

# Design Ecosystem in Portugal. Education, Research and Entrepreneurship

**Marlene Ribeiro**

University of Aveiro

marlenefribeiro@ua.pt

ORCID 0000-0003-0055-9851

**Francisco Providência**

University of Aveiro

fprovidencia@ua.pt

ORCID 000-0002-6411-5267

## Abstract

The article aims to frame the Design Ecosystem in Portugal, presenting data on education, research and employability in design, and identify possible causes for the still fragile connection between design and the industry. In Portugal, the extinction of the Portuguese Design Center, in 2013, exacerbates this lack of representation of design among companies, the public administration, and the general public, an space that is urgent to occupy. Oriented to observe, discuss, and think about the schools and research in design in the context of the national ecosystem, the REDE — Meeting of Design Schools presents itself as a sharing space for designing the future of Design Schools. The REDE started as an initiative of the Design Observatory in Portugal project of the ID+ Research Institute for Design, Media and Culture that aims to collect and interpret data from the Portuguese Design ecosystem to promote knowledge and influence public policies.

## Keywords

Design ecosystem  
Design education  
Design research  
Design-Industry collaboration  
Critical and creative thinking

Gone are the days when Design was simple, naively proposing to solve problems, when it still considered resources unlimited and its prescriptive action essential to healing the world. The complexity of Design, today conditioned by sovereign sustainability, implies creating and proposing new problems to the citizens. Only by creating new problems will it be possible to guarantee the species' survival. Innovation is a consequence of research, but the relevance of research depends on the quality of the question that generates it. In other words, only creating new problems can imply innovation (knowledge is, after all, the ability to ask better questions — in a more informed way). Therefore, only the (industrial) capacity to create new problems for consumers will be able to promote the progress of consumption habits and, consequently, guarantee the leadership of the organizations that propose it, thus realizing the Design of the future. In this spirit, we propose to characterize the Design ecosystem in Portugal through the review of national and European documents related to teaching and employability; the impact of design research and industrial production on the economy; to identify possible causes for the still fragile connection between Design and the industry and to point out alternatives for more effective collaboration.

### Education and Research in Design

The impact of (scientific) knowledge on the economic development of companies has led the European Commission to finance the integration of research and innovation through programs such as Horizon 2020 or the current Horizon Europe 2021–2027 with a scientific program based on three implementation pillars — Excellent Science, Global challenges & European industrial competitiveness and Innovative Europe (European Commission, 2019), thus acquiring more remarkable aptitude for global competitiveness.

The research strategy in Portugal is aligned with the European strategy and, analysing the country's financial effort in Research and Development (R&D) in the first 20 years of FCT - Foundation for Science and Technology<sup>1</sup> (1997–2016), there has clearly been an increase of more than four times in absolute terms and more than doubled as a percentage of GDP from 0.56% to 1.4% (PORDATA, 2020), but still met only about half the target set in the Lisbon strategy — 3% of GDP (European Commission, 2010). Portugal's results in the assessment of progress that the ERA — European Research Area published in 2018 report that

Cooperation between business and academia in Portugal remains low. Portuguese institutional framework does not include incentives or an integrated strategy to foster cooperation between academia and industry. The inefficient governance and finance systems of Portuguese universities when it comes to university business cooperation and innovation and the absence of large technology-intensive firms that might absorb more graduates from science and technology studies are also factors contributing to the issue. Furthermore, experience in the private sector is not valued and

The National Board for Scientific and Technological Research (JNICT) was set up in Portugal in 1967, making relevant contributions to the promotion and support of national scientific culture, in line with the European reality and aware of its backwardness, particularly in relation to the United States of America (Decreto-Lei Nr. 47 791, de 11 de Julho de 1967, 1967). In 1997 this organism was succeeded by the FCT — Foundation for Science and Technology, a Public Institute whose mission is “the development, funding and evaluation of institutions, networks, infrastructures, scientific equipment, programmes, projects and human resources in all areas of science and technology, as well as the development of international scientific and technological cooperation”. (Fundação para a Ciência e a Tecnologia, 2020).

academics have low incentives to follow dual careers or to engage in cooperation with industry. Recently a partnership between Innovation Agency and the business association for innovation (COTEC) was launched to encourage cooperation between academia and business. However, to date no concrete results were identified (European Commission, 2018).

In response to these timid results, the government has established the technological innovation strategy for Portugal for the period 2018-2030 whose objective is to

ensure Portugal's convergence with Europe by 2030, by increasing the competitiveness of the Portuguese economy, based on research, development and innovation, as well as on qualified employment conditions, together with increased public and private investment in Research and Development activities (Resolução Do Conselho de Ministros n.o 25/2018, 2018).

This willingness to assert Portugal in Europe through knowledge and innovation, with emphasis on the strategy of supporting and empowering the network of Interface Centres and Collaborative Laboratories, aims at greater dissemination of scientific results and success stories demonstrating the capacity of national innovation agents, motivating private investment in Research and Development (2/3 private expenditure to 1/3 public expenditure).

