

Walking participants through a virtual model: how we got there and its implications

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Keywords Cognition • Perception • Desktop virtual environments • Active navigation vs. passive observation

This paper presents the rationale for, and methodology from, an experimental study investigating the differences in spatial perception and cognition afforded by either actively navigating or passively observing a desktop computer model of a small cityscape. The motivation for the research is to establish the better method for architects and urban designers seeking to convey design ideas to their audience.

Findings from the research literature on whether active navigation of desktop virtual environments offers advantages over passive observation are equivocal in many areas. For example, there are contradictory findings in relation to wayfinding, spatial orientation and scene recognition. However, there is greater agreement on the issue of memory for spatial layout, with researchers confirming that this is enhanced with active navigation compared to passive observation.

Within architecture, there is evidence to suggest that the presentation of moving images (in, for example, a walkthrough) does lead to better understanding of design proposals, but at present the viewer is precisely that, a viewer of a predetermined display. In the research project outlined below we have incorporated 3D CAD (Computer Aided Design) models into a game engine in order to give subjects the ability to actively navigate themselves through an architectural model that would previously only have been accessible to them in the form

of a predetermined walkthrough.

The paper will report on a between subjects experiment to investigate what differences, if any, are to be found between active and passive navigation of our desktop virtual environment. Two versions of a small cityscape are presented that differ in three target areas in terms of paving type, presence or absence of buildings and walls, positioning of people, plants, trees and benches. One group of subjects is invited to navigate a route around the cityscape, using mouse and keyboard, directed by the researcher. The other group is shown prerecorded walkthroughs visiting the three target areas in the same order. As the subjects navigate/watch, they are invited to comment on what they see, what they like and what they dislike. After navigating/viewing one version of the model, the subjects complete a number of perceptual rating scales, and answer questions about their impressions and memories of the model. The task is then repeated for the other version of the model. At the end of the study subjects are asked which version of the model they preferred. Voice commentary is recorded, as is navigation behaviour.

Analysis of the results will help inform whether there is merit in taking the next step from passive presentation to active navigation in built environment and architectural research/practice, as well as contributing to the body of evidence regarding active and passive navigation of desktop virtual environments. of a predetermined walkthrough

