

MATERIAL CULTURE IN DESIGN PRACTICE IN PORTUGAL

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Abstract

This article aims to reflect the mission of the Degree in Design at the Faculty of Architecture of the University of Lisbon in university education in Portugal and the balance the relationship between theory and practice in the training of new generations of designers. The linkage between design and material culture was pelleted in design education in Portugal by Daciano da Costa with the collaboration and experience of Eduardo Afonso Dias. The combination between design and thought, and between form and function, culminated on the culture of "know how to do" using constantly the practice, on exercises in trial and test seized by the concept of trial and error.

Considering that the curricular units of design are the backbone of this course, the remaining curricular units programs are oriented around those objectives, particularly in the area of design technologies which seeks to strength the relationship between design creativity and technical component.

In a specific context, the workshops of the FA are certainly one of the capital gains for design students which have the possibility to make their study models, scale models or accurate and functional prototypes. Regardless of the economic and technical constraints, the workshops of the FA are part of the identity of the Degree in Design and training of young designers. The theoretical / practice component of the course has allowed students to monitor the evolution of materials, processes and technologies, factors that have contributed to the professional development of the designer in society and the consequent demand and acceptance by the Portuguese industries.

About to turn 25 years, the Degree in Design has sought to monitor developments in the markets and meet the demands of quality education by training your body of teachers, the restructuring of the curriculum and presentation of new exercises. Continuing the three years graduation, the Master's degree in communication and product coordinate among themselves the contents in order to ensure their sequence and projectual complexity and technological of the exercises.

Key words: materials, technology, design, material culture, workshop practice

1. DESIGN AND MATERIAL CULTURE IN FA

The design courses at the Faculty of Architecture of the Technical University of Lisbon (FA / UTL) appeared in 1992 by the hands of Daciano da Costa. After the restructuring of the Plastic Arts and Design Department of the Fine Arts School in Lisbon (ESBAL) in 1994 these courses were transferred to the current FA-UTL facilities in the University Campus of Alto da Ajuda.

"The Design section is still in installation period, with successive touches to the initial program of courses and with the normal limitations of public education, particularly financial. We have no illusions, this country is not in fact so rich that he can give up the joys of a large budget and who is poor is content with little. (...) The national education system is what it is. We will have to work seriously from the realities to create other realities." (Costa, 1995, pp. 79-81)

According Daciano (1995), the education of future designers must support the legacy of the Bauhaus in regard to educational pioneer. It was in the Design Degree that he found room for criticism and for the transfer of their professional knowledge in a pragmatic pedagogical action with noticeable objectives and effects. Through reproduction of the practical cases of daily life, exemplified the ability of Design in addressing the problems in society.

Since the establishment of the degree of Product Design and Fashion Design, it has been held three curricular restructuring, where we tried to adjust the programs and content in order to respond effectively to changing markets and domestic and international trends.

The Bologna Process, responsible for the last restructuring of superior education changed the curriculum of Degree in Design. The creation of the Master's Degree was directed to the linked formation of two complementary cycles (product and communication), with increasing levels of specialization and deepening.

"The student must confront the crosscutting issues to all projectual activities that are taught in school and acquire the material and intellectual bases that are its foundation. Should develop their skills to urn creative work and a critical attitude, free from conventions, and understanding of its time spirit." (Costa, 1995, p. 90)

Almost twenty-five years later, the Design courses retains the essence defended by Daciano da Costa "The Design prepares its own means to solve the problems: the level of production of coherent concepts and relations between them (Theory), the level of technical tools for research and representation (specific Techniques), and finally at the level of the creative process (Methodology). But it is in the materiality of its production and direct use of technology and economics that Design recognizes and differentiates (Costa, 1998, p. 98)

The FA Design courses are characterized by form professionals with the ability to solve problems, to involve the material culture in a complex answer to society's problems and expressing their awareness and professional ethics towards the welfare of the human being.

The spread of education of the FA and its approach to business and society has happened through some initiatives: study visits to businesses, museums, fairs and exhibitions; seminars, conferences and workshops with the participation of professionals, teachers and businesses; exhibitions of students' work and their dissemination on the websites of specialty.

"Engagement of knowledge with material reality is one of the key teaching". (Afonso Dias, 2014, p.135)

Between Art and Technique, the Design acts in the transition of these disciplines and articulates the theoretical and practical knowledge of architecture and engineering. Increasingly autonomous and consolidated, the Design field defined the scope of action through the expertise, technological knowledge, the production of scientific knowledge and cultural material.

