

# Design Management in an Era of Disruption



## Proceedings of the 19th DMI: Academic Design Management Conference

**Erik Bohemia, Alison Rieple, Jeanne Liedtka, Rachel Cooper**

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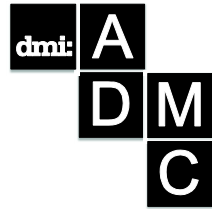
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## Semiotics and Global Products Design

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*This paper aims to make theoretical progress based on previous empirical studies on the semiotics of global products. Once these studies are supported by the theory of semiotics, this article proposes to discuss the possible ways to advance on research methodologies to analyze the relationship between users and their goods. Hence, the concept narratives, encyclopedia and dialogicity emerge as a manner of visualizing, categorizing, analyzing and linking information from/across different cultures. Furthermore, this discussion and advancement contributes to the management area in the sense of providing an epistemological foundation to improve systematic approaches on global products analysis, positioning and adapting, and its design process.*

**Keywords:** *Semiotics, Global Products Design, Encyclopedia, Dialogicity, Cultural Intertextuality*

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## Introduction

The relationship between individuals and products can be more complex than merely a material or an economic issue. They can then be understood as complex social phenomena, in which the semiotic aspects are equally relevant. Hence, it is necessary to better understand the possible relationships between physical and cultural signs in order to improve product development and adjustment for international markets.

Because of our dependence on symbols, it is desirable that objects materialize semantic codes to come to fruition in culture-specific contexts. Against this background, semiotics has evolved as a science that can adequately support empirical studies on the semantics of global products, improving the processes of product analysis and differentiation.

Unlike the commonsensical notion of differentiation, adaptation in the global market does not focus on changing the products' physical features, rather on the capability of transferring intangible features to the objects. This is evident in Moraes' (2008) argument that design, as a discipline, has drawn on the social sciences, aiming at anticipating the needs of future users. Thus, design has evolved into a multi- and interdisciplinary domain that is capable of providing timely responses while remaining open to interactions (Moraes, 2010).

In this context, semiotics emerges as an instrument for gaining better understanding of such issues as metaphors and identities of objects of use. Generally speaking, semiotics can be regarded as a scientific basis for designing objects that carry predetermined functions at the primary and secondary levels and are equally subject to being assigned functions at both levels (Domingues, 2011a). Regardless of Eco's (1968) contention that designers are supposed to manipulate variable primary functions and leave open the secondary functions, they are also able to deal with variable secondary functions. Domingues (2011b) provides empirical evidence that supports such a claim and points out the possibility of building on ethnographic technique methods to research and analyze cultural semantic categories that can contribute to the analysis and design of global products.

## Theoretical Context

### *Global Products and Symbolic Meanings*

In general, companies face complex issues when developing global products. As Levitt (1990) argues, ethnic specificities are traces of cultural

heritage, likes, and standards. However, as Levitt also points out, some of such traces slowly open up space for changes while, controversially, others simply evolve globally to make way for the homogenization of ethnic-specific standards at the worldwide level. This does not imply the end, but rather the widening of specificity and, in the face of current communication and technological progress, differences between users should be carefully assessed. In this context, design has been assigned the responsibility of efficiently adapting products (McCracken, 1988). As Levitt (1990) claims, technological modernization opens the way to design-based differentiation and other factors related to the market positioning of products.

The management literature features discussions on competition, differentiation, and positioning of products in the international market. The relationship of design, marketing, and other disciplines involved in product development is complex, and their integration is relevant to developing appropriate products. Scholars have observed that taking multidisciplinary approaches is relevant to understanding how product design provides superior experiences and adds value for the users (Kotler & Rath, 1984). Nevertheless, studies on which factors should be integrated into the design process to add such value remain incipient. Models of development of global products lack specific data on the interactions between users and goods and on their typical use. In our view, this can be obtained by identifying, analyzing and understanding semantic values, as well as advancing the use of ethnographic information, which has been restricted to the alignment of forms, functions, materials, and textures (Boztepe, 2007), rather than focusing on the possibilities of semantic relations between individuals and the objects of use. Such semantic relations are strongly associated with concepts of affordance, material culture, and identity.

