CRITICAL DIGITALITY: FROM THE VIRTUAL TO THE DIGITAL

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Abstract

This paper argues that the idea of "virtual" or "virtuality" belongs to a theoretical perspective that intends to explain components of the phenomenon of technological society nowadays. Firstly, the digital perspective is explained in its ontological basic structure: binary codes that organize a physical set or hardware according to logical rules, therefore the idea of a network society, virtual communication and digital human beings are concepts that are not really grasping the problem of the digital technology in our society. A digital perspective assumes the need to understand digital technology in its physical functioning, which allows a complete picture of the problem and enables the subsequent critical analysis of the virtual perspective. Secondly, the virtual perspective is analyzed from the digital perspective to its main metaphysical assumptions: simulation, as a presupposed moral ideal; and functionality, as a presupposed instrumental ideal. Finally, the conclusion explains the possibilities given by the digital perspective in order to assume new challenges of the digital universe, in contrast to a virtual perspective which would pre-limit such possibilities to previous needs to be satisfied. Thus, this paper rather than showing a well-defined argument it urges a reorientation of our notions of the virtual and the digital.

Keywords: *digital; virtual; simulation; codes; hardware; software.*

Digitalidad crítica: de lo virtual a lo digital

Resumen

En este artículo se afirma que la idea de 'virtual' o de 'virtualidad' pertenece a una perspectiva teórica que pretende explicar los componentes del fenómeno de la sociedad tecnológica de hoy en día. En primer lugar, la perspectiva digital es explicada en su estructura ontológica básica: códigos binarios que organizan un set de elementos físicos o un hardware de acuerdo con reglas lógicas. Por ende, la idea de sociedad en red, comunicación virtual y seres humanos digitales son conceptos que no aprehenden realmente el problema de la tecnología digital en nuestra sociedad. Una perspectiva digital asume la necesidad de entender la tecnología digital en su funcionamiento físico, lo que permite una representación completa del problema y permite el análisis crítico subsecuente de la perspectiva virtual. En segundo lugar, la perspectiva virtual es analizada desde la perspectiva digital hasta en sus principales suposiciones metafísicas: la simulación, como un ideal moral presupuesto, y la funcionalidad, como una idea instrumental presupuesta. Finalmente, la conclusión explica las posibilidades dadas por la perspectiva digital en aras de asumir nuevos retos en el universo digital, en contraste con una perspectiva virtual que podría pre-limitar dichas posibilidades para que necesidades previas sean satisfechas. Por ende, este artículo, antes que mostrar un argumento bien definido, exhorta a la reorientación de nuestras nociones acerca de lo virtual y de lo digital.

Palabras clave: *digital; virtual; simulación; códigos; hardware; software.*

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CRITICAL DIGITALITY: FROM THE VIRTUAL TO THE DIGITAL[1]

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Is the idea of virtuality (the virtual) sufficient to understand all the problems surrounding new technologies? In this paper we claim that the idea of virtuality does not concern the problematic of new technologies; on the contrary, virtuality diverts our understanding of such problems. We identify the virtual perspective as the object of discussion in this paper. To accomplish our goal, which is to make a critique of virtuality, we will propose that with the concept of 'digitality' problems about new technologies can be better understood; for example, the moral debate around technologies can be overcome, or at least, put on a different plane on which it would be easier to be solved; we will call this the digital perspective. In general terms, we consider that the idea of virtuality focuses on the external aspect of the phenomenon, whilst digitality implies a clear and precise ontology as a starting point from which more abstract and superior levels of discussion can be fairly developed. Virtuality is an exclusive concept because it does not conjugate the subjective perception that humans have of technology with an objective explanation of the technical and physical phenomena.

Digitality, on the contrary, is inclusive, for it moves from the physical to the metaphysical, from the mediated to the immediate, from reality to the real.

1. A digital perspective

The origin of our proposal refers to an intriguing reflection on the way we can understand the internet. The internet is normally understood as a massive communication media network. As such, it is basically a web of computers connected through a series of standardized protocols enabling machines to communicate with each other. One of the systems or services that have been mostly used and through which it is best known is the World Wide Web. To think of the internet, for most people, is to think about the WWW and, in this context, internet is understood essentially as a web or a network, just as if it were its unique essence, or exclusive specificity. But if we inquire into its characteristics, nevertheless, such fact cannot be assumed. Networks existed prior to internet. Why does the idea of network does not suffice as a basic characteristic of the internet?

