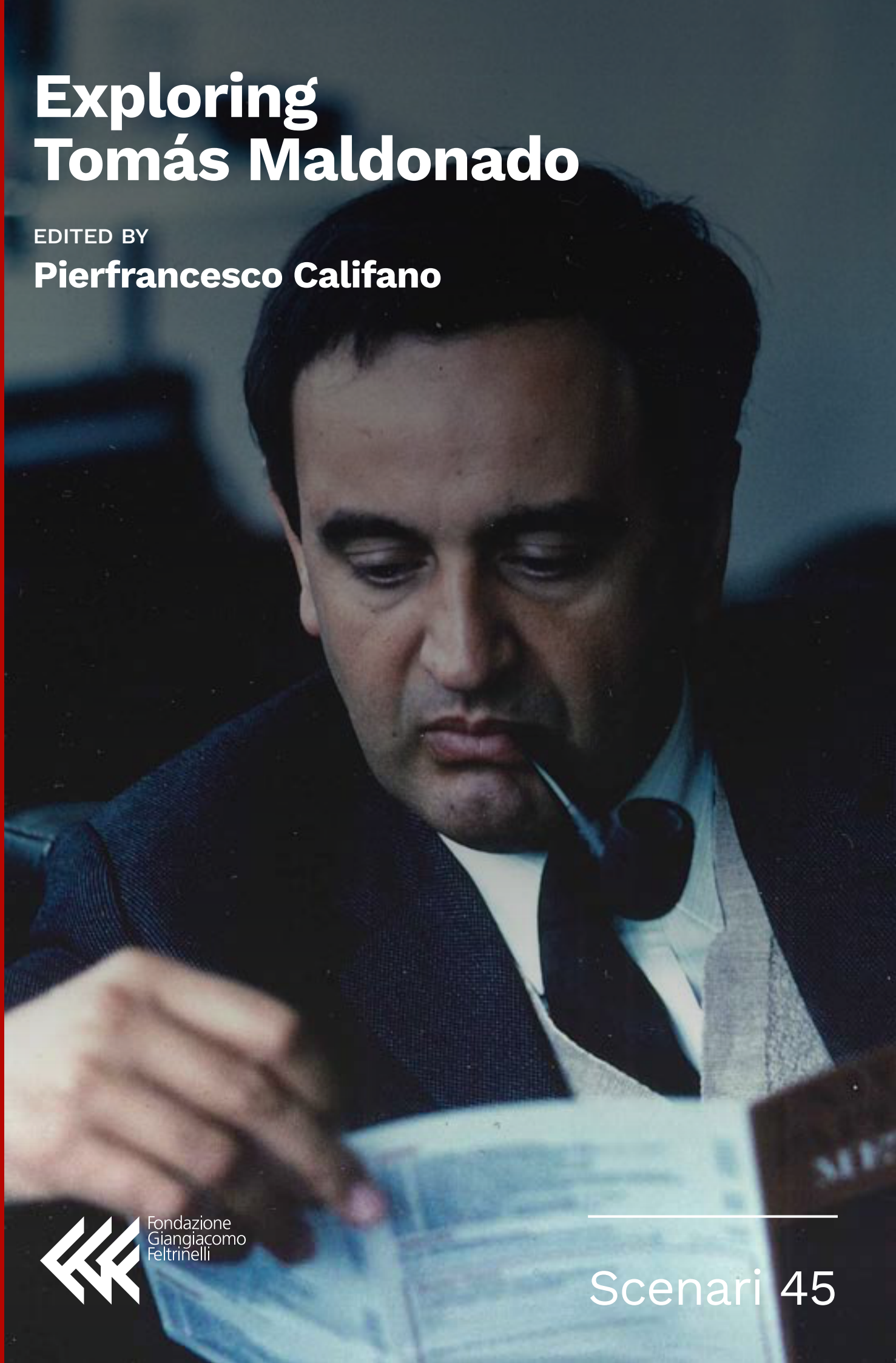
Exploring Tomás Maldonado

EDITED BY

Pierfrancesco Califano



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DOTTORATO DI RICERCA IN DESIGN
POLITECNICO DI MILANO
DIPARTIMENTO DI DESIGN

Summary

Changing Prospects in Design Education

Rupture and Ties with the Legacy of the Ulm Model

Gabriele Barzilai, Carlotta Belluzzi Mus, Fabiana Marotta

Focusing on Maldonado's role as an educator, what surprises is the depth of thought that characterises his writings as well as his theoretical competence. Trained as an artist, Maldonado was exceptionally cultivated, endowed with great critical attitude, and passionate for design, not merely as a practice, but as a form of education. To this type of education, since the 1950s, he dedicated a large part of his career and academic endeavours, working on the development of a philosophy of design. The weight that Maldonado's work carries within the history of design education is exemplified by the prestige of what is known as Ulm Model, a benchmark for most schools of design still today.

