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**Too “High” Tech:
Metonymical Fallacies and Fetishism in the Perception of
Technology**

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ABSTRACT

This paper suggests that technology is excessively “high” in two senses. The first sense refers to a high level of logical or grammatical abstraction: artifacts and machines are designated (in everyday and scientific discourses) as “technology”, a word that etymologically refers to the *knowledge* surrounding those artifacts. Following the Logical Types Theory, the fact of designating *concrete* artifacts with the level of abstraction which corresponds to the *totality* containing those artifacts, leads us into metonymical or “vicious circle fallacies” (Whitehead and Russell 1962). The second sense of “highness” is symbolic. Recent works on Anthropology of Technology show that machines are often perceived with a fetishistic regard. The most sophisticated innovations, in spite of being perceived as mere instruments, are raised to the symbolic status of mystical objects, or even treated as subjects. Here I will argue that this logical and symbolic “highness”, as a sign of our *fetishistic* devotion towards modern technology, calls into question the presumed rationality of high-tech societies.

INTRODUCTION

From Derrida and Baudrillard to Bourdieu and Latour, diverse post-structuralist thinkers have tried to surmount the subject/object dichotomy. In this epistemological challenge there is as well the intention of surmounting the opposition between Culture (idiosyncratic, relative, socially constructed), and Nature (universal, objective, existing beyond human society). One of the reasons why the analysis of those scientists is urging us to overcome this Cartesian dualism is that, in the context of high technology, the distinction Nature/Culture “becomes blurred or at least problematic” (Hornborg 2006:23).

This analytical problem concerns far more than post-structuralist epistemology: mass media, New Age discourses and the sophisticated commodities of capitalist production present technology as something capable to release us from our natural (geographical, physical, psychological) limits. The drive to transcend ontological frontiers is, nowadays, something *fashionable*. In the supermarket of my neighborhood, for instance, there is a shampoo/conditioner which name is “Pantene pro-V Naturefusion”. While working on this article, I decided to find out more about the kind of “fusion” mentioned, and I came across the following in the Pantene’s web site:

Pantene’s Nature Fusion collection combines hair care technology with the potential of nature for gorgeous results. Formulated with Cassia essence, these hair products for moisture provide balanced moisture and strength against damage¹.

The *fusion* here alludes to a sort of scientific, brilliant combination between technology and nature. This fusion contradicts the idea of technology as a sign of human’s “anti-natural culture” (Birn 2006:2166). Actually, it seems to evoke the contrary, and it might be closer to the notion of technology as a kind of existential “framing” (*Ge-Stell*) by which humans precisely “bring-forth” the veiled essence of their natural milieu, as Heidegger pointed out in his famous text *The Question Concerning Technology* (1978).

Nevertheless, I am reluctant to consider that the Pantene pro-V advertisers are fierce acolytes of Heidegger’s phenomenology. In contrast, I would suggest that the idea of a fusion between technology and nature is derived from a discursive context about advanced societies in which western science seems to be capable of *penetrating* the deepest stratum of the natural world. The categorical frontiers that separate male and female, nature and technology, mind and body or even humans and their environments seem to be already unsuitable to describe our societies (e.g. Butler 2004; LeBreton 1990; Latour 1991; Balée 1998). A new way of understanding reality is emerging, and it is precisely there, in this tangled mess of deconstructions and new anti-dualistic concepts, where the creative commercial discourses and the post-structuralist epistemology may find something in common: the end of modernity begins to dissolve the sense of our Cartesian dichotomies.

But, focusing on our subject, even if this post-Cartesian context of knowledge production is holding an ontological deconstruction of some dichotomies, it is “imperative to maintain an *analytical* distinction between the symbolic and the pre-symbolic ... to distinguish between those aspects of technology that derive from Nature and those aspects that derive from Society” (Hornborg 2006:29-30). From an ontological perspective, we will probably never formulate a satisfactory, essential definition of technology, as Heidegger tried to do. But from an analytical

¹ <http://www.pantene.com/en-us/Pages/collection.aspx?category=nature-fusion&TID=ea99c906-ea8f-4e97-bc77-b318aa6e2b2a> [accessed on March 9, 2011]

point of view, we need to treat our categories with comprehensive and exclusive semantic principles. Indeed, the problem is that there is something blurred in the perception of technology, something that impedes us from discerning matter, ideas and symbols, three aspects that, in the modern-technological context, appear completely mixed.

FUZZY DEFINITIONS OF TECHNOLOGY

The first reason for this conceptual fuzziness is a definitional problem. In the English language there are three terms derived from the Greek word *Techne*: the most abstract term is *technics*, which refers to the “study or theory of industry and industrial arts”; the most concrete is *technique*, that means a “practical method, skill or art applied to a particular task”; and, embracing both of them, there is the idea of *technology*, which alludes to the “methods and practices”, as well as to the “theory” applied to “industry or commerce” (Hanks 1986:1564). On the other hand, the etymology of *technology* is composed of the Greek word *Techne* (“arts” or “skills”) and the suffix *logos* (“treatise” or “reasoning”)². Indeed, though the etymology of *technology* refers only to a kind of knowledge, modern usages and definitions go beyond this etymology, and are usually referred to “the procedures, methods, and processes as well as to the artifacts themselves” (Medina and Kwiatkowska 2000:16), thus encompassing in the same word a wide variety of material and non material elements.

