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Simpósio Brasileiro de Design Sustentável (SBDS)

+

International Symposium on Sustainable Design (ISSD)

Anais

Porto Alegre

12 a 14 de novembro de 2013

Apoio:

Realização:

Caros leitores

O **Simpósio Brasileiro de Design Sustentável (SBDS)** e o **International Symposium on Sustainable Design (ISSD)** são realizados conjuntamente a cada dois anos. A primeira edição ocorreu em 2007 na cidade de Curitiba. As demais, nas cidades de São Paulo e Recife, respectivamente. Em 2013, coube a Porto Alegre no Rio Grande do Sul, sediar esse evento científico que já é considerado uma referência para os estudos sobre o design e a sustentabilidade na América do Sul. Para sua realização, estabeleceu-se uma parceria entre os Programas de Pós-Graduação em Design da Universidade Federal do Rio Grande do Sul (UFRGS), do Centro Universitário Ritter dos Reis (UNIRITTER) e da Universidade do Vale do Rio dos Sinos (UNISINOS).

A insustentável leveza do ter é o título desta edição, que teve como foco as questões ligadas ao consumo, desde o importante papel do design para a competitividade das organizações nos desafios da globalização dos mercados até o igualmente relevante papel do design para a produção e a crítica da cultura material nas sociedades contemporâneas. Nesse sentido, a presente edição prestou uma atenção especial à contribuição do design para a sustentabilidade econômico-social das organizações – empresas, ONG's e instituições, sem claramente desconsiderar a dimensão ambiental, pilar fundamental do tripé da sustentabilidade. Dessa forma, foi possível valorizar o grande trabalho dos pesquisadores brasileiros e da América do Sul que procuram situar o design como uma alavanca para a inovação na sociedade.

Nesse âmbito, quatro subtemas foram propostos para este evento:

- Cultura de design para a sustentabilidade – explorando as contribuições teórico-metodológicas do design para o desenvolvimento sustentável
- Design e cultura para sustentabilidade – abordando os desafios que o desenvolvimento sustentável aporta para o design;
- Design e consumo sustentável – focando nas propostas de designers para um consumo mais sustentável;
- Sustentabilidade e consumo de design – propondo uma reflexão com relação ao consumo de objetos de design diante dos desafios da sustentabilidade.

Destacamos que o Simpósio foi pensado com a intenção fomentar o diálogo sobre o design sustentável entre seus participantes. Para tanto, os trabalhos apresentados foram distribuídos em sessões temáticas que transcorreram à tarde. Na manhã do dia seguinte, foram realizadas sessões plenárias para o compartilhamento e debate das ideias explanadas. Como resultado, identificaram-se novas perspectivas e oportunidades de investigação no campo do Design Sustentável, além da criação de novos vínculos entre os participantes. Os trabalhos aqui publicados, todos apresentados durante o evento, compõem um mosaico extenso e valioso do conteúdo debatido e das discussões procedentes.

Para encerrar, gostaríamos de fazer um agradecimento especialmente a Maria Beatriz Galan (Faculdade de Arquitetura, Design e Urbanismo da Universidade de Buenos Aires -FADU-UBA) e a Rita Almendra (Faculdade de Arquitetura da Universidade Técnica de Lisboa - FA-UTL) que nos brindaram

com uma palestra de abertura e outra de encerramento respectivamente. A energia e entusiasmo emanado por elas engrandeceram o evento. Gostaríamos também de agradecer a todos os participantes do Simpósio, cujo engajamento foi fundamental para o sucesso alcançado. Por fim, cabe um agradecimento a CAPES pelo apoio fornecido ao evento para sua realização.

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Sumário

Packaging as a means for promoting sustainable and aware consumption

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Nowadays we are strongly aware of packaging wastes issues: many designers and researchers faced the challenge of eco-sustainable packaging. Conversely, communication problems are little considered, although informative function can have positive or negative impact on consumer's awareness.

This research aims to investigate the role of communication on the sustainability of pack. The theoretical analysis is applied to a specific case study: packaging of organic sauces of Tuttovo S.r.l.

The project started from a comprehensive analysis of the packaging: all its aspects were taken into account by appropriate methodologies (developed through the "Observatory of Eco-Packaging"), implemented for the specific category. First of all, we performed an analysis of the environmental sustainability of current packaging (through a qualitative-quantitative methodology), then we defined users' needs and their way of perceiving packaging (by market researches and eye-tracking methodology); finally we did an analysis of current communication styles for sauces category.

