

Advanced Design issues: a strategic and investigating research approach to design without a market

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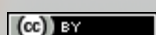
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Designed by Jully Rodrigues

## Advanced Design issues: a strategic and investigating research approach to design without a market<sup>1</sup>

### Questões avançadas de design: uma abordagem estratégica e investigativa para projetos sem mercado

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#### Abstract

The economic crisis that has hit countries in the west in recent years has generated a decline in the presence and the strength of the entrepreneurial class and also of its traditional role of “customer” of the design sector. Design has recently responded to this new situation by generating new working methods. Politecnico di Torino has evolved its classic demanding approach to design and brought it up to date by incorporating “explorative” capacities into the training of its students, providing them with the necessary skills to cope with an absence of market, proposing the designer as a key figure capable of exploring existing situations and offering new solutions. The aim of this paper is to show how, in the absence of market, the strategies that Exploring Design can implement generate system-product, process, service design projects that are always original and innovative, capable of leading quite easily to new methods, business ideas and spheres of activity in which customers can become involved later on.

**Keywords:** Advanced design, Exploring Design, Design education, Design methodology.

#### Resumo

A crise econômica que atingiu os países do oeste nos últimos anos tem gerado uma queda na presença e na força da classe empresarial e também no seu tradicional papel de “cliente” do setor de design. O design recentemente respondeu a essa nova situação gerando novos métodos de trabalho. A Politecnico di Torino tem evoluído a sua abordagem clássica para projetar e a mantém atualizada incorporando capacidades “exploratórias” na formação dos seus alunos, proporcionando-lhes as habilidades necessárias para lidar com a ausência de mercado, apresentando o designer como uma figura importante capaz de explorar as situações existentes e oferecendo novas soluções. O objetivo deste artigo é mostrar como, na ausência de mercado, as estratégias que Explorando o Design pode implementar, gerando produto do sistema, processo, projetos de design que são sempre originais e inovadores, capazes de conduzir facilmente a novos métodos, ideias de negócios e esferas de atividade em que os clientes possam se envolver no futuro.

**Palavras-chave:** Design avançado, Explorando o Design, Educação do design, Metodologia de design.

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## Introduction

### Proactivity of Design in relation to the market

There are currently numerous situations in a very wide variety of sectors in which the methodological approach of design is applied. The so-called “design thinking”, i.e., a complex problem-solving method based on analytical phases, multidisciplinary research, brainstorming and the creation of ad hoc strategies (Dorst, 2011), is applied more and more often not only to design, but also to business in general. An example is Lab.Brain design, an “innovation laboratory that uses design methods to generate in businesses an exchange process to open up exposure to external stimuli” (www.labbraindesign.com).

Thanks to its great disciplinary flexibility, design has recently started to take on “non-traditional” roles in its relationship with the market (Deserti and Rizzo, 2014), also as a result of the decline in entrepreneurial strength due to the recent economic crisis. It has gone from responding to a specific request to being an unusual proposer of research (Heskett, 2009). This makes it possible to extend the field of action of design for “weak” or non-design-oriented markets (Berends *et al.*, 2011). It even goes as far as to areas where there is absolutely no market at all, becoming the “arrival point”, the tool used to create brand new highly design-oriented activities and products.

This proactivity of design in relation to the market is also promoted at educational level by some universities (Celi, 2012), such as Politecnico di Torino which is the main subject of this paper. Here we are going to look at how the educational activity has evolved in line with the new relationships between designers and enterprise, developing projects and meta-design proposals of products and services for the future as defined by Advanced Design (ADD) (Celaschi *et al.*, 2014).

### Evolution of the design methodology at Politecnico di Torino – Design

At Politecnico di Torino, in the very recent past, part of the research for education regarded focusing on an evolved methodological model which can be shared and which characterises the Politecnico itself today (Germak and De Giorgi, 2008), starting with the inheritance of Giuseppe Ciribini’s requirement theory (Ciribini, 1984). During the International Standards Organisation (ISO) in 1972, Giuseppe Ciribini formulated the essential theory expressed by this declaration of intent: “the standardisation in the sphere of construction must acknowledge that a construction organisation is set up to meet human needs, needs that have to be presented in the form of incoming *requirements* which correspond to outgoing *services*”. About ten thousand students have been educated over a period of twenty years at Politecnico di Torino, following this model, which is still valid today, with certain integrations relating particularly to the expansion of the meta-design phase, with the study of the scenario in which the product response is manifested and with growing attention to environmental sustainability.

