

Training: A Critical Component Of Enrichment Programs

**Steve Martin, President
Natural Encounters, Inc.
23405 Woodland Road
Lakeville, MN 55044**

For years the words “animal training” have been associated only with animal shows. Animals continue to be trained for shows but today the term “animal training” extends far beyond arenas and amphitheatres. Zoos all around the world are developing animal behavior programs that incorporate training techniques into their environment enrichment programs. The focus of this paper is to discuss ways that animal training and enrichment interface to enhance the lives of the animals in our care.

Although most people don't realize it, animal caregivers have always been involved with animal training. The seemingly routine acts connected with providing food and managing animals are all associated with training. If you have been an animal keeper for 10 years, you have been training animals for ten years. Animals quickly learn to perform certain behaviors in response to even the most subtle cues in their environment. The distant sound of rattling food pans or the jingling of keys bouncing on a keepers hip may stimulate an animal to wait anxiously at an exhibit door in anticipation of its afternoon meal. The sight of a net, hose, or veterinarian may be associated with negative experiences and cause the animal to perform evasive behaviors.

Keepers should realize their power to influence animal behavior and take responsibility for their participation in creating both desired and undesired behaviors of their animals. Many of the behaviors we consider undesirable in exhibit animals are the result of interactions where keepers have inadvertently reinforced the animals with positive or negative reinforcement. It is beneficial that animal keepers develop a working knowledge of operant conditioning training techniques to gain a clear understanding of how their actions influence behavior.

For every action an animal makes there is motivation. At the very base level, the motivation is almost always to gain pleasure or avoid pain -- that is, gain something positive or avoid something negative. Understanding this concept will help animal caregivers interpret behavioral situations and begin to use training strategies to shape desirable behavior of the animals in their care.

One helpful way to interpret behavioral situations and develop training strategies is to ask *empowering questions*. The two most empowering questions for interpreting animal behavior are: “What is the motivation for this behavior?” and “How does it apply to the behavior of the species in the wild?” Because much of the behavior we see in captive animals is hard-wired, or instinct driven, connecting captive behavior to wild behavior provides invaluable insights into captive animals' actions.

Training animals in zoos is similar to the way animals learn in the wild. Animals are continually learning to adapt to their environment. A day in the life of an animal in the wild is filled with countless experiences that offer choices or require decisions. Every decision, right or wrong, is an opportunity for the animal to learn something about its environment. When an animal decides to take an action, it is the consequence of the action that determines if the action will be repeated. If something good happens in association with an action the chance of that action being repeated increases. For example, if a lion successfully stalks and catches a wildebeest in the tall grass near a certain water hole, that particular hunting strategy may be repeated. Decisions, actions, and consequences are the forces that shape behavior in the wild and are also the basis of operant conditioning training in captive animals.

Operant conditioning is a training strategy in which the subject is the operator. That is, the subject can choose to participate in the activity or not. Operant conditioning is also a type of learning based on positive and negative reinforcement. *Positive reinforcement* is something desirable, produced in association with an action, that will increase the likelihood the action will occur again. *Negative reinforcement* is something the subject does not like, or will work to avoid, and also increases the likelihood an action will occur again.

To illustrate how positive and negative reinforcement act upon animals, consider the behavior of certain lions in Africa. One theory of the tree-climbing lions in the Masi Mara in Africa is that they climb trees to avoid the hot temperatures and insects on the ground. The temperature and insects are the *negative* stimuli that affect the behavior of the lions laying on the ground and provide motivation for the lions to climb the tree. Once in the tree the lions are *positively reinforced* by the shade and comfort which they find there.

By asking empowering questions and understanding the motivation of animals in our care, we can begin to create enrichment programs that are proactive as opposed to reactionary. Many enrichment programs are initiated as a reaction to, and in an attempt to, alter an undesirable behavior. A parrot's incessant screaming can be the motivation to provide the bird with toys to distract and entertain it. It is very possible, and very likely, that the bird connects the presentation of the toys with the screaming behavior. The presentation of the toys could actually reinforce the undesirable behavior and cause the behavior to increase.

