

Designing Computer Based Archaeological 3D-Reconstructions: How Camera Zoom Influences Attention

M. Glaser¹, D. Lengyel², C. Toulouse² and S. Schwan¹

¹Leibniz-Institut für Wissensmedien, Tübingen, Germany

²Brandenburgische Technische Universität Cottbus, Germany

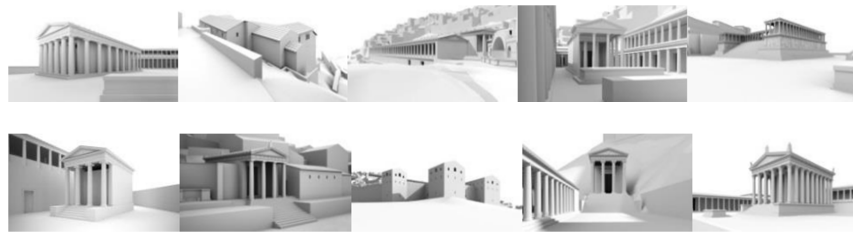


Figure 1: The ten buildings used as research material.

Abstract

Previous empirical literature [Sal94; WB00] indicates that there is an attention guiding effect of zooms. In order to substantiate this conclusion, an eye-tracking study was conducted to examine the influence of camera zoom on attention processes of the recipients.

1. Introduction

Participants ($n = 39$; mean age $M = 24.44$, $SD = 1.77$) were randomly assigned to three groups of 13 participants each. The first group watched ten film clips of static images of different buildings, the second group watched ten film clips of the same building, but with minimal zoom-in (10%), and the third group watched ten film clips of the buildings with minimal zoom-out (10%). All film clips had a duration of five seconds and were presented in randomized order. Buildings were taken from the computer based reconstruction of the ancient city Pergamon [LT11a, LT11b] (see figure 1). While the participants watched the film clips, their eye movements were measured with a remote eye tracking system. Fixation times (sum of durations of all fixations) in the center (central rectangle of 25% of the whole display) and in the context (remaining 75% of the display) relativized on the respective area, as well as the amount of gaze transitions between the center and the context were calculated.

Results show that fixation times on the center were significantly longer with zoom-in than with zoom-out or static clips. Fixation times on the context were significantly shorter with zoom-in than with static clips and by trend shorter than with zoom-out. Further, participants made significantly less gaze transitions between center and context with zoom-in than with zoom-out or static film clips.

Our results have implications for designing computer based archaeological reconstructions. Zoom-ins should be used in order to guide recipients' attentions toward the center of the presentation. Thereby, one must keep in mind that this is to the disadvantage of integrating center and context information. Zoom-outs on the other hand do not have the opposite effect of widening recipients' attention.

2. References

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