Museums Cut Research in Hard Times

Faced with declining funds, natural history museums are focusing on public exhibits and paying contracts to earn their keep. Critics say they should be leading research efforts on biodiversity

The 1990s are shaping up as a traumatic decade for an entire class of public research institutions around the world: the natural history museums. Many of these venerable institutions, hard hit by steep declines in both public and private funds, are fighting for a niche in an increasingly competitive world. As they explore new ways to raise money and attract visitors, funds for basic research—the core enterprise of many older museums—are shrinking.

Scientific leaders such as Harvard biologist Edward O. Wilson see this as perverse. Since natural history museums are virtual libraries of endangered species and cultures, they ought to be at the frontier of research on global environmental problems such as biodiversity, Wilson and other museum fans think. Museums ought to be planning "a tenfold increase in both capacity and manpower in the next decade," says Wilson. Instead, many are trimming back their scientific staffs, pumping up their administrative offices in hopes of catching the public's fancy, and reorienting their research toward applied projects that have a better chance of bringing in hard cash.

Even in the best of times, museums must struggle to balance priorities among their complex mission of caring for collections, doing research, and educating the public. It's a complex task that former Milwaukee Public Museum director M. Kenneth Starr compares to directing a symphony. These days, he and others fear that the brassy public side is drowning out the more scientific strings. But entrepreneurial museum directors respond that unless they jazz up the program, the music will stop altogether. Part of the problem is that the public is only dimly aware of the collections and research functions of most museums. "There's a very big financial problem with having a double mission when you're perceived as having only one mission," says Willard Boyd, president of the Field Museum in Chicago.

Consider what happened this spring to one of the oldest museums in the country, the New York State Museum in Albany. More than 25 Ph.D. researchers there study the history, geology, and biology of New York and curate excellent collections of fossils, fungi, and Iroquois artifacts. In January, the scientific jobs were put on the endangered list by Governor Mario Cuomo's budget office. A frantic letter-writing campaign by the scientific community and New York agencies won the museum some friends in the state legislature and softened the blow by spreading the pain to other institutions. Still, museum officials are now trying to carve $500,000 from their $5.7 million budget, and staff cuts are expected.

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High priority. The Smithsonian Institution has traditionally been a major supporter of research on biological diversity, such as this study of a rain forest canopy in Panama.

Wilson says such cuts "run counter to logic," but he and others are getting plenty of practice writing letters to counter such "illogical" moves. In 1990, changes at the British Natural History Museum in London sparked such a protest. More than 900 letters reached Parliament, but the museum eliminated nearly 50 research posts anyway. In 1989, the San Diego Museum of Natural History fired one-third of its scientific staff, including two respected Ph.D. curators. Today, budgetary woes have forced the Smithsonian's National Museum of Natural History to reduce staff by about 8% through attrition, and director Frank Talbot expects further shrinkage. Even at New York's American Museum of Natural History, with its large insulating endowments, science departments face a 20% cut in operating budgets this year, according to Michael J. Novacek, the museum's dean of science.

Even more demoralizing is the plight of the small museum that must answer to local officials who have only a vague idea of what research is about. Take the case of curator Allen M. Young at the Milwaukee Public Museum. Using outside grants, Young does field research in Costa Rican rain forests for a few weeks a year. He also directed an award-winning rain forest exhibit for the museum back in Milwaukee. When the hall opened, suspicious Milwaukee County supervisors wondered why Young kept spending "county time" so far away from Wisconsin—after all, the exhibit was already up. After years of trying to explain their mission to county government—and seeing public funding drop by nearly 20% in 1991—the museum this spring shook itself free of the county and put itself under the management of a nonprofit board. The county agreed to the arrangement in hopes that the new board will win more private contributions and that the museum will gradually wean itself from tax support.

