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Communicating Design using 3D Collaborative Virtual Environments and Online Chat

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by
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For millennia designers have been using sketches to communicate arrangements of objects in space. Since the Italian Renaissance, in the West, this was formalised as the perspective. Most recently, architects' hand-drafted sketches are increasingly being replaced by 3D computer modelling. The 3D computer-generated perspective extends the humble sketch by adding a photographic realism. Both rely upon the notion that a perspective is perceived intuitively by the lay-person and practitioner alike. While most of the literature reviewed in this thesis extols the virtues of perspective as a medium for communicating spatiality, little mention is made of identifying the role perspective plays in informing *how* perspective communicates spatiality. Its underpinning scientific ontological certainties are generally taken as given. However, whether perspective is how designers actually *see* their design visions is unclear. Moreover, whether designers' familiarity with perspective vision affects how they *choose* to communicate spatiality is equally unclear. As such, this thesis addresses the role of perspective in communicating design. It uses the latest iteration of perspective technology, the real-time 3D virtual environment (3DVE) as a vehicle. A series of pedagogical case studies in the use of 3DVEs is explored. The case studies are founded on exercises with design students as participants. The participants concretise their thoughts in text using online chat whilst exploring various 3DVEs remotely located from each other. The net result of this investigation is that perspective is only one of many methods the participants in this study used for communicating spatiality.

The thesis is structured about six chapters. Chapter 01 introduces the research goals, research question, methodology and thesis structure. Chapter 02 provides a literature review which mounts the case for the ubiquity of an intuitive perspective in design practice and theory since the fifteenth-century Italian Renaissance to contemporary 3D computer modelling. Chapter 03 outlines and justifies the use of a constructivist methodology for teasing out the issues raised in this inquiry. Chapter 04 provides an explorative and detailed analysis of three case studies that all revolve around the role of perspective in communicating spatiality between remotely located design-student participants using online chat to exchange information. Chapter 05 discusses the results of the case studies, providing some preliminary insights. Chapter 06 concludes the thesis. It principally draws upon the literature review and the discussion chapter to provide a conclusive view on the efficacies of perspective in communicating spatiality by the participants of this study.