Catalysts for Change
The Kellogg Projects
In Museum Education

The Exploratorium
San Francisco

Field Museum of
Natural History
Chicago

The Smithsonian
Institution
Office of
Museum Programs
Washington

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Catalysts for Change
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Preface

The Kellogg Projects in Museum Education have been a quiet force in the museum world since 1979. In the past seven years they have influenced hundreds of museums and thousands of museum professionals from all parts of the United States and many foreign countries. Still, in 1984 the Kellogg Foundation and Kellogg Project directors and coordinators wondered how their efforts contribute to improvements in museum education practice. That year they commissioned a review of the Kellogg Projects in Museum Education, and they asked me to examine the three projects looking for common themes, emerging trends, and notable achievements.

To accomplish this task I read annual project reports, studied materials prepared for residents, reviewed workshop formats, and examined colloquia agendas. I also read evaluation reports prepared by Judy Diamond, Beverly Serrell, and Robert Wolf. I visited each of the sponsoring museums, reviewed project files, talked with project staff and faculty, met with representatives of the Chicago Board of Education, and attended one of the Smithsonian Institution’s Kellogg colloquia. In addition, the special features that appear throughout this monograph are the result of interviews I conducted with Kellogg Project participants.

I have many people to thank. Judy Diamond (Exploratorium) and Helen Voris (Field Museum) brought order to the many elements of their respective projects. Margo Del Vecchio’s report on Smithsonian residents was invaluable. Carolyn Blackmon, Sally Duensing, Jane Glaser, Teresa LaMaster, and Philip Spiess worked closely with me. This was truly a collaborative venture. They provided information and read and critiqued several drafts of the manuscript. And while I take full responsibility for any errors in the report, it is the vision and hard work of these five Kellogg Project directors and coordinators that shape this monograph. Finally, my thanks to Ellen Cochran Hicks, who reviewed the book in its final stages, and I am particularly indebted to Ann Hofstra Grogg, who edited the book. She worked with me from beginning to end—providing insight, direction, intelligence, and inspiration. Much of this monograph’s organization, clarity, and logic are her doing.

The Kellogg Projects in Museum Education afford a look at the ways American museums define themselves as educational institutions. The view is both encouraging and informative. Many museums are examining their educational mission as never before. Few are as articulate on the subject as Kellogg Project staff. They have clarified and stated their perspectives, philosophies, and approaches to museum learning. At the Exploratorium, the Kellogg Project is built around that museum’s philosophy—a philosophy that guides its unique exhibit development process. Field Museum advances museum education practice by stressing the importance of finding a philosophical foundation for museum education and by continuing to explore the interpersonal dynamics of a team approach to exhibit development. The Smithsonian Kellogg Project sets out several tenets of museum education, reminding museums that they have an obligation to adults as well as children and that they are ultimately community institutions.

The recent report of the Commission on Museums for a New Century concluded that museums have yet to realize their full potential as educational institutions. The Commission suggested that new approaches to learning in museums must be developed. The lessons embedded in the Kellogg Projects in Museum Education offer several new approaches to learning in museums that should be of interest to the entire museum community.

Mary Ellen Munley
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A Changing World View: Museums and Learning
We are often reminded that our society is in the throes of a significant transition from the industrial to the information age. Advances in communications technologies herald an era in which information will be our most important product. Even now, the expansion of the information sector has captured the imagination of young and old and altered the way we think about learning. For those institutions concerned with education—not only schools but local school boards and state legislatures as well as research foundations and museums—the information age has already arrived.

Education and learning are no longer associated solely with "going to school." Informal, continuing, and voluntary education is gaining credibility as more and more people look for ways to go on learning throughout their lives. Adult education is the fastest-growing type of education today. The baby boom generation has matured into a group of adults with high levels of formal education and a firmly instilled desire to continue their intellectual growth. These adult learners are turning to a variety of alternative learning environments—open universities, training centers, conferences, workshops, and museums—in record numbers.

This expansion comes at the very time that the effectiveness of the nation's schools has been challenged. In the past five years at least ten major studies have outlined serious shortcomings in education. The alarming nature of the problem is reflected in the title of a report by the National Commission on Excellence in Education—A Nation at Risk. More and more people are recognizing that schools by themselves cannot solve the problems associated with educating this nation's children and, furthermore, that schools as we have known them in the past will not be able to meet the new demands of the nation's adults.

Museums have been in the forefront of those institutions actively seeking to extend education beyond the traditional classroom. As early as 1978, for instance, the Exploratorium in San Francisco and the W. K. Kellogg Foundation in Battle Creek, Michigan, began to discuss the ways that museums might teach the public about science. It was a good match. The Kellogg Foundation has a long tradition of support for continuing education, and the Exploratorium has earned an international reputation for the quality of its science exhibits. Foundation representatives were intrigued by the Exploratorium. They wanted to learn more about the teaching exhibits at the museum and the educational potential of museums generally.

In 1979 the Kellogg Foundation funded a project that allowed the Exploratorium to share its successful and innovative programs with museum professionals around the world. "Helping others help themselves" is the Kellogg motto, and the Exploratorium's Dissemination Project fit that bill on two counts. It offered museum professionals the opportunity to study ways of improving their exhibits and programs by working directly with the experienced and unparalleled Exploratorium staff. The "ripple" effects for museum visitors have been even more far reaching. For if, in fact, learning can take place in a museum, then museums are a rich resource worthy of further development in an information age that puts a premium on continuing education. It is this premise that particularly interested the Kellogg Foundation.

Two years after the start of the Exploratorium project the Kellogg Foundation turned closer to its Michigan home and funded a second project at Field Museum of Natural History in Chicago. It, too, was designed to explore the potential of the museum as an agent for public education. That same year the Smithsonian Institution in Washington, D.C., with its outstanding Resident Associate Program and Office of Museum Programs, was brought into the project.

Taken together, these three projects investigating museums as opportunities for
lifelong learning are pivotal in a period of unprecedented change in education generally and the developing field of museum education specifically. They call for consideration of the museum as a center of public education, and they provide a new model for professional training in museum education itself. For the first time, money and attention are directed toward the development of museum education as a professional field in its own right.

The idea of museums as educational institutions is not new, however, in the museum world. Virtually every museum in this country was founded with a charter that made education a central mandate. Since the early days of the twentieth century, leaders like John Cotton Dana have been dedicated to making their institutions rich educational resources for their entire communities. Dana, the head librarian in Newark, New Jersey, was fascinated with objects, and he set up the city's first public museum on the top two floors of the library building, above the book collection. He railed against what he called "gazing museums," meant only for the elite and specially initiated. Instead, he thought of the museum as an "institution of visual instruction." He wanted people from the entire community to be able to see and examine things directly related to them and to their lives. He presented this visual instruction through special exhibitions — as many as fifty-six in the museum's first five years. Dana worked to build a living, active, and effective institution dedicated to exhibition, interpretation, and community service. Museums like the Newark Museum have long contributed to public education in this country.

Despite charter mandates and the efforts of Dana and others like him, however, education and learning have not been center stage in museums. The acquisition of collections has had the limelight. But today the nation's great collections are in place. Buildings have been constructed to house them, and most museums are well along in the process of cataloging and researching their holdings. In recent years administrative and collections-related functions in museums have achieved high levels of professional standards. An equally stringent set of professional standards and practices for education and audience-related functions is now beginning to be developed. With the renewed emphasis on education in this country generally, museums are approaching their role as educational institutions with renewed commitment.

It may well be that museums stand on the brink of a major expansion in their responsibility to society. In the past they have experienced a number of similar dramatic developments that transformed the static cabinets of curiosities of the eighteenth-century wealthy into the inviting public museums of today. The introduction of dioramas at the American Museum of Natural History in New York and the Milwaukee Public Museum, for instance, created a sensation in the museum community.
The Kellogg Foundation and Museums

It was, in his words, “the spirit and insightfulness of one Frank Oppenheimer” that convinced Arlon Elser, an executive with the W. K. Kellogg Foundation, of the importance of recognizing museums as agents of lifelong learning. Oppenheimer’s “sheer brilliance and deeply profound understanding of why knowledge of science is necessary” initially got Elser and the Kellogg Foundation interested in museums.

Today Elser directs the Kellogg Projects in Museum Education and comments that those first impressions of the museum world at the Exploratorium still hold true. Introduction through the Kellogg Projects to scores of museums has given him an even clearer sense of the potential and power of the museum and affirmed his long-held belief that museums are too important to ignore. Seven years ago, when the Exploratorium Dissemination Program was just beginning, Elser remembers that leaders in education circles and the trustees of the foundation thought museums were simply “dusty old places.” Thus in 1979 there was a tremendous opportunity for the foundation to assist the country’s museums in enlightening the public about science, history, art, and themselves.

There is more to the museum experience than just looking at objects. Museums have the potential, in Elser’s view, to make important connections, to touch and change people if a commitment to those ends is part of their deeply imbedded structure. And that is what interests the W. K. Kellogg Foundation—a more complete integration of museums with the lives of people. This integration might range from cross-referencing objects from the community museum with books in the card catalog of the local public library to using historical collections related to food production to educate people about nutrition and general well-being.

Of course interest in the physical, intellectual, and spiritual well-being of Americans is not new to the W. K. Kellogg Foundation. The foundation has a long tradition of supporting programs to benefit the health and wholeness of Americans. The Kellogg Company itself has origins in an early health-care movement. In the 1860s several doctors, including Harvey Kellogg of Battle Creek, Michigan, developed whole-grain diets and often processed their own grain. It was Harvey Kellogg’s brother, Will Keith Kellogg, who first discovered the now-famous Kellogg’s Cornflakes when one day overheated rollers produced flaked corn bars instead of the usual corn biscuits. Soon after this happy accident W. K. Kellogg established his cereal company with its chief product—Cornflakes.

In 1931 the W. K. Kellogg Foundation was created for philanthropic purposes. Today it is the fourth largest foundation in the United States. Given the history and products of the company, the foundation has two aims: (1) the support of hospitals and health care, and (2) the support of continuing education. The Kellogg Foundation has funded numerous continuing education centers at some of this country’s major colleges and universities.