Let us assume the internet as a mass media communication system. Is being a network its main character? The internet belongs to the set of networks, not being the set itself. Even when we usually think of it as a ubiquitous network, the internet's core is found somewhere else: its central characteristic is that it is a digitalized network[2]. But there is more to it as the internet can incorporate within its digital capabilities, and thanks to them, previous webs or networks. The internet has become a digital ground or plane on which all previous forms of communication have converged into a new and unique way, which is the digitalization. In other words, even though the internet dwells the previous communicational webs, it does not establish all those networks by itself and therefore we cannot assume this (networking) as its true specificity. Instead, the main characteristic of Internet is to territorialize (Deleuze & Guattari, 1987)[3] all the communicational

[3] We use the concept of territorialization as Deleuze and Guattari construct it in their work A Thousand Plateaus. This concept explains a relation between two or more heterogeneous beings, so that none of them is more important than the other. On the contrary, each one plays a part in a mutual assemblage, they cannot be understood same as if they are neither assembled nor connected. Deleuze explanatory example is the relation between the wasp and the orchid, where the instant in which pollination occurs, thanks to the link between these

networks on a digital plane because it has the capacity to transform them into a homogeneous system. Networking is not something new established by the internet, rather digitalizing a network and digitalizing other forms of previous networks surely is. For example, nowadays we have achieved the digitalization under a standard code of all the existing audio and video signals. It is obvious that not all formats are equal, but the codification of sound or image as binary information is standardized.

There indeed are deep differences among audio and video formats, but all formats have similar physical processes that are necessary for any digital code to properly work as such. There is always a Hardware/Software connection, transmission and storage of electric pulses or data. In this sense, the great advance with this territorialization is that everything television, radio, cinema, telephone, education, science, etc., has been placed on the same digital plane; the connection between these prior networks is a possibility insofar as there is a process of digitalization. Thus, as television, radio, telephone and other kinds of communications are transformed or codified digitally they are homogenized as digital signals, as digital information.

It is obvious that this process towards homogenization strengthens the communicational network as it increases its scope and frequency, but it does not set by itself the communicational network. In any case, homogenization implies the integration of previous communicational webs in a single network. But, how have we come to do this and make it happen? Let us see.

Digitality has its own physical support. And as we already have insisted, a proper understanding of that physical support is a key component in any endeavor to grasp the ontological basic structure of the digital. Given the rise of electricity networks during the first half of the XX century, and the formation of an electrical society (McLuhan, 1962) the two last decades were important as humans constructed a completely new relation with electricity: the digital manipulation of it. This technical development has three important aspects that constitute the specificity of digitality: its intensity, frequency and transformation. Electrical intensity allows codification and speed; frequency enables repetition and error correction; and transformation grants communality of signals.

On the one hand, electric digital flows must be distinguished from normal or metric energetic flows by means of their size or intensities ($\pm 5 - 12$ V), not by their speed. Mainly because all energy travels at almost the speed

two beings, is ontologically different from the wasp when is separated from the orchid. In this case, communication networks are not the same thing as when they are digitalized and assembled, as in the Internet.

of light depending on the medium. But, with this low intensity electrical flow, it is possible to differentiate energy packets accurately and faster. This allows the digital code of zeroes and ones to be applied to energy, which means that energy does not flow raw; rather, it means that electricity becomes informed energy according to certain digital code. Because energy packets are smaller, communication speed increases in comparison to analogical signals. Accordingly, as semiconductor microchips have been qualified and their logical relationships have become more complex, the increase of speed within the web is reinforced in regards to any analogic communicative web.

On the other hand, the gain of fast coded energy flow entails an increase of frequency, that is, it allows an augmentation of the possibilities to repeat exactly the same message. Although in a digital network, the accuracy in repetition is much greater than in analogical networks, the important feature is the possibility to verify and correct. Thus, the scope of the digital network, also in a precise sense, is greater. For example, in television signals, air connections require direct visual interlace between antennae, but when it comes to optic fiber digital connections this is no longer necessary, because the conductors for the digital informed energy are able to transmit the signal until the end of the connection; even in wireless transmissions, like WiMAX, physical obstacles can be surpassed. Since digital signal is transmitted as a codified flow, it does not depend on a constant repowering but on the fact that when it reaches its destination the signal is rebuilt, remade in the device that receives it.

