

# EXPANDED SUMMARY

*Fashion product design and design practices in the circular economy: sustainability and material culture in everyday consumption*

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## Introduction

The global environmental crisis imposes urgent challenges to the fashion industry, which ranks among the largest consumers of natural resources and emitters of pollutants (UNEP, 2016; Ellen MacArthur Foundation, 2020). Although efforts to adopt more sustainable practices are underway, many strategies remain limited to isolated actions – such as the use of organic materials or less polluting processes – without questioning the prevailing linear production model. In this context, the circular economy emerges as an alternative by promoting reuse, repair, remanufacturing, and recycling, extending material lifecycles (McDonough and Braungart, 2002; Niinimäki, 2018). However, the core challenge lies in translating this discourse into effective practices that disrupt linear cycles.

Among proposed solutions, Design for Disassembly (DfD) stands out as a promising strategy. It involves designing products that can be easily disassembled, facilitating maintenance, repair, and reintegration into production cycles (Abuzied et al., 2020). Nevertheless, its application in fashion remains incipient due to the sector's material and symbolic complexity. Thus, this research investigates DfD as a sociomaterial practice capable of reconfiguring sustainable fashion consumption, grounded in Practice Theories (Reckwitz, 2002; Schatzki, 2003; Shove, Pantzar and Watson, 2012). This perspective broadens the debate on the role of design, moving beyond reductionist views by integrating it into sociocultural and material arrangements. It also contributes to building a theoretical framework capable of guiding research and interventions aimed at transforming consumption and production patterns.

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## Development

Design for Disassembly (DfD), or design for disassembly, is analyzed beyond its technical dimension, being understood as a sociomaterial practice capable of reconfiguring sustainable consumption in fashion. This perspective integrates the foundations of DfD, Practice Theories, and the principles of the circular economy, revealing the complexity of its implementation.

DfD emerges as a design approach that conceives products to be easily disassembled, repaired, and recycled, aligning directly with the circular economy paradigm. Its principles include modularity, the use of reversible connections, and ease of component separation. However, its application faces significant technical, economic, and cultural obstacles, which extend beyond the design sphere.

Practice Theories provide the necessary sociological lens for this analysis, understanding social practices as units composed of three interconnected elements: materials (things, technologies), competences (skills, know-how), and meanings (values, senses). This perspective shifts the focus from the individual consumer to the sociomaterial arrangements that shape behaviors, being crucial to analyze how design configures and is configured by everyday practices.

In the context of circular fashion, a systemic redesign is proposed to extend product lifespans and recirculate materials, going beyond the mere use of sustainable materials. This approach requires the transformation of consumption practices and the development of adequate support infrastructures, while facing symbolic barriers such as the stigma associated with repair and the culture of novelty.

The articulation between these three conceptual fields was synthesized into six main analytical axes. The materiality of DfD proposes materials, sewing techniques, and modular designs that enable disassembly. The involved competences demand new skills both from designers, who must design for circularity, and users, who need to know how to repair and disassemble. Cultural meanings must be re-signified, shifting value from novelty to durability and understanding disposal as a conscious act.

Design is understood as a social practice that organizes and can transform other practices, such as those of use and disposal. Effective circularity depends on the existence of a complete ecosystem of infrastructures, public policies, and markets that enable circular logic. However, technical, cultural, and economic obstacles continue to impede the large-scale adoption of DfD.

In conclusion, DfD proves not to be merely a design technique, but a complex sociomaterial practice. Its effectiveness in promoting circular fashion depends fundamentally on the simultaneous articulation of its three constitutive elements: materials that allow disassembly, social competences to carry it out, and cultural meanings that value it. The transition to circular models in fashion requires, therefore, an integrated approach involving concomitant changes in design, culture, and social and economic supporting structures.

## Conclusion

Through a dialogue with Practice Theories, DfD was analyzed as a sociomaterial phenomenon that articulates material elements, competences, and meanings, influencing everyday practices of production, use, and disposal of clothing in the context of the circular economy. The analysis demonstrated that DfD, as a design strategy, offers conditions for extending the lifespan of fashion products, by facilitating their disassembly, repair, and reintegration into technical cycles. However, its transformative potential depends on the social appropriation of the competences required to disassemble and reuse garments, as well as on the cultural re-signification of production and consumption practices, aspects often neglected in approaches that prioritize an isolated technical view of design<sup>3</sup>.

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