

Designing the stress

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Abstract

In previous works, the author of the present paper has been devoted to expose his theoretical and empiric investigations on Design and his methods as a part of a social communication process, as well as to the study of the human communication in general terms.

As a those reflections result, we seek in the present report to defend and to argue the following thesis: a good design find this departure point on a design process centred in the user. Then, after studying the conditions for the effectiveness of the Design objects, it is imposed, as an exercise of scientific and social understanding, the use of the same theoretical tools to analyse the consequences of Design products malfunction.

1. Introduction

In previous works, we have exposed our theoretical and empiric investigations on Design and their methods, framing them in the context of a social communication process. This process justifies and it explains them. He have been also studying human communication in general terms. Now we must look for some more reach conclusions.

All these works are based on three fundamental premises:

First, any culture can be understood as a generation of behaviours and material objects, which production and use is function of certain social relationships structure. Their meaning emerge from a certain system of social "necessities". The socio-cultural system is then a hyper-complex communicational system.

Second, the above-mentioned implies that, material environment components, act as messages, taken place over the base of certain language and producing some influence in their receiver-users.

Finally, the two previous premises implies that, an indispensable part of the projectual activity, consists on the knowledge, investigation and control of all human behaviour aspects determining the production or transformation of Design products, as a necessary condition for a good design. This is applicable so much to the field of Graphic Design or Visual Communication Design, like to the field of Industrial Design.

All this can be summarized in the following theorem: a good design find this departure point on a design process centred in the user. This premise implies an ideological positioning so much, as the logical conclusion that, if we are and/or we bet for a Welfare State, the effectiveness in the execution of products functions, redounds so much in human and social benefits as in economical benefits, contributing to a balance between both.

Then, after studying the conditions for the effectiveness of the Design objects, it is imposed, as an exercise of scientific and social understanding, the use of the same theoretical tools to analyse the consequences of Design products malfunction.

Design centred in the user is a desideratum, but the daily reality tendency is to very often show us the Design activity like “public enemy”: Design products appear to us as “collectors” of an over-information, accumulated in the day-to-dayness. This relates to the complexity of mental and behaviour models for their use, as well as to the proliferation of all type of disarrangements of diverse nature. The logical consequences upon the user shall be the frustration and the anguish, in other words: the stress.

These aspects will be examined so much from the theoretical perspective that sustains the hypotheses in play, like through some extracted illustrative examples of the daily life.

2. Design as part of communication process

Before we said that culture and, therefore, social system is based in the exchange of behaviours, symbols and objects, reflection of the underlying social relationships. This exchange also makes possible the operation, permanency and change of social structure.

We can understand the society as a self-organizer system.. We understand that a system is whatever group of components (subsystems) and their properties. They have interdependence relationships and they complete some functions whose last end is the global system maintenance. We speak of auto-organization in the sense that they are open systems. They influence and they are influenced by their environment. But they change not only to the environment adaptation, otherwise as a result of their conflicts, interferences and internal interactions, unceasingly self-re-organizing.

They are systems open to the information, that is to say, able to assimilate the novelty or the disorder, restructuring their behaviour patterns. They are systems endowed with a regulator apparatus acting for their preservation in front of internal and external environment, making it in especially flexible way. We understand for regulation all those processes producing the maintenance of system stability in front of interferences affecting him The regulator apparatus is the specialized part of the system, or that dynamic interactions whole, processing the information, and associating it to the actions and necessary operations: that is to say that transforms the information in performance program.

Applied to the social system we can understand that their regulator apparatus comes given by the existence of a culture: a reality conception or hypothetical world (some myths) necessary for information processing; and some interaction programs (behaviour rules), needed to maintain a social system uniform state.

However the socio-cultural homeostasis is not only based on possession and transmission of certain myths (acting like a reception filter -internal regulation -), and of certain external regulation mechanisms based on behaviour programs. Regulation also implies the externalisation of variety (fluctuations) control mechanisms, that constitute extensions of the regulation capacity.

This extensions are other systems acting as external regulators coupled to the processor system. They can consist on simple active or passive effectors (for example objects and behaviour scenarios), serving as material constrainers or barriers for the behaviour; or serving as facilitators, prosthesis or tools enlarging the environmental control capacity. There are from the same verbal language, as extension of the experience; the computer like extension of the cerebral capacity; the knife like extension of the teeth, or the dress as extension of the skin and sexual barrier.

