The role of the emotional design in bridging products and cultures

Francesco Galli, Marco Maiocchi, Margherita Pillan |
francesco.galli@polimi.it, marco.maiocchi@polimi.it, margherita.pillan@polimi.it Politecnico di Milano, Dipartimento Indaco

Abstract

The actual globalised market suggests that most industrial products can be sold everywhere in the world. As a matter of fact, the purchase of an object (or the access to a service) is usually motivated and pushed not only and often not mainly by its intrinsic function capability and quality, but by its meaning (from a metaphoric point of view) and the cultural values it expresses. Meaning and expression of values are mainly given to a product through design. According to recent studies on perception, based on neuroscience, it is possible to examine perceptual formal elements (e.g. shapes, colours, touch, interaction protocol, etc.) and to model both emotional meanings and cultural values. While this kind of modelling is a pioneer activity, still in its first tentative explorations, it seems to provide an unavoidable step toward a more aware a more responsible design activity.

The paper addresses to the above topics, presents a provocative model to depict the relationship between structure elements, emotional feelings and the cultural values, and it presents some cases of analysis of products/services available in the market. The different cultural values within different countries are examined and classified on the base f some social sciences results; emotional feelings and the values expressed by some products' design are abducted on the base of the hinted metaphors. The paper outlines a relationship between the formal characteristics of products and services, and the success factors overall in the world, and again in provides provocative guidelines to avoid cultural rejection in some countries. Examples and experiences are discussed.

KEYWORDS: Emotional design, cultural values, global market design, brain sciences.

A way to interpret Design

The first artefacts produced by humans were related to craftsmanship: resulting products were single operas, often personalised, with high costs and low production constancy, and the quality was related mainly to the knowledge of the author; apprenticeship was the only way to learn from a master.

The industrial revolution introduced production process formalisation and measurements, and the knowledge on the products was transferred from the people to the processes; the serial production allowed high standardisation, constant quality, reduced costs.

Most industrial products are now comparable in terms of quality and cost, and the differentiation among the products is mostly left to other aspects: the brand and the styling. We passed from Industrial Design to Design, which conveys meanings and emotions through perceptual characteristics of the products, beside the usual functions and quality.

Despite the wide literature about project methodology and creativity, and despite the maturity of the design education system all over the world, in most cases the design process as presented in the academic literature is conducted following empiric approaches and is mainly based on atelier like transfer of skills.

Nevertheless, as Design is a way for conveying emotions through perceptual elements, a deeper understanding of emotional mechanisms and, more widely, of cognitive and decision making processes, should provide conceptual tools to stimulate the creative though and to better understand the consequences of design choices.

According to the authors (Maiocchi & Pillan 2009), Design is the activity able to provide artefacts with:

- Functions: the ability for which the users will get the artefact; not only the primary functions (to clean, for a vacuum cleaner; to dry for a hairdryer an so on), but also secondary requirements (to be compact, to have big wheels for stepping on stairs, and so on);

- Shape: the geometrical (size, profile, curves, colours, etc.) and sensorial (softness, noisiness, etc.) characteristics, able (as we will see in the following) to drive primitive emotions;

- Meaning: the many aspects, possibly recalling other contexts through metaphoric evocation, able to give to the artefact a meaning unrelated with the goal of it; this aspect is extremely powerful in conveying emotions.

In particular, for the emotion generation, the following model can be provided, according to many neuroscience studies (Zeki 2009; Ramachandran & Hirstein 1999):
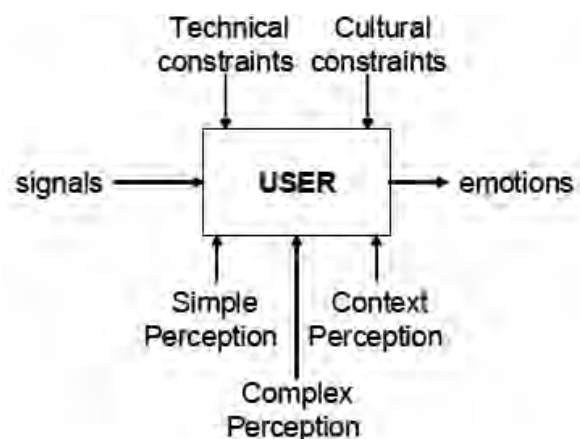