As pointed out by Gibson (1986), the focus of the term “affordance” relies on the possibility of an individual performing an action within the scope of his own context. In applying the concept “affordance” within the design domain, certain objects and environments can be considered as being more or less adequate than others in specific functions, and it is their physical features that assure their adequacy to either one or another task (Lidwell, Holden, & Butler, 2010). This implies that designers who develop user-oriented projects design products focusing on their potential meaning (Krippendorff, 2006). As product design involves physical objects, designers should be attentive as to how shared cultural conventions within social groups directly impact on the actual affordances. Therefore, since the objects have cultural and social dimensions, and are also subject of a project

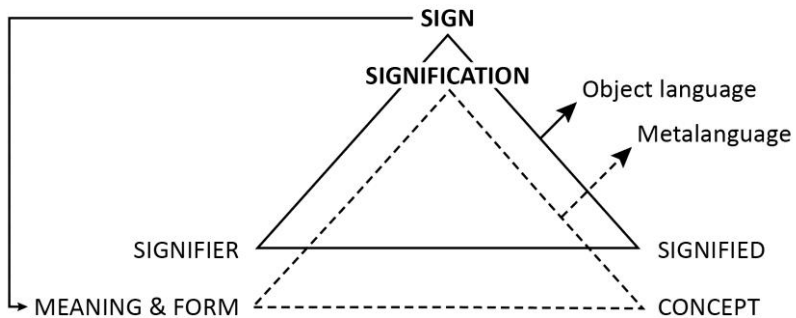
(Bianchi, Montanari, & Zingale, 2010), they can be named as artifacts and products (Bonfantini & Zingale 1999; Deni, 2001).

The purposes that individuals assign to artifacts and products derive from cultural processes, and designers should observe semiological features that are intrinsic to the material production. It is the production of goods and values that generates and reflects a society's cultural identity (Bomfim, 1999). One's identity is expressed in a product through three features: its very existence, origin, and quality (Nyemeyer, 2007).

As Eco (1968) claims, objects of use do not only function, they also communicate. Every use is converted into signs with the existence of a social group; therefore, an object that has a function enables and promotes this existence (Barthes, 1964). The use of objects goes beyond their functions: they can denote and connote specific functions depending on the cultural system (Eco, 1975).

Therefore, the notions of denotation and connotation are crucial within semiotics. Similarly, the terms signifier and signified provide analytical tools to describe two meanings: denotative meaning (level of the signifier) and connotative meaning (level of the signified), as indicated by Hjelm (2002). Such concepts refer to different levels of meaning, which explains why Barthes (1957) introduced the notion of new orders of signification. The first order is denotation, that is, the sign comprises both signified and signifier. The second order is connotation in that the denotative sign is used as a signifier and assigned a new meaning, referred to as myth (Barthes, 1964).

The myth comprises two semiological systems: the language and the system itself, referred to as object language and metalanguage (Barthes, 1957), Figure 1.



*Figure 1 The double integration of the semiological system within the Barthes' myth. Source: Developed by us based on Barthes theory (1957).*

As previously stated, objects of use can be deemed systems of signs, which should be characterized through contextualizing the signifier, culturally building on existing codes (Eco, 1968). This semiotic imposition admits the existence of a signifier within the signs of the objects of use, and this very existence enables the production of meaning or different functions.

Primary functions are clearly different from secondary functions: primary (denoted) functions are the initial functions, whereas secondary (connoted) functions are symbolically derived (Eco, 1975). In denotative terms, the object of use is the precise signifier of its function (Eco, 1968). However, certain forms may go unrecognized as determinants of certain functions (e.g., those of symbolic nature) and demand the awareness of a specific code for them to come to fruition.