In this sense it is distinguished between static regulators and dynamic regulators. The first ones are based on interferences control putting barriers to the same ones: for example the turtle shell like defense, the space organization as constrainer of possible human behaviours in each social environment, or dress as protective of cold or heat. The dynamic regulators regulate disturbances affecting to the system, setting over against performances counteracting them: from the tools in general to the languages (verbal or visual) in the symbolic plane.

Summarizing: Individuals should adapt to an urban social ecosystem, characteristic of the advanced industrial societies. It is compound almost in their entirety for an enormous quantity of extensions, produced by the same society.

In the artisanal societies, less complex, those extensions were the result of successive adjustment and adaptation spontaneous processes, prolonged in the time. In the post-industrial societies, configuration of environment is a planning processes lattice result. All environment components are fruit of projection processes previous and later to their production. They are the result of industrial Design processes (use and consumption objects), environmental Design processes (urban, architectural, of interiors), graphic and visual communication Design processes (mass media, publicity, signaletics, corporate image, etc).

Summarizing. This is our departure premise: Design is not only the formalization of product configuration, neither only style design. We understand it as the complex process intervening and embracing from the study and determination of use, aesthetic and configuration requirements (product conceptualization), going by their formalization, the previous production pre-test phase, the later to the same one post-test phase, and this last repercussion in the ulterior redesign. This constitutes a dialectical, continuous and spiral process, mediator of those extensions creation and evolution, founding social dynamics.

Design has become so an essential part of the whole social regulation process that we have exposed. It has an enormous responsibility then in getting the appropriate performance of regulation processes, as well as the same ones constant improvement.

3. User/product interaction

3.1 a cybernetic model

We understood Design products like extensions of regulation capacity, serving individuals to adapt and to survive in a hyper-complex social environment. From a cybernetic perspective we can consider object (in wide sense) and user like coupled transducers.

A transducer is a system with entrance. The alternation between system possible trajectories or behaviour ways is determined by the values of a parameter or entrance: concrete behaviours of another system, with which is coupled. The system states or behaviours influence in the behaviour line developing the other one and vice versa. When the influence is mutual, as in this case, we speak besides a joining with feedback.

Before, we understood social system as a communication system and we said that environment can be understood as a group of messages: All these components exercise certain influence in the receiver-users' knowledge and behaviour. Perception of environment events influence subjects, changing their information. Information transmission enable the systems integration, organization and regulation. Communication" is the word for these interaction processes and behaviours exchanges among coupled systems, facilitating relationships among them. Their base resides in the information transmission. (Marcé, F. 1990).

In a previous work (Marcé, F. 1989) we took a concept coming from the Environmental Psychology, giving him a bigger reach. We refer to the concept of privacy. This theoretical term is very useful to define the degree of existent effectiveness between two coupled transducers: effectiveness affecting to the mutual adaptation between two systems. The preservation of the appropriate privacy level, in our case of the receiver-user, resides in the good balance among the information arriving to the individual, and information that the individual transmits through its environment joining.

We said in the beginning: Design products appear to us as “collectors” of an over-information, accumulated in the day-to-dayness. Very often Design products involve an information excess, overflowing the subjects computing capacity. They force subjects equally to an excessive information transmission, hindering or impeding the appropriate development of adaptation answers.

Then we related this to the complexity of mental and behaviour models for their use, as well as to the proliferation of all type of diverse nature disarrangements. In the next sections we will explain these aspects.

First conclusion consists in that a good design will allows extensions improve or facilitate the environmental subject adaptation, and very especially subject adaptation to the same extensions: simplifying use objects mental models; simplifying necessary behaviour subroutines for their use; eliminating the existent disarrangements. In definitive, a good design should take to a foregone interferences neutralization: it should improve privacy level in the relationship subject-object.

Finally we should distinguish between two joining processes to keep in mind:

The joining user-extension. This forces disarrangements elimination, based on the intimacy improvement (use easiness). Basic condition consists on facilitating anticipatory regulation prevalence: To act it is not necessary to wait interference effects on the system, because enough indications making it foregone exist, and they allow to act in advance to neutralize it.