The results of the foundation’s recent foray into the museum world have been, says Elser, “nothing short of phenomenal.” He is impressed with the large numbers of people and museums the project has reached. And he is pleased to celebrate news that one Kellogg Fellow recently opened the brand new Science Museum of India. Now the foundation is looking for evidence that the discussion and enthusiasm it has generated will result in improved practice. Convinced that museums are important agents of public education, Elser asserts that if the foundation can make an impact on the museum field, it will have left a most important legacy.
as specimens were taken down from their shelves and placed in their natural context. And, in the twentieth century, the development of outdoor living history museums brought an equally new concept to the presentation and interpretation of collections. These innovations changed our notions of museums forever.

Today, educational efforts in museums are expanding beyond traditional tours for schoolchildren and lectures for adults: researchers are investigating the special qualities of learning in the museum setting, and the traditional view of museum education as the responsibility of a single department within the museum is being challenged. The Kellogg Projects at three outstanding museums with reputations for innovation in education are guiding more than five hundred museums through a redefinition of their educational mission, a redefinition with enormous potential for millions of museum visitors.

The Kellogg Projects at the Exploratorium, Field Museum, and the Smithsonian Institution are described in the following chapters. Each project is distinct. At the Exploratorium staff members introduced visiting residents to their unique perspective on teaching exhibits, their emphasis on perception as central to an understanding of science, and their trial-and-error method of exhibit development. Residents were immersed in the Exploratorium's way of making exhibits — a process that required museum staff to spell out the philosophies and methods that inform their work. The museum had been sharing its exhibit designs with others for years. Through the Kellogg Project, Exploratorium staff began to share their way of thinking and the principles that guide their decisions. That philosophy is presented in pages 7–20 as the central feature of the Exploratorium's Kellogg Project.

Field Museum focuses its Kellogg Project on professional development. Through two specially designed workshops — one on museum education, the other on the team approach to exhibit development — the staff provide a forum for exploration. Approaches to management, problem solving, and goal setting are recurring themes at these sessions. Through staff presentations, discussions, and activities, participants are led to reflect on the values and assumptions about museums, objects, education, and professional roles implicit in various methods of exhibit development and education programming. Field Museum's Kellogg Project strives to strengthen museum leadership through helping participants develop new perspectives on the tasks and issues facing their institutions and new skills with which to carry them out. The curricula developed by Field Museum are presented in pages 21–36.

The Office of Museum Programs at the Smithsonian Institution takes as one of its charges dissemination of information and innovations throughout the worldwide museum community. The Kellogg Project at the Smithsonian Institution is an effort to advance the field of museum education by bringing senior educators and administrators together and by encouraging museums to expand their thinking and programming in relation to education. The Smithsonian staff are guiding development of twelve demonstration projects, each designed to contribute to our understanding of museums as places for learning. While each project is specifically suited to its host museum, demonstration projects as a whole will advance the practice of museum education across the country. The design of the Smithsonian plan is presented in pages 37–52.

The people coordinating the Kellogg Projects at each of the three museums have taken considerable care to develop outstanding curricula for participating museum professionals. The chapters that follow are a synopsis of the Kellogg Project lessons, a discussion of principles, perspectives, and aspirations for museums as learning environments. The achievements of the staff at three distinguished museums have much to teach us about realizing the full potential of museums as agents of public education.
The Exploratorium
San Francisco
California
Profile of Exploratorium Project

► Title
Exploratorium Dissemination Program

► Funding Date
October 1, 1979

► Nature of Programs
• Residency program designed to provide museum professionals from around the world with firsthand exposure to the Exploratorium’s philosophy and exhibit development process
• Special topic conferences on science education and issues related to developing good electricity exhibits
• Publications providing other museums with detailed instructions for building Exploratorium exhibits

► Participants
More than 150 museum professionals and representatives of foreign countries participated in Kellogg residencies at the Exploratorium. Another 80 scientists, exhibit designers, and curators attended the conference on electricity exhibits. Some 250 museum professionals were part of a conference on exhibit design techniques. Nearly 50 individuals representing universities, science publications, school systems, television, and radio participated in the conference on appropriate media for science education. And literally hundreds of museum professionals are learning about successful, Exploratorium-designed exhibits through the museum’s “cookbook” publications.

► Geographic Reach
Participants in the residency program came from all regions of the United States and virtually all corners of the globe. As the most international of the three Kellogg Projects, the Exploratorium had residents from Argentina, Australia, Canada, France, India, Mexico, Saudi Arabia, and other countries. Conferences were attended by people from California and across the nation, while participants in the electricity exhibit meeting represented science museums in Florida, Hawaii, Illinois, New Hampshire, New Mexico, Oregon, South Dakota, Texas, and Virginia. Exploratorium publications, distributed by the Association of Science-Technology Centers, Washington, D.C., are available worldwide.

► Organizational Structure
The Exploratorium Dissemination Program is coordinated by Sally Duensing, associate director of the Exploratorium. The project is a museumwide concern, with staff members from all areas of the institution serving as faculty for the residencies and resources for conferences and publications.
The Exploratorium in San Francisco was the perfect springboard for the Kellogg Foundation's effort to encourage innovative museum education programming. It was founded in 1969 by Frank Oppenheimer as a museum of science and perception where interactive exhibits would lead visitors to explore the senses and the natural world. As its name clearly implies, the Exploratorium was to be a place for learning about science through self-discovery. Visitors were to be invited to take on an air of playfulness as exhibits engaged their hands as well as their minds. From the outset the museum reflected the latest pedagogical thinking and developments in education in the United States and Western Europe. At the time these concepts were revolutionary in the American museum and education scene. There was no financial support for, and even less understanding of, an institution dedicated to teaching science through exhibits. In the ensuing seventeen years remarkable changes have taken place. As George Tressel of the National Science Foundation wrote in the Encyclopaedia Britannica, "The Exploratorium has become the archetype for 'hands-on,' experiential science centers as well as a model for science museums throughout the world."

Education is the main—and only—mission of this museum, and staff members are devoted to realizing educational objectives. Unlike more traditional museums, the Exploratorium has no collections. It houses teaching exhibits that are valuable only so far as they are functional. When the Exploratorium's staff members talk about their work, they express a distinctive view of learners. People, they believe, do their own learning. No two learners are alike, but every person is capable of learning, and it is the job of museum staff to facilitate, not frustrate, museum visitors in their personal quest to discover. Effective exhibits don't direct learning; they allow it to happen. And the development of exhibits that teach science is the Exploratorium's forte.

The Exploratorium is always searching for new and better ways to teach science, and that makes it unique among those institutions that populate what is known as the museum universe. New ideas and new procedures are its standard. Staff members constantly seek new ways of incorporating new understandings of human perception into exhibits that make an inquisitive and enthusiastic learner out of the usually passive museum visitor. Whether it is presenting a new exhibit on stereoscopic vision, illustrating the relationship between the seemingly disparate fields of art and science, or unraveling the knotty problems involved in designing exhibits about electricity, the Exploratorium is at the forefront of new thinking. And there is little question that it is a sensational success as an institution that expands beyond conventional practices in both schools and museums.

While the Exploratorium as an institution is unique, its exhibits readily lend themselves to adoption by other museums. The museum profession has, in fact, long been fascinated with the Exploratorium's success. For years museum professionals and education specialists from around the world have informally approached the Exploratorium staff for information and advice on exhibit development. Some went to the museum specifically to spend time with staff members in exhibit preparation areas and observe visitors interacting with the museum's teaching exhibits. Many copied Exploratorium-designed exhibits for their own museums and science centers, and the museum promoted this kind of borrowing by preparing instruction sheets for building 134 of its exhibits. As the reputation of the Exploratorium's novel approach grew, the number of informal observers and borrowers increased dramatically. And while their exposure to the Exploratorium's approach was beneficial, their contact was necessarily limited in depth and focus.

Ten years ago the Exploratorium initiated a more formal program for disseminating information about its unique methods. A grant from the Fund for the Improvement
Electricity Conference

Frank Oppenheimer, late director of the Exploratorium, talked about the museum he created as "a woods of natural phenomena" that people first explore, and then want to study the "trees" to get the explanation. But the phenomenon of electricity proved tough to put on exhibit. With electricity exhibits he observed:

It isn't just the explanations which are hard, but we haven't been able to build exhibits in which people like the trees. This is, I think, one of the problems. With light, with sound, even with mechanics, we've done things that people really enjoy. But with electricity exhibits, [visitors] do everything we tell them to, and they shrug their shoulders. Seeing a meter move doesn't excite anybody. It's not something they give a damn about after they've done it.

To address the challenges faced by those teaching about electricity in schools and museums, the Exploratorium held a three-day conference in November 1984 to explore ways of building better electricity exhibits. Forty-three people participated in the conference—twenty Exploratorium staff members and twenty-three science historians, teachers, museum directors, writers, artists, and electrical engineers. The group included Nobel Prize-winner Luis Alvarez and MIT cosmologist Philip Morrison.

The format of the meeting was as intriguing as its subject. Primary emphasis was placed on brainstorming and generating ideas, as participants discussed the substance and interestingness of electricity. The conference began, for instance, with participants recalling their first encounters with electricity and trying to explain how their own interest and fascination had begun. A historian of science remembered creating "elaborate panel displays... with lights that would go on and off and switches all over the place." A director of programs and exhibits in a science museum had discovered that his Lionel train set was designed so beautifully he could make circuit tests with it; he experimented with completing circuits and shorting the transformer to see how long it took to get hot. As one participant concluded, "A lot of people got interested because their first experiences with electricity involved having fun—blowing things up, melting things. And it seems to me that that kind of thing has to be in exhibits to provide the attraction."

The Exploratorium is known for its commitment to building exhibits that promote visitors' innate curiosity about natural phenomena, and conference participants identified the challenge of developing good electricity exhibits as finding ways to get people asking their own questions about the phenomenon. During the three days participants generated as many as fifty ideas for electricity exhibits. They ranged from presenting small, simple motors that visitors can imagine building themselves, to offering historical examples of the first steps man took in recognizing and comprehending electric-
ity, to constructing a “Rube Goldberg affair” in which visitors can build electrical connections in different ways.