Understanding the legacy of the Ulm School of Design (Ulm HfG) – whose training approach owes much to Maldonado – in the contemporary landscape of design education became the starting point of our investigation. A critical reading of some of Maldonado's writings on the theory of education helped us trace the connections between the traditional models and the current reform of education in the field of design. In this respect, the end point was the conflicted relationship that the current reform movement shows to have with the old paradigm of design education. While breaking with the past, most of the schools that are leading the change prove to be rooted in the pedagog-

ical tradition of the Ulm HfG. Shedding light on this ambivalence is the aim of our research.

In addition to examining the nature of the ambivalent relationship that some world leading schools of design have with the traditional models of education, this essay gives an overview of how design education as a whole is evolving and what possible course(s) it may take in the near future.

Maldonado and the Foundation of a Pedagogy of Design

With the aim of understanding the weight of Tomás Maldonado's intellectual legacy in the contemporary field of design education, we started from the end, asking ourselves what the state of the art of design education is today. The query initially took us far from the fabulous golden age of design – when Maldonado and other prominent figures paved the way for the foundation of the discipline – into the great uncertainty of our time, where the ripening of the discipline is bringing about a crisis of the established models. Then, from the contemporary, we moved to the past, working on the connections between the two.

In doing so, we observed that the current landscape of design education is closely tied to the tradition, despite the major changes being made. While the field is moving far from the modernist understanding of design and approach to education, a fundamental mark of the latter can be still found today. In this regard, we identified three concepts that structure an essential educational core. This core links today's design education to Maldonado, by way of the influential Ulm School of Design.

The long wave of the Ulm Model: a threefold educational gist

Three key concepts form an educational core that has endured to date, since the foundation of design education: 1) inter-disciplinary character of the curriculum; 2) incorporation of scientific subjects, as

a complement to the technical and artistic training; 3) combination of theoretical (i.e., abstract) teaching and practical assignments (Figure 1).

