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Outlines for a semiotic analysis of objects¹

0. Abstract

The aim of this paper is to offer an initial theoretical setting for a semiotic analysis of objects, or, more correctly, usable artifacts.

Usable artifacts are signs as any other event, and as Signs they appear in the triadic scheme of semiosis, together with Object and Interpretant (please note that I will indicate the element of the Sign as *Object* with a capital initial, while lowercase *object* will be a synonym of artifact).

The semiotic analysis of artifacts is a tool for training designers, supporting design and research, modeling the impact of a new product on the market, etc.

Artifacts differ from other signs because: i) their representamen, or physical support, is normally used for some practical purpose, in interaction with other physical entities, included the human body; and ii) their Interpretant includes such use.

Artifacts can be analyzed in three stages: perceived qualities (Sign), use and production (Object), social discourse (Interpretant). A grid for the analysis is presented in the last part of this article.

0. Semiotics of objects

Objects are the commonest things around us. Things made by man for a practical use. All works of art, which are not made for practical ends, fall outside the scope of this investigation. However, usable artifacts may have aesthetic or artistic properties. Buildings, streets and towns are excluded from my reflection as well, together with ships, aircraft and other means of transportation, although the principles of semiotic analysis also apply to those large and complex artifacts.

From a semiotic point of view, any event is a semiotic event the moment it enters a subject's field of experience; that is, any event may become a *sign*, a text or a message. Therefore, artifacts are as much signs as trees, books or gestures are.

Interpretation is the process by which a cognitive system produces a habit or pattern of response to a Sign. The logical output of this process is called *Interpretant*. Any *Sign* is related to an *Interpretant* and to an *Object*. The *Object* is an event external and different from the Sign; it has more properties than the Sign can convey, regardless of the latter's complexity and size. The Sign mediates between the Object and the Interpretant.

This triadic unit is the modular component of a *cognitive process* in which any Interpretant becomes in turn a Sign for the next Interpretant, and so on without a *logical* end. Such process develops along different threads of transformations, in a dynamic not-linear network (see Deleuze and Guattari, 1976 and Eco, 1984).

In *practice* the process does end because the subject is forced by the environment to respond to the sign. This can be an action either in the outer or inner worlds, the latter being the cognitive act of storing new knowledge in his or her memory. The construction of a new cognitive pattern of action--a disposition to act or *habit*--is the output that brings the interpretative process or *semiosis* to a temporary halt.

Because of their mediating role, *Signs* share properties both with the Object and the Interpretant. As the interpreting process unfolds, the cognitive

¹ This article includes some results of four years of teaching and research at the Industrial Design Program, Milan Polytechnic. I wish to thank Ubaldo Stecconi for his suggestions and precious editing. The Swatch ad has been brought to my attention by Ylenia Raia.

system transforms one sign into another and connects new and old information. In human beings this process reaches advanced stages of elaboration, such that it is impossible to predict its final output (practical or cognitive) with any degree of certainty (when compared to physical or biological sciences). For example, the same commercial broadcast to the same audience twice can cause two different responses. This is quite obvious, since cognitive systems are endowed with *memory*, and thus it is impossible to submit the same sign to the same subject at different times, since the system has been modified by the reception of the first sign, by subsequent external inputs and internal elaboration.

0.1 What's the use of semiotic analysis?

Performing a semiotic analysis means simulating the interpretation of a sign by a community of interpreters (culture, group, organization, etc.) in a given place and time. We may define *interpretative circumstance* as the system composed by a community of interpreters, and the space and time of sign-reception. *Interpretative environment* indicates more stable conditions of reception. The meaning of a sign varies considerably if we change the interpretative circumstances. Yet, if we limit the circumstances to a subset of all the possible ones, semiotic analysis gains validity. We must keep in mind, however, that semiotic analysis deals with *simulated* models of interpretation.

The community of interpreters whose cognitive background is adopted for the analysis usually is the analyst's. This means that the analysis is always relative. Many overlook the fact that the signs we interpret have a certain meaning only for our social group, and wrongly attribute them a universal value. Normally, in everyday interpretations, this simplification does not produce serious mistakes. In analysis, on the contrary, we must always keep in mind that there is no interpretation without a cognitive background, though in our simulation this is simplified and generalized. On the other hand, interpretation has little value if the background has no social basis (if it is, for example, that of an individual): semiosis, like language, is a social process.

The analyst's job, therefore, consists in taking a model of culture, making it collide with a sign and plotting a map of interpretants. Such map has a predictive and applicative value. If the sign is received by a community similar to the model, it should interpret the sign in the way described by the analyst. The semiotic approach, however, is not *quantitative* but *qualitative*: it does not yield measurable values but networks of meanings and habits.

The scope of the analysis can be general, that is, we can use a simplified model of the whole community of interpreters; or it can be aimed at a specific group: teen-agers, seniors, students, professionals and so on.

The aim of the analysis can be a complete map of interpretation, that is, the simulated interpretation may concern the sign under all its aspects and may be fully developed; or it can be limited to some aspect. For example, we can analyze a car in full or only with respect to the aesthetic perception of its interiors.

The purpose of the analysis can be twofold: firstly, to train industrial designers by helping them to map rationally a product's network of meanings; secondly, to monitor the different interpretants of an object during the process of designing, testing or restyling. Semiotic analysis can be used when we need to foresee a community's reception and schemes of reactions to a sign. In particular, it is useful in marketing, politics, economy, mass media and communication planning.

0.2 Objects and images

Some authors in communication theory and semiotics use to say that, since artifacts are signs, they can be seen as cases of communication. In short, the advertising of a car and the car must be seen both as texts, sharing the same values, and the difference between them is not semiotically relevant.

