

# ENVIRONMENTAL DESIGN

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# ENVIRONMENTAL DESIGN

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# Introduction

by Mario Bisson

*"Everyone engaged in devising courses of action aimed at transforming current situations into more desirable ones is essentially involved in design. Whether in fields such as engineering, medicine, business, architecture, or painting, the focus is not merely on what is necessary but on what is possible. These disciplines concern themselves with envisioning alternative futures, exploring potentialities rather than accepting things as they are. In essence, they are concerned with design."*

- Herbert Alexander Simon

Progress necessitates a proactive approach, one that involves researching and understanding our environment with a view toward shaping future outcomes. We often find ourselves immersed in discussions about environmental issues such as pollution, traffic, and consumption, yet active participation is not always as prevalent.

The Environmental Design Conference serves as a platform for shedding light on the outcomes of research efforts across various fronts. It fosters scientific discourse among researchers, making visible both theoretical frameworks and empirical evidence. Moreover, it aims to raise awareness among public institutions and businesses about the necessary steps for a sustainable future, ultimately enhancing personal well-being and community welfare.

Engaging in discussion, analysis, and proposal is imperative in navigating the challenges that lie ahead. By inviting scientific luminaries from diverse backgrounds and distinguished research institutions, the conference facilitates the exchange of ideas, fostering innovation and driving progress. It provides an invaluable opportunity for emerging scholars to showcase their research on an international stage, fostering collaboration and enriching the collective vision of the MDA community, dedicated to enhancing the quality of life.

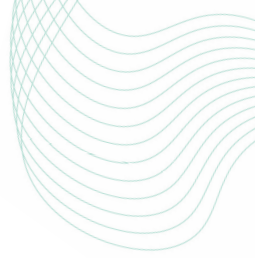
MDA periodically hosts conferences open to researchers worldwide who share an interest in contributing to the ongoing dialogue on improving quality of life. The 2024 Conference held in Ginosola saw participation from researchers from different disciplines. The outcomes of this event have been documented in a volume accessible on the association's website ([mda.center](https://mda.center)), serving as a testament to the collective efforts toward a better future.





# **SUSTAINABLE DEVELOPMENT**

- (2020). Augmented Reality and Gamification to Increase Productivity and Job Satisfaction in the Warehouse of the Future. *Procedia Manufacturing*, 51, 1621–1628. <https://doi.org/10.1016/j.promfg.2020.10.226> [Accessed 27 February 2024]
17. Reijseger, G., Schaufeli, W. B., Peeters, M. C. W., Taris, T. W., van Beek, I., & Ouweneel, E. (2013). Dutch Boredom Scale. *PsycTESTS Dataset*. <https://doi.org/10.1037/t62656-000> [Accessed 27 February 2024]
  18. Rickel, J., & Johnson, W. L. (1999, May). Animated agents for procedural training in virtual reality: Perception, cognition, and motor control. *Applied Artificial Intelligence*, 13(4–5), 343–382. <https://doi.org/10.1080/088395199117315> [Accessed 27 February 2024]
  19. Robb, J., Garner, T., Collins, K., & Nacke, L. E. (2017, February 1). The Impact of Health-Related User Interface Sounds on Player Experience. *Simulation & Gaming*, 48(3), 402–427. <https://doi.org/10.1177/1046878116688236> [Accessed 27 February 2024]
  20. Sanders, L. (2008, November). ONMODELING An evolving map of design practice and design research. *Interactions*, 15(6), 13–17. <https://doi.org/10.1145/1409040.1409043> [Accessed 27 February 2024]
  21. Schrepp, M., Hinderks, A., & Thomaschewski, J. (2017). Design and Evaluation of a Short Version of the User Experience Questionnaire (UEQ-S). *International Journal of Interactive Multimedia and Artificial Intelligence*, 4(6), 103. <https://doi.org/10.9781/ijimai.2017.09.001> [Accessed 27 February 2024]
  22. Vogel-Walcutt, J. J., Fiorella, L., Carper, T., & Schatz, S. (2011, October 13). The Definition, Assessment, and Mitigation of State Boredom Within Educational Settings: A Comprehensive Review. *Educational Psychology Review*, 24(1), 89–111. <https://doi.org/10.1007/s10648-011-9182-7> [Accessed 27 February 2024]
  23. Westgate, E. C., & Steidle, B. (2020, October 24). Lost by definition: Why boredom matters for psychology and society. *Social and Personality Psychology Compass*, 14(11). <https://doi.org/10.1111/spc3.12562> [Accessed 27 February 2024]



# Design as a catalyst for sustainability – bridging disciplines in the anthropocene

Dario Russo  
dario.russo18@unipa.it

Università degli Studi di Palermo, Italy

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**Keywords:**  
*Transdisciplinary design*  
*Circular economy*  
*Systemic innovation*  
*Humanity-Centric design*

## Abstract

In the Anthropocene era, design emerges as a pivotal discipline with the power to bridge diverse fields and tackle pressing environmental challenges, heralding a shift from traditional practices towards a holistic, transformative approach. This paper explores design's evolution from a functional role to a broader societal and human experience, highlighting its potential to foster a circular economy and systemic innovation. By examining the contributions of key figures like Adriano Olivetti and Ezio Manzini, and through the lens of emerging paradigms such as service and systemic design, the study reveals design's capacity to integrate values, sustainability, and innovation, thereby reorienting focus towards comprehensive experiences over individual products. The discussion extends to the importance of a transdisciplinary approach, underscoring design's role in orchestrating synergies across technology, culture, and environmental sustainability. This approach not only addresses complex global challenges but also emphasizes human experience, aiming to create meaningful, enriching interactions that drive social, economic, and environmental innovations. Ultimately, the paper advocates for a reconceptualization of design as a crucial agent in humanizing technology and fostering a sustainable, harmonious future, thereby establishing a new paradigm where design, technology, and sustainability are inseparably intertwined.