“By the end of the conference,” writes Cary Sneider of the Lawrence Hall of Science in Berkeley, California, “I was convinced that an effective new exhibit must combine two goals. It must teach some fundamental science concepts while demystifying technology for the general public.” He outlined an idea for a new exhibit. “Imagine,” he says, “a large table with a map of California. Near the center is a model of a town that lights up. Around the periphery are several power-generating systems, each corresponding to actual power plants in the state.” The units will each include an electric generator, so that power generation, operated by visitors, will be “real.” Set around the power system will be interactive exhibits explaining aspects of electricity demonstrated in the central display. “In summary,” Sneider writes, “the central exhibit will address visitors’ questions about where electrical power in the state of California comes from.”

Staff members from other museums are using ideas from the conference as they plan exhibits that invite visitors to “get comfortable with electricity” and work on a prototype of electric currents with the wires removed. More important than specific exhibit ideas, however, was the conference’s focus on visitors and curiosity. The focus directly addressed the greatest challenge facing exhibit developers in all kinds of museums—finding, and then presenting, that essence of a subject which humans find irresistible.
of Post-Secondary Education (FIPSE) supported an effort to introduce college teachers to the idea of teaching science through exhibits. During summer workshops, teachers learned about the Exploratorium's aims and joined its staff in developing exhibits. More than half of these interns designed major exhibits during their tenure and returned to their schools committed to exhibit-based, experiential teaching as a result of their own firsthand experience with the Exploratorium's approach.

In 1979 the Exploratorium received a grant from the W.K. Kellogg Foundation and was thus able to extend its efforts to reach out to members of the museum community. Known as the Dissemination Program, the Kellogg Project at the Exploratorium offered the first opportunity for museum professionals to participate in an organized, in-depth study of the Exploratorium's organizational structure, its exhibit development process, and the ways by which it realizes its dedication to education and teaching. Between 1980 and 1984, 125 museum professionals (81 from the United States, 44 from other countries) studied at the Exploratorium during two-week or longer residencies. Central to these residencies was an exposure to the Exploratorium's philosophy of teaching and principles of exhibit development. That philosophy is most evident in the process of decision making and exhibit building that takes place among Exploratorium staff, a process that is not best communicated through instruction sheets for replicating an Exploratorium-designed exhibit.

Through participation in the Kellogg Dissemination Program, museum professionals worked with the Exploratorium's decidedly creative staff, examined the conceptual foundations of this distinctive museum, learned its philosophy, and determined which of its elements were appropriate to their own museums. In this way the Exploratorium's innovative approach is now influencing the work of museum professionals in hundreds of museums around the world.

Elements of Good Teaching Exhibits: The Exploratorium's Message

Frank Oppenheimer's brilliant insights and noble aspirations form the basis of the Exploratorium's special contribution to education and to museums. "The whole point of education," he observed in accepting the Distinguished Service to Museums Award in 1982, "is to transmit culture, and museums can play an increasingly important role in this process. . . . It is a mistake," he went on, "to think that preserving culture is distinct from transmitting it through education. . . . Whether they like to admit it or not, curators are educators."

Oppenheimer had a distinguished career as a scientist and teacher before he turned his attention to creating a museum. His experience with teaching and curriculum development undoubtedly influenced his insistence that museums should produce exhibits that teach and, taken as a whole, present a well-conceptualized curriculum. His genuine love of science and devotion to education led him to seek out science museums all over the world, and his encounters with those museums—both positive and negative—shaped the Exploratorium. Visits to the Science Museum in South Kensington, London, in 1965 first made him aware of the kind of facility the United States lacked. The children's room in the basement inspired his commitment to allowing play in the museum and to stimulating visitors to ask, "What would happen if. . . ?" Demonstrations by college students at the Palais de la Découverte in Paris suggested the Exploratorium's Explainer Program, in which high school students spend afternoons at the museum answering visitors' questions about exhibits and the concepts they teach. A chance encounter with a museum technician actually using a machine on display at the Deutsches Museum in Munich was the inspiration for placing
the Exploratorium's machine and carpentry shops in open view to the public.

From his wealth of experience and years of perceptive observation, Oppenheimer developed a philosophy of exhibit-based teaching. This is what the Exploratorium staff teaches in the museum's Kellogg Dissemination Program.

Perception is not the only possible organizing concept for a museum. A history museum, for example, might achieve focus and educational enrichment by working with themes like national or ethnic identity or the nature of historical “truth.” A science arcade might organize exhibits around the themes of vibration or the human body. Creative expression or differing views of “beauty” might be appropriate organizing themes for an art museum dedicated to public education. Themes like these, which relate to ideas the museum can encourage its visitors to explore, help assure that the museum is achieving its educational function.

Museums should be organized around central themes. Each museum should be built around a theme, or rationale, that relates to what it can teach the visitor. Traditional categories like art, science, or history are not sufficient to serve as themes, for they are based more on collecting practices than on teaching concepts. Themes that invite the visitor to explore an idea or process important to human life provide a much sounder basis for learning.

Because perception is fundamental to science, the Exploratorium has chosen perception as its unifying theme. Perception invites visitors to compare different responses and to recognize that understanding science is understanding process and not simply possessing a set of right answers. Because perception is so central to the way human beings experience phenomena, the presentation of ideas about perception necessarily involves nonscience people in the process of science.

Exhibits should not stand alone; each should be developed as part of a larger curriculum. Typically, museum exhibits are built around objects and collections. At the Exploratorium, they are built around ideas and phenomena. Each exhibit is an element in the museum's overall theme, contributing to a visitor's understanding of a concept that is built upon as he or she progresses through the museum. The exhibits work together to help the visitor see patterns among seemingly disparate phenomena and identify recurring instances of the same phenomenon in different forms. Some concepts are complex and require demonstration at a number of levels. The idea of reflection, for example, can be studied at the Exploratorium in as many as eighteen different exhibits. There are many different starting points and pathways to see the interconnection of ideas. The Exploratorium does not have one “right way” to go through the museum, thus no one right way to learn.

This idea of an exhibit curriculum challenges museums at their very base. It means more than increasing the number of exhibits on a given topic. It means that the entire staff must understand both the concepts around which the exhibits are built and the theories about the ways people learn that must inform them. These understandings profoundly alter the exhibit planning process. They demand that museum profes-
Where do you start in trying to explain a concept in an exhibit? What must be known before another point makes sense? What is the best analogy that might be used to aid understanding? These are the questions that influence exhibit development when the task is approached from an educational perspective. Seeing museum exhibits as part of an overall curriculum requires an understanding of concept formation and a willingness to try a variety of exhibit strategies to accommodate differences in learning styles.

Exhibits should be designed to incorporate process as well as subject matter. Good exhibit development requires a spirit of creativity, experimentation, and—as the Exploratorium staff would say—“fiddling around.” Interesting exhibits come about when people with a variety of perspectives are involved in their development and when they allow their own questions and fascinations to guide their efforts. The Exploratorium’s organizational structure serves its exhibit development process well. Staff members are hired for their ability to cooperate and collaborate and for their demonstrated love of tinkering with ideas. The museum’s internal organization recognizes no rigid departmental territories; staff members work together on exhibit ideas with no division of labor by research, design, or interpretation tasks. Staff morale is high because of these opportunities to explore, test ideas, and create new exhibits with equally inspired co-workers.

Visitors are invited to participate in the process of exhibit design as well when the staff place a prototype, or “first draft,” of an exhibit on the museum floor to see how visitors interact with it. In fact, at the Exploratorium, an exhibit is never really “finished.”

Nowhere is the process of exhibit design taken more seriously than at this museum. At other museums the focus is on researching an exhibit’s content and securing the finest examples of objects available. These are certainly noble aims, but the Exploratorium’s system suggests that attention to principles of teaching and communication needs to be added to exhibit development efforts.

In 1981, with partial funding by Kellogg, the Exploratorium joined with the Association of Science-Technology Centers (ASTC) to hold a conference on exhibit development attended by 250 museum professionals. The Exploratorium staff were surprised by the fundamental questions about the process still plaguing those designing museum exhibits. “As a result of this conference,” one staff member said, “it is clear that the topic of exhibit conception, pedagogy and development is still in its infancy, although the art and techniques of exhibit design have been practiced for decades. There is still much to discover, study, and share.”

Exhibits should be interactive. At the Exploratorium visitors do not just pass in front of exhibit cases and look at objects; they actively participate in the learning process. These “hands-on,” or interactive, exhibits are designed to involve the visitor’s mind and body.

Since its beginning the Exploratorium has been the standard bearer for interactive exhibits in science museums, and these kinds of exhibits are currently quite fashionable. Unfortunately, some are not more than vacuous opportunities for visitors to push buttons, ring buzzers, and flash lights. At the Exploratorium the visitor is engaged in more meaningful ways, and, in fact, the exhibit is simply not complete without the visitor’s active participation. An exhibit on the cardiovascular system, for example, is built around observations and recordings of the visitor’s own heart rate. Designing each exhibit with the visitor in mind is a key element in perceiving the entire set of exhibits as a curriculum built around a teaching theme.
Exhibits should be built around actual phenomena and real things and should confront, rather than disguise, complexity. Human beings are attracted to actual events and real things. Indeed many believe that the opportunity to see real things is at the heart of the fascination of museums. A picture of a tiger is no substitute for a real tiger. Whistler's painting of his mother must be seen to be appreciated, and nothing speaks more eloquently about slavery than shackles worn by a man with a name.

It is often assumed that museums have to simplify their lessons to be understood by naive and uninitiated visitors. Exploratorium exhibits dispute this assumption by presenting the full complexity of natural phenomena instead of clean diagrams or simplified constructs. Real things, the Exploratorium staff believe, have an unmatched capacity to stimulate genuine appreciation and a desire to know more. Thus an exhibit on eye physiology does not simply outline in diagram form but includes a dissection of a cow's eye. Observers report that visitors not only learn how an eye works but come away from this exhibit with a new curiosity about, and even a delight in, the physical miracle of life.

The Exploratorium's use of real phenomena has implications beyond encouraging other science museums to do the same. It suggests that museums, especially those outside of science, might present the nuances, complexities, and even paradoxes related to their collections instead of simplistic interpretations of them.

