THE INTRINSIC CHARACTER OF PARTICIPATORY DESIGN IN SUSTAINABILITY AND SOCIAL INNOVATION

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Abstract: Ecodesign is a highly relevant field of study in the face of current environmental and social challenges. It integrates ecological criteria into all stages of product, service, and system design, aiming to reduce waste, optimize natural resources, and minimize environmental impacts. This perspective is essential to promote energy transition and address climate change, contributing to more responsible and sustainable production models. Understanding how sustainable practices enhance social and environmental quality is crucial for their broader adoption, supporting development processes that are both locally significant and globally connected. In this context, a literature review was carried out to explore the importance of collaboration in design, with a focus on participatory design as a tool for social mobilization and for building collective solutions to complex problems in inclusive and resilient ways. Tracing the historical presence of collaborative practices - from primitive societies to contemporary design - reveals the centrality of human cooperation in creating artifacts and systems. Contributions from key authors such as Victor Papanek, Ezio Manzini, Carlo Vezzoli, and Elizabeth B. Sanders highlight how participatory and sustainable design consolidate as fields of social and environmental innovation. The review also emphasizes the interconnection between participatory design, ecodesign, and lifecycle design, stressing their strong relationship with environmental conservation. Consequently, the designer's role extends beyond co-creator. Designers act as facilitators, translators, and materializers of ideas, mediating between social actors, spreading knowledge, and turning proposals into tangible outcomes. In doing so, design becomes a strategic practice to strengthen communities, foster social innovation, and increase socioeconomic resilience, paving the way toward a more just and balanced sustainable development.
Keywords: Social Innovation; Participatory Design; Social Design; Ecodesign.

1. Introduction

Collaboration among individuals is considered by some authors to be an intrinsic characteristic of human beings. For Maturana [1], this quality is inherent to our species, contrasting with the idea that competition is a constitutive attribute. Based on this premise, it can be inferred that the earliest forms of design, aimed at meeting collective needs since prehistoric times, had a collaborative nature.

According to Victor Udoewa, in the video *Origins of Participatory Design* [2], it would be unthinkable for collaborative design to have been absent over more than 300,000 years of civilization – from the Paleolithic to the present day. Throughout this trajectory, it is possible to identify stages typical of a design process, such as ideation, experimentation, and testing, from the production of flint stone tools to the construction of irrigation canals in Mesopotamia.

Moreover, it is possible to catalog countless artifacts created to meet human and collective demands at different times. The presence of percussion instruments, bows and arrows, or small boats in such distinct cultures as Japanese, African nations, or *Viking* culture – with no historical evidence of prior contact between them – indicates that observation and the search for solutions transcend geographical boundaries and reveal convergences in the act of designing.

Although aesthetic differences are evident among these objects, their functionality and usability show impressive similarities. Even without full awareness of this role, human beings act as vernacular designers, fostering dialogue, valuing local knowledge, and mobilizing social capabilities.

Design serves human needs, but the materialization of artifacts that meet these demands is essentially collaborative in nature, as technologies spread within and beyond the communities in which they originated. For Manzini, collaboration among individuals makes it possible to achieve results that would not be attainable in isolation. In this sense, the creation of a collective artifact is the result of a broad and complex social dialogue [3].

In light of this, the present paper proposes to carry out a literature review to understand the importance of collaboration in building social entities that work toward solving social problems, and to highlight participatory design as a tool for this mobilization.

2. Methodology

Based on research conducted by Xavier, Saba, and Nascimento Filho, the viability of applying participatory methodologies in design was discussed [4], since such practices, up until the first half of the 2010s, were regarded much more as an academic subject than as a competitive advantage for companies. Corporations feared that these methodologies could disrupt hierarchical and control structures, threatening the expert status of their developers, which, according to Sanders and Stappers [5], could undermine the logic of consumption. In fact, there are clear advantages to using such techniques, including obtaining multiple alternatives for emerging problems, greater knowledge transfer among participants, and increased efficiency in the results achieved [4]. However, the literature review brought forth more holistic elements that are intrinsic to social organizations, since collaborative practices depend on integrated collectives and the pursuit of solutions for them.

