



The philosophy behind video games: metaphysics, epistemology and ethics of electronic games

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Summary

More than mere human entertainment, in this article we will argue that the video game has its own ontological status as an institutional event of linguistic and social interaction, excluding the old definitions that placed it as a toy subordinate to the class of tools and other technological creations of the world. humanity, proving to be an entity independent of our minds, thanks to its diverse fundamental elements, also being capable of providing conditions for our own understanding of ourselves as rational human beings.

Keywords:entity, game, electronics, rules, interaction.

Abstract

More than mere human entertainment, in this paper we will argue that video games have their own ontological status as an institutional event of linguistic and social interaction, excluding the old definitions that placed them as a subordinate to the class of tools and other technological creations of humanity, proving themselves to be an entity independent of our minds, thanks to their various fundamental elements, and also capable of providing conditions for our own understanding of ourselves as rational human beings.

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Introduction

What could a child want? A human being who barely understands his own capabilities, even the concept of understanding itself, barely has his preferences or life goals formed and, above all, has no evidence of any solid demonstration of his own existence and subjective unity, would even have the chance to say you want something? One way or another, many ended up receiving a gift from their parents in the 80s and 90s that was said to be a dream for any of them. They didn't really know what it was, they often didn't know the name of the object, but what they saw in TV commercials, in store windows, was something, to say the least, magical!

What was seen were scenes that could never appear in the real world. A window into the perception of new and striking objects that almost involuntarily brought joy and the desire to be close, with an enchanted aura that deceived us, making us lose track of time. Maybe, because it really seems, at first, to have this fantasy proposal that intensely distracts children, it is one of the first reasons why a large number, to this day, still think that it is a childish experience. We talk about *video games*!

Called, in a free translation, video games, or electronic games, although the original term is the one used by everyone worldwide, including being abbreviated to simply "game", it basically proposes that we can participate in electronic games generated by a connected console to a video device, normally televisions, although it was also possible to create specific screens for playing games. We must pay attention, however, to how premature this definition is.

It may seem superfluous, but it is still not clear what the concept of game consists of, its elements, how we interact with it and its different forms. It will even be necessary to clarify many other fundamental issues, such as the definition of man, machine, reality, fantasy, relationships, senses,

anyway, because it is due to a lack of investigation into each and many other of these concepts that the video game, Even today, there is no treatment suited to its real manifestation, importance and benefits that it can bring us. In fact, this treaty aims at something further. The idea is really to give a *ontological status* to him, not as a human device or an instrument to give us an advantage in some way, but to expose what he really is, independently of us. Furthermore, independently of any other being that interacts with it, even giving the possibility of interacting with each other, as well as any other "being", exposing, once and for all, its autonomy and real definition.

Of course, continuing to read this writing requires the reader to have a minimum philosophical maturity so that they are able to suspend, for the time being, many definitions and understandings that they have already constructed in order to understand

just as it is possible, in a classic metaphysical analysis, for example, to conceive of mere inanimate objects or even fantasy objects as “beings”, as much as ourselves, less, or even more, given some scale of levels of being. The case is that only Philosophy, as an academic activity, reminds us that all the knowledge we have today is nothing more than definitions created by ourselves and there is no concrete proof that the terms and meanings we use correspond exactly to what they really are (task of Metaphysics). In fact, we ourselves invented that there must be a correspondence between two objects, one being the signifier and the other the signified. We don't know, yet, why something should be (anything)!

The focus will, of course, be on talking about the video game. We will not get lost in long discussions about the general structure of being and often some concepts and tools will be “given”, including the metalanguage itself used now. We will also try not to explain any socio-psychological theory, giving a strictly philosophical treatment. We hope that, with this, the video game will finally be recognized, firstly as an entity and, secondly, once we know what it is and what it is capable of, the importance it brings to our own understanding of ourselves, as well as to be and the Theory of Knowledge.

1. Is video gaming a mental pleasure?

Let's start with a venture *ontological* about what video games are. First of all, it is worth highlighting that what we are calling “videogame” here does not concern the electronic device itself or the combination between it and the TV, but its concept, its definition, the category to which it belongs and the which he himself created when he came into existence. Of course, we would not discuss here a physical object or the structure of matter, something that falls under Physics.

Firstly, it is reasonable to say that all writing is done with the intention of being useful in some way to one or more people. The search for leisure and happiness is something that is inherent in us and is *inevitable*, as Aristotle said¹. Now, considering, in principle, that the video game is an instrument of leisure, which, in turn, would make it one of our objectives, why, among all the experiences that exist with promises and reports that are much more striking and pleasurable than playing, are we choosing it as an important topic, in fact, the most important of them, when it comes to leisure? Now, to begin to partially understand the motivation for choosing it, the easiest way is to start by comparing it with similar experiences.

As the name already indicates, “video” depends on the sense of vision to be perceived, but let's start with the least similar ones, that is, with other activities that require other senses. Obviously, we will not list the infinite activities and sources of pleasure that exist in the world, but we will seek to induce a consensus in favor of video games. Still, without exploring the technical terms that define it, the word “videogame”, as a composition of nouns, presents itself, from this, proposing to make available at least *two simultaneous activities*. Of course, for any other activity, it is usually possible to carry out others at the same time, but it is rare to find one that is necessarily plural like video games. This is because human beings, as we have seen, are always in search of happiness, they synthesize entertainment methods and stations, in an attempt to unify everything good in the same place, making video games, for example, one of these endeavors.

Through it, it is possible, nowadays, to activate most of the senses, from vision (the screen itself), to hearing (effects and soundtrack) and touch (*joysticks* standard or modern motion sensors), leaving taste and smell for a future discussion (even in 2024, the date of this writing, there is not much investment in the interaction with these senses and, later on, we will see why). Although it is possible to make other activities a multitasking experience, the big difference with video games is the fact that they are already defined in this way, that is, their product is ready only when attention is paid, from the beginning, to all the elements that make it up. , by definition, instead of allowing other sensations (pleasures) at random. For example, during a meal, in addition to the standard intention of wanting to delight in its taste or smell, it is possible that I begin to admire its appearance or play with it in some way, but it was not made with that intention.

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However, this would still not be enough to justify this focus we are giving it.