The methodology developed proposes a progressive formation which evolves in three figures corresponding to

the goals that the first, second and third year Industrial Design student has to achieve in the level one degree.

In the necessary review in accordance with Ministerial Decree 270, since 2010 the formative model has been implemented by the Degree Course in Design and Visual Communication, which now offers students three progressive educational programmes:

- Concept Design, in response to the question “how?”;
- Scenario Design, in response to the question “what?”;
- Exploring Design, in response to the question “where?”.

The aim is the formation of an *aware designer*, capable of finding an added cultural value for the product, associated with the amplitude and precision of the services offered. The result is a product designed in observance of a performance-related and deductive methodology that considers needs, requirements, performance levels and the measurement of the performance offered and supplied as assessment parameters.

The next phases consist in the formation of a *designer capable of investigating the context, the scenario*. The methodology proposes the exploration of the sustainable process based upon certain essential requirements on which to launch the *design of a high quality product or service*. Here *metadesign* acquires more space and value, and the construction of the *setting* becomes the central moment.

The final aim of the training consists in instructing a *navigating designer, or explorer*.

Having completed the refinement of the process methodology, teaching takes on a new challenge: a free research, in which the matter of feasibility only crops up later. For the “navigator” designer there is no market (initially at least): there is only a meta-environment of keywords, panoramas with broad horizons to investigate with different tools, with a tendency to be free, open to organisation and integration in the continuation of research.

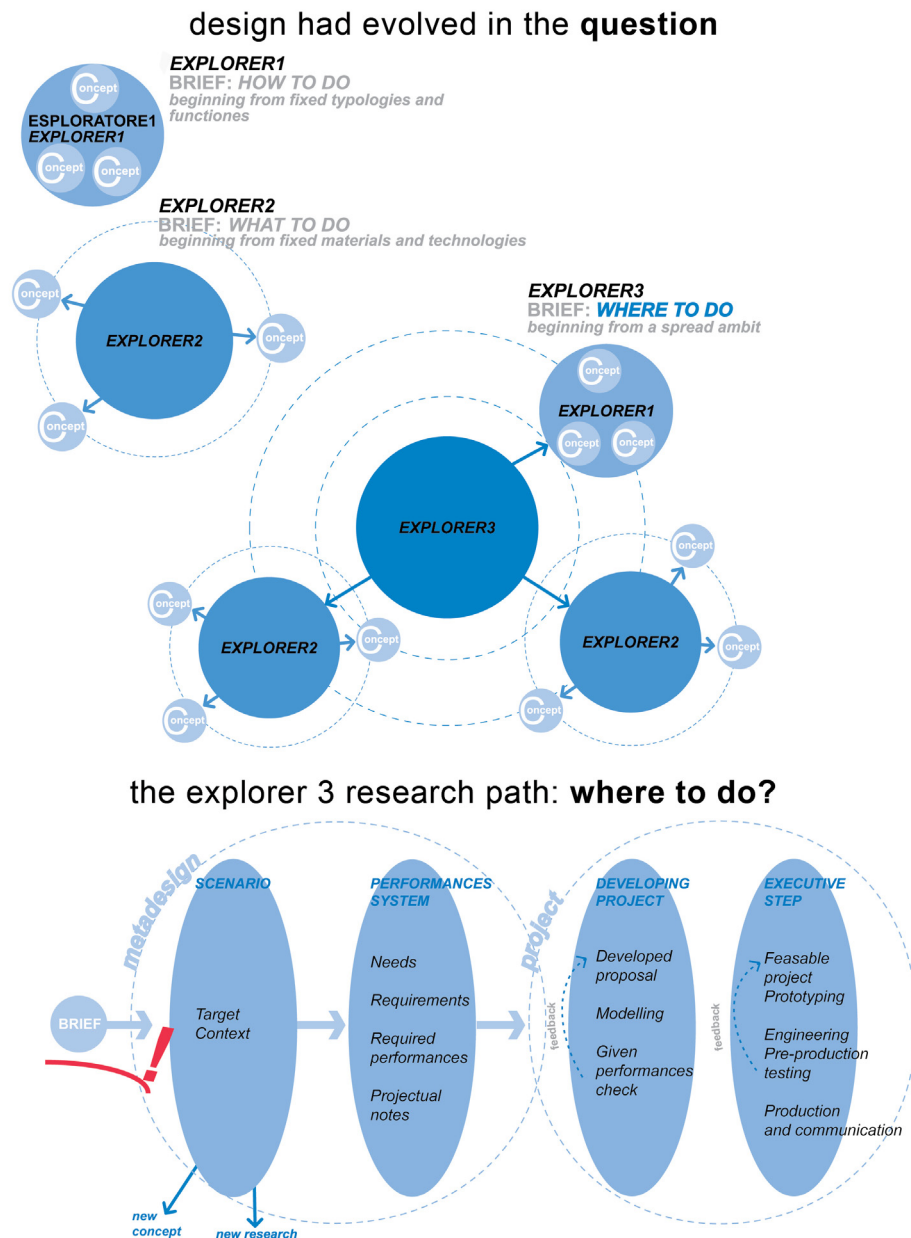
The absence of an initial market does not produce an abstract research/project, but allows the identification, in the numerous areas investigated by students, new markets and new typological and merchandise sectors in which design can be the driving force for cultural and economic resources (Germak and De Giorgi, 2008; Germak and Bozzola, 2010).