The second reason for this conceptual fuzziness is historical and anthropological: unlike the idea of “technique”, which was already present in Aristotle’s *Metaphysics*, the concept of technology did not appear until the seventeenth century, although its use was not popularized until later, during the industrial revolution (Marx 1996). The meaning of technology “had itself been blurred, during the last century [XIX], because it had been conditioned by a social environment in which a mass of new mechanical inventions had suddenly proliferated” (Mumford 1972:77). According to Gellner (1974), “concepts are themselves institutions” or “correlates of all institutions of a society”. The modern emergence of the concept could explain why there is a particularistic tendency to associate technology (not only the concept, but the social phenomenon itself) with something related to industry, machines and the latest artifacts created by western intelligence.

Opposed to this particularistic point of view, there are some researchers in history (e.g. Fiebelmann 1982), archaeology (e.g. Leroi-Gourhan 1943), anthropology (e.g. Lemonnier 2002; Cresswell 2004) and philosophy of science (e.g. Ferré 1988) in whose works the word “technology”, broadly defined as the human action on matter or the use of artifacts, acquires wider dimensions, often transcending the temporal limits of the industrial revolution or the contextual limits of the western economy. In general terms, the essential characteristic of the universalist perspective is to assume that all societies (including pre-modern ones) have some kind of technology.

As representatives of the most radical universalism, some scientists employ a permanent general definition of technology throughout their works (e.g. Drucker 1970; Ellul 1977; Foucault 2002). Those scientists bring into play an all-encompassing interpretation of concepts such as *technology* or *sociotechnical systems*, and use them to describe any human activity. In these cases, the concepts of technology or sociotechnical systems are considered appropriate categories to define almost any social interaction, from the layout of machines in a factory to the rules of penitentiary systems, from the tools used by industrial workers to the strategies of psychoanalytic therapy. The presumed materiality of technology is not relevant here: any social product or

² <http://www.myetymology.com/english/technology.html> [accessed on March 4, 2011]

relationship, material and immaterial, contains a kind of technology. Some ethologists have gone even further, and have tried to use the categories of *technology* and *sociotechnical systems* to describe the activity of chimpanzees and other animals (see a critical view on Joulian 1994; Wynn 1994). From this perspective, technology is seen as a universal phenomenon forming part of all the dimensions of nature and society.

In contrast with those ideas, some of the essays contained in *The Perception of the Environment* by Tim Ingold constitute a detailed deconstruction of universalism. In this book, the author rejects a universalistic approach to technology, and his main conclusion is that we should not use the concept of technology to analyze pre-modern societies, since this would involve an “overgeneralization” (Ingold 2000:297). With a particularistic-ecological perspective, Ingold rejects the idea of an innate and universal “technology acquisition device” in the human brain. Instead of this, he suggests that humans possess only “technology acquisition support systems”, which are not biological but contextually determined (see Wynn 1994; Ingold 1996). According to this ecological perspective, Ingold concludes that pre-modern societies only have *techniques* (skills, abilities, or dexterities guided by the imagination and practical rules of thumb), while in modern societies we find *technology*, which is *formally represented* (by language, for example), “externalized” (progressively institutionalized as a separate part of society), and sustained by intelligence (Ingold 2000:289-293).

These ideas are definitely necessary to revitalize the debate around the concept of technology. Nevertheless, returning to the universalistic point of view, the particularistic, dual vision of societies with and without technology could be still criticized. Some authors highlight the necessity of establishing a separation between “explicit” and “implicit” knowledge (Bloch 1998). Implicit knowledge could be understood as an alternative basis for a sort of technological (i.e. abstract, theoretical and technical) reasoning. Popper (1973) wrote that we should not refute an idea or causal explication simply because it is not completely explicit in any sort of scientific language. In this sense, the fact that technological processes in pre-modern societies are not as explicit or formally represented as they are in the West should not lead to the conclusion that these processes do not exist. However, this is a polemical and unresolved issue on which specialists are divided. In accordance with Ingold’s argument, some researchers consider that only pre-theoretical techniques or mere dexterities are to be found in pre-modern societies, because they are not based on any scientific treatise (e.g. Mitcham 1989; Sanmartin 1990); while others defend the view that pre-modern contexts display a kind of deep and abstract reasoning which should be called “technology”, even though it is pre-scientific, non-verbal, experimental and analogical (Goody 1985; Pfaffenberger 1992).

The problem here is the difficulty to prove or deny whether only western science implies a technologic-propositional thought and, in contrast, the absence of scientific treatises involves a mere pre-theoretical action. On the one hand, the differences between “knowing that” (i.e. theoretical, abstract) and “knowing how” (i.e. practical, non-propositional) are being challenged by diverse anthropologists (see Harris 2007). On the other hand, some of the actual researchers on cognitive sciences hold that humans also perform analogical representations (see examples in Ballesteros 1999; Pozo Muñoz 2006). This analogical-abstract knowledge could operate, beyond western science, as a theoretical reasoning about traditional techniques, thus indicating the existence of a sort of technology in pre-modern societies. The risk of this debate is that it refers to some speculations about the “human mind” (or its absence) in order to reinforce some sociological or anthropological questions, i.e.: should we equate the history of technology *solely* with the history of its industrial and scientific *externalization*? And, on the other hand: should we

focus on technology as an *essential human phenomenon* that was already present in the former human technical behaviors, before its scientific and mechanized modern form? If the definitive answer to these social, historical or anthropological questions lays in a certain notion of how the “human mind” *is* (or *is not*), then neither the universalists nor its critics, at least in the social sciences, seem to be able to overcome a dialectical and non-solvable fuzziness.