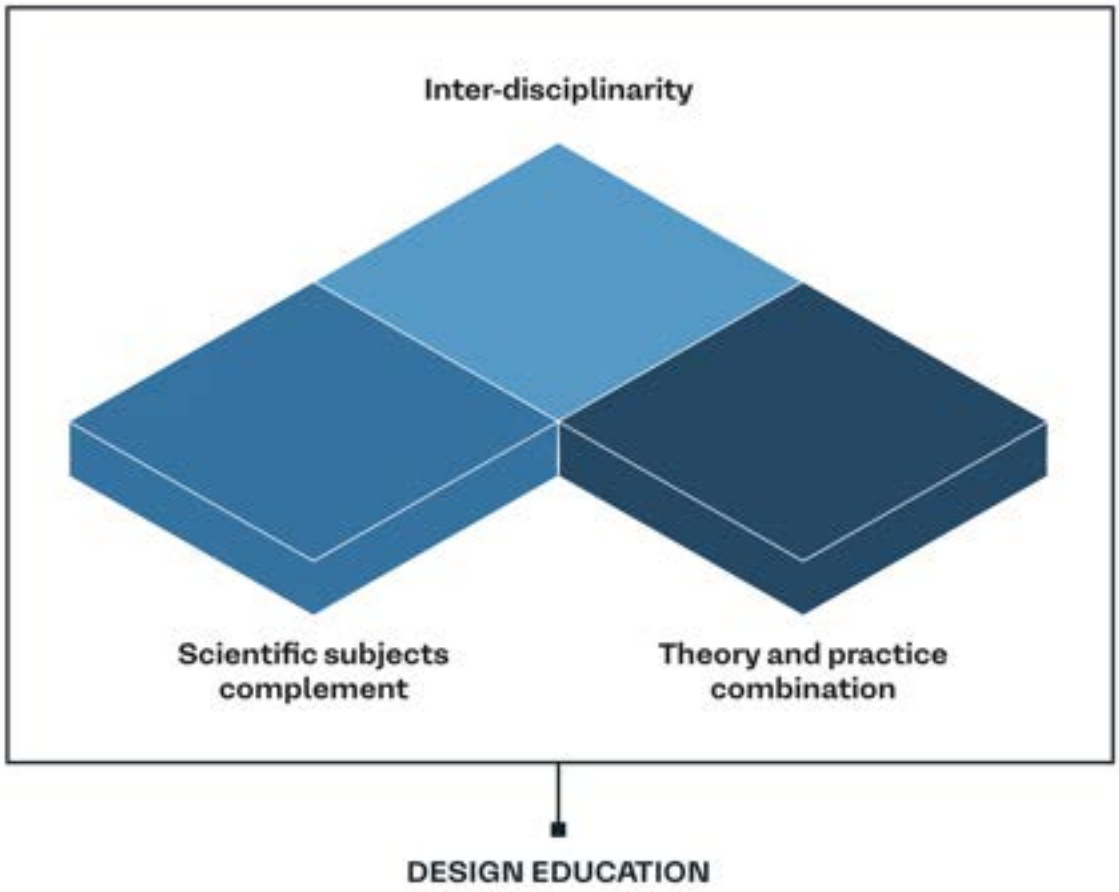


Figure 1. Threefold pedagogical core persisting since the Ulm HfG.

The inception of this educational mark can be traced in Maldonado's critical writings of the late 1950s, at the time when he took the lead of Ulm HfG, becoming the main instigator of the theoretical foundation of the school (Lindinger, 1988). Since 1958, Maldonado brought about a series of changes in the curriculum prior devised – still based, heavily, on the legacy of Bauhaus – driven by the key educational principles mentioned earlier. The principle that deserves to be explored first is interdisciplinarity, a concept that has been long adopted and recently further developed by most design schools and departments across the world. In a 1959 short essay about the current issues concerning the philosophy of education, Maldonado observed that the sway of the

concept of specialisation in the fields of science and technology was declining, leaving the stage to a pluralistic understanding of disciplines (Maldonado, 1974, p. 91). The interdependence among disciplines, which in Maldonado's view concerns design as much as other fields of study, entails the need for designers to give up the fascination exerted by specialism and be ready to rely on other branches of knowledge for both the attainment of their education and the performance of their role in society.[1] Paradoxically enough, what seems to endure to date – besides interdisciplinarity – is the phenomenon of sub-departmentalisation (i.e., specialisations). On the latter problem, a 1965 writing on the difference between specialization and specialism can be insightful (see Maldonado, 1965, p. 9). Maldonado makes a clear distinction, in this regard, between the necessity of specialisations in the present time and the ethical and cultural astray caused by specialism.

The second concept to be discussed is the need for a science-based design education. This was perhaps the most innovative aspect of the educational program at the Ulm HfG, firmly advocated by Maldonado, who would relentlessly argue against the idea of design as aesthetic- and art-driven (Maldonado, 1958, p. 31). Maldonado's determination to disrupt the artistic mark of design education – an almost unquestionable trait at that time, inherited from the Bauhaus – hinged upon the belief that designers ought to gain the "technological and scientific knowledge necessary to work in industry" ("ulm", 1, 1958, p. 1).

In fact, the breadth of Maldonado's advocacy was much wider than that – a new philosophy of education, informed by science, was at stake. This commitment in favour of a scientific foundation for design is testified by the syllabus of the four-year programme in use since 1958, which included theoretical courses ever seen in a design school.[2]

1 About the openness to other disciplines, Maldonado once argued that "the designer will, more than ever, have to obey factors unrelated to his own individual fields" (Maldonado, 1958, p. 37). In hindsight, this statement can be regarded as far looking, to the extent that the heteronomous character of design is today considered a matter of fact in the field of design education.

2 Perception theory, Mathematics, Physics, Chemistry, Sociology, Mechanics, Applied physiology, Theory of manufacture, Operational Research, History of Culture, Theory of science (see "ulm", 1, 1958, pp. 5, 7).