### Experimenting with the Degree Course in Design and Visual Communication

The explorer designer seeks new environments for design research, expanding the horizon of innovation. Meta-environments, such as interaction with water, light, sound, thermal comfort or, for example, flexibility, are the new fields of investigation.

After some first experimentations of the methodology during the previous academic years on themes as “Water”, “Air”, “The Measure of Time”, for exercising the Exploring Design programme of academic year 2012-2013, the chosen subject-matter was “Between tangible and intangible: the Light”, focusing attention on the interaction between materials and light.

For the exercise in 2013-2014, the subject-matter chosen is Sound, considered as a possible design requirement: “I am the way I Sound”. In 2014-2015 the subject are surfaces: “Surface and beyond”. Many of the references



**Figure 1.** The Exploring Design Methodology and the Focus on the third step of the Exploring Design methodology: “Where to do?”

to the design results in the present article will regard the completed exercise on Light.

**Scenario: from subject proposal to pre-concepts**

**Choice and launch of the open theme**

The environments proposed in the Exploring Design programme are undertaken by presenting a *transversal reading* of open subject-matters.

The subject-matter of Light, for example, touches numerous aspects, such as colour, reflection, transmission, the interaction of light with objects, environment and man, extending as far as considering, by contrast, the negation of light, darkness.

Sound (just like silence) is an even more complex theme, in that it is both “intangible and invisible”. It transforms and becomes, within the Programme, a design requirement. The invisible dimension of design (Ferreri and Scarzella, 2009) takes on an importance such as to become designed and controlled.

Another mainstay of exploration concerns the transversal nature of the subjects, synaesthesia and sensorial interactions: “sensing design means grasping sensations with the eye, but also touching, smelling, seeing and tasting the project. The designer’s ability lies in the capacity to orchestrate sensorial registers and choose what to perceive with the eye and what to leave to the other senses” (Riccò, 2008, back cover).

**Exploring the subject-matter by guided sub-environments, with the contribution of experts**

A first investigation of the meta-environment is carried out by the teaching group: environments, sectors, designs, products, materials and semi-finished products are collected and categorised into possible sub-environments presented to students as a first “guide” to follow in the more extensive investigation of the meta-environment.

Subsequent investigations were carried out by students with the support of experts, whose contribution is essential to the approach to the open subject-matter.

The initial subject-matter is broken down into sub-environments with the support of an expert in cognitive ergonomics, through qualitative sessions based upon a method which develops creativity along with various stimuli and tests. This method is based upon two specific stages: the first is divergent, in that it gives free rein to the imagination; the second is convergent, where ideas produced in the first stage are brought back to an applicable form (Allione *et al.*, 2012).

