

## Current Comments®

### The 1984 NAS Award for Excellence in Scientific Reviewing: E. R. Hilgard Receives Sixth Award for His Work in Psychology

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On April 30, 1984, the National Academy of Sciences (NAS) presented the 1984 NAS Award for Excellence in Scientific Reviewing to Ernest R. Hilgard, Department of Psychology, Stanford University. Hilgard was honored at an awards ceremony during the academy's 121st annual meeting in Washington, DC. This is the sixth year the award has been presented to an outstanding author of scientific reviews.

ISI® and Annual Reviews, Inc. have sponsored this award and co-donated its \$5,000 honorarium since its establishment in 1979.<sup>1</sup> The award was originally named in honor of the founder of Annual Reviews, James Murray Luck, who served as that organization's editor-in-chief until his retirement in 1969. Luck continues to serve on the editorial committee of the *Annual Review of Biochemistry*, which he started in 1932. I should mention that neither ISI nor Annual Reviews was consulted on Hilgard's selection by a committee of the academy.

The disciplines from which outstanding reviewers are chosen for the NAS award rotate annually among the life sciences, the physical sciences, and the social and behavioral sciences. This year, Hilgard was selected from among a number of outstanding candidates in the social and behavioral sciences. The previous winner from this area of scholarship was economist John S. Chipman, University of Minnesota, for his reviews of international trade theories.<sup>2</sup>

In honoring Hilgard, the NAS cited his "creative synthesis of the literature on conditioning and learning theory, which

shaped the field for decades, and his reviews in the difficult areas of hypnosis, suggestibility, and consciousness." His interpretation of the literature of two major fields of psychology is a remarkable contribution. Just as remarkable is that he continues his work today in this, his eightieth year.

The son of a horse-and-buggy doctor, Hilgard earned a degree in chemical engineering from the University of Illinois. Upon graduation, he served as an officer in the YMCA and studied at Yale Divinity School. Eventually, he decided that psychology might best address his interest in religion and science.

After receiving his PhD in experimental psychology from Yale University in 1930, Hilgard remained at the university as an instructor in psychology until 1933. In that year, he accepted a position at Stanford, where he has remained ever since. From 1942 to 1951, he served as chairman of Stanford's Department of Psychology. Since 1969, he has been emeritus professor of psychology, and director of Stanford's Laboratory of Hypnosis Research.

His numerous memberships and offices held in professional and honorary societies include the American Psychological Association (APA), the International Society of Hypnosis, and the Society for the Psychological Study of Social Issues, all of which he has served as president. His previous awards include the Warren Medal in Experimental Psychology and the Distinguished Scientific Contribution Award, presented to him by the APA.



Ernest R. Hilgard

Hilgard has authored more than 200 original research papers and reviews, plus numerous book reviews, biographies, etc. According to *Science Citation Index*<sup>®</sup> (*SCI*<sup>®</sup>) and *Social Sciences Citation Index*<sup>®</sup> (*SSCI*<sup>®</sup>) his work has amassed over 4,000 citations from 1955 to the present. Someday we will fill in the missing citation data for the pre-1955 years. His publications reveal a broad background in the laboratory and a lively concern for linking experimental results with theory. This breadth of interest has undoubtedly helped to make him a preeminent synthesizer and scientific reviewer. A selected bibliography of Hilgard's reviews appears in Table 1.

Most of Hilgard's work from the 1930s through the 1950s concerned one important area of psychology—conditioning and learning theory. Conditioning, the process by which a response becomes automatic as a result of reinforcement, was the subject of his early papers. A form of learning, conditioning opened the door for Hilgard to explore learning theories. His investigations led to his first series of major reviews.<sup>3-7</sup> One of these<sup>4</sup> appeared in the first volume of the *Annual Review of Physiology* in 1939.

One of the most influential of his reviews (with 334 citations) is *Conditioning and Learning*, published in 1940. The book had its inception in the fact that "theories of learning which make use of conditioning principles are not related in a simple manner to the facts from conditioning experiments."<sup>5</sup> Hilgard and his coauthor Donald G. Marquis, Yale, thus attempted to synthesize facts and theories. Their critical review pointed up inconsistencies and gaps in knowledge and thus helped to stimulate further research.

In another influential review,<sup>6</sup> Hilgard outlined the rigorous experimental designs needed to bring the study of learning into the laboratory. In keeping with his concern for theory, he addressed much more than laboratory techniques. Hilgard also discussed the importance of the "context" of any experiment—the conceptual framework that gives rise to useful laboratory work. This review, published in *Handbook of Experimental Psychology*, in 1951, has been cited in at least 250 publications over the past three decades.

Hilgard's reviews on learning were capped in 1948 by *Theories of Learning*.<sup>7</sup> Covering all the major theories in the first half of the century, the book explained each one, and also revealed gaps and suggested areas for further investigation. Hilgard's review had a momentous impact on this area of psychology. The NAS award committee stated that the book "almost instantaneously cast learning theory into the form that was taught and investigated for the next twenty years." *Theories of Learning* has been revised four times since its publication, the latest appearing in 1981.<sup>8</sup> As might be expected, the five editions of this book comprise Hilgard's most-cited work—over 650 citations.