The assignment of functions also implies a wider range of all communicative attributions of an object, as the symbolic connotations of an artifact are no less useful than its functional denotations (Eco, 1968). This means that before turning into actions, the functions codified by objects of use are classes of possible functions, or cultural units (Eco, 1975), and because the functions of these objects correspond to cultural units, the codes for their conception are found in cultural features and, hence, lie simultaneously within cultural anthropology and semiotics.

As a synthesis of the arguments on semiotics presented above, Figure 2 represents the theoretical foundation that allowed us to develop the framework that follows.

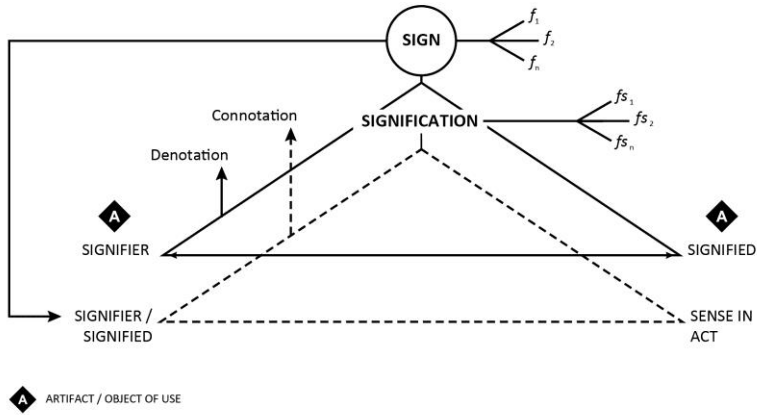


Figure 2 Model of interplay of functional and symbolic meanings.  
 Source: Adapted from Domingues (2011a).

Meaning assignment depends on the existence of an interpreter, that is, an individual that turns the object into a channel for the production of signs. In Figure 2, the left vertex of the first juncture, the denotation vertex, stands for the artifact existing [signifier], but still lacking representativeness. When the object starts representing something, it is assigned a sense [signified]. However, according to semiotics, only in a third moment [sign] is the object assigned the meaning of the first chain, which, for the objects of use, is realized in a use function:  $f_n$ . In the case of an object of use, shown in Figure 2 as an artifact, in the first articulation denotes its forms of use and connotes its possible functions –  $f_n$  – which are preconceived and recognized by the individuals. In other words, the object comes to being already carrying a socially and psychologically construed concept. At the configuration level, it denotes ways of working and connotes its possible functions. In the mythical juncture, however, the objects are assigned symbolic functions –  $fs_n$  – which correspond to institutionalized symbolic values.

Consequently, we believe that social discourses, as previously pointed out, can be regarded as issues strongly related to semiotics. That is, the sense of the artifact cannot be reduced to the mere relation between the signifier (the way object presents itself materially) and a signified (the expected function or performance). Hence, the concepts of “narrative”, “encyclopedia” and “dialogicity” can bring advancements and take an

important role in both the development and the analysis of global products based on the theory of semiotics.

### *Encyclopedia, Dialogicity and Cultural Intertextuality*

Each artifact should be recognized as an actor of a “narrative”, that is, as an element that takes part in a series of actions and behaviors in which artifacts on one side are called to act, and on the other to urge (Barthes, 1957; Deni, 2001; Landowski & Marrone, 2002). In addition, the notion of the encyclopedia provides a model of the semantic representation of an object regarding the historical, social and cultural complexities. In fact, the model of the encyclopedia (Eco, 1984; 2007) is suitable to make evident the multiple ramifications of the sense and knowledge, on different levels: individual, groups, social, cultural – perhaps even regarding general aspects of human beings. The metaphor of the encyclopedia allows the comprehension of the senses of the artifacts related to the cognitive or practical activities (Proni, 2012), and can also be considered as an intertextual network of cultural units interconnected – beliefs, habits, visions etc. This network produces not only connections, but also intercultural and intertextual dialogicity (Tedlock & Mannheim, 1995; Zingale, 2009), and then comparison and conflict (Landowski & Marrone, 2002), influence and infection, which can be considered “memetic” (Dawkins, 1976; Backmore, 1999), and drives inventive and innovative processes (Bonfantini, 1990; Zingale, 2012).