## Introduction

In the Anthropocene era, design takes on a pivotal role, acting as an interdisciplinary bridge among various fields and responding to the growing environmental challenges. This paper aims to investigate how design, as a hinge discipline, can influence and coordinate other disciplines to address complexity and promote a circular economy. Through examining seminal figures such as Adriano Olivetti and Ezio Manzini and referencing holistic visions of culture, we trace the evolution of design from a mere practical function to a broader human and social experience. The emerging paradigms of service design and systemic design will also be explored, revealing how the integration of these practices can strengthen our response to the ecological crisis and reorient the focus from individual products to an overall experience that encapsulates values, sustainability, and innovation. In this context, the article aims to outline a new vision for design, not merely

as a sectoral activity but as a holistic and transformative approach that can significantly contribute to the shaping of a more sustainable and humanly enriching future. From overcoming the dichotomy between humanistic and scientific culture to adopting a transdisciplinary approach, the paper seeks to rediscover design as a tool for systemic innovation, capable of humanizing technology and contributing to the establishment of a new planetary humanism.

## Design: a pivotal discipline

The modern world is marked by increasing complexity, where the challenges we face do not fit within the traditional boundaries of individual disciplines. Design emerges as a pivotal discipline, capable of uniting and interpreting different languages and methodologies to create integrated solutions and respond to complex needs. In its mediating role, design is not limited to purely aesthetic or functional areas but becomes a key player in orchestrating synergies across sectors such as technology, architecture, psychology, and the behavioral sciences. It is a discipline of coordination, capable of integrating and enhancing diverse contributions, converging aesthetics with functionality, technological innovation with cultural tradition, and economic efficiency with environmental sustainability. It is no longer sufficient for design to meet the requirements of form and function; it must also lead towards a more sustainable and equitable future that considers the biogeochemical cycles of our planet and the social systems that inhabit it.

Ezio Manzini, a leading figure in international design, redefines the role of the designer as a «facilitator» who harmonizes multidisciplinary skills, which is essential in an era where design is increasingly participatory: *Design. When Everybody Designs* (2015). Naturally, emphasizing the importance of a collaborative approach, Manzini encourages designers to transcend the role of mere mediators of processes and to take a proactive stance in defining and solving problems. While facilitating dialogue and cooperation, designers must bring their technical skills and aesthetic sensitivity, as well as a deep understanding of social contexts to transform needs and aspirations into concrete solutions (Manzini, 2015, p. 49). In doing so, the designer asserts themselves as an innovator who integrates individual and collective knowledge, steering complex projects toward innovative, inclusive, and transformative outcomes, generating a tangible social impact.

Adriano Olivetti provides another historical example of how design can function as a pivotal discipline. His vision of industry was not confined to the production of quality objects but included a broader concept of quality of life, integrating work ethics, social responsibility, and community well-being. This holistic approach allowed Olivetti not only to create innovative products but also to foster a corporate culture that valued beauty, art, and humanism. In Olivetti's work, we see "il tentativo di connettere I progressi della tecnologia di allora con la storia della cultura e la scrittura (l'epigrafia, la Stele di Rosetta, i geroglifici...) [...] Il tentativo di fornire un'interpretazione estetica della tecnologia" (Vinti, 2021, p. 71). An emblematic example of how Olivetti applied these principles to the design of technological products is the ELEA 9003, the first commercial transistor computer (ELaboratore Elettronico Aritmetico), developed between 1957 and 1959. It not only represents a formidable technological innovation but also evokes the Eleatic School, founded by Parmenides in the 5th century BC, emphasizing a deep bond between technical progress and philosophical heritage. The design



of ELEA 9003, therefore, can be understood as a physical expression of the integration between technology and cultural legacy.

In this regard, design emerges as a “sovereign technique (basiliké téchne)” in service of humanity, a Platonic expression that describes wise governance as the art of coordinating different functions within the polis (Plato, 304 e). As Umberto Galimberti suggests, for Plato, politics is not merely the exercise of power but the ability to weave together various skills and knowledge for the collective well-being (see Galimberti, 2020, p. 217). Sovereign technique is directing technique. Similarly, modern design transcends the creation of objects, spaces, or interactions, taking on the responsibility to integrate these endeavors within a larger and interconnected system. Following Plato’s model of “sovereign technique”, modern design becomes a form of “practical politics”, where the designer acts as a conductor harmonizing a wide variety of elements and skills towards a unifying and coherent goal. The designer’s task, then, is to mediate between technological innovation and human values, between economic efficiency and environmental sustainability, to create a symphony of elements that together promote a sustainable future in harmony with the needs of society. With this perspective, the designer reaffirms themselves as the keeper of balance and promoter of a holistic vision, considering each project not as an end in itself but as an integral part of a complex ecosystem. This is the challenge and opportunity of contemporary design: to be simultaneously technique and art, science and vision, guiding humanity towards a shared and responsible future.