This assertion (that I have strongly simplified) is partially true, but at the same time too sketchy.

In *Le avventure di Pinocchio*, the famous book by Collodi (², Mastro Geppetto, the puppet's father, is very poor and has a fireplace and a boiling cauldron painted on the wall. In spite of his efforts, he gets little material comfort from the image. In point of fact, the painting and the fireplace have something in common: a person who has never seen a real fireplace could recognize it by comparing the perception with the painting (as its verbal description). Yet, though both are signs, they are not identical: we cannot warm ourselves at a painted fire. How can we express this difference in semiotic terms?

As seen above, one basic property of signs is their mediating character: the Sign stands for something else (the Object) to some Interpretant. Besides this triadic relation (which has a *logical* and *cognitive* character) the Sign has a *physical* existence (which is called by Peirce *material quality* or *representamen*, and by others *expression* or *substance of expression* or *sign vehicle*), since it is an event under all aspects. For instance, an apple used in theater to represent Eve's temptation has all the physical properties of apples (it can be eaten, for example), *plus* the cognitive property of standing for a cultural unit, its Object. An egg in a bird's nest has physical properties, plus the cognitive property of indicating that a bird has been there.

There are signs whose material quality is neglected in interpretation, and others in which it plays a major role. In some of the latter the material quality also has a practical use (³).

In the meaning of this page, for example, the material quality of print is of no consequence, unlike in newspapers' titles or Chinese characters.

If we consider a painting, material qualities matter: the kind of paint and the way it is laid depends on whether the support is canvas, wood or other material. The whole painting is looked at according to implicit rules (distance, position, etc.) in order to fully exploit its semiotic properties. Yet, the kind of support and the frame have no practical use, apart from conveying the meaningful properties of the sign. No physical obstacle prevents one from using the painting to feed a fire, as we often do with old newspapers, but it is not a common use. Geppetto's fireplace, too, had no practical effect, besides that of coating the wall.

When we analyze a sign we often leave out accounts of its physical support. A lecturer who began to talk about Goethe's *Faust* by saying: "The *Faust* has a wonderful leather cover" would be very funny indeed. On the other hand, Ferrari cars could not have become worldwide status symbols if they had--say--no engine.

Artifacts, in a standard and general interpretative environment, have two peculiar characters that distinguish them from other kinds of signs:

1. their material quality or representamen, is normally used for some practical end, in interaction with other physical entities, included the human body;
2. their Object describes their use and points to the material quality of the Sign.

However, the assertion that artifacts communicate, besides having practical uses, is true. A Ferrari car says something about its user, under the social, economic, and aesthetic aspects. From this point of view, it works as any other sign.

Thus, artifacts are more complicated than standard signs, because their representamen is *in some way part of their meaning*. The text of Michael Crichton's *Jurassic Park* does not say 'open me at page one; read the first page

² The novel can be found at <ftp://manuzio.dsi.unimi.it/pub/Manuzio/c/Collodi> (in Italian)

³ According to Peirce, also in sensation and emotion "the material quality is made prominent" (CP 5.294). However, in this kind of signs the material quality is not pointed back by the Interpretant. See Proni 1989:102; CP 5.287.

then turn it and read the next; etc.' but tells us a story, a Harley Davidson motorbike, besides telling a story, says 'you can use me to ride'.

Back in 1968 Eco stated that an artifact (he used the term 'architectural sign') "denotes its function" (see Eco 1968:207ff). This means that--to stick to our example--a Ferrari car says something like 'this artifact can be driven on paved streets with such and such performances' and so on. In a like fashion, a knife is supposed to say 'cut'. In a more accurate definition, we can say that the artifact's Interpretant represents a function and points to the material part of the Sign as the means to perform it.

Because artifacts and 'pure' signs alike can communicate values, artifacts certainly have a communicative function. Yet, their meaning includes the practical function as its main component, and they are true artifacts if such function can actually be performed by their means.

If Geppetto's painted fire had been so 'realistic' as to warm him, then it would have been an artifact and not a pure sign. Thus, until we can drink beer ads, it would be better to consider them as something different from beer. Nonetheless, use and consumption are semiotic phenomena as legitimate as interpretation.

0.3 Use and meaning

It can be argued that meaning is mental, logical, abstract, and general, while use is material, practical, concrete, and individual.

There is, indeed, a difference between what is general and abstract and what is individual and concrete, but meaning and use belong to both categories. Any event that occurs in an interpretative circumstance has empirical and logical sides: all cognitive facts imply general schemes. On the other hand, any Interpretant is realized on a material substrate.

Jean Piaget has shown that perception is a complex feedback process in which action and information follow one another (see Piaget 1961 and Piaget et al. 1963). Every level of knowledge seems to follow this pattern, although internal processing tends to play a major role in the so-called 'abstract' or 'superior' thinking.

Thus, we can apply semiotic analysis to the use of artifacts as we apply it to the interpretation of a discourse. Of course, we will analyze a *model* or *scheme* of the standard use, as we analyze the model or scheme of standard interpretation. 'Standard' means a general and simplified interpretative environment.

0.4 Schemes of artifacts

There are many degrees of generality in artifacts.

Artifacts are mass-produced, even in handicraft. Industrial artifacts are made with processes that render them identical (for human perception). Thus, individual objects (*my car*) are seen as perfect copies of a design. Such a design is an abstract entity, since it cannot be reduced to drawings, plans or prototypes (see Anceschi 1981).

Handicraft objects are different just because their similarity to the design is less precise, due to the production process, and the design often is not recorded in drawings and instructions but stored in the mind of craftsmen.