3. Results and Discussion

When discussing Participatory Design, Victor Udoewa's video *Origins of Participatory Design* presents a timeline of what would be its academic origin, citing the Scandinavian initiatives of the 1960s, among other authors in the fields of architecture and urbanism. However, the first publication aimed directly at designers – addressing not only the importance of collaboration during design processes but also its relevance for the conservation of natural resources – was *Design for the Real World* by Victor Papanek. Long before Tim Brown and IDEO popularized *Design Thinking* and new concepts of user-centered design, Papanek, in the first edition of 1971, highlighted the responsibility of designers and project

developers for the shortcomings of ecologically inappropriate design. For him, everyone is a designer, and almost everything made by humans is subject to design, with purpose and planning as process stages. Furthermore, design must serve people's needs, and to achieve this, it must be participatory. It's not merely a treatise on design: Papanek offered a harsh critique of the design profession, clearly identifying the disconnection of product design from human needs and its deliberate alignment with the demands of capital. He nicknamed planned obsolescence "*Kleenex Culture*", began his preface by calling industrial and advertising designers phonies, and claimed that the most important skills in the profession are to recognize, isolate, define, and solve problems – not style or marketability (both of which he criticizes in this book and in later papers) [6].

However, Margolin notes that, despite its relevance, Papanek's critique remained marginal among design professionals and had little influence on the practice of ecologically responsible design [7].

3.1. Ecodesign

The pursuit of environmentally sustainable design has long been a topic in specialized events and professional activities. Professor Joaquim Redig revisited this reflection, adding that today's scenario represents only a worsening of the situation. According to him, environmental issues had already been raised by the hippie movement since the 1960s, but social sectors failed to give them due attention [8]. Since the Industrial Revolution, production standards focused on mass reproducibility, keeping product specifications and quality consistent, both in chemical processes and infrastructure. However, little was said about resource extraction, fossil fuel combustion, and their resulting environmental impacts. Even 19th-century scholars held conflicting opinions about the planet's regenerative capacity and its resources, especially given that population growth and the natural inputs needed and available were unlikely to be proportional [9].

In this paradigm, industrial design committed itself exclusively to mechanization efficiency, production scale, and delivery speed. Natural resource management was not a priority for major producers or the market. Still, there were critics concerned about environmental, economic, and social impacts, particularly due to planned obsolescence that shortened product lifespans to stimulate greater consumption [9]. According to Redig, this discipline and these environmental concerns were already part of the design course he joined in the late 60s, through a critical text by Tomás Maldonado [8].

This backdrop reinforces the relevance of *Design for the Real World*, even if ahead of its time. Papanek's book is a milestone, as it's a designer writing for and about designers. According to him, designers are, at least partially, responsible for everything that pollutes

[6]. This view was not isolated in the 1970s, but the work was generally rejected for sounding alarmist, anti-systemic, and paternalistic.

Margolin argues that the models of development – expansionist and sustainable – are antagonistic. However, he sees designers as artisans who mediate between these models, as they master the "art of conception and planning," despite a gap in reconciling them. Design generates plans, projects, and products, incorporating methodological techniques to manage problems and strategically distribute tasks [7].

Howard observes that laypeople have a clear understanding of the ecological reality around them, and not only hold relevant opinions and insights for solution-building but also engage deeply when it comes to environmental matters. However, they often face barriers due to a lack of knowledge. Thus, Participatory Design can be understood as a democratic decision-making method, bridging laypeople and experts [11].

In 2002, Ezio Manzini and Carlo Vezzoli proposed *Life Cycle Design*, in which ecodesign is central, considering the already evident damage caused by failures in environmental management. Both highlight in their works the importance of Participatory Design for Social Innovation as an alternative to reducing ecological harm [10]. However, they ultimately confront the neoliberal paradigm and, while proposing a new type of radicalism, acknowledge the risk of being anti-systemic.

From this concern, Manzini published *Design for Social Innovation and Sustainability*, focusing on local development as a way to propose systemic discontinuity in creative communities [12]. This process is made possible through the creation or organization of social innovation systems embedded in community culture.

3.2. Collaborative Organizations

Recognizing that industry, the consumer systems, and the lack of environmental management in product design are largely responsible for resource depletion and high negative environmental impact, Manzini proposes a socially based systemic change. He emphasizes local development as a central strategy for sustainability, arguing that effective solutions arise when they are conceived and implemented based on the resources, knowledge, and relationships of each territory. In this context, social organizations play a strategic role, functioning as hubs of social innovation capable of transforming local knowledge into sustainable and widely shared solutions [12].

According to Manzini, these collaborative organizations emerge from social needs and include:

- *Creative Communities* – The first form of organization, emerging through

bottom-up interactions, where a social problem demands the acquisition of knowledge to address it;

- *Diffuse Social Enterprises* – A natural evolution of Creative Communities, where service and/or business models emerge from implemented social innovations;
- *Collaborative Organizations* – Promising cases of diffuse social enterprises that evolve in highly connected environments, producing social, economic, and environmental benefits.

