intelligent discussion, which is capable of uniting citizens, since everyone wants the same thing, that is, that policies are implemented, the fundamental rights of the citizen

[150] SANDEL, *op. cit.*, p. 28.
[151] *Ibidem*, p. 29.
[152] *Idem*.

are guaranteed, and the city becomes a place of good life and happiness. That is why Sandel reaffirms: you have to do the right thing,[153] because when well-being actually happens, no one discusses what to do.

Sometimes to decide what to do is not an easy task. Our experience of the pandemic of Covid-19 leaves us a collective reflection of complexity. Technology can help us discover the remedy to fight the disease, but it cannot avoid the cause that is almost always environmental and urban. What to do has been the center of the discussions, and the tripod: environment, economy, and society was not very well understood, and this impaired effectiveness. But it is all a matter of intelligent laws, because such a theme cannot be resolved by discretion and individual or political positions, but always through intelligent normative principles of how to do the right thing. In this sense, Sandel, from Harvard University, provokes our rationality to a scientific posture of behavior, to be observed and guided by principles of law.

> Imagine you were the driver of a runaway tram. The brakes fail. You are desperate, because you see in front of you five workers who will be run over and die. But suddenly, you notice a detour to the right. There is only one worker on those tracks. You realize you can divert the tram, killing this only one worker. What should you do? A lot of people would say: Turn over! If it is a tragedy to kill one innocent, it's even worse to kill five. Sacrificing just one life to save five certainly seems like the right thing to do.[154]

[153] SANDEL, *op. cit.*, p. 32.
[154] *Ibidem*, p. 30-31.

Our town planning laws kill thousands of people for environmental and health problems; they kill by allowing occupation in inadequate spaces; they kill for not contemplating housing spaces for everyone; they kill for not predicting or facilitating sustainable economic and service activities; they kill for the bureaucracy that is insensitive and takes too much time to solve the citizens' problems; they make people starve by encumbering activities which are essential to human survival and dignity; they kill while discussing what is the right thing to do; they kill for the elitization of spaces, and social and economic exclusion; they kill for not observing the vocation of the natural environment. In all, 8.3 million people lived in Brazil, in risk areas, in 2010, according to an unprecedented survey carried out by the Brazilian Institute of Geography and Statistics (IBGE) and by the National Center for Monitoring and Alerting of Natural Disasters (Cemaden). This contingent, which is equivalent to the population of Pará, was exposed to natural disasters such as landslides, floods and torrents, etc.[155] All are tragedies foretold, with no more effective action, despite the enshrined principles of the Environmental Law of precaution, prevention and sustainability, despite the Forest Code and environmental licensing. Occupation problems that violate environmental norms and laws of nature, or that establish unintelligent forms of occupation annually kill much more than a pandemic. It turns out that these are localized problems that do not affect members of government or the rich. Certainly, we could solve a large part of the problems of environmental risks, survival, coexistence and human

[155] Available at: https://g1.globo.com/economia/noticia/mais-de-8-milhoes-de-brasileiros-viviam-em-areas-de-risco-em-2010-diz-ibge.ghtml. Access on: 6 Apr. 2020.

dignity, if Urban Law had defined how to do the right thing, optimizing more effective and efficient solutions. Intelligent urban planning rules to avoid the eternal unintelligent discussions are lacking. You cannot establish policies and guidelines without linking them to instruments on how to do the right thing, so that we never do the wrong thing. Urban Law has the role of doing the right thing intelligently, as it concerns the natural habitat of man and the created habitat, spaces where fundamental rights and dignity are protected.

The root of the lack of intelligent and concrete policies for occupation and sustainable development lies in the lack of legal instruments for planning and implementing adequate policies, and its consequences are known to everybody in our society. There would be no need for greater concern with the environment if the areas that *cannot be occupied* had already been defined, having as an instrument the environmental zoning and, on the other hand, *which areas can be occupied* in a sustainable way, considering urban and agrarian zoning instruments.