### *Things and Their Intertextuality in Our Environment*

Things are no longer alone, they are always in interaction with something else. That is, the sense of an artifact cannot be defined extracting it from its context. For instance, a word can be properly understood if it is in a sentence, and consequently within a text in which it takes part, but it is not enough. The text takes part in a context (in a situation and circumstance of utterance), and each text is conceived as a node inside of an intertextual network. In analogy, an artifact can be understood as a node inside its context, especially when regarding its role within a cultural context.

The interest of semiotics in artifacts and the material culture can be a starting point in the relational nature of objects. Semiosis itself, the process of identifying and generating sense, is relational. Therefore, semiosis originates when we establish a contact with the environment, inclusive of objects and everything which has a sensory and material nature. It is best to point out that semiosis can occur even in absence of a real language or



system of signification, like in the animal world. Indeed, the sense of an object emerges when we see something connected to something else, and that connection becomes an interest to the observer and therefore worthy of significance. All objects and events assume semiotic value only when they may affect our attention. As long as nothing happens in our minds, the objects are merely “objects”, things that are there, in total and absolute independence.

These “objects” and “things”, since they have a social and cultural dimension, and since they are the subjects of a project (Deni & Proni, 2008; Bianchi, Montanari & Zingale, 2010), we call them artifacts and products. They are in fact natural objects and cultural objects: the latter derive from our intentionality (Bonfantini, 2000). In this sense, objects are also facts and events happening in the world, or that we produce in and for our social life. Their relation nature (more precisely: semiotic-relational nature) is what gives them meaning. To invoke an old philosophical question, the sense does not lie in the being of things, but in their becoming: in their action and interaction. All things, once placed in the environment, tend to change the status of the other things with which they are related.

Therefore, nothing has a life of its own. Even things, such as human and nonhuman animals, have for us social existence, and the existence of every object, natural or manmade, is supported by a network of relationships. Only in this network can they express a sense. It is impossible to imagine the life of things, and even more so life in general, as a single and circumscribed event. Therefore, theoretically, we can set three possible dimensions to think about things regarding their possible contexts.

### *The Meaning of Things along Three Directions*

One should then try to think, at least methodologically, how to make theoretically evident that network of relationships. Only then can we try to obtain a model that allows us to understand how the meaning of objects and artifacts is built and composed in history and society. Thus we appeal to the dimensions of process (diachrony) and system (synchrony), which belong to linguistics (Saussure, 1916). Along with these dimensions, we added a third: the dialogical dimension (Tedlock & Mannheim, 1995; Bonfantini & Ponzio, 2010; Zingale, 2009).

Hence, in Figure 3, we propose a diagram that visually establishes the intersection of those three dimensions:

(1) The line of the diachronic sense: the artifact regarding its previous models within its own history;

- (2) The line of the synchronic sense: the artifact considering other system of artifacts, of the same or different category;
- (3) The line of the dialogic sense: the artifact in relation to its using interactions.