In the late 1950s, Hilgard's research interests seemed to veer away from his previous work into the realms of suggestibility, hypnosis, and consciousness. Hilgard himself sees no great division between his earlier work and his later research on hypnosis. He feels that his in-

**Table 1:** A selected list of Ernest R. Hilgard's review publications.

- Hilgard E R.** The relationship between the conditioned response and conventional learning experiments. *Psychol. Bull.* 34:61-102, 1937.
- Hilgard E R.** Physiological psychology. Part I. The conditioned reflex. *Annu. Rev. Physiol.* 1:471-86, 1939.
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- Hilgard E R.** *Theories of learning.* New York: Appleton-Century-Crofts, 1948. 409 p.
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- Hilgard E R.** Impulsive versus realistic thinking: an examination of the distinction between primary and secondary processes in thought. *Psychol. Bull.* 59:477-88, 1962.
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- Hilgard E R.** Hypnosis. *Annu. Rev. Psychol.* 26:19-44, 1975.
- Hilgard E R & Hilgard J R.** *Hypnosis in the relief of pain.* Los Altos, CA: William Kaufmann, 1975. 262 p.
- Hilgard E R.** *Divided consciousness: multiple controls in human thought and action.* New York: Wiley, 1977. 300 p.
- Hilgard E R.** Consciousness in contemporary psychology. *Annu. Rev. Psychol.* 31:1-26, 1980.

terest in the subject can be traced to some of his earliest publications.<sup>9</sup> Hypnosis, or autosuggestion, bears certain similarities to the conditioned response.

Others, however, perceive his venture into hypnosis as a courageous act. In the late 1950s, Hilgard, his reputation assured by *Theories of Learning*, could easily have waited for an honored retirement. Instead, he chose to investigate an area that was sometimes viewed as the purlieu of amateurs at best, charlatans at worst. According to colleague Lynn S. Johnson, Mental Health Center, Great Falls, Montana, "He was one of the first to really risk his reputation" on hypnosis. That reputation is not only intact today but has additional luster because Hilgard is "really an uncompromising scientist" who has studied hypnosis "as a scientist and not as a hypnotist."<sup>10</sup>

Hilgard has been responsible for numerous experimental reports on hypnosis and has also investigated theoretical explanations for the phenomenon. This work spawned his second series of major reviews.<sup>9,11-15</sup> The importance of these reviews to the field is acknowledged by the NAS award committee in their summary statement on Hilgard: "His critical, judicious, and painstaking reviews and analysis of the literature have done much to put a scientific stamp on the field that has often, with reason, been considered on the fringe of science."

This statement is backed up by the objective evidence from citation analysis, which shows that hypnosis is hardly "on the fringe of science" these days. "Clinical study of the significance and use of hypnosis" was one of the active research fronts of science in 1982 according to *ISI/BIOMED*<sup>®</sup> data. Four of the five core publications for the research front were written by Hilgard.<sup>15-18</sup> They include Hilgard's 1975 "review," *Hypnosis in the Relief of Pain*,<sup>15</sup> published in collaboration with his wife, Josephine R. Hilgard, a practicing psychiatrist and clinical investigator. The book was updated in 1984.<sup>19</sup>

It's hard to overstate the importance of review articles or books to the advancement of science. Hilgard himself suggested that "without scientific literature, we couldn't have science. And to make that literature accessible is an obligation on the part of scientists to one another."<sup>20</sup> I have advocated that review writing be considered a profession in its own right.<sup>21</sup> *SCF's Journal Citation Reports*<sup>®</sup> repeatedly reveal that review journals achieve high impact.

Although it is agreed that good reviews are an essential aid to research, getting people to write them has always been difficult. To write reviews, they must put aside their own immediate research efforts and expend a great amount of time and effort in analyzing,

synthesizing, and evaluating information in a limited subject area. In return, they have received very small financial reward. Research funding agencies should find a way to sponsor these efforts on a regular basis. While citation analysis and other methods can help identify important areas for reviewing, the role of the critical interpretive review will never be supplanted.

Until recently, there existed no formal award to recognize the contributions made by the most capable scientific reviewers. The cosponsorship of the NAS award by ISI and Annual Reviews is intended to encourage more scientists to try their hand at reviewing. The large number of *Citation Classics*™ which turn out to include reviews of the literature demonstrates all too well how useful reviews are to science in the continuing process of condensation.

I was delighted to be present, along with Bill Kaufmann, editor-in-chief of Annual Reviews, and Luck, on the occasion of this award. Not only has Hilgard made outstanding contributions to the field of psychology, he gave many long years of service as a member of the board of Annual Reviews.

Since the field of the award rotates annually, next year's presentation will be made to a reviewer from the life sciences. Nominations should be submitted before September 15, 1984 to the Office of the Home Secretary, National Academy of Sciences, 2101 Constitution Avenue, Washington, DC 20418.

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