

This Week's Citation Classic

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Pylyshyn Z W. What the mind's eye tells the mind's brain: a critique of mental imagery. *Psychol. Bull.* 80:1-24, 1973.
[Univ. Western Ontario, London, Ontario, Canada]

This paper presents a critique of contemporary research which uses the notion of a *mental image* as a theoretical construct to describe one form of memory representation. It is argued that an adequate characterization of 'what we know' requires that we posit abstract mental structures to which we do not have conscious access and which are essentially *conceptual and propositional*, rather than sensory or pictorial, in nature. [The *Social Sciences Citation Index*[®] (SSCI) indicates that this paper has been cited in over 210 publications since 1973.]

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"This was a much more painful paper to write than might appear. It started off as a criticism of some of the claims I heard graduate students making about the theoretical significance of experimental results involving mental imagery. I had the impression that they really did believe that there were pictures in the head that we examined when we created mental images. Of course everyone denied that this is what they actually believed.

"As I discussed this problem with various people at colloquia and conferences I discovered that the equivocation about the nature of mental images was extremely deep-seated and pervasive. Almost everyone I spoke to was prepared to admit that, though they themselves did not take the picture view literally, the person in the next office did fall prey to that error. The trouble was that nobody seemed to be exempt from the conceptual trap. I have to confess that I had trouble with it myself. During my first attempts at writing the paper I was plagued with doubts about my own coherence, so powerful is the subjective impression that imaging is a species of 'looking' at some mental object. It was certainly true of the reviewers of the manuscript I finally submitted to one journal: they rejected it with arguments that showed that they were precisely the 'straw men' that I was arguing against. The universal response to my arguments was (and, indeed, still is) to deny that any right-thinking person took the picture view seriously and to insist that the correct way to interpret the findings was X. But when I looked closely at X I found that it was either the picture view in very flimsy disguise or it was not explanatory at all (i.e., it was merely a name for the general capacity to reason about visual phenomena—as in the case of the phrase

second-order isomorphism').

"My claim, that the theoretical construct required to explain the phenomena surrounding mental imagery had almost none of the characteristics associated with pictures, met with enormous and widespread resistance. I soon realized that what was at stake was a serious misunderstanding of what one had access to through conscious introspection. When you introspect and you see an image of a large heavy green tree-shaped thing there is *nothing* in your head that has any of the properties 'large,' 'heavy,' 'green,' or 'tree-shaped'—those are properties of the thing you are thinking about. Failure to keep this point in mind has been the central weakness of two decades of theorizing about mental images and, as far as I can see, is still true today (see my 1981 paper for a discussion of this as it applies to more modern research').

"It is this conceptual slipperiness of the idea of imagery that contributed both to the popularity of the paper and to the fact that it is so widely misunderstood. People cite it mainly because it represents a critique of a view about which they have some lingering uneasiness—and it came out at a time when the interest in imagery was so strong that nobody was bothering to be the least bit critical except the doctrinaire behaviorists. The best way to put it is that psychologists found the paper tantalizing without being convinced. Some were impressed enough to have serious doubts about the interpretation of at least some of the claims of imagery research (such as that long-term memory consists of an indexed store of pictures). But most citations look something like, 'Images have been shown to have some property P—but see Pylyshyn, 1973, for a contrary view.'

"I have to confess that I find it wearisome to be associated with the argument about imagery, even though it has played a central role in shaping my career and my current interest in related philosophical questions.² In one sense the intuition that people have when they claim that there is something special about thinking imaginatively must be true. The problem is that nobody has been able to give any coherent story about what the special thing is. In the process of trying to do so, however, psychologists have uttered more silly things per page than in almost any other area of psychology. So while I keep doggedly pursuing the more fashionable alternative proposals (e.g., see my papers of 1978³ and 1981¹), I believe there is something in research that will eventually provide clues to the nature of the mind. In the meantime it seems to be telling us more about the problems of interpreting experimental regularities."

1. **Pylyshyn Z W.** The imagery debate: analogue media versus tacit knowledge. *Psychol. Rev.* 88:16-45, 1981.
2. Computation and cognition: issues in the foundations of cognitive science. *Behav. Brain Sci.* 3:111-32. 1980.
3. Imagery and artificial intelligence. (Savage W, ed.) *Perception and cognition: issues in the foundations of psychology.* Minneapolis: University of Minnesota Press. 1978. p. 19-55.