Finally, digital signal is, in a sense, a common signal to which all information can be translated. This entails that all digital information (flows of energy from beginning to end) is arranged or formatted in particular ways but, at least theoretically, formats can be translated from one to another: files of text can be read by different word processors if a conversion is done, music can be compressed to various types of files using a conversion software. It is worth remembering what digital information is and what it means that humans, as analogical beings, can access digital information. In fact, we are not digital beings because our existence is not given by a digital code composed of zeroes and ones, but by a much more complex code, let's say, as science teaches us so far, the DNA code. Paradoxically, some theorists have considered that they are digital beings because of their extended use of devices that follow a digital code and they try to expand that very same conclusion to the rest of the humanity (Clark, 2004). But, depending on how this last claim is understood we could agree with it. From our perspective, the extended use of digital devices is not enough to consider humanity as digital, mainly because we are always alien to the digital universe, for we

cannot access it directly. On the contrary, digital information from the digital universe (Maldonado Serrano & Rodríguez, 2014) ought to be transformed into analogical signals in order to be perceived by humans in appropriate metrical dimensions. In other words, just as there has been a transformation to zeroes and ones, a codification, there also must be a de-codification to interact with the analogic world of humans. All digital information needs to be transferred, transformed and recoded from the digital universe to the analogic world in order to be heard, read, seen, felt, etc.

Thus, in order to be perceived by our senses, digital information has to be analogized in situ by our television at home, by the computer in our office, by our cellphone, etc... Hence, the quality of all digital signals, grosso modo, is better than that of the signals transmitted by analogical devices, because the digital signal, during its process of transmission, does not suffer decay, inasmuch as the normal deterioration always is rebuilt at every station which repeats information. By the same token, when that information is input in the digital receiver device it is actualized and analogized. That's the case of CD's which, technically speaking, do not read music as magnetic devices do, such as vinyl, but read it as a bunch of zeroes and ones. Depending on the device at home, those zeroes and ones will be transformed by the Digital Analog Converter or DAC in order to be listened to. That is why the same CD can sound much better on some sound systems; it all depends on the processing capabilities of its internal DAC (speed, accuracy, etc.). Concluding this remark, we do not have direct access to digital information, but as users, we only perceive analogic phenomenon. As analogic beings, we can access to the same information once it is digitalized but, in fact, when it is no longer digital information; that is, when it is taken back to our analog way of perceiving. Finally, it is worth to recall the fact that the digital universe is within the analogic world.

Thus, we have introduced our main assumption which is our starting point; obviously, it is an arguable assumption; but it will be the cornerstone of this paper. We will call this the digital perspective. Let us have a look at the opposite perspective we mean to discuss, which we will call the virtual perspective.

2. The virtual perspective

So, what is virtual reality? What does 'virtuality' mean? Do these terms refer to something different? Delusion permeates our way of understanding virtual reality[4]. The regulatory ideal of all our actions in its favor is that we

[4] Adriano Fabris has elaborated a different critique to the use of the idea of virtual to explain digital phenomenon. Although we agree with its hermeneutical approach, this paper

cannot distinguish between what it is presented to us as virtual and what it is not, no matter how advanced the technology in charge of producing virtual reality is. 'The Matrix' trilogy of the Wachowski sisters exemplifies clearly this regulatory ideal: just a few can go out of virtual reality bounds, while the rest of us cannot distinguish between the reality and its virtual counterpart.

Under this ideal we find a core, a basic idea. What is the core of the virtuality ideal? Our answer is simple: delusion (Turkle, 2009). Everything seems to be found in the idea that perception cannot distinguish between what is virtual and what is real; perception has to be the subject of deception, it should be deceived. We should develop something like a Turing Test, in which, through a conversation, it could be possible to determine whether or not artificial intelligence is reached in order to measure the quality of virtualization achieved by certain couple hardware/software; a test to confirm the fulfillment of the ideal would be needed. However, it is out of the scope of this critique to develop such a test, in part because we see in such ideal a delusion with respect to the digital.