The federal urban and agrarian legislation is a general indication, but its particularities and diversities must be identified and built by the municipalities. But the construction of legal instruments on how to do the right thing is undoubtedly the great challenge for municipalities and the urgent need for universities to build adequate, concrete and effective knowledge. It is because of the lack of these legal instruments that we are witnessing, both in urban and rural areas, constant human-environmental degradation. Ensuring the socio-environmental function of urban and rural lands is not an ideological, but a scientific, necessary, indispensable issue of how to do the right thing. It is necessary to build intelligent laws, which contain norms for

planning sustainable public policies. The technology won't make it through this step; it must necessarily happen, otherwise we will continue eternally discussing the serious socio-environmental problems of our cities. But Urban Law must also, in addition to dealing with the activities to be developed in each space, identify its value, its priority, its role to play in urban sustainability. When a pandemic occurs, for example, it is in the city that it needs to be controlled, and the essential survival activities must already be identified in the legislation, under penalty of allowing us to establish a dangerous political, not intelligent, ineffective discussion, seeking to establish political positions, and not addressing the causes and avoiding the consequences. Saving lives consists of building knowledge to avoid the causes of death. Covid-19 is a consequence and not a cause. Certainly, the wrong way, without scientific concern, without observing the environmental precautionary principle, when dealing with environmental issues that we do not know, caused the disease. Just as the chaos in the economy is a consequence and not caused by Covid-19.

Urban Law, to be intelligent, must address the causes of urban problems and not only discuss the consequences, which are usually many, while the causes are always fewer. The lack of housing, of employment, is a social problem, as well as the economic crisis. However, we insist on treating them as different and antagonistic ways of forwarding sustainable development. The great challenge is to solve the conflict between the environmental, social and economic crisis, which are not conflicting or antagonistic issues, but dependent ones. The answers that we must look for, research and forward are the causes of the environmental crisis, the economic crisis and the social

crisis. The fact is that these are not ideological, but scientific, epistemic answers, that must be expressed in norms of intelligent law, in which difficulty in affirming rules is always greater than in our ability to adopt principles of law. Kempf reinforces that there is no sustainability without identifying the causes of inequalities and ecological crisis. Poverty and the ecological crisis are inseparable.[156] In this sense, it is necessary that the Urban Law respects ecosystems, includes the poor in urban housing zoning, and organizes the spaces, so as they are well distributed, for the different economic activities, necessary to generate jobs, income, social and economic inclusion.

The problem of inadequate zoning, which does not respect the natural vocation of the occupied space, which does not take into account the activities developed in them and that does not respect the people who will occupy this space, because the purpose of the occupation is merely real estate, generates problems that we will possibly not be able to solve later.

When in these occupied spaces there are floods and landslides with fatal victims, we are faced with consequences, which could have been avoided by Urban Law, with the adoption of legal instruments on how to avoid the causes, this is, to do the right thing, to have safe policies in the long term. When thousands of people live in informality, it is because we defend, over time, the poorest classes, but we never advance in the construction of legal instruments of how to do the right thing, because it generates commitment, decision-making, political exhaustion. It is because urban legislation has not defined housing spaces for the different social classes.

[156] KEMPF, *op. cit.*, p. 57-58.

The socio-environmental chaos created in cities, resulting from disorderly occupation, can only be avoided with planning, which implies intelligent legal instruments. Silva states that planning, in general, is a technical-instrumental process to transform the existing reality, in the sense of previously established objectives.[157] Therefore, objectives, guidelines, fundamentals alone are not enough. There is mainly need for legal instruments and projects that are linked to implementation. The execution implies plans that require executive projects, goals, material and human resources, responsible for execution, monitoring of execution, penalties for non-execution, monitoring and post-execution supervision and, fundamentally, regulatory rules of execution. Enforcement is not binding on legal norms; it frees each one to do his own way and according to his interests. It generates eternal discussions that do not solve urgent situations. Therefore, the basis of smart cities is an equally smart Master Plan (Plano Diretor). Otherwise, cities, even if they are equipped with technology, will not guarantee inclusion and well-being for all.

It is evident that technicians and specialists are the ones who should make the diagnosis of reality, prognosis, the definition of spaces according to environmental and social potentialities, through an epistemic process of knowledge construction. But so that the established objectives can be effectively achieved, so that there is legal security, certainty of sustainable human occupation, it is necessary that everything is translated into legal norms, through the adoption, for example, of legal instruments, mandatorily inserted in the national,

[157] SILVA, *op. cit.*, p. 75.

state and municipal zoning, more specifically, in the Master Plans of each municipality.

