Obituary

Harry Frederick Harlow (1905–1981)

Harry Harlow was born in Fairview, Iowa, on October 31, 1905. He grew up in an extended family environment, with a grandmother and two married but childless aunts in the neighborhood. Harry was the third of four closely spaced brothers who competed vigorously at bridge and tennis. No doubt this context provided a good learning situation for the art of riposte, for by the time he reached college he had already developed the quirky teasing humor that later became so well known to his colleagues. He went to Reed College for his freshman year, but transferred to Stanford in 1924 (AB, 1927). He remained at Stanford for his graduate work (PhD, 1930), where he supported himself with the usual assistantships, teaching in social psychology for Paul Farnsworth and rat-researching for C. P. Stone. His dissertation on a pedestrian rat problem, under the latter's guidance, soured him forever on both rats and parametric research. As a student, he began his study of the history of psychology. Indeed, he was always keenly aware of the history of psychological ideas as they touched his work. It was this perspective, in part, that enabled him to revolutionize the fields of animal learning and motivation so incisively.

Harlow's first appointment was at Wisconsin, where he was asked to teach introductory psychology and direct the animal laboratory. He worked hard on his teaching, which proved to be exceptionally good, and with his wry wit, very popular. Always a knowledgeable general psychologist, he continued to teach the first course most years until his retirement in 1974. As for directing the laboratory, he wrote many years later that the task was difficult because there was no laboratory. Shortly he met Clara Mears, a teaching assistant in educational psychology, and she suggested that the Madison Zoo had monkeys if he wanted to work with them rather than with rats. He made the necessary contacts and began work with an orangutan. It died, but shortly the university provided him with a monkey laboratory of his own. In that same spring, 1932, he and Clara were married. She was a bright and engaging psychologist, but a conservative university could not tolerate the idea of a young wife seeking a degree from the faculty of which her husband was a member, so she became a highly successful dress buyer for a local department store.

Harlow's first interest was in cortical localization of higher intellectual functioning. Stanford had given him a solid background in physiology and neuroanatomy, and monkeys were appealing as subjects because of their evident cognitive capacity. For this work he needed a standardized set of measures of discrimination and other visual-perceptual processes. Gradually he constructed such an instrument, the Wisconsin General Test Apparatus standard battery, but long before it was ready, he had learned a great deal more about the learning process in rhesus monkeys than he ever would about their central nervous system. What he discovered was the "learning set"—the process of learning to learn. In a series of simple discrimination problems, the monkeys first worked by trial and error, as conventional learning theory expected. But at some point they began to catch on to a general principle that allowed them to shortcut the process. Then they displayed one-trial learning: insight. The continuity–discontinuity controversy in learning theory was deflated after years of fruitless rhetoric, and by the end of the 1940s Harlow had forced learning theorists to face the necessity of incorporating a more cognitive approach into their theories. This was Harlow's first victory in his battle with the Yale brand of behavior theory, and he relished it with as much joy as he had gotten earlier from his bridge and tennis victories (and with the same teasing manner toward his rivals).

A second confrontation was in the offing. Primary drive reduction as a reinforcer was at the heart of behavior theory. Harlow's observations of his monkeys' behavior in learning situations made him doubt the importance of hunger as a goad to problem solving. On the contrary, well-fed animals approached their "school" with zest, curiosity proving more important than hunger as a motivator. He demonstrated its utility for both work and learning by setting up an observation chamber in which monkeys could manipulate a gadget in order to look through a peephole to another room. The monkeys would work many hours and solve many difficult discrimination problems to see—what? Not some aseptic abstraction, such as a clicking pendulum, but a real toy electric train running around a track.

In the meantime, after 15 years of marriage and two children, Harry and Clara Harlow divorced. Both remarried shortly, he to Margaret Kuenne, then a member of the Wisconsin faculty. During the next two decades they in turn had two children, and Margaret became an active and very productive collaborator in Harry's research of that period. Before that began there was an interlude, however. During World War II Harry had not participated in the war research and service that had engaged many of his colleagues. He felt it was time he paid his tithe, and in 1949 he accepted appointment as Chief Psychologist to the U.S. Army. The Harlows lived in Washington for two years, he working to develop more effective use of psychological research methods by the Army and she serving as an editor for APA publications. During this time Harry prepared and had accepted an Army staff study which established the Human Resources Research Office (HumRRO) through a contract with the George Washington University. He persuaded

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Meredith Crawford to accept the directorship of that organization.

