

JUST USING THE ELECTRONIC DAILY OBJECTS: NEW TECHNOLOGIES AND/OR/FOR THE USERS

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Introduction

Despite of the many efforts to consider the users when designing interfaces (as it may be seen by following some studies carried out in Human Computer Interaction, User Centred Design, Usability, etc.), a lot of interface design practices already disregard the user's point of view. To ignoring users has as a consequence, the use of some interfaces that does not correspond with the users' capacity to interpret them. The aim of this article is mainly to show that some decisions regarding the interface layout of some electronic daily objects are not in agreement with the capacities of the users to interpret them (sometimes users are unable to formulate any hypothesis about the functioning of the house appliance's interface). Instead of planning by considering the interface and the users as detached parts, designers should consider them as a continuous inseparable phenomenon.

The signifiers and the signifieds

The words *signifier* and *signified* are very often used by linguists – overall semiologists (Saussure, 1995) –, semioticians (Peirce, 1878) as well as by psychoanalysts (Miller, 1987). Although it could be argued that these both terms are slightly different in meaning for each of those theories, it will be enough to explain the adopted concepts within this study by considering the purpose of this paper. It does not matter if there are shared common meanings among those theories or not.

The term *signifier* was adopted to designate any element that acts as a stimulus before to launch the signifying processes, i.e., signifier is any element that may provoke a process of signification, even if these elements are not already captured by an observer. The term *signified* was assumed to name the signifier that was captured and is already being processed by an observer toward a representation, i.e., signified is any element from the real that is being or has already been transformed into reality. In these assumptions “real” is defined by the block of accessible elements (signifiers), which are available to be appropriated by an observer, and “reality” is assumed as its representation (signifieds). A block of signifieds is a corresponding model of some part of the *real* shaped by an observer in a more or less accurate and a more or less truthful way. In other words: the *real* is made of signifiers, while reality is shaped by an observer to create a correspondent model of the *real* by means of signifieds.

The construction of the meaning

From a static point of view, the meaning is established like a diacritic block of discreet elements or, to be more precise, the symbolic language is constructed from “elements that they each have their own value only when they are put in relationship with at least another element,” (Miller, 1987 p.28); hence, every single element is devoid of significance. The *meaning of an element* – or signifieds – is constructed from the perceptual capacities and from the sensibility to the differences existing among the *diacritic elements* – or signifiers –. The choice of the *signifiers* that will be translated into *signifieds* is determined by both the capacity of an observer to identify relationships among elements during his own meaning construction and his capacity to correlate these elements with a restricted possibility of significance.

The abduction starts from lacunas

Peirce (1878) describes, besides the well-known inference processes of deduction and induction, the abduction as another way of inference. Unlike the deduction and induction, which are formal ways of reasoning by symbolical logic processes, the abduction is informal. Informal does not mean illogical, but critical logic thinking. Instead of definite symbolic conclusions, the abduction has as result the formulation of hypothesis that may be used with a minor or major exactness as a provisory conclusion. Abductions are propositions that can be affirmed or denied, while both deduction and induction are assertions that are final judgments.

According to Bonfantini's (2000), the abduction may belong to three subtypes: (1) in the first subtype the law, which mediates the abduction process, is imposed in an automatic or a semiautomatic manner; (2) in the second, the law of the mediation is chosen within an available "encyclopaedia" and (3) in the third subtype the law of the mediation is an invention and is presented as an *ex novo* model. All of these three subtypes have in common the presence of signifiers without any signified, which starts a cognitive process.

When it is introduced new signifiers without any equivalent signified, the observer verify a completely absence of meaning and one of the two situations may occur: (1) if there is a small number of new elements, individuals are able to complete the lacunas among the whole of elements with some abducted interpretation (formulation of hypothesis); (2) if there is a great amount of new elements, individuals may not be able to infer a hypothesis, causing to them a cognitive anguish. The first case may be interpreted as an introduction of novelties and the second as a cognitive dissonance. In a summary, the lacunas may be either a *gap* for filling with some meaning or a *missing part* that impedes the meaning construction. The pertinence of the signifiers is an important factor that may facilitate the meaning construction. Furthermore, the quantity of missing signifieds (and not signifiers) in conjunction with the capacity of a people to filling those vacant places in order to establish a meaning will also differentiate both situations.

The construction of a sense

If someone says: "Mary is joyful", immediately a meaning pops up from this phrase but it does not mean that this statement encompasses a *sense*. The meaning is static (we may compare it with a dot). The sense, instead, is created along the time axis by connecting many signifiers to construct a sequence of meaning (and we may compare it with a line). In fact, Bonfantini (2000) affirms that to establish a sense it is necessary to move along the time¹ to achieve a comprehension. The construction of the sense depends on the relationships among many meanings that probably will express a phenomenon's performance along a period of time, i.e., it gives an overview of the historical aspect to the block of meanings. For instance, if it is said that "Mary is *finally* joyful", it denotes an historical sequence. It means that firstly Mary was sad or not so happy and, later, something occurred to bring Mary in a subsequent joyful state. Each meaning in relationship with one another is slightly transformed in order to be more efficient and compatible with the whole sense. So, it is established new values for each meaning directed by a specific sense construction.

