Coe, Jon C. 1992, "Animal Training and Facility Design – A Collaborative Approach", Perspectives on Training in the Zoo — Great Challenges, Profound Benefits, *1992 AAZPA National Convention Proceedings*, Toronto, American Association of Zoological Parks and Aquariums, Bethesda, MD, pp. 411-414.

# Animal Training and Facility Design – A Collaborative Approach

**Jon Charles Coe**
CLRdesign inc.
Since 2003: Jon Coe Design, Pty. Ltd.
jon@joncoedesign.com

Managing large animals can be dangerous, yet Carl Hagenbeck (1909) describes immobilizing an old lion for removal of painfully ingrown claws simply by ordering "down" and "stay" and comforting it throughout the "hands-on" procedure. However, few trainers have the mastery to employ these techniques, even with animals they have raised and trained themselves. Our current dependence on frequently changing keepers and animals requires reliance on properly designed facilities operated by staff safely separated from the animals.

Elephants are perhaps the last of the really dangerous animals to be managed "hands-on." However, future keepers would probably no more go in with elephants, than today's' keepers would go in with lions or tigers, although in the past these were also managed hands-on by some trainers.

## Two Training Methods and Their Facility Design Implications

To be effective, facility design must work in harmony with the training system in use. Two common systems operate on opposite principals.

## The Carrot and the Stick

Hediger (1950) explains the ethological principals behind traditional circus training in terms of a dominant human subtly manipulating the flight distance and critical distance of a subordinated big cat. Most care-givers move and otherwise manipulate animals using this human dominance approach. Animals move in the desired direction by moving **away** from the keeper/trainer. This movement may be encouraged by loud threats or other forms of mildly aversive treatment. This system requires the transfer door to be located away from the keeper. In traditional holding facilities the animal transfer door is located on the opposite side of the night room from the keeper aisle.

## The Carrot and More Carrots

Operant conditioning as described by Pryor (1984) and others uses an opposite approach. No form of negative or aversive behavior is used and the trainer or keeper is neither dominant nor subordinate to the animal. Since desired behaviors are rewarded (usually with food) animals are **lead** not driven. While operant conditioning can be used to lead or send an animal in any desired direction, the easiest and most direct method is to move the animal toward or parallel to the trainer/reward giver. In this case the animal transfer aisle would be located parallel to the keeper aisle and in front of the night room.

## Trainer Access to Transfer Chutes

When long transfer chutes are used the keeper path should be parallel to the chute, allowing continuous opportunity to provide positive reinforcement. The barrier type ideally should accommodate the passage of appropriate food rewards. Once trained, frequent reinforcement is unnecessary and new animals can be trained at any time.

Excellent keeper/trainer access to the complex series of transfer chutes in the new gorilla exhibit at Zoo Atlanta helped the silverback gorilla, Willie B., master the complex facility in a very brief time.

## Design for 'Hands-on' Management

When hands-on manipulation is used with potentially dangerous animals such as elephants and rhinos, designers must provide abundant keeper escape routes and avoid "blind corners." Good keeper/trainer access into the animals' area is also important since the human assumes the role of "herd leader." This is reinforced with frequent direct contact.

## Design for 'Hands-off' Management

Traditional dangerous animals such as large carnivores, great apes and dangerous elephants are trained without direct contact by the "carrot and stick" method mentioned earlier. Some zoo staff desire mechanically powered shift doors which cannot be stopped or reversed by great apes or elephants. One zoo director once instructed me to design a shift door apparatus which the chimpanzees could not control. Thoughtful reflection shows that this is impossible while humane standards of care apply. No matter how powerful the door mechanism, it will not be closed so long as a chimp puts a single finger across it. Similarly, Michael Schmidt (1991) warns against using hydraulic doors to trap elephants in restraint areas.

Restraint (squeeze) cages are another example of this truth. Mechanical restraint, when properly designed and applied, is often greatly superior to chemical immobilization. However, a panicked animal can be badly traumatized when forced into a restraint or immobilized within it. Only through habituation and other forms of training can restraint facilities be properly used (Schmidt, 1991).

## Design for Protect Contact

The concept of protect contact (Desmond and Laule 1991) requires the animal to expose the desired areas of its anatomy for treatment outside its confined area. Examples include an elephant putting its foot through a hole in the barrier for a nail trim or a chimpanzee putting its arm into a special sleeve to allow blood to be drawn. The animal is trained to do this. The barrier must be designed to have a flexible array of operable openings in the appropriate places. It is important that both the trainers and the animal have a good view of the procedure and of each other. Obviously, it is also important that the animal cannot reach the trainers or anyone else involved in the procedure.

