

Digital Transformation in Fashion System Design: Tools and Opportunities

Authors : Margherita Tufarelli, Leonardo Giliberti, Elena Pucci

Abstract : The fashion industry's interest in virtuality is linked, on the one hand, to the emotional and immersive possibilities of digital resources and the resulting languages and, on the other, to the greater efficiency that can be achieved throughout the value chain. The interaction between digital innovation and deep-rooted manufacturing traditions today translates into a paradigm shift for the entire fashion industry where, for example, the traditional values of industrial secrecy and know-how give way to experimentation in an open as well as participatory way, and the complete emancipation of virtual reality from actual 'reality'. The contribution aims to investigate the theme of digitisation in the Italian fashion industry, analysing its opportunities and the criticalities that have hindered its diffusion. There are two reasons why the most common approach in the fashion sector is still analogue: (i) the fashion product lives in close contact with the human body, so the sensory perception of materials plays a central role in both the use and the design of the product, but current technology is not able to restore the sense of touch; (ii) volumes are obtained by stitching flat surfaces that once assembled, given the flexibility of the material, can assume almost infinite configurations. Managing the fit and styling of virtual garments involves a wide range of factors, including mechanical simulation, collision detection, and user interface techniques for garment creation. After briefly reviewing some of the salient historical milestones in the resolution of problems related to the digital simulation of deformable materials and the user interface for the procedures for the realisation of the clothing system, the paper will describe the operation and possibilities offered today by the latest generation of specialised software. Parametric avatars and digital sartorial approach; drawing tools optimised for pattern making; materials both from the point of view of simulated physical behaviour and of aesthetic performance, tools for checking wearability, renderings, but also tools and procedures useful to companies both for dialogue with prototyping software and machinery and for managing the archive and the variants to be made. The article demonstrates how developments in technology and digital procedures now make it possible to intervene in different stages of design in the fashion industry. An integrated and additive process in which the constructed 3D models are usable both in the prototyping and communication of physical products and in the possible exclusively digital uses of 3D models in the new generation of virtual spaces. Mastering such tools requires the acquisition of specific digital skills and, at the same time, traditional skills for the design of the clothing system, but the benefits are manifold and applicable to different business dimensions. We are only at the beginning of the global digital transformation: the emergence of new professional figures and design dynamics leaves room for imagination, but in addition to applying digital tools to traditional procedures, traditional fashion know-how needs to be transferred into emerging digital practices to ensure the continuity of the technical-cultural heritage beyond the transformation.

Keywords : digital fashion, digital technology and couture, digital fashion communication, 3D garment simulation

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