This overall scenario allowed to define specific eco-guidelines, in order to design sustainable packaging to facilitate user's awareness. Facing packaging analysis according to systemic design approach, in particular relationships and behaviours analysis, we were able to define new sustainable behaviours and scenarios, such as unpackaged and single-dose packs for people with special food diseases.

Introduction

Packaging and sustainability: a complicated relationship

Since the mid-20th century, the packaging has gradually been considered as a real product and not only as a box to contain others products. This implies it has its own functional and communicational identity (Bucchetti 2005). Whereas on one hand practical and emotional function of packaging grown in importance, on the other hand people became aware of the environmental impact of its life-cycle.

Certainly the quantitative impact of packaging waste is alarming: only in Europe we produce about 78.4 million tonnes of packaging waste every year (Eurostat 2010). Institutions, organizations and the scientific community tried to face this challenge by promoting information campaigns and actions to make all stakeholders aware of this issue. Therefore eco-sustainable design became more widespread: reduction of materials and volumes, use of biodegradable or recycled materials, optimization of transportation and storage of packaging, etc. Also the reuse of packaging or the simplification of materials recycling, are becoming common best practices.

From the qualitative point of view, consumer acquired a significant role in relation to packaging: growing attention to home waste collection has lead many manufacturers to design special labels, indicating materials and waste typology. Furthermore the awareness on environmental problems related to packaging and packaged products, has seen the rise and the increasing spread of stores and sales systems of loose products[1] (Smith 2012). In particular, waste issues caused by many

[1] Loose products are products sold without packaging, through alternative distribution system, as vending machine or specialty

packaged product, primarily water bottles, gave rise to a real bottom-up movement to sensitize people and lead the market towards new alternative systems, such as water dispensers or home filtration systems.

Despite the growing attention to the issue, the results obtained are not sufficient, and the packaging is still a communication and emotional product rather than a true means of information (Ares, Besio, Gimenez & Deliza 2010:298-304). Consumers' awareness could promote an information revolution: packaging could be an important means to provide information about the product and its qualitative properties, encouraging a more sustainable consumption. Quality and environmental sustainability should not be communicated using an analytical language; information should use an aesthetical and emotional language. Informing does not mean showing a problem but rather actively involve people who are informed.

Packaging could be a means for promoting a change in consumption style, making transparent the complex system behind the product itself. Pack is a multi-sensory communication platform that comes into contact with high-frequency (daily use) and high involvement (its task is also influence purchasing) with people. This symbiotic nature of packaging and product is a key strength on which communication is based: also information could take advantage of this relationship.

An eco-sustainable approach to packaging design is fundamental, concerning shape, materials, opening systems, processes, etc. But eco-design need to go beyond the practical aspects of packaging (Barbero & Cozzo 2009), defining new consumption scenarios and making the packaging promoter of a culture of quality.

Pack to rise awareness

This research has two main goals: on the one hand it aims to describe a design methodology that allows to define eco-guidelines for packaging design, according to user's real needs. On the other hand, it aims to define the key points of the packaging evolution towards information and people' participation: this approach to sustainability will involve packaging, product, users and local territory (Grönman, Soukka, Järvi-Kääriäinen, et al. 2013: 187-200).

Ethics is a prerequisite to be added in packaging concept: honesty of communication and transparency of the whole supply chain, are the basis for an innovative design ethic, able to rebuild the concepts of sustainability and packaging. A practical methodology facilitates the interaction between market needs and eco-design, but it should aim to create new systems for products and their packaging.

Pack and product are inseparable, according to their ancestral definition of content and container: designers should consider this original meaning, studying the main relationships between product, packaging and the context in which they are included.

We have to think about packing as a complex system, so it would be possible to promote an effective and efficient approach to socio-environmental sustainability, able to actively involve the territory. This concerns both the material aspects (resources, processes, consumers, industry stakeholders, etc..) and the immaterial ones (society, knowledge, respect for the environment, etc.).

This research starts from a methodology developed and implemented by the Department of Architecture and Design of Politecnico di Torino, which has been applied for the analysis of organic sauces "Natura è Piacere" of Tuttovo Ltd. It is a Piedmontese SME that has been recognized "Eccellenza Artigiana" (artisan excellence) by the Piedmont Region and "Maestro del Gusto 2013" (master of taste) by Slow Food: this brands recognize and value the artisan companies that have distinguished themselves for the quality of their productions (Natura è Piacere 2013). Furthermore Tuttovo's products are certified by European mark "Bioagricert".

