

# Jerome Bruner

(1915–2016)

Psychologist who shaped ideas about perception, cognition and education.

Jerome Seymour Bruner helped to launch the cognitive revolution in psychology — the shift from focusing on how stimuli or rewards provoke behaviours (behaviourism) to trying to understand the workings of the mind.

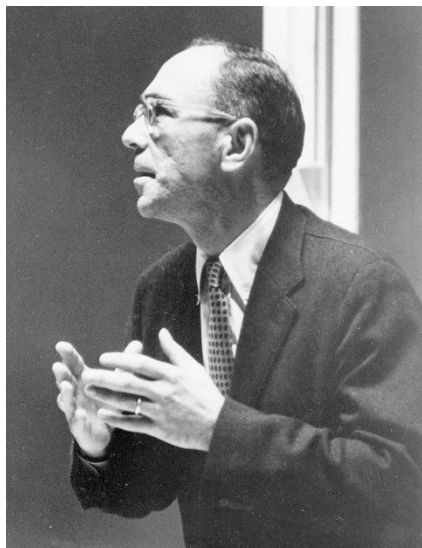
Bruner, who died on 5 June, aged 100, was born — blind — in New York City in 1915. His sight was restored by cataract operations when he was two. In 1937, he earned a degree in psychology at Duke University in Durham, North Carolina. He received master's and doctoral degrees in psychology from Harvard University in Cambridge, Massachusetts, in 1939 and 1941. After working in military intelligence during the Second World War, he took a faculty position at Harvard in 1945.

Bruner once noted that during his two years of blindness, he had constructed a visual world in his mind. His early experiences may explain why, in the 1940s and 1950s, he sought to demonstrate how perception is not just a bottom-up process controlled by the senses, but also a top-down process controlled by the mind.

In collaborative experiments conducted at Harvard, Bruner revealed how certain mental factors influence visual perception. In one study, for instance, he demonstrated that ten-year-old children underestimate the size of bigger coins and overestimate the size of smaller coins, and that poor children overestimate the size of the larger coins more than affluent ones do (J. S. Bruner *et al.* *J. Abnorm. Soc. Psychol.* **42**, 33–44; 1947). His work inspired a new approach to the study of perception that became known as the new look in perception.

Bruner transformed perception from a stimulus-dependent response into something that involved mental processing. But he wanted to study cognition more directly. With psychologists Jacqueline Goodnow and George Austin, he performed innovative experiments that explored how people infer concepts and categories (for instance, of colour and shape). Their 1956 book *A Study of Thinking* was crucial in ushering in the cognitive revolution.

Bruner's 1960 book, *The Process of Education* brought the cognitive revolution to educational thinking in the United States and elsewhere. His concepts of the development of representational capacities, suggested that ideas should be communicated to students using actions, icons or symbols, in that order, and depending on their age. In 1963, after



my first year in graduate school at Harvard, Bruner arranged for me to go to Senegal to study culture and cognitive development. Because his book had tightly linked schooling with cognitive development, Bruner was delighted when my data from Senegal showed that various measures of such development depended on whether or not children had attended school, not just their age.

I had first encountered Bruner during my first year of university, when he lectured in one of my courses. In his lectures, he described the concept of human intentionality — the ability of the mind to be proactive and to represent future goals — as another challenge to behaviourism. When I returned to Harvard as a research fellow in 1968, Bruner was studying cognitive development in infancy. Intentionality was now central to his thinking. Crucially, he observed that infants only a few weeks or months old have intentions and goals, even before they are able to act on them.

In 1972, Bruner sailed his boat across the Atlantic to take up the first Watts Professorship of Psychology at the University of Oxford, UK. There, he shifted focus from 'intentional action' to 'intentional interaction'. In 1975, Michael Scaife and Bruner reported that starting at eight months old, most infants will follow an adult's gaze when the adult turns to look at something (M. Scaife and J. S. Bruner *Nature* **253**, 265–266; 1975). The pair called this phenomenon joint visual attention because it established a common focus between adult and infant. It has since

become widely recognized as an essential social mechanism for guiding infants to link words to objects in language acquisition.

Bruner returned to the United States in 1980. First at the New School for Social Research in New York, then at New York University, he explored people's propensity to tell stories. He argued that unlike logic, narrative thought is universal. Once again, he was trying to expand cognitive psychology to encompass human experience. His 1986 book on narrative, *Actual Minds, Possible Worlds*, has more than 14,100 citations. Applying ideas about narrative to the law, Bruner started working with legal scholar Anthony Amsterdam at the New York University School of Law. Their 2000 book *Minding the Law* describes how courts rely on storytelling and how the stories "change the way we understand the law — and ourselves".

Jerry made seminal contributions to an astonishing number of fields — each a stop on the road to finding out what makes us human. Beginning in the 1960s, computer simulations became the model of the human mind in cognitive psychology, with researchers trying to simulate how humans solve problems, form concepts, comprehend language and learn. But reducing humans to computers was antithetical to Jerry's humanistic perspective.

Given this, it was surprising that computer scientist Alan Kay, the designer of what became the Macintosh graphical user interface, turned up more than 30 years ago on Bruner's Manhattan doorstep with a gift of a Macintosh computer. Jerry's ideas of representing information through actions, icons and symbols, central to his theory of cognitive development, had inspired Kay to get users (even children) to act (through a computer mouse) on icons, enabling the use of an abstract set of symbols (computer program). This was the foundation for what became the Macintosh interface.

Jerry had a towering intellect and an insatiable curiosity. When I returned from Senegal with my data, he made me feel as if I had done the most exciting research in the world. His reaction fuelled the rest of my career and has greatly influenced my own mentoring. ■

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