Figure 1. A schematic model of the emotion construction

- Signals. First, external physical signals (e.g. light, sounds, etc) reach perceptual organs.(e.g. eyes, ears, etc);

- Simple Perception. These signals are interpreted by the brain, through simple abstraction processes (f.i. brain areas to "see" only slope at 45%, while other only at -45°, co- operating for the interpretation of any other slope; the persistence of the colour perception guaranteed by tour brain, and so on) (Zeki 2009);

- Complex Perception. Elementary signals are interpreted and recognised in their mutual relationships, as an embedded brain abstraction activity (e.g. part of the brain devoted to recognise faces; parts to recognise houses); this complex perception is related to the phenomena studied by Kanizsa (Kanizsa 1997) or to the Gestalt principles, as well as to symmetry properties, order, rhythm, contrast, rounded or angular shapes (Ramachandran & Hirstein 1999). It has been proved that of recognitions of this kind provide emotions (i.e. to determine the secretion of some neurotransmitter related to pleasure, fear, or other feelings);

- Context perception. Further levels of recognition happen, taking into account a wider context; some of those recognitions are embedded (such as social structures, family or simply chairs); other, more subject to change, are related to everyone's personal experience; in any case, those recognitions are responsible of very strong emotions, strongly related to metaphoric structures (Lakoff & Johnson 1980) and semantic maps;

- Constraints. The emotions are submitted to an acceptance evaluation; beside technical and economic constraints (preventing the designer in doing something or the buyer in buy something), cultural values can dramatically influence the evaluation and then the acceptance; Hofstede et al (Hofstede 2010) examine which values are typical of different cultures (countries or groups within a country), providing the consequent behaviours of the people; the maps provided by the authors allow to understand whether or not some meaning of the product will be accepted or refused by some cultures.

In this paper we will examine the cultural constraints and the meaning generated by the context perception, providing a model for evaluating possible coherences or conflicts.

Cultures and values

Human populations share biology. They react in similar way to similar stimuli, but in the centuries various behaviours sedimented in various groups, making population different; those behaviours, initially learned, some times went embodied in the genetic heritage; still today we are changing in our behaviours, and learning new ones. It is what we call culture. There are many evidences of this model, also matching data from linguistic, genetic and

history (Cavalli Sforza 2001). Each culture is characterised by rites, heroes, symbols, each of them coherent with specific values. Geert Hofstede (Hofstede 2010) et al. studied deeply how to characterise culture and to measure the related values.

According to those studies, six indexes can be used for characterising a specific culture, as shown below:
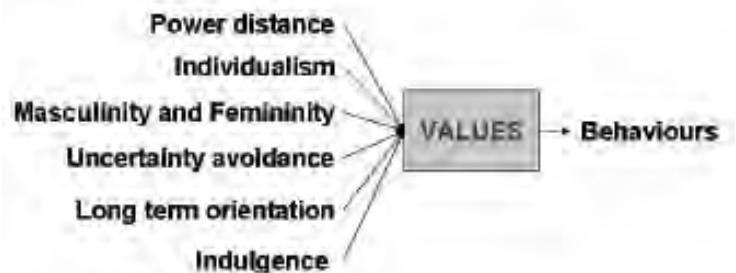

Figure 2. The cultural indexes according to Hofstede

The indexes have the following meanings:
- Power distance. The level to which a less powerful member accepts the unequal
distribution of power in any kind of structure (family, school, community, organisation, etc.)

