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# Entertaining Zoo Visitors and Zoo Animals: *An Integrated Approach*

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## Introduction

Until the last two decades most zoo and aquarium animal displays were designed with little reference to the habitats in which the animals evolved or to the physical and behavioral needs derived from these native environments. Rather than modeling from wild nature, which is difficult to quantify, other animal care facilities were copied. When problems in animals' physical health arose, veterinary specialists were called in. Behavioral problems were combated with drug therapy, or specialists in behavioral enrichment or training were consulted. The physical and behavioral healths of the animals often were not seen as interrelated (Burghardt 1996). Most interventions were remedial attempts to compensate for behaviorally impoverished artificial habitats, (Coe, 1992a, 1992b) even though Heini Hediger (1950) clearly identified this problem nearly fifty years ago. More recently, Coe and Scheffler (1989) have shown that behavioral stress can adversely affect animal immune response and Snowdon (1989) has shown that giving animals choices can lower stress. Many others, including the members of this panel, have published extensively about the benefits of behavioral enrichment and operant conditioning training. Since training is itself enriching to the animals (Laule 1992), there seems to have developed an unfortunate intramural competition between specialists in these two disciplines. I endorse the position of this panel that collaboration among all design and animal care professionals is essential if the animals are to receive the environments and care they deserve.

Fifteen years ago, Hal Markowitz (1982) argued for the integration of behavioral enrichment and training into the basic design of animal displays, but it is my experience that this had been very slow to happen in any significant way. An unfortunate divide arose between defenders of Markowitz’s active intervention approach and the movement toward much more passive naturalistic habitats espoused by Hancocks (1980) and Hutchins (1984). [See Fortham-Quick (1984) for an excellent discussion of this debate]. In fact, both of these directions, when combined, result in unprecedented behavioral opportunity, animal activity and public enjoyment. This compound approach, informed by ethnology and field research, also borrows heavily from theme park technology and show training techniques to create a significant new direction for zoo and aquarium facilities.

## Activity Based Design

Definition: Activity-based design begins with the premise that the animals' long term well-being is paramount and that environments, programs and procedures which advance this goal are frequently of great interest to the visiting public. Healthy animals with stimulating behavioral choices tend to be active animals. Therefore, opportunity-rich animal environment, enlightened animal care and caretaker devotion should all be made visible to the public within a setting which demonstrates the animals' innate competence. Whether simulations of naturally or culturally derived habitats or pure functional facilities these environments are abundantly provided with appropriate behavioral opportunities for the animals, keepers and zoo visitors.

The designer's goal is to collaborate with other zoo professionals in the shaping of environments which immerse animal, caregiver and guest within significant, informative and pleasurable experiences which advance both the well-being and long term conservation of the animals and species displayed.

Activity-based design facilitates ongoing, active interventions in husbandry, behavioral enrichment and training, recognizing the need for change, novelty and improvement. However, this flexibility need not restrict the designer's imaginations. Indeed, the reverse is true. For example, in the Toledo Zoo's Great Ape Exhibit (Petiniot 1995), when zoo staff and designers were faced with few options because of a limiting site and construction budget, they chose training and enrichment as the display themes. Here, family groups of gorillas, chimpanzees and orangutans can rotate through highly enriched interconnected indoor and outdoor enclosures, while the viewing public watches and enjoys greatly increased animal activity and species-typical behavior. (See Coe, 1995, for more on animal rotation)

Challenged to devise settings with real thematic drama and entertainment value, which also provide diverse behavioral choices and changes, designers have responded with some of the most memorable and diverse animal displays yet accomplished, including three recent AZA Exhibit Award winners. While predating the term "activity-based design" Woodland Park Zoo's "Northern Trail," National Zoo's "Think Tank" (Broda-Bahm 1997) and Sea World of Florida's "Arctic Wild" demonstrate many features of this approach. For example, they all immerse visitors in dramatic recreations of plausible thematic settings, based upon a thorough understanding of the animals' natural behavior. All provide the animals with substitute occupational activities such as searching for and catching or earning food in ways which are highly visible to the public. The resulting high animal activity levels satisfy both animals and guests. Visitors are also encouraged to actively explore the thematic habitat for themselves. They too have more fun. Three recent zoo facilities have taken the concept of activity-based design even farther.

## The Louisville Zoo Islands Exhibit

Louisville Zoo Director Bill Foster and General Curator John Walczak wanted their new "Islands" exhibit to break new ground. The resulting displays and support facilities allow staff to rotate siamangs, orangutans, babirusa pigs, tapirs and tigers through three natural habitat type outdoor enclosures and one spacious "day room". Enrichment features in the outdoor habitats appear naturalistic (artificial bamboo sway poles, vines, pools, hidden treats, etc.) while the day room has an "anything goes" approach for optimal enrichment flexibility. A major advance developed at this facility is that the operant conditioning training is not hidden from the public, but is presented "up front", as both public education and fact-filled entertainment (Walczak 1995). While senior zoo staff supported the novel concepts of animal rotation and activity-based design, they credit their "hands-on" staff, particularly trainer/keeper Jane Franklin, for making the theories work.