Structuring such ideal we can find at least two basic assumptions. Ironically, these assumptions undermine the idea of virtuality instead of consolidating it; such ideal corrupts the comprehension of virtuality. And, by the same token, such internal corruption explains why an accurate comprehension of the digital universe is not easily achieved. On the one hand, a strong distinction between reality and virtuality is held. This means that even in the case when we could not distinguish between one and the other, the idea that one is the best delusion, while the other is the original underpins this conception. Always, at least ideally, there would be an original even if we are not able to distinguish between the original and the copy. This seems of great importance for the argumentation because the consequence is not the suppression of the original, but precisely the opposite, that the original will always be present even if we cannot detect it. This would be a tacit moral principle; inasmuch as virtuality is understood under this concept of delusion against an original there would be economical, legal and political advantages.

On the other hand, functionality is the second interpretation given to the virtual. The previous distinction leads us into the functional aspect of virtuality. While it seems an assumption derived from the previous one, it has its own significance. The digital just seems to have a social or human function as it serves to the goal of simulating something belonging to reality. Evidently, it is necessary to specify the variety of implications under this

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has a different scope, for it is not a historical critique but a technical critique (Fabris, 2009).

assumption, but for now this would be enough. Here we find that virtuality as functionality implies an instrumental understanding; therefore, virtuality would be presented as an improvement for human existence thanks to the supposed replacement it makes of reality, even if the substitution could not be achieved, according to the regulatory ideal.

Both assumptions, the moral, which consists in maintaining within the boundaries of the digital the difference between the copy and the original, and the instrumental, which consists in interpreting the digital always in relation to its functionality for humans, both deserve a strong critique as they are presented as the limit to understand the digital. In this sense, virtuality prevents us from approaching to digitality. This means that the virtual perspective distorts the phenomenon of the digital and does not explain the actual social phenomenon proper. The critique here proposed could show that the concept of virtual is not enough as a guidance to understand the digital phenomenon. Even more, the expression 'virtual' does not imply a relationship from the copy to the real; rather it means an enlargement of reality itself, by means of digital media. Now let's see each one of these assumptions.

2.1. The problem of simulating reality

The ambition to make exact copies and to simulate reality, seems to be naturally humane. We see it in art, both in naturalistic or hyper-realistic practices, and even in the interpretative and repetitive exercises of music, dance and the theater. Basic human behavior is learned by simulation, as in walking, running or talking. We can also find copying in wardrobes, not just those of armies but also in other groups and social classes which are always looking forward to maintain uniformity up to a certain degree; copying an original design for every subject that belongs to a particular human group is a must. Perhaps, the most ambitious enterprise has been the alphabet itself, particularly, once it reached the level of printing (McLuhan, 1962). Learning how to write implies the necessity to copy with the hand what is seen by the eye. In this sense, it was not necessary to wait until the digital era to have the experience of making exact copies or of simulating. Simulation is a human act, rooted in the way human beings learn and think. For this reason, it is clear that the problem posed between the copy and the original is not a problem which in itself has arisen as an exclusive aspect of digitality.

Thus, how to understand the assumption that conceives delusion as a core of digitality? Even if the relationship copy-original is not by any means obvious, simulation itself has been a common way to interpret it. But, does

this mean that simulation can be understood as a copy? Not exclusively. Simulation, understood as a particular way of copying, is independent from digitality. The capacity to make appear or to make 'as if', can be easily found in the analogical experience of the world without an appeal to digitality. But if we examine this particular way of copying, as simulation seems to be, we can understand the flaw in the idea of virtuality much better.

Thanks to the technological developments that led to new forms of simulations, it seemed that the concepts of copy and simulation are inseparable from digitality. In particular, nowadays, when it is used, the idea of virtuality becomes suspiciously clear, for it pretends inseparability between simulation and virtuality. We have to insist, however, that the simulation attributed to virtuality will never achieve the continuum of reality, for the former is a discrete series, while the last is continuity. Even if there is a digital simulation of any phenomenon, humans will always understand that the simulation is not the real thing being simulated as such. This was understood very well by John Searle when, criticizing what he called the strong program of artificial intelligence, denies that reality could be replaced by simulation:

> *So, we can do a computer simulation of the flow of money in the British economy, or the pattern of power distribution in the Labour party. We can do computer simulations of rain storms in the Home Counties, or warehouse fires in East London. Now, in each of these cases, nobody supposes that the computer simulation is actually the real thing; no one supposes that a computer simulation of a storm will leave us all wet, or a computer simulation of a fire is likely to burn the house down* (Searle, 1980)

Consequently, our point is related to that of Searle's because what we are saying is that simulation is unable to duplicate some features of reality and therefore no simulation by itself ever constitutes a duplication of a phenomena.