The application to this practical case study allowed us to define a new comprehensive design approach.

bulk shops or special areas within supermarkets.

Methodology: from theory to practice

The methodology used in this research, has several steps, each of them using established methods of analysis, concerning design and environmental sustainability. This allows obtaining well-founded results that are comparable with other sectors and explore different aspects of packaging: from sustainability, to communication and functionality.

The methods and the steps of analysis are mainly three:

- Environmental sustainability analysis. It is based on a quali-quantitative cross analysis of the functionality and eco-sustainability of packaging, through the disassembly of the packaging.
- Users' needs definition. The analysis is composed of a quantitative part (surveys, data collection on the specific sector) and a qualitative one (users definition, people's approach to the product category).
- Communication analysis. It consists of a first step in which we analyse the most common packaging in the product category, according to common qualitative and quantitative criteria. In the second step, some best practices are selected, according to different communication styles.

The methodological innovation of this research is the synergistic use of different approaches: established methods are used and implemented in a new system of analysis. This allows, on the one hand, to define practical eco-guidelines for sustainable design, on the other hand to identify future scenarios for the product category and its packaging.

The methodological approach we used, has a strong theoretical value, that is suitable for different packaging and product categoires. However to explain it better, it would be useful to show the methodology applied to a practical case study in the food industry.

In the following paragraphs, the three steps of analysis will be explained through the "project Tuttovo". The main goal of this case study was the definition of the main issues and potentiality of current packaging, in order to rethink the concepts of packaging and organic sauce. The results of the analysis have allowed to outline the main criteria for redesign Tuttovo's packaging, according to environmental sustainability and information needs of consumers.

Afterwards, we apply a systemic approach to packaging, based on the analysis of the relations between the actors involved in the life cycle of packaging. This allowed us to define new sustainable behaviours and scenarios, such as unpackaged and single-dose packs for people with special food diseases.

Environmental sustainability analysis

The analysis starts from the definition of the main problem of the current packaging, from the point of view of sustainability. The concept of environmental sustainability, however, is joined to the functionality of the packaging and needs to be analysed together with it. For example, some environmental problems are closely related to the conservation needs of products, mainly in the food industry. An assessment of environmental issues is therefore correlated to the functional requirements that packaging should meet, in order to perform its containment, transport and product protection functions.

The Environmental sustainability analysis has been developed since 2005, by the Department of Architecture and Design (DAD), in collaboration with the course on Environmental Requirements of Products (Faculty of Architecture, Politecnico di Torino) within the Observatory of Eco-Pack (Barbero, Pereno & Tamborrini 2011: 105-115).

The approach is based on the packaging disassembly, in order to identify the critical issues from both a quantitative and a qualitative point of view (see Figure 1). It addresses in particular:

- Weight and materials. All the packaging components are weighed and measured, indicating all the materials. This allows to define the main problems concerning weight and material composition.

- Volumes. Technical drawings show the filling level of the packaging and the empty spaces.
- Qualitative pro and cons. Starting from disassembly and quantitative data, pro and cons are evaluated according to two different aspects: functionality and sustainability. Functionality takes into account: (1) the effectiveness of storage and the optimization of the volumes; (2) the efficiency of preservation and protection against shocks; (3) the ease of use of packaging (handling, opening / closing, etc.). The sustainability instead considers: (1) the presence of over-packaging (number and usefulness of components, etc.); (2) the material composition (number of materials, ease of disassembly, etc.); (3) the optimization of volumes (relationship between packaging and product).