In this context, Manzini’s reflections, which in one of his latest works outline design as:

*una sequenza di azioni che influenzano i sistemi sociotecnici (e quindi anche economici, politici e culturali) in cui si opera e con cui si entra in relazione: delle azioni sul mondo, attinenti alla vita di tutti i giorni, fatte operando dove si è. (Manzini, 2018, p. 114)*

Regarding policies for design, *Le politiche per il design e il design per le politiche* by Marzia Mortati, Beatrice Villari, Stefano Maffei and Venanzio Arquilla delves into the role of design as a strategic lever for innovation in Europe, highlighting the importance of evaluating design policies to support economic growth and programming efficiency (Mortati, Villari, Maffei and Arquilla, 2016). These works are part of the broader context of design as an institutional political practice, where the focus is on integrating design into existing political structures to promote innovation. Design for Policy by Christian Bason (2014) represents a fundamental contribution in this direction, exploring how design can innovate public policies through collaborative approaches, emphasizing the importance of design thinking in the policy-making process. Bason positions design as a strategic tool for policy improvement and innovation, highlighting how design can significantly contribute to the formulation and implementation of more effective and citizen-oriented policies. On the other hand, *Design as Politics* by Tony Fry (2010) and *The Politics of Design* by Ruben Pater (2016) present different angles – the first with a theoretical-academic approach, and the second with a practical-project-oriented approach – focusing on how design can serve as a form of activism and social critique. These authors explore the collaboration between design and innovation in public policies from a perspective that emphasizes the potential of design to contribute to socio-economic progress through collaborative approaches, but with a critical emphasis on the political and social implications of design, thus moving away from the more institutionalized approach<sup>1</sup>.

## From product design to product-service-system design

In the era of sustainability, design takes a new direction, moving from the tangible boundaries of the product to the experiential realms of service. This shift, triggered by the need to respond to urgent environmental challenges, is rooted in an understanding of the complexity and biogeochemical cycles that govern life on Earth (Butera, 2021). The approach of service design, evolved from the pioneering works of the late last century that already envisioned low material density product-services with high social participation (Manzini, 1997), assumes a human-centric dimension as theorized by Donald Norman, aiming to create an experience that goes beyond mere practical function and thus the technical efficiency of the product (user-centered design) to touch the emotional dimension and personal values (human-centered design) (Norman, 2013). Service design goes beyond the traditional conception of product design to focus on the configuration of experiences, as well pointed out by Stigliani and Fayard (2010). A significant example is IO, a free public services app that aims to revolutionize the relationship between citizens and Italian institutions by adopting an approach centered on people's needs. IO, awarded in 2022 with the prestigious Compasso d'Oro, historically associated with the design of physical products, offers everyone a single platform to access public administration services (<https://www.adi-design.org/un-app-per-cittadini-e-istituzioni.html>).

Indeed, service design is not limited to the digital realm but remains connected to the tangible world insofar as it implements a precise organization of interaction phases, with both physical and digital artefacts, defined as “touchpoints”. The aim is to create a flow of engaging and memorable experiences for people. This approach ensures that the service design encompasses all aspects of the user's interaction with the service, from the physical environment and objects they encounter to the digital interfaces they use. The focus is on crafting a holistic experience that resonates on multiple levels, including the emotional and the practical, ensuring a seamless integration of the physical and digital aspects of the service.

In this context, product and service are not antithetical terms but components of a holistic strategy that also includes the communicative event, as indicated in the Prosev Strategy by Carlo Vannicola: the synthesis of product (Pro-), service (-se-), and event (-ev) into a cohesive and meaningful narrative (2017). An immediately clarifying example, suggested by Vannicola himself, is the activity of a small winery that combines the wine product with a range of services, from offering home cooking to managing sommelier courses, and organizes events, such as cyclical tastings of local products or opening its cellar to the public, becoming “il terminale di un sistema territoriale che diffonde la propria cultura in un mercato ‘conosciuto’ de-globalizzato” (Vannicola, 2017, p. 22). In short, design is no longer just a matter of form and function but a complex and reflective practice that intersects different disciplines, from psychology to environmental sciences, to design solutions that are engaging, ethical, and sustainable.

But there is more. Today, discussing design inevitably entails addressing its systemic dimension and its integration with the circular economy. Systemic design forms a set of optimal connections for sustainable and regenerative functioning, much like in nature, where every output becomes a new input. System, service, circular economy, as emphasized by the authors of the Torino Innovation Lab, are fundamental prerequisites

for sustainability (environmental, social, and economic) and essential ingredients of innovation: “Il design è innovazione sistemica” (Design is Systemic Innovation) (2022). Therefore, design today is increasingly a system-product-service design, a holistic dimension that tends to spread both in design practice and in university education, as demonstrated by the presence of a Master’s Degree Course in Product Service System Design – Design for the System Product Service (PSS) at Politecnico di Milano. As clarified by Carlo Vezzoli, an eco-efficient PSS resolves into

*an integrated mix of products and services that are together able to fulfill a particular customer demand (to deliver a ‘unit of satisfaction’) based on innovative interactions between the stakeholders of the value production system (satisfaction system), where the economic and competitive interest of the providers continuously seeks environmentally beneficial new solutions. (Vezzoli, 2024, p. 50)*

This shift in design to embrace the entire ecosystem, including living beings and the entire environment, characterizes the latest work by Donald Norman on Design for a Better World (2023). This means transitioning from human-oriented design, as we have mentioned earlier, to humanity-oriented design, giving the term “Humanity” the widest possible semantic extension. More precisely: “Designers must still follow the design principles of human-centered design, but now within the broader scope of the entire globe: all living things; the quality of the land, water, and air; the loss of species; the changes in climate” (Norman, 2023, p. 188). But we will return to this topic at the end of the paper.

