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CYBERSPACE AND REAL TIME: THE VIRTUAL BEYOND THE SCREEN

[M. LUISA GÓMEZ]

When talking about new technologies, it is inevitable to refer to the changes that they have generated –and continue to generate, at increasingly greater speeds- in our culture, leading us towards the so-called Network Society [1] or Information Society. This new form of society is characterised by new forms of production, social relations and interactions, of data management, etc. All of which linked to the possibilities of interconnectivity that digital and information technology processes allow for.

At the origins of these transformations we can observe a process of “acceleration” promoted by technologies that we can verify, as Virilio, Gleick or Kern have done, by analysing the evolution of the means of transportation and communication since the end of the 19th Century. In practice, this acceleration consists of reducing the time that is necessary to develop any process, be it travelling a distance (from the application of steam engines to means of transportation, to high speed trains or airplanes), performing complex calculations (increasingly rapid computation processes) or transmitting specific information (from the telegraph to broadband systems).

It is therefore obvious, as expressed by many researchers of the relation between culture and new technologies that this process of acceleration has had, and will continue to have, practical consequences on our relationship and understanding of the complex notions of space and time, or rather of the notion of space-time.

One of the consequences of the acceleration of processes regarding time and space could be defined as “contraction” [2]. When we

refer to time, the greatest expression of temporal contraction given by velocity is simultaneity. This clearly has always existed, yet it was not until the 19th Century that it was fully and consciously experienced –at a social level–, through the regulation of time by the establishment of official time, the emergence of the Theory of Relativity and the development of telecommunications [3] the latter, further enabling the possibility of material experimentation. Only the birth of simultaneity as a conceptual category allows for the emergence of the concept of Real Time, which is fundamental in the current perception of time.

As for spatial contraction, this also appears through the development of telecommunications, that is to say, the possibility of communicating at a distance and in Real Time. It would therefore consist, as Virilio observed, in the suppression of geographic distances in favour of the time of life, in other words, simultaneous time imposes itself on real space [4]. Nevertheless, and despite the possibility of eliminating geographic distances in communication, obviously real-physical space does not disappear in favour of real time. We may therefore consider that it transforms itself, in our imaginary –due to the experience of simultaneity– into a different space: a virtual space, which, with the appearance of digital and information technologies, has become Cyberspace. Summing up, given that, thanks to telecommunications, we lose the notion of physical and temporal distance, we convert this time-space differential into some sort of “mental abstraction” [5]. This is what Giddens defines as “empty space”, which stems from the separation between *time* and *space* – understanding the latter through the notion of “local” as the physical settlements of geographically located social activity. Therefore, until the development of communications at a distance, both of these notions coincided, dominated by “presence,” by localised activities. Moreover, the separation occurs the moment that relations

between “absentees” appear, set at a distance from any possible face-to-face situation [6]. Indeed, we can state that virtual space shall be the greatest expression of spatial contraction [7] as its emergence relates to the development of the notion of Real Time.

Let us now attempt to illustrate this idea that space, thus contracted, becomes virtual space. Let us consider the experience of talking on the telephone. We know that there is a distance between our interlocutor and ourselves, but we unconsciously create a notion of space for this communication. In M. Krueger’s words, “knowing the geographic realities, adults tend to think about communication as the transmission of information from one point to another. Children, on the other hand, believe that if they are talking with someone they must both be in the same place. We base our concept of *place* in the capacity to communicate. In other words, the place created by the action of communicating is not necessarily the same as it is at both extremes of the connection; there is information in each end that is not being transmitted. The information that is communally available for both parties defines the *place*. There is a distinct trend to expand the meaning of being in the same place. We can observe this in the development of transmission systems, from Morse code to the telephone, radio, black and white television, and finally colour television. Each one of these broadcasting and diffusion systems allows us to perceive events from a distance in a successively more detailed manner than with its predecessor” [8]. The notion of Cyberspace (which, as we know, first appeared in 1984, in Gibson’s novel “Neuromancer”) belongs to the world of information technology and digital communications. Based on these concepts we could say that non-digital telecommunications, such as those quoted by Krueger, represent a primitive form of Cyberspace, or virtual space, as mental projections of real space.

In fact, starting from this idea of communicating at a distance, Krueger developed in the mid 1970s, that is to say several years before the notion of Cyberspace was developed, a device called VIDEOPLACE on which one could read, "this is a conceptual environment with no physical existence. It is based on the premise that the act of communication creates a place that consists of all the information that the participants share at that moment. When a distance, as in a telephone conversation, separates the communicants, there is still a sense of being together although sight and touch are not possible. By using television instead of telephone, this sense of place is augmented, by including vision, physical dimensions and a new interpretation of touch" [9]. This device was more than a videoconference system; in it, Krueger installed video images of all the interlocutors together in a shared video space—a physical room- visible to all. In a later phase of the project, Krueger developed CRITTER, an artificial creature that lived in this virtual space of communication, which interacted with its interlocutors.