As for the latter subject, one can argue that besides inspiring the training programmes in industrial design worldwide in the following years, the Ulm Model is also at the base of the contemporary development of design as an academic discipline.[3]

The third fundamental concept is the complementary relationship between practice and theory in design education. At the time when the Ulm HfG was founded, the problem was to incorporate theoretical – and scientific-based – teaching in the basic training, since the latter still matched the practice-driven approach developed at the Bauhaus thirty years before. Maldonado's commitment, in this regard, was considerable and his critical writing about it extensive. The matter was of pedagogical nature, mainly revolving around the inadequacy of the Deweyan "learning by doing" approach[4] in light of the rise of a new age of unprecedented progress based on abstract scientific thought. Maldonado observed that the educational theories at the core of the progressivist approach were proving to be no longer suitable for effective learning, at several levels of education (Maldonado, 1974, pp. 87-89). This approach, for Maldonado, was no match for the challenges of modern life that the designer was called upon to address (Maldonado, 1958, pp. 38-40). The moment had come, thus, to restore the importance of theory in design education, equipping design students with theoretical knowledge, besides practical training.[5]

3 Indeed, the current debate over epistemological matters pertaining to design research would be unimaginable, had that historical shift in design education not occurred. And the same applies to the content of the educational programmes in contemporary design schools: irrespective of the specialisation or direction of the school, scientific subjects are a trademark of basic training in design.

4 For a better understanding of the role of Dewey's thought in the early foundation of design education, see Cross (1983).

5 The aim, however, was not to turn the educational approach so far adopted upside down, making theory the absolute drive of education, but rather to rebalance the relationship between theorical and practical learning.

Educational Turn in the Discipline of Design

The current reform of design education: new curricula and the evolution of the discipline

In our post-industrial world, characterised by far-reaching transformations on a global scale, design education is undergoing a veritable ontological change – a renewal process that questions the very roots of the discipline, moving away from the classical Ulmian conception of training and research at the service of industry. This process is bringing about significant changes to the way designers are trained, testified by the current overhaul of the curricula across design schools around the world. Of all the changes under way, we believe, three are key to the evolution of the discipline.

First, a new understanding of the raison d'être of design – no longer of merely utilitarian character – is taking hold. In this regard, new ways of investigating the relationship between "designed things" and humans are being explored, often outside of industrial production systems. Therefore, design education is expanding its scope of intervention, beyond the context of industry and mass production. Indeed, today designers are trained to work in a wide range of professional areas, from consultancy in the field of service and product strategy to project-management in the context of multi-disciplinary design teams, as well as theoretical research in academia – let alone the vast area of interaction design and HCI (human-computer interaction). The traditional craft-oriented industrial design education, in this regard, is believed by some to be unfit to prepare students for the challenges of our fast-changing and increasingly complex socio-economic system. Educators in the field of design are thus revising the curriculum, including new skillsets and competences, drawing on subject areas traditionally uncharted.[6]

6 E.g., philosophy, business, economics, anthropology, behavioural science, climate science, psychology, political science, social theory, robotics, digital fabrication,

Second, as design expands towards a wide range of fields of application, methodological issues about teaching and learning arise. In particular, some educators and academics claim the need to go beyond the concept of tacit knowledge – underpinning the traditional training in design – identifying clear and structured methods to both achieve and assess the knowledge transfer. Such a theoretical standpoint has major implications for the education of the designers of the present and the future – indeed, whether designers are well equipped for the challenges of our contemporary society largely depends on the quality of learning. The landscape of design education, however, is diverse and the above-mentioned instances of reform live alongside traditional programs, in which the concept of tacit knowledge is deep-seated as integral to the artistic side of the education. As a result of this theoretical divergence, some design schools are leaving behind the artistic dimension of the training, hinging upon a scientific approach to education (Meyer, Norman, 2020, p. 37).

Third, as design became a fully-fledged academic discipline (Archer, 1979; Cross, 2018) – approximately in the 1990's – the field of design education started to face the epistemological problems common to all disciplines (Levy, 1990; Findeli, 2001). For the first time in history, theorists and academics in this field dealt with the problem of what kind of knowledge design produces and, above all, to what extent this knowledge can be regarded as trustworthy (Cross, 1982). In other words, the problem of what type of research the field of design carries out – i.e., in what way research is conducted and for what purpose. This coming of age of design as a discipline has entailed a twofold innovation. On the one hand, the development of research departments, where students learn how to perform research, either in industry or in academia. Because becoming researchers requires a new set of skills and competences, specific educational programs – research-oriented – have been recently designed and implemented. On the other hand, the increasing efforts being made by some design schools into linking

computer science.

post-graduate research to undergraduate training, by means of dedicated (and structured) educational activities.[7] This link gives students the chance to acquire a speculative and theoretically solid approach to problems and problem-solving – typical of the research-minded – since early in their training course.

