

IQ ZOO AND TEACHING OPERANT CONCEPTS

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Psychology texts often cite the work of Marian and Keller Breland and their business, Animal Behavior Enterprises (ABE), to demonstrate operant conditioning and the “misbehavior of organisms” from an evolutionary perspective. Now available on the Internet at the official IQ Zoo website (<http://www3.uca.edu/iqzoo/>), the artifacts of ABE’s work, in the form of photographs, documents, and audio/video recordings, provide a wealth of concrete examples of operant and evolutionary contingencies. Included in this site is the related work of Robert E. Bailey. These exhibits and their associated learning materials are relevant to many courses, including introductory psychology, psychology of learning, behavior modification, and history and systems of psychology.

Key words: animal behavior, Breland, history of psychology, IQ Zoo, Skinner

From 1955 to 1989, Marian and Keller Breland’s IQ Zoo, located in Hot Springs, Arkansas, served as an introduction to operant conditioning for many future psychologists (see Figure 1). Earlier, the Brelands had studied operant behavior under B. F. Skinner at the University of Minnesota and in his Project Pigeon lab, where they taught pigeons to guide bombs during World War II (Skinner, 1960). After the war, the Brelands parlayed the reinforcement of behavior via the automatic feeder into a remarkable display of the effectiveness of positive reinforcement (Breland & Breland, 1951, 1961; Gillaspay & Bihm, 2002; Skinner, 1979, 1983).

In 1947, the Brelands incorporated their business, Animal Behavior Enterprises (ABE), and based it upon the promise of operant conditioning and positive reinforcement. ABE worked with companies, amusement parks, and entertainment venues to provide a

Funding for this project was made possible in part by a National Science Foundation grant, Award #0322431 (“Marian Breland Bailey and the History of Behavioral Psychology”).

We wish to thank William Lassiter for help in organizing materials and Brent Passmore for technical assistance.

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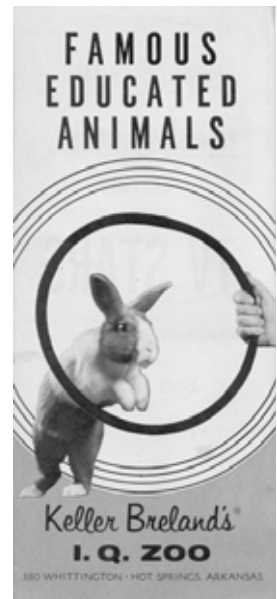


Figure 1. IQ Zoo bunny-through-hoop (trademarked) advertisement.

host of animals performing in a variety of anthropomorphic settings (Bailey & Gillaspay, 2005; Breland & Breland, 1951, 1961).

The Brelands moved to Hot Springs, Arkansas, in 1951 because it was a busy tourist center and because Keller did not like cold weather. Because there was such public interest in their work, they established the IQ Zoo in Hot Springs in 1955. At the IQ Zoo, chickens danced to rock-and-roll music (see Figure 2) and told fortunes, raccoons played basketball, rabbits kissed and propelled fire trucks, rabbits and cats played the piano, ducks turned on jukeboxes and strummed guitars, and cockatoos solved math problems (or so it anthropomorphically seemed). However, sometimes the animals did not act as expected, and the Brelands described these anomalies in the “Misbehavior of Organisms,” published in the *American Psychologist* (Breland & Breland, 1961). Upon the advice of William Verplanck, they interpreted these findings along evolutionary lines and subsequently incorporated ethology into their work, for example, with herring gulls and ravens. After Keller died in 1965, biologist Robert E. Bailey served as CEO of the business; later, Marian and Bob married. Bob had worked with the Brelands in the early 1960s while serving as the first civilian director of the Navy’s marine animal program at Point Mugu, California. As director of ABE, he developed many “control-at-a-distance” projects.