Although nowadays the experience of a videoconference may not be all that exciting to us, what is interesting about this project is how, when thinking about communicating at a distance, Krueger developed the idea that when the notion of physical space is distorted another space emerges to take its place. We can consider this, another primitive form of Cyberspace, although already developed using the resources of information technology.

On the other hand, Krueger's project leads us towards a different consideration: here—beyond the spatial convergence—what is being sought is the possibility of interacting with others through this space, as well as interacting with the space itself through the screen (in this case, by means of movement sensors and other devices). This implicitly brings up another idea, upon which we shall focus later on: the increasing development of

interactivity, which can be perceived as an attempt to "occupy" this virtual space.

Before going any further, now that we have dealt with space, let us return, briefly, to the notion of Real Time, to present this concept as a spatial notion as well. We have already mentioned that the concept of Real Time developed thanks to the emergence of the notion of simultaneity, and that this was experimented thanks to the consolidation of communications at a distance. We stress this point, as we have to bear in mind that Real Time—no matter how paradoxical it may seem—is not immediate in the sense of not being mediate [10]. For it to exist as such, and as we understand it to mean, there must be a medium that helps us gain awareness of simultaneity at a distance. If two events occur simultaneously in the same space, they do not occur in Real Time, they occur here and now. If two events occur simultaneously in separate places, they merely occur simultaneously. In order for two events to occur in Real Time, as we understand this term to mean, there must be some link between the two spatial extremes. Let us take, for example, a Real Time, live television broadcast. In this case, something occurs in one specific point, while at that same moment, there is another point where this event materialises in the form of an image, that is to say, it is mediated. There would be no notion of Real Time if these signals were not transmitted through a space. This implies that Real Time, as a form of temporal contraction would not exist without spatial contraction and vice-versa. Summing up, both notions are inextricably related: in the same manner that physical space and time form a space-time unity, the virtual space and simultaneous time of the new mediums also form, within this perspective, a unity in themselves: Cyberspace-Real Time.

Based on all of the above, we can establish that in the information era, given the possibilities of simultaneity and Real Time created by the new technologies, we live the experience of two superimposed spaces. One of these spaces is real, that in which we move

about physically, while the other is virtual, Cyberspace, in which we communicate and through which we manage information. Similarly, the experiences of a real time, composed of many times depending on experience, in which the events of our life develop, superimpose themselves with Real Time, through which we access Cyberspace. It is clear, that there must be some connection between these two times and spaces. However, for this to be possible, there must be some point of contact between them, and –focusing on Cyberspace–, given that virtual space has no physical existence, we can only materialise it through its representation. We can normally access this aforementioned representation through a screen, and necessarily in Real Time; that is to say, there is no possibility of deferred cyberspace access, both in Real Time's strictly temporal sense of simultaneity as well as in its sense of mediated time.

We could therefore claim that the overlap of space-time dimensions is what characterises Network Society's space-time and therefore we can see –although only partially–, what kind of influences the process of acceleration of technological mediums that we referred to initially has had on our relation with space-time.

THE "SHAPE" OF CYBERSPACE

Now that we have seen how the notion of Cyberspace takes shape, let us move on to analyse how it relates to real space. To do so we must reconsider the notions of interactivity and "occupation" that we mentioned earlier on.

Before doing so, it would be advisable to sketch out some considerations on Cyberspace. We already know that Cyberspace is a virtual space –although built by real information processed by real yet immaterial particles such as bits [11] – therefore, it has neither shape nor dimensions. Thus, the only possibility of understanding it in a spatial sense is to perceive it, as we have done before, as

information's "place". Nevertheless, the prefix *Cyber* also has spatial connotations, given that it means "steersman" in Greek, hence the notion of "navigating" through cyberspace [12]. However, navigation requires coordinates, virtual ones in this case. These are provided, on the one hand, by the manner in which we organise information to be able to access it, giving "shape" to cyberspace, and on the other hand, by the manner in which we access it, that is to say the interface, which is how that shape is materialised or represented.

Hypertext determines the "shape" of Cyberspace. T. Nelson developed the former concept in 1963 as a method of accessing a set of virtually infinite information that spread into equally infinite directions. This system implies, as Carrillo has explained, the final break away from modern perspectivism, as its dimensions are beyond the user's vision and perception. The user can only access a fragment, and only in a sequenced manner [13].

