

The Socio-Technical Relationship between Architects and Nano-Enhanced Materials: An Ethnographic Study in Cairo, Egypt

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Abstract : Advancements in the field of nanoscience and nanotechnology have had a sweeping effect on the manufacturing industry in the last two decades, and have specifically allowed for the enhancement of a multitude of applications in the field of building technology. Research carried out in the architectural field in the past decade highlights how those enhancements have improved the structural and environmental performance of buildings, and/or how they developed the aesthetic value of façade or interior treatments. In developing countries, such as Egypt, the actual use of those nano-enhanced applications and their benefits rarely manifest. Hence this paper investigates the socio-technical relationship between the architectural design process and nanotechnology in Cairo using participant observation within an ethnographic study. The study focused on the socio-cultural context of an environmental design process in a specific design firm, and the role of nano-enhanced applications in it, and provided a thick description of the design decisions made within the preliminary stages of the design process of a residential building in Cairo, Egypt. Using Grounded Theory, and through the analysis and coding of the qualitative data collected, this paper was able to identify specific socio-cultural issues influencing individual architect cognition, clarifying how the context of the design process of the studied project affected the design team members' responses to nano-enhanced materials. This paper presents those findings within a framework of the three identified statuses of response to nanotechnology and classifies the socio-cultural reasons influencing them. In doing so, the paper aims to shed more light on the relation between nanotechnology and architects in their natural environment, and hence allow both to benefit more from a clearer understanding of how the socio-cultural context, along with the benefits of using nanotechnology, influences the design decisions made.

Keywords : nanotechnology, design process, socio-cultural context, nano-enhanced applications

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