Shrinking income

The Milwaukee museum is betting on private support. But private as well as public dollars are tight these days, says Edward H. Able, executive director of the American Association of Museums. Tax laws enacted during the 1980s make contributions from both individuals and corporations tougher to get, and the recession has left the public in a penny-pinching mood, shrinking income from admissions and gift stores, explains Able.

Compounding the pressure on research budgets, the National Science Foundation (NSF), a major financial presence at most museums, has tilted its generosity more toward exhibits than research. NSF funds collections, exhibits, and research through three separate programs (although each program is also open to nonmuseum applicants). In the past 4 years, the pool of NSF money that includes exhibits—the informal science education program—has increased by 130%, rising from $15 million in 1989 to $35 million in 1992. In the same period, NSF support for collections has increased by 66%, rising from $4.4 million in 1989 to $7.3 million in 1992. But the funding pool that supports many museum research projects, NSF's systematic biology program, has increased by only 21%,

rising from $12.7 million in 1989 to $15.4 million today, according to NSF figures.

Other institutions concerned with science education are coming to appreciate the ability of museums to make science fun. The Howard Hughes Medical Institute, for example, has launched a new grants program specifically aimed at museums, and in June will award more than $6 million for hands-on science programs at museums and science centers. Such programs fill a key niche in science education, but the benefits for museum research are indirect at best.

Going public

Faced with a funding picture that favors education over research, museums are paying more attention to what the British call "Front of House" issues—exhibits and public programming—that can attract grants and visitors' dollars. For example, the American Museum of Natural History is redoing its entire fourth floor, with a new hall of human biology and new geology exhibits. The Field Museum in Chicago embarked upon an ambitious exhibit plan beginning in 1986; by the end of 1994, about 40% of the halls are to be renovated. Along with the new displays, museums offer a host of new programs. You could play "Environmental Jeopardy" or catch the hiphop beat with a "Tree Rap" on Earth Day at the Philadelphia Academy of Sciences. You can go to a "Science Carnival," on tour at the Bishop Museum in Honolulu or sleep in the shadow of giant whales courtesy of San Diego.

Important though these initiatives may be, some curators wonder whether anyone is watching out for science. The new emphasis could easily tip the balance away from science at small regional centers, like the Museum of Northern Arizona, which has established an aggressive program to make money. Indian cultural shows draw crowds in the summer, new exhibits keep attendance up, and the museum shop turns a healthy profit. The museum shop even launched a new branch in a mall in Scottsdale, Arizona, last year, says director Philip Thompson. The shops sell everything from Indian art to such trendy items as popcorn rocks.

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–Edward O. Wilson

HARVARD

Thanks to such strategies, the museum is projecting a small budgetary surplus this year, despite the recession and a small population base. The 1991 budget was $3.7 million, a 130% increase since 1982. However, while overall income was rising, the budgets of two science sections—biology and geology—dropped 16%. The museum has excellent regional collections in anthropology and paleontology, but two of the five curators are now planning to leave, in part because they feel that the museum is not conducive to a productive research career. "I have less than 10% research time," says anthropologist Linda Eaton, who is leaving for a university teaching job. Her husband, geologist Jeffrey Eaton, is also planning to leave. Says Linda Eaton, "At this point in my life, I would not advise young anthropologists to go into museum work, because it is becoming less and less satisfying in terms of making a contribution to your field."

Thompson admits researchers are not always happy at the museum, but he thinks that they are not adjusting to reality. "The age of the imperial curator is relatively over," he says. "A museum has varied constituents, not just an academic elite. Its constituents are the general public as well."

