PERCEPTION

Book Review

van der Stigchel, S. *How Attention Works*. Cambridge, MA: The MIT Press, 2019; 152 pp.: ISBN 9780262039260, $24.95

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A policeman overlooks his colleagues assaulting an innocent passerby and is wrongly accused of obscuring their misjudgments, a car driver fails to notice a scooter and causes an accident, and—as if these incidents on their own did not make for a highly unfortunate Saturday—you lose sight of your tent at a festival and find yourself trudging through muddy puddles in search for green tarp. Although seemingly unconnected, all of these events illustrate a fundamental property of the human visual system: We consciously perceive only small chunks of the visual world that surrounds us in all its detail. In his book *How Attention Works*, Stefan van der Stigchel sets out to explain how visual attention shapes our experience of the environment and argues that a selective attentional focus can have detrimental consequences when misguided but ultimately enables us to function effectively in a world of distraction.

Across seven chapters, van der Stigchel provides a broad overview of visual attention and its interplay with perception, action, and memory. Ingeniously, he coins the term "attention architects." It describes all those strategically guiding our focus of attention—website designers, teachers, traffic engineers, advertising agents, magicians, and perhaps you— who attempt to influence what aspects of the world we perceive or fail to register. In a casual tone, van der Stigchel reviews the science behind what, in these trades, is often based on intuition, experience, or training. He describes pre-attentive limitations on perception and illustrates the existence of an attentional filter mechanism that shapes how we search visual scenes. The author then outlines the interplay between visual attention and eye movements and explains how implicit long-term memory resulting from prior exposure to a situation can guide the spotlight of attention. In his final chapter, he describes various slips of attention—both pathological and nonpathological—and concludes that "it is when things go wrong that we realize that our ability to see the entire picture is just an illusion" (p. 115).

Van der Stigchel does not shy away from classical vision science terms. Among others, his book includes explanations of salience, luminance adaptation, crowding, change blindness, pop-out and serial search, inhibition of return, and cueing. While these concepts are well known to the vision science community, *How Attention Works* will certainly appeal to a wider audience including undergraduate students and complete novices. In fact, an

inexhaustible stream of easily understandable illustrations and demonstrations can be considered the most distinguishing feature of the book. Each chapter starts with an applied example that provides an intuitive entry point to what lies ahead. Illustrations continue to be interspersed throughout each chapter and often dictate the explanatory flow.

At times, however, the flood of loosely connected illustrations can appear overwhelming and makes it difficult to keep the higher level argument in mind that these examples were supposed to support. Just like a fire truck can go unnoticed among other red cars (as the author himself points out), some of his more striking examples are at danger of being drowned out in the stream of illustrations. On a larger scale, one could argue that his way of storytelling is representative of a general challenge attention scientists may have to overcome: While we have a plethora of striking demonstrations readily at our command, we appear to lack a consistent framework. The anecdotalism van der Stigchel is employing conveys the impression that attention science is still very much in its stamp collecting phase. On the other hand, giving as many examples as he does can be expected to spark and maintain curiosity in non-expert readers. Moreover, the book constitutes a compilation of demonstrations that will be immensely useful for teachers to draw from. The appended "Notes" section provides a list of go-to articles that both reference the research behind the book and supply a resource to nurture the interest sparked in professional readers.

More than anything, however, *How Attention Works* reminds us that vision science is a fascinating field, not only to the members of its community. All too often, we get caught up in peculiar questions that may seem relevant to merely a handful of people. It is refreshing to see one of us lift his head from the perceptual petri dish to reconsider the full breadth and interconnectedness of the field and communicate it to people outside our immediate circle. In a way, van der Stigchel himself acts as an attention architect, directing the spotlight to the vision sciences by collecting some of their most entertaining examples and demonstrations. Drawing connections between those examples and integrating them into a consistent framework is a task mostly left to the reader. While anyone in search of a coherent take on *how attention works* may be disappointed, those interested in experiencing *what attention does* are most certainly in for a treat.

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