Exhibit displays should not call attention to themselves. At the Exploratorium, phenomena are center stage, and they are never asked to compete for attention with the accoutrements of their display. The exhibits resemble laboratory tabletops where a scientist is in the midst of an ongoing experiment. The "unfinished" look entices visitors to experiment. The hope is that when visitors exclaim, "Oh, how beautiful!" they will be talking about the quality of refracted light or the ingenuity of the nervous system and not about the design of the exhibit. After all, say the staff members, the process of creating teaching exhibits is not a decorative art.

Some people fault the Exploratorium's apparent lack of concern for an exhibit's appearance, arguing that the unfinished, eclectic ambiance of the museum defeats efforts to focus visitor attention on beauty. The Exploratorium staff respond that the beauty resides in the rhythms, patterns, and variations in nature and not in the cases or hallways holding exhibits. Exhibits that are unfinished are more accessible to visitors, they contend, and the spirited way visitors interact with these unarguably approachable exhibits confirms their contention.

The links between art and science need to be made clear. The process of accepting nature's inherent complexity and looking for connections among phenomena extends to overall museum programming and is evident in the Exploratorium's efforts to identify the underlying similarities between science and art. From its beginning the Exploratorium has used the observations of scientists and the vision of artists as a means for getting at its organizing theme—perception.

In a program unique among science and art museums, the Exploratorium has since 1974 invited four to six artists each year to work with its staff and to produce original works for the museum that inspire discovery of the subtle connections between art and science. These works now stand interspersed among the didactic exhibits on the museum floor. Some demonstrate scientific principles; others present an artist's perspective on the materials and methods of science. Video artist George Bolling, for example, prepared a real-time broadcast of the Pioneer satellite's five-day approach and orbit of Jupiter to demonstrate the new ways it enabled the scientist and the artist to see.
Even music and language are clearly subjects related to the curriculum of this science museum. Poet Muriel Rukeyser, for instance, applied her language skills to label copy and organized a series of readings in which scientists and poets explored the ways language conveys imagery, experience, and ideas for both literature and science. Through her influence the Exploratorium developed a series of exhibits on the topic.

The Exploratorium's particular vision of the connection between art and science is exemplified in a project conceived and executed by video artist Edward Tannenbaum, titled *Discernibility*. Using a touch control panel, video camera, and video monitor, visitors design video sculptures in which they are the created image. By playing with the touch control panel, visitors vary the quality, range of shading, and level of abstraction of the image.

The Diffusion of Exploratorium Innovations

As Exploratorium residents return to their museums and duplicate Exploratorium approaches and techniques, elements of Exploratorium innovations are being disseminated throughout the world. As one resident explained, “The Exploratorium is wholesale, not retail. It exists for other science museums and science educators.” The Exploratorium has emerged, in fact, as a prototype museum, one that is in the forefront of research on exhibit design processes and the creation of original exhibits and programs that are studied and used by other museums.

Copies of Exploratorium exhibits are now in museums everywhere. Some were duplicated by former residents; others have been built from 134 detailed construction “recipes,” or instruction sheets, outlined in a series of Exploratorium publications called *Cookbook I* and *Cookbook II*. The cookbooks are designed as a source of exhibit ideas, and they illustrate, by example, the techniques of interactive exhibit construction. Each recipe has annotated drawings, diagrams, and sufficient notes to enable the reader to construct the exhibit. A third cookbook, to appear in 1987, is being prepared as part of the Kellogg Dissemination Program and will expand the scope of the series by describing the pedagogical value of the exhibits. In an effort to preclude thoughtless replication, recipes in this third volume will include information about the interrelationship of exhibits and the importance of creating a group of exhibits on a single topic.

Even more important than the specific exhibits and programs residents took with them from the Exploratorium and duplicated in their own museums is the way exposure to the Exploratorium has challenged conventional views of the educational responsibility of museums. As an exhibit development research facility, the Exploratorium afforded residents opportunities to study new approaches to exhibit design, and the results have been remarkable. Residents reported that, for the first time, they came to understand what it means for an exhibit to be effective. Accuracy and appeal are not enough; an exhibit must teach.

Residents also spent considerable time watching people interact with Exploratorium exhibits. They began to develop ideas about how people learn in the museum. Chief among their discoveries was that the quality of learning is positively
Science Place

The village of Barrington, Illinois, is about to have its first science museum—the brainchild of two local high school teachers. Chris Chiaverina, a physics teacher at Barrington High School, visited the Exploratorium in San Francisco and came away from the experience with an idea to create a science resource center back at school. Together with his colleague, Glenn Leto, a biology teacher, he imagined the hallways of the high school filled with exhibits that passing students would find intriguing.

At the beginning of the 1981–82 school year these two teachers presented their idea to science club members who enthusiastically endorsed the plan. By October the students had built fifteen science exhibits and set them up in the hallways for parents’ night. The general student body showed interest in the exhibits, too, but as the size and number of exhibits grew, Chiaverina and Leto feared they might be “creating a monster.”

Based on the exhibits’ initial success, the teachers made a more formal proposal for the development of a school system science museum to be called “Science Place.” They bought two Exploratorium cookbooks and planned exhibits for a mini-wing of their museum. Their focus was ideas of light, so they called their collection of exhibits “For Your Eyes Only.” Thus began the school’s relationship with the Exploratorium. Students called San Francisco with questions as they constructed the exhibits, and they were encouraged by the support of the Exploratorium staff, as some local people thought the new museum might be no more than a science fair of shadow boxes with cutouts.

The high school students and their teachers were so enthusiastic, and called the Exploratorium so often, that Sally Duensing, assistant director of the museum, took interest in them and visited the school during a trip to the Midwest. She was greatly impressed with the quality and inventiveness of the students’ exhibits, and she subsequently offered Glenn Leto an invitation to an Exploratorium residency.

The invitation proved pivotal to the subsequent development of Science Place. It “turned a lot of heads” locally and the professional recognition given this teacher afforded the project credibility and prestige. Since then the two teachers have returned to the Exploratorium and were granted a sabbatical during spring 1985 to see what they could make of their Science Place idea. During their travels to the Northwest and Canada that year, they were advised again and again that they needed a permanent place for their exhibits if they were to build support. Until now, exhibits were set up in the school gym for one week a year.

The school district has now made a commitment to find a temporary place for Science Place. The village of Barrington is about to approve an occupancy permit for 10,000 square feet of office space. For a six-month period Science Place will become a reality—and it will take one more solid step toward becoming a permanent institution in Barrington.
related to an exhibit’s ability to reveal the inner workings and intricacies of phenomena. New summer residencies are held concurrently with the museum’s teacher workshops. Exploratorium exhibits are the centerpiece for these intensive teacher-training programs. Experienced teachers learn about science, and residents see how all programs at the Exploratorium relate back to the exhibits on the floor.

Toward the end of their two weeks, the residents found themselves thinking about how the total museum environment either encourages or frustrates visitor participation and learning. At first some had been bothered by the unfinished look of the Exploratorium’s exhibits. As one resident remarked shortly after his arrival, “No one told me it was a strange, black, ugly building.” This “museum in the raw” with its unfinished exhibits and lack of easy answers forced residents to probe deeply to understand its success. They often assumed the posture of visitors as they approached an exhibit and asked, “What is this?”

And in doing so, they exemplified why the Exploratorium’s exhibits work. Their unfinished appearance invites inquiry and makes participation easy. “People feel they can beat up on the exhibits and they won’t hurt anything,” observed one resident while touring the museum floor. The ad hoc appearance of Exploratorium exhibits is a brilliant realization of form suiting function.

Exposure to Exploratorium exhibits forced residents to consider their own museum’s exhibits against radically different notions of exhibit development, intent, and appeal. And while many still feel that the experimental climate at the Exploratorium is not necessarily appropriate to their museum, nearly all came away with new ideas about the relationship between exhibit form and function. “Often our exhibits look like pinball games rather than experiments,” reflected one museum professional, “and that is a product of being over finished.”

The Exploratorium staff recently had an opportunity to examine the relationship between form and function as several of their exhibits were on view at the IBM Gallery of Science and Art in New York City in spring 1986. A decidedly decorative dimension was added to the exhibits for the occasion, and the staff discovered that context is everything when making design decisions. No function was sacrificed for the sake of the slicker and more congruent look to the exhibits at the IBM Gallery, and they worked just as well—in this setting—as the “unfinished” exhibits work at the Exploratorium. During three months, 288,000 people visited the Exploratorium exhibits at IBM. They spent a lot of time with them and were actively engaged in experimenting.
ing and teaching. You do the exhibit for yourself.” His final comment recalls Oppenheimer’s oft-quoted speculation that “perhaps each of us is in some way everybody, and the surest way to delight others is to find what is a delight to ourselves and to the people we are fond of.”

The emphasis on self-fulfillment is incorporated into the Exploratorium’s organizational structure, too, and residents were especially impressed by the way it encourages self-exploration among staff and fosters the cooperative spirit that makes learning possible. “Underlying it all,” remarked one resident, “is a joy of life and science.”

Many residents left the Exploratorium determined to find similar vehicles for developing a spirit of give-and-take and experimentation in their own museums. Of course every museum cannot—and should not—be the Exploratorium. As an institution devoted exclusively to public education, it can extend the possibilities for learning in the museum in ways that are unique. At the same time, its democratic approach to exhibit development makes it a prototype. It serves as a reminder of the educational potential in all museums and provides a standard against which others can assess their efforts. The challenge for residents has been to find those elements of Exploratorium innovations that are right for them. And they do. The Kellogg Dissemination Program, though housed at a single museum, has increased the learning potential of all museums.
Profile of Field Museum Project

► Title
Museums: Agents for Public Education

► Funding Date
May 1, 1982

► Nature of Programs
• "Museum Education: Strategies for Effective Programming," a workshop for museum educators on the importance of establishing mission statements, goals, and objectives for education departments
• "Exhibit Development: A Team Approach," a workshop for teams of educators, curators, and exhibit designers from museums interested in employing a team approach to exhibit development
• Chicago Educators Network, a collaboration among educators from Chicago cultural institutions and representatives from the Chicago Board of Education
• Field Museum Faculty Training Program, grants supporting self-directed professional development projects for members of Field Museum’s Education Department
► Participants

The education workshop has attracted educators from more than 150 museums in all regions of the country, and the exhibit workshop has been attended by teams of participants from another 77 institutions. Thus nearly four hundred museum professionals from all parts of the United States and Canada have participated directly in Field Museum Kellogg workshops. Though most participants represent history and natural history museums, participants have also come from art and science museums as well as from children's museums, botanical gardens, and zoos. Museums of 3-500 employees and annual operating budgets of $25,000-$215,000,000 attended these workshops. Most participants in the education workshop have more than three years' experience in the museum field, while those in the exhibit workshop, on average, have more than seven years' experience, and nearly half have more than ten years of museum experience.

