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Dear Fred:

I am sorry it has taken so long to reply to your letter. We've been going through a number of changes, including moving our offices, and I'm afraid a great deal of correspondence has been side-tracked. Bob has undertaken to answer your questions about additional examples of "behavior drift."

Let me tell you a bit about Bob--we were married this past June. He has six children by a previous marriage, five of whom are at home with us. They range in age from seven to sixteen, so we have quite an assortment. Bob is a biologist who has been with the company since 1965--he was formerly training director of the Navy marine mammal program when we were consultants on the program from 1962 to 1965, and was the first one, using operant conditioning techniques, to release a dolphin in the open ocean (and get it back!). I'm enclosing an offprint of his report on that incident.

Concerning your question about Keller's letter--I'm afraid I don't recall the substance of the letter in detail, although I do remember the ending. And I do not remember what was meant by the statement about unlearned behavior (was that from the letter, or construed from our article--see below). Certainly we all start with unlearned behavior, whatever we do--the rat running or climbing, the pigeon pecking, the rabbit pawing--all are "instinctive," "species-specific," locomotor, food-getting, or other behaviors. As we have pointed out in our book, behavior can be described on a continuum. At one end are those behaviors which are virtually completely "hooked up," and develop in every normal individual of a species at some point in development, irrespective of particular environmental experience. At the other

are those which are almost completely shaped by learning, although again, it all starts with unlearned behavior--"a response must exist at some strength in order to be reinforced." Midway are those behaviors which are simply easier to condition than others, in certain species. One way we have been able to optimize the fruits of both operant conditioning and the insights we've gained from ethology is to study our animals and know which behaviors are easy to condition in which species. A pigeon can make a number of discriminations in a box. It can fly to a targeted point and make a certain response. It is very difficult to condition that same bird to make an in-flight response to SD. With seagulls and ravens, it is much easier. If you want a dog to follow an odor trail, don't pick a saluki or a wolf-hound--if you want a dog to orient to a visual stimulus, don't pick a bloodhound. Starting with this unlearned behavior of course, we then shape, to order, as much as we can, with operant methods.

Our company is still, after 30 years, in the business of producing animal behavior conditioned with operant conditioning techniques, as we have broadcast far and wide (on national television and in numerous publications), with all due credit to you, many cherished memories of the time we spent working with you, and great respect for the sheer genius you brought to the world of psychology.

Incidentally, we've had some side excursions; we were engaged in a behavior modification program with the Southern Regional Educational Board, setting up a training program for ward attendants at the Pinecrest State Training School in Pineville, Louisiana, for dealing with the severely mentally retarded. I'm currently teaching general psychology at our local community college, and we've participated at numerous behavior modification workshops across the state and in neighboring states, ranging from token economies for elementary schools in disadvantaged neighborhoods to behavior modification for hard-core state prison inmates. It's been an interesting life.

However, as we have expanded into work with over 100 species, we have found it useful (and indeed, essential, especially at the time we first encountered the problems) to bring into play certain concepts and ways of looking at animals which we gathered largely from the ethologists. These were the insights we tried to convey in "The Misbehavior of Organisms," and at the time we published it, we felt (and still feel) that it shed some valuable light on an area which was being largely neglected by the psychologists of that time. At any rate, it is possible that the statement you are referring to about unlearned behavior is from that article, and the only lines I can see are that "ethological facts and attitudes in recent years have done more to advance our practical control of animal behavior than recent reports from American learning labs." Here I have underlined "recent" (not so

underlined in the article) to emphasize the point that the fine grain of schedules of reinforcement, for example, and similar work on a very few species, coming from the operant conditioning laboratories of the 1950's did not help us anywhere near as much as the concept of imprinting, for example, from the ethologists, which enabled us to control the behavior of seagulls in open flight situations at distances of many kilometers over open ocean. We had to go outside the operant system as it existed in the 1950's in order to learn about the "species-specific" or instinctive behaviors which we were finding so vital to the practical control of behavior. As to the question about practical results from the use of purely unlearned repertoires, I would say the Dancing Chicken comes close to being an example. Although the behavior is shaped in the sense that it has become conditioned to certain S_D's, it is certainly a strong unlearned pattern, on about the same ratio perhaps, as the barnyard scratcher--every few scratch patterns turn up a grain or a bug or so. In open ocean guidance work with dolphins, the dolphins~~has~~ learned to stay within a "cone" of sound to reach the reinforcement. What is unlearned is that all dolphins, without training, follow the edge of the cone (right, left, or either one, depending on convenience), so that there is no "hunting" or oscillating behavior in the cone. Simpler examples involve unlearned locomotor patterns for exhibits of various sorts.

Thus I would go back to the paragraph in the article which says "All this, of course, is not to disparage"

Last fall, I received another little note from you on a request for information from a publisher (which I duly answered) asking whether life had been kind to me, and yes, definitely it has. I sincerely hope you feel the same. It's been a great life, and your influence has made so much possible, in more ways than one. I would like to keep in closer touch--~~we~~ all get so busy, a sad mistake. We would both like the chance to see you some time and talk over many fascinating subjects of the past, present and future.

Sincerely,

Marian Breland Bailey