The joining extension-environment. Disarrangements elimination consists on improving the execution of object primary functions.

We will especially focus in the first case: it is the one corresponding and affecting more clearly to Design process in strict sense. The second case, not less relevant, it would be more characteristic of design engineering. Although we don't want to induce to believe that this separation is always as overwhelming as it could come off of our statements. To clarify concepts, let us give an example: it interests us more use easiness of mechanisms allowing car window movement, that external noises and rain window isolation capacity.

3.2 disarrangements: causes and consequences

3.2.1 effectiveness dimensions according to the product type

In case of objects, we can differentiate primary and secondary functions (Eco, U. 1978). We can relate object effectiveness with execution of first ones, and their implication capacity with second ones. Effectiveness would include execution of effective primary functions so much (praxis based), as of conceived primary functions (form capacity to transmit its use or uses like denoted meaning). The implication would suppose connotative meanings transmission (aesthetic message, according Moles), susceptible to persuade receiver of object attractiveness.

In the case of the two-dimensional visual messages, the only primary function that they possess is the conceived

type (denotative): to transmit a limited referential type information that, depending on messages type and complexity level that we keep in mind, it can end up completing opposed functions.

1-For example in a commercial brand sign, it will consist on the transmission of certain recognizable formal identity. This will be a necessary requirement so that message aspects centred in the implication can act. In this case, therefore, this primary function is to implication service, on the contrary of what could be considered in the case of objects.

2. We can affirm the same about of iconic-descriptive level denotation, in figurative visual messages in general: it will be a necessary condition recognizing representation of our environment elements, so that the aesthetic-rhetorical treatment, applied to the same ones, be effective. A specially clear case is that of advertising messages.

3-Same is applicable to signaletics: in this case intelligibility or cognitive legibility constitute the basic primary and responsible function of effectiveness.

4-From another point of view, we can also find a relationship among primary and secondary functions, comparable to the characteristic of three-dimensional use objects. We can understand, for instance that aesthetic-rhetorical aspects (implication), relative to the paging type applied to a didactic book , they are serving to a better understanding and motivation for their contents learning (referential primary function).

We see the importance adopted by each one of the two factors so, it will vary according to messages type and implied codes. For example, in the case of the group of messages conforming a corporate image program, legibility is an indispensable condition, but the impact turns out to be the decisive factor, although it comes conditioned by the preservation of same ones necessary minimum legibility.

On the other hand in a graphic verbal message, constituted by a text centred in referential message function, the things vary. Let us suppose a writing containing emergency instructions, on as acting if a bad machine operation takes place. Main message will be of typographic character, maybe related with explanatory illustrations. Here maximum legibility (perceptive and cognitive) will be the decisive factor. The impact, in the comparative sense regarding other pamphlets of instructions, will be irrelevant. It is more, it will be necessary to control that no originality intent can rebound in the most minimum descent in legibility. Only impact type to keep in mind, will be the one that affects to the relationships among the different pamphlet information component blocks, that is to say, to the same one compositive level. And it will be even this way to the service of getting a better legibility, standing out the most relevant data in each part of the pamphlet.

3.2.2 transgressions types

We will focus basically transgressions affecting to daily use objects, and to the joining object-user, without forgetting some important aspects of visual messages and other Design products. We don't seek to elaborate an exhaustive listing but some one sufficiently significant and illustrative of our theses.

We understand that the trajectories or behaviour ways, developed by the transducer-user are transformations, operations, tactical or subroutines of an action program. We will use the word "operator" meaning the material part, in which the behaviours act to produce changes in the transducer-object. This one acts on certain initial system state, in function of an objective or task to carry out, to produce the transition to other states or necessary sub-goals to reach the general objective.

a) Interaction with objects.

Centred in object/user interface.

1-Growth of manipulation subroutines complexity (behaviour trajectories), to carry out the same operations (often reducing or hindering their effectiveness). Technique fetishism, as prevailing myth in our society, has an important responsibility.

Transformation in devices of mechanical operators in digitised operators provides us numerous examples: Television or videotape configuration or programming, some time ago they were carried out with a simple button and the effects were apparent observing them directly in the screen. Now the button or buttons activate a much more complex menu in screen, being able that the same menu hides great part of the screen, preventing to see the produced direct effects, that is to say, impeding the feedback.