As we mentioned earlier, simulating something means that perception experiences something as if it were another thing, for example, flight simulators, financial simulators, etc. Simulation is an excellent tool to train, to predict, to probe, to learn, to entertain. Despite the former, we should not forget that human perception is three dimensionally and metrically limited: there are sound edges, visual edges and tactile edges. There is more to be seen, heard or felt, beyond what is actually seen, heard or felt. Precisely, due to digitalization the perceptual limits of humans can be overcome. It is easy to be seduced by this idea of digitalization as the perfect medium

for simulating reality, and therefore, to interpret digitality as virtuality. The question is: why has digital technology enabled us to handle such subtle electric flows up to the point that the digital overcomes the limits of human perception, and therefore seems to be a perfect simulation? In this way, nowadays with proper machines the idea that virtuality will be indiscernible from reality becomes convincing.

But if we compare this regulatory ideal, which we find in the idea of virtuality, with some digital realizations, then we shall note, paradoxically, a fatal flaw in the intention of perfect simulation. This flaw inverts the ideal of virtuality, presenting it as the only realization of digitality. In fact, if the ideal of a perfect simulation contains a delusion in its constitutive core, what it is interesting in this case is not that there is a duplication bit-by-bit of reality, with accuracy pretensions, but that the experience of reality in itself is changed or improved, and therefore reality is enlarged or enhanced for us humans. Thus, we can start to understand why the idea of virtuality in the sense of simulation cannot account for what can be achieved by means of digitality.

To put it in different words, digitality instead of being a simulation environment is rather a space for configuring a reality which is not strictly simulated, because it is not what is experienced by human perception, but instead it constitutes a reality that makes possible to have new experiences, i.e., reality, when enlarged, provides us with new perceptions. Thus, the possibility to perceive an aspect of reality which is not given to us in a usual perception remains open. This shows us the potentiality of digitality, not as virtuality but as a breakdown of reality towards other possibilities not given to human perception in analogic reality (three dimensional and metric). Let's see two simple but interesting cases.

We can take a look back to the cinema in order to understand how digitality makes possible what analogically is impossible. Again, The Matrix. In their trilogy, the Wachowski sisters create a new time-image[5]: the bullet-time-image. Throughout the movie there are many scenes made up with this time-image. The first scene of this time-image is when Trinity's kick to a cop is visualized by the camera from multiple perspectives before she delivers the hit; this time-image is found along the first part of the trilogy and it is

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[5] Gilles Deleuze proposes the key concept of movement-image and time-image to understand the novelty of cinema. He argues that cinema can only be understood through these signs, which are concepts, because they show us what cinema is about: not photographs in movement, but the capture of movement itself with the minimum of the physical to support movement; not action or thought, but the minimum of action itself to support an experience of time (Deleuze, 1986, 1989).

improved throughout the second and the third parts. At its beginning, "the magic of cinema" was that images, situations, characters and impossible events were produced through camera tricks, double expositions, zooms and others. The achievement with the bullet-time-image resides in the efficient combination between camera manipulation and digital manipulation of images.

Specially, with digital rendering, which is the conversion from a digital calculation process of images and sounds to an on-time audiovisual flow for human perception, it was possible to enhance significantly well-known cinema techniques. Digital rendering, instead of being achieved by means of a complex of couplings between cameras and other devices, results from a direct manipulation of the set of images obtained by digital means. In this way, digital rendering opens a new possibility for cinema as it gives us a completely new image-sign which would have been impossible to create employing old analogic means. Therefore, the bullet-time-image could not be conceived as a result of reality but as an exclusively creation of digital cinema. On a daily basis nobody can live in a bullet-time, but as a creation of digital cinema, bullet-time expands our perception of reality because the circular movement of the camera is accepted as if the viewer did it.