¹Aristotle, in his *Nicomachean Ethics* (c. 300 BC), says the following: “It is generally admitted that all art and all investigation, as well as all action and every choice, aim at some good; and that is why it was said, quite rightly, that the *good is what all things tend towards*. But a certain difference can be observed between the ends: some are activities, others are products distinct from the activities that produce them. Where there are ends other than actions, they are by nature more excellent than these (ARISTOTLE, 1984, p.49) (...) verbally, almost everyone is in agreement, as both the vulgar and men of superior culture say they are This aim is happiness and they identify living well and acting well as being happy. (Id. *Ibidem.*, p.51)

Its great difference lies in what we define here as *Direct Conceptual Interaction* (ICD). In other words, while we interact physically in most pleasurable activities, as well as conceptually, that is, through an interface of mental objects, such as categories and abstractions used in the identification and standardization of pleasure, the video game not only uses all of this, but depends on this set! An example will better illustrate: In a film, in fact, we seek the entertainment of video and sound in it, but, nevertheless, it aims to awaken in us a mental reflection, of the most diverse types, depending on who is watching, even if the script writer defines a standard central idea, making this experience an “extra senses” activity.

We will not concern ourselves here with discussing whether mental objects arose from the senses or vice versa (primacy of the mind over the world) and we should just admit that there is a physical ≠ mental difference between, for example, *eata* loaf of bread and *thought* about eating bread, the latter being able to make us take into account several other factors about the bread, such as what would happen if it were spoiled, if I couldn't eat it because it wasn't mine or what I could add to it to make it taste better in a different way, that is, to conjecture about bread and occupy myself in another way than what he proposes, without the obligation to do any of these things. In other words, in this situation in the film, in fact, it was already possible, from it, to reach a more human, more rational level of pleasure, allowing us to put aside the obvious sensations that have distracted our species since the beginning of time.

The comic book, despite having static images, cannot be as invasive as the film, that is, it does not condition the viewer in such a restricted way to absorb what is being presented abruptly, without time to think, as in a succession of images fast and uninterrupted images that we have in a video. Just as reading a book leaves it more up to the viewer to create the scene in their head, which makes them not necessarily a less pleasurable or worse experience because it manifests itself in such a way due to its low budget, but just a different one that, by the way, it even has the advantage of being less likely to be cloying because it can always be thought of in a new way, with each new reading. However, because it has this character of appealing too much to mental exercise, which costs a lot of energy, in the end, most people are always focused on enjoying more obvious and simple entertainment like a movie, because the more senses we use to identify something, the easier it is to understand it, and the easier it is *at first*, more pleasure.

Before arguing about the pleasure of the challenge, we must remember that such pleasure only occurs in how easy it is to reason about the problem, not referring to the solution itself. In other words, only those who are capable of being challenged, in a “fair fight”, take pleasure in the challenge, making it an easy task. Hardly anyone would find pleasure in finding a ball in a completely dark room, without any clues. Randomness does not bring any ease and would actually create a great feeling of wasted time. Not that it is inappropriate for the purposes of enjoyment, but in this case it was misapplied. Given the *Intentionality* of the mind, this always works *linking one factor to another*, and, if a rule, such as that of randomness, is, by definition, the lack of connection between terms *in a given mold*, even if you connect any two, with each mistake (thinking that the ball was in a certain place), the feeling of not achieving the goal would increase more and more, which would increase bad mood and, therefore, displeasure.

When we talk about ease, we are not referring to an *mental copulation* of ideas promoted by intentionality. If it really works like that, thought the human being, how can we go about creating “ready-made entertainment” so that the extra-sense character becomes even stronger and we can maximize this pleasure center even more?

Unlike anything else, video games allow direct interaction with the “product”. Direct because, unlike other sources of entertainment, when there is an extrasensory interaction, it is passive, indirect, that is, the spectator just waits for the composition to reach him and, only after that, can he

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²To John Searle (*Intentionality*, 1983), any complete approach to language requires an approach to how the mind/brain relates the organism to reality (SEARLE, 1983, p. vii). Intentionality is nothing less than our directional capacity that relates mental states to objects or states of affairs in reality. States such as beliefs, desires, and intentions are examples of this, such as when we believe something is the case or desire a certain event to occur.

3 Aristotle argued that we are always looking to associate ideas through knowledge, in its *Metaphysics* (sec. I AC): “all men, by nature, have the desire to know: a proof of this is the pleasure of sensations, because apart from their usefulness, they please us in themselves” (ARISTÓTELES, 1984, p. 11)



generate the subjective fruits of the experience for the sake of your pleasure. In a video game, however, the spectator is not just the spectator. Just like in other games, he acts! Just like in other games, the facts and results only unfold based on the player's will, although, to be a game, it must follow a minimum standard line thought out by the creator, but we will see this better when we understand well what it is. a game.

The important thing now is to make it clear that the video game is not just a game, as it appeals to *electronic devices* that facilitate and maximize the way of dealing with it, providing another "obvious pleasure", by allowing the use of the senses in a less laborious way, since it is more "given" like a film, and much better defined, unlike of books, comics, for using more devices and elements to express themselves. His big advantage is this *sum of factors*! (the machine automates compliance with rules, for example).

As we have seen, less obvious media can indeed provide more pleasure, as it is relatively variable for each reader, and the film is even more obvious and well defined than the video game, as it does not have a direct relationship with the viewer. , tends to produce *almost* the same effect on most people. But, the idea is precisely to set up a center in which there are all these elements, even if they are sometimes weakened, so that there is a *greater probability* of providing pleasure to those who are enjoying it. A kind of average that, for a species (us) that does not work with absolutes, is quite satisfactory.

The video game, therefore, has this power and this plural proposal to maximize the contribution to *necessary activity* of mental copulations. Even though there are many types of objectives to be fulfilled, infinite hobbies and sources of pleasure, whose qualities vary for each "thinking thing" (in René Descartes' terms, in this case, restricting us to humans), that is, even if each If you have your preference and even if video games are not an obligation in someone's life, even a displeasure, the idea for now is to show what your intention and pretensions are towards humanity and how the factors shown here really convince. Wanting to reach not only the old five senses (although not all, at the present time), but an extra dimension of senses through an unprecedented method, the ICD, the video game aims to reach the core and extreme of the human capacity for pleasure. This, of course, in view of the *human beings*, supposed creators and who still treat it as a tool for such purposes.

If video games are not, essentially and primarily, a pleasure for our mind, what is they?