For example, the sub-environments generated by the subject of Light were: *projecting, allowing the passage of light, fluorescence and phosphorescence, transporting light, reflection, light and colour effects, see-through/non-see-through, changing effects, light as energy-speed-movement, emotional warmth, light as magic-mystery, light as sculptor, light as sound, non-light.*

Meta-environments (Light, Sound, etc.) have also been analysed with the support of specialists, thanks to the performance of workshops and the analysis of specific subject-matters relating to other disciplines (such as technical physics, colour theory, acoustics).

**Analysis of sub-themes and pre-concepts**

After looking at the sub-themes in detail, the students are split into macro-groups (from a minimum of six to a maximum of twelve people) depending on the declared tendency of each micro-group (three or four people) to investigate the sub-theme. This free research phase on a sub-theme, which is not imposed, allows students to experiment an authentic investigation within a subject of interest, from which they have to extrapolate pre-concepts.

Pre-concepts are a declaration of intent (poetic), presented using slogans, adjectives, keywords and concepts (e.g.: “see the light with other senses”, “light as a guide”, “the light of my home with me all the time”, ...). Pre-concepts identify possible areas of intervention; once the pre-concepts have been shared among team members, each micro-group will choose the pre-concept(s) to develop, defining and developing it (them) gradually, until the concept has been elaborated.

**Project phase: From the concepts to the results**

**Generation of concepts from the shared scenario**

The elaboration of the shared/reference scenario has generated pre-concepts that are part of the critical mass of material shared by all the students, which they can draw on to proceed in their design process.

Once the right approach to the meta-environment and the shared/reference scenario was identified among the many possible options (allowing the passage of light, light as energy, light as sculpture, fluorescence/phosphorescence, etc.), the students proceeded with the definition of the product/service to develop according to the activities



**Figure 2.** The Light research map: from the theme to the Scenarios.

learned during the education process in the previous years, summarised in the figure of the scenario designer and the concept designer (cf. Introduction).

The concept is the idea that lies at the base of the design, the combination of guidelines emerging from the analysis of the scenario, and represents the system of fundamental values to pursue in the perfection of the design. The concept can be defined as the tangible form of an intuition which, triggered by the study of a research environment, contains an element of innovation in design (Lerma, 2008; Barbero, 2008).

The different scenarios generated numerous and different concepts and guidelines which, selected by the teachers involved, generated, in turn, products/services and families of products that can be transformed into a new design brief.

### Analysis of specific scenarios, concept market analysis

Having defined the concepts to develop in meta-designs or designs, students analyse the possible areas of intervention through market analysis, with the support of the discipline of economic and lateral market assessment.

The contributions of marketing and economic assessment focus on new concepts, like that of "design-driven innovation" (Verganti, 2009), which form a link between creativity (as a conceptual process used to generate ideas) and application of the ideas in the creation of better products and/or services than those that already exist. At the same time, these disciplines aim to supply certain essential notions, with a view to consolidate the student's knowledge and help in the assessment of the performance of a product on the market.

Students have to elaborate a market analysis of the concept, framing the reference market and creating new product/service categories where they are missing (Whiting, 2011), following the lateral market process. "Design-driven" innovation does not come from the market; it creates new markets. It does not promote new technologies, but generates new meanings. And it changes the rules of the game (Verganti, 2009).

This knowledge placed at the service of the designer allows a response to the challenges that companies are faced with today (Cova *et al.*, 2007).

### The Requirements System

The explorer designer students proceed in the design process as informed designers, defining the requirements system of their design, i.e.: the performance-related and deductive methodology that considers the assessment of needs, requirements, performance levels and the measurement of the performance offered and supplied as assessment parameters.

The requirements system explains the needs of the individual players that come into contact with the product designed: not only the requirements of the end user, but also of the manufacturer, the handler (transport, maintenance, etc.), the other subjects that come into contact with the end product (other targets, but also the same territorial and environmental contexts). The needs will, therefore,

be translated into particular requirements, which will subsequently be compared with the performance offered by the product obtained.

