

Empowering Textiles Towards a Circular Future. Meta-Textiles Case Study

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Abstract

This paper explores the condition of the textile value chain as an agent of reticular reconstruction, capable of redesign and regenerate the actual context (Ellen McArthur Foundation, 2017 and McKinsey, 2019). The textile industry tends towards a circular systematization which presents the opportunity to reimagine our systems. To do so, businesses need to consider, address and rethink the governance of cultural, social, economic and environmental impacts of their current models and corresponding supply chains (Amed, et al.,2020). The textile supply chain has completely transformed its practices, modifying the notions, parameters, criteria and linear processes. It has given rise to a new genre who's central axis is circularity to ensure prosperity (Lehmann et al.,2018). Textile industries are in the spotlight due to the heavy environmental impacts along their products' life cycle. As a consequence, the textile sector has become a priority area in the new circular textiles action plan of the European Commission. Circular action should inspire evolution towards new forms of relationship, more equitable, fair and responsible.

Action that broadens the autonomy and decision-making capacity of textile industry players is needed, establishing direct dialogue and agile interactions. Thus, textiles players must address strategic questions in order to give answers to complex processes. This analysis questions how most attempts to raise and spread sustainable awareness occur at the textile making stage and its design processes. Sustainable is often primarily used by the industry and the brands as a greenwashing marketing tool. In the 2017 report by Global Fashion Agenda (GFA) industry workers identified several barriers to sustainability such as short-term thinking, resistance to change, lack of company resources, undefined roles and lack of skills (Kerr and Landry, 2017). In this context, transparency not only provides a link between workers and customers, but it provides workers and their unions the needed information as it allows for interactions to be settle in an efficient manner (Ditty et al., 2018).

The article will present a short introduction to digitalization and virtualization processes on textiles. The overview gives context for the necessity of using digital textile design systems and e-material interface platforms to save the use of resources and improve the impact footprint. Thus, to help improve consistency in the understanding of sustainable textile approach, this chapter examines its relationship within the textile supply chain, defines the strategy that promote their interactions and determines their key enabling principles.

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Further on, the META-TEXTILES project will be introduced with a focus on the topic of traceability with digital textiles. This article addresses collaborative forms of engagement and processual materialities that have been core to the project, META-TEXTILES. The established method interprets and challenges the traditional knowledge about how textiles are constructed and designed. Therefore it will enrich the present and predict a future textile language in order to enable innovative materials and product identities in the textile field. The fabric passport has a crucial function as it technically materializes the design vision and serves as a decision tool for future product developments in the production process. It traces a legacy that asserts a continuity from textiles and material design practice in more traditional conventional formats to future and emerging design that engages and merges both the physical and digital aspects.

Methodology: This study is based on empirical data gathered through fieldwork and our reflections on the analytical framework. The project is practice-based, involving refractive methods in a process that is both generative and regenerative.

The methodology is grounded in an experimental research within textile design, and discuss digitalization and virtualization as means to investigate the role of materials in an industry in search of sustainable development.

Results: Through participatory action research, this project intends to create sustainable real interactions and respond to the patchy industry landscape. In seeking to explore possible ways in which digital textiles could strategically contribute to encourage a sustainable future, we engaged the Italian company Manteco SpA through interconnective processes of making. Several design experiments were implemented in a case study in which the company wanted to assess how textiles become action connectors rather than representational features. The significance of the research is that it demonstrates how collaborations between the tradition and digital can introduce craft thinking into digital workflows. At the same time makes it possible to acquire a broader perspective of design practice when making changes of the existing fashion system. The finding that emerged reveals new workflows that it allows for in articulating the relationship between contexts, mindsets and practices– while bringing into relief the inherent boundaries and conflicts that exist within the fashion system. The study argues for the potential of material as foundational for creating new methods and communicate its value to processes of change.

Keywords: textile design, virtual materiality, textile passport, traceability, digital workflows.