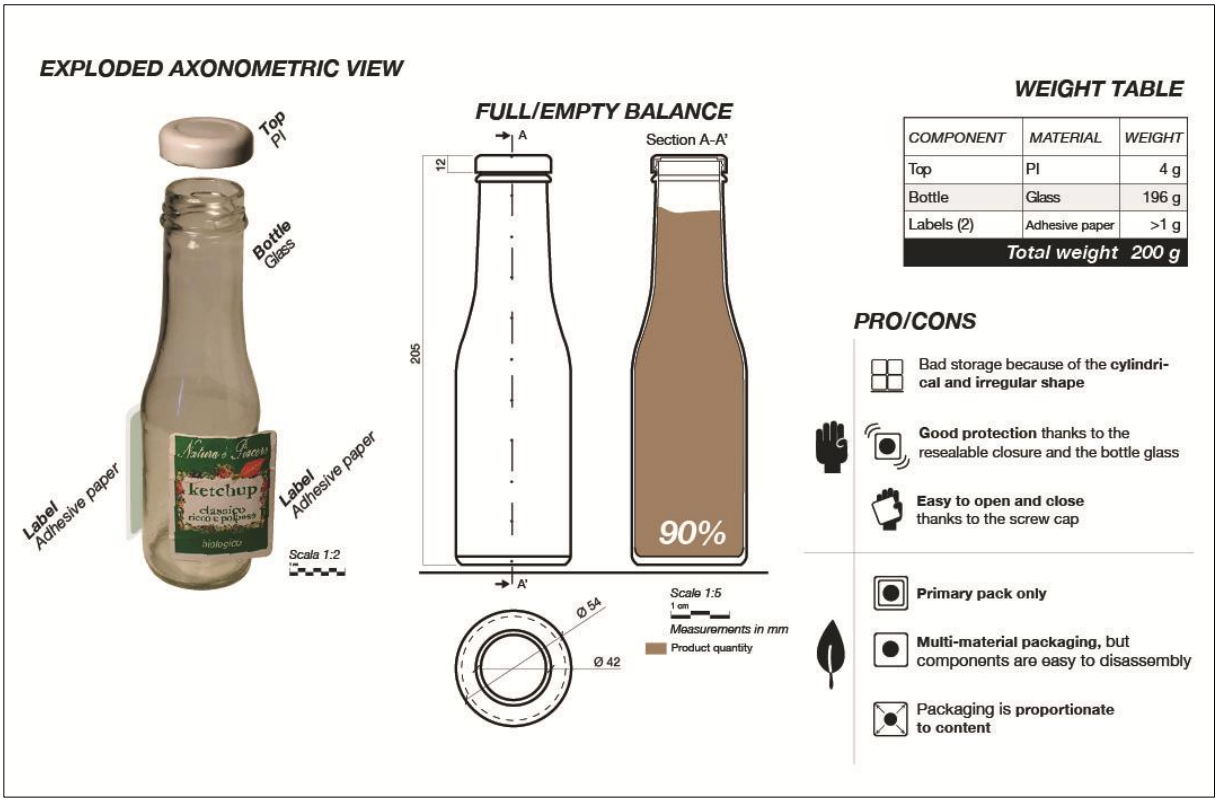

Figure 1 Example of Environmental sustainability analysis

The environmental sustainability analysis of packaging has been applied to packaging Tuttovo and to the main packages of sauces on the market. This allowed to identify the functional and environmental problems of the current packaging.

The packaging of sauces has many functional and environmental issues:

- Difficulty to use the whole product.
- Storage problems related to common heavy materials, such as glass;
- Requirement of additional tools for serving the product (e.g. spoons).

This analysis not only allows to identify issues, but also the potentiality from which designers have to start:

- The importance of use several times the pack and the product (focus on the opening / closing system);
- Attention to the ease of opening and pouring sauce;
- The transparency of the pack to communicate and check the sauce.

Critical issues and potentialities are generic and need to be compared with the perceptions and needs of users who will use packaging. For this reason, we need a further step of analysis to define users' real needs.

Users' needs definition

Tuttovo's core business is high quality organic sauces. The analysis of user needs was therefore focused on two main aspects of the product: on the one hand the scenario of organic products, on the other the world of sauces.

For both aspects the analysis was composed of two-step:

- Quantitative analysis. It provides a general search, based on analysis of market data (industry reports, surveys, research on trade fairs) and cognitive analytical tools such as eye tracking (that is an approach using devices for measuring end users' eye movement when looking at the packaging or the product). This allows to obtain a main overall view of the sector and tp identify potential and critical issues of the product, referring to the market.
- Qualitative analysis. It concerns the definition of users (consumer groups, archetype profiles, etc.) and their approach to purchasing and product consumption. This analysis starts from quantitative data, towards the definition of quality profiles, aiming to investigate the role of consumers and their needs.

In Tuttovo's case study, the quantitative analysis mainly focused on the organic world: it defines the main market segmentation of organic products (both at European and Italian level) and the percentages of users who rarely or frequently purchase them (ISMEA 2012). Crossing the main purchasing criteria of organic products and their main sales channels, allowed us to define a generic target for the category (see Figure 2).