2-Excess of useless or dispensable operations in detriment of most useful and habitual (these more probably used). Most of electronic devices can be included in this category (again Technique fetishism): cellars, photographic cameras, digital video cameras, phone answering machines, etc. Most includes a multitude of operations supposing, in principle, an increase of benefits. Transmitting a sensation of reality control increase. It is more magic than real. Most of operations are hardly never used or never used. When we should make it we must look for to the instructions manual. This fact already converts the relationship with the apparatus in more complex and conflicting. In some cases the useless or dispensable operations end up substituting to more usual operations.

We will take the case of a simpler device: the 6 musical CD's " Pioneer " old model cartridges reproducer, had a button " Time " allowing to know remaining songs time, and the total disk duration. In their new model it loses the function and a button appears "Hi-lite" of pieces principle automatic exploration. This less useful operation could be carried out for other ways.

3- Operations concentration in connection with the operators: multiplicity of operations and transitions concentrated on an operator implying different manipulations to allow different device effects. Again cellars, record players, videos, etc are good examples. Often same button should be pressed one or several times, according to the required operation.

We will continue with Pioneer's simple example. Previously, it had a button for each one of 6 disks, now it has only one that you must pulse successively to play a new disk. Six buttons are only conserved in the remote control, but we will examine it in paragraph number 7. Buttons "REW" and "FFWD" (manual search) and other 2 buttons dedicated to pass from a song to another (track search), they decrease to 2 buttons completing a different function according to the pressure exercised on the same ones. Again 4 buttons are only conserved in the remote control. Buttons "play" and "pause" suffer the same transformation.

Let us keep in mind that in most devices taking place this functions concentration, as cellars, there is not a remote control compensating it.

4-Operators reduction, transferring operations to other existent operator and appropriate with the same operations. It doesn't imply accumulation of operations in strict sense but synthesis or elimination of redundancy, but the result is that the operation is hindered. A very simple case provides a good example: In the Opel Astra and in other cars the opening mechanism and centralized closing is located in the insurance button of driver's door. Keeping in mind his position on the door, their opening forces to rules of arm and hand movements challenging the ergonomics and the motive possibilities. Look at figure 1. It could be closed with elbow, equally uncomfortable and forced micro-action, that taking naked arm can also cause easily pinches. An operation redundancy exists in other car brands, technically very simple. There is a dashboard button, easily accessible.

5-Improvement of aesthetics without keeping in mind generation of new disarrangements. There is another example in same automobile. The dashboard central console is silver colour made, contrasting with black colour of remainder dashboard. A great constant central reflection takes place in the windshield.

6-Feed-back or visibility lacking in general, in Norman sense (1988), caused by a bad topography: affecting pertinent operation transmission (conceived primary function), and their effects transmission. It is consequence of concurrence of others factors we are examining. For instance a bad legibility of signs, added to an operations concentration, plus an operations accumulation, making device unintelligible for the user.

7-Multiplication of parallel interfaces not equivalent in benefits. For example remote controls. It is a complement allowing to carry out all operations, avoiding continuous displacements They respect Norman principle (1988) of an operator for each function. But this doesn't imply a full redundancy among apparatus operators and distance control operators. Therefore this becomes indispensable. It is a small object moving for the room, going by different hands. Easily it is ruined before the apparatus or it strays, adding daily difficulty that living room is invaded by diverse devices remote controls. If it is ruined, the apparatus lost great part of its functionality or handling easiness.

8-Disarrangements that no longer strictly bear a mini-actions or micro-actions excess, but the decrease in the probability of success of implied action units. For example the opening of drink cans. A sample: in a certain moment cans of Cocacola reduce their superior surface diameter (possibly for storage reasons). It doesn't produce more actions in their opening, but to carry out them more slowly, for not spilling liquid. There is an increase of doubt and of performance conscience (a focal attention increase and automatism decrease).

9-Faulty designs from beginning on those nobody acts changing it, trusting on disarrangements habituation and the assumed inevitableness sensation. For example teapots spilling liquid; too small handles of cups, with their difficult grabbing, possible burns, etc.