The Louisville Zoo staff has kept careful records of animal behavior and health beginning when the animals were introduced into their new homes. These studies, in their second year at this time, record urine cortisol levels, animal behavior and visitor stay time. While still preliminary, the studies suggest positive behavior and high activity levels without significant stress to the animals. The new exhibits seem to be very popular with the visiting public, and zoo attendance has increased significantly since they opened. Mammal curator Steve Taylor believes that the integration of design, operation, enrichment and training is essential if zoos are to advance to the next level. He believes that for this to happen, three major ingredients must be in place: 1) institution-wide support, 2) a skilled staff dedicated

to making the ideas work, 3) the ability and willingness of everyone involved to "think outside the box" (Taylor, personal communication).

## The Los Angeles Zoo Chimpanzees of the Mahale Mountains Exhibit

Chimpanzee keepers Vicki Bingham and Jennie McNary suggested from the beginning of planning that the highest priority for their new exhibit was the animals' well-being with the goal of providing these highly social and intelligent animals with the greatest possible range of species-appropriate behavioral choices. This lead to the decision to move many enrichment features right up to public viewing windows so that zoo guests could both understand the paramount importance of enrichment activities and enjoy the creativity and dexterity of the chimpanzees in manipulating their environment. The zoo wished to display the chimpanzees as if they were a wild troop in their native East African habitat, while providing the flexibility to use enrichment features not found in nature. For this reason it was decided to develop two adjacent settings. The first is a simulated gap in a hillside forest; the second, a simulation of an abandoned logging camp being taken over by jungle vegetation and opportunistic chimpanzees. "Natural" appearing enrichment features include artificial termite mounds, logs and trees outfitted with hidden food dispensers to encourage foraging (with close up guest viewing of this animal activity); and "logging camp left-overs" including sawdust piles, log and slash piles along with old ropes. Thus, the affective ability of habitat immersion displays to demonstrate important emotional and ecological messages (Coe, 1985), including the need to share resources between people and wildlife, is combined with the flexibility required for an effective ongoing enrichment program, all within a memorable and exciting landscape. This exhibit is presently being built with the strong support of Zoo Director Manuel Mollinedo and is scheduled to open during late spring in 1998.

## The Philadelphia Zoo Primate Conservation Frontiers Exhibit

The terrible fire that devastated the Philadelphia Zoo's primates on Christmas Eve, 1995, resulted in a tremendous ground swell of popular support and the dedication of zoo staff to make a dramatic advance in primate husbandry in their new facility. General Curator Karl Kranz, Mammal Curator Andy Baker and their staff also chose to make the well-being and safety of the animals a first priority, while informing the public about the global nature and dedicated people of the international primate conservation movement. However, unlike the Los Angeles Zoo where primates can live out-of-doors most of the year, the Philadelphia climate required that both non-human and human primates (staff and guests) spend much of the time indoors. Thus a large building for public display is required. Again the image of an adaptively rebuilt tropical logging operation was developed, but in a much more substantial way, including facilities for eleven species of primates. The exhibit theme evolved to suggest the proposition that an abandoned logging mill had been redeveloped as an active primate conservation center which invited eco-tourist guests. Areas normally thought of as "behind the scenes" will become focal points. These "home rooms" will be equipped with diverse enrichment features. In an ironic turnabout, logging equipment once used to destroy primate habitats will now provide play and foraging opportunities. Publicly attended animal training sessions will become important guest education and entertainment. Trainers and presenters will be strategically positioned to address both their animal and human audience. Enrichment features, including changeable "activity cabinets", will be integrated with interpretive graphics, encouraging primates to gather near these areas. The building will be designed to blur the barriers between human and non-human primates, as if all were free to come and go, crossing each other's paths to see and be seen. Zoo guests could well ask, - "Who is on exhibit here?" Outdoor animal habitats also will combine habitat immersion techniques such as simulated field research camps and free-ranging tamarins within a landscape suggestive of tropical forest reclaiming a disturbed natural site. This project is in design at present and is scheduled to fully open in the late spring of 1999.

## Putting Animal Well-Being First

What do all of these exhibit examples have in common? Each example used the concept of activity-based design to wrap the exhibit theme and design around the central mission of providing zoo and aquarium animals' optimal levels of psychological well-being. Behavioral management and environmental stimulation once thought of as being peripheral and remedial, have now become central

elements of zoo design, operation and marketing. Whatever taxa displayed, this approach should maximize animal activity levels and overall fitness as well as popular appeal.

These examples also have something else in common. All depend upon creative, hands-on staff that participated in the development of the behavioral concepts and have dedicated themselves to making them work. Front line animal care professionals such as Gregg Thompson (Woodland Park Zoo), Char Petiniot (Toledo Zoo), Jane Franklin (Louisville Zoo) and Vicki Bingham (Los Angeles Zoo) are essential for the long term success of this approach.

While activity-based design is still in its infancy, I believe it will result in a new generation of zoo and aquarium facilities which, according to Louisville Zoo Mammal curator Steve Taylor - "Will be more fun for animals, staff and visitors!" (Taylor, personal communication) However, as Taylor said, this will only happen when motivated, progressive zoo professionals at all levels continue to "... think outside the box".

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