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INNOVATION IN DESIGN EDUCATION

*Proceedings of the Third International Forum
of Design as a Process*

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INNOVATION IN DESIGN EDUCATION

Theory, research and processes to and from a Latin perspective

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STRAND 2 INNOVATIVE INSTRUMENTS FOR DESIGN TEACHING

OBSERVATORY OF ECO-PACK. RESEARCH AND TEACHING EXCHANGE FIELD

Barbero, Silvia
Ph.D., Research Fellow
Politecnico di Torino, DAD, Italy
silvia.barbero@polito.it

Tamborrini, Paolo
Research Associate
Politecnico di Torino, DAD, Italy
paolo.tamborrini@polito.it

The Department of Architecture and Design (DAD) and the course on Environmental Requirements of Industrial Products founded the Observatory of Eco-Pack (OEP) in 2005. The OEP is a strategic body that joins theoretical research with teaching: part of the pack screening is updated by the students of the course, so they can work together with the researchers and develop their critical sense. The OEP conducts a complete screening of the packaging production sector according to specific methodological choices that examine many aspects and consists of a qualitative part (coherence in forms, dismantling...) and a quantitative one (simplified LCA).

The cross analysis of all data provides a map of the general characteristics and of problems of packaging on the market. This complete analysis gives the chance to improve existing packaging and begin the definition of new guidelines to design packaging *ex-novo*. At last, it is possible to obtain specific proposals for each sector, in order to design a new sustainable pack.

••• Packaging, environment, data/bank, guidelines,
qualitative and quantitative analysis •••

INTRODUCTION

The most sustainable packaging is no packaging.

Packaging in an answer to archaic need of human being, since XX century, it becomes the symbols expression of a brand and the consumers recognize themselves in purchased products. The primary function of sales packaging is to protect the product until it is ready

for use, but it is as important as its marketing function, that influence the sales package decision. This function has clout to the competitiveness of the product (Prendergast G., and Pitt L., 1996).

Starting from 1990s, a trade-off between the primary and marketing function of the package and the environmental demands can be claimed. Particular consumer concerns relate to the effect of packaging on resource use, energy consumption, pollution, solid waste and litter (Lawson, R., and Wall S., 1993). Furthermore, the litter is an environmental and social problem that is closely related to packaging. the design of a packaging influences also the behaviours and the changes of it being littered.

Pressure for environmentally friendly packaging is not only coming from consumers but from EU directives. The EU has issued a wave of directives, some of which have direct implications for packaging. There are nearly 200 EC/EU directives and decisions, which deal specifically with environmental areas (Protero A., McDonagh P., 1992). The European Parliament and Council Directive 94/62/EC of 20 December 1994 on Packaging and Packaging waste have been many successive amendments and corrections¹, directly incorporated in the basic text. This directive focuses on increasing the recycling of packaging material and reducing the level of packaging waste, has major implications for marketing and logistics.

Given that there are both consumer and legislative pressures on companies to rethink their packaging, the question remains if design a package more environmentally compatible reduces its ability to protect and promote the product.

From these remarks and needs, the research group from POLITO DESIGN decided to implement the Observatory of Eco-Pack (OEP): tools, systems, and strategies for innovative package design.

METHODOLOGY

The OEP is designed as a research field where education, research and production can merge and dialogue.

In the bachelor degree in Design and visual communication (Politecnico di Torino), the courses of Environmental requirements of Industrial Products and of Industrial design and packaging involves the students to implement the data base and to reflect on design processes. Furthermore, some workshop on the topic are organized for students that want to have a full-time experience on design eco-packaging with different tutors from academics and from companies. Some students decide to work on that topic for their thesis, so those are the moment when the studies, the analysis, and the concepts becomes real design process.

The research is always improved by the interaction with other researchers from other uni-

¹ Directive 2004/12/EC, Directive 2005/20/EC and Regulation (EC) No 219/2009

versities abroad, with experts and managers from industrial sectors, and with the bachelor, master and doctoral students.

In the wake of environmental legislation and consumer demand for more environmentally friendly sales packaging many companies will be forced into a position of redesigning their packages. When it comes to this redesign, or developing a new sales package altogether, environmentally friendly packaging may offer a competitive advantage.