2. Video game ontology - main elements

Metaphysically speaking, we can theorize an ontology of video games and list their fundamental elements. A video game is an experience in which we are able to enter commands through an interface *graphic*(video), from *peripherals*, based on a program *electronic*(the game), whose logic establishes *rules* that we must respect while we intend to interact with it. In other words, it is an experience in which we act according to specific rules, in this case, in a specific "world", which is the electronic multimedia, since we interact with the help of several senses. To better understand what this entity, the video game, is, we will analyze it in parts, based on common sense and/or more specific analyses, and only then will we be able to elucidate the idea brought here.

2.1. The game

Let's start with the idea of a game. To do this, it is first necessary to carry out a certain ethical and psychological reflection on thinking things. Since we only understand logical concepts through the mind or, more strictly, through our source of thought, there is a need for mental copulations to occur, that is, *how impossible it is to think about not thinking*, according to Descartes' analysis (Meditations), there is a chain of copulas between two terms starting from this first, which forces anything thinking to always be connected one thing to another, one of which we define as the "objective" of the other, in any order, and it always does so in favor of the only necessary action it can perform, the *indubitable truth*(the *cogito*), "I think, then

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4 René Descartes, in his *Philosophical Meditations* [sec. XVII], 1983): "Archimedes, to take the globe land from its place and transport it to another part, it asked for nothing more than a point that was fixed and safe. Therefore, I will have the right to conceive high hopes, if I am fortunate enough to find only one thing that is certain and indubitable. (...) Am I so dependent on the body and senses that I cannot exist without them? But I persuaded myself that nothing existed in the world, that there was no heaven, no earth, no spirits, no bodies; have I not persuaded myself, therefore, that I did not exist? Certainly

am”), which is to think, because if I didn’t do it, it wouldn’t be necessary.

Well, from this, we know that, let's talk about the human being, this thinking thing is incessantly “doing something”. Naturally, its first inevitable actions are to carry out actions so that it can continue carrying out actions, starting with satisfying basic needs for survival, from searching for food, to supplying enough energy to move the body and mind, as well as shelter. to keep the integrity of both safe and stable. Considering that the human being has evolved, he has been transforming, increasingly beginning to efficiently satisfy his most primordial needs and, as he cannot stop doing something, his mutations have given him new capabilities so that he can carry out new activities.

Then, we can start to focus more on the evolution of the mind. As humanity went beyond its own species and became more and more the human we know today, its activities became less and less physical, becoming more mental, conceptual, abstract and products of this kind were developed, such as Mathematics, Geometry, their scientific consequences and of course, Philosophy, as the study of the possibility of any such knowledge, even going so far as to recognize the problem of infinite regression in the search for the foundations of foundations, due to the need for primordial mental copulation, conceiving, in this way, life given just like that.

However, because of this, human beings find themselves forced to carry out more and more activities to find another unrealizable answer beyond the vicious circle in which they find themselves. Then, reaching a state of control over their needs, humanity came to know the concept of *distraction*. Your desperate mind is prohibited from thinking! She is always associating one thing with another. But what about now that there are apparently no more goals? There is no “what now?” She just goes, because *he must*, perform a subsequent association.

There lies the origin of the game! The human being finds himself tired of feeling victorious in the face of the difficulties that life and nature have brought him and, therefore, creates *anew reality* with its own rules and obstacles to maintain the need for mental copulations. He finds himself forced to occupy his mind in any way. So, once he has set up his new world, he starts to respect these rules and, by meeting the need for copulations, which is comfortable, he accumulates loads of good humor and has fun. By the way, “game” comes from the Latin *jocus*, which means play, fun. The association between humor and games is now clear.

If the game has to have rules, then what are the rules to determine that an activity is, in fact, a game? Many people theorize about this and end up misunderstanding each other when some say that certain elements are necessary and sufficient, while others say the opposite. For example, one party argues that every game has a player and an opponent and that games like Solitaire and any other in which there is only one player do not fit the definition and are seen as a puzzle (*puzzle*). Others say that fun is no longer mandatory for all participants, as long as at least one has the pleasure (see the 2005 film “Saw”) or even that defining a winner and a loser goes against the purposes of fun. and that, therefore, this characteristic is not always present. Now, the discussion about whether this or that element is part of the definition of game is useless, as only one is really indispensable, which gave rise to it: the contribution to the need for mental copulations of a thinking thing. In this case there is no *whoor awhat* specific.

The video game easily fits into any action that emerged after a supposed separating line between activities that contribute to the basic needs for survival and those that were created by idleness, just to maintain the constant copulation of ideas in the mind. Therefore, both in the video game and in the game in general, we conclude that there must be a player (at first and, as we will see, not necessarily a human being. In this case, the game here will closely resemble the concept of *language games* by Ludwig Wittgenstein, since the player will be, at least, an age linguistic nte)

no, I existed without a doubt, if I persuaded myself or merely thought something. But there is some, I don't know who, very powerful and very cunning deceiver who uses all his industry to always deceive me. There is no,

therefore, there is no doubt that I am, if he deceives me; and no matter how much he deceives me, he cannot make me

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I am nothing, as long as I think I am something (...) I am, I exist, it is necessarily true every time I say it or conceive it in my mind. (DESCARTES, 1983, p. 99-100) I am, I exist: that is certain; but for how long? Namely, for all the time I think; because it could, perhaps, happen that, if I stopped thinking, I would simultaneously stop being and existing” (Id. Ibidem., 1983, p.102). 5

Wittgenstein says in his *Philosophical Investigations* (1953, paragraph 65): “Instead of indicating something that is common to everything we call language, I say that there is not one thing common to these phenomena, in virtue of which we use the same word for them all, - but rather that they are related with each other in many different ways. And because of this kinship or kinships, I call them all

There must be rules? Yes, therefore, all of them are what makes the game, to the extent that the human being he looks for other activities to do, when he finds himself in need of a game, that is, he looks for other objectives to fulfill, as thought obliges him, based on rules, since any and all activities can be described and every description is minimally composed, predicted, regulated. For example: in football, players and the ball are acted upon by gravity (physical law); players run on the field without being able to cross the boundary lines (conventional law); the ball must enter the net to score a “goal” (also conventional). In other words, just the act of describing the activity already defines, *automatically*, the rules⁶.

Should there be a goal? According to what we have seen, if the game emerged from a simple obligation to think, that is, after the basic thoughts have been fulfilled, one starts to invent objectives to be fulfilled when creating a game. Initially, those that are fulfilled are, in fact, those of the primordial activity of copulation, but not an objective in the common sense of the term, in the sense of those who argue that a game must have an objective. It is argued that there must be an objective, in addition to the fundamental one (that of thinking), so that only a restricted group of players can achieve it at a time, thus defining the *winners*, those who achieved, and those *losers*, those that don't. But, according to our reflection, this is not an indispensable element.