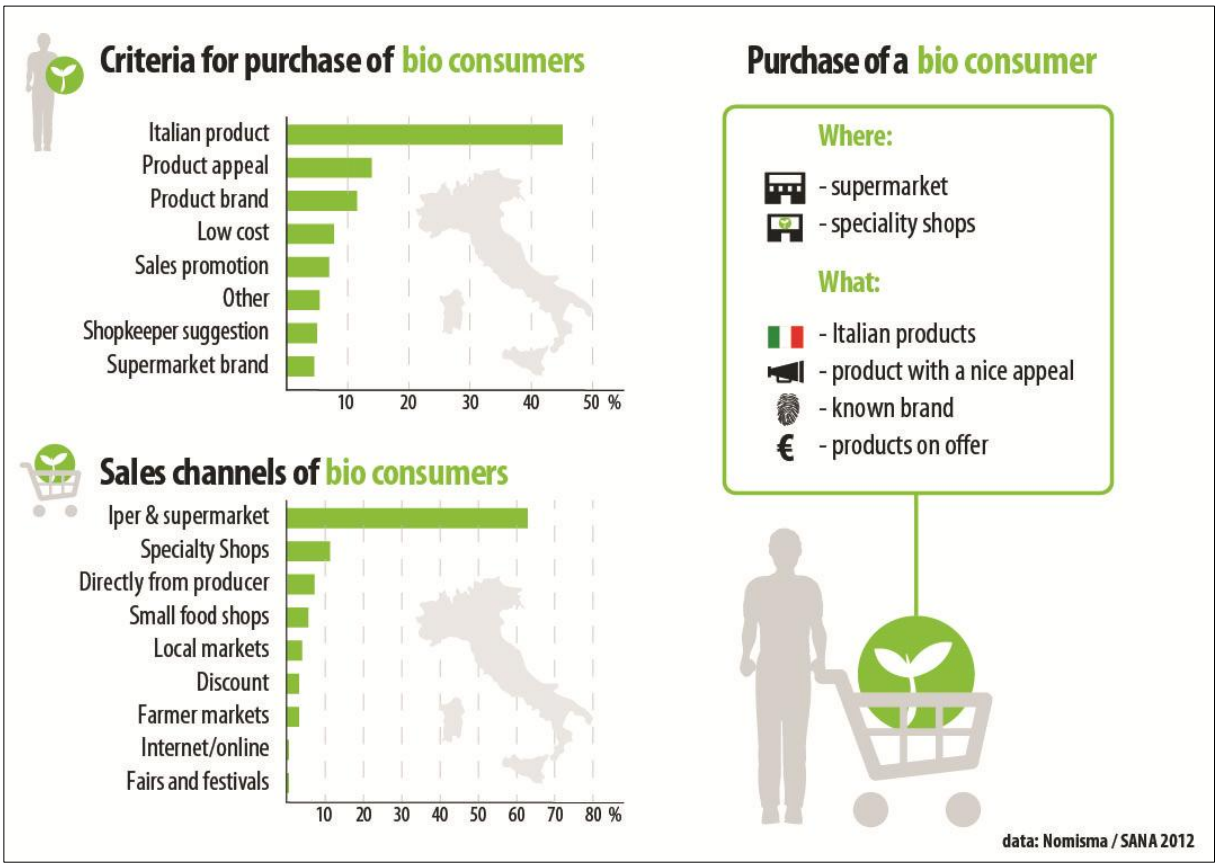

Figure 2 Users' needs defined by preliminary quantitative analysis.

The quantitative analysis is used to define the consumer's image based on meaning data, but it is to generic for an effective design. For this reason, it is necessary to deepen the analysis through a qualitative approach.

This allowed, in Tuttovo's case study, to define who are the four main categories of user that consume sauces and what they seek from sauces and food (see Figure 3): on the one hand, we identify the "slow" consumers (gourmet and experimenters), they love cooking and are potential buyers of organic sauces. On the other hand, the "fast" consumers (routine and indifferent) are not interested in cooking, in quality and in organic sauces. So the analysis could be focused on two main users figures, whose needs have to be considered in the packaging design.

Figure 3 Categories of users, defined by qualitative analysis

Communication analysis

Communication is one of the main aspects of packaging: the perception of the product through the pack is essential. Communication has to describe the product but could also be an active element in promoting quality and aware purchase decision.

For these reasons, the communication analysis is the last important step of the present methodology. In Tuttovo's case study both the company packaging and the main pack on market were analysed; so we were able to define what has to be communicated and how.

The previous analysis on consumer needs allows to determine if communication elements and styles are really effective for the user to whom the product is projected for.