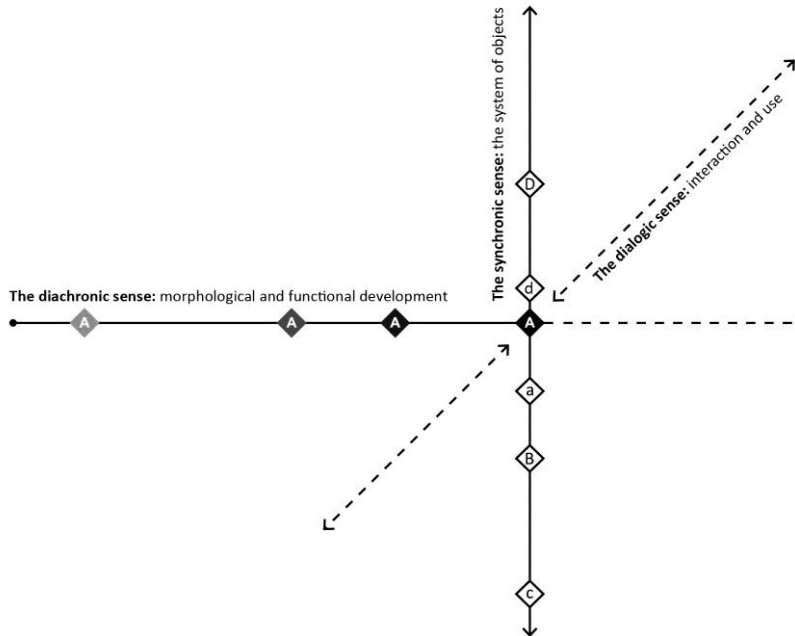


Figure 3 The three dimensions of the sense: diachronic, synchronic and dialogic.

### The Diachronic Sense

The first direction is that of the diachronic. That is, the study and evaluation of cultural objects considered in their origin and temporal development, often in the historical and comparative mode. The diachrony is the process flow of each type of artifact. It is the evolutionary unfolding of the objects. Diachrony puts objects in history: it is therefore the historical meaning of objects (Bonfantini & Renzi, 2010).

For instance: the TV. Once it was an object for collective fruitions, now it is an intimate device for personal vision. Once it occupied the domestic scene, now it is invisible and unnoticeable among other pieces of furniture. What changes is, its different way of “serving the communication”. Its formal metamorphosis goes hand in hand with the change in the use of

social communication. The TV is also monitor and display. Its history begins before the television industry and continues beyond this. On one side it is parent of the movie screen, on the other, its conception takes an important role in devices of vision and control (e.g., dashboards and radar), and with all family of computer monitors, smartphones and tablets.

The diachronic meaning of any cultural artifact can be potentially understood by asking two questions: a) What are the environmental and historical conditions that led to a particular artifact? b) How much and how well does an artifact represent the meaning of its era?

### **The Synchronic Sense**

The second direction is that of synchrony, the study and evaluation of cultural objects considered in a given historical moment, thus abstracted from their development over time. Synchrony, a term proposed by the linguist Ferdinand de Saussure (1916), offers criteria for the collection and study of a set of cultural objects, their simultaneity. In this way, this set is a system of objects in a given epochal dimension. The synchrony looks at the structural dimension of the objects, to their form and compositional syntax and to their sensory nature as determined in the environmental conditions of a given period: the trends of the period, the availability of technology and the social objectives. For instance, there is a different awareness of the ecological threat, or the attention to the body, that today guides the understanding and design of many artifacts, like automobiles and home appliances.

An object that has hardly changed over time is the bicycle. Once a poor transport vehicle, today it is a sign of an ecological vision of social life: an implicit request for a different view on metropolitan mobility.

Therefore, if we want to get the contemporary meaning of the bicycle – or even better, if we want to understand which would be the criteria for design innovation and invention with regard to the bicycle – it should be positioned in the net of its relations with other artifacts or structures where it can be found. There are many projects that seek the innovation of the bike, but do not regard its form or mechanics, but the lightness of the materials and the possibility of being able to bend and fit the bicycle into a backpack or a trolley (cf. [www.sadabike.it](http://www.sadabike.it)). In this case the bicycle is inside an urban system of mobility, such as public transport.

The questions about the meaning of the objects that we find here are mainly: a) Why at a given time a form is considered more appropriate, and therefore more full of meaning than others? b) Which other artifacts or

systems or socio-economic organizations enter into relation with an artifact?

### **The Dialogical Sense**

The third direction concerns the dialogicity sense, the sense that derives from all in question and interpretative actions on artifacts, and from the interaction between observer and object: by what we users are able to ask, and the answers, inferentially, that we are able to grasp. This direction is also the most scientific, because by asking an artifact (e.g., to understand how technological product works) the user puts in place processes of investigation not so dissimilar from those of the archaeologist, historian or anthropologist. This then is the experiential dimension of objects, which are particularly of interest to the processes studied by Interaction Design and usability ergonomic testing.