Then, in several situations we are not dealing with single objects, but with general descriptions of objects. When I decide to buy a new car (second-hand cars are different), I don't think about a single individual car, as I do when I think about a friend. I think about a brand, a model, maybe a configuration, that is, schemes. Then, according to my order, an individual car will be chosen and delivered to me. Still, when I talk about my new car, I often talk about the *model* and not about my individual one.

In the semiotic analysis of usable artifacts, we must specify at which level of abstraction we want to work: we can analyze--for example--a particular stand mixer, like the *KitchenAid* (USA), or mixers in general. In its turn, a model can have different colors, accessories or configurations. We always deal with abstract entities, even if we are watching and measuring a single material

object. Semiotic analysis deals only with *models of artifacts*, and not with individual objects.

This does not exclude that *material, interactive* properties must be considered: the weight of a wrist watch, the cold sensation of the metal strap or the soft sensation of leather on the wrist, are important in designing and analysing an artifact. But we will not take into account properties of *individual* objects, as the broken strap of *my* watch. Yet, the fact that a model of blue jeans wears out in a particular way can be considered. In this case we have a model whose properties change with use. The model must be intended as an abstract scheme but not a fixed and unchangeable form.

0.5 The semiotic structure of artifacts-Signs

0.5.1 Qualities of the artifact

The first act of interpretation is *reception*, that is, the receiver's awareness that he or she has perceived something that stands for something else.

Perception is a semiotic process. Sensations and percepts are signs.

Thus, even the simple sensorial knowledge of an artifact is subject to analysis.

It might seem that watching, touching, smelling, weighing, and in some cases tasting an artifact is such a simple fact that it does not need any reflection. Yet, there are fields in which a specific training in perception is required to accurately describe an object or substance. Among professional activities based on perceptive training are wine, coffee and olive oil tasting, tuning of musical instruments, refereeing in sports, medical diagnosis. People who work in these fields have the same perceptive system as the rest of us, but they are trained to concentrate on their sensations, separate the different sensorial data, evaluate and describe them.

The semiotic analysis of artifacts requires such ability, although not focused on particular sensations.

The first thing to take into account is that we frequently mix sensations with culturally acquired knowledge. Most people, placed in front of a Coca-Cola can and asked to describe what they perceive, would say, "It's a Coke". Yet, this is not the result of perception. To recognize a Coke can we must have received a cultural training. If we answer "A can of soft drink", we still use our education, and not just our senses. A man from 17th century would not see a can, but a metallic cylinder painted in red and white. To the limit, even recognizing a metallic surface requires some education.

In short, perception is not 'reality', but the result of the interaction between an event and a sensorial/perceptive system. If all human beings would become suddenly color blind, all the colors of the (perceived) world would change, though the physical nature of objects and of light would stay the same.

Therefore the analyst must be aware of the different contents of perception, and must be able to separate the levels and come to the more primitive sensations. He must have the naïve eye of a child and the accurate tongue of an expert.

Since the human perceptive system is part of our standard interpretative environment, we will consider the perception of the artifact as the starting data and the description of perceptive qualities of the artifact as the first step of analysis.

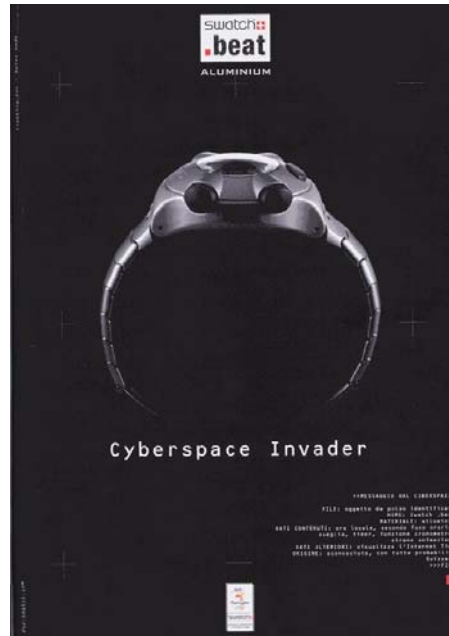
However, such sensorial exploration must not be just a quick look at the artifact but an accurate and complete examination.

0.5.2 The Object of the artifact

The following scheme can help us understand the semiotic model of artifacts proposed in this article:

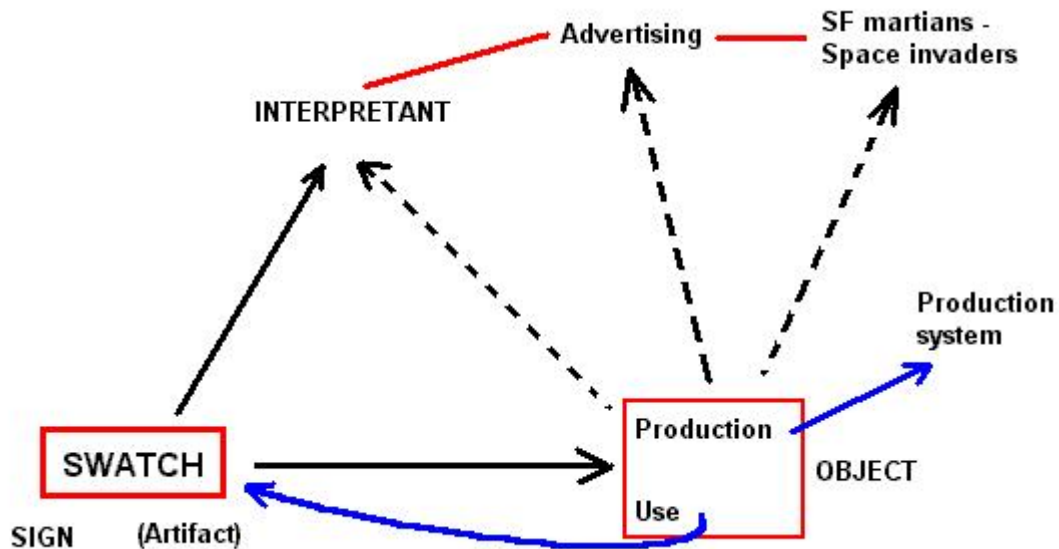
This diagram has no logical order: a content like "It is well kept" refers to the individual bike in the picture, implying that the picture has been taken now and not when the motorcycle was new. Another content-unit, "Women don't like to wear a helmet after they've done their hair", is not strictly part of a dictionary definition of motorcycle. It also implies a point of view on 'women' that refers to a particular culture.

