

## AN INTEGRATED APPROACH TO DESIGN: HOW ZOO STAFF CAN GET THE BEST RESULTS FROM NEW FACILITIES

Jon Charles Coe, Principal  
CLRdesign inc.  
115 North Third Street  
Philadelphia, PA 19106  
Phone: 215-925-1002  
FAX: 215-928-9441  
Email: [jcoe@clrdesign.com](mailto:jcoe@clrdesign.com)

### ABSTRACT

Good exhibit and facility design depends upon close collaboration between all "stakeholders" on the zoo staff with the professional design team. Animal care staff play a critical role in this interdisciplinary process. It is also essential that the animal and exhibit management plan be developed concurrently with the exhibit design plan and that designers continue to have input with staff during the critical "commissioning" process after the exhibit opens.

This paper will briefly discuss the "design process" and suggest ways that animal care staff and other zoo professionals can become better informed consumers of design services and thus contribute more successfully in the design of the facilities they will be called upon to operate.

*Question: "Should keepers and other frontline animal care staff play a significant role in planning the design and operation of exhibits?"*

*Answer: "Yes, if they are prepared to make a significant contribution."*

### INTRODUCTION

It may not be in your job description, but you too are a designer. If you have ever identified a need, envisioned a solution and achieved the desired outcome, you have been a designer. Architects, landscape architects, engineers and museum designers are just different types of designers. So are dietitians, management planners and animal husbandry specialists. Professionals in the former list know all about design; you know all about your animals, staff and resources. How can these two spheres be blended to create the best results? One answer lies in developing an informed interdisciplinary process that is both interactive and collaborative.

Traditional top-down zoo design may involve only the director, general curator, donor and architect. If the director encourages the architect to interview zoo staff independently, the process becomes interdisciplinary but not necessarily collaborative. This process can be seen in zoos of all sizes with strong minded and visionary directors. Small zoos typically use local generalist architects and very large zoos often use in-house designers. In either case, the results can be very good or very bad, depending upon the knowledge, vision and leadership of the principals, but either way front line keepers are often left out of the loop.

Many mid-sized zoos use specialist zoo design consultants like CLR or one of our excellent professional colleagues. We recommend using a collaborative workshop process, but the client determines who to invite to the workshops. If the purpose of the workshop is to discuss large scale planning issues such as where the exhibit should go, or when among competing zoo priorities a given exhibit should be developed, we suggest only involving upper level zoo staff from a wide variety of disciplines, hoping to have what are called "big picture people". When we are designing a specific exhibit, we usually request that at least senior keepers be included in all of the design workshops. Sometimes management agrees with this strategy, sometimes they chose to involve only higher level staff instead, with occasional input from keepers.

**Why involve multi-disciplinary zoo team members in exhibit design?** (Bierlein and Sammons 1997, Coe 1998, McGill 1998, Torres and Spiegel 1996)

1. Because the Zoo Mission Statement implies multiple values and goals.
2. To cover all the bases, assure nothing is overlooked.
3. To learn from other points of view.
4. Because there is strength in diversity.
5. To improve support and buy in from a broad range of zoo departments.
6. Because innovation usually occurs at the inter-sections of different professions and viewpoints.
7. Because exhibits are so expensive to build they must serve many masters well to justify the investment.

**Why involve animal care staff in exhibit design?** (Keeper point of view)

1. They know the animal "clients".
2. They know what has worked before.
3. They and the rhinos are the primary users of the project, so individual preferences are important.
4. To improve buy in and continued support for the project.
5. To ensure coordination between project design and husbandry design.

**Why should keeper staff be excluded from the design process?** (Common senior staff response)

1. May not be up-to-date in husbandry practices such as operant conditioning, behavioral enrichment, etc.
2. May only have limited experience.
3. Facility may outlive generations of individual caregivers and animals and shouldn't be designed for individual preferences.

## **ZOO TRENDS WHICH ENCOURAGE KEEPER PARTICIPATION**

### **Activity-Based Design and Management**

Until very recently, animal husbandry, behavioral enrichment, operant conditioning training and exhibit and facility design were carried out by separate specialists, at least that is often the case in larger zoos. This unnatural separation can lead to conflict and competition. The concept of Activity-Based Design and Management is to fully integrate these and other important elements into a single interactive plan. This plan combines the physical design for the facility with the husbandry plans for the animals and plants and the interpretive/entertainment plans for the zoo guests.

*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. (Coe, 1997)*

### **Integration of Facility Design and Operation**

Many new highly integrated exhibits are still being operated with old-fashioned linear management systems and not performing up to capacity. New thinking in design requires new thinking in operation and management (Coe 1998). Several zoos are moving toward team-based exhibit management, following a significant trend in industry. The full integration of facility design and operation is an important aspect of Activity-based Design and Management.

### **ARE YOU PREPARED TO CONTRIBUTE?**

To you as animal care staff, design will be a new field, with new jargon and new cultural values. To prepare yourself, you should know more about the design process.

**The design process**, as taught in schools of design involves five steps and is generally analogous to the "scientific method."

**Step 1 – Site Inventory.** This is the data collection period. Subjects may include, microclimate, soils, topography, existing vegetation, facilities, views and vistas, etc.

**Step 2 – Site Analysis.** The data is analyzed to identify trends, processes, opportunities and constraints that the existing site offers.