10-An even more perverse variant of the previous one is when someone design new objects to palliate wrong design of previous ones. For example the CD's cellophane packing, almost always impossible to open up, it has ended in the design of a small object to cut it.

11-There is another case when the good solutions degenerate in cheaper versions into that the lack of quality in the production transforms them in useless. A habitual example are letters envelopes "easy open", having passed from opening simplifying, to convert common break of envelope in more difficult than it was before.



Figure 1

b) Styling structural case.

1-From social system inner logic, a continuous styling is more comprehensible in a product like car with a social fetish symbolic function (prestige ostentation). It imply a false sensation of social ascension (Baudrillard, 1972), related with social requirement being continually "in" (Kientz, 1971). These are motor bases of consumption society. This situation produces anguish and continuous frustration in individuals. When they believe to have satisfied reference group expectations, they are forced to reconsider them (Dorfles, 1965). This is one of the big structural causes of the predominant stress in an anomic society like ours.

2-Same phenomenon it's also comprehensible in all consumption objects with same social fetish symbolic function, although having lesser price and shorter life. We are thinking about dress fashion design; about all ornamental function things and, from some time ago, about technological fetishism associated to electronic devices.

3-Same continuous image changing it's more surprising, when we find it applied to perishable products: their effectiveness would come conditioned by the attainment and maintenance of a stable identity. Result is the reduction of that effectiveness by a periodic disorientation of its users. For example a chips bag constantly changing its visual configuration. May be it should face other smaller marks parasitism or configurational mimetism. But it is destroying their own brand image and hindering recognition by users.

4-Something similar is happening, to companies and institutions corporate image (entities based on their stability). Small styling changes, in reasonable spaces of time, transmitting renovation idea (it is an instituted social myth), they can be beneficial. Could be also assumable for their real or potential clients. However, there are usually changes much more radical, unjustified and simply responding to arbitrary design fashions, in a similar way mentioned about automobiles.

5-Special mention it deserves the mystifying use of styling. I'm not referring to its usual social function, but to simply masking of very concrete company interests, clearly disregarding those of their clients. An example is the gel body "Hydro Genesse" container: there is a radical change in its two-dimensional and three-dimensional visual image. Before it announced the gift of 20 product% free. Now the apparent size of the container is the same one, but its capacity has passed from 900 to 750 ml. But they will gift a little container of different aroma. After, container size is again increased, diversifying product aromas. They return to announce gifting of 20% product free. Finally it returns to 750 ml container, with a smaller visual and tactile discrimination of opening lever that converts it in much more difficult. An we have also the original product disappearance, a global image changing, and a higher price.

A case of moderate styling that doesn't break the identity would have it in the moisturizing cream " Revlon ". In this case the same container is also used for different products, only varying the label in function of the image product , but maintaining a common brand image. This derives in economy, so much in literal sense, like in sense of Design, as of information transmission.

c) Visual messages.

We will only mention two very significant and habitual cases:

1-A lack of legibility and consistently in intelligibility, favouring the implication based on visual aesthetics or rhetoric. This is specially serious for the receiver when intelligibility is just the basic message function. It usually ensues in products that their purchase and use motivation are based in visual rhetoric and an aesthetic enjoyment. But it is in fact reduced by that intelligibility lack. The masks of the musical CD's are a good example. They are

bought by the music. The visual seduction of wrapping induces to the decisive impulse of purchase. But the wrapping also bears the transmission of referential information equally necessary: like songs titles, their lyrics, edition year, etc. It's very average that color contrasts, shapes combination, or composition convert in illegible those data.

It's much more serious when it takes place in magazines or Sunday newspapers supplements: their really primary function is referential.

2-An intelligibility lack in the signs or symbols with a deictic function. For instance on signaletics, subject is on constant uncertainty about the relevant behaviour line. In objects of daily life it bears a persistent tension accumulation. When signs are public, and requiring quick answers even with survival value, they can bear errors associated to involuntary social transgressions or even of fatal character.