FIG. 1. EXAMPLE OF EVALUATION ICONS AND THEIR MEANINGS.

The OEP is founded in 2005 by the Assistant Professor Paolo Tamborini, who coordinates the research group: Silvia Barbero, Clara Ceppa, Gian Paolo Marino, Cristina Allione, Dario Toso, Amina Pereno, Erika Vicaretti.

It is organized in:

- **Typologies** (contexts: person, environment and society): In order to make an organic and complete analysis, it was necessary to divide the packaging sector in twelve major categories that fit into three different contexts within industrial products are configured, based on different dynamics and fruitive relationship with the consumer. So the three contexts group the twelve major categories of packaging, according to different dynamics of relation and use. Each category is considered in all its forms and types of packaging, so that a comparative analysis of the various packages belonging to a given type of product provides the first results on the most common types and environmental problems.
- **Functions**: the functional aspect of the packaging is essential, as the protection and preservation of the product is the very meaning of the packaging. Understanding the protective needs of the product category and the specific needs of the consumer who uses it, is the starting point of the packaging analysis. The first step of OEP analysis and categorization is therefore based on three aspects: space optimization, protective and conservative functions, packaging usability (Livingstone S., Sparks L., 1994).
- **Materials**: the analysis of materials and connections is another key element. The choice

of materials and of the assembly of components, contributes to making a sustainable and functional packaging. In OEP methodology, materials and connections are represented by an exploded view which shows in a immediate and intuitive way, the criticalities of the packaging. Through a simplified LCA, we can determine quantitatively the impact of packaging on the environment.

- **Best practices:** in addition to noting the criticalities of contemporary packaging (according to the different product categories), it is important to provide examples of good pack. An archive of positive case studies can be a useful source of inspiration for designers and students.
- **Theory:** the analysis is realized by the drafting of eco-guidelines for environmentally sustainable design of packaging; each category has its specific guidelines, which combine sustainability and functionality. Designing a packaging, it is also necessary to know the general rules and those of the specific product category. A synthetic but useful section on national and European regulations, allows the designer to have full and complete guidelines for his project. Finally lecture's video are loaded on OEP platform, they are useful for the students attending the class, but also interesting for researchers and professionals who want to be updated on the progress of research in environmental sustainability.
- **Networking:** the OEP tries to be as exhaustive as possible, but to provide a comprehensive point of view is useful and interesting to create a network of portals and websites devoted to research in packaging and design fields. For example Packaging Design Archive, Comieco lab packaging & design, Laboratorio Chimico Camera di Commercio di Torino.
- **Wiki-pack:** each category, above all the "Best Practices", can be freely updated. Everyone can add products, information and his own analysis to implement the platform.