¹ It has to be differentiate the conception of "sense line" from the "chain of signifiers" described by Peirce (1878) as well as by Lacan (1995) when they affirm that the people are always compulsorily connecting signifiers captured from the real.

Dialoguing with machines

How does it being introduced new technologies in the users' everyday life? The Norman's (1998) words are quite clear when he describes the stages of development of the technological employs. In the beginning, the use of new technologies is conditioned to what these technologies are capable of doing. At this stage, design concepts will be developed by translating the technological requirements into a usable product. It may be inferred that such a design procedure will put in relevance the technology and the product interactivity will be enough to be used. So, the interfaces will be part of a technology-centred product. As an outcome, the interfaces will just allow the use of the device. This kind of objects will attract only who is a technophile (Cooper, 1999; Norman, 1998) or is in need of it (Norman, 1998). Later, in the maturity, the technological companies will do some efforts to pay attention to the users necessity. In favour of User-Centred-Design practices, Schneiderman (2002) states that understanding human needs will accelerate the evolutionary development of useful technology. Moreover, he considers the usability design as the start of a "paradigm shift" and synthesises saying: "The old computing is about what computers can do; the new computing is about what people can do." Even if the author is referring to computer technologies, his affirmation may be easily fitted to any type of device that uses computational components to allow the human-machine interaction. It can be asserted that the quality of the human-machine dialogues also depends on the stage the useful technologies are, and on how many innovations are being introduced as novelties.

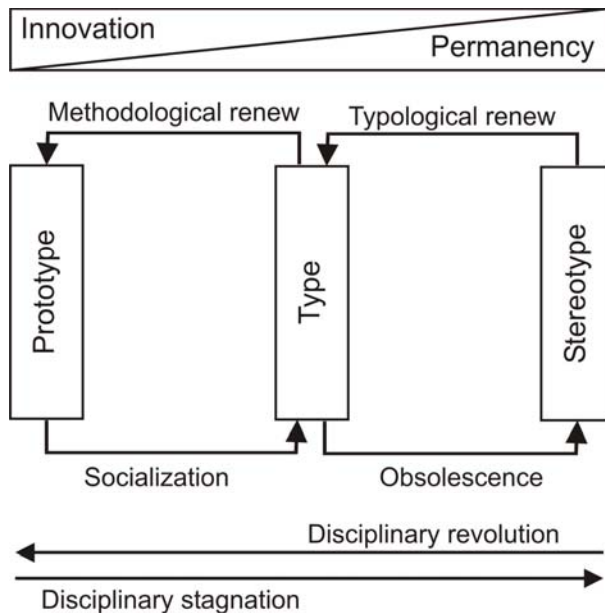


FIGURE 1. *The Krüger's (1984) typological morphogenesis model.*

In regard, VanPatter (2005) says that the humans are able to understand something as *new* only by comparing it to something that they already know. Clearly, VanPatter is talking about the *ex-novo* model in correspondence with the users' mental models as the same way as Lynch (1960) says about the standard type. Lynch affirms that when a type is sought by the first time someone may recognize and describe it because it corresponds with a stereotype that was already known. Krüger (1984) presents a typological morphogenesis model (Fig.1), in which he analyses the transformations of the type. In this model, each time that is introduced novelties it means that the actions are running to a *disciplinary revolution*. On the other hand, when the model is not

renewed, the prototype gets marred and runs to a *disciplinary stagnation*. If a prototype is repeated, it may be said that a *socialization* process is occurring and it is evolving for a type, but if the repetition is widely employed what should be a type becomes a stereotype in an *obsolescence process*.

If someone acts on the stereotype he/she gives a new look to a product, refreshes its characteristics and restores the people's interest. It is occurring a *typological renew*. If the model is radically modified from a type to a prototype it is coming about a methodological renew. Needless to say that some users and planners perform a disciplinary revolution and several others look for disciplinary stagnation.

But what does this typological morphogenesis model has to do with human-machines dialogues? When designers set up an interface in a revolutionary way they have to take into account that the users are able to assimilate just a limited number of novelties. A person who tends to a disciplinary stagnation will be probably less able to accept *ex-novo* models. On the other hand, if designers opt to maintain the elements of an interface already known, it may be disgusting for a lot of users interested in a disciplinary revolution. In the first case, users are subdued to a large amount of novelties, hence they may have some difficulty in establishing a meaning for the new elements, while in the second case users may be regretful with a product that does not offers any of the new elements they aspect. Obviously, designers may not satisfy all of the users' idiosyncratic differences, thus the ability to define how many novelties should be introduced in an interface constitutes one of the Achilles heel to a good interface design dialogues.