2. EDUCATION THROUGH THE WORKSHOPS: STUDY, DEVELOPMENT AND TESTING

The workshop area of FA are part of the identity and formation of Degree in Design, and are certainly one of the capital gains for design students who have the opportunity to make their models study, scale models or rigorous and functional prototypes. Regardless of the economic and technical limitations, the theoretical / practice component of the technology courses has ensured the monitoring of the evolution of materials, processes and technologies. In the academic and experimental context, it is constantly promoted the contact with Portuguese companies through study visits. This approach sometimes originates partnerships for work development supported technically and financially or to professional stages.

"Transmitting and do today learn the 'project act' as a complex process performed by the designer in the technical and production relations are the obstacles to transfer our mental object to the real object experiential ..." (Costa, 1995. 90)

In this degree the Project courses units are the backbone of the whole formation. The area of Design Technologies develops exercises of direct support, whose problematic refers to material reflection, technical, technological and productive, which combines a variety of other knowledge acquired in units such as Ergonomics, Management, Sustainability, Innovation, Branding, Computation, Design and

Project. The culmination of these experiences are only established with the implementation of a full scale model, or in the case of master's degrees, in prototypes.

"The compatibility of Design with production and marketing, attention to the evolution of techniques, materials and forms and requirements and market aspirations are sufficient factors for the industries themselves recognize and request the intervention of the designer." (Afonso Dias, 2014, p. 9)

Expressions such as "material culture" or "know-how" say directly about the theory and practice of Design Technologies on a close relationship with Project, in which content should cohabit and provide a gradual increase in projectual complexity. At no point may think of separation or replacement of these two areas.

"All solutions or new materials, novel or traditional, have their opportunity and not always to technological advancement corresponds modernity. There may be modern and new interpretations of the skills of a traditional material or different ways to explore the expression of old materials. There are traditional materials with which the man keeps an affective relationship and there are also other technologically evolved that it accepts without reservation by going to meet his desire to live new situations." (Costa, 1993, p. 61)

This article aims to portray the teaching of technology in the area of Product Design, prove their importance in the formation of future designers and try to recover some of the structural and fundamental principles that transformed Degree in Design of FA (Pre-Bologna) in a reference course.

2.1. Case Study

The educational structure to be developed in the area of Design Technologies in FA is exemplified with the presentation of the practical component of work done by students of the Master in Product Design FA.

On the following section are briefly presented the objectives of the course and the statement of the exercise:

The unit course of Technologies is developed through theoretical and practical exercises closely linked to product design. The monitoring of the exercises has different approaches related to the type of materials, technologies and resources available, alternating with sessions of critical analysis from the technological perspective of ongoing projects.

2.1.1 *Main objectives*

Basic knowledge of mechanics and physical properties of materials;

Processes and production methods available and their application to production systems in industrial environment in the creation of new products;

Justify the projects in theoretical and technical bases, reinforced by the concept of Material Culture as a structuring intellectual instrument;

Develop autonomy and critical capacity to decide, plan and manage the different phases of the project implementation process;

Identify and characterize the processing technologies, assemblages, surface finishes and forms of commercial presentation;

Technical drawing: presentation, description and detail drawings, technical specifications and legend using 2D and 3D building / modeling programs;

Understand and develop the technical and formal mastery of the raw material through the workshop work for executing maquettes, models or prototypes resulting from the exercise;

Experience building models contacting with rapid prototyping processes;

Deepen the technical knowledge through the approach of real content and issues presented within the course of Product Design.

"Whether in the workshops, supporting and encouraging the development of models and prototypes, transmitting their technical and technological knowledge. FMS. "(DE, p.182)

In an attempt to keep the legacy left by their teachers, teacher and researcher Paulo Dinis seeks to maintain and promote a direct and personalized support to each student or working group, whether in times of technical decisions either in cooperation act side by side with students.



Figure 1. Execution of components for prototypes - moments captured in the workshops of the FA (Rafael, 2015)

2.1.2 Synthesis of the exercise presented to students

Object of the scale body for leisure or sport constituted by two subsets of different materials and techniques. The shaped plywood and fiber glass (FRP - Fiber reinforced polymer) should be predominant in function, structure and appearance of the final formed object and allow the assemblies to each other to be removable.

The concept should be placed in a contemporary context, defined by students and approach the structural, functional, technical and constructive problems in accordance with the materials and technologies to apply.