LOGICAL FALLACIES

Nevertheless, in contrast with these scientific debates, the “technological products often have different meanings to non-experts” (Hess 1995:184). In everyday language the word technology does not evoke an Amazon Indian using his blowpipe or a chimpanzee collecting termites by introducing a twig into a termite hill. In the English dictionaries, for example, we will find definitions of technology such as: “new machines, equipment and ways of doing things that are based on modern knowledge about science and computers” (Summers 2006), or “the application of scientific knowledge for practical purposes, especially in industry, [as well as the] machinery and equipment developed from such scientific knowledge” (Pearsall 1998). Hence the particularistic definitions of technology put the emphasis on a *machine-like technology*, and relate this idea to the industrial and post-industrial western way of life (for more examples see: Hanks 1986; Lurquin 1998; Anderson 1998; Summers 2004; Agnes 2009).

From a certain logic’s point of view, we could consider that some logical fallacies or contradictions arise from the mixture of two levels of abstraction under the same classification (the same word): the “modern” *machine-like* and the “etymological” *knowledge-like* idea of technology. But “technology” is not the only word in our language that evokes an abstraction and a concrete thing without the need for further grammatical precision. The word “nature”, for example, evokes the natural elements as well as the abstract category encompassing those elements. As Whitehead and Russell warned, it is possible to find many logical fallacies in everyday language. However, as I will suggest below, the idea of technology holds a particularly interesting fallacy, in the sense that it could be understood as “proof” of our fetishistic (i.e. non-rational) devotion to modern artifacts.

In the Logical Types Theory, Russell and Whitehead (1962) established a system of axioms to avoid those formulations that generate fallacies or indemonstrable truths within mathematical language. Although mathematical symbols are merely formal (a priori they do not possess semantics), the authors suggested that certain properties in the construction of mathematical codes could be extended to everyday language. In some sense Russell and Whitehead tried to use the analytical tools of logic in order to identify some contradictions of everyday language, which is not a *logical*, but a *social* or *anthropological* reality.

At this point it is necessary to distinguish between logical and anthropological analysis. As I will argue next, these logical contradictions are no *fallacies*, but only *symbolic indicators*, from an anthropological perspective. This is a very common critique of the Types Theory. Ludwig Wittgenstein, for instance, noted the dispensability of this logical analysis and the suitability of substituting it with a theory of symbolism, which could take into account the discursive *contexts* (see Wittgenstein 1979; Ruffino 1994). Indeed, from an anthropological point of view, or even from a semantic perspective, the logical fallacies cannot be extrapolated to the “social world”. People do not experience the supposed fallacies or contradictions as mistaken perceptions of reality, but as coherent categories of their particular contexts.

Nevertheless, there may be an analytical linkage between logic and anthropology. The central idea of the Logical Types Theory is the Vicious Circle Fallacy, which refers to a logical

(i.e. mathematical) paradox: a class cannot be member of itself (Whitehead and Russell 1962:64). A classic example of this paradox is that of Epimenides the Cretan saying that all Cretans are liars. The Vicious Circle sets a paradox by confusing different levels of abstraction: the members (Cretans) and their class (the Epimenides statement). We could reformulate this paradox by saying that *a total* (i.e. a class) cannot be *a part* (i.e. a member) of itself. This reformulation, closer to the verbal dimension, allows us to go beyond logic in order to identify a kind of *pervasive metonymy* in ordinary language. An example of such metonymy is the fact of confusing the reference to the *artifacts* with the reference to the *knowledge* that produces those artifacts, which leads us to Vicious Circle or “metonymic fallacies” (Barthes 1974) in the statements about technology³.

As a first approach, some mass media headlines may provide a clear example of the fallacies entailed in the statements about technology:

*Mumbai Terrorists Relied on New Technology for Attacks*⁴

*TechBytes: Technology Involved in IMF Sex Scandal*⁵

*Motorola ties with Microsoft to enter into Smart Phone Technology*⁶

*Pope rejects abortion, reproductive technologies*⁷

According to these examples, it is possible to deduce that the word “technology” (which etymologically is a *logos*: a kind knowledge) evokes concrete, material things or artifacts in our ordinary language. The point here is that other *logos* (e.g. biology, archaeology, neurology) refer only to sciences or to a certain *collection* of things, but not to concrete, separable, physical objects (e.g. we don’t say “biology” referring to a concrete animal or “neurology” referring to our brain). This is why, in the grammatical use of technology, we may be confronted with a contradiction when classifying the artifacts in the same category that we use when designating the knowledge that produces those artifacts. This grammatical ambiguity dissolves the logical frontiers between the *part* or *consequence* (technological artifacts), and the *whole* or *cause* (technology as a kind of knowledge involving the production of machines, devices, networks, and son on...). This confusion between levels of abstraction leads to the kind of fallacies revealed by the vicious-circle principle:

Whatever involves *all* of a collection must not be one of the collection; or conversely: if provided a certain collection had a total, it would have members only definably in terms of that total, then the said collection has no total. We shall call this “the vicious circle principle” because it enables us to avoid the vicious circle fallacies involved in the assumption of illegitimate totalities [Whitehead & Russell, 1962: 40)].