- Individualism. Individualist is a society in which the links between persons are limited, and everybody is interested only to himself or to his family; opposite to collectivist, in which
the protection of the group prevails

- Masculinity and Femininity. In a masculine society there are strong gender distinction for
emotional roles (assertive male, focused on success; tender and modest female, focused on life quality); a feminine society: mixes emotional roles, and both tend to tenderness and life quality;

- Uncertainty avoidance. The threat level perceived in conditions of uncertainty, ambiguity, absence of information;

*- Long term orientation. Long term orientated cultures favour actions giving future results, with perseverance and frugality, while short term orientation favours actions looking to past and present, respecting traditions, personal appearance and social duties;*

- Indulgence vs Restraint. Tendency to allow relatively free gratifications of basic and natural desires related to enjoying life and having fun; the opposite, restraint, gratifications needs to be curbed and regulated by strict social norms.

All the above indexes have been measured over more than one hundred countries, providing rank lists, positioning maps, correlations, and, more important, many lists of behaviours associated to each different cultural orientation.

For example, the following figure refers to the ranking of an excerpt of he measured levels for Power Distance (the scale is relative, and arbitrary).
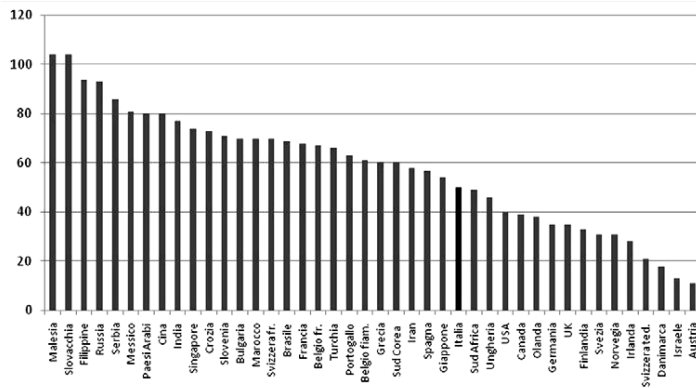
Figure 3. Ranking for Power Distance (reworked from Hofstede 2010)

The following table shows the different behaviours observed in opposite value of the index for Power Distance:

Family and school

Low Power Distance	High Power Distance
- Inequality to be reduced	- Inequality favoured
- Social relations to be managed	- Rituals in social relations
- Interdependence	- Dependencies
- Parents, elder and sons are equal	- Obedient and respectful sons
- Sons do not support parents	- Sons support parents
- Students and teachers are equal	- Teacher respected outside
- Teachers stimulate interaction	- Only teachers can take initiatives
- Teachers transfer neutral know how	- Teachers transfer personal wisdom
- Learning for interchange	- Learning depends on teachers
- Policy based on secondary school	- Policy based on universities

Organisations

Low Power Distance	High Power Distance
- Hierarchy = advantage	- Hierarchy = inequality
- Decentralization	- Centralization
- Few supervisors	- Many supervisors
- Balanced salaries	- Different salaries
- Manager use experience and collaborators	- Manager refers to seniors and rules
- Advice of subordinates taken into account	- Subordinates obey
- Ideal leader = democratic	- Ideal leader = good father
- Rational relationships	- Emotional relationships
- Obstructed privileges	- Spread privileges
- White and blue collars equal	- White collars higher than blue collars

State

| Low Power Distance	High Power Distance
- Power legitimated	- Power over right
- Power separated by skill	- Power joined with skill
- Large middle class	- Small middle class
- Equal rights	- Powerful privileges
- Power based on ability	- Power based on tradition
- Changes by evolution	- Changes by revolution
- Politics: dialogue, not violence	- Politics: violence, not dialogue
- Pluralism and vote	- Autocracy e cooptation
- Strong centre and weak wings	- Weak centre and strong wings
- Distribute income and levelled by taxes	- Unequal income, emphasized by taxes
- Low perceived corruption	- High perceived corruption

Design and communicated values

According to what we stated above, the formal characteristics of a designed object tend to associate specific meanings to it. Those meanings refer in some way to implicit or explicit underlying values and replicate a number of cultural messages and values of the specific market.