The prototype should be executed and tested at the FA workshops with the support of technicians responsible for each area.

2.1.3 Technical and functional synthesis

User mobility;

Structure in plywood - laminated wood conformation;

Hull FRP (Fiber reinforced polymer) - modeling;

removable assemblies (demountable) between different materials;

structural concerns - tensile, compression, bending and torsion;

Inserts or other structural materials to a lesser extent possible;

Optional - incorporation of flexible elements of total or partial coating;

Entering additional components that complement the main function and that may be incorporated in the initial module;

Palette of colors, materials and possible finishes;

Application of basic knowledge about ergonomics, anthropometry, process management, sustainability, computing and branding.

2.1.4 Production dossier

Execution project with technical drawings (assembly drawings, detailed technical drawings, exploded perspective, materials map, product tree, manufacturing sequences, details, accessories and technical specifications about materials);

Presentation of commercial variants of the product and a palette of surface finishes (color, texture, brightness, etc.). "

The works presented were designed, implemented and tested by Masters students in Product Design and supported directly by the course teacher and the technicians of the FA workshops.



Figure 2. “Swingu” - Carolina, Ana, Sara (Rafael, 2015)

Figure 3. “Conquer” - Hugo, António, Rafaela (Rafael, 2015)



Figure 4. “Crush” – Agostinho, Raquel, Vanessa (Rafael, 2015)

Figure 5. “Down Track” – Tiago, Isabel, José (Rafael, 2015)

"We will also have to take account of the materiality of the design as a form of knowledge and, contradictorily, to conclude that the intellectualization of education may correspond to miss the hand of culture and, consequently, the loss of the clarity of spirit (...)" (Costa, 1995, p. 94)

The excellence of this work proves that the investigator's objectives and concerns about the terms "material culture" and "know-how" are relevant and that they need to be provided and adapted in the teaching that is more theoretical and virtual.

3. RESULTS

3.1 “Made in FA” Project

The realization and testing of projects culminated in ecstasy and eager to move to the next level. The conclusion of the semester and the end of the school year did not diminish the desire and ambition of these almost designers. In order to disseminate the results obtained in the course unit of Technologies and see thus recognized the quality of work, it was proposed to hold an exhibition in the FA facilities. This raises the "Made in FA" Project.



Figure 6. Exhibition at the Faculty of Architecture (Author, 2015)

Backed by the faculty's website, the project assumes the continuity of the following classes, thus creating a portfolio of work carried out in this course unit and a database of information on students, such as the option to provide the links to the website or personal portfolios.

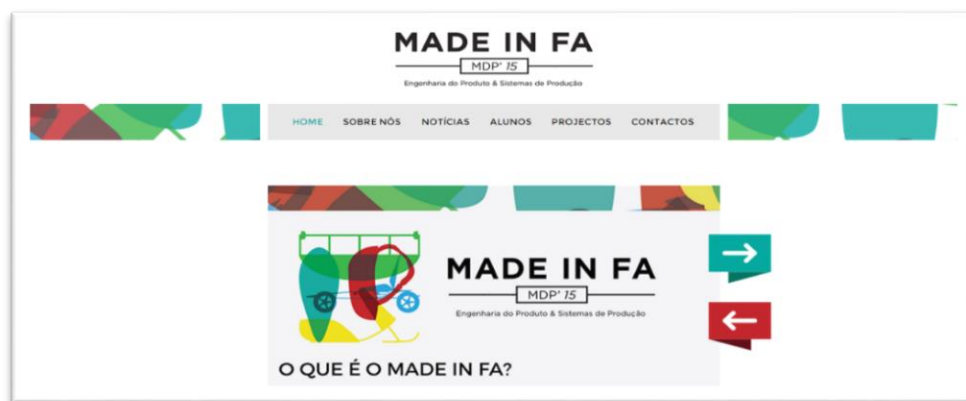


Figure 7. “Made in FA” Project homepage

(Source: <http://madein.fa.ulisboa.pt/index.html>, accessed 24 April 2016)

Still integrated in the "Made in FA" Project, it was proposed the study to the realization of an itinerant exhibition on Portuguese territory, which resulted in several proposals, including:

- “Projecting Sciences” - Knowledge Pavilion, Park of Nations, Lisbon (Hugo, António, Rafaela);
- “Time Out” – Ribeira Market, Cais do Sodré, Lisboa (Tiago, Isabel, José);
- “Exchange at the Alto da Ajuda Campus” - Institute of Social and Political Sciences, Alto da Ajuda, Lisbon (Carolina, Ana, Sara);
- “Open Week: the Faculty in the Secondary” - Secondary School Henriques Nogueira de Torres Vedras, Torres Novas (Agostinho, Raquel, Vanessa).