An investment that should not be ignored by companies, because, according to data from the European Commission for every €1 invested in research and innovation in the European Union, it generated a return of €13 in the business sector (European Commission, 2011), an investment that translates into innovation. However, Portugal is already innovative (one of the classification criteria is the integration of Design in the organization), appearing classified in the European Innovation Scoreboard among the seven strong innovators' countries and twelfth in the general table (European Commission, 2020). We think its ambition should be to position itself in the group of five innovation leaders, bringing the university closer to companies and better qualifying its workers.

Despite the reassuring promise of Design, almost 20% of unemployed people are registered with the Institute of Employment and Training (Portugal's public employment service), against almost 10% of unemployed graduates in other disciplinary areas (Friães, 2017). That indicates a lower absorption of graduates in Design or an excessive supply of this professional class to the market. It should be noted that the almost forty public Design schools of the University and Polytechnic system in Portugal are geographically distributed with representation in the Coast and Interior, North, Centre, South and Islands, which means that no region (with the exception of the Autonomous Region of the Azores) lacks training in Design.

In these schools, around 2,200 graduates in Design are trained per year in Portugal, including the first, second, and third cycles. Of these, the number of those who graduated in the third cycle (2019/2020) and, therefore, more oriented to innovation, were 18 designers, which corresponds to less than 1% of the total number of graduates (Direção Geral de Estatística da Educação e Ciência, 2021).

With the aim of being constituted as a Portuguese Design Observatory, the research project DesignOBS Towards a Design Observatory: models, instruments, representations and strategies (led by ID+ Research Institute for Design, Media and Culture) proposed the collection and interpretation of data (currently providing 5 open access databases on the project's website, available at <https://designobs.pt/resources/>) of the Portuguese Design ecosystem, in order to promote its knowledge and influence public policies.

It was in this national ecosystem context, oriented towards an observation, discussion and distributed thinking about school, teaching, research and a professional practice in Design, that REDE – Design Schools Meeting was created. It is presented as a space to shape and design the future of Design Schools in Portugal and has already had three editions (Borges et al., 2017, 2019, 2021). Retrospectively, REDE#01 (University of Aveiro, 2017) assumed an exploratory approach and enabled a first diagnosis of the shared questions in the three thematic areas suggested to debate: education, research and transference / community. In the continuity of this inaugural meeting, REDE#02 (Polytechnic Institute of Cávado and Ave, 2019) opened doors up to the local agents and counted on speakers representing academia, industry and the local power and still with the international presentation of the Danish Design Center which, from the experience of articulating these agents, demonstrated the economic value of design. Keeping the spirit of active engagement of the design community, REDE#03 (Faculty of Fine Arts of the University of Lisbon, 2021) centered in the teaching staff the premise of a synthesized observation of the training context in design, a critical analysis and, finally, a general view on the future perspectives and improvement opportunities.

### **Economic Impact of Design**

Different documents point to the need to develop Design metrics to collect data to assess its economic impact, thus demonstrating the strategic value of its integration in organisations (European Commission, 2013; Montréal World Design Summit, 2017).

The *Design Ladder Model* developed by the *Danish Design Centre* (2001) and widely spread in Europe, proposes mapping the use of Design in companies in 4 steps:

- STEP 1 NON-DESIGN — Design is not applied systematically;
- STEP 2 DESIGN AS FORM-GIVING — Design is used as finish, form-giving or styling in new products/ services;
- STEP 3 DESIGN AS PROCESS — Design is an integrated element in development processes;
- STEP 4 DESIGN AS STRATEGY — Design is a key strategic element in our business model.

The *Innobarometer* report (European Commission, 2016) — which presents the results of the survey of a sample of over fourteen thousand companies, including all European Union Member States, and Switzerland and the United States of America for comparative interest — focuses on innovation by identifying the profile of innovative companies, the problems of commercialising innovative goods and services, public support for innovative companies, future invest-

ment plans and, using the *Design Ladder Model*, the role of Design in company strategy in order to establish the future of innovation and its impacts. The report identified that in the average of the European Union countries 12% of European companies integrate Design as a strategic factor, 14% as a form generator, 18% as a process, and 56% of companies do not systematically integrate Design.

Portugal follows the average percentages of the European Union countries. The countries which most integrate Design in their companies are Austria (63%) and Switzerland (59%), while Portugal stands at 44% and, regarding step 4, Austria and Denmark stand out in equal percentages (21%), while in Portugal the percentage is 11% (European Commission, 2016, p. 97).

Observing these results, the information that Design has generated £85.2 billion (7% of GVA) in the UK (Design Council, 2018) gains paradoxical strength. *The Design Economy* report fits it with the evidence that Design is the ninth-largest employer, and the designers are 29% more productive and 23% more qualified than the average national workers. Radiography of the sector, favorable to evidence of significant economic impact, that Design Council has advocated, calculating that for £1 invested in Design, there will be £20 return in increased revenue, with a net operating profit of £4 (four times that invested) (Design Council, 2012).

The academia has been concerned with studying the relationship between Design and Industry (Agapito et al., 2015) and dealt with several events, not always with the desired success. Design presents itself as a partner of companies (it is in them that it takes place creatively). However, there is a specific resistance in this relationship.