³ Note that this logical focus is not going to be an end in itself. In the last section of this article I will focus on how our “logically fallacious” statements about technology can be at the same time “anthropologically continuous”, and coherent with our discursive contexts, precisely due (and according to Wittgenstein’s critique) to the semantic and symbolic properties of technology.

⁴ <http://www.nytimes.com/2008/12/09/world/asia/09mumbai.html> [accessed on June 6, 2011]

⁵ <http://abcnews.go.com/Technology/techbytes-technology-involved-imf-sex-scandal/story?id=13630197> [accessed on June 6, 2011]

⁶ http://www.techtree.com/India/News/Motorola_ties_with_Microsoft_to_enter_into_Smart_Phone_Techn/551-51289-615.html [accessed on June 6, 2011]

⁷ <http://news.google.com/newspapers?id=GwaAAAIBAJ&sjid=rioEAAAIBAJ&pg=6968,6762285&dq=technologies&hl=en> [accessed on June 6, 2011]

“Technology” could be considered an “illegitimate totality” because it contains parts (artifacts) defined in terms of the total (technology): instead of saying “technological artifacts” referring to the parts (a grammatical precision which would respect the different levels of abstraction) we are used to saying “technology”, without any other grammatical precision. In short, what we are revealing here is that the statements about technology are all too often metonymic. As Lewis Mumford pointed out in his historical analysis of mechanization, we tend to identify tools and machines (or the products of technology) with technology itself, by substituting the part for the whole (1969:13). Indeed, the use of metonymy is not necessarily a logical fallacy, but *only a rhetorical* strategy of representing the whole by one of its parts, the cause for the consequence, and so on.

Nevertheless, most statements about technology do not have a rhetorical intention. See the example below:

For the love of the game. VIERA® S2 Series Plasma HDTVs are great for sports and cinema-quality movies. Our Neo PDP technology delivers sharp, detailed image and remarkable brightness⁸.

This information is accompanied by the image of a TV, the *VIERA® S2 Series Plasma*. Reading the text, one realizes that “our neo PDP technology” does not refer to the technological knowledge (the whole) responsible for the design of this TV, but to the TV itself (the part), or even to a concrete device installed in the TV. This is not an example of the part referring to the whole (e.g. the TV as an iconic representation of PDP engineering), but of the part referring to itself. There is no rhetoric association, but only a logical ambiguity: a part referring to itself with the grammatical determination referred to the whole (technology). In the context of technology we usually do not use metonymy consciously, as a narrative figure. Rather, we use the metonymy automatically, with no awareness of doing so and as a result of a *pervasive* confusion between levels of abstraction. This fuzziness, rather than being the result of a metaphorical intention, shows our grammatical disregard of the abstractive difference between the whole (technology) and its parts (e.g. technological artifacts). In this sense, the ambiguity of technology could be better conceptualized as a “metonymic fallacy” (Barthes 1974), in the sense that all too often it implies the assumption that the part is a *factual* (not rhetorical) substitute of the whole, or vice versa.

FETISHISM

In his illuminating article on fetishism, Roy Ellen (1988) highlighted an aspect of some human classifications that is crucial in order to understand the arguments above. Ellen underlined the “conflation of signifier and signified” (219) and “the ambiguity between content and form” (227) which takes place in the perception of fetishized objects. The author provides a clear example of my homeland:

The Black Madonna, Our Lady of Monserrat, located in a monastery northwest of Barcelona, has been an important centre of Spanish and Catalan pilgrimage for centuries.

⁸ http://www2.panasonic.com/consumer-electronics/shop/Televisions/VIERA-2010-HDTV-Series.147542_11002_700000000000005702 [accessed on August 30, 2010]

The image is nowadays protected by a glass screen, though a hole has been cut to allow physical contact (usually kissing) with the orb which she holds in her left hand. For many supplicants this physical contact is vital, as is the physicality of the spiritual presence. To all intents and purposes it is the image which is being worshipped, as the spiritual essence is intrinsic to this particular object and cannot be said to stand for some disembodied notion which has some temporary incidental association with it [Ellen 1988:227].

In fetishism, the mystic energy is concretized in one object that is the symbol and the symbolized at the same time. This conflation of signifier and signified is analogous to the metonymical or vicious circle fallacies of the conceptualization of modern technology. If we say, for example, "this is high technology" (referring to a car we are looking at) we are admiring the car itself. Though in this case a logical (e.g. etymological) sense of "technology" should express recognition towards *the knowledge* of some engineers, that statement constitutes a worshipping of the object itself. The question then is why the idea of technology involves a tendency to the conflation of signifier and signified, and why is it more vulnerable to vicious circle or metonymical fallacies than other *logos*.