Before the computer, one of the first popular “dialogic objects” was the radio. Not only because it speaks, but because to make it talk or play we had to act on it. But greater is the complexity of performance, more difficult becomes the dialogue.

The relevance of the dialogical sense can be seen at the increase of importance of the communication items related to an artifact (e.g., manuals, tutorials etc.). These items tell us that each artifact asks the user to identify the interpretant relation that makes its use possible. The user must learn the language of the artifact. Hence, the task of the design is to conceive objects in a manner that makes the inferential language possible.

The line of the dialogical sense is also a social line. The “conversations” with the objects are also conversations around it: the dialogicity is also the aspect which increases the collective and cultural knowledge, the semiotic place in which people share and learn the complexity of the experience in the artifactual world.

The research questions, then, are: a) From which characters of the artifact depend our ability to use it properly and satisfactorily? b) Which are the inferential and interpretive procedures that come into play in understanding the usage schemes of an artifact?

### *Artifacts in Scene, Sense in Act*

Artifacts are predominantly on one or other of the three directions, or on their intersections, in daily use the objects are always in “scene”<sup>2</sup>, a semiotic scene. A delimited and coherent space in which the objects are next to us, around us and at our disposal. The metaphor of the scene tells us that each artifact is always associated with at least one second artifact: no object is alone, it is always a part of a syntax and a composition.

The concept of “scene” does not only regard the way things are set; it also regards the way things acquire, extend and change its sense. The model of the three lines of the sense is designed taking into account the complexity of the action that each line can generate, because the sense of the things lies not in the things, but in the actions they make and actions they allow us to do. In fact, it is necessary to start from Peirce’s idea of pragmatism (CP 5.402) on the meaning of signs and things: the meaning of any cultural act – a sign, but also an artifact – lies in the series of effects and consequences, in *habits*, that such an act produces or is capable to produce in the context of the interpreters. It is for this reason that signs and artifacts produce and nurture the cultural universes. And more specifically: cultural universes.

In fact, the language of the objects is not a system closed in itself, but a system that interacts with our experience of the world (Violi, 1997). Therefore, each semantic universe is continuously influenced by many realities (e.g., historical, environmental, psychological), and certainly influenced by the semiotic reality in its complexity, that is, the set of our knowledge about the world.

Arguing with semiotics based on the model of linguistics, Bakhtin (1929) brings attention to the fact that the sense is accomplished with “live speech”, regardless of the existence of a code or pre-existing system. Hence, Bakhtin makes the distinction between the “neutral meaning” of a word (for us: an artifact) and its “sense in act”. The latter is the overall sense of unity and of any semiotic act, the sense that you can define only in the reality of social interaction, such as the dialogue in a conversational situation as studied by communication pragmatics (Grice, 1975). This means that the sense of an artifact is not defined only by the way in which it manifests (for instance its shape or belonging to a product type), but also by its implicit

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<sup>2</sup> It should be noted that the metaphor of the scene asks to be developed, keeping in mind that from it derive many other metaphors. Perhaps, for this “etymological” reason, the term scenario appears to be repeatedly used in the theories of design. See Jégou & Manzini (2004); Carroll (1995).

meaning (the Conversational Implicatures, as defined by Grice) and environmental and historical factors. This current sense – or sense in use – thus requires an active understanding. Being designed, instead, the object requires an evaluation of the “dialogical game” in which it may be present and also that the artifact produces and urges.