The breadth of the changes discussed here shows that the evolution of the discipline of design – and its impact on both education and practice – is driven by a shift in perspective, in the light of an unprecedented cultural and techno-social breakthrough.

Shift in perspective: the sprawling role of design in society

When we talk about design today, we cannot help but specify the professional field to which we are referring, among the many where design finds application. Indeed, doing design can mean many different things, depending on the field of application. While such a manifold character is a hallmark of design since its very foundation, in recent years the range of employment of designers has grown wide, spanning from the traditional sector of manufacturing to the thriving service economy, which includes fields such as healthcare, education, and information technology, just to mention a few. Furthermore, designers can work as researchers, either in public universities or in the research and development departments of private businesses.

As the application of design has branched out into a vast set of fields, the understanding of the role of design in society has become more polysemous than ever. That is to say, we are witnessing a diversification of approaches to doing design. As a consequence, new perspectives on both the discipline of design and design education are emerging. In this regard, the new curricula being developed and adopted by some schools aim to meet the requirements of the current

7 MSc in Industrial Design at the Eindhoven University of Technology (NL) and Master of Design at the Carnegie Mellon Institute of Design (USA) are two examples among the many.

socio-economic context, characterised by phenomena that have come to be known as "tertiarization" and "fourth industrial revolution".[8]

The current reform of design education can thus be described as a process of adaptation to the modern socio-economic system, including the cultural and techno-social changes recently occurred. This one-sided understanding, however, does not suffice to illustrate how and why design education is changing. Another sway, besides the market, drives the renewal of the curricula: the intellectual movement inside schools and departments. While the influence of the market change on design education is inevitably strong, academics are those who ultimately devise the curriculum, choosing how to adapt the latter, based on their interpretation of the changes occurring in society. This interpretation is often developed independently from market interests and economic powers, asserting pedagogical principles besides matters of professional expediency. Critical to this active role in driving education is the ability of the discipline of design to question its own foundations at the time of its full maturity.

[9]What is changing design education as we have known it since the 1960s, in the final analysis, is a twofold sway. "External" one – the pressure of the market as well as the related cultural and socio-technical changes – and "internal" one – the intellectual movement that critically interprets the changes occurred and independently develops a pedagogy of design.

8 The latter phenomenon is opening up new opportunities for the hybridisation of design with the fields of artificial intelligence, robotics and computing technology. This expansion in scope is leading some design schools to incorporate subject areas coming from the field of applied sciences, giving rise, in some instances, to distinct educational paths – this is the case of the master programs in interaction design, HCI (human-computer interaction) design and the like. It is not unusual to find subjects such as robotics, digital fabrication, electronic circuit design, and programming in some of today's graduate programs in design.

9 The critical-theoretical tools that the discipline has developed to structure itself allow for a re-examination of the role of design, considering the cultural and socio-technical changes earlier mentioned (Ghajargar, Bardzell, 2019).

Tradition and Reform in the Landscape of Design Education

The growing signs of breach with the past suggest that design education is departing from the classical teaching approach developed throughout the former century, following the profound change of the world's economic, social, and cultural processes since then occurred. As earlier mentioned, the paradigm shift reflects a new understanding of both the role played by design in society and the aim of design research in academia.

Despite this shift, a deep connection with the modernist Weltanschauung that inspired the foundational models of Bauhaus and Ulm is still present today in most schools and departments of design worldwide, including those that have moved away from such models. The greatest theoretical debt, in this respect, is to what has come to be known as Ulm Model, a cornerstone in the history of design education.

While the rupture with the ontological understanding of design posited at Ulm HfG in the 1960s is sizeable, the educational approach adopted by the schools at the forefront of the current reform hinges upon some of the key concepts developed in the legendary German school. In particular, those that form the threefold educational gist earlier described.

A shared pedagogical core among different programmes across the world

A brief review of the programs currently offered by some of the design schools that are leading the reform can help the reader gain an insight about the extent to which the three-pronged theoretical approach at the heart of the Ulm Model is core to design education still today.