Here it is suggested that this logical or grammatical ambiguity is a sign of the symbolic, fetishistic properties of modern artifacts. According to Hornborg (2006), fetishism follows the logic of animism, in the sense that it is a specific *animation* of non-living things, such as stones or machines. In a wider sense, animism presupposes an identity of interiority between human and non-humans (Descola 2005). The point here is that, whereas animation concerning nature is a classical subject within Anthropology, animation concerning modern artifacts is not so much studied. This lack of interest towards the non-technical or non-economical aspects of artifacts could be explained by the "pre-understandings" which too often emerge in attempts to define technology (Sigaut 1994). The study of technology has always been traditionally linked with the study of industry and scientific western knowledge. But from a more recent anthropological standpoint, technology is not only analyzed as a means to an end, in its very instrumental sense, but as a "symbol" of modernity and development (Pfaffenberger 1988).

The recognition of the symbolic aspects of technology provides the first step towards an understanding of the phenomena that (beyond science, modernity, and even rationality) surround the technological development. Historians note that technology "has been endowed with a thing-like autonomy and a seemingly *magical power* of historical agency" (Marx 2010, emphasis added). Following that perspective, recent studies are focusing on the veiled relationships between technology and magic (see Gell 1988; Stivers 2001; Morley 2008), or on the "technological imperative" (Pacey 1983), which reflects our compulsive search for technological solutions to technological problems. Indeed, the new foci reveal something more than a rational, instrumental use in the scope of technology, something that determines our relation with modern artifacts in a non-explicit, even mysterious way.

But there is a limitation in analyzing technology *only* in the western-industrial context. Even Science and Technology Studies (STS) have focused primarily on western technoscience, and "perhaps this is why anthropologists have been so noticeably under-represented" in this academic milieu (Hess and Lane 1992:X). It seems that technology is a feature assigned to western cultures and thus of less interest to anthropologists. Nevertheless, we (anthropologists) are far from being those "explorers" who conquered the distant, exotic "other". Current anthropology has a very reflexive focus analyzing the cultural and social mechanisms of our own contexts as well as the way in which we construct our scientific knowledge.

One of the clues of this reflexive undertaking is to use the comparative method and, in concrete, analyze our modern society with the categories usually employed to describe pre-modern ones. A clear example of this method is Latour’s recent work on modern fetishism (2009). Fetishistic cult was described for the first time by Charles de Brosses, after his journeys in Africa, in the mid 18th century. From the beginning, it was associated with a very primitive form of adoration that treated material objects as subjects, and hence it was far from being considered as an example of human rationality (Sansi 2007:141). Bruno Latour describes how surprised the Portuguese were when they realized that the Guinea natives worshipped their handcrafted stone figures (2009:21). Europeans believed only in ideal, intellectualized divinities, and the adoration of material objects that human themselves had fabricated was perceived as a contradiction or even worse, as an attempt of comparing their creative power with that of their gods. Thus, the concept “fetish” comes from the Portuguese word *feitiço* (witchcraft, sorcery) whose etymology alludes as well to something that is “made” (*feito*) by humans. This could be interpreted as proof that fetishism belongs to the religious spectrum of magical beliefs, which, supposedly, modern societies are surmounting thanks to their “scientific control” over nature. Nevertheless, as Latour has suggested, the attribution of magical transcendence to material things that humans produce is not an exclusive characteristic of pre-modern societies or “primitive” forms of religion. On the contrary, modern or “anti-fetishistic” cultures also “convey to their [material, technological] idols a strange cult that we should disentangle” (2009:35), and here is where the specific perspective of anthropology may provide an interesting interpretation.

Fetishism, or more precisely the idea of “machine fetishism” (Hornborg 1992), could provide a suggestive analytical frame for those symbolic, inexplicit aspects of technology (and, by extension, of modernity). Machine fetishism is an example of modern, concrete animation; it is a projection of social metaphors not onto nature (in its Cartesian sense), but over a material-artificial reality composed of machines, communication and navigation systems, networks, industrial circuits, electronic devices, and so on. Modern artifacts, in general, hold something more than a material existence and instrumental function. The projection of human qualities such as intelligence, personality, faithfulness or autonomy onto our machines becomes everyday more present. Some psychologists investigate the relation between humans and what they call the “technological nature”, which includes those “technologies that in various ways mediate, augment or stimulate the natural world” (Kahn et al. 2009: 37). In the relation between human and robotic dogs (which are examples of “technological nature”) these studies conclude that most of the robotic dog owners “endowed it with animation”, while 59 percent of participants attributed “social rapport”, and a high percentage (12% for adults, 60% for children) attributed a “moral standing” to these machine-pets (Ibid: 39-40).

In a wider sense, similar attributions of “personality” or “sociality” are to be found not only in robotic pets, but in the perception of modern artifacts in general. Western natives tend to characterize technology as an “external phenomenon, or more particularly as an autonomous force” (Downey 1992:146). The anthropological explanation of this fact could be that the fetishistic admiration of modern machines leads to “mystification” and even “attribution of autonomous agency or productivity to certain kinds of material objects” (Hornborg 2001:132). This perspective is in part derived from the Marxist analysis of commodities fetishism. According to Marx, “the mystical character of commodities” originates “material relations between persons and social relations between things” (2010:46-7). The Marxist critique highlights that commodities are seen as having, like persons, certain autonomy in the way they establish their relationships within a mode of production. But modern foci on machine fetishism,

or in the “social life of things” (Appadurai 1988), describe this mystical or projected social life of objects not only at the level of commodities production, but on the relation established between *persons* and *things*, even when those things are not commodities, thus encompassing the production as well as the demand, distribution, consumption, use, and so on.