The interpretative circumstance also includes intertextual connections. Dealing with artifacts, one common kind of intertextual reference is advertising. The image we see below is a good example:



The product is 'set into discourse' in a visual way, playing on its resemblance to SF Aliens and video-game invaders. This intertextual reference can be taken into account in the semiotic analysis of the watch: it is one of the encyclopedic relations to be reported in the semiotic map.

The scheme is the following:



I want to stress the scheme of semiosis resulting from this figure: the Object (what the Sign stands for) is the engine of semiosis (Bonfantini, 1980:xxx), its core, and is reflected in the first steps of interpretation. The further steps can be contents that are logically 'far' from the Object, but they

are always (though indirectly, as suggested by the dotted arrows) related to it. Of course, for an external observer considering Sign, Object and Interpreter, the Object has an independent existence, while the interpreter deals only with the Sign, and must *infer* the Object, though usually with a high degree of confidence.

0.5.4 How to write Interpretants and Objects

Interpretants are content units.

According to Peirce, the space of semiosis is a continuum with identifiable parts. After a part has been identified, it becomes a determinate and discrete unit governed by a triadic relation of Sign-Object-Interpretant. But if we split it, we find that any component has the same structure, and so on. Thus, content units are not conventional entities, although any combination of them cannot exhaust the interpretative process.

Between any two successive Interpretants it is always logically possible to put another intermediate Interpretant. The space of semiosis is thus infinitely divisible (see CP 6.204⁴). The same applies to the Object. Peirce calls it 'Dynamic Object', because it is a process which infinitely approaches the 'real' referent of the Sign but never reaches it (see CP 5.259-263).

When we write and draw the report of a semiotic analysis we select some Interpretants and Objects, and our selection is only one possible 'reading' of the artifact. Its relativity does not imply that some readings can be more valid than others.

We must choose a way to present our semiotic map. Words, diagrams, hypertexts, and any other kind of communicative device can be used. Obviously, to have a more rational and comprehensible presentation, it is better to follow a method and a standard grid. However, semiotic analysis, besides being a technique, is also an art (like wine tasting...), and the analyst must not be held captive by the scheme. A brilliant reading can skip many steps and focus on the most important points.

In the second part of this article I will advance a hypothesis of a grid for the analysis.

1. A grid for the semiotic analysis of artifacts

1.1 First step: perception (Sign)

As I said above, the first step of analysis is to ascertain, by careful observation, the perceptive properties of the artifact-sign.

In the first step of analysis we must concentrate on the sensorial interaction with the artifact: observe it under different points of view, handle it (if possible), touch it, smell it.

We are inclined to think that we know every particular of the objects that surround us in our daily life. Yet, most of us would not be able to describe the rear of our TV sets, or the shape of the back seats of our car. We see a lot of things but we observe few.

Observation requires an innocent eye: we must drop all our biases and try to use the least cultural or acquired knowledge we can. Of course, we can never erase our education: it is difficult to see a car and not to recognize it as a car, while it is easier to see a microprocessor and not to recognize it, and only a few people can see the traditional tool used to make 'passatelli' ⁵ and know what it is. When we meet an artifact of which we ignore both use and name, our description is necessarily naïve. We must simulate this situation in front of the artifact we analyze.

The purpose of this effort is to describe the artifact in a complete way without being concerned with its use and its socially coded values.

⁴ Reference to Peirce's Collected Papers are traditionally given with the system 'CP volume number . paragraph number'. Ex.: 2.56 = Vol. 2, par. 56.

⁵ Typical soup from Romagna (Italy), made with eggs, Parmesan cheese and dry grated bread in broth.

Perception can be supported by photographs, videos, drawings, measures etc. To keep note of the analysis we can use a voice recorder, or a video camera, or just write down on paper.

The report of this stage is a description that lists the most important traits of the artifact. Since we usually analyze artifacts that belong to a type, we may choose to list only the differences from the standard models.

1.1.1 Internal syntax

Many artifacts have parts. Scissors, for example, are composed of two blades kept together by a pivot. These three pieces can be separated. Each blade has a looped handle, sometimes of a different material sometimes the same as the blade's.

Blades and pivot are *separable parts*. Handle and blade (when cast in one piece) are *unseparable parts*. They are functionally different: the handle is made to insert fingers in it, the blade to cut.

A TV set is much more complicated. The analyst is not supposed to take the artifact apart. She must only play with the moving parts as if she were a child, pretending she doesn't know how the thing works.

Parts of the artifact are put together according to its *internal syntax*.

1.2 Second step: use and production (Object)

Use and production are the two directions of the causal line on which the artifact is placed as a material event. The production is the chain of causes and effects that have brought the artifact into existence. The use is the chain of possible and probable causes and effects in which the artifact will be involved.