**Step 3 – Program.** Definition of client goals and needs, everything from "why are we doing this?" to "how many pounds of manure does a rhino produce per day?" The designer can help organize the program elements, but the staff have to provide the data and direction. Program elements are usually prioritized into "project imperatives" (what you must have), "project preferences" (what you want) and "project wish-list" (what you can do without if necessary).

Some clients feel they can save money by preparing their own program before bringing in the design team, but our experience is that all this data must be later confirmed by the designers anyway, and programming can best be done with the help of the professional designers.

**Step 4 – Synthesis.** This is the creative part, the alchemy of forming golden concepts and visions from base data. It is largely an intuitive process and defies description in linear terms. It is often an uncertain process when no clear outcome is visible, until suddenly a potential solution presents itself from the apparent fog of variables. Clients who like certainty are often uncomfortable with this step.

**Step 5 – Evaluation.** This is the testing stage when ideas from earlier stages are evaluated against program goals and criteria. Usually several concept alternatives are compared and the final concept, often a hybrid of previous concepts, is selected.

### **Linear vs. Cyclic Processes**

The design process outlined above is usually thought of as a linear process, with a discrete beginning and end. In our experience, however, it is best thought of as a cyclic or spiral process. After the first pass through, the concept is refined by repeating the process in greater detail or refinement. This process continues to repeat with the design of each component of the project.

### **The Project Development Process**

The design process outlined above can be applied to many problem-solving needs. In terms of the designer's professional service, the project can be broken into five distinct phases.

1. **The design phase** develops the users program and design concept and elaborates it into a well-developed set of drawings, models and construction budgets approved by the zoo. This is the period in which zoo staff can have the greatest input.
2. **The construction document phase** converts the design into the technical language of the construction industry, commonly called "blueprints and specifications". Staff review of these documents is important for quality control, but changes and additions are very expensive and may not be possible. Since zoo staff are not trained to understand these documents, they must insist that the designers thoroughly explain everything to them.
3. **The bidding process** is used to select the building contractor and subcontractors. When bids exceed construction budgets, cuts have to be made and changes can result which have unforeseen consequences. A strong, effective staff design team may be able to help evaluate "value engineering" cutbacks.
4. **The construction phase.** In order to avoid confusion (and potential lawsuits) zoo staff, other than the zoos "client representative" are not allowed to interact directly with any of the contractors during project construction. Changes can occur during this time which frequently disappoint keeper staff. Therefore the zoo's staff design team should continue as advisors to the client representative.
5. **Commissioning** . Just as ships are not considered complete until they return from their commissioning voyage, zoo exhibits should not be considered complete until after the animals and staff have used them for a while. While this worthwhile concept is new to zoos, Brookfield Zoo has made it an essential part of their team approach to planning and design (Vernon 1997).

### **FACTORS FAVORING SUCCESS IN THE DESIGN TEAM**

If keepers are to become important contributors to the design of new animal facilities, they, like all the other players, must be prepared and committed to make a positive contribution.

1. **Knowledge and experience.** How much have you learned about rhino behavior beyond your immediate experience through reading, research, trips to other zoos or study of wild rhinos? Are you familiar with recent advances in operant conditioning and behavioral enrichment with rhinos and other species? Have you kept abreast of medical or dietary issues?
2. **Spirit of collaboration and teamwork.** We sometimes hear keepers bemoan the "good old days" when "the animals were the most important thing" and the animal department made all the important decisions at the zoo. We've also heard zoo staff say "... we could have a great zoo if it weren't for all the people!" Needless to say, keepers who strongly share these two sentiments would not add much to a collaborative design team.
3. **Buy-in and responsibility.** The price of real participation is the requirement to take responsibility, not only for your own work, but for the success of the entire project. If you are simply willing to "leave it to the experts", then don't complain about the final results. Make communication within the team and with the designers a personal responsibility. Don't expect the designer to read your mind. Insist on having your ideas discussed and tested, but first make sure these ideas are well reasoned.

4. **Follow through.** How often are ideas developed during creative brainstorming sessions actually used by staff after the exhibit opens? Very rarely, because there is often little continuity between zoo staff who help with the design and the staff which operate the facility. Designers may have a lot to do with the design, but rarely have any input during exhibit operation. Continuity of vision and function are in the hands of zoo staff, especially the day-to-day users. If these keepers help to create the design they want and need, and follow through during operation, they will have made a real contribution to the welfare of the rhinos in their care.

## REFERENCES

- Bierlein, J., and Sammons, L., 1997. Connecting the Pieces: A Multi-Disciplinary Approach To Exhibitory. AZA Proceedings, American Zoo and Aquarium Association Bethesda, MD.
- Coe, J. 1998. Twenty-First Century Management Systems for Twenty-First Century Zoo Exhibits. AZA Proceedings, American Zoo and Aquarium Association, Bethesda, MD.
- Coe, J. 1997. Entertaining Zoo Visitors and Zoo Animals: An Integrated Approach, AZA Proceedings, American Zoo and Aquarium Association, Bethesda, MD.
- McGill, P., 1998. Staff Involvement and the Exhibit Design Process: integrating outcomes for animals, visitors and conservation. Paper presented at the Fifth International Symposium on Zoo Design, Paignton, England, 17-21 May, Paignton, England. Submitted for publication in proceedings.
- Torres, C and Spiegel, J. 1996. Self-Directed Work Teams: A Primer. Pfeiffer & Co., San Diego, CA.
- Vernon, G. 1996. Team Players: Brookfield Zoo's Approach to Creating New Exhibits. Bison, Vol. 10. No. 1, pp 22-29. Brookfield Zoo, Brookfield, IL.