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Orangutan Housing and Exhibition: Recent Trends

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Introduction

Orangutans (*Pongo pygmaeus*) have been slow to benefit from the revolution towards more naturalistic exhibit and facility design. The orangutans' native curiosity and destructiveness made them poor candidates for the highly naturalistic presentations becoming common for gorillas. More importantly, gorillas seemed to capture the hearts of wealthy donors and "silverback" zoo directors more successfully than orangutans have. It is now becoming the orangutans' turn, as this conference demonstrates. New materials, technology, and a continuing movement toward facilitating more naturalistic behavior are opening exciting opportunities for the red ape.

Great Ape Exhibition – Divergent Models Now Converging

Primate exhibits in general, and orangutan exhibits in particular, have developed in two divergent paths since the days of the blue tile-lined cells. In the "high tech" model, construction materials are selected for their durability and cleanability. Appropriateness for normal orangutan behavior was of secondary importance while naturalistic appearance was considered least important. The Lester Fisher Great Ape House at Lincoln Park Zoo is a successful example of this approach. Opened in 1975, the facility provides orangutans and other great apes with voluminous, vertically orientated activity areas. Light and temperature gradients provide choices of microclimate for the apes. The original climbing structures of ridged steel pipe were later supplemented with flexible ropes and cargo nets. While there is only a modest attempt to introduce greenery into the scene, there is considerable success in producing an environment for naturalistic behaviors.

At about the same time, Chicago's other great zoo in Brookfield developed large indoor mixed species exhibits which include orangutans, gibbons, tapirs and even large monitor lizards separated by habitat stratifications. While the artificial trees are robust and inflexible, artificial vines provide an interactive dimension for the apes. However, while this is a bold early attempt at habitat replication, large volumes of unusable space had to be set aside as barriers and the overall affect appears sparse compared to the animals' forest home.

The Whittier Southeast Asia Exhibit at San Diego Zoo opened in 1983. This outdoor facility also provided great vertical orientation and complex climbing choices. Heavy ropes offered a limited range of motion. The heavy log structure, like its steel counterpart at Lincoln Park Zoo and the concrete trees at Brookfield Zoo, was designed to remain rigid. Orangutan escapes and other problems discussed in the paper which follows detract from what is otherwise a move forward in orangutan exhibition.

A more naturalistic approach to exhibit design, in terms of both function and form, was undertaken at Zoo Atlanta. The exhibit which opened in 1988 provided three adjacent habitats, separated by hidden double moats. As originally conceived, the males occupying the two end exhibits would display back and forth while the females in the central area could vote for their favorite by positioning themselves near him. The orangutans, however, were less impressed by these opportunities and generally ignore their conspecifics in adjacent areas.

The Zoo Atlanta orangutan exhibit provided complex climbing opportunities by securing large dead trees to steel and concrete foundations. The "trees" originally reached a height of 55 feet. While several zoo keepers expressed doubt that zoo-raised apes would venture so high, a young female became an opening day spectacle when she immediately climbed to the very top and stood upright with both arms raised overhead, seemingly seeking even greater elevation. Unfortunately, several years later the structure had to be lowered somewhat when the upper branches became unsound due to wood rot.

In both the San Diego and Atlanta facilities, the range of arboreal movement offered to the animals is compromised by the danger of potential escape. This concern has led to a new direction in orangutan exhibition. In the new model outdoor habitats are totally enclosed in light weight yet very strong stainless steel netting. This takes the concept of the oversized outdoor cage developed by John Aspinall at Howletts Zoo in England (*National Geographic*, Vol. 181, No. 3, March 1992, P. 21) for gorillas and later also used as the Columbus Zoo's "Gorilla Villa", but creates instead a voluminous tent-like structure. The fine woven cable net is also more transparent and diaphanous than the welded steel bars of the older facilities. The result is that the apes have far greater access to the volume of space available, yet the light structure does not appear "cage-like" or oppressive.

One of the best examples of this hybrid exhibit approach is found at the Toledo Zoo. Here four large interconnected enclosures allow animals, encouraged with non-coercive operant conditioning, to rotate between and through all four areas. Trainer Gail Laule (pers. comm.) notes that of all three great ape species participating in this rotational movement, the orangutans seem particularly to enjoy the extended movement opportunities provided. Rather than being the much maligned "... red fur-ball in the corner", the orangutans have become active.

The Toledo Zoo exhibit depends on a rigid structure of heavy steel pipe to support the mesh. In contrast, the new orangutan facility which opened at Cheyenne Mountain Zoo in 1992 uses a far lighter cable-supported tensile structure. This forty foot high structure encloses an impressive volume of space yet appears very light and unconfining. Originally the orangutans' climbing apparatus of logs and ropes was intended to be suspended from the same cable system which supports the mesh enclosure. Everything would move, imitating the motion of tree limbs. However, conservatism (or was it practicality?) on the part of the structural engineer resulted in a more conventional fixed climbing structure. While there was some initial concern that the orangutans could undo or tear the woven cable net, this has not been the case during the first year of operation according to zoo Director Ms. Susan Engfer

The Oklahoma City Zoo's Great EscApe facility combines the behavioral enriched indoor "dayroom" pioneered at Lincoln Park Zoo with the more naturalistic landscape treatment developed at Zoo Atlanta. Apes may move between the year-round indoor dayroom with its log climbing structures and experiential fiberglass "sway poles", a sheltered and mesh-roofed outdoor area and the large moated outdoor habitat. This area features not only abundant dead trees for climbing, but a shaded "feeding platform" modeled after the release site at the Bohoric Orangutan Rehabilitation Center in Sumatra. Interpretative graphics explain and expand upon this comparison.

Future Directions

What further innovations are being developed? Refinement of material technology will allow development of flexible artificial trees using high tech fabrics and resins. And there is yet hope for a fully cable supported tree-like mobile to be built surrounded by an existing grove of giant eucalyptus at the Chaffee Zoo in Fresno, California. The concept of such a facility is developed in their recent master plan.

But perhaps the most exciting potential lies in combining existing exhibit technology in new ways, using enhanced training technology to readily move animals through naturalistic settings and event simulations. For example, picture this scenario from the Islands Exhibit, presently under design at the Louisville Zoo. Imagine a pair of hornbills flying low along a stream course and settling on branches and vines to feed on fruit. Soon they are displaced by gibbons hurrying to the same prize. These in turn are eventually displaced by a slow moving orangutan. Both the birds and primates scatter uneaten fruit on the sand below and a tapir comes to feed. At length, the gibbons and hornbills, which have moved on (to the next exhibit), are again displaced by the orangutan and tapir. Meanwhile, in the first exhibit, a tiger appears. It investigates the fallen fruit and continues to explore the surroundings. This type of mixed species rotation provides an enormous increase in opportunities for naturalistic and spontaneous behavior. The scenario simply supplies the stage for this improvisational habitat theater.

Orangutans have benefited from far more spacious and enriched artificial habitats in recent years. The contrasting steel and rope environment of Lincoln Park Zoo and the artificial tree and vine approach of Brookfield Zoo are merging in the large mesh enclosure of Cheyenne Mountain Zoo and the highly active interconnected habitat at the Toledo Zoo. The addition of enlightened, positive reinforcement training adds an exciting new dimension with the opportunity of single species or even mixed species rotation through a variety of enriching habitats. These combinations, in turn, can lead to levels of flexibility, complexity and variety we can scarcely conceive, yet which are well within the orangutans' ability to manipulate and enjoy.