It is perfectly possible to take a pencil and start scratching a line along a sheet, for an indefinite amount of time, and someone will be playing, as it is an activity *that you don't need to do*, you don't have to. However, we did not define any objective beyond the fundamental ones. Our mind is satisfied with every point we create on paper along the line, but there is no other goal beyond that. In this way, this example eliminates the presence of an objective, as well as other supposed elements such as the winner and loser, as there is a player, there is a rule, but there are no reasons to put an end to it and the qualification of the player becomes impossible.

Even in solo games, it is possible to say that “I beat myself”, breaking a *Record* own, for example, to just unnecessarily create a contradiction in which “I am a winner and a loser at the same time”. Simply, an element that should not be present in the definition⁷.

So, the common definition of game, naturally imprecise, will be: *any activity initiated without the purpose of meeting the basic needs for survival, with the aim of entertaining the mind (maintaining the obligation to carry out copulations of ideas), with a set of specific rules that define the players' actions.*

Anyway, the important thing is to note that the basic elements of the game are, for now, *player and rule*. Remembering that we are still treating the game as our creation, as a kind of “being” inferior to us, but the objective of this text is to show that this is not how things work. We want to show that it, the game, is not inferior to us for the same reasons that commonly define us as “real”, as well as describe all its characteristics and capabilities that, when interacting with us, bring us a series of reflections that give us help us understand more about ourselves.

2.2 Peculiarity of Electronics

technology (from Greek *τεχνη*— “technique, art, craft” and *λογία*— «study”) deals with any and all studies on the creation of the human being, that is, it seeks to understand the methods to define “objects”, which

“languages” (...) we see a complicated network of similarities, which involve and intersect with each other. Overall and detailed similarities (paragraph 66).

6 John Searle, in his *Speech Acts* (1969), says that, in fact, the “football game” only exists solely because a person or a group of people created this institutional fact based on rules *constitutive*, that is, rules without which the game of football would not exist.

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7Ludwig Wittgenstein promotes a reflection on the necessary conditions to define what the game is, in his work *Philosophical Investigations* ([1953]1984, paragraph 66): “Are they all 'recreational'? Compare chess with the game of hopscotch. Or is there a win and a lose in everyone, or competition between the players? Think about solitaires. In ball games there is a winning and a losing; but if the child throws the ball at the wall and catches it again, this feature has disappeared. See what roles skill and luck play. And how different skill is in chess and tennis. Now think about wheeled toys: the element of fun is present, but how many of the other characteristic features have disappeared! And so we can go through many, many other groups of games and see similarities emerge and disappear” (p.39).

they may or may not be alive, and their respective functions, preferably, useful to the human race. We know that it is our “obligation” (from the point of view of pleasure as an end in itself) to always look for the most advantageous, fastest and most effective path and the greatest merit obtained to date has been Electronics.

Basically, it was a way that man found to *automate* the actions themselves. In other words, the simplest way one could find to simplify the tiring actions of life is the tendency not to practice them and through the use of the lightest particles, however, because they go together, one of the strongest on the planet, the subatomic particles, protons, neutrons and electrons (without worrying about the countless others that still exist today) and, in this case, specifically the latter, as it was relatively easy to control, it was finally possible to stop doing many things to which we were obliged, because of our primordial obligation to think.

Thanks to Electronics, we were able to stop weeding, planting and harvesting. Thanks to it, we no longer need to hunt, risk our lives (although because of it many people have died, we will not discuss this balance of advantages here), much less suffer to prepare food, separate the good from the bad, the healthy from the toxic, Even though we sometimes prefer the latter, in short, we live with much more chances of surviving. Because of it, we are able to reach our destinations much faster, saving our legs and arms, our energy, to think instead of moving, allowing even greater advancement for future generations. And of course, unconsciously, despite being technically conscious, allowing it to replace us, going so far as to make it do entire jobs for us, rendering man useless, even daring to manufacture humanoids so that they become increasingly closer to us than ever, not only in ability, but in appearance, until we reach the point of being indistinguishable from them. Robots talk, walk, run, understand, teach, without getting tired (requiring a mere charge from the socket).

In our view, mastering the energy of electrical flow is our merit. That is, there is a tendency to believe that their capacity, serving us, is a kind of subordinate of ours, but this only occurs when we close ourselves off from seeing the logical possibilities involved. What stops her from not using us? After all, if A interacts with B, B interacts with A and there is exactly no way to define any absolute form of dominance over one another. Are we or are we not doing the electric flow the favor of building a path and paving its roads for a smoother rush (electric wires)? When we create more advanced circuits, are we or are we not renovating their homes and leisure spots? In general, as two initially different things become the same, there will come a time when they will become confused and specifically at that moment, and only at that moment, that is, a witness who appears exactly there, would not have the possibility of defining who “created” who.

In other words, there is at least one case in which the machine can be seen as the creator of the human being, which removes any certainty about man's dominance over it. Martin Heidegger already said something about this and Fábio Valenti Possamai made a comment, in a text *The question of technique in Heidegger* (2010):

The essence of technique, as Heidegger told us on several occasions, is not something technical. This essence is the power that makes us, mysteriously, calculate and seek to have control over the movement of existence – and this is an inherent characteristic of the human being. According to Heidegger, we should not worry about mastering the technique, but rather understanding that its essence refers to our own way of being and, because of this, we would need to establish a freer relationship with it, opening ourselves to other ways of being. (POSSAMAI, 2010, p. 28)

The human being, therefore, created the form *definitive* of pleasure: a means of automating your actions and avoiding effort, section that concerns the 'video', having only to perform a few minimal movements through an input device (a peripheral), the *joystick*, adding this to his noblest activity, the game, in which, by definition, he acts out of mere obligation in respect for the need for mental and *nothing more than that*, characterizing the “game” part, and, with this combination, reaching the maximum state of the honorable human condition of being or, at least, how we think we are.

Of course, we can also say that these two entities worked together to enslave us, because, if they didn't realize, we lived to “build” them, believing that we were on the right and purest path of evolutionary nobility, exploring our intellectual potential, supposedly placing ourselves as the only species capable of working beyond basic needs. And, whoever builds, is it the worker or not? Is the worker or not the one below those who order them to work? The important thing is to notice how things fit together and are interdependent.