The communication analysis combines quantitative and qualitative elements (see Figure 4):

- Information-communication balance. The first step concerns the quantitative measure of the space dedicated to communication and information on the packaging. This let us define in an objective way if communication focuses on the emotional/advertising aspect rather than on the informational one.
- Ecolabels. All green stickers present on the packaging are identified and explained. So we can understand if we producers use self-statements or well-known ecolabels that are useful to the users.
- Communication elements. It is a qualitative assessment of the four main elements that characterize communication: (1) colours (how they are used, which color prevails and why); (2) images (role of images and evocative or informative effectiveness); (3) fonts (legibility, motivations of use, communicative effectiveness); (4) materials (multi-sensory communication

or onlys functional use of materials).

- Communication functions (Ciravegna 2010). It is an evaluation of the effectiveness of communication referring to the four main function of communication: (1) appellative function (draw the attention of consumers in the store); (2) persuasive function (push to purchase); (3) identification function (recognition and relationship with the brand image); (4) informative function (how much useful information are provided to the consumer).

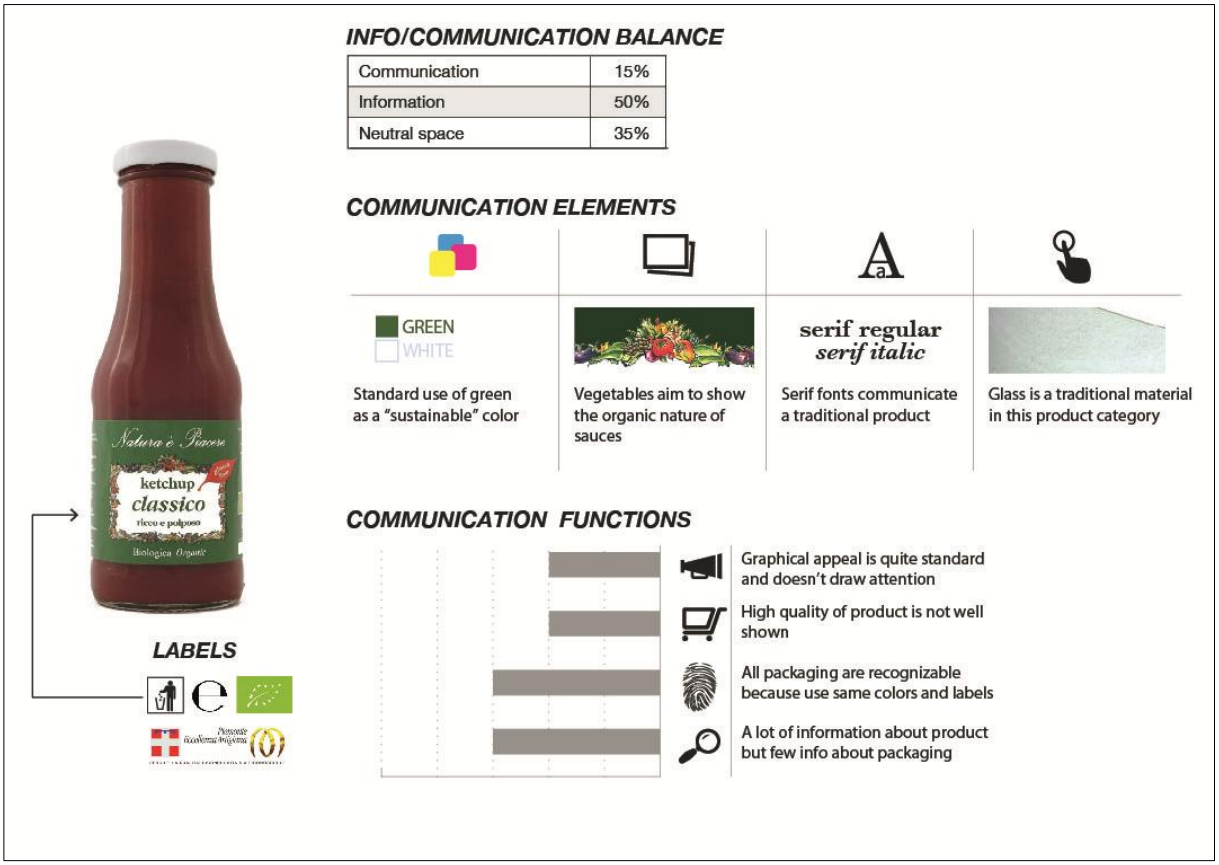

Figure 4 Example of Communication analysis

Communication analysis allowed to identify the main problems of communication in of sauces' packaging:

- Use of standard pack and little identification;
- Lack of effectiveness in the organization of information;
- Absence of information about the disposal stage of the packaging;
- Poor utilization of multi-sensorial communication.