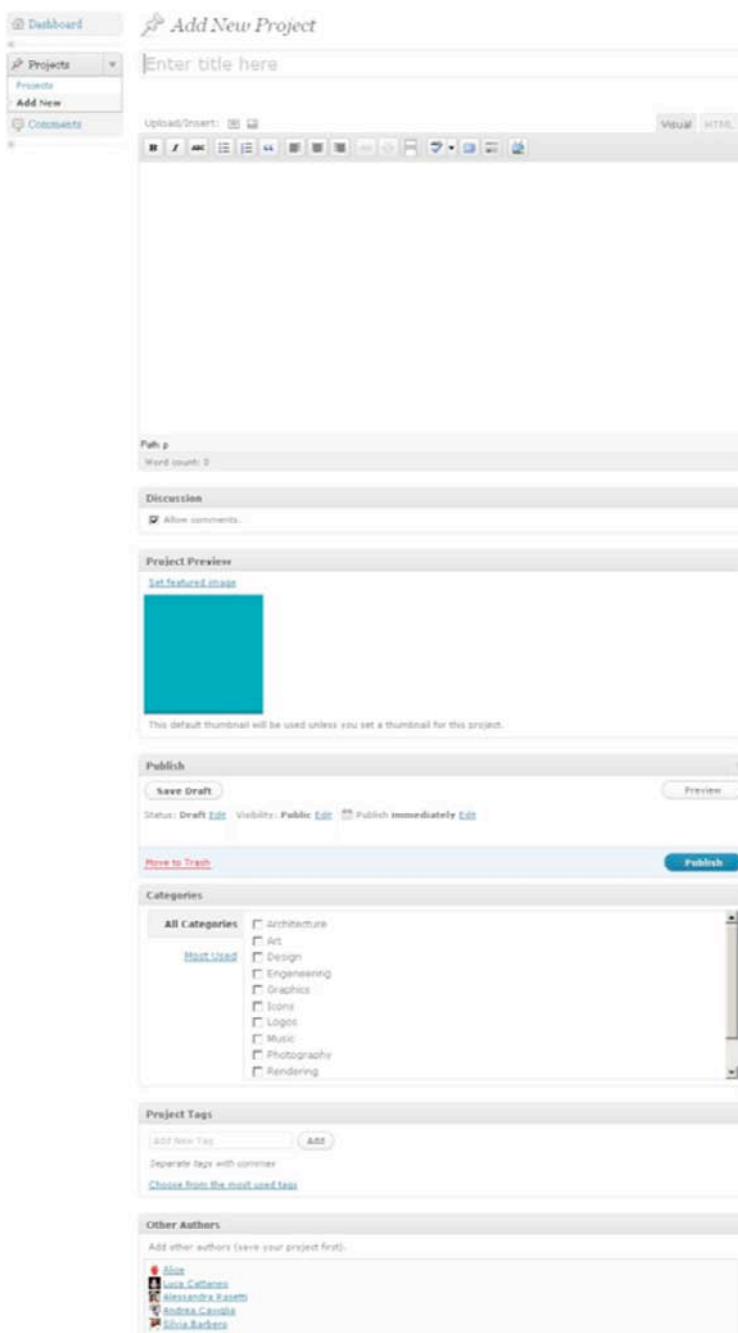


FIG. 2. EXAMPLE OF WIKI-PACK INTERFACE.

Besides the criteria, underlying concepts and principles, most discussions towards achieving goals for sustainable packaging are focused on details of models and practices adopted by the industry, and the effectiveness and practicality of these practices in balancing the economic profits and environmental benefits.



FIG. 3. ORGANIZATION OF OEP

The OEP help to answer to the following questions:

- 1- How we can form ecopack designers?
- 2- How we can manage the complexity of ecopack project?
- 3- How we can design the quality of packaging?
- 4- How the production can push the innovation in packaging sector?

RESULTS

OEP is

- tools for didactics on sustainable pack;
- tools for firms on new technologies and materials;
- tools for designers on contaminate different sectors and find new solutions;
- through the wiki concept, it grow up with analysis and tests.

It is a digital platform that allow to archive, search, classify, design.

It can be useful for:

*students: learning only theoretically the environmental problems of packaging is difficult, if you need to design and make it really a sustainable product. To learn how to design, it is useful for students to have practical case studies, analyzed by themselves. Through the OEP, design students actively discover the problems of today’s packaging, and learn a useful analysis methodology for their projects. The portal allows them to compare each

others and use the knowledge that they themselves have created for their studies, as well as in their future career.

- *researchers: the OEP is an open platform that researchers, top managers of this tool, can integrate and use. Those who hold a class, can use the OEP tool to explain to their students how to integrate sustainability into the project; in general it is a tool to communicate some topics covered in their researches.
- *designers: for designers, the platform is an interesting resource for approaching the research world. Besides being a practical tool that can be useful even for a professional, designers can participate actively integrating sections and sharing their expertise with students and other professionals. The OEP is a mutual exchange of information that it's certainly interesting for the designers' works.
- *company experts: companies often seek confrontation and collaboration with the university. Anyone involved in packaging field, can find in the OEP a first approach to the world of research. A company expert can then understand what is a sustainable design, and how the quantitative analysis, common in the industry, can be integrated by a qualitative approach. The OEP is therefore both a practical tool for information, and a place of contact between industry and research.

