

Through Additive Manufacturing. A New Perspective for the Mass Production of Made in Italy Products

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Abstract : The recent evolutions in the innovation processes and in the intrinsic tendencies of the product development process, lead to new considerations on the design flow. The instability and complexity that contemporary life describes, defines new problems in the production of products, stimulating at the same time the adoption of new solutions across the entire design process. The advent of Additive Manufacturing, but also of IOT and AI technologies, continuously puts us in front of new paradigms regarding design as a social activity. The totality of these technologies from the point of view of application describes a whole series of problems and considerations immanent to design thinking. Addressing these problems may require some initial intuition and the use of some provisional set of rules or plausible strategies, i.e., heuristic reasoning. At the same time, however, the evolution of digital technology and the computational speed of new design tools describe a new and contrary design framework in which to operate. It is therefore interesting to understand the opportunities and boundaries of the new man-algorithm relationship. The contribution investigates the man-algorithm relationship starting from the state of the art of the Made in Italy model, the most known fields of application are described and then focus on specific cases in which the mutual relationship between man and AI becomes a new driving force of innovation for entire production chains. On the other hand, the use of algorithms could engulf many design phases, such as the definition of shape, dimensions, proportions, materials, static verifications, and simulations. Operating in this context, therefore, becomes a strategic action, capable of defining fundamental choices for the design of product systems in the near future. If there is a human-algorithm combination within a new integrated system, quantitative values can be controlled in relation to qualitative and material values. The trajectory that is described therefore becomes a new design horizon in which to operate, where it is interesting to highlight the good practices that already exist. In this context, the designer developing new forms can experiment with ways still unexpressed in the project and can define a new synthesis and simplification of algorithms, so that each artifact has a signature in order to define in all its parts, emotional and structural. This signature of the designer, a combination of values and design culture, will be internal to the algorithms and able to relate to digital technologies, creating a generative dialogue for design purposes. The result that is envisaged indicates a new vision of digital technologies, no longer understood only as of the custodians of vast quantities of information, but also as a valid integrated tool in close relationship with the design culture.

Keywords : decision making, design euristics, product design, product design process, design paradigms

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