As an example, the three vacuum cleaners in the following picture convey different meanings, respectively transforming the user into the prototypical housewife, into the warrior against massive dirty, into a Ghostbuster for dirty as an intangible enemy.

Figure 4. Three kind of vacuum cleaner

As the first will be more acceptable for a masculine society, the second makes acceptable men engagement in house works.

If we were able to ascertain the values related to a designed artefact, we would be able to verify its coherence with the dominant cultural values of a market, and then predict its potential success/flop.
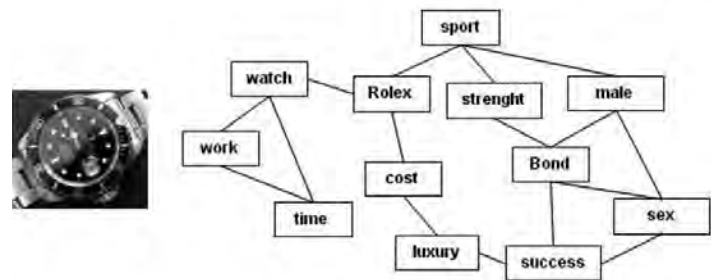
Figure 5. A Rolex watch and its stereotypical semantic context.

What we called Context Perception is the more appropriate source for meanings having to do with cultural values: we can represent them as a semantic network, connecting many metaphoric relationships; for example, the stereotype of a sport chronograph, black, heavy, with many buttons and information recall unavoidably masculine values.

The work of Hofstede provides a large checklist of behaviours: collecting all the presented behaviours for all the six indexes it is possible to verify how much a specific artefact imposes, requires, expresses or simply orients the user attitude toward some of the specific behaviours indicated in the list.

In such a way, we suppose it should be possible to invert

the organisation of the study by Hofstede: if an artefact is compliant with certain behaviours, we can verify which indexes should be present (and to which extent), in order to make the artefact acceptable.

After that, we can verify which countries are compliant with those values of the indexes, forecasting possible success or failure.
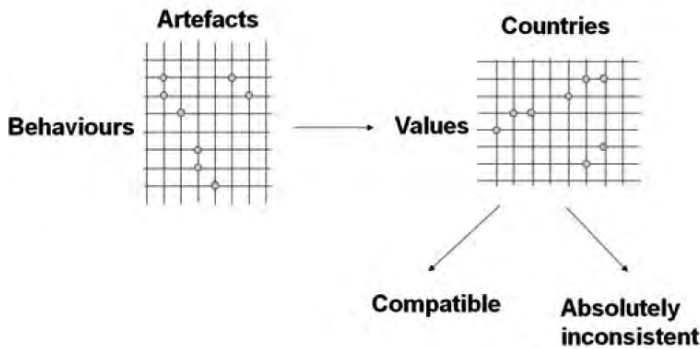

Figure 6. From artefacts to supposed behaviours, to values, to acceptability

Some experiments

We applied the above process on two kinds of artefacts: products and services; dealing with services, we must consider the organization structure (i.e. the social interaction model) instead of the material characteristics (shape, colours, materials,...) considered for products. We deduced a huge reference checklist collecting all the behaviours listed by Hofstede. Then we used the list to analyse the artefacts under test, from a point of view of the complex perception. In a number of different contexts, a few hundred of students were involved in the experiment so to produce statistical results. So we scored the "values" hidden behind the artefacts, getting a "cultural profile" of it, to be compared with cultural profile of a country.

Here some result of the experiments.

Products.

We considered the following six handles by famous designers:

Figure 7. Six handles by famous designers

Then we examined the behaviour checklists provided by Hofstede, scoring one point for each "the statement is coherent with the model suggested by the artefact". For example, the handle by Cini Boeri seems ignore thrift, the one by Mongiardino recalls to traditions, etc.