In this chain the descriptions of two subjects are inscribed: the *model user* and the *implied producer*.

Production	Use
wood, iron, fusion, etc. <-< hatchet >->	to hold, to chop wood
--- past ---	--- present --- --- future ---

1.2.1 Use

To use an artifact means to interact with it in order to attain a goal. Interaction is a feed-back process of action and perception: the subject acts and monitors the effects of the action to tune the next act, and repeats this loop until the process is stopped or brought to an end.

Not all the steps of this process are conscious: when we learn how to use an artifact (for example to drive a car), we acquire a series of automatisms that we perform without being aware of the individual actions they require.

These schemes of interaction can be considered as the reference of the artifact-sign, what we usually call the *function*. An artifact, then, is the material means required to perform a function. The function is expressed as a scheme of interaction, sometimes very complicated and vast: just think about the functions of a house. The use-scheme of an artifact consists in use-sequences that follow a use-syntax. Consider--as an example of syntactic sequence--the reversible operations we find in any on-off device (buttons, switches, faucets, etc), the use of levers and steering-wheels, the particular kind of movements of the computer mouse, or the operation needed to tie up a shoe, completely different if the shoe has Velcro straps.

The artifact does not *force* its use: we can use an object in a non-standard way: a shoe as a hammer, a knife as a screwdriver, a bottle as a candleholder, and so on. The artifact *conditions* the interaction because of its material structure and shape: I can use a baseball bat to hit somebody on his head, but it would be difficult to use it as a toothpick. To follow Peirce's terminology, the unforced conditioning artifacts exert on us is called

determination, meant in its etymological sense of 'setting the limits'. The power to determine interpretations is common to all signs and is their salient property. Artifacts have the additional property of setting the limits to their possible uses.

Thus, we can define 'use' as a process in which a subject acts to attain a goal (cognitive or practical) in interaction with an artifact which offers the support and sets the limits of its constitution. The properties of the artifact should be seen as possibilities and constraints of interaction.

1.2.2 Relation between artifact and use

How do we figure out the use of an artifact?

The mere artifact offers a large number of logically possible interactions. Unless we have a clear matching between the object and the human body (as in a glove) it may be difficult, without a previous knowledge, to infer the use by observing and handling the object. I wonder if somebody, without the proper cultural background, could infer the use of a spindle.

The actual use of artifacts produces *interaction codes*, socially recorded, described in texts and preserved in a community.

Yet, we must keep in mind that new non-standard uses may rise in individuals and groups. The consideration of other possible interactions with an artifact, besides the coded ones, can suggest the designer new ideas (see Munari 1977). In fields like fashion, non-standard uses of clothes and accessories have inspired many stylists.

1.2.3 The model user

The user and the artifact are two sides of the same scheme: artifacts have inscribed the figure and actions of humans (directly or indirectly through other objects), and humans make artifacts according to their range of actions, their body and the way they live.

Any artifact implies one or more *model users* ⁶: the furniture of kindergartens implies child-users; the objects that Ulysses and his mates found in Polyphemus's cave scared them, because they implied a user of giant proportions.

The model user is not implied only anatomically, but also for practical abilities (a piano keyboard requires a trained user, a toy like 'Game Boy' requires a level of training difficult to achieve among grown-ups).

The model user must be described in general terms in the analyst's report. At this stage we limit our attention to the characteristics of the model user strictly implied by the functioning of the artifact. For instance, a bicycle requires legs of a certain length.

1.2.4 External syntax

In some cases the artifact is enough to perform the function (for example a chair); in other cases some further object is needed, as for hammer and nail, racket and ball, mast and sail, etc.

Some use sequences or functions require a set of artifacts to be performed correctly. Westerners eat using knife, fork and spoon, glass, dishes, and other objects in coded use schemes. When we dress up, depending on our gender, culture and the season, we wear clothes in a specific order. A tennis match requires a series of objects, from clothes to bags and shoes.

All these artifacts compose *sets*. In some cases the set is designed according to the same style (as with cutlery); in other cases it is put together by the user according to use schemes and personal taste.

Use schemes can be considered like syntactic rules in which artifacts appear as components. Syntagmatic relations connect a logical sequence of items by the connective *AND*.

⁶ This notion is inspired to that of *model reader*. See Eco 1979:50ff

Some syntactic sequence is strict, some more elastic.

It is important to list the artifacts related by a coded use sequence to the one we analyze.

1.2.5 Paradigmatic relations

Paradigmatic relations are the connectives of an alternative choice, symbolized by the connective *XOR*. In language, paradigms are typically represented by conjugations: any element is alternative to the other (either I write 'am', or 'are', never both).

In analysing an artifact, paradigmatic relations connect our object to the objects that can replace it. A disposable razor, for instance, is paradigmatically related to an electric razor. But it is also paradigmatically related to other models of disposable razors.

Of course, no artifact performs the same function in exactly the same way as another.

Paradigmatic relations are very important because they concern the *positioning* of a product in relation to its competitors.

1.2.6 How to describe use

In mass production any product, before being marketed, is tested in several ways. Tests of resistance, functionality, ergonomic and aesthetic evaluation are performed. It would be useless for semiotic analysis to repeat such experiments. Yet, we cannot evaluate an artifact without using it. The artifact must be used, if possible thoroughly and repeatedly, and compared to similar artifacts, to determine the use-schemes, their faults and their strong points. We can also interview users.

In particular, we must try to find and emphasize how the artifact carries out its function, and whether this solution is sound and handy. In this job, a good help may come from the history of design and technique (see Zingale, 1999).