Stereotypic pacing is another behavioral problem that has generated a variety of enrichment programs. It is important to understand that enrichment activity is often viewed by animals as a form of positive reinforcement. If enrichment is presented in conjunction with a particular act it may increase the likelihood that the act will occur again. Sometimes our noble attempts to eliminate undesirable behaviors actually act to increase them.

Animals in zoos lead very different lives than their wild counterparts. Their lives are designed by curators, architects, nutritionists, geneticists, and behaviorists. We have gone to great lengths to provide these animals with everything we believe they need for a happy healthy life. We provide them with the best food, the perfect mate, a well studied social group, and exhibits that often look better than the species' own natural habitat. However, even the most visually attractive and naturalistic exhibits do not encourage animals to utilize the carefully planned enclosure or practice species typical behavior. Animals in zoos often lack the opportunity and motivation to use their instincts and adaptations to earn a living like their wild counterparts.

When enrichment and training interface, we create an environment where captive animals have opportunities to experience choices, make decisions, and experience the consequence of their actions. Training is a tool that can create countless enrichment opportunities for animals. Training can also help reduce stress, increase skill and confidence levels, and even provide enrichment for their human caregivers.

Stress

There is a good argument that some levels of stress are actually enriching to animals. Stress and anxiety are a normal part of life in the wild for most animals. However, it is generally accepted that relieving stress levels in zoo animals is beneficial. Training can relieve stress by providing opportunities for animals to participate in their own care.

For years, animal keepers have used training techniques to encourage animals to shift from one holding cage to another. The easiest way for some keepers to induce this behavior was with negative reinforcement. Often this was in the form of a hose, net, trash can lid, etc. The animal learned to move to another area to avoid the negativity and reduce the stress.

Negative reinforcement is a valid way to influences behavior. Animal behavior in the wild is frequently shaped

and influenced by negative reinforcement. A bird will turn around on a perch to face the wind and avoid the discomfort of having the wind blow its feathers up. A primate will move out of the dominant animal's area to avoid confrontation.

However, as a training tool, negative reinforcement has its limits. A general rule of negative reinforcement is that an animal trained with negative reinforcement will only work at the level necessary to avoid the negative stimulus. For example, an elephant will only lift its leg high enough to avoid the bull hook. Positive reinforcement, on the other hand, creates an environment where the animal wants to participate and is much more comfortable and open to learning. Virtually any behavior trained with negative reinforcement can be taught more effectively with positive reinforcement.

Today, shifting problems are being eliminated as keepers are developing a better working knowledge of operant conditioning training techniques and are implementing them into their animal management programs. They understand that positive reinforcement, and consistency in animal management programs, allow animal caregivers to greatly reduce the stress levels of their animals.

Another area traditionally considered stressful to captive animals is health care. In years past, some animals would do everything in their power to flee their exhibit at the sight of the veterinarian. Now, many veterinarians are associated with positive interactions as animals are being taught with positive reinforcement to voluntarily participate in medical exams. The days of immobilizing an animal for a tooth examination or to take its temperature are quickly disappearing. Animals have learned to voluntarily participate in weighing, full body examinations, urine collection, ultra sound examinations, hoof trims, blood draws, and many other veterinary procedures. All of these behaviors are performed with very little, or no, stress to the animal.

Training animals also allows staff to gain a better understanding of the animals in their care. Trainers develop a much closer relationship with their animals and therefore become more sensitive to subtle changes in their behavior. Often these subtle changes are the first signs of illness and can result in veterinary examination before more overt symptoms are present.

Skill and Confidence

One of the greatest advances in the zoo world is in the area of environment enrichment. Most enrichment programs involve providing novel objects for animals to investigate and interact with. Often these objects are similar to those that the animal may encounter, or utilize in the wild, such as a tree stump, leaf bed, water element, etc. It is easy for us to assume that simply providing an environment enrichment device will cause animals to use it. However, too often our good intentions are met with complacency or apprehension by the animals. Many times this is due to the animal's lack of experience or skill level instead of lack of interest.

There is a critical time in the lives of most animals when many of the tools for survival are learned. This period generally coincides with the course of time that a young animal is with its parents. It is during this period that the animals develop their coordination and motor skills, communication skills, and various other skills such as hunting, predator avoidance, foraging, etc.