New technologies and the users. When the use of technologies is in its beginning, it is centred to what these technologies are capable of doing (Norman, 1998). So the solutions of interactions are relatively neglected in favour of what decision makers consider as important: better, cheaper, more powerful, unique technology and so on. In this phase technologies requirements prevail on the users' need. It has not too much to choose from: it may be inferred that the planners will consider the "technologies requirements" AND "the users' need" as two separated aspects. It may be sustained that in this phase de human-machines dialogues are poorly planned. Norman (1998) says that in this stage, people are just attracted as technophiles or by a great necessity about the functions a device may offer. According to the author, in this phase users are called "early adopters."

New technologies or the users. In the commencing of an intermediate stage, technologies are mature enough to be taken for granted, so, the marketing strategies dominate the process of planning (Norman, 1998). The staffs try to understand the users' requests. Hence, the development of the new technologies is directed to satisfy the new features desired by the market. But the companies prepare the market interest saying what is interesting, and powerful, and up-to-date, etc. According to Norman, (1998) the choices about what has to be considered are done through arbitrary decisions and hardly ever the customers' real needs are addressed. The planners are more interested in solving some technical problems by asking to their customers – or merely supposing – what should be helpful to them, than to actually discovering which are users' requirements (Probably it would be more worthwhile to inquire to the non-customers users). In this phase the design actions are centred whether in just developing new technologies based on the marketing strategies OR, much more rarely, in the users real needs.

New technologies for the users. Already in this phase users are looking for status and does not matter too much if the products does not have a very good interaction. Despite that, the

development of the new technologies is alleged to satisfy users need, and the researches are directed to the new features desired by the market. About it, Norman (1998) complains about the companies' actions to improve on highly quantifiable measures of performances. Even if the companies' actions are carried out by means of very strict scientific methods, these researches are solely to be marketably used, disregarding the actual users necessity. What is not measurable is considered of minor importance. The author says that this is where the computer industries are today: planners are concerned with the development of interfaces FOR the users' needs, but the word "for" means that the users are passive subjects to whom planners are deciding *for*. The marketing staff is also oriented by many consumers' behaviour: convenience and reliability are more important than technological superiority (Norman, 1998). On the other hand it starts to matter the formal aspect, which gives prestige and pride of ownership. Users would never prefer to wearing an inexpensive plastic watch, even if it coasts much less and works much better than a handmade watch.

Design with the users. To achieve the planning maturity, any product must be planned "with" the users' participation. This old discussion on design was early treated by Sommer (1983), one of the very first authors, which has considered the people's actual needs. According to him, the planner's job should concern *with* people rather than *for* them. It is a mistake to think that it is enough to take into account the planners' suppositions. It is, as well as, a blunder to believe that the scientific studies fixed by the marketing staff are much better than the planners' suppositions (Norman, 1998). Indeed, the most part of these studies is scientifically correct but seldom deals with relevant aspects to the users' requirements (Norman, 1998; Cooper, 1999). Surely, many of the electronic daily objects are designed to the market interest, and some of them may meet the users' needs. To know exactly what should be done to improve human-machine dialogues, the only way is to seeing how people interact with these devices. If a design *with* the users has to be envisaged the main challenge is to decide which instruments and better skills are capable to modify the current design models.

The metaphors: alienation or welding?

Galileo (1610, apud Arecchi, 2003, p.8) stated that the complexity arises from the attempts to logically construct the world. So, if someone says that are living in a complex world and he has to use complex machines, it means that he was trying to organize the world into a logical construction and he has failed. To bypass the discomfort provoked by the unsuccessful endeavor, individuals start a reductionism process. The reductionism process begins when someone starts on to transform the Real into reality. Although there is an information loss, this process allows individuals to get cognitively the complex phenomenon as a whole.

If individuals are not able to conclude a reductionist model by inventing a signified for the *ex-novo* model, they may: (1) look for analogous situations that are already familiar to them; (2) move their attention to another phenomenon easier to be understood (Kuhn, 1993) or (3) simplify the Real into a disagreeing reality model by constructing a wrong corresponding model (Lakoff & Johnson, 1980). These metaphors may promote, whether a welding by step-by-step construction of a theoretical model (Hirtle, 1998) or an alienation in the individual's relationship with a phenomenon.

Between the machines and humans

Based on Fadini (2000), Pizzocaro (2004) outcrops that, from a systemic point of view, there is not any dichotomy between humans and machines, but contiguity between the natural, alive and the artificial, lifeless and she says that such contiguity begs to rethink about the existing planning categories.

Pizzocaro (2004) also affirms that the fuzzy boundaries between natural and artificial as well as the progressive fade from category to category, pertain to an image of the reality as a unitary block. The current comprehension of this contiguity is not taking into account by designers during the planning process.

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