## Training Enhanced Exhibits

As an exhibit designer of some experience, I am well aware of the limitations of facility design when it comes to "uncooperative" animals. A chimpanzee with a good throwing arm can make a beautiful open-moated exhibit useless. Animals which are more comfortable hiding in the shadows because of some early aversive experience are unable to use their carefully furnished habitat fully. (Since designers don't make mistakes, we don't need to discuss ways in which training can overcome facility deficiencies. Perhaps other panelists will cover this subject).

## Special Exhibit Opportunities

Creative integration of facility design and training can greatly expand the potential of both exhibition and psychological enrichment.

**Example One: The Linear Exhibit.** The Elephant Exhibit at Woodland Park Zoo (Jones, 1991) provides a complex amoeba-like elephant area with different functions (bath, browse, etc.) located at different habitat nodes. This "Habitrail" could be used for many types of animals, expanding behavioral opportunities and exercise. But training would greatly help the animal learn to use its complex new home and help insure that both the enrichment and display potential is realized. In nature, young social animals learn their home range from their elders. In new zoo exhibits they can best rely upon their keepers/trainers for this introduction.

**Example Two: Rotating Exhibits.** Many zoo animals commonly rotate among exhibit areas and off-exhibit areas. At the Ford African Rainforest at Zoo Atlanta, four outdoor exhibit areas are interconnected to indoor night facilities in such a way that a given troop of gorillas can use a different outdoor area each day for four days. This would approximate a natural home range condition. While this potential is not yet fully realized, it suggests the possibilities for rotating exhibits. It is easy to envision a large Indian waterhole exhibit, for example, that might alternately be visited by elephants, rhino, gaur and tapir. But this vision is only achievable with effective animal training.

**Example Three: Behavioral presentations.** Both formal and informal presentations of natural behavior in habitat settings are very popular, and allow the public to understand and appreciate natural behaviors they may not have noted before. Designers must integrate the needs of behavioral presentations into the overall exhibit concept.

## Behavioral Enrichment Training and Facility Design

Exhibit designers are becoming involved in the design of more "built-in" enrichment opportunities. Unfortunately, these facilities are often little used by the animals. Why doesn't the cage-raised leopard climb into its tree? Why doesn't the chimpanzee beat on its new artificial drum tree? Why doesn't the elephant swim in its pool? Perhaps they simply never learned how. Maybe a keeper/trainer needs to show them.

## How do we integrate training needs into facility design?

Integrated functions require integrated facilities. Integrated design begins with an integrated design process. And this results from selling policy makers on the benefits of training, such as enhanced functionality, expanded exhibit appeal and greater bang for each buck of hard earned construction funding.

A collaborative exhibit design team should include animal keepers, trainers and designers, in addition to appropriate upper level staff, beginning at the conceptual level. Participants from education, horticulture, research and behavioral enrichment (if not already represented) should be included in the initial brainstorming and goal setting sessions. The broad group should also reconvene periodically throughout the design and construction phases to make sure that full integration of the original intent is maintained. They should also carefully design, collaboratively, the process by which the animals are introduced into the new facility. Finally, the team should assist in the post-occupancy evaluation of the facility.

Obviously this requires a lot of time from a lot of people. Collaboration involves compromise. Learning from each other can sometimes be difficult. But it can also be exciting, for the stakes are high. The animals under our care deserve no less than the best we can offer. And the safety of our staff is equally important. When our visitors experience active, natural-behaving animals in supportive settings, they will not only support our institutions, but are much more apt to join us in our mission of perpetuating wildlife and wild places.

**REFERENCES:**


Desmond, T. & Laule, G. 1991, Protected Contact "Elephant Training", *1991 Annual Conference Proceedings, pp. 606-613,* American Association of Zoological Parks and Aquariums, Wheeling, WV.

Hagenbeck, C. 1909 *Beasts and Me,* Longmans, Green and Company, London.

Hediger, H. 1950, *Wild Animals in Captivity,* Butterworth, London.

Jones, G. 1989, "Beyond Landscape Immersion to Cultural Resonance: In the Thai Elephant Forest at Woodland Park Zoological Gardens", *Annual Proceedings,* American Association of Zoological Parks and Aquariums, Wheeling, WV.

Pryor, K. 1984, *Don't Shoot the Dog!* Simon & Schuster, New York.

Schmidt, M. 1991, "The Elephant Restraint Chute Owner's Manual", *Washington Park Zoo Elephant Monograph #1,* Portland, OR.