

## Chapter 5

# Interactive Architecture as Digital Texturation: Transformed Public Spaces & New Material Integration

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### ABSTRACT

*The notion of a digital transformation of public spaces concerns the way in which the content of the public, ranging from individual information to physical buildings, is changed as an effect of an ongoing digitalization of our surrounding. The notion of this transformation process also indicates that the public space, and digital computational power is two highly intertwined elements situated in a process in which the physical and the digital become fully integrated into one coherent element, typically labeled computational composite as it unfolds across our modern landscape. But how could this texturation process and its resulting intertwined physical/digital element be described? In this chapter, the authors take a point of departure in current research on ubiquitous computing for the purpose of understanding how digital technology drives this development while at the same time opening up for a wider interpretation of the underlying processes driving this process influenced by current research on interactive architecture. They then describe their development of a texturation theory capable of addressing the ways in which architectural elements and digital technologies becomes integrated in the process of designing meaningful environments. As a proof of concept they then present a case study that serves as an illustration of interactive architecture as a texturation of a public place. The chapter ends with a general discussion about the texturing of information technology in relation to physical space, as it normally constitutes the public and elegance as a guiding notion for design of meaningful environments. Finally, the authors discuss the implications of their research for industrial design research in general, and the implications for the area of industrial informatics in particular.*

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## INTRODUCTION

The notion of a *digital transformation of public spaces* concerns the ways in which the *content* of the public, ranging from individual information to physical buildings, is changed as an effect of an ongoing digitalization of our surrounding. Private information can nowadays be easily spread in and across public places via mobile devices, and more and more, the buildings around us are equipped with wireless networks that make them accessible, and equipped with wall mounted displays that also adds a media dimension to the public space.

Further on, the notion of this digital transformation also indicates that the public space and digital computational power are becoming two highly intertwined elements, situated in a process in which the physical and the digital become fully integrated into one coherent material as it unfolds across our modern landscape. Through the development of new dynamic and interactive materials, and through more integrated implementations of the digital in the physical public space we're moving towards a state of development in which there will not make much sense to distinguish the digital from the physical, and a stage in which the digital scaffolds the physical, and in which the physical defines the digital.

In our field of research we have for some years now used terms like ubiquitous computing (e.g. Weiser, 1991), ambient intelligence (e.g. Cai, Y., & Abascal, J., 2006), pervasive computing (e.g. McCullough, M., 2004), and the notion of the disappearing computer (e.g. Streitz, et. al., 2007) to label and understand this development. These theoretical concepts stresses, in one way or another, the current trend towards a complete integration of digital computational power, and our physical surrounding. This includes the development towards socio-digital interaction environments in which people, in their physical surrounding, have instant access to digital services and interaction technologies that can enable them to interact with other people, or interact directly with the digital layer of

their physical environment. In this development computational power and novel representation techniques becomes a new design material even in the re-shaping of the whole urban landscape.

A problematic aspect of these concepts is that they are all focused on the digital or computational aspects of this transformation, thus implying a risk of missing to address how the environment as a whole might *appear, function* and *scaffold* human social life. As pointed out by Sengers, et al (2004) we might not really understand how to contribute to this digital transformation in a proper way as we, through our design-oriented approaches, set out to embed computational power in our physical world, and Sengers et. al. (2004) pinpoint this lack of understanding by comparing with the field of architecture on how that profession contributes to the design of our built environment:

*"Imagine a world without architects, where only engineers construct buildings. With a keen eye towards functionality, these engineers would make sure buildings were sound, but something would be lacking. People would miss the richness of architecture—the designed connection to their lives, history, and culture. The designed experience of these buildings would be irrelevant to their social and personal concept of buildings. Yet this is the world researchers are inadvertently creating with ubiquitous computing." (Sengers, et al, 2004, p. 14)*

As indicated by Sengers et. al. (2004) we might, in the realm of ubiquitous computing be to focused on solely the *functional capabilities* of ubiquitous computational power, thus missing to address ubiquitous computing from the perspective of it as being fully integrated in our environment as a physical/digital element.

*So, how could this integration process of blending computational power into our public places and its resulting intertwined physical/digital materials and elements be described?*

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