Once defined pros, cons and requirements through the three-step analysis, it is important to cross all the results. We have to understand the functional and communication requirements in relation to what consumers really need, this would let us define the guidelines for design eco-packaging.

The social and environmental sustainability of the packaging is not limited to the choice of eco-materials and eco-processes: consumer education is a key point that packaging should addresses. Communication can effectively convey useful information, which are easy to understand and could inform consumer about the product, its quality, and the whole supply-chain behind it. Changing the approach to communication in packaging, we can generate new trends of consumption, towards the

awareness of purchase decision. In this way, packaging could become a sustainable means to convey the quality and sustainability of the product.

Eco-guidelines and future scenarios

The analysis led to two different but somewhat complementary results: first, we defined the eco-guidelines for the re-design of Tuttovo's packaging. In particular, we focused on the single-dose packaging, which the company sells to high quality catering, and on small and medium-sized packaging, that are sold in local stores. New materials, shapes and styles of communication will be implemented by the company, according to the guidelines defined in this analysis.

Secondly, new distribution scenarios were defined: both for the re-designed packaging (single-dose and small-medium size) and for new applications as loose products. The first scenario examines new applications that go beyond the current use in domestic context or in organic restaurants: the main critical issue of the single-dose packaging is its use-and-throw nature. However, there are sector where single-dose packaging has a high practical functionality, such as outdoor uses, especially for people with special food diseases. Tuttovo's sauces are organic but also gluten-free, and celiac desease affects a growing number of consumers (Mustalahti, Catassi, Reunanen et al. 2010: 585-597).

The second scenario completely transforms the sales channels: many shops and stand-alone vending machine arose in Italy in recent years (Belletti & Neri 2012: 44-47) to meet the needs of consumers aware of environmental issues and importance of food quality; this kind of users could be interested in Tuttovo's product. The concept of vending machines, often used for low cost food, is a new distribution channel with high potentialities. High quality shops and new typology of vending machine could be future scenarios that open up new opportunities for the company and for critical consumers.

Packaging as a territorial system

The analysis carried out for Tuttovo opens new scenarios for organic sauces and their packaging, but above all, it espresses a broader concept of consumer awareness and a greater role of the packaging.

The packaging changed from its primary function of container to the primacy of its communication function. Nowadays pack has to face a new challenge: to become the means of communication of a territory and its cultural identity. In order to reach this goal, a further step is needed and it's essential to analyse the packaging according to the Systemic Design approach (Bistagnino 2011).

Packaging and product should be considered in relation to their geographical territory and to the actors involved in their life cycle. Environmental sustainability of supply chain and production processes is essential but not enough: sustainability has to involve intangible yet deeply important aspects such as culture, ethics and people's awareness.

If we consider organic sauces and their packaging as part of a territorial system, we have to take into account three main features:

- Culture
- Food
- Territory

Joining these three aspects in the design process and throughout the whole packaging life cycle, we could create a really sustainable packaging, that would be able to promote a new culture of awareness and quality (see Figure 5).

Figure 5 features and relationships map of systemic packaging

Culture

Culture is the set of knowledge and practices that characterize the life style of a community, which is passed down from generation to generation within the same society.

According to the definition given into the UNESCO's Universal Declaration on Cultural Diversity, culture includes different aspects and different spheres of life:

> *Culture should be regarded as the set of distinctive spiritual, material, intellectual and emotional features of society or a social group, and that it encompasses, in addition to art and literature, lifestyles, ways of living together, value systems, traditions and beliefs" (UNESCO 2001)*

The concept of tradition is closely related to culture: it involves a *corpus* of beliefs and practices shared by a group of people (Cornejo Happel 2012: 175-193). The traditions are therefore the starting point for effective communication, able to relate to people. Nowadays, however, there has been a cultural flattening and a progressive uniformity of practices and beliefs, according to the Western lifestyle. Globalization, on the one hand, led to open-mindedness, but on the other hand it is causing the disappearance of local cultures and social identities (Embong 2011: 11-22). This has, as we shall see later, a deep impact on the concept of food identity and territorial belonging, and finally on environmental sustainability. The awareness of their own culture generates awareness of their place of origin and predisposes to the discovery and creation of local social network. The relationships between people are the groundwork of culture: be conscious of this, it' essential to increase and strengthen cultural changes. Building strong cultural identity also leads to an effective and proactive cross-cultural comparison, which is possible if cultures are well defined.