Maurice Godelier noted that commodity fetishism operates “outside the conscience”, thus “disguising the social relations of production” (1974:323). Recent studies suggest that fetishism disguises not only the relations of production, but our relation with technology in general, to the point that “the relationship between human labor and technology is clearly ambiguous in terms of which serves which” (Hornborg 1992:12). This unconscious, disguised dimension of our relationship with *things* is linked with the alienation or the “institutionalized divorce” between traders, consumers and producers who create “specialized mythologies”, which emerge from their ignorance of the whole economic trajectory of a certain commodity (Appadurai 1988:48).

Those mythologies, along with fetishism, indicate that there is something more than scientific knowledge and rational economical principles in the circulation of commodities. The question is whether the mystical aspects that disguise our perception of commodities operate beyond their economic “life”. As suggested above, modern technologies (which are, in fact, potential commodities or means of commodity production) are also endowed with animation, intention or personality. Some studies in the anthropology of technology point out this could be due to symbolic and even magical projections onto modern artifacts, and hence, as Marx proposed with the analysis of commodities, machine fetishism could be an adequate category to continue this deconstruction of the non-rational, mystical dimensions of high-tech societies.

In the precedent sections I have tried to show that every-day and scientific language hold pervasive semantic fuzziness and metonymical fallacies in the statements about technology. This generalized conflation of signifier and signified leads us to a fuzzy conceptualization of *all elements*, material or immaterial, designated as “technology”. The question here is whether machine or commodity fetishism is a sufficiently comprehensive category, or whether the phenomenon they underline could be extended to a wider sense of *technological fetishism*. Indeed, here I would suggest that the logical and fetishistic “highness” attributed to western, sophisticated innovations, concerns not only commodities or machines, but all specialized artifacts, formulas, electronic devices, industrial circuits, communication systems, networks, and any other manifestations of technology in advanced societies.

This focus on technology is, inevitably, an interdisciplinary subject that concerns anthropologists, historians, philosophers, political scientists and sociologists. An initial idea for such a deconstruction is that, from a STS standpoint, science and technology are not the product of pure rational or cognitive factors. On the contrary, STS show that social factors shape the production of all science and technology, and this observation goes beyond the pure theoretical reflections: such a social shape holds a “mystification” of the social differences derived from the technological order, a mechanism of social classification (i.e. of power distribution) that David Hess called “technototemism” (1995:22). This technototemism operates according to a “boomerang” logic by which “social relations are transferred into nature or technological world, and then nature (or technology) can be transferred back to legitimate an existing social order as the natural order” (1995:23).

The boomerang logic of “technototemism” seems a pertinent final illustration for both the opening and the closing remark of this paper: on the one hand, it stresses the *fusion* between nature and technology, as consequence of the high techno-scientific advance, which involves the emergence of new hybrid (i.e. non dualistic) categories. On the other hand, while

technototemism informs us about the *form* of human projections onto the technical world (and vice versa), the study of technological fetishism provides the analytical tools for understanding the *substance* of those projections, that is: the mystifying, fervent and devotional way in which we bow down to our artifacts.

CONCLUSION

Roy Ellen, inspired by the reflections of Lévi-Strauss on totemism, asks himself a theoretical, almost philosophical question: “of what greater whole is fetishism a part?” (1988:220). Though we are not capable of giving a response to such a big question, this idea could help us frame the arguments above.

In this article I have suggested that the grammatical ambiguity and logical fallacies entailed in the concept of technology are linked with a fetishistic perception of modern artifacts. These fractures of the logical, objectivist and scientific western identity may indicate that the context of modern technology is not completely rational: fuzzy in a semantic sense, fallacious in logical terms and fetishistic from an anthropological point of view.

After the 19th century evolutionism, many anthropologists have intensively tried to refute the idea of “irrationality” within “primitive societies”, neglecting the importance of this issue in their own societies. As an example of such undertaking, Jarvie and Agassi questioned the supposed “irrationality” of societies that perform magic, and proposed they have “weak rationality”, in the sense that magic at least “claims immense pragmatic value” (1974:176). Nowadays, the whole anthropological academy has assumed a minimum of scientific relativism and no one, within our discipline, could defend that “rationality” is an exclusive characteristic of the West. But the question arising here is: if we are all (more or less) rational, does the idea of “irrationality” have any analytical sense?

As argued at the beginning of this paper, the symmetric description of anthropological facts dissolves modern/premodern, nature/society or subject/objects dualities, and the consequence is that reality re-appears to us as a monumental hybrid (Latour 1991). This could be understood as a sort of extreme exaltation of the milieu. Nevertheless, though agreeing with a certain idea of symmetry (at least in the sense of keeping methodological equidistance when we compare modern and pre-modern societies), it is also necessary to maintain our *analytical* dualities. By adopting such perspective, I have tried to invert the direction of the “classical” attributions of irrationality towards pre-modern cultures, in order to re-project them onto our own society. As an example of such symmetrical focus, I have described the fuzziness and fallacies entailed in the western idea of technology and how these blurred logic-semantic dimensions relate with a fetishistic perception of modern artifacts. This fetishism could indicate that all too often, under our “technical decisions”, lies a disguised, non-rational devotion towards modern artifacts, which derives from a symbolic, mystifying *elevation* of technology. In a wider sense, this hypothesis appeals to the necessity of reformulating the arguments of relativism, that is, not to use them with the aim of refuting the irrationality of societies which perform magic, but to question the supposed “strong rationality” (Jarvie 1984:48) of societies that perform science.