As the name suggests, they are the most “distant” devices in the video game. In this case, the physical emphasis term is weak, since the size of the wires or the aerial range in the case of wireless is insignificant. This distance concerns more the *conceptual gap* existing between the device *creator* the virtual world and the *player*, which occupies the real world.

Peripherals are input devices, that is, only through them can we introduce commands, from the real world into the virtual one. They can be of the most diverse types, from *gamepad* the *joysticks*, ergonomically adequate equipment, normally presented in a generic form, if differentiated only by legal terms, with the sole intention of bringing simplicity and practicality to controls through man's most complex member, the hand. By the way, it's good to remember its importance.

Although there are now some forms of interaction through virtual reality in which the hands are partially used or even ambitious projects, such as interaction solely through the brain, hands are still a source of pride for humanity to this day. It is true that many animals, said to be, from a certain perspective, inferior, have a similar structure, sometimes almost identical, but, obviously, the lack of capacity *complex* of reasoning does not make their “hand” even close to ours, in terms of efficiency. They are incapable of performing surgeries or building integrated circuits, nor do they have the skill to cook or write a text nor, in general, use it in its own form, in a complex way, such as communicating through pounds or confirmation signals. , farewell or ostentation (we did, however, have the example of the female gorilla Hanabiko Koko, who learned a modified version of North American sign language, with its due limitations).

Hands, for humanity, are the symbol of *art and technique*, without which the physical construction of the expression of feelings or devices that facilitate their lives would be impossible or very inefficient (except for adaptive exceptions, when it is possible to equal or surpass the power of the hands through other limbs). It is because of them that we show what we are capable of and, today, we seem to be the dominant species.

There are other types of peripherals that make more sense when games aim to simulate reality. In “car” games (*racing games*), in which a car is controlled, it is convenient and more intuitive to use the control devices used in the vehicle, which is the case of steering wheels and pedals. In “shooting” games (*shooter games*), also found interesting the use of a fictitious firearm, with which, instead of bullets, information is launched that is recognized through the air on the video game device, allowing the experience of hitting targets according to the player's aim .

It is even in this regard that we begin to recognize more the experience of playing as something useful, or as they say, “real”, which is useful in practical life, including serving military matters, such as flight and shooting simulators, to training pilots and soldiers, demonstrating great efficiency, being a field with increasing financial investment. By the way, video games today are one of the biggest money makers in the world of entertainment, surpassing the film and music markets simultaneously. It seems like it's not just a child's thing anymore, as they used to say. The financial sector, however, will not be our focus here. Let's leave that to the specialized media. Furthermore, the idea is also not to talk about its usefulness and benefits in the psychological, sociological or economic fields, these interests being scientific and not philosophical.

Theoretically, the peripheral would be our symbol of superiority before the machine, before the video game experience, our weapon of coercion, as there is no order we give that is not obeyed (except the *bugs*, which we will talk about later). However, as we have seen, the path can also be reversed. Yes, nothing prevents her from forcing us (by imposing the addiction) to take control and satisfy her desires. However, opening ourselves to logical possibilities, and their “absurd” character, although correct, would not give academic meaning to the present text. In fact, time and evolution have only allowed us today to witness previously unimaginable role reversals. There are already games that introduce commands to us explicitly.

It is important to highlight that, from the beginning, video games already had their own input devices on us. There are games that “speak” to us. It is the famous phenomenon of “breaking the fourth wall”. It doesn't take much to explain this term.

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Since a long time ago, with the help of Geometry, we have understood and defined “reality” as composed of three dimensions, that is, it is possible to visualize everything that exists through its extensions in up to a maximum of three distinct directions, namely, the x-axis (horizontal), y-axis (vertical) and z-axis (perpendicular to the plane formed by the previous two). We didn't make the world this way and we have to accept it in the same way that a human is normally born with two arms and two legs.

In this way, with the advent of technology that allowed the creation of digital dimensions on computer screens, we can conclude that the three dimensions are also possible there. It is interesting to note



how the evolution of these *software* (program, game) took place, therefore, as technology evolved, contact with the dimensions took place gradually, in order, starting with the first, then the second and finally the third, almost like an evolution of a species, such as like us. Thus, the notion of 1D was created, a reality formed by an axis, a dimension; 2D, reality formed by the sum of the first two axes, with two dimensions and finally the sum of the three, 3D reality as we know it.

Well then, what is there between our reality and virtual reality? There are those who say that the virtual is inside ours and is part of the same 3D world, but, if we consider the computer screen as a window, it seems that they are the ones looking at us and we can be inside their 3D world. Since the clash of these logical possibilities leads to nothing, we decided to separate the two as independent.

By the way, this is an ancient craze of human reasoning. Whenever faced with a logical contradiction, which may even have arisen from a valid reflection, human beings prefer to define a wrong path rather than try to understand the reason for the contradiction and what it actually means, in addition to stating something and its negation at the same time (basically, what contemporary reasoning decided to *doparaconsistent*, which rejects the *explosion principle* of Classical Logic and, therefore, a trivial conclusion through the conjunction of contradictory sentences).

Since the first philosophers, because of the need to connect A to B, the obligation to think, humanity has always been in search of *justifications*. To understand something, we must rely on previous, more fundamental and precise knowledge. It's always like this: "on what basis do you say such a thing? If you have no basis, then you are just making it up and anyone can make up anything. Your statement is as true as any other lie and I have no reason (again) to use it as the basis (again) for my future thoughts." But, if the person who stated asks: "and who said that a basis is necessary to give truth to a statement?", falling into a contradiction, therefore, trying to suspend his first action at, at least, the level of doubt, as his interlocutor did, who invalidated his statement, but who is also unable to answer that question, the one who asserted is *looking for a base* to validate "whether a basis is necessary to validate statements", already affirming itself.

In other words, either you accept that truths need a basis or, if you think that this is a statement as true as lies, you will inevitably look for a basis, and you will accept the first element of the disjunction. It goes without saying! We saw with Descartes that it is *impossible not to call* A to B. Even when talking about "nothing", "non-being", they end up being something. In other words, we are condemned to live in a contradiction, in a constant, infinite search for an explanation prior to the current problem, indefinitely. Upon verifying this, the human being had to choose: either we accept this and deteriorate to infinitesimal residues (contradiction) or we pretend that it is not so and proceed based on this, *playing* with this assumption.