Then we normalised the total scores, according to the number of questions for each index on the checklists,

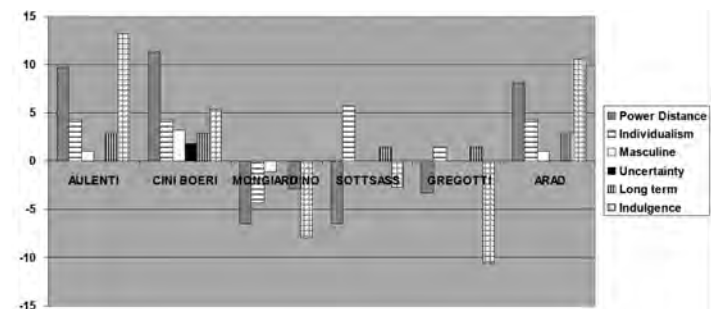getting the "soul" of the artefact:

Figure 8. The "soul" of the handles

The handles of Aulenti, Cini Boeri and Arad appear to be more oriented to values near to acceptable power distance, individualism, masculinity, while Mongiardino is the opposite, and the others are more complex.

Furthermore,, we can compare the cultural values of a country as stated by Hofstede, with those of an artefact: if we consider less relevant the different scores toward orientation (i.e. both country and artefact show the same value, e.g. masculinity, also if to a different extent) in respect to opposite values (i.e. country and artefacts show a masculine and a feminine tendency), we can build evaluation as the following one:
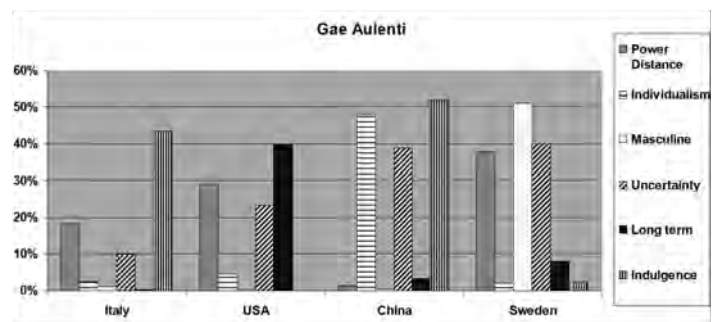

Figure 9. The compliance of the values of a country in respect to the ones supposed behind an artefact

More, if we "compute" an average of the differences between the values for a country and for an artefact, we can obtain some indication on the "worldwide marketability" of each product:
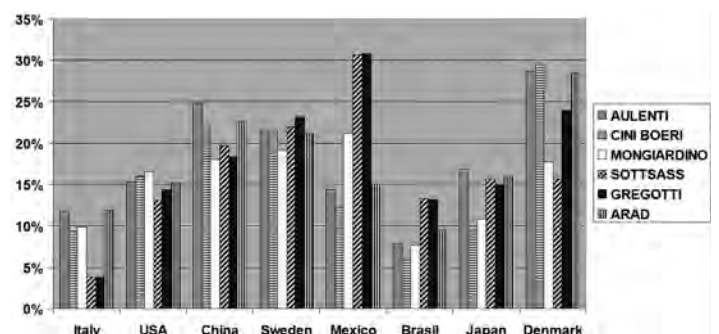

Figure 10. The "worldwide saleability" of the products.

It is evident that Sottsass and Gregotti are suitable for Italy and that the large China (but also Sweden and Denmark!) is a difficult market for those traditional Italian style design products.

Services.

We experienced the approach also for the design of services, taking into account four different kind of innovative services:

- PEDIBUS: a self-organised scholarship escorting by walking;

- CAR SHARING: self organised private car pick up and transportation among people
sharing expenses:

- GAS: Solidarity purchasing groups

- FOREIGN: the name of an Italian association supporting foreigners in Milan (Italian
language courses, ...).

