THE CONTINUING PERSISTENCE OF THE ICON

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Haber's central arguement is that an icon is useless for normal perception, and is therefore inappropriate as an object of scientific investigation. I offer three objections to this arguement. First, Haber focuses his complaints on the icon's persistence, but ignores the role of the icon as a high-capacity, information-storage buffer. Second Haber rests much of his case on an "ecological validity" arguement which, I claim, is inherently weak. Third, contrary to Haber's assertion that persistence is irrelevent in normal perception, there is a variety of everyday situations, considerably more common than lightning storms, in which persistence plays a critical role.

Two Characteristics of the Icon

The icon, both as a theoretical construct, and as a presumed physical entity, has two major characteristics. First, it is viewed as persisting after the offset of the stimulus, and second, it is viewed as having a very large informational capacity. While acknowleging both of these characteristics, all of Haber's complaints center around the former.

In order to carry out their day-to-day activities, humans need to acquire some, and discard the rest, of the total environmental information impinging on the sense organs. A logical way to meet this need would be to provide a large-capacity, raw-information, storage buffer, in conjunction with a selective filter capable of extracting the relevant information from the buffer. Indeed, it is hard to imagine how things could be otherwise and Haber certainly describes no alternative candidates. In any event, the icon, along with a selective-attention mechanism precisely fits this specification.

But why is there persistence as well? The inherent need (if any) for persistence is certainly more obscure than the inherent need for a large-capacity storage buffer. Haber's raising of this question is clearly the most useful facet of his paper. Perhaps persistence is indeed a mere evolutionary byproduct. But not being able to find a use for persistence hardly seems an adequate reason for abandoning the whole concept of the icon.

The Curse of Ecological Validity

Haber spends a good deal of his paper (a) arguing that we do not normally see a world that is chopped up by a tachistoscope and (b) enumerating the various means - body movements, head movements and eye movements - by which we do see the world. He makes these points quite thoroughly. Haber then goes on to claim that, since persistence only exists in the context of an artificial laboratory situation, it's irrelevant for everyday perception, and hence there's no need to study it.

This is certainly one point of view - but it's a point of view that runs counter to scientific wisdom and practice that has developed over the past few millennia. On this point of view, for example, one would ignore the recent discovery of the monopole, since this elusive particle doesn't seem to play much of a role in everyday physical activity. Similarly, if one were studying gravity, one would shy away from experiments involving objects falling in near-vacuums, or balls rolling down near-frictionless inclined planes, since one would one would be hard-pressed to find such artificial situations in the real physical world. One would concentrate instead on exploring phenomena

that are more ecologically abundant, such as leaves drifting gently from trees or rocks bouncing down bumpy hillsides. The point I want to make, of course, is that an obvious use of some phenomenon in the real world doesn't traditionally constitute a necessary condition for studying that phenomenon in the scientific laboratory.

Are there Uses for Persistence?

My remarks so far have presupposed that there is no obvious, practical use of visual persistence beyond Haber's amusing example of "reading in a lightning storm." A moment's reflection, however, turns up other, more common, uses. Consider, for example, that tachistoscope-like device, the movie projector, which is found in abundance throughout the Globe. A movie projector, of course, produces a very brief flash of light every 62.5 msec (or, in some cases, 125 msec) and it remains for visual persistence to fill in the gaps.

Until ten or fifteen years ago, one might have argued that the movie projector constitutes an odd, isolated example of a real-life necessity for visual persistence. However, as our culture becomes increasingly oriented around visual-display devices, the question of what the visual system does when the screen is dark becomes increasingly important. As I was composing myself to write this note, my June, 1982 issue of "Call APPLE" arrived. The lead article is entitled "Video Interfacing" and the come-on quote, printed just below the title, reads, "...human visual perception exhibits a phenomenon known as persistence of vision." In the article, the reader is told of the importance of persistence as a crucial component in the design

of a computer/video screen interface.

That space-age technology has managed to find uses for visual persistence is not, of course, a rebuttal to Haber's fundamental arguement. Above, I used the term "inherent need," by which I meant a need that was addressed by some evolutionary process. It seems unlikely that evolution could have prophesized the movie projectors and video screens that would eventually enter the life of the evolving organism; thus the question of whether there is some inherent use for persistence is still open and interesting. However, even if we are ultimately forced to answer this question in the negative, the study of persistence and its characteristics will continue of practical necessity.

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