

# In Response

## The Species-Specific Behavior of Ethologists

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In the September 7, 1979 issue of *Science*, Bruce R. Moore and Susan Stuttard pointed out that the stereotypy reported by Guthrie and Horton resembled species-specific behavior and then generalized the point to all operant behavior. "For almost half a century," they wrote, "most research in instrumental (operant) conditioning has been conducted without regard for the natural behavior of the animals used as subjects." It is hard to understand why ethologists continue to make this mistake. In *The Behavior of Organisms* I called the response to the lever "a reflex," using the term as Sherrington used it for behavior that could scarcely be more "natural." I did describe shaping a response through successive approximation, but I said that that was appropriate only when "a rat may be found (very infrequently) not to press a lever spontaneously during a prolonged period."

In *Schedules of Reinforcement* Ferster and I noted the "genetic unity" of pecking, which we called "a characteristic bit of behavior which appears with well-defined topography." According to Moore and Stuttard, "the pigeon's 'operant' key-pecking response . . . was not identified as a simple grain-pecking reaction." They are right, but not for the reason implied. When a pigeon is induced to peck by taping a grain to the key, as is sometimes done, the response may be "simple grain-pecking," but pigeons peck other objects, including the key used in operant research, in many different ways and for many different reasons. Autoshaping often yields an exploratory tap. A side-to-side flick is another

possibility. When pecking a small target on a large screen was reinforced, high-speed photography showed that the pigeons behaved as if grasping the target and tearing it with a twisting motion. When reinforcement is contingent on number of responses and when the relay circuitry is fast enough, a pigeon may execute a kind of drum roll. None of these responses is the "common avian peck," to which Moore and Stuttard refer, in which a pigeon seizes grain and with the help of its tongue tosses it back into its throat.

It is possible to study lever pressing in pigeons and key pecking in rats, and it has been done, but it is much more reasonable to choose the organs and modes of response which are characteristic of a species. The responses of a bird's neck, head, and beak compose one of its most effective repertoires, useful for much more than ingestion. Part of it is no doubt a product of natural selection—a repertoire of phylogenetic behavior suitable to a fairly stable environment. Part of it is certainly acquired by the individual—a repertoire of ontogenic behavior appropriate to environments too unpredictable to make innate behavior feasible.

According to Moore and Stuttard a "generation of investigators" have believed that "they have taught tens of thousands of pigeons, individually, how to peck." But operant conditioners have never been concerned with teaching pigeons "how to peck." The pecks come ready-made. At issue is the probability that a pigeon will peck at a given time and place as a function of its environmental history.