Three cases are taken as examples of an emerging trend in design education, which is currently questioning the traditional models estab-

lished over more than half a century: BXA design program[10] (School of Design, Carnegie Mellon University, USA); Master in Design for Emergent Futures[11] (ELISAVA – Design and Engineering Faculty, Universitat Central de Catalunya, ES); Master in Design Studies[12] (School of Design, Harvard University, USA).

The BXA design program at the Carnegie Mellon School of Design (USA) is a good example of a radical reform of design education. As an intercollege degree program, the BXA allows design students to attend courses in the fields of science, technology, and humanities outside of the School of Design. The result is a broad-spectrum education, in either humanities or sciences, with a focus on design. The degree program brings the usual framework of interdisciplinary education in design a step further, allowing for a hybridisation of the curriculum, which relies on an interdepartmental exchange of knowledge and competences among different disciplines. Such a prototype of a new training program is as far from the Ulmian traditional model of industrial design education as rooted in the latter's most essential educational framework. Indeed, a blend of theory and practice, highly interdisciplinary teaching and learning, and scientific education are pivotal for this program.

A similar case is the Master in Design for Emergent Futures offered at ELISAVA, in Barcelona (ES). The main objective of the program is to equip students with practical competencies of digital fabrication, physical prototyping, and communication as well as theoretical knowledge of Artificial Intelligence, machine learning, synthetic biology, applied economics, and research methods. Besides designers, engineers, artists, technologists, urbanists, and computer scientists, the program is open to students with a bachelor's degree in either sociology, or anthropology, or economics. The focus of the course is the use of emerg-

10 https://www.cmu.edu/interdisciplinary/programs/ (Last consultation February 22, 2022).

11 https://www.elisava.net/en/master-design-emergent-futures (Last consultation February 22, 2022).

12 https://www.gsd.harvard.edu/design-studies/ (Last consultation February 22, 2022).

ing technologies to address wicked problems in the urban context, from both a strategic and practical viewpoint. Students are required to implement and validate their designs as well as critically assess the latter's impact through research. This program too – as the BXA design program at CMD – drives away from the canonical models of design education and yet hinges upon the essential threefold Ulmian pedagogical framework earlier discussed.

The Master in Design Studies at the School of Design, Harvard University (USA), is uniquely untraditional in its own way and perhaps a special case. The two-year master is based merely on coursework – no studio work is included. Students choose one area of expertise among four – Mediums, Ecologies, Publics, Narratives – and structure their own peculiar curriculum, benefitting from the wide range of courses offered across both the graduate school and the other departments of Harvard University. Moreover, throughout the study course, students from all four domains gather to develop open projects where everyone's individual expertise can be applied on specific issues of societal concern. This approach to design education is a novel one in so far as some of the areas of knowledge addressed are unusual for a curriculum in the field of design, making the program a true hybrid of different disciplines. The program, thus, is highly interdisciplinary, understanding design as a combination of science, technology, art, economics, politics. Practice, in this regard, comes as the locus where to apply the theoretical and broad knowledge gained during seminars and coursework. Overall, the distance from the traditional models of design education is great. The match with the Ulmian threefold pedagogical core, however, is just as great.

Far from being a representative sample of how the field is evolving, the set of cases described above is a glimpse into some of the emerging trends in the current landscape of design education. Interestingly, these trends break with the past models of education in design while being rooted in them. In this respect, the legacy of Ulm feeds the present world of design education back, thanks to a deep cultural stratification.

The Evolution of Design Education: a Multifaceted Phenomenon

Over the last twenty years, design education has been questioning its fundamentals, changing the understanding of what design is in the first place, and so giving rise to a reform of both the discipline and the practice. As maintained in this essay, the reform has followed the historic change of social, technical, economic, and cultural nature that has occurred in our world. This change is still under way and so are the repercussions on the world of design.