The second case can be taken from the financial system. The so called virtual bank is, fortunately, anything but duplication, nor a copy nor a delusion of a real bank. It would be disastrous if long queues in banks were simulated on Web pages, or if the time taken by the teller to count paper money were simulated in an ATM. The virtual bank is not a simulation of a real bank, instead it counts as an enlargement of those possibilities that are unthinkable for the bank out of the digital universe. Here we can appreciate the difference between the real meaning of virtuality for the virtual bank and the sense of virtuality as simulation above mentioned. And precisely in this difference we note that we are no longer in the realm of virtuality but in digitality. The virtual bank as digital is the bank that is impossible in the analogical world, but it is perfectly possible inside the digital universe.

Perhaps we can explain why the idea of virtuality has spread so much when we refer to something beyond reality. However, such explanation, for the moment, may not be complete. There has been a preparatory daily exercise in the popular aesthetics. This would have been shaped by cinematic experience. Cinema is where a non-intentional shaping has been given in order to overrate simulation as the key to virtuality and virtuality as the key to the digital. A movie is like some kind of simulation of reality. That's what any spectator has to suppose, in order to enjoy the movie. Maybe this continuous repetition is responsible for our tendency to think that

representations have the only aim of simulating reality. Although this is not enough, for it is only a 'maybe', we consider this as a possible explanation of why virtuality and simulation are so tied. We would need to run more experiments and arguments to confirm this hypothesis though.

At this point, apparently a big problem arises in the face of the idea here defended because virtuality offers not one simulation of reality but it produces a lot of sensory experiences in different possible worlds. But, precisely the point here is that the concept of virtuality is incapable of explaining the enhancement of reality. Rather, a digital enhancement of reality undermines previous perceptual experiences of reality and forces a partial abandonment of these. Not only banks are understood in new ways but, for example, digital microscopes lead us to change our view of the micro-physical world. Computational simulations of, for example, the origin of the universe or of life, permit a new understanding of reality itself; here, beyond simulation, reality is configured in new ways of understanding, as models.

Let us now proceed to examine the second component of the core of virtuality to see why it also contradicts such idea.

2.2. The problem of functionality

The needs that the digital is intended to meet are determined a priori from an economic, political and legal perspective and are projected onto the digital universe. Musts and don'ts are moral parameters strange to the digital universe as such. If this universe would not have had the ability to emulate or duplicate real life up to some degree, any legal constraint applied to it would have been excessive. The human ability to symbolize and re-symbolize enables humanity to reckon code, a software or a technical sequence of logical symbols, as good or bad. A digital photograph, a sequence of zeroes and ones, can be allowed or forbidden inasmuch its symbolic content was already sanctioned outside the digital universe. In this sense, inasmuch as the uses of the digital are regulated, the needs of the digital are also regulated.

The projection and its success of the needs into the digital universe will be directly proportional to the degree of its functionality. Effectively, very useful software in commercial transactions, for example, is legalized from the world outside the digital universe as it can represent monetary exchange. Functionality, in this sense, is always extrinsic to the digital. However, digitality enables us to pose in a different way the problems around the relations between the legal and the digital. The virtual perspective tries to understand what legal norms have to be assumed within the digital and therefore it overflows the digital with laws that are not thought for the

digital itself but for something extrinsic to it. From the perspective of the digital universe we ask why and how these regulations can and/or must be accepted as internal limitations on the digital.

A good example of this problem, again, is the virtual banking system. Questions related to this issue are not formulated with regard to the system, about the system itself or towards improving the financial model but lead simply to understand what digital system is more reliable. The digital is, here, externally determined as if it had nothing to give to the financial system.

The example of 'virtual education' can also show that the virtual view is predominant. Pedagogic inquiries are called off, and the circulation of information becomes the central issue for this type of education. The most formerly criticized pedagogical view is now blindly placed in first place. Master classes are, at best, video recorded and transmitted online as the highest didactic approach. Coverage, quality, costs, space saving and a manifold of didactic mediums are proper of a metric for a three dimensional analogical world. Again, an external need is imposed over the digital possibilities and the digital universe is determined to function under a priori conditions (to train the student). The virtual perspective silences pedagogical and didactic renewals that the digital universe could support.

Many other aspects can be taken into account: software learning developments became useful to suffice various needs. This kind of software was mainly based on Skinners educational machines, and not on a renewed view of pedagogical processes. Instead of bringing new ideas into educational practices, former superseded views were brought back despite the criticism they once arose.