The results, with the approach described for the products, are shown below.
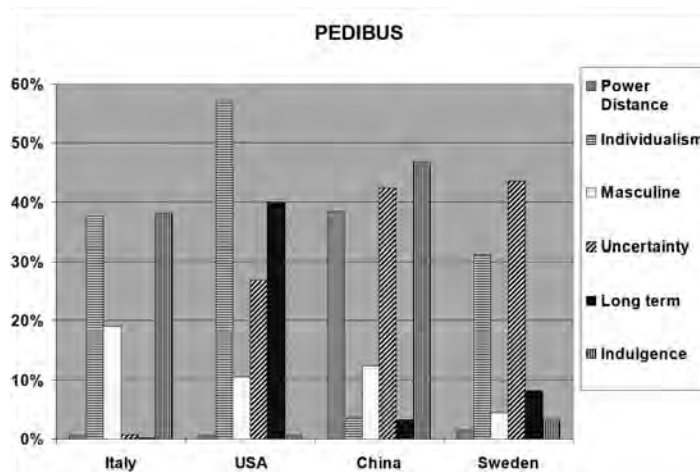
Figure 10. The cultural compliances between indexes and countries for the service PEDIBUS.
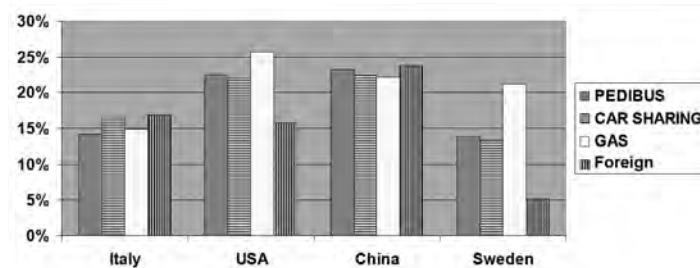
Figure 11. Acceptability of different services in different countries

Final remarks

A number of different disciplines, such as brain and neurosciences, social studies, and cognitive psychology provide a great amount of knowledge that allow a deeper understanding of the messages (metaphors, meanings, emotions, cultural attitude, and so on) vehicle by formal attributes of designed products and services. While these knowledge are widely employed in marketing, advertising and trend setting activities, the academic world still stack to a traditional approach to the design process, mainly based on empirical knowledge background "atelier like".

A deeper understanding of cognitive and emotional phenomena associated to product and services characteristics could bring novel contributions to creative processes, also supporting a more aware control of the cultural outcomes of the project decisions.

In this paper we presented some provocative experiments performed applying Hofstede theories about cultural diversity, on some products and services. We mean to stress that the presented work is completely in its experimental phases, and it is not yet mature for a reliable application. In particular, we see as a priority, the search of a more objective way to construct of the semantic net representing the complex perception of the artefacts.

A research group we are experimenting the application of a number of different information and models provided by the cited bibliography and others, in order to understand how to include twenty first century knowledge in the design practice. We are still looking for partnership in the design academic community.

References
Cavalli-SforzaL. L., Genes, Peoples, and Languages , Penguin Books, 2001.

Hofstede G., Hofstede G. J., Minkov M (2010), Cultures and Organizations, Mc Graw Hill Kanizsa G. (1997), La grammatica del vedere, Il Mulino - Bologna.

Lakoff G (2004), Don't think an elephant, Chelsea Green Publishing.

Lakoff G, Johnson M (1980), Metaphors we live by, University of Chicago Press.

Maiocchi M., Pillan M. (2009), Design e Comunicazione, Alinea, Firenze.

Mari E. (2001), Progetto e Passione, Bollati Boringhieri.

Munari B. (1980), Da cosa nasce cosa, Laterza.

Ramachandran V ., Hirstein W . (1999), The Science of Art, Journal of Consciousness Studies , 6 (6-7), pp. 15-51, Imprint Academic, UK.

Zeki s. (2009), Splendor and Miseries of the Brain, Wiley-Blackwell.

PROJECTING *Design* 2012

Global Design Bridge
CUMULUS conference

SANTIAGO | CHILE
NOVEMBER 2012

CUMULUS
WORKING
PAPERS

cumulus
creative linking

Duoc UC