The Chicago Educators Network involves ten Chicago cultural institutions and as many as twenty representatives of Chicago schools. Under the Faculty Training Program, nine members of Field Museum's Education Department traveled to some twenty-five museums in the United States and Canada, visiting nearly sixty colleagues to discuss specific museum education issues and programs.

► Geographic Reach

Though located in the Midwest, Field Museum's Kellogg Project has attracted museum professionals from all regions of the United States. In the first year most workshop participants came from Midwestern states, but as the workshops became better known among museum professionals, they drew participants from all parts of the country. Records of attendance show that participants are nearly equally distributed across the American Association of Museums' six regions—New England, Mid-Atlantic, Southeast, Midwest, Mountain Plains, Western—with slightly greater numbers from the Western and Southeastern states. Six Canadian museums have attended Field Museum workshops.

► Organizational Structure

Field Museum's Kellogg Project is directed by Carolyn Blackmon, chairman, Education Department, and coordinated by Teresa La Master. Staff of Field Museum's Education Department serve as faculty for the education workshop, and members of Field Museum exhibit and curatorial departments serve as faculty for the exhibit workshop. Keynote speakers with particular areas of expertise from outside Field Museum address each workshop. All four elements of the Kellogg Project are administered through the museum's Education Department.
According to its statement of purpose, Field Museum of Natural History in Chicago exists to preserve, increase, and disseminate knowledge of natural history and to convey both information about, and delight in, the natural world. To achieve those purposes, the museum acquires and preserves collections, sponsors and publishes original scientific research, and educates through exhibits, lectures, and other media. Field Museum’s more than 13 million artifacts and specimens in anthropology, zoology, botany, and geology make it one of this country’s major research institutions with a long-standing reputation for excellence.

Field Museum serves audiences ranging from schoolchildren and the general public to scholars. In addition, the museum is a leading institution within the museum community. Museum professionals turn to Field Museum staff, administrators, and trustees for counsel about collections care, governance, fiscal management, and education programming. The Kellogg Project at Field Museum recognizes the museum’s leadership position. Called “Museums: Agents for Public Education,” it grew out of a proposal prepared by the museum’s Education Department and accepted by the Kellogg Foundation in 1982.

If the Exploratorium is a prototype, Field Museum is an archetype, a completely perfect museum in the classic sense. Its responsibilities to collect, preserve, research, and educate make it more typical of museums generally than the Exploratorium, whose sole purpose is to educate. Because Field Museum embodies attributes common to so many museums, its Kellogg Project has the potential for widespread grassroots support. It is designed to increase understanding of the responsibility to public education in the context of complex institutions, both large and small, that must find a balance among their responsibilities to collections, the advancement of knowledge, and public education. At the same time, Field Museum is currently expanding and formalizing its commitment to education, and its Kellogg Project is a significant part of that effort. And as befits an institution with a reputation for leadership, Field Museum, through its Kellogg Project, is sharing its development with hundreds of museum professionals.

The museum’s founders were committed to public education, but like many great museums in this country, Field Museum’s reputation rests more on the quality of its collections and the original research conducted by its scientists. It was not until 1969, seventy-six years after the museum opened its doors, that a formal department of education was established. Until then separate education programs were endowed by committed individual supporters and staffing was minimal. Twenty-four museum professionals now work to attract and serve a large and diverse audience. Today the Field Museum’s one million yearly visitors partake of a wide range of programs for schoolchildren, teachers, gifted and talented children, college students, scholars, and other adults. During its seventeen years of formal operation, the Education Department has sought to encourage and develop more effective visitor use of the museum, and it has achieved this goal by establishing one of the most comprehensive education programs in the country.

Field Museum has school tours, teacher-training projects, a school loan program, special summer classes for high-ability students, and a museology course for gifted high school students. Exhibits are supplemented with lectures, festivals, audiovisual programs, performances, demonstrations, and workshops. The staff coordinate study trips to areas of biological and ecological interest for adults and families and manage two participatory exhibits in the museum. In addition they are responsible for a formal course for adults and museumwide recruitment and placement of all volunteers.

As these activities suggest, the scope of Field Museum’s education programming is unmatched. The demands of so large and
Sound management of public programming is the keystone of Field Museum’s Education Department. It has led the way in recognizing that the future of museum education departments depends on a careful articulation of the departmental mission and related goals and objectives. This conviction arose from direct experience. As early as 1978 the Education Department began to define the natural history concepts it would strive to teach through its programs. In 1982 it began developing goals and objectives for the whole department and for each of its programs as part of the budget process. The activity forced the question of appropriateness of specific programs. Just because a program is successful, staff recognized, doesn’t mean it is appropriate for this museum with its given institutional purpose. While scores of public programs and dozens of audiences served are testimony to hard work and good intentions, what is needed is a clear sense of direction. A self-study process begun in 1984 led staff members to look more closely at Field Museum’s institutional mission and to design a department mission statement, goals, and objectives to guide its work.

Field Museum’s Department of Education, its mission statement explains, exists to interpret the museum’s focus on biology, earth science, and human history through its exhibits and collections. The department is to provide formal and informal learning opportunities by employing a variety of educational strategies and formats that will:

- attract a diverse audience from a broad-based constituency;
- provide information that is current and in concert with accepted scientific theory;
- present the subjects of natural history effectively and encourage interaction, exploration, and discovery;
- promote awareness of our environment to increase understanding and appreciation for nature’s interdependence; and

But what sets this education department apart from many others are its efforts to give continuity to so far reaching a slate of programs. In 1977, the department was restructured in two divisions to provide more cohesive planning and better program implementation and evaluation. The Group Program Division is responsible for all educational activities serving teachers and organized groups; the Public Program Division focuses on programs geared to the general public.

diverse a department require staff specialization. Thus, rather than the education generalist found in most museums, each Field Museum educator concentrates on a single area like teacher training, adult programming, or volunteer management. Because they handle so many programs and specialties, together the staff have a breadth of accumulated experience invaluable to museum professionals who must perform similar tasks on a smaller scale.
• encourage lifelong learning in a museum setting.

This mission statement presents the purpose and responsibilities of the department in broad strokes. It is the four goals of the department that provide further guidance for decision making. The goals, developed by staff consensus, state that the department will:

1. develop programs that involve objects from the collections and relate to the subjects of exhibits at the museum;
2. emphasize public interaction with exhibits in the exhibit development process;
3. insist on a high-quality experience for the visitor and determine the number of offerings in terms of the effective "carrying capacity" of the staff; and
4. stimulate participants in education programs to become active museum supporters.

A Focus for Change: Field Museum's Specialty

Field Museum does not present itself as an ideal education model, but its wealth of trusted experience, its vision, and its commitment to constant improvement make it a perfect focus for professional development and discussion of new education programming—goals that are the cornerstones of Field Museum's Kellogg Projects.

Professional development. Over the years, Field Museum's Education Department has been recognized for its exceptional public programs. Like the Exploratorium staff, Field Museum's education staff have long been regularly asked for advice by professionals around the country. The staff have always sought to be helpful, but now the Kellogg Project has given a focus to these informal efforts. The Kellogg grant has made it possible for the museum to serve a greater number of museum professionals and to place its practical advice within the framework of a philosophy of museum education. In addition to the Education Department's development of its mission and goals, in 1982 museum staff were fresh from another learning experience. Installation of a new permanent exhibit, Maritime Peoples of the Arctic and Northwest Coast, marked the beginning of the museum's commitment to a team approach to exhibit development.

And while the team system was not flawlessly executed this first time around, museum staff at the highest levels were committed to it in principle. Education staff were certain they had rich material to share with others, especially experienced museum professionals from small and middle-sized museums across the country.

Field Museum staff believe that knowledge, attitudes, and skills of professionals are central to effective and innovative programming, and their Kellogg Foundation Fellowship Program provides museum educators, curators, and exhibit designers with a well-organized series of workshops on museum education and exhibit design. In addition to conveying information and sharing approaches, the workshops create an atmosphere in which participants learn from one another and help each other understand the policies and practices of their institutions and their role within them.

Field Museum decided early on that it would take as its charge the training of future museum leaders. Those selected for
participation in its Kellogg Project workshops are mid-level professionals committed to their careers. They are usually in positions of middle management within their museums and active in professional circles outside their museums. Field Museum also sought the participation of experienced professionals from middle-sized and small museums in an effort to reach a core of leaders capable of shaping the profession from the grassroots up. Since 1982, 160 museum professionals (representing 160 different museums) have participated in Field Museum’s workshop on museum education, and another 240 individuals (from 80 museums) have participated in its workshop on the team approach to exhibit design. As intended, these 400 Field Museum Kellogg Fellows have had a wide range of influence.

Field Museum works hard to track the impact of the workshop on participants and their institutions through postworkshop evaluations three and nine months after the participants return home. These evaluations show that the learning from Field Museum’s Kellogg workshops has far-reaching effects. For example, evaluations from the 1984 program show participants return to their institutions as stronger leaders—more articulate and informed, and with renewed confidence and commitment to their museums. They began new programs and projects, were able to develop overall program plans with goals and objectives, established exhibit teams, clarified their roles within their institutions, increased interdepartmental communication, and performed more exhibit and program evaluation. Several participants shared the knowledge gained at the Kellogg Project at regional and national meetings. More important, participants shared what they learned with colleagues at their institutions—an estimated two hundred persons within their departments, and more than two thousand within their institutions. These are all indicators of strong network building, and as this ripple expands, Field Museum’s philosophy and approaches are reaching into all corners of the museum community.

**Museum education programming.** The Kellogg Project at Field Museum has also been shaped by the staff’s belief that museums are underused education resources—a contention especially intriguing from an institution with one million yearly visitors, 40 percent of whom have a structured learning experience in the museum. Obviously Field Museum staff are not making a simple observation about museum attendance figures; they are raising questions about the overall quality and extent of museum education programming. The general public, they argue, could learn more during museum visits. People need to be informed about how to use museums, and schools and museums have not yet realized their potential for collaboration. The quality of museum education will be improved, they insist, not by doing more of the same but by developing new directions.