Manzini proposes a strategy to face the transition toward sustainability, which requires scaling up creative communities and diffuse social enterprises while preserving their original social qualities, closely linked to the small-scale nature of each initiative. This contradiction is the greatest challenge in consolidating and spreading collaborative organizations. In proposing a concept of design for social innovation, Manzini argues that local communities become the protagonists of sustainable change processes. Thus, participatory design enables the co-production of collaborative solutions, contributing to the strengthening of social cooperative networks and local innovation ecosystems – essential elements for a just ecological transition, while also enhancing communities socio-economic resilience [12].

3.3. Social and Participatory Innovation

Manzini [3] describes two types of design: diffuse design and expert design. He asserts that non-designers, laypeople, or amateur designers *do exist*, and Margolin supports this, stating that "design is an attitude everyone should have" [7]. Partially echoing Maturana, Manzini argues that collaboration is intrinsic to human character. He believes that three abilities common to designers can be found in most individuals:

- *Critical sense* – the ability to observe, recognize, and diagnose problems;
- *Creativity* – the ability to imagine something intangible;
- *Practical sense* – the ability to assess the viability of proposed actions [3].

However, at some point in the design process, an expert must take over. For Manzini, social innovation occurs when people, experts, and material resources come into contact in new ways. "When faced with new problems, human beings tend to use their innate creativity and design ability to invent and make something new: they innovate" [3].

The designer's role, then, is to mediate ideas and translate concepts: "Designers have always created connections between society and technology." Collective creation without methodology can quickly turn into chaos. Designers are therefore responsible for turning ideas into visible and tangible elements [12].

Manzini and Vezzoli also argue that participation, by including individuals in building solutions, enhances their sense of well-being and self-esteem, as their contributions become part of the collective solution framework, enabling them to formulate objectives and help achieve them. Moreover, individual contributions have an intellectual dimension that can influence the format of services or products, thus building social quality [10].

Participatory observation allows designers to enter social environments to identify and document needs that can be addressed through their intervention, according to Margolin and Margolin [13]. With collective reach and social impact, design for innovation seeks to develop solutions, while social innovation addresses intractable problems that individuals, alone, would not have the skills or resources to solve. Through participatory design, these collectives bring together different actors, promote inclusive dialogue, and strengthen collaborative networks, creating responses that reduce dependence on long supply chains.

Thus, Vezzoli [14] proposes that the design of environmentally, socially, and economically sustainable innovation systems should be a promising field for identifying solutions and exploring new potential uses for design, with emphasis on:

- The creation and/or co-creation of guiding scenarios that foster partnerships and interactions among different actors, focusing on sustainable production;
- The facilitation of participatory design processes that collaboratively define relationships and offering systems – encompassing products, services, and communication [14].

Both the development of collaborative scenarios and dialogic spaces for experience exchange and information access networks are vital to participatory design practice if its goal is to address everyday problems, which often arise unexpectedly. Such a system must be built collaboratively so that access to information is democratic and available to all, given the diversity of users within collectives. “The more skilled and motivated the user, the simpler the solution required. However, the less skilled the user, the more the system must be able to compensate for their lack of abilities” [12].

Finally, it’s important to emphasize caution in expert intervention in amateur environments. Creativity and collaboration cannot be imposed, and external interventions can jeopardize system balance [12]. Thus, participatory design, in combination with social innovation practices, goes beyond creating one-off solutions – it acts as a catalyst for systemic and sustainable transformations, while serving as an intermediary and translator of ideas. By connecting popular knowledge, technical expertise, and material resources in collaborative processes, it expands communities capacity to

autonomously solve complex problems. This is a strategic field that, while promoting inclusion and social protagonism, also builds pathways toward resilient and sustainable local development.

4. Conclusion

Participatory methodologies applied to design are directly linked to sustainability principles and environmental conservation. Contrary to what many believe, user-centered design is a much older concept, even though it has received more publications in recent years. When we talk about ergonomics, we talk about usability. When we establish molds and metrics for mass clothing production, we discuss user experience. Literature reviews such as this one make it possible to trace the historical trajectory of these ideas and methodologies, revealing how long it takes for society to consider such practices viable or socially acceptable.

The methodological approach guided the research through the provocations presented by the authors consulted here. From the search for the origins of Participatory Design, we found proposals advocating its use within the concept of Ecodesign and *Life Cycle Design*, both of an environmental nature. Through environmental management, we arrived at Collaborative Organizations, which employ collective, participatory, and environmentally responsible design. It's possible to draw a connection, particularly through the path proposed by Professor Ezio Manzini and his three works cited in this paper.

With this in mind, even though co-creation can and should be used in any context where it's needed, its socially sustainable dimension calls for a careful focus on actions directed toward spaces where sustainable local development is most necessary. In this way, the designer's social role becomes not only that of a co-designer but also a facilitator, translator of ideas, and enabler of technologies.

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