## Transdisciplinary approach

But at this point, let’s ask ourselves: is design multidisciplinary, interdisciplinary, or transdisciplinary? In fact, these three terms, although often used interchangeably, are far from coincident. The prefixes that distinguish them leave no doubt: multi- indicates coexistence; inter- implies placement (between); and trans- indicates passage, crossing, something more dynamic, oriented toward synthetic transformation. As Bernard C. K. Choi and Anita W. P. Pak emphasize:

*Multidisciplinarity draws on knowledge from different disciplines but stays within their boundaries. Interdisciplinarity analyzes, synthesizes, and harmonizes links between disciplines into a coordinated and coherent whole. Transdisciplinarity integrates the natural, social and health sciences in a humanities context, and transcends their traditional boundaries. (Choi, Pak, 2003)*

That’s why, as the design process becomes more complex, it leads to more significant results by ascending to the transdisciplinary dimension. Let’s be clear, delving into a subject by tempering different perspectives, embracing ever-wider horizons, incorporating methods, techniques, and tools from other disciplines into one’s knowledge base, in short, hybridizing the established knowledge of one discipline by contaminating it with others, is inherently fruitful, if only to expand human knowledge. But there’s more to it. It’s also a matter of flavor. When a talent from one discipline interacts with a talent from another discipline, unpredictable and inevitably fruitful synapses are created. When talents multiply, characterizing a particular place at a specific time, individual talent is destined to expand significantly, increasing the overall creative potential. This gives rise to a kind of creative resonance that leaves a mark in history, as it happened in Athens in the 5th century BC, the era of Pericles<sup>2</sup>, or in Florence during the Renaissance<sup>3</sup>, or

even in Vienna during the Belle Époque<sup>4</sup>.

Let's return to design: multidisciplinary, interdisciplinary, or transdisciplinary? It is multidisciplinary when it draws on knowledge and approaches from various disciplines to solve specific design problems. Similarly, design can be interdisciplinary when there is very close integration of the involved disciplines. In an interdisciplinary context, different disciplines work together more synergistically, aiming for common understanding with a unified approach to solving design problems. Nonetheless, design can aspire to become transdisciplinary when it goes beyond the mere integration of existing disciplines by developing new ways of thinking and addressing problems. Transdisciplinarity involves crossing approaches from very different disciplines to address complex and global challenges. The system-service-product design, as mentioned earlier, emerges as a key approach in this perspective. It involves the integration of specific skills into the design, going beyond product design and considering the entire system of services and products. The system-service-product designer, unlike a narrow specialization, must extend their field of intervention to other skills and disciplinary areas, creating synergies among them. This holistic, interdisciplinary, and transdisciplinary approach is essential for addressing complex and global challenges. Similarly, design moves away from linear solutions and embraces a holistic and interconnected perspective. Its ability to collaborate with other disciplines is one of its main strengths in solving complex and global problems.

In the world of design, the transdisciplinary approach can be described using the metaphor of letters to depict it. The "T" represents this concept, where the vertical segment symbolizes the specific expertise of a designer, such as font design or user experience (UX) / user interface (UI) design. The horizontal segment represents the designer's ability to extend their scope to other skills and disciplines. A designer with a broader horizontal segment is capable of effectively collaborating with diverse professionals, facilitating dialogue and fruitful exchange. "Da osservare – as Francesco Zurlo points – che in qualche modo è proprio quest'ultima dimensione orizzontale che ha consentito al design di assumere un ruolo di rilievo nel dibattito sulla strategia" (Zurlo, 2012, p. 110). This multidisciplinary approach evolves towards transdisciplinarity when the designer integrates various skills and transcends the boundaries of established disciplines. On the contrary, the "I" represents the monodisciplinary designer, solely focused on one expertise, without significant expansion into other areas. However specialized, he is destined to be a "lone star" (Collins and Hansen, 2021, p. 32), resistant to interdisciplinary connections. The "X" indicates the designer with interconnected skills in various disciplines, represented by the intersection of lines. Therefore, they can converge the design team towards a common goal, working holistically and interdisciplinarily. Lastly, the "Pi Greco" represents the designer with two specific skills, clearly correlated, integrated into a new transdisciplinary approach. This hybridization process leads to the creation of new design methods and represents an evolution of the "T", adding a second vertical stroke symbolizing the new transdisciplinary expertise. Thus, design evolves, configuring new letters with multiple vertical segments that implement horizontal aggregations, developing innovative approaches to projects and communication methods (Chung, 2022).

Continuing to segment design into specializations (product, interior, communication, fashion, etc.) is limiting considering its transdisciplinary nature. Because, as you have seen, design is a holistic process that extends

far beyond the materiality of the product, becoming an experience and a strategy. Vignelli's philosophy reminds us that "Design is One" (2012, p. 22), a single field that expresses itself through a thousand forms (*Ars una species mille*, as the Latins used to say), where the culture of design is not divided into humanistic and scientific, but unifies in the method (Munari, 1981). Munari and Moholy-Nagy have taught us that design does not reside in a specific sector but in the systemic approach and the design attitude that addresses the complexity of the world (Moholy-Nagy, 1947, p. 42), aiming for sustainable and inclusive innovation.