In practice, nothing happens in Public Administration that is not provided for by law. The law is the main planning instrument for public management. In the private sector, planning, to be carried out, only needs the sovereignty of the entrepreneur's will. In public administration, the manager's will is bound by the law. So, planning will only be executed, if there are effective laws that guide public and private agents' behavior. Therefore, Law needs to go beyond the phase of mere constructor of concepts, guidelines, doctrine, new rights, and their affirmation. It is urgent that rights are effectively ensured and respected, which implies the need for an epistemic, interdisciplinary, and planning construction, transformed into intelligent and effective legal instruments.

The administrative structures of the Brazilian State demonstrate the total ignorance of what planning is. At the federal level, for example, planning is only concerned with monetary and financial matters. There is no national plan for the sustainable occupation of the Brazilian territory. This compromises natural and life-friendly habitats, biodiversity, environmental wealth, cultural diversities, and degrades, putting human evolution itself at risk. The Planning Secretariat is normally the agency that prepares financial projects or certain works, such as construction projects for hydroelectric plants, airports, railways, etc. These works must be the result of an intelligent and sustainable occupation of the territory, which ensures not only occupation, growth, but development and legal security. This avoids political, economic, and social crises, as discussions will not be necessary, when it is time to decide. Intelligent laws indicate how to

do the right thing, in advance, such as already discussed, consolidated and "consensual" planning.

The lack of intelligent legislation that relates environment and development, as a planning instrument, is verified in a report on competitiveness in tourism, prepared during the 2017 World Economic Forum. Brazil appears in first place in terms of potential for natural and tourist resources, but occupies the 27th position among 136 countries, in terms of infrastructure.[158] We made a mistake in not zoning, identifying the spaces, establishing an intelligent legislation about what should be improved in these spaces, providing opportunities for public and private investments with legal certainty. The lack of knowledge or omission is evident, as, in these examples, it appears that Brazil does not know how to use the legislation intelligently to plan, as the projects are not linked to the managers, because they are abandoned in the name of party politics and not of State policies.

The legal world knows that, if these projects were linked to intelligent legal instruments, the continuity of planned future policies would be compromised, since the administrator cannot be linked to projects, but to the law. However, when a project is not just the creation of a ruler or party, its execution is guaranteed for a longer period of time, as it is the result of a law. We are not referring here to a particular law, but about the law as a planning instrument, with mandatory execution, with targets, penalties and periodic reviews. The profusion of norms in Brazil does not mean that it is the result of an

[158] *Revista VEJA*, São Paulo: Abril, ano 52, n. 1, p. 11, 2 jan. 2019.

intelligent posture by the legislator, nor by the managers of different entities of the federation.

In no Planning Secretariat in our country, there is a division or sector that has the purpose of studying and permanently adopting laws as planning instruments, precisely because, in our public management culture, the law is not seen as a planning tool. This goes against what determines the CF/88, in its art. 37, violating the Democratic State of Law, since one is dependent on the will or the "lights" of an administrator or "savior of the Fatherland", who may not be committed to the policy of the State.

Disenchantment with the inefficiency of the Public Administration leads to the adoption of laws with intelligent effectiveness, which only use technology to plan smart cities. Planning is having an intelligent Master Plan, which organizes the occupation of spaces, according to their natural vocation and the needs of man. Diversity takes place in space and time, but neither space nor time are objects of identification, zoning and preservation.

On the other hand, the need for logistics for economic activities that generate work and services, in all spaces where these are needed and close to where people live, precedes an intelligent legal order that disciplines the use of technologies.

The planning process is a permanent work of reflection, construction, and adaptation of public policies, monitoring and proving the efficiency of the plans and their results. The planning process is based on legislation. In this sense, in Brazil, especially with regard to the topic addressed here, which is occupation as a human habitat on a natural environment, which must be respected, as widely discussed, we have a wealth of standardization, indicating paths.