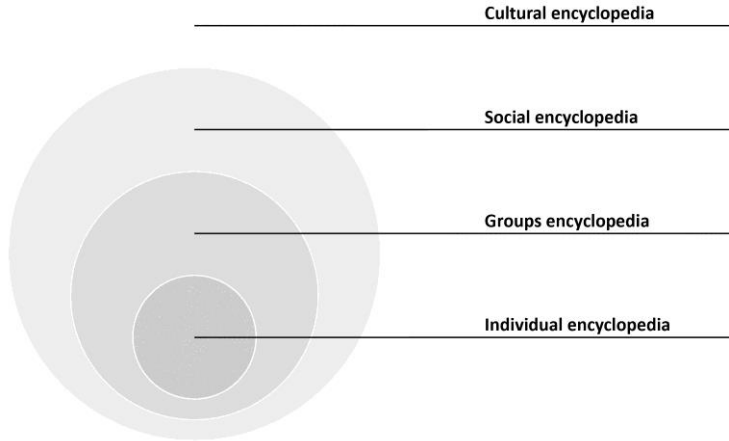
Therefore, the design cannot start from the possible tension between the conventional meaning [conventional signified] and the sense in use. Even the sense in use is the subject of the project, and this understanding of the design is strongly linked to the idea of abduction in the Peirce manuscripts (Bonfantini, 1987; Zingale, 2009, 2012).

To stay with the semantic models, the effort of design with regard to [prefigure] the sense in use – to understand the meaning of artifacts and therefore also the way to conceive – can be guided by the model of encyclopedia developed by Umberto Eco, first developed in 1975 and then in 1984. This model has been designed to overcome the limitations of semantics that separates the inside knowledge of a language (or a system of signification) from those relating to the knowledge of the world. In the model of the encyclopedia, for instance, each "unit of content" (e.g., "oven") is not only the definition (denotation) of the furnace as "an enclosed compartment", usually part of a cooker, for cooking and heating food ([www.oxforddictionaries.com](http://www.oxforddictionaries.com)), nor merely an aspect of the connotation associated with particular uses, such as "kiln" or "furnace". In the model of the encyclopedia, the content "oven" tends to include all the other knowledge that a certain culture has developed around this "enclosed compartment", such as metaphorical ones (a warm place), fairy (Hänsel and Gretel Brothers Grimm), and sadly even those historical (the cremation chamber in a Nazi concentration camp).

As in the library of Borges, an encyclopedia brings an entire heritage of beliefs and knowledge of a cultural community. But it is an irregular archive, often fragmented, incomplete, in continuous change. As a network of semantic interconnections, in which each node refers to other nodes, often unpredictable. But above all, the encyclopedia can have different extensions, for instance: the one that considers the human history of the entire planet; and the one that collects the knowledge of a nation, narrowing the circle of ethnicity, of a social group or even of a family community. Finally, the encyclopedia also has an individual dimension.

To improve the understanding of the concept of encyclopedia, Eco uses the metaphor of the rhizome, taken by Deleuze and Guattari (1976). The graph that we propose here - Figure 4 - is instead a theoretical hypothesis, a

way to represent what might be called an encyclopedic graph, where the knowledge of each individual is embedded in a number of others.



*Figure 4 The different levels of encyclopedia.*

Instead, the rhizomatic structure emerges once we try to give a representation, even if basic and fragmented, of the possible joints and “grafts” among encyclopedic fields at a global level.

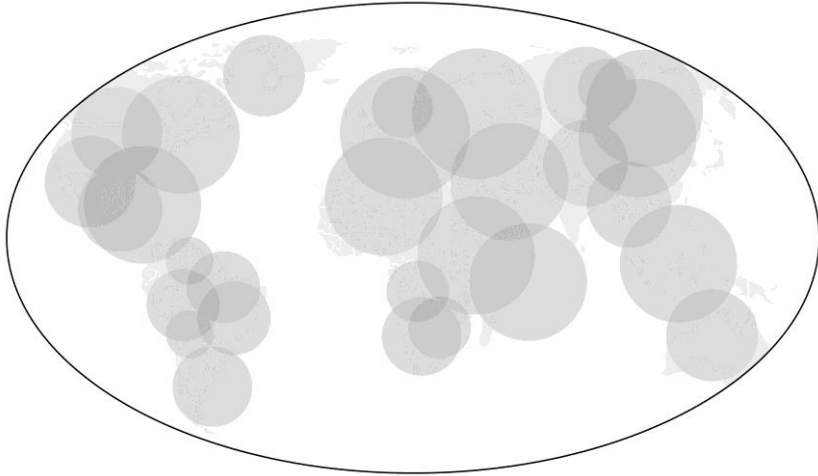


Figure 5 The encyclopedia as a complex and global phenomena.