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References

- Agrawal, T. K., Pal. R. (2019). Traceability in Textile and Clothing Supply Chains: Classifying Implementation Factors and Information Sets via Delphi Study. *Sustainability* 11, no. 6: 1698. Available at: <https://doi.org/10.3390/su11061698>
- Amed, I., Berf, A., Balchandani, A., Hedrich, S., Jensen, J. E., Straub, M., Rolkens, F., Young, R., Brown, P., Le Merle, L., Crump, H., Dargan, A. (2022). The state of Fashion 2022. BoF. McKinsey & Company, Consumer Packaged Goods Practice, pp. 16–95.
- Chalmer, C., Eder-Hansen, J., Lehmann, M., Tochtermann, T., Tärneberg, S. (2018). Ceo Agenda 2018, Seven sustainability priorities for fashion industry leaders. *Global Fashion Agenda*.
- Edelkoort, L. (2016). 'New York Textile Month will highlight the revival of Cloth' says Li Edelkoort. *Dezeen*. <https://goo.gl/7aEKBW>.
- Ellen MacArthur Foundation (2020). *Vision of a Circular Economy for Fashion. Sustainable by Design. Explorations in Theory and Practice*. UK: Ellen MacArthur Foundation.
- Ellen MacArthur Foundation. (2017). *Circular fashion—A new textiles economy: Redesigning fashion's future*. UK: Ellen MacArthur Foundation, pp.1–150. Available at: https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report_Updated_1-12-17.pdf.
- Ellen MacArthur Foundation. (2015). *Circularity Indicators: An Approach to Measuring Circularity*. Ellen MacArthur Foundation.
- European Commission. (2023). *Questions and Answers on EU Strategy for Sustainable and Circular Textiles*. March 2022, 30–32.
- Fury, A. (2021). Virtual fashion: the next frontier? *Financial Times*. <https://www.ft.com/content/18d9017c-670a-4311-aea5-4a6a72839409>
- Garcia Rivera, F., Brolin, E., Syberfeldt, A., Hogberg, D., Iriondo Pascual, A., Perez Luque, E. (2020). Using Virtual Reality and Smart Textiles to Assess the Design of Workstations. *Advances in Transdisciplinary Engineering*, 13, 145–154. <https://doi.org/10.3233/ATDE200152>
- Irwin, T., Tonkinwise, C., Kossoff, G. (2015). *Transition Design: an educational framework for advancing the study and design of Sustainable Transitions*, 6th IST Conference, University of Sussex, Brighton.

Kerr, J., Landry, J. (2017). Pulse of the Fashion Industry, 2017. Boston, USA: Global Fashion Agenda. Available at: https://globalfashionagenda.com/wp-content/uploads/2017/05/Pulse-of-the-Fashion-Industry_2017.pdf

Kruse, E., Johan, J., Kryger, A., Iskov, C., Hjort, T., Jeune, H., Cuoco, R., Stevenson, N. (2017). Convening the fashion education system. Centre for Sustainable Fashion.

Kumar, T., Kumar, V., Pal, R., Wang, L., Chen, Y. (2021). Computers & Industrial Engineering Blockchain-based framework for supply chain traceability : A case example of textile and clothing industry. p.154.

Kumar, V., Hallqvist, C., Ekwall, D. (2017). Developing a Framework for Traceability Implementation in the Textile Supply Chain. Available at: <https://doi.org/10.3390/systems5020033>

Lehmann, M., Tärnberg, S., Tochtermann, T., Chalmer, C., Eder-Hansen, J., Seara, D. J. F., Boger, S., Hase, C., Berlepsch, V. von, Deichmann, S. (2018). Pulse of the Fashion Industry 2018. Boston Consulting Group Global Fashion Agenda. Available at: <https://www.globalfashionagenda.com/pulse-of-the-fashion-industry-2018-report-released/>

Marin, A. W., Zumstein Mueggler, I. R., Adler, F., Haeberle, J., Poldner, K. (2015). The Design Alphabet for Textiles as applied Method at the Frontiers of Textile Design Research. 1–14.

Mcquillan, H. (2020). Systems Thinking : multimorphic textile-forms zero waste systems thinking : multimorphic (Issue 37).

Mistra. (2019). The Outlook Report. Mistra Future Fashion Final Program Report. Available at: http://mistrafuturefashion.com/wp-content/uploads/2019/10/the-Outlook-Report_Mistra-Future-Fashion-Final-Program-Report_31-okt-2019.pdf

Parliament, E., & Agenda, I. (2021). A . Context , problem definition and subsidiarity check B . Objectives and mapping of policy options. 59(2019), 1–5.

Steensen Nielsen, K., & Gwozdz, W. (2018). Report on geographic differences in acceptance of alternative business models: Report on geographic differences in acceptance of alternative business models. Available at: <http://mistrafuturefashion.com/wp-content/uploads/2018/05/Mistra-Future-Fashion-Report-3.1.2.1.pdf>

Tanttu, M., Kohtala, K., Niinimäki, K. (2016). Can Design-Driven Material Innovation also drive circularity? Circular Transition: A Mistra Future Fashion Conference on Textile Design and the Circular Economy 23–24 November 2016. Chelsea College of Arts & Tate Britain, London, UK.

Wacker, M., Keckeisen, M., Kimmerle, S., Straßer, W., Luckas, V., Groß, C., Fuhrmann, A., Sattler, M., Sarlette, R., Klein, R. (2005). Simulation and Visualisation of Virtual Textiles for Virtual Try-On. Research Journal of Textile and Apparel, 9(1), 37–47. <https://doi.org/10.1108/RJTA-09-01-2005-B005>

Watson, D., Gylling, A. C., Thörn, P. (2017). Business Models Extending Active Lifetime of Garments: Supporting Policy instruments. *Mistra Future Fashion*, p. 42. Available at: <http://mistrafuturefashion.com/wp-content/uploads/2018/04/Mistra-report-3.2.4-Policies-for-Supporting-New-Business-Models.pdf>