The representation of this shape is a product, as we have said, of the interface. That same year, in 1963, Ivan Shuterland developed the Sketchpad system, which made it possible to generate interactive graphics with a computer [14]. Since the 1970s, graphic interfaces started to develop with the aim of facilitating users' access to information. Hence, by 1976, tests were made on certain spatial forms of information organisation, such as the "Dar El Marar" project, based on an aerial view of a village recreated through animation with a series of data stored in specific buildings that could be recovered by getting close to them [15]. These experiments led to the SDMS (Spatial Data Management System), which in turn, led to the development of "Icons." In 1984 Macintosh was the first to develop the "windows" system that we are all acquainted with nowadays, although it was finally popularised by IBM with the launch of Windows in 1989. This system allows for the spatial distribution of various simultaneous possibilities of action that the

users have at their disposal [16].

Up to now, we are still referring to the immaterial aspects of Cyberspace, but if we wish to talk about interactivity, we must resort to the screen's physical space, which as we have already mentioned, is the medium through which we access the representation of Cyberspace in Real Time. A movie metaphor may help to visualise the relation between the screen and Cyberspace: in cinematographic terms, a shot is what we see on screen, while Cyberspace acts "outside the shot." Whereas in a movie, the director selects the frame of the shot through the camera lens, in Cyberspace, the users select the shots, that is to say the information that they wish to view. In this metaphor, we can represent the elements that in a movie make us aware of the existence of this world beyond the frame or shot –such as voices off-screen - with hypertext links. These, give rise to new windows that articulate themselves like different aspects of Cyberspace, in the same way as each camera movement shows us new dimensions of "out of focus" space in movies. As in a movie, the "out of focus" space coexists virtually with the space that the shot represents; the virtually infinite space of Cyberspace coexists with the information that we view on the screen.

Among the many obvious differences that we can find in this metaphor, we want to stress that when accessing information in Cyberspace, the user always chooses, selects and ultimately navigates. Herein lies interactivity in spatial terms. This interactive access to information dissolves the boundaries between virtual space and real space, especially when it goes beyond the limits of the screen and we can make the operations that we carry out in Cyberspace materialise in real space.

However, not only are the boundaries blurred, between what is virtual and what is real; the opposite, is also true. Internet 2.0 demonstrates that the possibilities of interactivity and interconnectivity are practically unlimited. Therefore, as well as

expanding the dimensions that we mentally, and constantly, bestow on Cyberspace to infinity, these possibilities have led us to develop a desire, not only to navigate through this virtual space, but also to "inhabit" it in new ways. This has given rise to the development of new forms of representation of Cyberspace, which from the point where we left off the evolution of the forms through which we access it –that is to say the windows system- manifest themselves in a growing trend towards the imitation of real space. Therefore, those who are already calling for Internet 3.0, expect that it will characterise itself in terms of its presentation of Cyberspace in three-dimensional models, such as those that we can already see in some virtual communities such as Second Life.

J. P. Jacob, an expert in technology prediction and researcher at the IBM Almaden Laboratory has stated that, "in Internet 3D the navigator will be an avatar, who will interact and cooperate with other persons represented with their own avatars" [17]. In fact, the popularity of some navigators that already respond to this spatial model, such as SphereXPlorer, 3B or Browse3D, is already growing.

This, which is possible in practice due to the development of new processing and storage capacities for graphic data will not only imply the emergence of new manners of exploring cyberspace, but also new forms of "inhabiting" it. Navigating the Internet through an avatar will be beyond chats and forums, define our "presence" in the Web – however virtual. Indeed, this will allow us to know what other users are accessing the same information. As we can see, the trend is towards the development of models that bring us increasingly closer to an immersive experience and to what we understand as the "occupation" of space. Although we will still have to wait a few years for the normalisation and greater accessibility of Virtual Reality devices that allow for a "real" experience of Cyberspace occupation, we are getting

increasingly closer –at least formally- to the real spatialisation of virtual space.

If, as Carrillo considers, the notion of a technological future in the mid 20th Century depended on a logic related to expansion beyond terrestrial boundaries –the end of the Cold War signalled a change of course from interstellar journeys to journeys in Cyberspace [18] -we could conclude that this expansionist logic is quickly reaching its limits. These limits shall be, if the current trend continues, the real occupation of Cyberspace.

NOTES

[1] We can also talk about a space-time “compression” to retake D. Harvey’s expression.

[2] Quoted in: Molinievo, J.L., *La Vida en Tiempo Real: La Crisis de las Utopías Digitales*, Ed. Biblioteca Nueva, Madrid, 2006, p. 33-34.[3] Kern, S. *The Culture of Time and Space: 1880-1818*. Cambridge: Harvard University Press, 2003.