In Figure 5, the circles which represent the encyclopedic universe would be multiplied to an indefinite number. It would be possible to think of an inextricable labyrinth, and perhaps even larger. As Eco writes, no graph is able to represent the model of the encyclopedia in its complexity (Eco, 1975), because this encyclopedia is not attainable in its totality (Eco, 2007). However, Eco also specifies that

*the encyclopaedia is the only way by which we can make it right, not only for the operation of any semiotic system, but also the life of a culture, as a system of interrelated semiotic systems.*<sup>3</sup> (Eco, 2007, p. 56)

Possibly, the model of the encyclopedia is then the only one which can allow the designer to deal with, regarding the necessary methodological caution, the problem of the meaning of artifacts. Or better: the problem of how artifacts propose and, at the same time, produce new meanings within a given anthropological reality.

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<sup>3</sup> Our translation for: "L'enciclopedia è l'unico mezzo con cui possiamo rendere ragione, non solo del funzionamento di qualsiasi sistema semiotico, ma anche della vita di una cultura come sistema di sistemi semiotici interconnessi" (Eco, 2007, p. 56).



## Final Remarks

Regarding the literature of management and design, the models and arguments previously stated tell us then that design – and the production of goods and artifacts in general, which includes global products – should consider:

1) Thinking of the diachronic dimension, the variation of the senses [denotation level] of an artifact can directly affect its acceptance in different contexts. Especially considering that the development of social and cultural aspects are not synchronized, even within the same contexts. That is, the individuals' response can be more or less effective when experiencing their goods.

2) The synchronic sense, which offers criteria for the study of a set of artifacts in its epochal dimension, can provide a structure of analysis that enhances the manner in which products can be redesigned or adapted to their contemporary context.

3) The dialogicity is understood according to the two acceptations: on the one hand to be seen as an action in relation to the reaction of the other (hence the sense of an artifact lies in the manner in which it is recognized); on the other hand is the dialogism and the awareness that every artifact is to be seen as the answer to interpreting another (e.g. the sense of an artifact can be seized only regarding the intertextual relationship with other artifacts). It is to say, to analyse an artifact, designers should also take into account the other artifacts around it, which makes the design process even more complex.

4) The sense is the result of a collection of stories, but these stories are inevitably dialogic and intertextual. Therefore, the sense of an artifact can vary across cultures, and detected differences can add value to the user's experience in their specific contexts.

5) The sense is a set of dependent and independent variables: variables that depend on an extensive and global knowledge, and variables that depend on specific and local knowledge. Hence, the analysis of global products design, as pointed out by Levitt (1990) and claimed by Boztepe (2007), should be taken in-depth in order to better support processes of conception, positioning and adaptation of goods, especially when dealing with different cultural backgrounds.

6) The consequence that the sense of the artifact is an experienced phenomenon and to be designed should be experienced, is just for the reason that the sense is always a reality defined by the practice of use and the relationship with other artifacts and "discourses". This built a network of

senses which on one side renders the process of artifact analysis almost unfeasible but, on the other can enrich the value of an artifact from the users' point of view. But, as demonstrated by Domingues, Moraes, & Dias (2014), empirical research has been done in this direction.

7) The design practice should then be developed from the ability of the subject-user to interpret the meaning of an artifact, according to what Bakhtin called answering comprehension: an understanding that it is also an appropriate response for the project, but also capable to regenerate the sense of the project itself.

As the theoretical assumptions have been discussed, for further advancements, empirical investigations are strongly desirable in order to test the theoretical arguments in different contexts and realities. The graphic of the three dimensions of the sense - Figure 3 - is not closed in itself. Any enhancement based on the theory of semiotics is welcomed. That is, we believe that broadening knowledge on the dimensions of the senses can improve the methods to analyze global products, which adds value to global products design, its management, and to users' experience.

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