REFERENCES

- Agnes, Michael
2009 Technology. College Dictionary. Fourth Edition. Ohio: Wiley Publishing.

Anderson, Sara et al.

1998 Technology. Chambers English Dictionary. Edinburg: Chamber Harrap Publishers.

Appadurai, Arjun, ed.

1988 Introduction: Commodities and the Politics of Value. *In The Social Live of Things*. Pp. 3-63. Cambridge: Cambridge University Press.

Balée, William and William L. Balze, eds.

1998 *Advances in Historical Ecology*. New York: Columbia University Press.

Ballesteros, Soledad

1993 Representaciones Analógicas en Percepción y Memoria: Imágenes, Transformaciones Mentales y Representaciones Estructurales. *Psicothema* 5(1):5-17

Barthes, Roland

1974 *S/Z*. London: Cape Editions.

Birx, James

2006 Technology. *Encyclopedia of Anthropology*. Thousand Oaks, CA: Sage Publications.

Bloch, Maurice

1998 *How We Think They Think*. *Anthropological Approaches on Cognition, Memory and Literacy*. Boulder: Westview Press.

Butler, Judith

2004 *Undoing Gender*. New York: Routledge

Cresswell, Robert

2004 Technologie. *In Bonte, Dictionnaire de l'Ethnologie et de l'Anthropologie*. Pierre and Miquel Izzard eds. Paris: Presses Universitaires de France.

Descola, Philippe

2005 *Par-delà de la Nature et Culture*. Paris: Gallimard.

Downey, Gary Lee

1992 CAD/CAM Saves the Nation? Towards an Anthropology of Technology. *In Knowledge and Society. The Anthropology of Science and Technology*, vol. 9. David J Hess and Linda L. Lane, eds. Greenwich, Connecticut: JAI Press Incorporated.

Drucker, Peter

1970 *Technology, Management and Society*. London: Heimann Press.

Ellen, Roy

1988 Fetishism. *Journal of the Royal Anthropological Institute of Great Britain and Ireland* 23(2):213-235.

Ellul, Jaques

1977 *Le Système Technicien*. París: Clamann Lévy Ed.

Feibelmann, James

1982 *Technology and Reality*. The Hage: Martinus Nijhoff Publishers.

Ferré, Frederic

1988 *Philosophy of Technology*. Englewood Cliffs (N.J): Prentice Hall Foundations of Philosophy Series.

Foucault, Michel

2002 *Vigilar y Castigar. El Nacimiento de la Prisión*. Madrid: Siglo XXI Editores.

Gell, Alfred

1988 *Technology and Magic*. *Anthropology Today* 4(2): 6-9

Gellner, Ernest

1974 *Concepts and Society*. *In Rationality*. Bryan R. Wilson, ed. Pp: 18-49. Oxford: Blackwell.

Godelier, Maurice

1974 *Economía, Fetichismo y Religión en las Sociedades Primitivas*. Madrid: Siglo XXI Editores.

Goody, Jack

1985 *La Domesticación del Pensamiento Salvaje*. Madrid: Akal

Hanks, Patrick et al., eds.

1986 *Technics. Technology. Technique*. *The Collins Dictionary of The English Language*. London & Glasgow: Collins.

Harris, Mark, ed.

2007 *Ways of Knowing. New Approaches in the Anthropology of Experience and Learning*. New York: Berghahn Books.

Heidegger, Martin

1978 *The Question Concerning Technology*. *In Basic Writing. From Being and Time (1927) to the Task of Thinking (1964)*. David Farrel, ed. London: Routledge & Kegan Paul.

Hess, David J.

1995 *Science and Technology in a Multicultural World. The Cultural Politics of Facts and Artifacts*. New York: Columbia University Press

Hess, David J. and Linda L. Lane, eds.

1992 *Preface*. *In Knowledge and Society. The Anthropology of Science and Technology*. Greenwich, Conneticut: JAI Press Incorporated.

Hornborg, Alf

1992 Machine Fetishism, Value and the Image of Unlimited Good: Towards a Thermodynamics of Imperialism. *Royal Anthropological Institute of Great Britain and Ireland* 27(1):1-18.

2001 *The Power of the Machine: Global Inequalities of Economy, Technology and Environment*. Oxford: Altamira Press.

2006 Animism, Fetishism and Objectivism as Strategies of Knowing (or not Knowing) the World. *Ethnos* 71(1):21-32.

Ingold, Tim

1996 The Optimal Forager and the Economic Man. *In Nature and Society. Anthropological Perspectives*. Philippe Descola and Gisli Pálsson, eds. Pp. 25-44. London: Routledge.

2000 *The Perception of the Environment. Essays in Livelihood, Dwelling and Skill*. London: Routledge.