A more complicated issue arises from our understanding of knowledge itself. Once knowledge is digitalized, information takes its place, and knowledge is thus understood as a thing, not as a process or an event. It seems that the meaning of thought is no longer important; rather the question of how to learn and what amount and kind (quality) of information to gain, becomes central. Knowledge is replaced by information, understood as things being transferred from physical warehouses (hard drives, flash memories or cloud storage) to biological warehouses (the brain). Unfortunately, this statement needs its own further development.

From the digital perspective several aspects become clearer than from the virtual perspective. The idea of information going from one place to another is misleading. Information is not transferred, neither physically nor digitally. Firstly, consider that electrons do not travel from the source to the receptor as train wagons from one station to the next do. There is obviously an electronic excitation but the idea of an electronic flux does not mean that

the same electron moves from the source to the receptor. Strictly speaking, an electron is not transmitted. Nevertheless, the interactive play of electrons allows a directed flux. We already know that it has been codified under a binary system. We also know that only the ones have a physical reference, which is the electronic pulse, but the zeroes do not have such reference. It does not make sense, therefore, to think in a transmission of zeroes and ones.

But to understand this phenomenon as a symbolic travel is not an option. This is the most metaphysical aspect of the digital. A CD, for example, where its registry can be represented in binary code, does not lose any of its zeroes or ones. It is not only that there is no physical damage as in former electromagnetic supports, although it has its own type of possible decline. Rather, the registry in a CD is "read", "interpreted" by a gadget which generates its own flux in accordance to the one found in the CD. We cannot go here much further into this inquiry, and these few lines may seem insufficient to convince the reader that with "transmission" in the digital universe, we are not talking about any kind of transportation. Rather this is a kind of exact copy of a symbolic order which is repeatedly copied. To make things even more difficult, we must recall that a hard drive containing PDFs, for example, does not contain the texts. The electromagnetic marks must be interpreted or decoded, for them to be shown as texts. Put it in this way, the digital perspective shows that information cannot be understood as content. An electric flow turns information only if it is interpreted or decoded. This interpretation is a metaphysical process which purports certain physical conditions that we have learned to manipulate thanks to the advance of physical science and the like.

To go further into the problem around the extra-digital functions imposed to the digital universe, we should think of the alphabet. Are the letters we use, are the sounds we hear in spoken language, themselves the information we receive? Or, is it rather a metaphysical reconstruction completed by our brains?[6] This is how the digital universe can be limited by prior needs established outside it and this is how it can be reduced to a simple instrumental virtuality[7].

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[6] These are the same questions Searle is posing in his Chinese Room Argument, according to Rodriguez, et. Al. (Rodríguez, Hemorsillo, & Lara, 2012).

[7] Baudrillard's sense of disfuncionality could be applied here for virtuality would be part of the disfunctional system, or of the symbolization of the digital (Baudrillard, 1996). Digitality would be the aspect of the contemporary functional system, as thought by Baudrillard. In this sense virtuality would be the disfunctional misconception of the digital.

3. Conclusion: The Possibilities of the Digital

The problem that underlies the previous section can be set as follows: digitality can offer new possibilities not expected in the analogical world. But inasmuch as the digital universe only satisfies previous needs from the analogical world, the potential gains of the digital are not seriously taken into account. Paradoxically we find that the functionalities arose within the digital are taken as illegal or are prohibited. In fact, when a need does not emerge outside the digital, instead of satisfying an external absence, it proposes a new desire which is not a lack, nor pleasure, nor a fantasy, rather it is a new possibility[8]. Maybe this is what turns the digital perspective into something dangerous for the statu quo. Maybe this is what the virtual perspective prevents.

Such was the case of Napster. Without satisfying a need of men, it produced a desire which was quickly censored for it overflew the expectations of the virtual. Napster, as nowadays Facebook, destabilizes virtuality and proposes new desires that could not be simply fulfilled by the analogic world, for it surpassed the musical lacks that the virtual had to suffice. Instead of promoting consumption and earnings, the digitality of Napster promoted free circulation of music.