OEP is a sharing platform where the product-package can find different solutions in:

- *Shape and function: it is preferable to design a packaging shape, appearance and ergonomics together. These are important but they can be integrated with environmental sustainability. Shapes that optimize storage and display at store, can improve the transport stage, thus reducing the impact on the environment. The function of packaging is important, today many packages are immediately throw out by the consumers. Giving one or more functions to the packaging, we can extend its life cycle and increase the product value in consumers' opinion. Thinking of a second life of packaging, is definitely a good strategy, both for environment and for brand. It is easy to propose an unintelligent or useless reuse, but a careful analysis of case studies and product category can favour a good project.
- *Material: There aren't impacting materials in themselves, then there aren't perfect materials to create a perfect eco-friendly packaging. It is important to always put the material in connection with the project and with the packaging requirements that must meet. The simplified LCA allows us to assess the environmental impact of the specific material, but through the qualitative analysis we can understand how the material can help us to optimize the shape, function, communication and disposal of packaging. For example, we might say that a label made of recycled paper is more sustainable than a plastic one but if the bottle, on which we have to place it, is made of plastic too, the second label can facilitate the recycling process, making the pack mono-material. Furthermore using a label of shrinkable plastic also avoids the use of adhesives, that are problematic in the recycling

stage. This simple example shows how, through the analysis of products and packaging, you can choose the most sustainable material for a specific packaging.

*Process: The simplification and optimization of packaging also leads to the simplification of processes. The design of a new packaging strongly influences the industrial process, if for example you design a mono-material and mono-component packaging, both the relationships with suppliers and industrial processes are simplified. So an eco-friendly packaging is not only good for the environment but also for the company itself. The OEP, especially in research on good pack, it also considers the sustainability of the process and presents case studies of packaging which can greatly improve the trial stage.

*Logistic: The storage phase is a problematic and expensive both for the manufacturer and for the point of sale. Optimize the use of material, the weight and shape of a packaging improves the sustainability and allows to optimize storage. In some cases the secondary packaging is analyzed and optimized shapes and openings, can facilitate the storage but also exposure to the place of sale, facilitating the work of operators. The reduction of transport, optimization of the storage phase and facilitating the process of being sold, are parameters that are evaluated as nell'OEP make packaging more sustainable and facilitate the logistics of the whole process.

CONCLUSION

Packaging can transmit useful data to allow consumers' aware choice and also spaces dedicated to the brand and visual suggestions aimed to communicate the product value. Nowadays packaging communicates above all the brand identity and provides only the information that the manufacturer must state by law. A different kind of communication is possible, providing information about the origin of the product, its real characteristics and highlighting where and how throw out the packaging, in order to properly re-cycle it. Information and transparency can also become an effective tool of communication, to promote the product itself and the brand identity, generating consumers' affection.

The OEP enforce the eco-guideline that states the importance to design product and pack together (Lanzavecchia C., 2000). The pack has the same importance as the products that it protect inside at environmental level, so it should be designed at the same moment. In that way it is possible to find very different solutions than the common ones and really integrated products-packages. The OEP pulls up the commodities with their respective packaging, helping the reflections on them.

In that way, the quality of packaging is also guarantee in a huge and complex sense: the wrapping cannot be evaluated without its content.

The good news is that there is evidence that packaging can help (or hinder) getting a sustainable product into people's handle, which is important, and that packaging itself can be made more sustainable (improvement imperative).

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“Innovation in Design Education” is the title of the Third International Forum of Design as a Process, the annual meeting of the Latin Network for the Development of Design Processes, held in November 2011 at the Politecnico di Torino, Italy. The book presents the results of the conference, which focused on three specific topics of the debate concerning design education: the relationship between schools and companies, innovative instruments for design teaching, and research for education. Particular attention was finally addressed to the host school, which was invited to present its experiences and research relating to the chosen theme.

Elena Maria Formia is an architect and has a Ph.D. in History of Architecture and Urban Design. Since 2008 she has coordinated the activities of the Latin Network for the Development of Design Processes, an international organization of professors and researchers from nineteen universities, which meets every year during a thematic Forum. Her research deals with the history of design and its impact on contemporary professional culture. Over the years, she has attended several international conferences and has written many articles in magazines and journals, such as Strategic Design Research Journal, Redige, I+Diseño, The Art Newspaper, Il Giornale dell'Arte, Il Giornale dell'Architettura, and Le Culture della Tecnica.

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