There is an example on "Bosch" dishwasher symbols (figure 2). One refers to the lack of salt and the other one to polish's lack. They are states of the apparatus taking place only from time to time, and their user is not familiarizing continually with them. This reinforces the necessity that analogical code basing them avoids ambiguity totally (an arbitrary code would be even less advisable). Someone can associate the radiation structure with snow flake stereotype, therefore with the salt glass (in fact it represents the "sun" shining). On other hand the two invested semi curved lines with arrow tips suggest movement, fluency. It make more difficult to close the shapes group to be seen as letter S (of salt). The purely analogical character of first symbol still hinders more to create the expectation of an abstract sign regarding the second. Have just complicated it an abstract property (the shine) it is represented by an analogical sign, and a particular object (the salt) is represented by an abstract sign (the acronym of their name), using an analogical rhetorical treatment (for example the arrows).

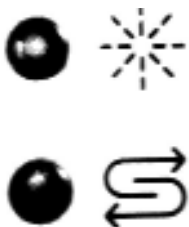


Figure 2

d)Environmental organization.

This section would deserve, as the previous one, a monographic study. It affects especially to the urban and interiors spaces design. We will limit ourselves to give an example, representative only of one of their multiple variants.

We refer to a case getting attention especially, for their reiteration in brief time lapses, as well as for their styling components related with the aspects of this phenomenon to that we refer previously.

We are thinking about habitual changes in the hypermarkets. Their user finds a continuous change on graphic image of indicative sections posters; on same ones location; on sections distribution inside the commercial space, or on products included in every section. This phenomenon forces continually to change the space environmental image that individual has been creating. That serves to be guided easily, transforming the space into a familiar behaviour scenario and therefore controllable. Changes take to the loss of reference axes; to the disorientation; to the necessity of restructuring environmental image and, therefore to convert in conscious and difficult a

process that had been automated. It increases the complexity of a social action periodically (the purchase), already sufficiently complex.

Supposed marketing reasons may support this changes (when forcing to stroll it can be supposed that more not foreseen things will be bought). But these behaviours take place equally without necessity of losing well-known orientation indicators (the accumulation of diverse products and discounts advertising take us to always buy more than what we sought).

4. Conclusions

a)It's able to understand that final effectiveness value of design product, or the related privacy level and, therefore their capacity to reduce or to increase the stress, they are determined by the following equation:

-Relationship among the cost (increase of information at molecular level related computing or behaviour), and the molar benefit (identity definition; general expense in time decreasing; feedback improving; more effective final result; regulation improving in the extension-environment joining, etc).

b)Often, although global benefit is apparent, the stress degree generated by functions concentration or proliferation in inferior level, converts that supposed benefit in paradoxical. For example time decrease of global execution, that bears an counteractive increase of complexity in mini-actions or micro-actions levels, characteristics of developing behaviour program.

c) It is necessary to keep in mind the use frequency, as determinant of long term disarrangement effects. In general, if it's giving a continuous use of operators, it is easier to learn arbitrariness. But if they are an occasional use, as salt substitution and polish in dishwasher, or occasional adjustment operations in videotape reproducers, cameras, etc; then it is impossible to assimilate it. We shall appeal to instructions manual. And often this doesn't already respond to intelligibility conditions mentioned.

d) We don't discard the possibility that in some cases (for example, mobile telephones and other electronic objects) it is designing for an upward generation, fully socialized in hyper-complex society (like adolescence segment), forgetting the rest of population. It would be necessary to value, however, which can be long term final consequences.

e)Summarizing. Stress is a characteristic dysfunction of hyper-complex industrial societies. It appears as a social problem associated to them. The exponential increase of information hinders its control, and it hinders, this way, the individual's control on social environment. You can probably continue increasing the information and the stress level.

First question is until what threshold it is acceptable; keeping in mind, for example, that psychotropic medicines are most consumed in this society type.

Second question is if price to pay for individuals compensates this geometric progression growth model supposed benefits. Especially if we keep in mind that it is based on absolute competitiveness. In fact if every time individual is "failing" more, we should not forget that he is the base subsystem on that whole social system is leaning.

It would be necessary to begin thinking about sustainability concept, already used in the economic plane, but in psychological terms and of social relationships. In this sense we believe that it will always be more beneficial a system based on characteristic rules of non null sum games (cooperative games in that all win), and not based, like now, in null sum games, in that one should lose so that the other one wins. This would take to reconsider the social relationships, the consumption society bases and, in consequence, the social function of styling, in particular, and of Design in general.

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