## Experience and transdisciplinarity – from Gastrophysics to Geopolitics

In today's design landscape, experience asserts itself as a fundamental principle. Understood as the designed and perceived life experience of an individual, it becomes a crucial criterion for evaluating design. Indeed, the validity of a project is measured not only through its tangible results but also, and most importantly, in the impact it has on the lives of its intended users. Therefore, design, aiming to improve the quality of everyday life, resolves into the project of experiences that are not only functional but also enriching, meaningful, and capable of conveying values and stimulating social, economic, and environmental innovations. By focusing more on the experience (person) than the product, the potential of design to evolve into an essential tool for addressing and solving complex problems is revealed. This process requires a synergistic orchestration of diverse disciplines, working together to pose relevant questions and develop effective solutions. In this perspective, the reflections of John Dewey, the famous American philosopher, assume particular significance. With his essay *Democracy and Education* (1916) and the subsequent work *Art as Experience* (1934), he placed experience at the heart of aesthetic and educational discourse. His philosophy permeated the Bauhaus of Weimar, inspiring what would become the leitmotif of the most influential design school of the first half of the 20th century: "Learning by Doing". This approach places direct experience at the center of learning and designing, emphasizing that knowledge deepens and enriches more through continuous practice and experimentation. His words remain an inexhaustible source for us: "The work takes place when a human being cooperates with the product so that the outcome is an experience that is enjoyed because of its liberating and ordered properties" (Dewey, 1934/1980, p. 214).

In reference to the concept of experience, it is interesting to explore the emerging field of *gastrophysics*, as outlined by Charles Spence in his brilliant essay *Gastrophysics: The New Science of Eating* (2017). This is a terrain where gastronomy and psychophysics converge. According to Spence, the taste of a dish is not simply the result of its physical components but rather the outcome of a complex series of influences operating at sensory and conceptual levels. In this context, food transcends its nourishing function to become a medium through which a meaningful experience can be designed, enriched by stimuli that involve sight, smell, hearing, touch, and taste, as well as numerous other psychological aspects. Similarly, service design relates to product design as *gastrophysics* does to food: it's not so much about satisfying a nutritional need as it is about making the gastronomic experience memorable. Success is achieved through a systemic approach, aiming for innovation<sup>5</sup>.

The parallelism between design and *gastrophysics* proves particularly fruitful when considering their transdisciplinary nature: *gastrophysics* exemplifies how the fusion of different disciplines

– in this case, gastronomy, psychology, and physics – can create new modes of understanding and appreciating food. Furthermore, as Spence highlights, gastrophysics reaches its full potential when it collaborates with design, technology, and behavioral sciences, thus offering a model of how transdisciplinary collaboration can amplify innovation and human experience.

The adoption of a transdisciplinary approach, which skillfully intertwines multiple disciplines to explore new ways of working and interpreting the world, is at the heart of the renewed interest in geopolitics. Publications like *Limes*, led by Lucio Caracciolo, and *Domino*, under the direction of Dario Fabbri, exemplify this success. Fabbri introduced the concept of *Geopolitica umana* (2023), an expression that highlights the importance of the “*Il fattore umano*” and revitalizes traditional geopolitics, often criticized for its determinism, by intertwining geography, history, politics, economics, psychology, philosophy, and literature (Limes, 2019). This renewal demonstrates that, although geopolitics may be more ideology than an actual science, its transformation into an increasingly intricate and nuanced field of study allows for deep and complex analyses. The integration of both scientific and humanistic disciplines reveals that, despite the individual elements being familiar, it is in their transdisciplinary combination that the true added value lies. For, as we well know, the whole is greater than the sum of its parts.

## Humaizing technique

Reflecting upon the substance of design, one ponders: What is the essence of a designer’s activity? Stripping the concept of complex definitions, a simple truth emerges – design is the humanization of technique. Born with the Industrial Revolution, its aim was to shape new industrial products, not only functionally but also meaningfully. There was a need to give a soul to the industry, infusing art into mechanical products (Art Industries). In the 19th century, the concept of “*applied art*” defined what we today recognize as design: art applied to industry, to the practical function of a product. This tension between function and form persists to our present day, as evident in the title of the catalog for the 4th edition of the Triennale Design Museum in Milan: *Le fabbriche dei sogni* – Dream Factories (Alessi, 2011).

Let’s quickly examine some historical examples, tracing key milestones. In the early 20th century, Hermann Muthesius, founder of the *Werkbund*, spoke of the “*stile tedesco*” (Vitta, 2001, p. 146). Later, Walter Gropius revitalized the Bauhaus by declaring: “*Arte e tecnica – una nuova unità!*” (Gropius, 1923, p. 137). In the early 1960s, Gillo Dorfles identified the “*estetività*” as a fundamental condition of design (Dorfles, 1972, p. 10). This concept was reiterated by the philosopher Fulvio Carmagnola, who discussed on “*‘impura’, ovvero capace di scendere dalle regioni alte della bellezza fino al contatto con le merci e le manifestazioni mediali del nostro mondo*” (Carmagnola, 2001, p. 8). Designed goods, thus, develop an imaginary or symbolic component insofar as this “*è diventata una parte strutturale del loro valore economico*” (Carmagnola, 2006, p. 6). A process of “*ipersignificazione che le merci hanno conquistato grazie all’inserimento al loro interno di una nuova qualità energetica, che ha saputo trasformarle in entità dotate di forte attrattività*”, according to Ernesto Francalanci (2006, p. 34). The history of design is *Il progetto della bellezza*, as Maurizio Vitta states: “*La bellezza è tornata ad essere l’orizzonte delle cose*” (Vitta, 2001, p. 320). A beauty that is not an end in itself but is equivalent to making products and services expressions of culture, or in other words, to humanizing technique.