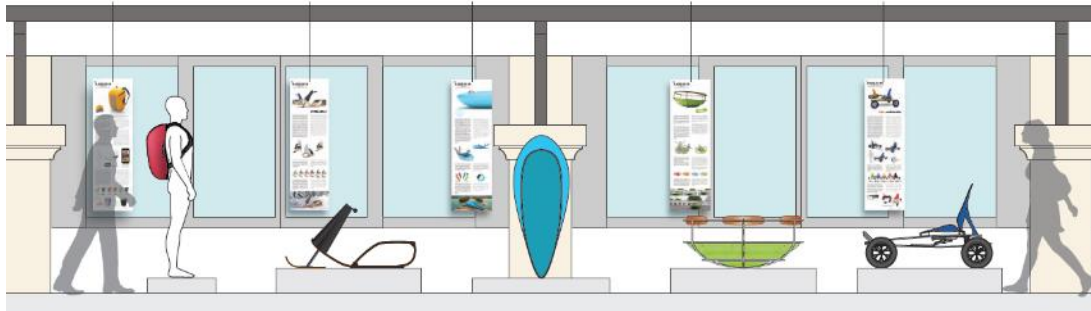


Figure 8. Proposal Itinerant Exhibition "Time Out" (Source: Tiago, Isabel, José)

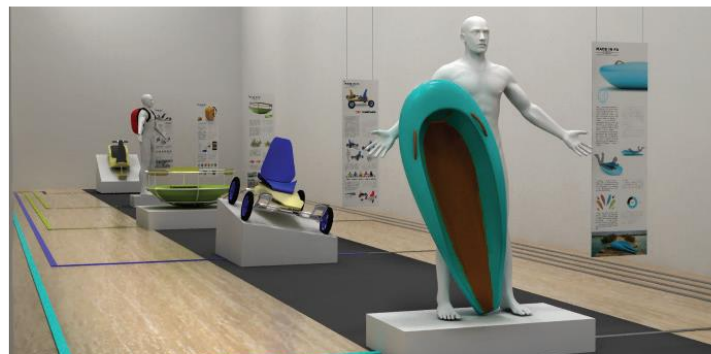


Figure 9. Proposal Itinerant Exhibition "Projecting Sciences" (Source: Hugo, António, Rafaela)

3.2 Backbone for the design technologies

The "draft document" is the gateway to the physical reality of an idea. Idea which is in itself a way of interpreting the collective imagery. (...) The increasing complexity of the human environment problems imposed by new needs and technological developments, proposed different ways of thinking and different projective operative techniques to solve these problems. " (Costa, 1995, p. 82)

About to turn 25, the Degree in Design has sought to monitor developments in the markets and meet the demands of quality education by training your body of teachers, the curriculum of the restructuring and presentation of new exercises.

Despite the course being limited to three years of training, the functioning of communication and product masters strive to matched the content taught in order to guarantee the continuation and maintain the gradual increase of design and technological complexity of the work.

"Eduardo Afonso Dias has always been the designer, the man Know How, but also of Knowing Being of reflected practice." (Moreira da Silva, 2014, p.182)

Regarding to the Technologies area, it developed a diagram that gathers and intersects the various components, resources and services available and / or desirable for the development of student work in the FA workshops and subsequent consultation and exploration of the professional activity.

As shown in diagram 1, the structure of the FA workshops currently has what might be called the "central trunk" (work areas) supported by two members (college resources and business contribution).

The verification of the available resources allowed the investigator to verify the absence of investment in the faculty sector. The financial shortage, the excessive wear of machines and tools, the lack of maintenance of the physical space and the impossibility of expanding the facilities, have disturbed the practical application of the knowledge acquired in class, and also has concealed the importance of technology in times of collaboration / intervention of design courses.

The recasting of the Technology course unit contents of the 1st and 2nd cycles of Degree in Design presupposes identify, reflect, update, harmonize and organize the "backbone" that make up the teaching of Design Technology. The restructuring of the study plan, the stability of the faculty and technological innovation is in line with the opportunity to intervene and draw a new cycle for this area.

