Roads, Interiors, Graphics, and Research Technology

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INTRODUCTION

This issue of the *Interdisciplinary Journal of Signage and Wayfinding (IJSW)* provides a broad overview of the true interdisciplinary nature and breadth of the multiple and inter-related fields of inquiry involved in signage research. The articles in this issue also showcase the diverse research methods currently being used to explore some of the important questions related to efficiency, effectiveness, and aesthetics whose answers can serve to inform improved practice and policymaking related to signage and wayfinding specifically, and to visual communication more generally. What emerges from this seemingly eclectic collection of research is a surprising degree of overlap, pointing to the importance of a journal such as *IJSW* for informing specific areas of research related to signage and wayfinding, but also assisting researchers to access those findings emerging in allied fields.

In the first article, Hildebrandt and Auffrey's Road Signage and Contextual Communication on America's Legacy Highways reports on their long-term exploration of the visual communication along America's historic US highway system. Much of this five-year effort concerns on-premise signs. However, because of their intense focus on contextual influences, the research intentionally includes all the aspects of the built and natural environment that provides the visual setting in which signs compete for visual attention and seek to influence viewer behavior. Outdoor advertising and public informational and directional signage are also necessarily part of the archive of over 15,000 images. The authors are now extending their work to signage and wayfinding in the interiors of complex building environments as well. Their findings emphasize the critical importance of context; signs identically designed and placed may differ in how effectively they communicate their

messages and ultimately influence viewer behavior, the result of differing environmental contexts. As such, the implications of their findings are significant for signage design, sign industry practice, and sign regulation.

Garvey and Klena's article, Parallel-Mounted On-premise Letter Height and Sign Size, provides a technical link to Hildebrandt and Auffrey's work, or perhaps Hildebrandt and Auffrey provide a broader contextual lens for the Garvey and Klena article. While Garvey and Klena do not directly address the impact of environmental context on visual communication, such context necessarily has important implications for related research in the future. The current article details a follow-up study to Garvey's 2006 research on driver detectability of parallel versus perpendicularly mounted commercial road signs that is widely used by the on-premise sign industry. In this current work, the authors offer revised minimum standards for parallel sign square footage and letter heights based on the smaller observation angles they measured, which differed significantly from those previously assumed; their recommended minimum letter heights are roughly doubled and sign sizes quadrupled. These results imply the need for fundamental re-thinking about the design, industry practice, and regulation of parallel signs to the extent that these are a primary means for visual communication. As the authors suggest, research is needed to further validate these results to accommodate a range of real-world environmental contexts.

The article by Peña, Ragan, and Harrison, Memorability of Enhanced Informational Graphics: the effects of design relevance and chart type on recall, adds important empirical evidence to our understanding of the impact of design enhancements in attracting visual attention to communicate a message to viewers, especially with respect to the use of charts. This research found enhancements considered to be "relevant to chart contents" assisted viewer recall of some elements, such as title and other thematic elements, but did not improve viewer memory of specific data values. Based on these results, the authors conclude that relevant enhancements can indeed improve recall of some chart content to the extent that enhancements are related. Further, and importantly, recall of information

for charts with unrelated embellishments was worse than unembellished charts, suggesting poorly chosen enhancements may distract or interfere with recall and therefore should be avoided. These findings have important implications for the design and placement of signs (a la the contextual issues foregrounded by Hildebrandt and Auffrey) and raises questions for visual communication at several levels, suggesting the need for additional investigation. For example, how do these findings extend to the communication of less complex and technical information, such as those found in a typical on-premise sign?

Rahman and Mehta's article, Signage Form and Character: a window to neighborhood visual identity, compares the design and style (form and character) of signs in urban neighborhoods, noting how the signs of a neighborhood contribute to their visual identity or sense of place, "often representing the interplay of the collective social, political, cultural, and economic values of the people who live and work there." Their extensive visual survey of on-premise signs allows an exploration of signage typefaces, shapes, materials, and illumination as signifiers of place and documents how the collective signage in a neighborhood business district serves to create a defining identity or identities. Of particular interest for sign designers and regulators is their finding that signage for the non-place-based businesses associated with gentrified neighborhoods tend to be undifferentiated, generic, and visually monotonous. This raises a number of research questions for those interested in the process and consequences of neighborhood change.

Li and Huang's article, Visual Access Formed by Architecture and its Influence on Visitor's Spatial Exploration in a Museum, investigates how the physical structure of a museum influences the visitor's exploration of space. As such, there is a focus in this article, as in others, on the critical importance of visual context in visual communication for wayfinding. In this case, the museum interior architecture and design shapes a museum visitor's visual access (visual attention) and effectively determines which exhibits many (perhaps most) visitors (especially first time visitors) will experience. As such, the results hold that direct visual access is more important than

physical distance in a visitor's choices about which areas of the museum to visit. While this finding affirms earlier wayfinding research, it also raises interesting research questions with respect to the specific challenges of visual communication and wayfinding in complex interior environments, linking it to the work of Tang, presented later in this issue.

Tang's article, Analysis of Signage using Eye-Tracking Technology, provides insight into the use and potential of emerging research tools for signage and wayfinding research. Historically, the design and placement of signs combined elements of art and craft and was based on a combination of acquired aesthetic sense and talent, and had a penchant for past practice based on learned experience and desirable outcomes. More recently, researchers have sought technology-based tools with more limited or at least defined biases. This search for objective measures of sign effectiveness has pushed researchers to explore vision science and human response to what can be displayed on a sign. For some, the use of 3M's Visual Attention Software was a breakthrough in this search for objectivity, as it provided validated predictions of pre-conscious viewing of static images. Recently, screen-based and wearable eye-tracking (ET) technologies have emerged as important tools for capturing objective data of visual attention. This article presents the results of an exploratory research design that assessed the use of multi-user ET technology and explored how sign placement and context affect the capture of visual attention. The research uses ET hardware and software in dynamic (video) real-world contexts to assess how visual attention is impacted by location and proximity to scientifically established features that draw human attention. The results show that these emerging ET technologies have substantial promise to measure the visual performance of signs in ways that earlier technology could not. These finding are important for signage and wayfinding research broadly, and ultimately can serve to inform advances in signage design and practice. The analysis of the highway and neighborhood signs, both perpendicular and parallel, could certainly benefit. Similar benefits could be achieved for assessing signage and wayfinding in complex interior environments.

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