### New Design Materials

The Programme also includes the contribution of the discipline of New Design Materials and of MATto, the materials library of the Design studies course at Politecnico di Torino ([www.polito.it/MATto.it](http://www.polito.it/MATto.it)).

The course of New Design Materials gives students the technical and scientific instruments they need to assess the functional and economic aspects of innovative materials and technologies (Ferrara and Lucibello, 2012) and develops their ability to make qualitative and quantitative assessments of the performances of the materials and technologies within the Programme project.

The materials library, MATto, which is an archive of state-of-the art materials, semi-finished products and technologies, on the other hand, proposes an expressive-sensorial reading, also considering environmental sustainability, developing a sensorial approach in students. Moreover, MATto presents certain materials/unfinished products/innovative technologies to the course, selected by a group of internal researchers and teachers in accordance with the subject-matter of the Programme, which the students can/must use in their design. The challenge faced by the student-designer in this case lies in undertaking an imposed design restriction, relating to the material to use, a condition which occurs regularly in designing in collaboration with industry (Pedgley, 2009).

The students are required to explore and investigate materials and technology in order to identify possible new design areas, identifying the best application of the materials suggested within the design proposal, such as to enhance and exploit their visual and audio qualities.

### Specialised findings in the design proposals

The final designs presented by the students were assessed by specialists from the world of design, materials and marketing. In particular, fifteen designs for the home were selected for an international industrial design competition, Young e Design, reserved for young designers under the age of 35, held within the "Salone Internazionale del Mobile" in Milan. A joint but variegated participation, which focused on the relationship of "things" with the light inside (or outside) the domestic environment.



Figure 3. New design materials: MATto the material library.

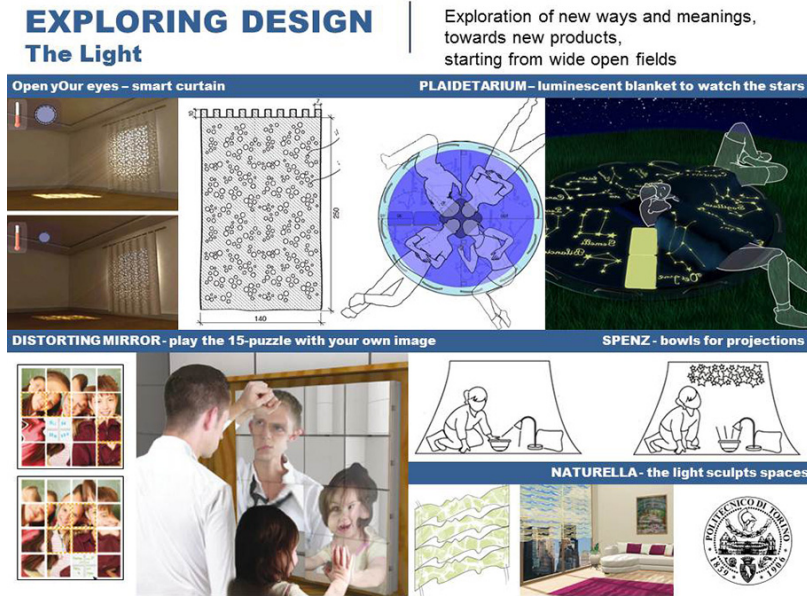


Figure 4. The Light: examples of the projects presented by the students of the academic years 2012-13.

