

## Behavior Analysis in Animal Training

### History

For centuries, humans have trained animals for entertainment and to assist them in their work. Dogs have been used to drive livestock since the Neolithic times, the circuses of early Rome featured trained lions, elephants and chariot horses, homing pigeons were used as early as 2350 BC in Mesopotamia, and the Vikings were training horses in the 9th century.



In the 1800's, the modern theories of behavior that eventually led way to animal training and enrichment as we know it today began to evolve. In Russia, Nobel prize winner **Ivan Pavlov** (1849-1936) studied learning that was related to reflexive responses. Pavlov's theories explain why a dog begins to salivate when a food dish is rattled.

At the same time Pavlov was working in Russia, in the United States, **Edward Lee Thorndike** (1874-1949) was studying the effects that different consequences have on new behaviors. His "Law of Effect" said that responses that produce rewards will tend to increase in frequency. Thorndike's work laid the groundwork for the development of operant conditioning.



Another key person in the development of behaviorism as we know it was **J.B. Watson** (1878-1958). Watson is known as the father of modern behaviorism and it is his work on respondent conditioning that can help animal trainers understand what has happened when they are dealing with an extremely fearful animal.

### B.F. Skinner



**B.F. Skinner** (1904-1990) was greatly influenced by the work of several people including Watson and Pavlov. Skinner actually expanded Watson's work on behaviorism when he described the science of operant conditioning. **Operant conditioning is the area of behaviorism that explains the relationship between environmental events and actions.**

Skinner discovered while working with rats (and later pigeons) that he could systematically change the behavior of an animal by giving it a food reward for pressing a lever. Although Thorndike is credited for being the first person to describe operant conditioning concepts in his work *Animal Intelligence* (1911), Skinner was the first to widely publicize and promote this new technology. In 1938, Skinner published *The Behavior of Organisms*, the landmark work that fully defined this exciting new science of operant conditioning.

Today, animal trainers for many species use a “clicker” as a conditioned reinforcer. While many trainers believe the clicker is new to animal training, Skinner described using clickers in his 1951 paper, *How to Teach Animals*.

### **Marian Breland Bailey and Bob Bailey**

In 1938, when Skinner published *The Behavior of Organisms*, Marian Kruse was his research assistant. She later married Keller Breland who was also a graduate student in psychology. With World War II a major concern, the Brelands joined B.F. Skinner to work on Project Pelican, a project that used operant conditioning to train pigeons to guide bombs that were referred to by the Navy as “pelicans.”



In 1943, Project Pelican ended and the Brelands formed Animal Behavior Enterprises. Through Animal Behavior Enterprises, Marian trained animals for animal shows and commercials. In the 1950's, the Brelands were featured in esteemed national publications such as *Time*, *Life Magazine*, and *The Wall Street Journal*. They worked with Parrot Jungle in Miami and developed the first manual for dolphin trainers at Marine Studios in Florida.



Bob Bailey was a zoologist and the Navy's Director of Training when he began work with the Brelands to establish the “Dolphins at Sea” program for the U.S. Navy. Using the principles of operant conditioning, in 1965, Bailey developed an ambush detection system using pigeons.

Keller Breland died in 1965. Marian Breland and Bob Bailey continued the work of Animal Behavior Enterprises and they were married in 1976.

Over the course of many years, using operant conditioning, the Baileys trained more than 140 species of mammals and birds. Bob Bailey is well-known for using a *bridging stimulus* which is the method of using a bridge between an animal's response and the delivery of a reinforcer (such as food).

Along with B.F. Skinner and Keller Breland, the Baileys were the pioneers of many of the animal training procedures in use today, including using conditioned reinforcers such as clickers.