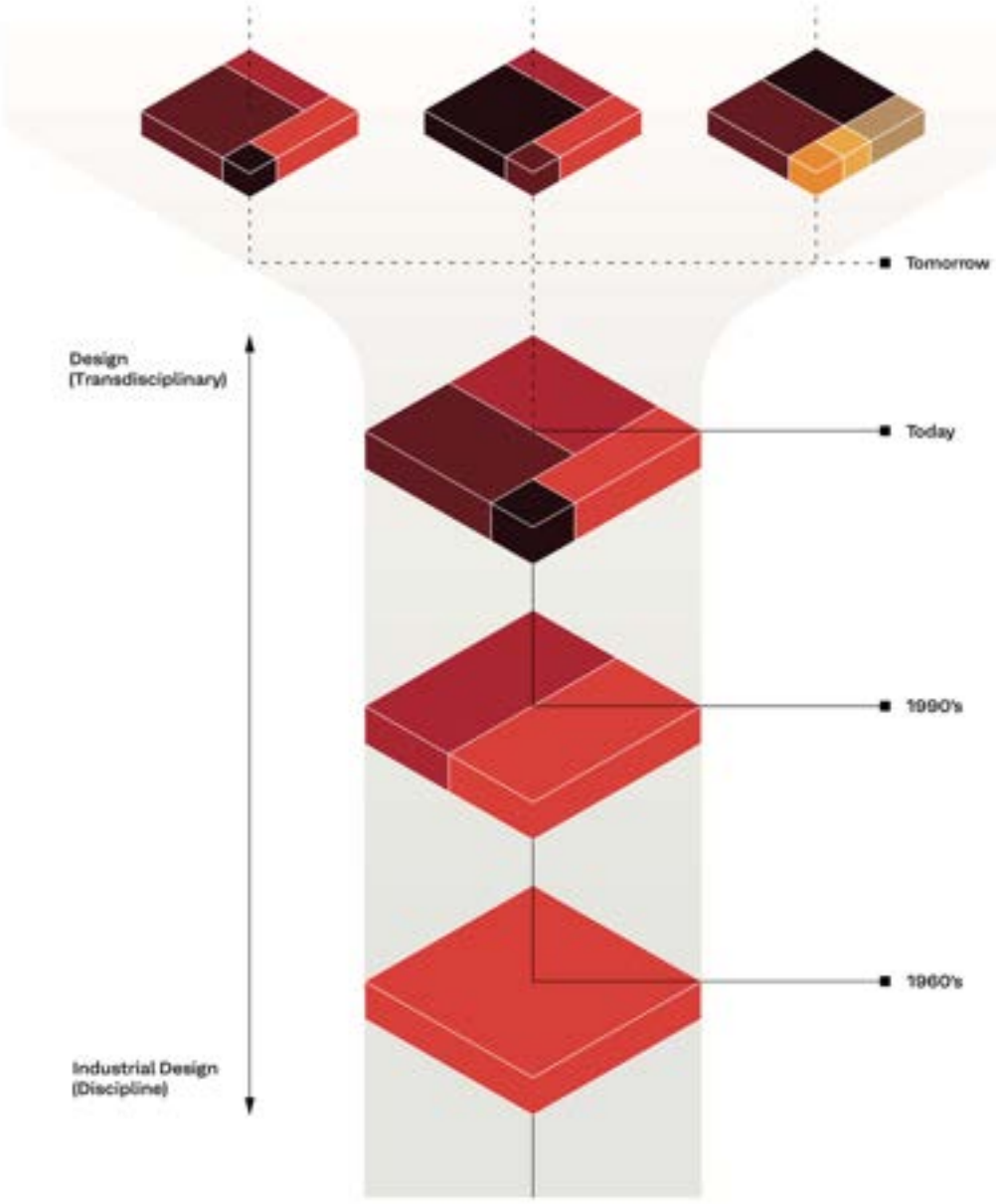
While the emerging trends can give us a hint regarding how design education is currently evolving, we think that it is too early to speculate on the direction that design pedagogy will take in the long run. Indeed, the scale of the phenomenon is small enough to warrant caution when making predictions. As things stand today, such trends constitute a niche in the field of design education. Moreover, as hitherto discussed, the ties with the past models of education are stronger than they appear.

What makes it hard to assess whether the current changes will prove long-lasting is also the great diversity of approaches to design and design education that coexist in the field today. This is perhaps the greatest difference between the current time of reform and the one that saw Maldonado and others setting precedents for a formal education in design.[13] In such a context, a multitude of voices make themselves heard; none of them are strong enough to set a model, and yet, all of them thrive in the wake of the – claimed – need for a change.