Role clarification, redefinition of goals, attention to audience, examination of organizational structures, and new systems of communication form the keystone for all four components of Field Museum’s Kellogg Project. The education workshop directs professionals toward fresh conceptual frameworks and planning strategies. The exhibit workshop is an in-depth examination of content and personnel considerations reshaping the exhibit development process into a team approach. Museums and schools are opening new lines of communication through the Chicago Educators Network, and Field Museum staff have enhanced their work by establishing links with colleagues in other museums through Faculty Training Program grants and the Kellogg workshops. It is the lessons embedded in these activities that are the contributions of Field Museum.

**Museum Education Workshop: Strategies for Effective Programming**

Field Museum’s philosophy of museum education recognizes the centrality of the object, is dedicated to stimulating problem solving, and emphasizes the inductive reasoning involved in moving from single ob-
jects to larger, more abstract concepts. Learning in the museum, the staff believe, is grounded in two study methods—examining and comparing specimens and objects to ascertain specific identities, and using conceptual frameworks to examine and interpret natural phenomena, artistic products, and material culture. The job of museum educators is to focus visitors’ attention on objects so that they might, through close examination, achieve some new awareness about nature, a culture, and themselves. Under pressure to produce a large number of programs, often with a volunteer and minimally trained staff, most museum education efforts miss opportunities for stimulating enrichment and personal growth among visitors, and that is what Field Museum aims to rectify.

Recognizing the need to move beyond a “bandwagon” approach to planning public programs, Field Museum emphasizes the importance of every education department’s developing its own mission statement and set of goals and objectives. But there is a discrepancy between Field Museum’s desire to assist museums in the development of coherent, conceptually sound programming and the current expectations of educators. Most fellows come to the Kellogg education workshop hoping to get new program ideas, find solutions to problems they have with existing programs, and learn about marketing and outreach strategies that will increase their audiences. However, they welcome the opportunity to discuss large issues—the values and assumptions behind their activities—because at their museums they have neither the time nor an appropriate forum for that kind of discussion.

The workshop is evolving into a professional training program with two distinct dimensions. One is providing assistance and support on a practical level, and the other is getting people to examine the principles, concepts, and philosophies underlying their work. Recent workshops have featured keynote speakers on topics like developmental psychology and learning theories. Through activities, readings, and discussion, participants confront issues such as: What is the “something special” communicated by a real object that cannot be found in a facsimile? How do exhibits communicate? What are the perceptual and inductive skills necessary to successful museum learning, and what can education programs do to develop those skills? What ways do people learn, and how can the museum be certain that its offerings are varied enough in presentation style to serve different learners?

For many participants the discussions at Field Museum’s Kellogg workshops are the first time they have ever talked about these issues. Most museum educators are bogged down by the heavy practical demands of program implementation and rarely get the opportunity to explore the theoretical and conceptual dimensions of their work. The staff are confident that their efforts to elevate the quality of thinking and discussion about museum education will improve practice. By stressing that long-term planning based on a departmental philosophy and mission is the key to quality programming, they have begun to cut through to more conceptual issues. Participants report that one outcome of the workshop is an understanding of the importance of planning as a management tool and conceptual undergirding for decision making. They are being intellectually challenged and stretching to think of education in the museum as something more than special programming.

**Exhibit Development Workshop: A Team Approach**

A formal role for the museum educator is the most innovative component of Field Museum’s team approach to exhibit design. Through its Kellogg workshop on this topic, the museum showcases its team structure—presenting it not as a *fait accompli* but as a work-in-progress.

There is nothing startlingly new about a team approach to exhibit design. It is based on the premise that several areas of expertise are essential to building good exhibits;
"It was wonderful to see that everyone was having the same troubles we faced with the team approach to exhibit development," admits Richard Kool, education officer at the British Columbia Provincial Museum in Vancouver. He and a curator from the museum attended Field Museum’s Kellogg workshop on exhibit development in 1983 as they prepared to plan several natural history exhibits. They hoped to find out how others responded to the resistance they were encountering to a team approach.

Living “out on the edge of the world on the island of Vancouver,” Kool appreciated the opportunity “to get into the middle of North America” and see what people are thinking and doing. He discovered that others shared his concerns about museum education. While in Chicago, he organized informal breakfast meetings for museum educators. He found the planned workshop activities useful, but the real strength of the curriculum, he concluded, was its flexibility. Instead of submitting to a rigid structure, museum professionals were encouraged to “create their own curricula” in formal and informal discussions. Kool calls his week in Chicago one of the best professional sessions he ever attended and attributed its success to being surrounded by smart people from Field Museum and other museums. “It helped me,” he says, “solidify thoughts I’d had for a long time.”

Interactions with colleagues and Field Museum staff were so stimulating that Kool drafted an essay capturing his thoughts as he flew home to Canada. Chief among his con-
cerns was the historical legacy of museum education. The difficulty in implementing a team approach to exhibit development, he realized, is a problem of role definitions. Educators meet with resistance as they join teams because they are perceived as second-class citizens in a museum world populated by curators and researchers who have unquestioned content expertise. The domain of education—concern for visitor experiences—has not been valued as highly as knowledge of art, anthropology, science, and history.

The result, Kool argues, is that museum educators have created “parallel empires” in museums. They have vast numbers of schoolchildren coming to their programs, but they rarely participate in the “real” work of the museum. Thus, when budgets get tight, education—because it is not perceived as central to the museum’s operation—is often first to be cut. Underlying this analysis is Kool’s recognition of the widespread assumption that museum educators usually don’t have an important contribution to make. In exhibit planning, for instance, curators provide knowledge about an exhibit’s subject, and exhibit designers know how to make it “look good.” Senior administration takes the view that curators and designers ought to be able to create exhibits themselves; involving educators in the process would only make it unnecessarily complicated and long.

Knowledge of object-based learning is, in fact, still in its infancy. Exhibits are evaluated only in terms of their accuracy and esthetic qualities. Kool cites the example of an exhibit that “looked gorgeous from fifteen feet” and won important design awards. The problem was that visitors could not read exhibit labels: they had been screened onto plexiglass suspended away from the wall, and the shadows they cast made them illegible. Curators care about the research behind an exhibit; designers work for an effective overall appeal; but, in Kool’s words, “nobody is concerned with what happens up close at an exhibit.”

The way to break this cycle, Kool proposes, is for educators to bring their own “secret knowledge” to the task of developing exhibits. Educators need to create an area of expertise. The museum world needs to know more about the education content of exhibits, and this will require additional research about audiences, learning, and exhibits. The educator can then be the team member who applies insights from environmental psychology, cognition research, and perception studies to the making of successful exhibits. Concern for the ability of an exhibit to communicate and teach should be the responsibility of the museum educator.

Kool is now redefining his position at the British Columbia Provincial Museum. The Education Department has been eliminated; that gives him the opportunity to find a place for himself—and education—within the institution as a whole. He approaches this task knowing that his views are shared by other museum educators—people he is still in touch with since his week at the Kellogg workshop in exhibit development in Chicago.
the traditional emphasis on content, which put exhibits exclusively in the domain of curatorial staff, is not sufficient. Field Museum is offering a new perspective on the method by focusing not on its worth but its workability. Incorporating the practical focus is welcome because, while a team approach to exhibit design is often accepted in theory, it is hard to put into practice. As one participant in Field Museum’s exhibit workshop expressed it, “The introduction of a team approach to exhibit conceptualization and design is a practical problem that at this point works mostly in theory only. Implementation seems more the issue.” And implementation is precisely what the Kellogg Field Museum workshop stresses.

Participants in these workshops recognize from the outset that the team approach is about process. They come from their museums in teams of three, and success depends on the willingness of these individuals to identify a set of shared goals and, finding the appropriate balance of responsibilities, to work together to achieve them. To help teams work together, Field Museum staff make a useful distinction between working as a committee to guide an exhibit and working as a team to create an exhibit. A committee, they say, is any group of people that works to accomplish some end. On a team, however, the mix of people is crucial. There are particular areas of expertise that must be represented, and individual team members have a responsibility to represent a particular point of view. Majority rule and reliance on positions of authority are not the interaction styles for a team; compromise and collaboration are.

The team approach deserves the attention of museums, Field Museum argues, because it is an organizational scheme consistent with the museum’s dual responsibilities to collections and public education. Yes, it is a slow way of doing exhibits, requiring many voices and much conversation. But that’s exactly what is needed, say Field Museum staff, to achieve the best interpretive exhibits. It is by using a team approach to exhibit development that museums are most likely to communicate effectively with their audiences. For its team approach Field Museum specifies three kinds of expertise and accompanying responsibilities:

**Curator:** The curator provides the scholarly expertise based on knowledge of the collection. As subject matter specialist, the curator is responsible for establishing the overall concept of the exhibit.

**Designer:** The designer is responsible for the visual appearance and coherence of the exhibit. The designer’s expertise assures that the exhibit material is set out in an appealing, understandable, and attractive manner.

**Educator:** The educator establishes the link between the content of the exhibit and the museum audience. The educator is a communication specialist who understands the ways people learn, the needs that museum audiences have, and the relationship between the museum’s program and the activities of other educational institutions, including schools. The educator plans evaluation activities that will examine the exhibit’s success in meeting its intended objectives and communicating with visitors.
The crucial function of the team is to work together to establish specific goals and objectives for an exhibit. The sharing of this responsibility ensures that exhibits will have a variety of intended outcomes to satisfy audience needs and design objectives and requirements for subject matter accuracy and collections care. By a consensus agreement to these objectives, all team members share a common vision and a commitment to the project. Consequently, attention to group dynamics, role clarification, and the relation of the team to the larger institution are key issues in the Kellogg workshops.

Museums and Schools: A Fresh Start

The Chicago Educators Network grew out of an established idea for collaboration between the museums and the schools in the Chicago area. There is nothing new about museums encouraging local schools to use their resources. School tours are still one of the mainstays of most museum education departments, and many museums have active teacher-training and outreach programs. But too often school museum visits are field trips and no more. Despite the fact that schools have a long history of using museums, museums continue to be underused by teachers, administrators, and students. Field Museum is seeking to reframe this long-standing relationship.