Returning to the possibility of two worlds, the virtual and the real, now that we have two separate 3D worlds, we ask ourselves: separated by what? As always, looking for a basis for everything, we then say that, in the order of the numbers, there is a fourth dimension that separates them, just as the existence of the y-axis separates the x-axis into two parts, the negative and the positive side (like a cross). So this 4D line, purely *conceptual and abstract*, as the world wants it to be (for the same reason we accept that we have two eyes and two hands), would need to be "broken", in the metaphorical sense of being overcome, transgressed, so that there is interaction between the two 3D worlds.

It's scary to see this happening! All our old beliefs are thrown away, because why do we still think we are superior? We say that we are better than the machine because we apparently created it, but the act of creating is problematic (it could be a mere *discovery*) is uncertain and, even if that were the case, we could have been the ones created. Furthermore, giving her orders may be an order she gives us (e.g., contemporary electronics addiction).

Still leaving that aside, as usual, we say we are better than them because we are not *automatic*, that is, we have the will, or at least the impression of it. Every moment, we "decide" to carry out a series of actions and we believe that we are the owners of these decisions, mainly because we always decide something that benefits us in some way. But, do you realize that we are guided by a need, an order superior to ours? The need for copulations would then be our logic of *software*? But wasn't the machine inferior to us precisely because it followed orders? If, having already accepted this, we still think that the machine is inferior, because few orders are needed for it to work, while we have so many that it even seems that we are autonomous, think again.

The use of the term "few" is, obviously, *arbitrary* and problematic. Furthermore, trends show that, as time passes, machines already respond to highly complex logic (see contemporary artificial intelligence, such as GPT Chat) and, for a long time now, have been capable of operating

many of our functions with much more efficiency, many that we already consider impossible for us, such as determining the decimal places of Pi. So, already convinced of the logical possibility that machines, entities whose capabilities appear to be the closest to ours (in some cases, better), as we love to be surprised more by what we see than what we believe or know, the visualization of the breakdown of fourth wall seems to be the definitive proof that they are alive!

When we see the machine “talking” to the viewer and answering their questions, no matter how repetitive it may seem after a certain moment, we have no choice but to recognize it as a being as capable as us, since, if we stop to think, we also repeat ourselves a lot. Every day we eat, walk, breathe and fulfill our physiological needs. Are we really going to insist that the number of elements that are repeated matters in determining who is better than who? The machine may simply be wanting to interact with us with just that (we have already seen people interacting with less).

2.4. Image

Historically, what was seen in the “video” part of the video game underwent a series of changes. The old ones *sprites*^{2D}, hand-drawn images digitized and controllable on the screen, were the dominant feature around the 90s and their appearance *cartoon*, in other words, that it resembled cartoons, which were, at least in the eyes of most, programs for children, reinforced the impression that it was a childish experience and without anything of value to add to us, as adults.

Soon after, the *renderings*^{3D} and games were increasingly proving to be realistic and useful, as in the cases of the simulations mentioned, or even artistically, generating beautiful landscapes and/or stunning scenes that began to resemble filming, even worrying people about the influence this could have on their children, as violent, sexually inappropriate or terrifying images were more frequent and closer to reality⁸. Reality that, for common sense, basically concerns everything about which there is no need to think about whether it is possible to think about it, because the non-need to think about it (to make it real) already makes it possible (real). In other words, everything that is given *how it seems*, before being questioned. As is evident, the need for mental copulations would be real and the unjustifiability of everything else beyond that, such as the fact that we have fingers and ears (which, for some philosophers, would be “core” certainties).

By the way, the image, which we perceive through the sense of vision, is considered by many to be the sensitivity *noblest*. It is as if it were impossible to recognize beauty without it, although there is beauty seen through other senses (such as music), but, for some reason, vision is the “strongest”. Saint Augustine, in *Free Will* [year 395] 1995) tries to justify:

8 On ethics in video games, Grant Tavinor, in his *The Art of Videogames*, says that (our translation): “We can guess what response this moralistic theory would have when confronted with the immoral joys of *Grand Theft Auto*. Video games, one might say, pervert moral understanding by allowing the player to indulge in sordid and thoughtless fictional involvement. Video game players lack moral learning because they are not reflective; If they stopped to reflect, they would quickly learn that their fictitious involvement is degenerate. Video games, in this view, can be condemned for their moral evil. Although I will not do so here, this line of argument can be developed in conjunction with some form of ethics of *virtue*, perhaps further strengthening the moral case against fictional immorality. Thus, although it is merely fictitious that a football player *Grand Theft Auto* might like an act of murder (in fact, there was no murder to like), it is true that they liked a game whose topic was murder. It is not what the players are doing fictionally that is morally reprehensible, but what they are actually doing.

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mind doing: enjoying fiction that is about something considered immoral and therefore having what might be considered an inappropriate moral response to fiction. Again, the mere content of a fiction may be the appropriate subject of moral criticism. Our intuitions tell us that what we voluntarily imagine, and what we imagine and feel about it, are not morally neutral things” (p. 162). This topic even generates controversies in Brazil and around the world, regarding how much feeling like committing crimes in a game contributes or not to the execution of real crimes. This debate, however, is more psychological than philosophical. The important thing is to know that, from a philosophical point of view, we can expose ourselves to moral decisions in an engaging and digitally interactive fiction, making us wonder about moral concepts, such as guilt, good, bad, right, wrong, regret, etc.

We can, therefore, many of us together and at the same time see a single object, although each one has its own senses. They allow us to see together and at the same time a single object. Thus, even if my senses are one, and yours are another, it may happen that the object of our vision is not distinct for you from what it is for myself. That a single object, however, be present to both of us, and that we see it equally and at the same time (AGOSTINHO, 1995, pg. 95)

Of course, the precarious technology of his time was incapable of teaching them precisely that the electromagnetic waves that characterize one person's vision are not exactly the same as those that reach another's cornea (the same thing about sound, which we will see later). , but at least they are more similar to each other, unlike the other three remaining senses:

Although we each inhale the same air through our noses, or taste the same food, however, I do not breathe in the same portion of air as you, nor do I ingest the same portion of food as you. But I take one and you take another (...) As for food and drink, however, it will necessarily be one part that I receive and another that you receive. (...) as for touch, we certainly cannot touch the same object in its entirety at the same time, only in different parts. As for the same part, it would only be each one at different times. This is because nowhere where you touch can I apply my touch, unless you have removed yours. (AUGUSTINHO, 1995, pg. 96-97)

In fact, image and sound, essential elements for immersion in the gaming experience, have a higher capacity in relation to the other senses, however abstract this analysis may seem.