Even at that bastion of research, the Smithsonian, Natural History director Talbot raised about $4 million last year—explicitly for public programs, while scientists say they're hurting badly (see story page 1270). Says paleobiologist Anna K. Behrensmeyer, "We in the research community have been feeling that the priorities have not been for research." Smithsonian botanist Vicki A. Funk adds: "This museum started with science at the core. Everything else was based on the collections and on the science. Education and exhibits came second. And that's not true anymore; exhibits and education have taken on a life of their own." Talbot

Worlds Apart: From Frankfurt to Honolulu

Museums are adopting diverse strategies to survive in the tough economic climate of the 1990s. Some are clinging to their traditional scholarly role while others discard the aura of academia in favor of a more hard-headed corporate approach. Here are snapshots of two museums that bracket the extremes:

In Frankfurt, Germany, the Senckenberg Natural History Museum—which was inspired by Goethe and supported by 19th-century intellectuals like Darwin, Cuvier, and Haeckel—retains basic systematic research as its core. Most of the annual budget of roughly $12 million comes from the German federal and provincial governments. Naturally, the museum would like a larger share, yet when sacrifices must be made at the Senckenberg, it's not research that suffers—it's exhibits.

"They would never touch the research," says museum director Willi Ziegler. "They just don't dare. Touching science makes what we call 'bad optics' to the public." In 1993, the museum's research budget will increase by about 6%, according to Ziegler. Unlike U.S. museums, research, not exhibits, is the primary vehicle for the Senckenberg to "give back" to the taxpayers, he explains. So instead of curators complaining about hiring freezes, at the Senckenberg they worry about how to finish displays. There are only three artists on staff, and the human evolution exhibit has been in progress since 1970.

At the opposite extreme, geographically and philosophically, is the Bernice P. Bishop Museum in Honolulu. Few U.S. museums have given themselves over to applied research as a means of supporting inhouse science with as much gusto as the Bishop. The museum's budget is about $14 million, but most of the money comes from earned income, not government appropriations. For example, the museum has developed a thriving contract business assessing how new development and roads will affect archeological sites. "We provide the highest quality goods and services, and we charge the market rate," says president and director W. Donald Duckworth.

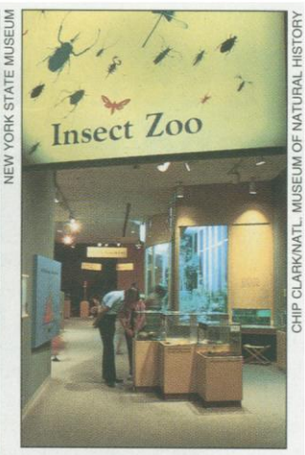
Scientists interested only in esoteric research questions need not apply, according to anthropologist Elizabeth Tatar, chief of the Bishop's anthropology department. "We cannot support ivory tower research, self-serving research," she says. "We have to be addressing those [social] problems and we won't do that by hiring people who are saying, 'I am interested in this question and I don't care what the world thinks.' " For those scientists who are interested only in curiosity-driven research, Tatar's advice is simple: "Go to a university." But, she adds, "I don't think even the universities will stand for that much longer."

–E.C.

agrees he's bolstered the public side, but points out that he hasn't cut research to do it. He and other administrators say it's a matter of putting resources into an area neglected for too long. "Some of these exhibits have been up for 40 years. At the California Academy, I changed an exhibit that had been up for 70 years," says Talbot.

At smaller institutions, livening up exhibits may be the chief path to fiscal salvation. At San Diego, for example, new director Mick Hager walked in on a deficit of $450,000 last July. Six days after he arrived, he scheduled a major temporary exhibit featuring robotic whales, to be followed by a dizzying temporary exhibit schedule and an all-out marketing campaign. So far, so good: Revenue from the whale exhibit is over budget and, if the trend holds, this year's deficit will be down to $50,000. "You've got to give people something to walk in and see," Hager says. And research? Only one of the positions lost 3 years ago has been restored. Hager admits that the number of scientists is "below what is probably critical mass for a scientific culture within the institution." He says he plans to beef up the scientific staff...when he can afford to pay their salaries.

NEW YORK STATE MUSEUM



CHIP CLARK/NATL. MUSEUM OF NATURAL HISTORY

Upstairs, downstairs. The Smithsonian's spectacular new insect zoo *(above)*, paid for by private funds. Moth and butterfly collection at the New York State Museum *(left)*, where more than 25 scientific jobs were threatened by budget cuts earlier this year.