Despite the complexity of what appears as a magmatic assortment, it is worth attempting to portray the hallmarks of the current landscape of design education. The diagram in Figure 2 outlines a possible

13 Indeed, the current reform movement is unlikely to attain the translatio imperii that has been attributed to the case of the *Ulm HfG* (Riccini, 2020). The most obvious reason is that while the founders of the *Ulm HfG* faced the challenge of laying the foundations of a distinct pedagogy, the educators of the present design schools are dealing with the crisis of a ripened discipline, in a highly structured educational system, with decades of history.

classification of the current – old and new – trends in the field. This classification aims to put some order in a seemingly chaotic scenery and is meant to help develop a better understanding of the current situation – far from being a final say on the matter.



	Macro-areas of knowledge	Role and context (for whom)	Role and aim (for what)
	Arts and Technology	For industry	Manufacturing and Communication
	Arts, Science and Technology	For industry	Manufacturing and Communication
	Arts, Science and Technology	For industry and society	Manufacturing, Communication, Service and Research (R&D)
	Arts, Humanities, Science and Technology	For industry, academia and society	Manufacturing, Communication, Service and Research (both R&D and academic)
	?	?	?

Figure 2. Old and new trends in the current landscape of design education.

The Future of Design Education

A pluralistic approach to design

The early years of this century have ushered in a wave of changes in the discipline of design, challenging the established role of design in society. The rapid socio-economic transformation at a global scale has eroded the dominant canon of design as a practice mainly concerned with mass produced objects, opening the way for new areas of application.

In response to this transformation, some design schools around the world have developed and implemented significant innovations in the curriculum, marking a break with the traditional model of training in industrial design. While the innovations implemented are the result of years of theoretical debate about the future of the discipline and the role played by education inside academia, the pressure of the changing economy – outside academia – is what drives the reform of design

education. Indeed, industry and markets are changing, together with people's habits and demands, and there are different ways of doing design – the scope of application of design is growing wide.

As a result of the expanding scope of application, a diverse set of new curricula – distinct from each other – are being developed in design schools and departments. By examining these curricula, the step change in choosing the content of training is often sizeable, as totally new professional profiles are being set. However, from an educational viewpoint, the connection with the traditional models of Ulmian inspiration is still strong. In particular, a line of continuity can be found as far as three educational principles are concerned: interdisciplinarity; science-based education; merge of theory and practice. We believe that this threefold educational gist has persisted since Ulm HfG's time. Thus, the current reform movement within the landscape of design education is characterised by a complex and ambivalent relationship with its own cultural foundations. Starting from this complexity is key to understanding the direction that design education will take in the years to come. In this respect, there are still many open questions.

Design education in the upcoming years: unanswered questions

The most significant change recently occurred in design education is the proliferation of new and distinct curricula, which reflect the transformation of the global socio-economic system – its new demands and modes of production – marking a departure from the traditional models of industrial design. Because the pedagogical legacy of such traditional models persists in the schools that are leading the current reform – despite the evident break with the past – one open question is whether the discipline of design will permanently lose unity, formalising its own fragmentation by splitting into separate disciplines.

The threefold pedagogical gist we discussed in this essay is perhaps what keeps the different instances emerging in design education under the same umbrella, besides the institutional legacy. Given the depth of

the reform, however, it is hard to predict whether such a formal unity will last. In this regard, two possible scenarios can be envisioned.

In the first scenario, the role of industrial designer as we know it today will become increasingly secondary, leaving the stage to other professional profiles. This would certainly generate a split into different disciplines and types of training, putting the schools of industrial design in minority while making the new educational programs prevalent. Designing services, processes, and methods – as well as carrying out research for public and private bodies – would thus supersede the classical product-oriented design jobs. Given this scenario, however, it is hard to clearly picture how the new professional roles would evolve. Indeed, unexpected types of jobs might emerge from such a turnaround.

In the second scenario, the new professional profiles that are currently emerging will evolve but stay marginal in the economic context. Thus, the related educational programs would be a niche in the landscape of the world's design education – not unlike nowadays. A split into separate disciplines, in this case, would still be possible, following an increasingly clear definition of the peculiarity of the new profiles. More likely, however, the new trends would stay under the aegis, as it were, of the umbrella term design, sharing a common ground with the different identities active in the field.

Both scenarios carry numerous other questions that remain unanswered, for the time being. Carefully observing the evolution of the emerging trends or movements in the following years will give us a hint about the course that design education will take in the next half a century.

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