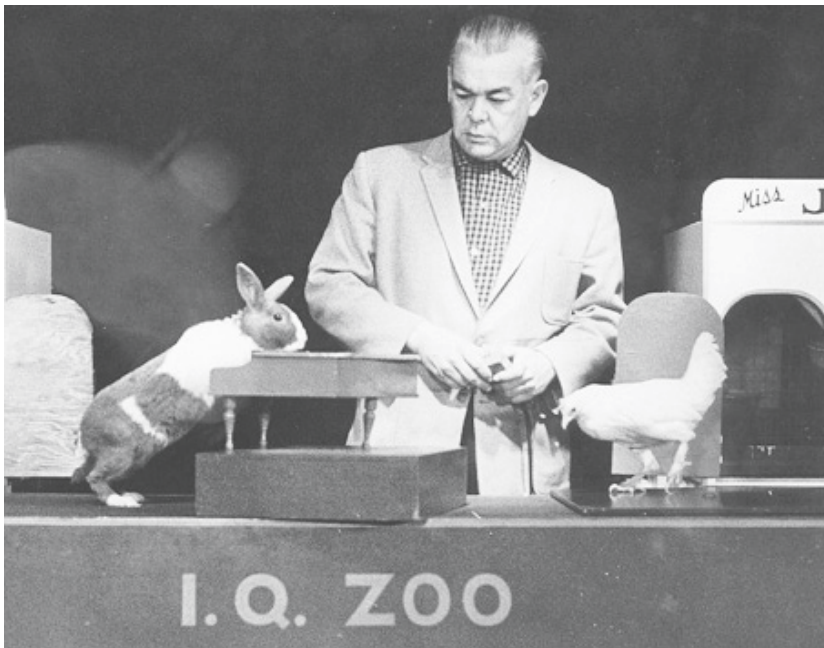


Figure 2. Keller Breland with “Punch and Judy” act (Punch plays the piano while Judy dances).

After Marian’s death in 2001, the National Science Foundation provided funds to the University of Central Arkansas to preserve the remaining artifacts of ABE, now housed at the Archives of the History of American Psychology in Akron, Ohio. In the act of processing these materials, the current authors developed an online resource with pictures, documents, and

audio/video clips, many with explanatory text, available for teacher and student use at the following website¹: <http://www3.uca.edu/izoo/>

These IQ Zoo and ABE exhibits provide an entertaining introduction to operant behavior. This online resource describes animal acts created for industries, fairs, and amusement parks, as well as military-funded projects that trained gulls to rescue downed pilots in the water, pigeons to deposit or retrieve secret packages of information, ravens to take spy photographs with hidden cameras, and pigeons to fly ahead of convoys and spot snipers in the brush or in trees along the roadside (Bailey & Bailey, 1980; Marr, 2002).

The site also provides a step-by-step analysis of the behavioral technology that insured ABE's success. Because many of the self-contained units, like the capsule-vending and fortune-telling chicken, were "fancy Skinner boxes," the site provides an attention-grabbing introduction to basic operant concepts, including positive reinforcement, differential reinforcement, shaping, extinction, S^D (discriminative stimulus), S^Δ (S-delta), schedules of reinforcement, backward and forward chaining, and instinctual drift.

For example, the home-run chicken is used to exemplify backward chaining, and a pig that roots at, rather than deposits, his giant wooden nickels in a piggy bank demonstrates instinctual drift. Bird Brain, a chicken that plays tic-tac-toe, demonstrates stimulus control (B. F. Skinner challenged Bird Brain on several occasions but never won; nor did any other human, for that matter). The site also describes the use of clickers and whistles ("bridges") to overcome the time delay in reinforcing animals, as well as the use of "targets" for the stimulus control of animals (e.g., laser beams aimed at multistoried buildings told pigeons where to leave tiny packages).

The site includes learning activities, such as crossword puzzles and cooperative-learning tasks, that clarify technical terms with examples from the ABE repertoire. In addition, the site contains contracts and correspondences testifying to many of ABE's firsts, the only known radio recording of Keller Breland as he explains his methods, and a training manual detailing the mechanics of the drumming duck, basketball chicken, fortune-telling chicken, dancing chicken, fire chief rabbit, and piano-playing duck. Pictures, documents, and audio/video materials are in downloadable form for instructors who wish to integrate these resources into their lectures and demonstrations.

A psychology teacher could easily project these examples before a large class, and even the still photos, which can be enlarged, provide a powerful introduction. Perhaps the best reason to use this website as a teaching tool is that the material is entertaining, as it was when the IQ Zoo was open and the Brelands and the Baileys welcomed visitors. The fact that ABE provided a good living for its founders and associates for nearly 50 years suggests that operant conditioning works, it works dramatically, and, when administered by capable hands, it works reliably.² Current students can learn much from the historical work of Animal Behavior Enterprises.

1 Best if viewed with the Microsoft Internet Explorer browser.

2 Because ABE was so dependent upon the health of its animal entertainers for its success, it also pioneered the provision of humane environments for its animals (see "Humane Appraisal of ABE, 1954" in the Documents section of the website).

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