In this regard, the words of Ettore Sottsass are iconic:

*Per me fare design non significa dare una forma a un prodotto più o meno stupido per un'industria più o meno sofisticata. Per me il design è un modo di discutere la vita, la socialità, la politica, il cibo e perfino il design. (quoted in Radice, 1984, p. 187)*

Morover: design has always existed, since the time when «significava incidere sulle frecce segni magici o simboli e così via; o anche dare una forma speciale alle frecce» (Sottsass, 2019, p. 69).

In response to the challenges of our times – which encompass both environmental issues, particularly the reduction of CO<sub>2</sub> emissions and the preservation of biodiversity, and the need to humanize the ecological transition or “forking” (Butera, 2023, pp. 113-114) – design emerges as a crucial discipline. Humanizing the ecological transition means, once again, infusing humanity into technique, designing configurations, devices, interfaces, systems, strategies, services... that incorporate shared values, embraced not as obscure impositions but as individual aspirations within the framework of collective cultural advancement. In this context, design, with its procedural nature and transdisciplinary approach, considering hard sciences and humanities as inseparable parts of the same culture (Bucciantini, 2023), fully responds to the call of Mauro Ceruti and Francesco Bellusci in *Umanizzare la modernità: un modo nuovo di pensare il futuro* (2023). This means recovering humanism in a planetary dimension, rekindling anticipatory imagination and long-term visions, and redefining the ideas of progress and future “per proporre vie di uscita dalla crisi della modernità che la crisi di quelle idee ha generato” (Ceruti and Bellusci, 2023, p. 16). It also means, as Stephen Toulmin suggests, “recuperare la saggezza a misura d'uomo del Rinascimento, senza perdere di conseguenza i vantaggi guadagnati durante trecento anni in cui la vita intellettuale è stata dominata dalla filosofia cartesiana e dalle scienze esatte” (Toulmin, 2022, p. 228). It means embracing an «ecologia integrale», as enunciated by Pope Francesco (quoted in Oreskes, 2024, p. IX), recognizing that “la relazione precede l'esistenza” (Ceruti and Bellusci, 2023, p. 86), insofar as every entity (physical, chemical, biological, human, social, ecological...) coexists before it exists. And in the design of the relationship – or interaction – design is called upon to make a significant contribution.

## Conclusions

At the conclusion of our discussion, it becomes evident that design, in its role as a pivotal discipline, represents a valuable resource in addressing the environmental and social challenges of our time. This consideration leads us to view design not merely as the creation of objects with aesthetic functions, but as a transformative and integrated field of action, where technique, humanism, and sustainability converge. Thus, design today tends to transcend its original function, assuming a key role in orchestrating synergies between technology, culture, and the environment. The figures of Ezio Manzini and Adriano Olivetti remind us of the importance of converging ethics, aesthetics, and functionality, shifting the focus from the individual product to interaction with the entire ecosystem. This systemic approach, evident in the evolution towards system-product-service design, reflects a fundamental change in the way we conceive of and interact with our environment.

The adoption of a transdisciplinary approach is at the heart of the change in the world of design. Integrating knowledge and skills from diverse disciplinary fields has become essential to navigate the complexity of our current context. This transdisciplinary methodology allows for crossing the traditional boundaries of design, paving the way for solutions that are as innovative as they are sustainable. In this way, the interconnection of social, environmental, and economic systems is valued, giving life to a rich and dynamic design result, ready to respond agilely to the pressing needs of the present.

The emphasis on human experience further underscores this evolution. We are no longer limited to meeting functional needs but aim to shape meaningful experiences capable of stimulating social, economic, and environmental innovations. This shift in focus from the object to the experience allows us to explore new ways of interacting with the world, integrating concepts from fields such as gastrophysics and geopolitics.

The humanization of technology through design proves to be an indispensable piece, serving as a bridge between innovation and fundamental human values. This process not only makes technology more usable and ethical but also aligns it with our values, emphasizing a commitment to environmental respect and sustainability. Consequently, design transforms into a catalyst for a future where technology, humanity, and nature do not merely overlap as distinct entities, but intertwine harmoniously, together composing an integrated and coherent result.

In conclusion, we underscore the invitation to rethink the role of design in our world – a fundamental discipline that contributes to improving daily life towards a sustainable and harmonious future, integrating knowledge and skills from a wide variety of fields. This transformative approach not only responds to the immediate challenges of our time but also lays the foundation for a future in which design, technology, and sustainability merge into a holistic and innovative paradigm.