The work for which the Harlows are best known was their mainstream research on the love relationship between mother and child and among peers. According to Harry's report, this work began inauspiciously and very much by chance. He had attempted to start a breeding colony of rhesus monkeys. In order to keep the infants free of the pervasive diseases their mothers brought from India, he removed the infants at once and reared them in splendidly germ-free isolation from their mothers. The infants thrived physically but proved to be emotionally distorted as adults and would not mate. Harlow noted the way in which, as infants, the monkeys clung to their diapers as if to security blankets, and the intense emotional disturbance caused by forcible removal of the blankets. He inferred correctly that these objects had become mother surrogates, and he thought to design an artificial mother which could be varied in substance and action for experimental purposes. Thus was invented the cloth mother (and its wire mother counterpart) and with them came the discovery of contact comfort.

The stage was set for the new confrontation with behavior theory, this time in the realm of motivation, personality, and child rearing. For behavior theorists, the incentive value of previously neutral objects was acquired by association with primary drive reduction. Following both Watson and Freud, they placed emphasis on very primitive cyclical biological drives. But although Harlow's monkeys were well-fed, they did not thrive nor did their meager diapers provide a significant other to whom they could become attached. So he constructed the static mother figure covered with terry cloth, gave her a single nipple, and allowed the infant to live with her. He reasoned that if the feeding was creating her incentive value, the infant should be as loving to one kind of figure as another. This did not prove to be so. A wire framed mother without the terry cloth was not fully rejected but it was quickly deserted for a cloth mother. Contact comfort seemed to be the truly primary incentive. A series of studies showed that other qualities could add quality to contact comfort, but not a great deal. Feeding, warmth, and rocking made small positive contributions, but were not nearly as powerful in producing love for the mother surrogate as behavior theory had assumed.

The next stage in this research on love was rich in findings about the experiences necessary for monkeys to develop mature personalities and competent adult behavior. The Harlows were able to distinguish five love systems: maternal love for the child, infant love for the mother, age-mate or peer love, adult heterosexual love, and paternal love for the child. The infant–parent relationship was a necessary precursor to the development of peer relationships, and both were required for the development of normal adult heterosexual love and maternal behavior. Isolation of an infant for the first three months would be sufficient to interfere somewhat with further emotional growth, and isolation for six months would destroy any possibility of normal adult behavior, either sexual or social. Infants reared in isolation became autistic and showed the stereotypic movements and postures, the rocking and huddling, so characteristic of some schizophrenic human children. Accompanying these symptoms was what appeared to be acute depression. In a final spurt of research activity just before his retirement, Harlow began the study of therapeutic intervention on these personality disorders. He found that the peer relationship could be reasonably well activated if the therapist monkey was just at the age of starting his or her own peer interaction and was much younger and less aggressive than the patient monkey.

Harlow's research career, spanning a full half century, was notable for its single-minded adherence to the search for understanding of a single species, for the imaginative methods he devised for the study of both cognition and motivation, and for the crucially important findings these methods provided. He was not a formal theorist in the style of a logician, nor was much of his research of the hypothesis-testing variety. But his careful empirical development of the facts of behavioral development led to propositional generalizations that have contributed notably to an understanding of human as well as monkey motivational development. Although he often gave the appearance of a mischievous child teasing the Establishment, he was widely recognized and rewarded for his singular accomplishments. He was elected president of the APA, received Distinguished Scientific Contribution Awards from both the APA and the Society for Research in Child Development, the Gold Medal Award from the American Psychological Foundation, and the National Medal of Science. In 1975 he received the Kittay International Scientific Foundation Award.

Margaret Kuenne Harlow died of cancer in 1971. The following year Harry remarried his first wife, Clara, who was by then widowed. They moved to Tucson in 1974. During the late 1960s Harry's health deteriorated somewhat; he appeared to be having trouble with alcohol, but eventually his main physical symptoms were diagnosed as parkinsonism. After his remarriage, and with suitable medication, he regained much of his former humor and vitality until he developed a brain tumor from which he died on December 6, 1981.

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