1.2.7 Production

The first step in describing the production system from which the artifact results is the material composition. Wood, iron, steel, plastic, resin, fabric, etc.: each material implies a different method of production and shaping. The artifact stands as the last stage in a chain of causes and effects whose beginning coincides with that of the Universe. We cannot go that far... but we usually have some notions in mind as to how the artifact has been produced.

This path of analysis is not always meaningful. In some cases, however, the production is very important. In particular, all handicraft objects have most of their value in production. Irregularities of hand-made artifacts are so important that they are artificially reproduced in some mass-produced objects.

Production (process and material) is also important for artifacts used in sports (skis, tennis-rackets, etc), kitchenware (dishes, cutlery, etc.), furniture, high-tech and in many other fields.

Sometimes it is impossible to infer the production system just by examining the artifact. It depends on background knowledge, that is, the interpretative circumstance we suppose. How many people can tell whether a plastic artifact has been printed or extruded or can recognize the work of a lathe? As analysts we must decide which background knowledge we must adopt, how specialistic and how detailed. Of course, the eye of the semiotic analyst is not that of an engineer. What we are interested in is the production system to which the artifact points: handicraft, electronic, mechanical, chemical, and in some cases the technique, material and assemblage.

1.2.8 The implied producer

In a specular relation to the model user we have, on the other end of the cause-effects line, the model producer. In this case, the subject is usually non-individual. It's a firm, a shop or an organization. A car, for example,

implies a big plant, a vast organization of research, design and distribution. An expensive Swiss chronometer implies a small factory, a long tradition of care and precision, manual work, accurate testing.

These properties compose an image we can call *implied producer*. It must be listed in the report, usually in short, unless it is particularly important (as in the example of small-run production).

1.3 Third step: discourse (Interpretant)

So far we have analyzed the causal relations of the artifact; i.e., material interactions with production systems and users. In this way we have followed the path that connects the artifact-Sign to its Object.

When we come to the Interpretant, cognitive relations are at play, which connect the Sign (and indirectly its Object) to socially established cultural units.

In this stage of the analysis we start as before from the artifact-Sign, then we pass to the Interpretants connected to the *use of* the artifact and eventually to the Interpretants connected to the *discourses on* the artifact.

1.3.1 Artifact values

1.3.1.1 Perceived values

Bello ('beautiful') is the word you hear most frequently in Italian malls and shops. Beauty is one of the qualities, or values, consumers look for in some products. Usefulness, functionality, low price, up-to-dateness, originality, and elegance are some of the values we attribute to artifacts. But all properties are relative: consider beauty that we perceive as an intrinsic property of the product. Artifacts that were seen as beautiful and elegant in the past (like decorated furniture, furry carpets, square-profiled cars, black tiled bathrooms, plastic shoes, etc) now seem outdated and ugly. Functional values change even faster, due to continuous evolution in technology, not to speak of prices. Concerning originality and up-to-dateness, the concepts themselves are time-sensitive. All the values that seem directly present in the artifact actually result from the interaction between our cognitive system and the artifact itself. Since the cognitive system, down to perceptive processes, is anchored to our cultural background, I call *perceived values* all the properties that the artifact shows besides its mere material description (step one) and its use-schemes (step two). Perceived values are discursive properties, that is, they have an intersubjective and socially defined communicative nature ⁷.

Two examples, taken from *Newsweek*, (9, August 28, 2000, p. 6). The first artifact presented by Malcolm Beith in the *Periscope* survey is the American icon KitchenAid's stand mixer. The artifact is almost unchanged since the 1930s. We can easily list tradition, solidity, simplicity, reliability, and classicality among the perceived values.

The second artifact presented is a line of "21st Century Kilts" for the youth market designed by Geoffrey (Tailor) Kiltmakers. The kilts come in various materials, from the traditional wool tartan to PVC. The picture shows one boy wearing a black shiny plastic kilt. Considering this latter product, its perceived values comprehend some of those mentioned above, like tradition and classicality, but mix them with originality and extreme innovation. Of course, we deal with *Scottish* tradition and costumes.

⁷ To understand the nature of social entities, think of somebody that whistles a song walking in a street. Another person picks up the song and goes on singing it, walking the opposite way, and this fact is repeated again: the song exists in the same place for a certain time, but its physical support and the individuals who produce it are always different. This is the nature of linguistic codes and semiotic habits.

1.3.1.2 Values of materials

Materials have meanings, which change through time. Ivory, steel, wood, leather, wool, silk, etc., characterize the artifacts they compose.

The history of the social reception of plastic, for example, is extremely interesting. In the early sixties, when plastic began to flood the markets, its image was highly positive: it was light, cleanable, hygienic, cheap, brightly colored, modern, and could take more shapes than any other material. Designers rushed to create any kind of plastic object: glasses, chairs, furniture, clothes, lamps, toys, etc.

The image changed suddenly in the seventies: plastic was accused to be polluting, undestroyable, to induce cancer. If burned, it produced dangerous smoke. Plastic objects became rapidly a symbol of low income and bad taste. Plastic clothes and shoes, worn in the sixties by models and rock stars, disappeared from the wardrobes.

In the following years the interpretative environment changed again, and today plastic is accepted as 'politically correct' in many kinds of artifacts, while has disappeared from others. New recyclable and biodegradable plastics appeared, helping the users to accept its presence.

Therefore, a plastic overcoat in the sixties was fashionable, in the seventies was a provocation (some underground bands, like Devo, used such garments), in the nineties it was seen as uncomfortable and artificial.

1.3.1.3 Socially coded users

In analyzing use we considered the model user inscribed in the structure, size and operation of the artifact. Now we will describe the user socially associated with the artifact.

