ORAL PAPER

Spatial strategies in real and virtual environments

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Abstract People explore and navigate in physical and virtual environments. Do we acquire and utilize spatial information differently in front of a monitor screen than actually moving in real spaces? In this paper, we present an experiment where strategy pattern formation during free spatial exploration was compared between two environments: a real room and an equivalent desktop virtual simulation. Both environments contained five identical landmarks situated at the same relative locations in the rooms. Each of these five landmarks contained a different object. Our data showed that in the physical environment participants were moving through space in patterns that reflected distinguishable and meaningful strategy. In contrast, the exploratory behaviour in the virtual environment was not organized along qualitatively different strategy patterns. One plausible interpretation is that people in physical environment are more confident and experienced in 'cognitive investments' into various spatial strategies, whereas they are not in virtual environments. The lack of strategic patterns in the exploration of the virtual environment resulted in relatively inefficient subsequent navigation performance. However, the initial investment in exploration of the physical environment resulted in efficient navigation in the equivalent navigation tasks. Based on these findings, we argue that spatial cognition and behaviour maybe fundamentally different in the real world and in equivalent desktop virtual realities.

Keywords Spatial strategy · Exploratory pattern · Spatial cognition · Desktop virtual reality

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