However, when we check the plans, they repeat the general norms and, at most, establish norms of state and local interests, nothing reflecting on the realities in question, nothing concretely planning, showing not knowing how to do the right thing. They are actually pasted copies that only seek to comply with legal deadlines established as limits, but they do not propose anything concrete, as they are not Execution Plans of what the law determines in its general rules. As an indication of the wealth of general rules, we have: the law that establishes the need for Regional Plans (Estatuto da Metrópole, Law No. 13.089/2015); the City Statute (Federal Law n. 10.257/2001), which establishes the obligation of Master Plans; norms that prioritize places dedicated to tourism (Federal Law n. 11.771/2005); the law that establishes the policy for the preservation of hydrographic basins (Federal Law n. 9.433/1997); law that establishes the obligation of Ecological-Economic Zoning Plans (Decree No. 4.297/2002); the law that establishes the obligation of the Solid Waste Plan (Federal Law n. 12,305/2010); the law that establishes the need for a Sanitation Plan (Federal Law n. 11.445/2007); the law that establishes the adoption of the Urban Mobility Plan (Federal Law n. 12.587/2012); Metropolis Statute (Federal Law n. 13.089/2015) and so on.

However, we have no plans, but a repetition of general rules plus some rules of state and local interest. Despite national and general legislation, very little is actually happening, because a plan presupposes: executive projects, epistemic knowledge, goals, definition of resources, execution time, responsibility of the executing (public or private) body, monitoring and supervision of execution, regulatory rules of execution, penalties for non-compliance with goals and deadlines, monitoring and supervision of post-execution, and so

on. When it comes to plans for a four-year term, we can provide for resources in the Multiannual Budget, but when it comes to long-term plans, their implementation is compromised, since the Multiannual Budget is for four years and, after that, the new manager decides whether to allocate new resources for that plan. With this, thousands of plans just begin and have no continuity. This renders general rules useless, and it is evident the lack of knowledge to establish cogent standards for the implementation of short, medium and long-term plans.

The law makes the Master Plan mandatory, however, plans are supposed to have been adopted, but nothing obliges their implementation, because intelligent legislation that makes it effective, feasible and gives legal certainty to its implementation is lacking, a fact that generates uncertainty in investors and compromises the future of cities. The election of a new ruler cannot compromise the continuity of State policies, provided for in the national legal system. But the lack of intelligent legislation leads to a fresh start every time a new management starts working.

It is necessary that the governments establish action plans, which mean commitment made in their administration, to execute steps of the legal planning instruments provided for by law, which are the Master Plans. From what has been said, we can conclude that the government plan does not derive from the party's program, but from State policies, which are institutionalized in intelligent legal instruments. The choice of this or that action is discretionary, political, and partisan. But the set of actions must already be expressed in the legal instruments, as a guarantee of the Democratic State of Law itself.

The ideology, or the party program, will only give the people the notion of which institutionalized state policies should be implemented, because changing legal instruments implies a change in state policies, which are guaranteed by law and which have as their nature the people, their diversity, their needs and their rights. It is not a party decision, because it has a scientific, epistemic and legitimate basis, since it involves the entire population, and it is a guarantee of the Democratic State of Law.

The submission of the planning of a state or municipality action to a party program characterizes a dictatorship. Diversity and equality are not contradictory, but necessary, and a law is needed to protect them.

As a rule, what has been observed is that there is no long-term planning, because there are no State policies implemented in the Brazilian legal system. Administrators are committed to their ideas, but they are not linked to a nation or city project. Social and environmental sustainability should be a State policy, because governments tend to adopt a policy of parties and power, when there are no plans transformed into law. Bryant states, referring to the partisan state, that we live the selfishness of evil, in which one person or group of people benefit, but all others pay an extremely high price for it. Drug trafficking is an example of this.[159] There is a tendency to continue occupying the entire Brazilian territory, to meet some economic interests of groups, without an environment-friendly planning; spaces for all, with ecologically balanced environment and well-being for all. And, after all the spaces of the Brazilian territory

[159] BRYANT, *op. cit*., p. 89.

are occupied and the problems created become evident, as in our great cities, the ideology, the party or the candidate is invoked to save what is left. Believing in Santa Claus is timely and proper to childhood, but it will never be a responsible posture of mature and conscious citizens.

Finally, believing in intelligent laws that guarantee rights and planning in the medium and long term is the right path.

We conclude that there is no way to plan smart cities, just by betting on technology or using artificial intelligence, neglecting basic issues that have not yet been resolved, such as the natural environment, urban zoning of social and economic inclusion, respect for the laws of nature, which are the foundations of respect for life. Technology does not plan, it just helps with planning. Just the law guarantees medium and long-term planning. Our Master Plans need to be intelligent laws to consolidate a new concept of smart cities and to be able to use technology in a complementary and correct way.

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