Jarvie, Ian Charles

1984 *Rationality and Relativism. In Search of a Philosophy and History of Anthropology*. London: Routledge.

Jarvie, Ian Charles and Joseph Agassi

1974 The Problem of Rationality of Magic. *In Rationality*. Bryan Wilson, ed. Pp.172-193. Oxford: Blackwell.

Joulian, Frederic

1994 Peut-on Parler d'un Système Technique Chimpanzé? *Primatologie et Archéologie Comparées. In De la Préhistoire aux Missiles Balistiques. L'Intelligence Sociale des Techniques*. Bruno Latour and Pierre Lemonnier, eds. Pp.45-64. Paris: La Découverte.

Kahn, Peter; Severson, Rachel and Ruckert, Jolina

2009 The Human Relation with Technological Nature. *Current Directions of Psychological Science* 18(1):37-42.

Latour, Bruno

1991 *Nous N'Avons Jamais Été ;odernes : Éssai d'Anthropologie Symétrique*. Paris : La Découverte.

2009 *Sur le Culte Moderne des Dieux Faitiches. Suivi de "Iconoclash"*. Paris: La Découverte

LeBreton, David

1990 *Anthropologie du Corps et Modernité*. Paris: Presses Universitaires de France.

Leroi-Gourhan, André

1943 *L'Homme et la Matière*. Paris: Editions Albin Mitchel.

Lemonnier, Pierre

2002 Technology. *In* Encyclopedia of Social and Cultural Anthropology. Alan Barnard and Jonathan Spencer, eds. Pp.544-547. London: Routledge.

Lurquin, George (comp.)

1998 Technology. Elsevier’s Dictionary of Greek and Latin Word Constituents. Netherlands: Elsevier Science B.V.

Marx, Karl

2010 Capital. A Critique of Political Economy Vol. 4 Chapter 1. Online Version:
<http://www.marxists.org/L.pdf>.

Marx, Leo

1996 La Idea de “Tecnología” y el Pesimismo Posmoderno. *In* Historia y Determinismo Tecnológico. Mary Roe Smith, and Leo Marx, eds. Pp.253-273. Madrid: Alianza Editorial.

2010 Technology: The Emergence of an Hazardous Concept. *Technology and Culture* 51(3):571-577.

Morley, David

2008 Medios, Modernidad y Tecnología. Hacia una teoría interdisciplinaria de la cultura. Barcelona: Gedisa.

Mumford, Lewis

1969 El Mito de la Máquina. Buenos Aires: Emecé Editores.

1972 Technics and the Nature of Man. *In* Philosophy & Technology: Readings on the Philosophical Problems of Technology. Carl Mitcham and Robert Mackey, eds. Pp.77-85. New York: The Free Press.

Mitcham, Carl

1989 ¿Qué es la filosofía de la tecnología?. Madrid: Anthropos.

Medina, Manuel and Kwiatkowska, Teresa

2000 Ciencia, Tecnología, Naturaleza y Cultura en el siglo XXI. Madrid: Anthropos.

Pacey, Arnold

1983 The Culture of Technology. Oxford: Basil Blackwell

Pearsall, Judy, ed.

1998 Technology. The New Oxford of English Dictionary. Oxford: Oxford University Press.

Pfaffenberger, Bryan

1988 Fetishised Objects and Humanised Nature: Towards an Anthropology of Technology. *Royal Anthropological Institute of Great Britain and Ireland* 3(2):236-252.

1992 Social Anthropology of Technology. *Annual Review of Anthropology* 21:491-516.

Popper, Karl

1973 La lógica de las ciencias sociales. *In La Disputa del Positivismo en la Sociología Alemana*. Theodor Adorno, et al, eds. Pp: 101-119. Barcelona: Grijalbo.

Pozo Municio, Juan Ignacio

2006 Adquisición del Conocimiento: Cuando la Carne se Hace Verbo. Madrid: Morata.

Ruffino, Marco Antonio

1994 The Context Principle and the Wittgensteins's Critique of Russel's Theory of Types. *Sinthese: An International Journal for Epistemology, Methodology and Philosophy of Science* 8(3):401-414.

Sanmartín, José

1990 Tecnología y Futuro Humano. Barcelona: Anthropos.

Sansi, Roger

2007 Intenció i Atzar en la Història de Fetitxe. *Quaderns. Serie monogràfic* 23(8):139-158.

Sigaut, François

1994 Technology. *Companion Encyclopedia of Anthropology, Humanity, Culture and social life*. London: Routledge.

Stivers, Richard

2001 Technology as Magic. *The Triumph of the Irrational*. New York: The Continuum Publishing Company.

Summers, Della, dir.

2006 Technology. *Longman Dictionary of Contemporary English*. Essex: Pearson Education Limited.

2004 Technology. *Longman Dictionary of American English*. Essex: Pearson Education Limited.

Whitehead, Alfred North and Rusell, Bertrand

1962 *Principia Matemática*. Cambridge: University Press.

Wittgenstein, Ludwig

1979 *Notebooks 1914-1916*. Oxford: Basil Blackwell.

Wynn, Thomas

1994 Tools and Tool Behavior. *Companion Encyclopedia of Anthropology, Humanity, Culture and Social Life*. Tim Ingold, dir. London: Routledge.