A good start was made at a two-day workshop conceived and organized as part of Field Museum's Kellogg Project. The innovation here is not in the idea but in the method—the conscious involvement of decision makers at the highest levels. Members of the Educators Network are heads of education departments in Chicago cultural institutions and school administrators responsible for curriculum development. Present at the meetings were the assistant superintendent, Department of Curriculum; the associate superintendent, Office of International Multicultural Education; and the directors of the Bureaus of Art, Social Studies, Science, Mathematics, and Language Arts of the Chicago Board of Education. Several teachers also participated in the network, though widespread teacher support is still a goal.

The key to the new approach is joint responsibility for planning. Representatives from local museums and the school board spent time getting to know each other and together concluded that they share a desire to explore how museums might have a role in educating our children. At several roundtable sessions participants shared information about curriculum objectives and museum experiences and resources that could be used to support them. A two-way relationship is being established, and both parties report having been strengthened as a result. Network members are now more aware of the structures, issues, and problems that govern each other's world. The museums have come to recognize the complexity of the school system and to understand that they need to build a different type of reputation with the schools—a process that will take time. School officials, for their part, express a desire to continue exploring possibilities for genuine collaboration between schools and museums.

Several concrete results have already come out of the Chicago Educators Network. The roundtable discussions produced documents relating curriculum objectives by grade level to museum resources in the areas of science, social studies, and foreign languages. The Public School Bureau of Mathematics consulted Chicago museums as it revised its new Masters' Learning Curriculum and included a resource booklet of museum activities in its curriculum materials. Social studies teachers now conduct meetings at Field Museum, and the Social Studies Bureau hosted a workshop for book publishers in two Chicago museums.

Network members are especially proud of a professionally produced videotape they created about Chicago museums for public school administrators. “Discover Our World—Through Chicago Museums” aims to introduce administrators to the structure of
Joining a Professional Community

George Ann Danehower, curator of education at the Lakeview Museum of Arts and Sciences in Peoria, Illinois, has more than twelve years’ experience in museum education. Yet Field Museum’s Kellogg workshop on museum education was her first opportunity for professional training in the field.

Danehower moved to Peoria in 1974 with her family and volunteered for many years at the Lakeview Museum. She later joined the staff as manager of the sales gallery for two years and was then appointed curator of education, a post she has held for six years. Reflecting on her decision to attend the Kellogg workshop, Danehower comments, “I had no benefit of formal museum education training, and I was thankful for an opportunity to pursue professional training so close to home.”

Danehower approached her week in Chicago hoping to learn about current developments in museum education.

I wanted to find out who was writing what, and what the controversies were. But what I actually found was that I learned the most from discussions with the other museum educators attending the workshop. I came away much more confident of myself because I participated in a very professional program.

The workshop at Field Museum broadened Danehower’s view of her museum’s educational mission. Her Education Department, she realized, had to set goals for itself that are directly tied to the mission of the entire museum. She now meets regularly with the museum director and puts program goals and objectives in writing. Taking a broader view of her responsibility has resulted in more elaborate programs and increased community involvement for the museum.

Soon after the Kellogg workshop, the Lakeview Museum hosted a week-long seminar for activity directors of health-care facilities within a 125-mile radius of Peoria. By her own admission, Danehower doubts she would have seen the relevance of such a program had she not gone to Chicago. A specific result of this new collaboration is increased distribution of the museum’s traveling mini-exhibits. Until recently the exhibits were loaned to schools, but now nursing homes and retirement facilities are also welcome borrowers, and the museum reaches several hundred additional people each year.

“Summer Circus,” a day camp at the Lakeview Museum, has become more elaborate as Danehower “thinks broader and bigger” about programs. She has added schoolteachers to the program’s corps of seventy volunteers, and they receive in-service credit for their participation. In fact, the school district now looks to the museum for continuing education programs like “Summer Circus” to “update” its teachers. So in addition to providing a museum program for children, “Summer Circus” now involves the museum with the school district, teachers, and a much larger community.

Danehower is increasing her professional activities, too. She has presented sessions on junior docent programs at the Illinois State Historical Society and the Midwest Museums Conference annual meeting. She believes that the confidence she developed through participation in Field Museum’s Kellogg workshop allowed her to agree to a session presentation and to survey other museums about their docent programs for young people. Danehower now feels her professional affiliations compare favorably with those of her husband, a physician. She has a group to be part of. Though she had previously attended conferences, she had not gotten to know fellow museum educators. The Kellogg Project at Field Museum introduced her to that professional community.
museum class visits. Nine museums are represented in the ten-minute program—the Adler Planetarium, the Art Institute of Chicago, the Chicago Historical Society, the DuSable Museum of African American History, Field Museum of Natural History, the Lincoln Park Zoo, the Museum of Contemporary Art, the Museum of Science and Industry, and the John S. Shedd Aquarium—but this is not a museum travelog. Instead, administrators are told that teachers can arrange for special courses to be conducted by museum personnel, that administrators are welcome to attend teacher workshops at the museums, and that they will be met at the museum by guides. The videotape closes with comments from teachers who have had positive experiences with their classes in museums.

The videotape is becoming a regular feature at administration meetings and in-service training programs for teachers. The school system distributes a brochure announcing its availability, and is preparing a resource handbook. "Partners in Education," designed to accompany the videotape, will list museum experiences to support the curriculum objectives specified by the school board.

Some important results of the Chicago Educators Network are less tangible but equally significant. School officials are, for instance, beginning to see how museums might be used in back-to-basics programs. As one school representative stated, children need experiences in order to read well. Higher-order thinking skills are developed by exposure to people, places, and things. Museums offer that exposure. Reading programs at the University of Illinois, Chicago Campus Reading Center, are already teaching children to read with the aid of museums and their collections. For others, museum experiences as part of school programs introduce meaning to lessons children often experience as disconnected and unimportant. A curriculum developer noted that contact with museums gives students a sense that our culture cares; it introduces them to thoughtful presentations of people, ideas, and creations and "builds cultural islands in their brains."

Through the Chicago Educators Network, museums and the Chicago Board of Education recognize each other as valid and valued partners in offering quality educational opportunities to the children of Chicago. This partnership is no more evident than during teacher strikes in recent years. During those times, museums offer programming for children, encourage visits, and appear on a National Public Radio program supported by the Chicago public school system and designed to keep children focused on learning. The school system now has a new superintendent, and the Chicago Educators Network will likely be reshaped under his leadership. But there is no doubt about its future. Now that the partnership is sealed, the immediate challenge is to help teachers become more comfortable with museums in their classrooms.
Professional Development for Field Museum Staff

Through its Kellogg workshops and Chicago Educators Network, Field Museum has served as a focus for the professional training of people from other museums. Through its Faculty Training Program, the Kellogg Project has also offered the museum's own staff the opportunity for professional development. During the early years of the Kellogg Project, Field Museum educators designed self-directed learning programs. They traveled to other museums, met with more than sixty colleagues, and brought back to Field Museum new ideas, perspectives, skills, and enthusiasm.

In the museum profession there is little opportunity—and even fewer resources—for travel, so faculty development grants were welcomed and were planned with care. Staff from the Harris Extension School Loan Program studied similar programs at museums in Philadelphia and Canada. Another educator studied adult programs in museums, discussing philosophies and themes with his counterparts from the New York Botanical Garden and the Smithsonian Resident Associate Program. An exhibit of living insects now on display at Field Museum is the result of one educator's visits to similar exhibits at the National Museum of Natural History in Washington, D.C., and the Cincinnati Zoo. And several ideas for general audience programs were gleaned from discussions and observations at museums in Seattle, Pittsburgh, Oakland, and San Francisco.

For younger staff members, these study grants provided an important introduction to the museum education profession. One young woman remarked that for her the best thing was learning that "there is a museum profession. I am one of those professionals, and I'm being sent on a business trip." Museum education is still a nascent field, and this seemingly naive recognition of professional viability is a genuine revelation for most museum educators. Even a museum as established as Field Museum needs to install a sense of professionalism in its education staff, and the Faculty Training Program made that possible. The Kellogg workshops have also enhanced staff development by piquing interest in evaluation of education programs, criteria for appropriate statements of purpose for museum programs, and the role of an education department in exhibit development. As a result, educators now meet in reading-discussion groups that focus on these topics and more general subjects like learning theory.

Concrete Changes

Staff development is a recurring benefit of the Kellogg Project, and with it has come increased recognition of the contributions museum educators can make. Field Museum's Education Department has taken on new areas of responsibility. Department staff are acknowledged as general experts on the museum audience, and their duties are extending beyond program planning. An educator is now working, for instance, with a member of the Anthropology Department on label formats for a small gallery installation. The Education Department is inti-
mately involved in the museum's plans for a visitor study center, and it now has full responsibility for exhibit evaluation.

Every part of Field Museum, in fact, has been affected by the Kellogg Project and its explicit message that the museum is committed to public education. Most dramatically, the museum learned critical lessons about the relationship of a museum's mission and goals to its organizational structure: a museum dedicated to research and education needs to be structured so that those two functions receive equal attention and are allocated appropriate resources. In 1985 Field Museum put theory into practice through a new organizational structure that elevates public education to an authoritative position. Under the new system, Field Museum is managed by a president and four vice-presidents: one each for research, public programs, finance, and public affairs. It is too early to know the effects of this change, but the museum community is eager to learn from this bold experiment at one of its most trusted institutions.

Creating a climate conducive to change at the highest administrative levels is an enduring value of the Kellogg Project at Field Museum. The project hasn't given the museum answers; it has offered challenges. And the staff look forward to continuing to share their failings and successes, their misgivings and visions, with interested and equally committed colleagues.
CREATIVE SURVIVAL

THE PROVIDENCE BLACK COMMUNITY IN THE 19TH CENTURY

INTRODUCTION

"Creative Survival" examines black life in Providence from 1770 to 1865. During the Revolutionary War and Civil Wars, thousands of Rhode Island blacks served from their homes and helped their communities. This exhibition is the story of black survival in a hostile and oppressive world. The exhibition is divided into three main sections: the history of black life in Providence, the struggles of black women, and the opportunities to compete fairly with white Rhode Islanders.