"Its history, successes and failures blend with the awareness and the history of the Portuguese own design. (...) Still ironic and critical, but at the same time confident in the potential of new generations, as always." (Afonso Dias, 2014, p.24)

The problem discussed in this article, the professional researcher ambition in the field of technology and personal motivation for the materialization of the contents taught triggered an opportunity to research, with the school to develop further by conducting post-doctoral.

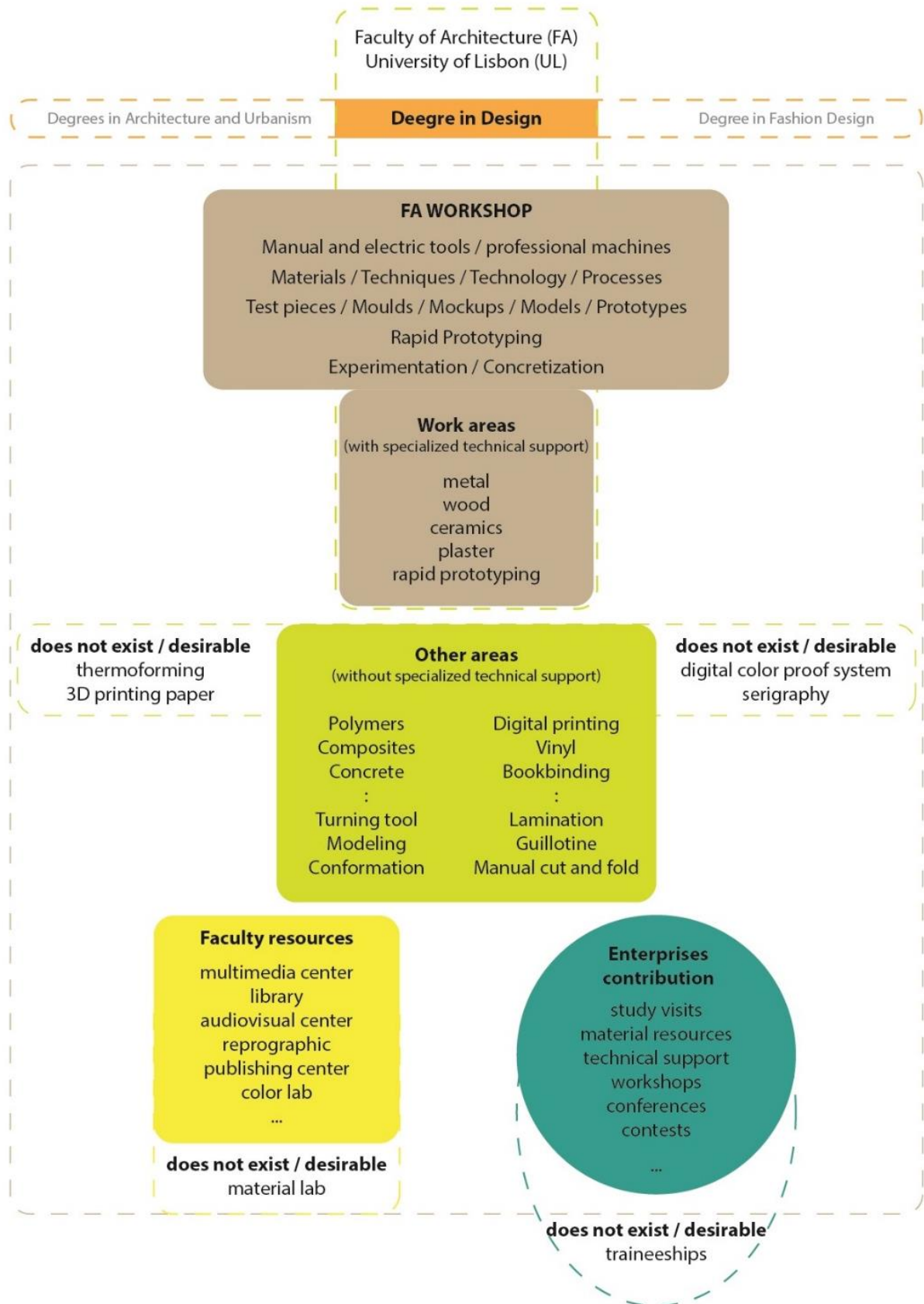


Diagram 1. Current structure of the technologies available in FA (Author, 2016)

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FIGURES

- Figures 1, 2, 3, 4, 5 – Miguel Rafael – Centro Multimédia da FA
- Figure 6 – Paulo Dinis

DIAGRAMS

- Diagram 1 – Paulo Dinis