Chapter 16
A Methodology for Interactive Architecture

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ABSTRACT

In this chapter, the view that Interactive Architecture (IA) practice ought to produce (digital) interactive interventions designed to affect people’s actions and behaviours is firstly introduced. After presenting the challenges arising when integrating these two different conceptions of the word: Atoms and bits, reviewing the interpretations of IA and the lessons learnt from design methods theory in architecture, a novel way of approaching the intersection between architectural design, methodology, and emerging interactive technologies is proposed. This chapter attempts to make strong connections between design philosophy and project work, in aid of reinforcing the intellectual side of IA projects. Very often these types of projects are the result of technological pursuits rather than intellectual ones. Furthermore, this study demonstrates some strategies for ensuring the collaboration of design with related scientific and intellectual domains: architecture, computer science, and behavioural and social studies.

INTRODUCTION

“One of the great computational and design challenges of the twenty-first century is to unite the digital with the physical that is to integrate new forms of telecommunications and computing into everyday life” (Greenfield and Shepard 2007).

In the context of this publication, Interactive Architecture explores emerging practices within architecture that aim to merge digital technologies & virtual spaces with tangible and physical spatial experiences. Interactive Architecture research investigates the creation of unique ways of navigating and occupying space by adopting the time based nature of digital technologies. That is, physical spaces in which some aspect of the space changes based on the actions of one individual or a group of people - such as graphical displays, visual projections, sound and lighting.

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CONTEXT

Advances in physics have led to a new understanding of physical phenomena. Advances in biology and neurology have led to new discoveries regarding the human sensory system. Advances in mechanical and electrical engineering have led to development of physical computing systems. Advances in Human Computer Interaction have led to new understanding of embedding physical computing systems. All in all, these advances have contributed an explosion in technology and engineering development in general and digital technology and infrastructure in particular.

Interactive Architecture as noted by Sparacino (Sparacino 2002) is a field truly driven and informed by technology which in turn shapes the architectural thinking and project development. Furthermore, computing technology is the main driver behind Interactive Space Design research and the evolution of the man-machine interface has been a prime force behind the development of new computing paradigms. Grudin (Grudin 1990) was the first to realise that computing evolution could be seen as the story of “computer reaching out”, in which the man-machine emphasis moves from being directly focused on the physical machine to incorporate more and more of the user’s world and the social setting in which the user is embedded. Grudin’s principles can still be seen in current trends in Human Computer Interaction design.

In 1991 Mark Weiser published what is considered to be the seminal paper in Ubiquitous Computing: “The computer for the 21st Century” (Weiser 1991). Weiser argued that “the most profound technologies are those who disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it”. He then set out his vision of a world in which “silicon based information technologies”, not the absence of the word computer, have disappeared (this is also known as Weiser’s invisibility principle). Furthermore, Weiser perceived that such machines i.e. laptops were nothing more than a transformational step toward achieving the real potential of information technology”. By postulating his vision, Weiser conceived a new way of thinking about computers in the world, “one that takes into account the human environment”. In short, Weiser moved computing from two-dimensional to three-dimensional interactions. He placed information technologies in a three dimensional space in which computers will “disappear” and “weave themselves into the fabric of everyday life until they are indistinguishable from it” (Weiser 1991). Today advancements in computer power, the availability of easy to customise software tools which can be coupled with accessible digital interactive hardware (e.g Arduino) are making possible the realisation of Weiser’s vision.

IA exploits the relationship between technology and the new possibilities of design that allow for more interactivity in everyday life contexts (e.g. shopping, children’s hospitals). The key differential characteristic of IA (a time based design discipline) is information feedback or information reflection. Because “interactive architecture” is changing over time (with interaction) it has a much more directed ability to adapt to temporal conditions. The information feedback and the analogy of “Human Computer Interaction loop” is an exclusive digital issue which underpins and enables the relation between design and human behaviour. This text provides some strategies to ensure design is integrated into, otherwise, purely technologically driven endeavours.

INTERACTIVE INTERVENTIONS

Early perception amongst Architectural Scholars (Kronenburg 2007) was that Interactive Architecture is about automation or intelligent automation in buildings in which “an action that is carried out towards a predetermined result though the process may be changed along the way”. This is seen as a built-in reactive quality. From this perspective, the ambition of an intelligent building is to integrate
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