

Topic Page: [Sperry, Roger \(1913 – 1994\)](https://search.credoreference.com/content/topic/sperry_roger_1913_1994)

Summary Article: **Sperry, Roger W. (1913–1994)**

From *Encyclopedia of Special Education: A Reference for the Education of Children, Adolescents, and Adults with Disabilities and Other Exceptional Individuals*

Fifty years of systematic and ingenious research resulted in Roger Sperry's development of novel ideas about the nervous system and mind. Born to a middle-class family in Hartford, Connecticut on August 20, 1913, Sperry dedicated his professional life to understanding two basic questions in psychology: (1) What is consciousness? and (2) What roles do nature and nurture play in the regulation of behavior? Educated at Oberlin College in Ohio (BS in English and MS in psychology), Chicago (PhD in Zoology), and Harvard (postdoctoral fellowship in psychology), Sperry always went against the conventional wisdom of his day, tending to question established fact through simple but brilliant studies. Most of his important studies were completed as Hixson Professor of Psychobiology at the California Institute of Technology.

He indicated that his work could be divided into phases. The first phase, developed at Oberlin and continued through his Chicago years, focused on determining whether the nervous system was malleable or amenable to change through learning. After interchanging nerve fibers in rats, initially motor ones and later sensory ones also, he concluded that the nervous system was more hard-wired than we had previously thought. These experiments were later replicated in a variety of amphibians and mammals, using both motor and sensory fibers. It was during this time that he developed the theory of chemoaffinity of nerve fibers. He proposed that if nerve fibers were cut, they would grow back to their original site using chemically induced growth.

During the 1950s, Sperry began to question whether this hard-wired concept was also found inside the brain (since he had previously worked with fibers in the peripheral nervous system). Initially working with cats and later with monkeys, Sperry began cutting the largest nerve tract in the brain, the corpus callosum. It had been previously thought that this fiber tract's role was essentially to hold the two sides of the brain together. His initial studies reflected that the two sides appeared to have different functions. However, he believed that humans could provide more accurate information regarding the perceived differences.

Together with surgeons Joseph Bogen and Phillip Voegl, Sperry designed a series of studies aimed at discovering the functions of the two sides of the brain and if the brain was as hard-wired as the peripheral nervous system. About a dozen patients with intractable epilepsy had their corpus callosum severed in what is now called "split-brain" preparation. Over numerous studies, some of which are still being carried out, it was discovered that the brain was indeed hard-wired, much like the peripheral nervous system. Further, it was found that the left hemisphere was primarily responsible for verbal information while the right hemisphere controlled visual information.

Additional studies revealed that the patients had two separate minds. Hence, their behavior was not integrated. After further study, Sperry concluded that consciousness was a function of the integration of both sides of the brain simultaneously. Also, he believed that the consciousness emerged from brain function and, in turn, had a downward control on the brain function from which it had been produced.

In his later years, Sperry became interested in the notion that specific value systems, as found in

conscious thought, had an effect on the global situation. Specifically, he believed that appropriate values (reduction in overpopulation and pollution) were the solution to the modern problems facing society.

For his scientific work, Sperry shared the 1981 Nobel Prize in Medicine and received the highest awards in the disciplines he worked in, including psychology, neuroscience, and philosophy. With over 300 publications and close to 100 students doing research in nine different continents, Sperry's contributions extend far beyond his half century of research and modern-day psychology. He died at the age of 80 in Pasadena, California from complications of ALS. He is survived by his wife and two children.

This entry has been informed by the sources listed below.

References

- Puente, A. E. (1995). Roger Wolcott Sperry (1913-1994). *American Psychologist*, 50(11), 940-941.
- Sperry, R. W. (1952). Neurology and the mind-brain problem. *American Scientist*, 40, 291-312.
- Sperry, R. W. (1982). Some effects of disconnecting the cerebral hemispheres. *Science*, 217, 1223-1226.

Antonio E. Puente

University of North Carolina at Wilmington Wilmington North Carolina

APA

Chicago

Harvard

MLA

Puente, A. E. (2013). Sperry, Roger W. (1913--1994). In C. R. Reynolds, K. J. Vannest, & E. Fletcher-Janzen (Eds.), *Encyclopedia of special education: a reference for the education of children, adolescents, and adults with disabilities and other exceptional individuals* (4th ed.). Hoboken, NJ: Wiley. Retrieved from https://search.credoreference.com/content/topic/sperry_roger_1913_1994

 Copyright © 2014 by John Wiley & Sons, Inc. All rights reserved.

 Copyright © 2014 by John Wiley & Sons, Inc. All rights reserved.

APA

Puente, A. E. (2013). Sperry, Roger W. (1913--1994). In C. R. Reynolds, K. J. Vannest, & E. Fletcher-Janzen (Eds.), *Encyclopedia of special education: a reference for the education of children, adolescents, and adults with disabilities and other exceptional individuals* (4th ed.). Hoboken, NJ: Wiley. Retrieved from https://search.credoreference.com/content/topic/sperry_roger_1913_1994

Chicago

Puente, Antonio E. "Sperry, Roger W. (1913–1994)." In *Encyclopedia of Special Education: A Reference for the Education of Children, Adolescents, and Adults with Disabilities and Other Exceptional Individuals*, edited by Cecil R. Reynolds, Kimberly J. Vannest, and Elaine Fletcher-Janzen. 4th ed. Wiley, 2013. https://search.credoreference.com/content/topic/sperry_roger_1913_1994

Harvard

Puente, A.E. (2013). Sperry, Roger W. (1913--1994). In C.R. Reynolds, K.J. Vannest & E. Fletcher-Janzen (Eds.), *Encyclopedia of special education: a reference for the education of children, adolescents, and adults with disabilities and other exceptional individuals*. (4th ed.). [Online]. Hoboken: Wiley. Available from: https://search.credoreference.com/content/topic/sperry_roger_1913_1994 [Accessed 18 October 2019].

MLA

Puente, Antonio E. "Sperry, Roger W. (1913–1994)." *Encyclopedia of Special Education: A Reference for the Education of Children, Adolescents, and Adults with Disabilities and Other Exceptional Individuals*, edited by Cecil R. Reynolds, et al., Wiley, 4th edition, 2013. *Credo Reference*, https://search.credoreference.com/content/topic/sperry_roger_1913_1994. Accessed 18 Oct. 2019.