Unlike a film, even though there are films included in games, playing the game itself is an activity in which we interact with images produced in real time. That is, there is a *engine*, a graphics engine that, through a complex programming and processing language, generates images at the same time that the player is entering commands, in real time, at that instant. If this were not the case, there could be no interactivity with the video (and other elements), because, by definition, a simple film is a ready-made image that is independent of the facts of the real world that surrounds it while it is reproduced, unless, of course, , break or render the visual interface unusable.

This characteristic, in fact, is one of the great frightening factors that games bring, as it is the *engine* which allows a certain virtual and/or real event to occur, depending on who is playing! In other words, it is as if it were an autonomous being that reacts to the different actions that can be inserted. Obviously, with our current technology, we are restricted to a small number of possible commands, but sufficient to characterize a conversation, such as we talk to each other. As we have seen, this number of chances for interactivity is only a matter of time.

Let's call it *Specific Effect*(EE) the real and virtual facts that occur respectively to each type of thinking thing. I speak of real and virtual because, as we have seen, unique events occur when a certain thinking thing, in this case, a human, interacts with the video game, in the virtual 3D world (how many times the character failed the objective, for example) as well as in the 3D world real (the types of emotions that a given experience caused by the video game can cause).

The fact is that EEs are legitimately *asocial interaction*, like any other, because the main factor that characterizes it is the real-time reaction between the *individuals*. We must understand "real time" as the famous term "live", that is, imprecisely, when there is a "small" interval of time between the responses of speakers and interlocutors. Even more so since this interaction is something visual, in a world in which the concept of reality generated maxims such as "I only believe by seeing", having visuals with increasingly detailed textures, close to the images we see in that concept of "real" mentioned above, from the sense common; images made *instantly*, based on motion capture, with mechanics whose fidelity to our

Physics are increasingly indistinguishable from the real world, the power of vision is one of the best weapons to this electronic experience shows its value and, not surprisingly, was chosen from the beginning for the video game concept!

2.5. Sound

From sound effects created by instruments and delayed effects to the recording of sounds taken directly from reality, they say that sound is, alongside image, one of the best instruments for immersion in the virtual world. Augustine, in the same book above, argues in favor of it:

We can in the same way hear, at the same time, the same voice, and so, even if my ear is one, and yours another, yet the voice we hear will not be one for you and another for me. Nor does part of this voice go to your ear and another to mine. But, on the contrary, the sound as it was emitted, in its identity and totality, will make each of us heard equally and at the same time. (AUGUSTINHO, 1995, pg. 95)

He, therefore, puts hearing and vision on the same level.

A final reflection on image and sound is that, in general, we ask ourselves what a technological advance would mean for *in addition* of reality or if we would be stuck with an alleged copy of what we call reality. There is the possibility that an image and sound are more reliable than *own* the real world? But, this is a performative contradiction. After all, we need a comparison parameter to define whether something is faithful to this parameter or not. Therefore, video game technology has the potential to *resignify* reality as we know it (if it hasn't already).

2.6 Bugs

Just as making mistakes is human, considering, for now, the video game as its product, it is natural that it presents some problems. In fact, making mistakes is human because only he judges what is right or wrong, as far as we know, even though we know that it is impossible to accomplish such a feat. What we do, at most, is define what is right or wrong and judge from there, but we will never know if the thing or fact judged is, in itself, right or wrong. In fact, the very concept of “right” would need to be evaluated as right, falling, as we have seen, into an infinite regression of analysis.

Ignoring this, the history of *bug*, briefly, tells how in the past, in the early days of computers, the machines were gigantic and occupied entire rooms. In this way, macro bodies, in this case, mosquitoes and other pests, found it quite easy to enter the mechanisms and circuits of these devices, causing short circuits and other problems, causing the machine to operate irregularly, bringing results different from those expected.⁹ Although, nowadays, there are no spaces for such foreign bodies, the complexity of the operating boards, as well as the programs that operate through them, is much greater and, consequently, increases the probability of problems occurring, as the number of tasks increases. that can go wrong.

The big problem with this, in an electronic game, unlike conventional, face-to-face games, whose rules are abstract and “untouchable”, theoretically unalterable (unless someone cannot or pretends not to understand), is that problems like these *alter* the rule of the game relatively randomly. In any case, this is very serious, in fact, in theory, decisive, for *disqualify* the experience as a game or, at least, as “this” game, as the rule was changed, without prior notice and consensus from the players.

However, because we recognize our inability not to make mistakes, although there is no formal warning about the existence of *bugs*, as it would be commercially unviable, there is an acceptance by players of a certain acceptable amount of these defects that do not remove the game from the game concept. This section is very important, as we explain here, why the game is not a human creation, since, given that humans make mistakes, if they were its creator, they would be destroying it as they create it (since destruction is an error!). Heidegger defends this with another argument, in this comment by Fábio Valenti Possamai, in his 2010 article mentioned above:

Technique is not a plan that we project, but it is also not something that projects us – we are neither masters nor slaves; We complement each other, we are dependent on each other. For Heidegger, modern technique, in addition to being foreign to everyday language, is incapable of being measured or controlled by man – this is perhaps our greatest illusion. According to Heidegger, technology should not be seen as dangerous, as it would then be considered as having an instrumental meaning and would be subject to our command. (POSSAMAI, 2010, p. 26)

2.6 Plot

Being an entertainment medium, in our view, video games try to capture our attention with all of the above elements and could not fail to use one of the best resources, which is telling a good story.

9 You can read the full story at this web link: <https://www.dbvis.com/thetable/why-are-they-called-bugs/>

From the bards to e-books nowadays, so that the thinking thing is always thinking about something and thirsty for information, there is nothing better than a good adventure, full of twists and turns and facts packed with action to occupy our minds.

It is worth remembering that, according to our current definition, puzzle-type games, such as Patience, Sudoku, kicking a ball against the wall, cards, chess, in short, everything that does not have a plot, we call it a “pastime” or “competitive game”. The video game, in turn, will always present us with a story, no matter how simple it may be, just as there are card games, such as *Magic the Gathering*, which has a *lore* (plot), which justifies the rules and events of a match. Also, there are electronic games, such as *Counter-strike*, which were designed solely for competitions.