In regard to this aspect, we reach the subtlest problem between both perspectives: to pay or not to pay for something that is just a copy. The analogical world has long extended the idea of private property: land tenure is blindly assumed as indisputable, even if the past demonstrates it had been arbitrarily stolen or conquered. The projection of the validity of land tenure into symbolic property is called intellectual property.

Indeed, inasmuch as virtuality maintains a separation between the original and the simulated, an external original has to be accepted. On the basis of its existence a precise and effective monetary reward has to be granted. If, on the contrary, we were to emphasize digitality instead of virtuality, the grant of property of electric fluxes as digital codes would be more complicated or even impossible. In this sense, we can find a real ground for the Open Software movement.

An example of virtuality as a basis for intellectual property may be seen in pornography. It makes sense to use the expression 'virtual sex', pornographic web pages fill the internet. Why 'digital sex' would not make sense? Maybe because the idea of 'virtual sex' domesticates the imaginary

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[8] Deleuze and Guattari expose the idea of Body Without Organs, to explain desire in A Thousand Plateaus. In this article we have assumed the idea that desire can be easily misunderstood. We also assume that the digital as a plane of immanence produces its own desires, just as any experimentation (Deleuze & Guattari, 1987).

of the digital and it becomes the spearhead of the virtual perspective: reality is simulated up to the point that a sexual experience is real, but since there is someone behind the webpage, a set of actors and actresses, one must pay for that.

We are not saying, though that just the main use of the word 'virtual' grants what we are trying to describe here. Our argument simply states that since simulation and functionality of and for the analogical world are constituents of the virtual conception, virtuality is the best way to interpret any digital phenomenon in order to frame it according to market rules, especially those of intellectual property. On the contrary, a digital perspective frees the phenomenon of commercial duties and enables the digital universe to serve as an enhancer of human experiences formerly impossible.

Nevertheless, the fact that the digital makes this kind of new experiences possible (to share both music and videos, for example) it does not mean that morality has to be excluded. The problem is that in reducing digitality to virtuality it is possible the projection of market goals onto a universe with immense possibilities of offering an open and liberal logic, not seen before in analogical reality. Here lies Richard Stallman's interest for preventing the confusion of Open software, his view, with free software, his opponents view (Stallman, 2010).

Neither functionality nor simulation effectively limits the digital. Only in a prescriptive fashion they intend to limit the comprehension that we really can achieve of the digital. What if instead of simulating our three dimensional world sensorial experiences, digitality creates new sensorial possibilities? What if, instead of following external needs, digitality enhanced our desires? Fortunately, this is already being experienced, in some sense.

What is at stake here is not the capability of the digital to duplicate reality. Rather its capability as a new tool for humans to move through their reality. But the expansion of reality is something more crucial than what Michael Heim, one of the greatest philosophers of the virtual, detects and critiques (Heim, 1984, 1994). The expansion of reality through digitalization cannot fulfill external needs imposed by humans. As discussed above, the difference between the digital universe and the analogical world allows us to understand the potentiality of the digital, that exists within the former only; it does not duplicate the world, rather it is extend it without limits under the conditions and the possibilities of the digital that are mostly logical, which, by the same token, are constrained by hardware conditions.

What does "expansion of reality" mean? Since digitality became a control of electric flows almost at a photonic scale, humans were able to extend their participation in the electric flows thanks to the digital they

created themselves. In other words, humans move in an analogical metric level, as usually allowed by their bodies; and thanks to the digital, we also move in a non-human level in which they project themselves, under logical conditions. Since the hardware is as a photonic highway, which is nothing else than electric fluxes, the speed of movement increases. "Expansion of reality" does not mean a way out from one reality into another, rather it means that a new lower level, which constitutes its natural analogical level has been reached, and the original level is thus expanded. Since what is expanded is conditioned by a logico-mathematical formalism, it gains the boundlessness that belongs to such logical dimension, e.g. there are no limits for equations, for repetitions, digits or cycles.

We would be seeing here a digital transformation of the analogical, an expansion of the analogical to the digital. In this sense, simulation is a derivation of the primary potentiality of the digital, which seems to us that has not been yet taken into account in the research about the virtual. In other words: it is obvious that the digital can simulate our perceptual world in a metric and analogical level with very outstanding results and with even better results in the time to come. But reducing the specificity of the digital to one of its manifestations blinds us to the possibilities that this reality has to offer to humans.

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