Discussing this apparent dissociation between Design and industry, we find several possibilities of justification:

- 1 A prevalence for the subcontracting of industry in Portugal, working under the clients' Design, thus not working on its identity and not positioning itself through its own brand and product;
- 2 Difficulty in managing the critical and creative design workforce by companies, which is not retaining as many graduates as would be desirable;
- 3 The small size of most Portuguese companies and the consequent lack of means to integrate Design;
- 4 Design's inability to understand the corporate culture.

Also contributing to the lack of representativeness of Design among the national industry, public administration, and general public, the extinction of the Portuguese Design Center (in 2013) that developed an important work of valorisation of Design in the national and international context. A space that, in addition to schools and the individual initiative of professionals, urge to occupy.

However, the degree of intervention of Design in companies and its impact on the success of organizations has been studied over the last twenty years, giving rise to the discipline of Design Management.

In the evolutionary process of Design Management, we highlight 4 publications that have in common the staggering of different phases of Design integration in organisations, resulting from the Danish publication:

- 1 *Design Ladder Model* (Danish Design Centre, 2001);
- 2 *Design Management Manual* — Portuguese Design Centre / IAPMEI (Providência, 2008);
- 3 *Vertical design management in organisations* — PhD defended at University of Aveiro, ID+ (Noronha, 2017);
- 4 *Vertical design management in the territory* — PhD defended at University of Aveiro, ID+ (Ribeiro, 2021).

The *Design Ladder Model*, 2001, presents an evolutionary model on 4 levels, from the absence to the strategic function of Design in companies that, at the most basic level, focuses on the conformation of objects and at the intermediate level on the methodological process of its realisation. Similar to the Danish model, the *Design Management Manual*, 2008, reduces the steps to 3, associating each step with a historical incremental factor, starting with the *optimisation of industrial design production*, moving on to *good branding practices* as narrative coherence of production and considering above all *strategic anticipation* in the design of futures by service design and the creation of new problems. Proposing a 5th level which he called Academic Design (influenced by the researcher Dorst (2016)), Noronha, 2017 considers the intersection of design practice with academic research at the top of the pyramid. Finally, based on the imperative of vertical design management in organisations, Ribeiro (2021) applies the model to the territory, through articulation between the university (cultural mediation of design), industry (vertical design management) and the local authorities (territorial brand), in a holistic symbiosis of complementarities.

These 4 publications trace a diachronic process of evolution in design management, looking at the impact of Design on the economic value of companies, presents the scaling of three significant domains of Design integration. The first, primary, of production (production optimization); the second, intermediate, of communication (brand) and the third, superior, of strategy (management).

In its latest iteration (2021), Design Management saw the need to overcome a corporate scale, jumping to the territorial scale of the region (regional development), the country (national sovereignty) or Europe (European single market). Design started to consider the strategic dimension of the territorial brand, articulating the three agents of intervention on the territory for a knowledge economy:

- 1 *universities* through the production of innovative knowledge (scientific strategy), critical and creative anticipation of the future
- 2 *industry* through the production of competitive and memorable branded goods (commercial strategy), using new distribution technologies
- 3 *local authorities* through the management of the territorial identity, synthesised through the graphic brand (political strategy), supporting social cohesion and communicating territorial value.

## Conclusions

In conclusion, when we ask ourselves what the ecosystem for innovation applied to entrepreneurship means today, we cannot fail to observe the imperative need for the articulation of domains through Design (ontological proposal of Design as a cultural mediator — (Providência, 2012), which go beyond industry, university and territory in themselves, in order to assert itself articulately as a *European territorial brand*. This condition of verticalising Design in territories and companies, prospectively and strategically oriented, will ensure the efficiency of Design within organizations, translating into economic growth and social prosperity (Ribeiro, 2021).

In line with Horizon Europe, the entrepreneurship ecosystem should focus on European industrial competitiveness under four significant objectives: 1. defense of industrial and intellectual property (technological sovereignty); 2. decarbonization of industries and energy efficiency; 3. promotion of the digital domain and its leadership; 4. stimulate the dynamism of the European single market. These four objectives reflected in the contribution of Design could mean a practice more focused on the Sustainability Program (United Nations General Assembly, 2015), Digital technology applied to industry, or protected authorship of the system of forms.

Nevertheless, of all the ambition with which Design can contribute to entrepreneurship, through the Program (functional destination), Technology (for sustainable production), and Authorship (conforming new ideas), we believe that authorship as a system of production of meaning through cultural mediation is, of all the contributions, the most relevant.

### **Marlene Ribeiro**

PhD in Design and researcher of the ID+ through MADE.PT Critical Design Lab for Growth and Prosperity research group. Interested in the fields of Design Education & Research, Design — Industry Collaboration, Design Management, Design for the Territories and Design Policy.

### **Francisco Providência**

PhD in Design and designer with own studio since 1985, Francisco combines his professional practice with teaching and research in Design. He is the coordinator of the research group MADE.PT Critical Design Lab for Growth and Prosperity, ID+ that centers its scientific activity in the project (research through Design).

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