Some administrators believe that the renewed public focus reflects both a crisis in science education and a suspicious attitude toward basic research. "My perception is that there is less sympathy for fundamental research and more emphasis on societal benefits, short-term benefits, technology transfers," says Robert Hoffmann, assistant secretary for science at the Smithsonian museums. Public museums are something of a bellwether of societal attitudes to research, says John Peake, associate director for scientific development at the Natural History Museum in London. Peake, who has presided over controversial changes at his museum, is convinced that all scientific institutions will have to face the fact that society is less willing to support basic research.

The pressure to be useful

So it's no wonder that some museums have embraced applied science as a way to justify research and generate paying contracts. At the London museum, research has been restructured into several areas, including human origins, biodiversity, and human health (with emphasis on the systematics of human parasites). Peake insists that this restructuring has not gutted the museum but will in fact save it. Four years ago, the museum raised about £100,000 a year in outside money; last year it raised more than 10 times that, according to Peake. And temporary positions have replaced the permanent posts lost 2 years ago. But pressure to appear "useful" has made research in areas such as paleobotany and bird systematics all but extinct. And a few individual scientists have had to drop one line of research and pick up another. One spider expert, for example, found himself abruptly put to work on deep-sea nematodes to fulfill a contract.

Peake also has promoted change in another area: the relationship between collections work and basic research. At most museums, day-to-day curation has been taken over by collection managers. But at the London museum, the trend has gone even further. There, researchers are no longer directly responsible for collections, and collection managers are not rewarded for research accomplishments, although many still work on scientific projects. Similar rules apply at Honolulu's Bishop Museum (see story page 1269), where researchers are no longer regarded as being "on top of the pecking order," with respect to collections, says president and director W. Donald Duckworth. "All we say in modern museum management is that we recognize collection management as a legitimate career path," he says.

Not surprisingly, scientists don't like this one bit. They insist that research is the primary way of breathing life into specimens, so researchers should set policy for collections. For example, Scott Lanyon, associate curator of birds at the Field Museum, sets policy regarding such things as destructive sampling of the collections for DNA work. "You get rid of me and hire a collection manager who doesn't do research and in 10 years they might not allow any sampling at all," he warns. "A collection without research is a dead collection."

Science on display

If nothing else, the fiscal crisis is forcing museum scientists to acquire a bit more political savvy and to communicate the importance of what they do to a wider audience, including politicians. It's also sparked at least one innovative strategy to preserve science: put research itself on display. This idea is being tested at the Field Museum, where president Boyd plans an extensive new exhibit program to take advantage of the public's interest in how science is done. The new exhibits would show curators collecting specimens in exotic locales, scientists using high-speed cinematography to capture animal behavior on film, and technicians coaxing a fossil out of its encasing stone. Scientists have already begun to carry camcorders into the field to capture moments of discovery on tape, says vice president for collections and research Jonathan Haas. A temporary dinosaur preparation exhibit, with a working fossil prep lab, will offer the first taste of the new concept next January.

There's no guarantee that such displays will turn the tide for research, but it's one attempt to make the public aware of the science that goes on behind the scenes, as well as to unite staff members from different sides of the museum.

In a broader sense, some museum officials believe that museums may even benefit from the troubles of the 1990s. Listen to Alan Ray, director of operations at the New York Museum: Thanks to the outpouring of support for his museum this spring, "the museum made friends. People in the legislature woke up to the fact that there's a vital need for our services," he says. This, says Ray, will put the museum in a good position for next year's round of budget negotiations.

In Ray's view, the challenge for museums is to make their case to their constituents, including the general public—before the budget ax falls. If they do, they may be able to live up to their potential in the next decade. If not, their role in the 21st century may be that of caretakers and showmen, instead of practitioners of science.

–Elizabeth Culotta