The concept of consumption is closely related to the previous ones. Consumption is an individual act but has a strong social and cultural meaning: what we buy and how we use/consume products, is determined by our culture. Greater cultural and territorial awareness would also affect the consumption style: promoting local culture (languages, traditions, know-how, lifestyles, etc.) means to promote a mindful consumption style and, finally, to promote high-quality local products.

Food

What packaging contains is not just a product to promote, communicate and sell. The product must be an expression of the people who use it and the culture that produced it. The issue becomes more complex if, as in this case, we deal with food: it has a dual ideological nature that impacts on its sustainability and awareness.

First, the food is cultural identity: it was originally closely linked to local traditions of communities. Cultivate, transform, cooking, eating. These actions identify a culture, depending on the way in which they are carried on. Current society has almost lost the sense of the first two actions and also cooking and eating have undergone weighty transformations (Hartmann, Dohle, & Siegrist 2013: 125-131). In terms of sustainability, it is necessary to recover the awareness of these actions: this does not mean returning to the *status quo* but to consider the cultural territoriality of a product as a fundamental element to communicate. Quality and type of food, seasonality, and nutrition: they are the basic concepts of food that we should rediscover, communicate and promote (MacRae, Szabo, Anderson et al. 2012: 2146-2175).

The second feature of food is strictly related to the first one and concerns the food as a communication media between different cultures. The great migrations typical of our time, create the phenomena of *cultural shock* (Oberg 1960: 177-182) in many group of individuals. That is the confusion due to the loss of cultural elements of their original culture and the integration in a new foreign cultural. The efforts of maintaining a traditional nutrition constitutes an important element of discomfort; but food can also become an element of communication and social integration. Culinary exchanges (recipes, cooking, etc.) can lead to the discovery and rediscovery of new lifestyles and new cultures, fostering mutual knowledge and socio-cultural integration (Disdier & Marette, 2013: 23-44). So product communication could support experimentation and cultural exchange, but it requires a deep integration with the territory.

Territory

As food, even the territory is characterized by a dual concept: belonging and knowledge. Both are necessary to develop a territorial awareness in the consumer.

Belonging is linked to the concept of territory as a physical and geographical place: this is not strictly related to housing but to a wider concept of identity. Sense of belonging is not limited to the local scale but it can expand until it assumed a global dimension. Belonging generates respect and care of territory, because it creates on people a sense of the common good and personal responsibility in protecting their own territory (Germak 2008). Responsibility should be extend to a global scale: the consumer acquires awareness of how environmental impacts in distant places can damage himself and his place of origin.

Knowledge is linked to the sense of belonging but implies a collective dimension. Discovering and/or rediscovering their own territory and traditions lead people to active participation within their community. The enhancement of local know-how and territorial potentialities entails the creation of a network of individuals who work together and share ideas and skills (Aires & Bosia, 2011: 47-63). In a multi-cultural context, knowledge is extended to other territories: the discovery becomes a means of ethnic knowledge, which, however, emphasises local and traditional features of other communities. Travelling does not mean moving but learning. Communication is the focus of knowledge and can be direct and physical but can also be encouraged through means of inter-personal communication.

Conclusions: packaging and sustainability

An overall and complex analysis is required to explore the sustainability of a product. The packaging is a product with a own life cycle and important material and communicative features to examine. This research aims to propose a tool to investigate this complexity, starting from the design aspects closely related to packaging, as form, function, communication, and information. These aspects show us how to design the packaging and for who design them, not only innovating typologies but also suggesting new products and new markets for the companies.

Product and its packaging are stand-alone entities but should be related to the territorial context to which they belong. It is therefore necessary to understand why and how design them to ensure the relationship between packaging and its territorial system. Packaging features should therefore be extended to a holistic dimension: the packaging can be functional for many stakeholders, using local resources and communicating the social and cultural values of that territory.

In the case analysed with Tuttovo Inc., the food is the other important element: the packaging contains and communicates a complex product. Food has many functional requirements and above all a strong cultural value, that has undergone great transformations.

Communicate the discovery and rediscovery of food as local tradition is an important goal, that packaging can actively promote. It is a means of direct interaction between the person and the food/product, and can actually promote the quality of this linkage.

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