3. Epistemology of video games

We will list a set of fundamental characteristics of video games in terms of their interaction with humans and how we deal with what we can or cannot know about a digital reality.

It is always possible to achieve the goal (LFVG): The fundamental law of video games, unlike many games in which they can end without the player winning, in video games it is the player who defines the passage of time that concerns his actions in this reality, so that even if he is defeated and the famous screen of the *Game over* (end of game), it only serves as an interface for the player's reality but, for the flow of the game, which has a beginning, middle and end, by definition, its reality is suspended waiting for the player or there is even the possibility of its world persist (theory of *Persistent World*), when we can consider that its events continue to occur (passage of time, day and night, the walk of uncontrollable characters that influence the player's status), but that do not change the possibility that the player will finish. In other words, LFVG allows us *predict* that our relationship with that world has a purpose and this mission is achieved if the rules of the game are well respected. There are games, however, in which the player may be very incompetent and unable to witness the end (“the reset”) of the game.

Resource contingency is always possible: Programmers always think about a margin of error for differences that may exist in the performances of different thinking things and, therefore, calculate an average to apply resources to help the player (the game's difficulty). In other words, developers try to know the limits of human cognitive capabilities, both plus and minus. Therefore, there is a minimum that must be done, both in terms of plot and performance, in order to reach the ending. Likewise, although there is a maximum of collectibles or a sufficient number to be able to do everything within the game, depending on who is playing, they may have more than necessary to reach the end of the game, but, as the player himself he can create his own rules in that reality, he can give himself a new objective based on this contingency (for example, a self-imposed mission to win the game without being defeated once).

You can always try again: It has a lot to do with LFVG, because what matters in the game is the flow of its own time and not ours. While we are trying again, for the actual development of the video game, the attempt that counts is the one we succeed in. However, there are games that “see” the number of attempts and make this influence the final results, but only in the results that concern the real world, because, if a game determines that the character's death is the end of the game, it would be in contradiction to himself if he claimed that he survived, by giving another chance, even after he died.

External factors cannot influence the results: As has already been explained, video games have their own reality and, unless the fourth wall is broken, nothing of ours should influence it. To do this, programmers invented a feature called *Pause*, with which we can stop the flow of the video game in our opinion (we know that nothing prevents it from persisting), as there are a series of unforeseen and expected events that someone goes through while playing, from going to the bathroom or helping a family member after an accident (or being called by your mother, creating the famous phrase “mother, online games are not allowed *pause*”).

Although there are games or certain parts of them in which this is not possible, they do their best to ensure that these external factors are not capable of altering results, unless the player does not use them and leaves, for example, the controller dropped and the character immobile, being the target of actions harmful to the health of your avatar.



The game is not interested in the image and sound conditions in which it is presented, nor with possible power outages, these being factors of our reality, only worrying about being processed, through the machine we created, the console, and manifesting its concept, that is, the sum of all the elements we exposed. In games like *Resident Evil*, which aims to cause fear, appeals a little to this side of our reality, breaking the fourth wall. In it, we need an item called *Ink Ribbon* (ink for an old typewriter) so that, only after finding the typewriter, you can save your progress (losing progress is one of the biggest frustrations in *gamer*). In other words, in addition to the dangers of the game itself for the character, there is pressure on the player to think twice before going to an unknown place without saving, because he didn't have the ink or is trying to save money, taking advantage, to complement the terror, of this difficulty of the external factor: either save, revealing the fear of wasting time in real life, or risk it.

Explanation of your reality: This last rule is very important, especially in today's more realistic games. It is necessary to make it clear, through explicit explanations or subtle suggestions, what can or cannot be done in a game, otherwise the player will have the right, through an analysis of logical possibilities, to think that he can, for example, pass through a wall and spend the rest of their days trying, disqualifying the game as such because the rules were not exposed, much less followed. Basically, it is a general rule of the game that demands an explanation of the rules of a given game, its reality, what is possible or not, or players will not be able to follow it and, therefore, it will not be a video game.

Conclusion

The objective of this writing was to define the concept of video games, what it really is and to expose that what we have, in the so-called games industry, is just a type of manifestation of its existence through which we become aware of its presence.

The game allows us to realize something about ourselves. That reality is made of rules: we cannot simply do whatever we want; that we are always forced to think as we are something: since the cogito, human beings are always thinking and looking for problems to solve; that society is hierarchical: that we have winners and losers, that it is possible to reverse this situation, as we are equal, human competitors; that fiction is a mirror of reality with its own laws: not only because of the realism it has achieved, but because it establishes itself ontologically as a reality separate from ours; that we can learn through its own dimensions: we can experience, simulate and test real or unreal things, preparing ourselves for the material, finite and mortal world; that we are afraid of acting: of the consequences, that we make mistakes, that we want to try again, that we want to be perfect, competitive, that we want to win.

References

- ARISTOTLE. *Metaphysics book 1 and book 2; Nicomachean Ethics; Poetics/Aristotle*; selection of texts by José Américo Motta Pessanha; Translations by Vincenzo Cocco, Leonel Vallandro and Eudoro de Souza – 2nd ed. – São Paulo: Abril Cultural, 1984. (The Thinkers).
- DESCARTES, René, *Meditations; Objections and responses; The passions of the soul; Letters/ René Descartes*; introduction by GillesGaston Granger; Preface and notes by Girard Lebrun; Translated by J. Guinsburg and Bento Prado Júnior. – 3rd ed. – São Paulo: Abril Cultural, 1983. (Os Pensadores).
- AUGUSTINE, Saint. *Free will*. Translated by Nair de Assis Oliveira. São Paulo: Paulus, 1995. WITTGENSTEIN, Ludwig, *Philosophical investigations (1953)*; Translated by José Carlos Bruni. – 3rd ed. – São Paulo: Abril Cultural, 1984. (Os Pensadores).
- PLEASE, Fábio. *Technique and the question of technique in Heidegger*. *Intent*, ISSN: 1983-4012, 2010.
- SEARLE, John. *Intentionality*. Cambridge University Press, New York, 1983.
- _____. *Speech Acts*. Cambridge University Press, New York, 1969.
- TAVINOR, Grant. *The Art of Videogames*. Wiley-Blackwell. John Wiley & Sons Ltd, The Atrium, Southern Gate, Chichester, West Sussex, PO19 8SQ, United Kingdom, 2009.