## Notes

1 Carl DiSalvo, in his work *Design, Democracy, and Agonistic Pluralism*, presented at the DRS International Conference 2010, offers a fundamental distinction between “political design”, which deals with individual approaches and activism and “design for politics”, which focuses on how design can be integrated into institutional political practices. This distinction allows us to appreciate the diversity of approaches in the field of political design and policy design, highlighting how design can variously influence and contribute to the political and social context. In line with Fry’s critical observations, it is crucial to recognize that his view challenges widely accepted concepts such as “sustainability” and “progress”, reflecting an anti-progressivist stance that he shares with thinkers like Cameron Tonkinwise. Therefore, in discussing their work, it is essential to avoid attributing to them a vision not consistent with their critical thinking, especially in relation to innovation and progress in design.

2 Anaxagoras, Gorgias, Protagoras, Parmenides, Zeno, Melissus, Democritus, Archelaus, Socrates, Plato, Hippias, Prodicus, Isocrates, and Antiphon, among the philosophers; Aeschylus, Sophocles, and Euripides, among the tragedians; Aristophanes, among the playwrights; Hippocrates, among the physicians; Myron, Phidias, Praxiteles, Zeuxis, Ictinus, Hippodamus, Callicrates, Mnesicles, Alcamenes, Ctesilaus, and Polyclitus, among the artists; Herodotus, Thucydides, and Xenophon, among the historians; Hyperides, Thrasymachus, and Lysias, among the orators.



3 Brunelleschi, Leon Battista Alberti, Masaccio, Fra Angelico, Paolo Uccello, Piero della Francesca, Filippo Lippi, Andrea del Castagno, Domenico Veneziano, Francesco Squarcione, Andrea Mantegna, Michelangelo, Raphael, Botticelli, Perugino, Domenico Ghirlandaio, Donatello, Luca della Robbia, and, of course, the immense Leonardo da Vinci (the quintessential genius).

4 Gustav Mahler, Arnold Schoenberg, Alban Berg, and Anton von Webern (music); Alfred Roller, Gustav Klimt, Carl Moll, Egon Schiele, and Oskar Kokoschka (painting); Sigmund Freud, Carl Gustav Jung, and Alfred Adler (psychoanalysis); Karl Kraus, Arthur Schnitzler, Robert Musil, and Joseph Roth (literature); Otto Wagner, Joseph Maria Olbrich, Josef Hoffmann, Koloman Moser, and Adolf Loos (architecture).

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## References

1. Germann, F., Ebbes, P., & Grewal, R. (2015). The chief marketing officer matters! *Journal of Marketing*, 79(3), 1-22.
2. Alessi, A. (2011), *Le fabbriche dei sogni. Uomini, idee, imprese e paradossi delle fabbriche del design italiano = Dream Factories. People, Ideas and Paradoxes of Italian Design*, Milano: Electa – La Triennale di Milano Design Museum.
3. Bason, C. (2014), *Design for Policy*, London: Gower Ashgate.
4. Bucciantini, M. (2023), *Siamo tutti galileiani*, Torino: Einaudi.
5. Butera, F. (2023), *Sole Vento Acqua. Italia a emissioni zero nel 2050*, Roma: Manifestolibri.
6. Butera, F. (2021), *Affrontare la complessità. Per governare la transizione ecologica*, Milano: Edizioni Ambiente.
7. Carmagnola, F. (2006), *Il consumo delle immagini. Estetica e beni simbolici nella fiction economy*, Milano: Mondadori.
8. Carmagnola, F. (2001), *Vezi insulsi e frammenti di storia universale. Tendenze estetiche nell'economia del simbolico*, Roma: Sossella.
9. Ceruti, M. and Bellusci (2023), *Umanizzare la modernità. Un modo nuovo di pensare il futuro*, Milano: Cortina.
10. Choi, B. C. K. and Pak, A. W. P. (2006), *Multidisciplinarity, interdisciplinarity and transdisciplinarity in health research, services, education and policy: 1. Definitions, objectives, and evidence of effectiveness* [Online] Available at: <https://pubmed.ncbi.nlm.nih.gov/17330451/#affiliation-1> [Accessed 7 February 2024].
11. Collins, J. and Hansen, Morten T. (2021), *Great by Choice. Uncertainty, Chaos and Luck – Despite Them All*, New York: HarperCollins.
12. Chung, K. (2022), *I, X, and T-Shaped Designers: What's the Difference?* [Online] Available at: <https://www.uxbeginner.com/i-x-and-t-shaped-designers/> [Accessed 7 February 2024].
13. Dewey, J. (1934/1980), *Art as Experience*, New York: Perigee Books.
14. Dewey, J. (1916/2015), *Democracy and Education. An Introduction to the Philosophy of Education*, Edinburgh: Bibliotech Press.
15. DiSalvo, C. (2010), *Design, Democracy, and Agonistic Pluralism*, Available at: [www.mckinsey.com/industries/capital-projects-and-infrastructure/our-insights/imaging-constructions-digital-future](http://www.mckinsey.com/industries/capital-projects-and-infrastructure/our-insights/imaging-constructions-digital-future) [Accessed 7 February 2024].
16. Dorfles, G. (1972), *Introduzione al disegno industriale*, Torino: Einaudi.
17. Gropius, W. (1924), "Breviario per i membri del Bauhaus (abbozzo)", in Wingler, H. M. (trad. 1972) (ed.), *Il Bauhaus. Weimar Dessau Berlino 1919-1933*, Milano: Feltrinelli, p. 137.
18. Francalanci, E. (2006), *Estetica degli oggetti*, Bologna: il Mulino.
19. Fry, T. (2010), *Design as Politics*, Oxford: Berg.
20. Gaiardo, A., Remondino, C., Stabellini, B., Tamborini, P., (2022), *Il design è innovazione. Metodi e strumenti per gestire in modo sostenibile la complessità contemporanea: il caso Torino*, Siracusa: LetteraVentidue.
21. Galimberti, U. (2020), *I miti del nostro tempo*, Milano: Feltrinelli.
22. Fabbri, D. (2023), *Geopolitica umana. Capire il mondo dalle civiltà antiche alle potenze odierne*, Milano: Gribaudo.
23. Limes – Rivista italiana di geopolitica, 9, 2019 ("Il fattore umano").
24. Manzini E. (2018), *Politiche del quotidiano*, Roma: Edizioni di Comunità.
25. Manzini E. (2015), *Design. When everybody designs. An Introduction to Design for Social Innovation*, Cambridge (MA) – London: The MIT Press.