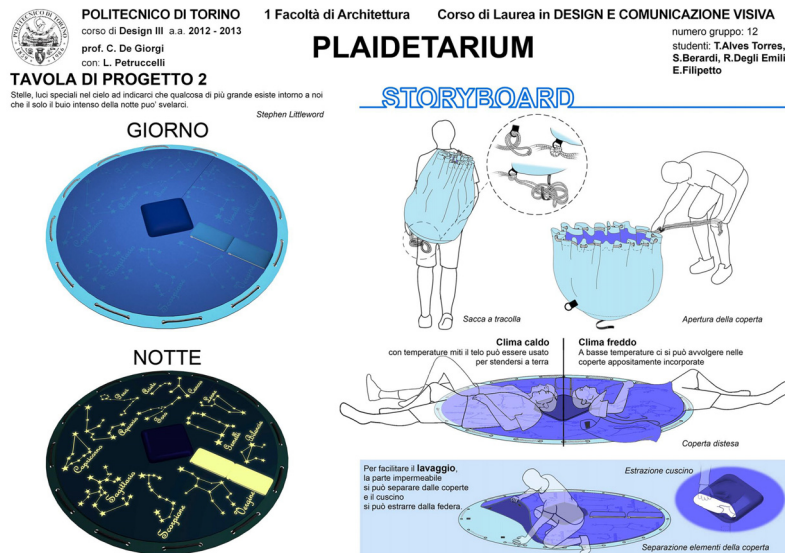


Figure 5. A project: Plaidetarium. Students: T. Alves Torres, S. Berardi, R. Degli Emili, E. Filipetto.

The designs of the Exploring Design Programme of 2012-2013 were awarded the Special mention of the jury.

These are the award-winning products:

- *Immagina l'immagine*: deforming mirror, playing with your reflection;
- *Open yOur eyes*: mutating and intelligent curtains, which react to different light conditions;
- *Naturella*: a shutter that sculpts the space, the settings;
- *Spenz*: projection bowls for children, to create play areas;
- *Plaidetarium*: blanket to look at and recognize the stars at night;
- *Tramonto*: lamp to educate and create awareness, through the mutation of light, of the problems deriving from waste and excessive consumption of artificial light;
- *Divisorio Sonoro-Luminoso*: dividing surface for public areas, patios and open spaces;

- *Luna di Notte*: lamp that moves itself like the moon and communicate the passing time;
- *cAlore - cOlore*: a napkin which teaches children how to eat properly, using light and colors;
- *La (S)Coperta del Buio*: a blanket-tent, for playing and discovering that you aren't afraid of the dark;
- *Biscotto Braille*: moulds for biscuits that communicate their identity using braille; biscuits have the shape of letters, to write messages that sight-impaired children can read;
- *Pick Out*: book for reading in the dark and in the light; different stories and different characters;
- *Light Wave*: bookmark – light that exploits photoluminescence;
- *Teatrino delle Ombre*: a child-sized theatre for projecting stories, fairy tales and fables.



## Discussion and future developments

### Experiment with several open themes

In the near future, we expect to continue experimenting with new open themes, also in relation to the emerging economic and cultural situations on which the intellectual energies of international debate are focused: food (also in relation to EXPO Milan 2015), water for all and tangible culture. In addition to this, the commitment in terms of sensorial perception is also confirmed, with the opening of the themes of touch and smell, new frontiers for design attentive to the “soft” variables of the product. A theory currently being defined is also that of international comparison on themes to be defined, with Design Courses from the other side of the world (e.g. with UEMG – Universidade do Estado de Minas Gerais, Brazil), which declared their interest in these opportunities during a first meeting.

### Involving companies in specific projects

We also propose, in the near future, investigation of the real feasibility of the proposal developed by students with companies working in the different merchandise sectors involved (some of which very distant from the initial research context) and the establishment with them of operating methods which range from the verification of technical-economic feasibility to prototyping, to be carried out in conjunction with former-student designers.

## Conclusion

According to the most advanced orientation of design culture and of the Advanced Design, design processes define products and services for the future. Often these products and services are not defined and requested by clients: in fact, in the absence of a market, due to structural contingency or specific difficulties, the strategies that Exploring Design brings into play with a proactive role with respect to the situation in hand, lead to design theories for product, process and service systems that are always original and innovative from the point of view of cultural and technological contents and of confrontation with the market, capable of leading to areas of actions that would normally be ignored. New methods, enterprise ideas and areas of activity are outlined, in which a “new market” can be involved in proposals that have already evolved, with feasibility being verified on a case-by-case basis. Moreover, Exploring Design allows students (future designers) to understand the contemporary role of the designer (his professional, ethical and social responsibilities) and comprehend the spin-offs that may derive from an open design approach; students have knowledge of the potential contribution of design to innovation, in production and consumption and the ability to analyse some simple series of data regarding a segment or an entire market.

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