Just because you put a large log in a bear's exhibit does not mean the bear will automatically climb it. For the bear to climb the log three things must be present: Opportunity, Motivation, and Skill. Putting the log into the exhibit creates the opportunity but what is the bear's motivation to explore or climb the log? If the bear has never seen a log before it may be suspicious or even afraid of it. With time the bear's curiosity may cause it to investigate the log, but climbing the log would be unlikely. Climbing the log requires skills, muscles, and coordination that are usually developed at a young age.

In a young bear the motivation to climb trees is provided by its natural inclination to explore, play, climb, run, and forage. Motivation to experience these actions dissipates as the animal gets older. If the bear did not have an opportunity to experience climbing a log when it was young, it will have no experience to draw from in later life when the log is presented in its exhibit. Therefore, the bear may lack the motivation and skill required to make full use of the log as an enrichment opportunity. Training is the tool that can provide motivation, skill, and confidence in the bear.

Training the bear to climb the log is just like training any animal to perform any behavior. Start by envisioning the final behavior and break down each step leading up to that behavior into small steps or *successive approximations*. Once the bear has accomplished a particular step without hesitation, move on to the next step.

In the wild, animals use successive approximations to teach their offspring. A peregrine falcon will drop a dead bird from a thousand feet in the air for its progeny to catch as it falls to earth. Once the young birds have mastered this step the adult will release a slightly wounded bird. Gradually, as the skill level of the young birds increases the parent falcon will catch and release an unharmed bird for the young falcons to attempt to catch. A similar strategy is used by Killer whales as they catch and release seals for their young calves to catch.

Using successive approximations to get the bear to climb the log in its exhibit could proceed in these steps. The first step would be to place the log in the exhibit. The log may be less threatening if laid on its side or at a slight angle. Placing bits of food that the bear can smell in holes on the log will provide motivation for the bear to explore and manipulate the log. Gradually, over several days, one end of the log can be raised and the reinforcements can be placed higher on the log. The bear will gradually gain skill, coordination, and confidence that will ultimately allow the bear to climb the vertical log.

Enrichment for Humans

Enrichment is not just for animals. Animal caregivers gain a great amount of enrichment from a successful behavior program. Their work becomes easier as animals become eager participants in their own care. Each time an animal performs a behavior correctly the trainer is reinforced by a sense of pride and accomplishment. With each training session a trainer learns a bit more about the animal. Training sessions often become the most enjoyable part of a keeper's day. Training sessions are almost always the most enjoyable part of an animal's day.

Training can also lead to another area of enrichment for keepers, and the zoo visitors. Keepers are now beginning to use their animal training sessions as interpretive opportunities for the public. Exhibit animals are encouraged to perform species typical behavior in a naturalistic setting while the keeper interprets the action to the guests. These presentations provide enrichment for all concerned and they help the public learn a bit more about the animal.

Conclusion

Animal training is playing an increasingly important role in successful animal management programs. Trained animals are experiencing more stress free lives as they learn to participate in their own care and cooperate with routine husbandry procedures as well as with more involved behaviors.

Animal training is also an important component of animal enrichment programs, allowing keepers to take a proactive approach to problem behaviors and avoid inadvertent reinforcement of these behaviors as so often happens when a reactive enrichment measure is applied. Training also ensures the success of enrichment devices by providing animals with the necessary motivation, skill, and confidence to allow them to take full advantage of the offered device.

Operant conditioning is fast becoming a part of the vocabulary of animal keepers all over the world as are the empowering questions they can use to influence and understand behavior. By asking themselves, “What is the motivation for the behavior?” and “How does that behavior relate to the behavior of this species in the wild?” they are able to create and implement an appropriate training strategy.

They understand that positive reinforcement is something desirable, produced in association with an action, that will increase the likelihood the action will occur again and that negative reinforcement is something the subject does not like, or will work to avoid, and also increases the likelihood an action will occur again. Finally, they realize that positive reinforcement is a preferred method of training because it creates an environment where the animal wants to participate and is much more comfortable and open to learning as opposed to acting only at the level necessary to avoid negative stimuli.

Animal training and enrichment are the tools through which we can make the lives of the animals in our care less stressful and more stimulating. At the same time, we can enrich the lives of animal keepers and educate zoo visitors. Training is critical to enrichment and critical to the evolution of our understanding of how to best care for the precious creatures that depend on us for their every need.