26. Moholy-Nagy, L. (1947), *Vision in Motion*, Chicago: Theobald.
27. Mortati, M., Villari, B., Maffei, S. and Arquilla, V. (2016), *Le politiche per il design e il design per le politiche*, Rimini: Maggioli.
28. Munari, B. (1981/2010), *Da cosa nasce cosa. Appunti per una metodologia progettuale*, Roma-Bari: Laterza.
29. Norman, D. (2023), *Design for a Better World. Meaningful, Sustainable, Humanity Centered*, Cambridge (MA) – London: The MIT Press.
30. Norman, D. (2013), *The Design of Everyday Things. Revised and Expanded Edition*, New York – London: The MIT Press – Basic Books.
31. Oreskes, N. (2024), “L’ecologia integrale di cui abbiamo bisogno”, in *Il Sole 24 Ore – Domenica*, newspaper, 21 January, p. IX.
32. Pater, R. (2016), *The Politics of Design. A (Not So) Global Design Manual for Visual Communication*, London: Laurence King.
33. Plato (1991), *Tutti gli scritti*, Milano: Rusconi.
34. Radice, B. (1984), *Memphis. Ricerche, esperienze, risultati, fallimenti e successi del nuovo design*, Milano: Electa.
35. Stigliani, I. and Fayard, A. (2010), *Designing New Customer Experiences. A Study of Socio-material Practices in Services Design*, London: Imperial College Business School.
36. Simon, H. A. (1969/1996), *The Sciences of the Artificial*, Cambridge (MA): The MIT Press.
37. Spence, C. (2017), *Gastrophysics. The New Science of Eating*, London: Penguin.
38. Sottsass, E. (2019), *Molto difficile da dire*, Milano: Adelphi.
39. Toulmin, S. (trad. 2022), *Cosmopolis. La nascita, la crisi e il futuro della modernità*, Milano: Mimesis.
40. Vannicola C. (2017), *La Prosev Strategy. Il servizio del prodotto servizio evento*, Firenze: Forma.
41. Vezzoli, C., Kohtala, C., and Srinivasan, A. (2017), *Product-Service System Design for Sustainability*, New York: Routledge.
42. Vignelli, M. (2010), *The Vignelli Canon*, London: Prestel Publishers.
43. Vinti, C. (2021), “Lo stile Olivetti”, in Di Tondo and G., Peruccio P. P. (eds), *Caleidoscopio Olivetti*, Torino: Allemandi, pp. 67-71.
44. Vitta, M. (2001), *Il progetto della bellezza. Il design fra arte e tecnica, 1851-2001*, Torino: Einaudi.
45. Zurlo, F. (2012), *Le strategie del design. Disegnare il valore oltre il prodotto*, Milano:

# The environmental labels for sustainable communication design

Francesca Scalisi, Dario Russo  
francesca.scalisi@unipa.it, dario.russo18@unipa.it

Università degli Studi di Palermo, Italy

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Sustainability

## Abstract

Sustainability in communication design is a rapidly and continuously evolving field, with growing attention to eco-compatibility, the use of sustainable materials, and effective communication strategies to promote environmental awareness among users. To improve the commercialization of products-services and demonstrate a tangible commitment towards the now essential requirement of environmental sustainability, companies are adopting more ecological production processes and paying greater attention to the durability, reparability, and recyclability of products. The paper examines environmental labels as a tool for environmental communication, characterized by specific and transparent languages, as opposed to generalities and greenwashing. Such a strategy should characterize companies that clearly communicate their position on sustainability, distinguishing themselves in the market and reaching their users effectively.

## Introduction

According to the Brundtland Commission's definition, sustainable development is about ensuring "that it meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987, p. 15). Initially used to define more equitable dynamics of economic development, the term 'sustainability' has quickly become commonplace and has been progressively used to characterize not only the development model but also individual actions or situations where this model is applied and materializes (from sustainable production to sustainable market), including the use of recyclable and biodegradable materials, with the aim of limiting the use of fossil fuels, the consumption of non-renewable resources, and the production of waste. This definition has been repeatedly cited and expanded upon with new and specific nuances by numerous institutional documents of strategic guidance that have followed one another to the present day at an ever-increasing pace, starting with Agenda 21 (UN, 1992), the Climate-Energy Package 20-20-20 (European Commission, 2009), and the Sustainable Development Goals of the 2030 Agenda (UN – General Assembly, 2015), through the Action Plan entitled Closing the Loop (European Commission, 2015), the European Green Deal (European Commission, 2019), the Renovation Wave (European Commission, 2020a), the Circular Economy Action Plan (European Commission, 2020b),

