VISSOFT 2014 Keynote 2

Visualization and Human Vision: A Tale of Two Systems

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Abstract

This presentation will present some of the breakthroughs that have recently occurred in our understanding of human vision, and discuss how they might inform the design of more effective ways to visualize information. For example, although it appears to us as observers that we always see everything in front of us, recent work in visual perception has shown that this is not true: observers can have great difficulty noticing changes that occur during a brief interruption or eye movement, even if these changes are large and the observer expects them. This "change blindness" has formed the basis for considerable research over the past decade into issues such as how much of a scene is remembered, what kinds of memory systems are involved, and what role is played by visual attention. Several of the highlights of this line of research will be discussed, including the proposal that scene perception is based on a dynamic "just-in-time" process, relying on a careful interplay between internal knowledge and external information. It will then be argued that the operation of this system is similar in important ways to how humans access information via interactive visualization systems, and that this similarity can be the basis of insight into the limitations of visualization, as well as possible ways of overcoming these limitations.

Biography

Ronald A. Rensink is an Associate Professor in the departments of Computer Science and Psychology at the University of British Columbia (UBC). His research interests include human vision (particularly visual attention), consciousness, visual design, and information visualization. He obtained a PhD in Computer Science from UBC in 1992, followed by a postdoc in Psychology at Harvard University. For several years he was a research scientist at Cambridge Basic Research, a lab sponsored by Nissan Motor Co., Ltd. He returned to UBC in 2000, and is part of the UBC Cognitive Systems Program, an interdisciplinary program that combines Computer Science, Linguistics, Philosophy, and Psychology. Since 2010, he has also been UBC Director of the Vancouver Institute for Visual Analytics (VIVA).