The bicycle is a good example of the difference between model user and socially coded user. Traditional bicycles come in two main types: for men and for women. The model user is not different for the two models: any man can ride a woman's bicycle and any woman a man's bicycle. The model user must have a standard adult body and possess some basic skills. The frame of a woman's bicycle was designed to allow the user to wear skirts, but of course it can be used by anyone wearing trousers; conversely, women can ride men's bikes wearing trousers or skirts.

The socially coded user is different: we expect women's bicycles to be used by women and men's bicycles by men. Then, bicycles have gender, but only from the social point of view.

If a piano implies a model user who has undergone a specific training, it is socially connected to middle or upper class education, a family which cares for culture and art (because the study of piano must begin in childhood), a certain romantic inclination.

These implications are weaker than causal implications: from the logical point of view they have only statistical ground, and can change in time and across cultures.

When women choose to use men's bicycles, they flout the social code, which was so strong as to produce two different designs for the same vehicle. Analogously, the piano can be played by a black American, born in the Thirties, who learned to play jazz without any formal training.

When we construct Interpretants we move at the upper end of semiosis, where the interpretative environment has a growing power in determining the actual effect of the Sign. Social codes have a considerable strength in driving the interpretation: if we see a man stepping out of a Mercedes, in dark suit and tie, leather briefcase and shoes, we usually think he is wealthy or powerful, or both. However, we must not forget that interpretation is circumstance-sensitive. The same scene, set in a poor rural village in Bolivia, close to coca-growing areas, may make us think that this person is a narco-boss. The same artifacts point to a different coded user if we change the interpretative circumstance.

To go back to a previous example, a brand-new KitchenAid's stand mixer, placed in view in a new modern kitchen, may be interpreted as a sign that the owner wants to show her knowledge of cult objects, her love for American icons

and design evergreens. Maybe the artifact has never been used to make cookies and it will never be: it has become an art object, like Philip Starck's orange-squeezer. In this case, the actual use-sequence of the artifact loses almost all importance.

The young man who wears a '21st Century Kilt', today, does show he preserves a Scottish tradition (if he's Scottish) while at the same time following fashion and sporting a young look. If the user is not Scottish, the kilt will be more original, and show the desire to break social codes, but with a dandysh shade and a love for Scotland and its culture.

1.3.1.4 The image of the producer

The implied producer is the production system causally inscribed in the artifact. But from the product we can infer more about its origin than the simple production process.

Cultural codes assign an image to any producer, and in particular to those who carry out specific strategies. The craftsman, the old industrial firm, the Eastern-European electronic behemoth, the Italian fashion designer, the Swiss watchmaker, etc. are all model-producers. Brand and corporate identity are components of this Interpretant, but other elements play important roles, such as the country where the artifact comes from. 'Made in Italy', 'Made in Japan', 'Made in France' are more than simple indexes: the artifact assumes some of the values connected to the country. I personally remember a 'Made with pride in the USA' label, which was more explicative than a two-page leaflet.

Thus, consumers think that German products are durable and rationally built, French are fine and original, Italian well designed and fashionable, although today, in the era of globalization, the 'made in' label does not tell very much about the real place (or places...) of production.

A particular kind of producer is when user and producer are the same: this is common--for example--in 'clubwear', the clothes used by young people in discos (see Vaccari 2000), and in personalized motorcycles and cars. The artifact becomes a sign of the user's personality, his or her style, views and attitudes.

1.3.2 To own, use, consume

An artifact is acquired, used and in this process is consumed, that is, receives the causal marks of the interactions in which it takes part.

The person or persons who use an artifact may have different ownership rights: from simple shared use (at least ten basketball players share the same hoops), to family property, employee use of corporate property, leasing, and complete private ownership.

Use and ownership of goods have a myriad possible variations: producer, user and owner overlap in self-made artifacts, like the shawls old women knit for the coming winter. These give rise to strong Interpretants of individuality, independence, and originality or of a tradition of penury and self-sufficiency.

Ownership types are inferred through coded rules: seeing a bride in a white limousine and seeing the same lady driving the same car into a supermarket parking lot some days later, makes us infer different kinds of ownership.

Veblen was among the first to state that the use and consumption of goods had not only practical ends but also social values (Veblen 1899). Expensive or luxury goods, owned or exhibited, show the wealth of the user, and thus his or her role in society. It was a very important theory, which has been extended to other social values. To use an artifact can be the sign not only of wealth but also of a life-style (think of the different social status associated to golf and boxing), political or religious positions, gender or cultural interests and so on.

Another very interesting field of research is the elimination of artifacts: when, why and how do we dispose of an object? A used artifact can be

sold and become a second-hand product, or thrown in garbage bin, or carefully preserved to increase its value in time. In some cultures, the shortest is the time an artifact is kept before being thrown away and substituted with a new one, the highest the social status of the owner. For example, in many social environments the frequency with which one changes his or her car is usually exhibited as a status symbol on a par with the price and model of the car itself.

1.3.3 Communication and artifacts

Artifacts can be involved in communication processes under three aspects: they can carry messages in their own structure or close to it, they can be the topic of a message dedicated to sell them (marketing communication), or they can be part of a discourse.

1.3.3.1 Communication in the artifact

Whenever messages can be erased from an artifact without changing its general perception, they must be considered as separate signs. For instance, the bright-colored stripes or letters that characterize the body of certain mopeds cannot be eliminated without changing their appearance, while the small label that warns you to wear a helmet can be peeled off without altering the general look. Also, the ringer melody of a cellular phone is part of the artifact's operation. Unerasable messages must be considered under the sections 'perceived values' and 'use'.