[4] Citado en: MOLINIEVO, J.L. *La Vida en Tiempo Real: La Crisis de las Utopías Digitales*. Madrid: Biblioteca Nueva, 2006, pp. 33-34’

[5] Molinievo states that, based on Virilio’s considerations, “the pretended (space-time) immediacy is mental, not physical: the same things in different places, but for the mind, given that the body really is in different places””. In: *Ibid.*

[6] Giddens, A., *Consecuencias de la Modernidad*, Alianza Ed., Madrid, 2002, p. 29-30.

[7] Although we are currently dealing with virtual space, it is also interesting to point out that there may also be contraction in the physical experience of space. For example, a journey on the underground may contribute to give us a fragmented vision of the urban space, which, obviously, will influence our imaginary of the city.

[8] Krueger, M., *Artificial Reality*, 1983, quoted in Rheingold, H., *Realidad Virtual. Los Mundos Artificialmente Generados por Ordenador que Modificarán Nuestras Vidas*,

Gedisa, Barcelona, 2002, p. 226.

[9] *Ibid.*, p. 130.

[10] On the immediate as non-mediated and the media, see, Huertas, R., *Sobre la Realidad (Virtual o No)*, Mileto Ed., Madrid, 2002.

In practice, the media’s Real Time depends on Real Time Systems (RTS). These are computer systems that interact with the environment to present a logical result in a timeframe that corresponds with the evolution of the process in development. Such systems are present in all of the electronic and digital devices that we employ daily (cell phones, microwaves, automobiles, etc.) In: www.wikipedia.org, consulted on 25/03/2008.

[11] As we know, digital information is processed in bit (binary digit) form. Although the bits may have a material *representation* in the form of ones and zeros, they are entirely immaterial and travel at light speed. As Negroponte says, bits are to information what the atoms are to matter, that is to say that although they are invisible, we know that they are behind each computational process. In: Negroponte, N., *El Mundo Digital*, Eds. B, Barcelona, 1995.

[12] This prefix comes from the Greek *Kybernetes*, “steersman” or the person who steers a vessel. Thus, when in 1948 Norbert Wiener published his work on machine control, he called this new science Cybernetics. Although it would appear that it is from this notion that Gibson took the name Cyberspace, there are other theories that indicate that it was due to the existence, at the time, of a computer known as Cyber. In: Millán, J.A., *Vocabulario de Ordenadores e Internet*, <http://jmillan.com>, consulted on 07/03/08.

[13] Carrillo, J., *Arte en la Red*, Ed. Cátedra, Madrid, 2004, p. 114-115.

[14] In: *Ibid.*, note 11, p. 127.

[15] *Ibid.*, p. 133.

[16] *Ibid.*, note 13, p. 71.

[17] *Las Cinco Innovaciones de los Próximos Cinco Años*, interview with Jean Paul Jacob

in the Colombian newspaper *Tiempos del Mundo*, 15/03/2006. A reproduction of the printed page can be consulted in: www.elsiglodedurango.com (24/11/2007), and there are various references to this article in: www.coberturadigital.com (14/02/2007) or in *Enter 2.0* in <http://enter.com.co> (19/01/2007), all of which were consulted on: 08/03/2008.

[18] *Ibid.*, note 13, p. 15 and following.

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DIGITAL ETHICS

[GERARDO SAN MARTÍN]

Starting from the Aristotelian principles of ethics, the path that is to take us to the same place soon forks out in two different directions. The ethics of the emitter and the ethics of the message must consider the ethics of the medium. In this manner and from the very beginning we have laid out this text's starting point: the measure and value of digital technologies as necessary bearers of the ethics of images, as well as the considerations triggered by these mediums' current vulnerability.

It is crucial to reconsider ethical issues when dealing with images. The frailties of network access and in the reception of digital communication compel us to perform this task rigorously and transparently. On the other hand, we must recall that the utility and necessity of questioning the ethics of images in digital media will inscribe itself within the utility and necessity of tackling ethical concerns in any human activity.

All images reveal an action. A real action in itself, captured in a specific place, instantly and simultaneously incorporated at the very moment of its capture, at which point reality is frozen. The image appears as a temporal and spatial fragment. The real image is not the object that produces the vision. The image that we are dealing with is generated in, and by the mind [1].

Any image that is created to be visualised, beyond the light that makes it visible, reflects the ethics of an action, of a language expressed somewhere between full consciousness and full unconsciousness. The image dictates an interpretation of things from our own perception. The image blinks, talks and breathes. The image seems to be alive, evokes and makes us think. All thought is an ethical event. All thought anticipates an action, or the decision of inaction which