A message included in the artifact, verbal, visual or of any other kind, can be interpreted as a separate message. Yet, the fact that the message appears on an artifact affects its meaning. All messages in the artifacts include or imply indexes that point to the whole artifact or to its parts. For example, the mark "Made in Italy" implies "The object on which I am placed was made in Italy".

Labels usually carry warnings, production data, standard or protocol marks, and similar information. They are numerous in high-tech or military devices. Besides their denotative meaning, their presence means safety, quality control and after-sale care and contributes to reassure the user. For this reason labels have increased in number and visibility in recent years.

Labels allow us to infer which user the producer is addressing. Europeans, for example, find the large use of warning labels on American products amusing, and quote the advice on matchboxes ("Keep the box far from the eyes while striking the match") or on champagne bottles ("Do not point the bottle towards the face while opening it"). In fact, this habit only shows that American companies fear corporate-liability lawsuits brought against them by the dumbest users of their products and their shrewdest lawyers.

Brands would deserve specific treatment, since they are often complicated texts, strongly connected to corporate or brand identity and carrying diverse values.

However, they mainly communicate the producer's identity, tracing back the tradition of a name to fame and myth or originality and innovation.

Brand is often the main reason for purchasing; it allows the producer to charge a higher price than the competition. Thus, brand image is a main issue in communication strategies (see Semprini 2000). For example, if the media report that a famous sportswear firm sells shoes made by child workers in developing countries, the brand image is damaged, which turns into a financial downturn. The firm immediately launches a communicative crisis strategy trying to parry the blow.

Semiotic analysts must be always abreast of media flow, in order to monitor the changes in corporate and brand images expressed by the brands.

Instructions are not artifacts, but are part of what we might call *para-artifact*, that is, all those objects and messages that surround an artifact as a kind of support or entrance ⁸.

Their presence, completeness, friendliness, reliability are the more important the more the artifact is difficult to operate.

Some products come with VHS videos or Cd-roms besides instruction booklets, to offer the user a more pleasant approach. Some artifacts require thick manuals designed to teach their use, maintenance and troubleshooting. All such texts constitute an independent field of communication research.

Packaging has become a very important para-artifact, sometimes it is more important than the product itself. In point of fact, to define some perfume bottles as 'packaging' would be a mistake: they are part of the artifact, as any container necessary to give the fluid a shape. Liquids or gases sold without a container (like gasoline or sometimes water or milk) will not be considered artifacts.

Packaging talks about the artifact it contains, sometimes showing its picture. All these properties make it a text with an indexical sign pointing to the artifact and a communicative sign talking about it. In fact, as Ferraresi points out (Ferraresi 1999:26ff), packaging has practical functions (to protect and keep the product) and semiotic functions (to communicate the product).

Furthermore, the packaging is an artifact itself, and can be analyzed as such ⁹.

1.3.3.2 Communication for the artifact

Today industrial artifacts are surrounded and 'pushed' by an enormous flow of communication. Advertising and other marketing messages often fill more than 50% of media channels.

Semiotic analysis of advertising is an autonomous field of research and consulting, supporting strategic marketing and following up operative marketing.

When we analyze an artifact it is often difficult and costly to collect and analyze all related advertising. However, some traits of an advertising campaign may be crucial to understand the socially coded values of the artifact. When a car, for example, is associated with a famous testimonial, some values of the testimonial are transferred to the car. When Pepsi decided to strengthen its image among young consumers, it chose Michael Jackson as its testimonial, loved by teenagers and identified as a popular youth idol.

Sometimes, however, ads do not change the artifact's values, but only stress values already recorded in social habits. In such cases advertising does not play a crucial role in analysis.

Advertising is also important for the establishment and support of corporate images. In this case the values of the messages are connected to the artifact via the producer's image.

1.3.3.3 Artifacts in communication

Our society talks about artifacts more than any other in history does, also because never in the past had common people owned so many things.

Not only do mass media host advertising, but they also talk about artifacts in many other ways. The launch of a new product, in particular for technologies, is a piece of news. Artifacts' defects and successes, new ways of using them, problems they solve, new models, fashion, cult objects, always find room in newspapers and TV.

Movies, songs, videogames, novels, theater, etc. comment on and embody artifacts, show them, criticize them, make them cults or outdated.

⁸ The notion is inspired by that of paratext, elaborated by Genette. See Genette 1989.

⁹ Ferraresi 1999 presents a complete semiotic theory of packaging and some examples of analysis. Packaging and usable artifacts are slightly different things, but there are many common points in our methods of analysis (see 125ff).

XX-century visual art, especially pop art in the sixties, began to use, include, quote, rearrange, destroy, and imitate industrial products.

All these discourses about artifacts, in media, art and private communication, build the socially shared semiotic map of products, and continuously changes, reshapes, widens or narrows the network of its interpretants. Discourses even affect our perception of artifacts: we recognize the latest model of sneakers or of a handycam because we have been informed of their existence by the media or our friends, and we immediately judge them nice, fashionable, appealing, or dislike them, influenced in one way or another by the social discourse, our cultural background or personal ideas.

2. Conclusion

When we come to consider the circulation of values in social communication we find ourselves again at the beginning of our inquiry, because the influence of culture in the perception of the artifact is remarkable.

This circularity does not weaken the method of analysis: semiotics tells us that there is no neutral starting point where knowledge is without bias or background.

The analyst tries to adopt an intersubjective vantage, describes the likely interpretation process of a defined community with a clear and organized text, which may help to unravel the tangled threads of everyday automatic interpretation.

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