"Creative Survival" is the story of the black community's struggle, which involved fighting for their rights in the eyes and hearts of white.
Profile of Smithsonian Project

► Title
Kellogg Project, Office of Museum Programs, Smithsonian Institution
Theme: Museums and Change

► Funding Date
May 1, 1982

► Nature of Programs
- Kellogg Regional Workshops to introduce museum educators to changes in demographics, communication technologies, and trends in education on a national scale
- Demonstration projects at twelve museums designed to increase the educational impact of museums in communities
- Kellogg Museum Professionals at the Smithsonian, a program providing week-long residencies for senior-level museum professionals

► Participants
Twelve fully participating museums, selected from five hundred applicants, include some of the leading institutions in their regions. Given the intent of the program to foster widespread changes in the museum community, institutions were selected on the basis of resources, education programming, and a desire to tackle new problems. Three museums with special responsibilities to underrepresented audiences—a Hispanic cultural center, a Native American museum and an Afro-American history museum—were also selected for full participation.

Regional workshops have been attended by 120 senior-level museum professionals, and nearly 30 of those people have completed week-long residencies at the Smithsonian Institution. Within the last year, the project has contracted with twelve specialists, most from outside the museum community, to serve as evaluators of the demonstration projects at each of the fully participating museums.

► Geographic Reach
Two fully participating museums are located in each of the American Association of Museums' six regions. In addition, the Smithsonian Kellogg Project sponsored workshops in each of those regions: in Boston; the Bronx, New York; Charlotte, North Carolina; Toledo; San Antonio; and Portland, Oregon. Twenty museums from each region were represented at each workshop.

► Organizational Structure
The Smithsonian Kellogg Project is directed by Jane R. Glaser, program manager, Office of Museum Programs, and Janet W. Solinger, director, Resident Associate Program. The project is coordinated by Philip Spiess III. Individual participating museums have responsibility for their demonstration projects, all of which are supervised by the Kellogg office at the Smithsonian. Colloquia, workshops, and Smithsonian residencies are planned and administered by the Smithsonian office.
The Smithsonian Institution is nearly synonymous with unmatched quality, resources, and access to state-of-the-art information. It is the world’s largest museum complex. A unique institution, it cannot serve as an exact model for other museums: its resources are too vast, its audience too large and diverse, and its mission too global. Smithsonian programs can, however, be adapted to other museum settings. Thus the Smithsonian quite naturally serves as a focal point for the museum community; it is an ideally situated catalyst for change.

Given the unique features of the Smithsonian, its portion of the Kellogg Project is organized differently from the projects at the Exploratorium and Field Museum. As described in previous chapters, each of those museums had a particular message reflecting its recent advances in exhibit and program development. And although the Exploratorium and Field Museum have distinctive features and impressive reputations that set them apart from other museums, many museum professionals see a direct and powerful relationship between the practices and thinking at those two institutions and the needs of their own museums.

The Smithsonian, on the other hand, has long understood that its forte does not lie in its ability to model specific approaches and programs for other museums. As the national museum, it has a responsibility to share the ideas and resources of its staff, including knowledge of advances in museum practice around the world. Thus its Kellogg Project does not focus solely on what the Smithsonian does. Instead the Smithsonian Kellogg Project is serving as an organizing agency working to stimulate innovative education programming in museums across the country by bringing to the task its prestige, access to resources, and concern for the development of all museums.

The W. K. Kellogg Foundation awarded a three-year grant to the Smithsonian Institution in May 1982. When the Smithsonian Kellogg Project got under way, preliminary results from the Exploratorium and an outline of Field Museum’s project indicated that their efforts to train museum professionals would produce good results. The Kellogg Foundation thought it advisable to expand its efforts and include the nation’s best-known and biggest museum. Of the three Kellogg Projects, the Smithsonian’s is the largest. Befitting its scope, its goals are more general than the other two. Its stated purpose is “to improve and expand the educational role of museums in their communities.” More specifically, the project set out to:

- define the role of museums as educational agencies and emphasize that all of a museum’s functions and activities are part of its educational purpose;
- offer museums an opportunity to explore and experiment with new and different educational ideas and methods;
- enhance the educational role of museums in their communities by helping them to work with other museums and educational institutions, such as libraries, colleges and universities, and public and private school systems;
- strengthen the total educational impact of museums by involving museum policy makers and decision makers—directors, trustees, and senior staff—in discussions about museums and learning.

Initially the Kellogg Project was designed as a series of residencies, colloquia, workshops, and regional conferences on the theme of “Museums and Change.” During each of the first three years of grant-supported activity, Smithsonian programs were planned on specific considerations: museums and changing communities; museums and changing educational patterns; and museums and changing technologies. Workshops and colloquia have taken place on these topics.

The selection of “change” as an organizing concept, though of interest to many museum professionals, was not sufficiently
bold as to mark the project as fundamentally different from similar efforts by other museums and museum organizations. The National Advisory Committee for the project—leading museum directors and university administrators with expertise in continuing education—and the project administrators wanted the Smithsonian Kellogg Project to create something very different for the museum community. A directive prepared for the Advisory Committee by the project coordinator underscores this intention.

If it [the Kellogg project] were just another series of conferences and workshops for the museum profession, it would be duplicating efforts now carried out in many parts of the country by many organizations. . . . If it were just a compilation and dissemination of the many interesting educational activities that museums are presently carrying out in their communities, it would be repeating information already adequately collected and distributed by museums. . . . And if it were to concentrate its efforts solely on those activities which comprise the traditional and narrow view of "museum education," the Kellogg Project would in no way be serving the needs of the museum community. . . . The intent of the Smithsonian Kellogg Museum Education Project, therefore, is to try to do something different, in different ways, and yet to achieve something of use.

Thus the Smithsonian renewed its charge to develop a program designed to stimulate original thinking and innovative practice in museum education. Articulating a substantive base and establishing an organizational structure for such an ambitious project were not easy.

A Structure for Change: The Smithsonian's Contribution

The Smithsonian demonstrated its commitment to new thinking and new approaches by developing a structure conducive to bringing about change in museums. Acting on the recommendation of a member of the National Advisory Committee, the project staff decided to supplement workshops and conferences for large audiences with a concentrated program for a small number of museums selected as representative of the museum universe. Each museum would be asked to design and complete—with the assistance of the Smithsonian—a demonstration project that would stimulate its own commitment to education and serve as a model for other museums. In this way the Smithsonian might set up a ripple effect and serve as a resource and catalyst for change in the museum community at large.

It is this structure and the Smithsonian's conscious effort to establish itself as a forum for change that is this project's special contribution. Specific programs are now being piloted in the participating museums, and the structure of the Smithsonian effort gives them their distinctive qualities. The Kellogg Project at the Smithsonian thus fulfills an important function for the museum community. It assists participating museums in the process of analyzing the sources of new opportunities for museums as educational institutions and then helps those museums as they go about doing the hard work that ultimately lies at the base of all successful innovations.
It is one thing for a museum to announce that it intends to involve its community in program planning and expand its audience. It is another to achieve those goals. Increasingly museums are discovering that they need new resources, different expertise, and considerable time to accomplish such changes. The Smithsonian Kellogg Project provides a forum for thoughtful experimentation. It also creates a formal structure for the development and dissemination of innovations within the museum community. The structural features of the Smithsonian Kellogg Project are integral to its success and are described below.

**Participating museums.** To assure geographic distribution among participating museums, an equal number of museums was selected from each of the American Association of Museums' six regions. Representation of art, natural history, history, and special museums (such as science centers and children's museums) was also achieved. Thus breadth of participation was easily accomplished. More troublesome was finding a way to add depth to the experience of participating museums. Commitment and continuity were considered essential if the project were to facilitate real change.

This desire for commitment and continuity informed the decision to require participation from specific staff members at each museum. The Smithsonian made it clear that participation in the project would be open only to museums willing to invest the time of their top-level decision makers and senior staff. Museum directors, trustees, and heads of departments were to form four- or five-member teams for each participating museum. The involvement of policy makers is essential to the philosophy of the Smithsonian Kellogg Project, since they are often the most effective change agents and opinion leaders in their museums and within their regions. If these people alter their thinking about museums and education, the argument goes, then the ripple effects from the project will be all the more penetrating throughout the larger museum community.

An announcement of the Kellogg Project was sent to institutional members of the American Association of Museums, museum directors, members of boards of trustees, and museum educators. All museums were eligible to apply. Applicants were asked to specify which staff and governing board members would work as a project team, to provide a description of the institution's educational activities, and to state what they thought would be the value of participation. It was made clear that all costs for travel and participation in project colloquia and workshops would be paid for by the Kellogg grant.

Nearly five hundred museums applied for the project on just three weeks' notice. The Smithsonian staff read that overwhelming response as strong endorsement of the project's commitment to increase the educational role of museums in their communities. Program staff reviewed the applications looking for museums that would lend the project diversity in location, type, and size. Equally important were the museum's willingness to participate for the full three years and desire to initiate change. Museums were also selected for the mesh between their institutional mission and major new programs about to be implemented and the goals of the Kellogg Project. Quite simply, the Smithsonian was looking for museums that had already made a demonstrable commitment to their audiences and had a history of good education programming. They could then serve as flagship museums in their regions.

The twelve museums finally selected for participation are some of the largest and best museums in the country. Project staff hypothesized that if change occurred in these venerable institutions, then change was possible in museums with less formidable bureaucratic structures and perhaps less firmly established traditions to overcome.
Television Programs from Museums

Many museums dream about making television programs, and the Louisiana State Museum has done it. “Rags, Hags, and Velvet Gowns,” based on the museum’s costume collection, first appeared on New Orleans public television WYES-TV in October 1985 and aired for the third time in April 1986. So far the program has been shown in southeast Louisiana and parts of Mississippi. Broadcast to a statewide audience is a goal for the near future.

Overall, reactions to this professionally produced program have been very positive. Viewers report learning about historical changes in style, the response of fashion to changing roles of women, and what fashion says about a society. Tamra Carboni, assistant director for public programs and project director for this Kellogg demonstration project, is pleased that the television program is not simply a tour through the museum’s costume collection but an entertaining and informative program that stands on its own. With contributions from historians, fashion experts and even examples of contemporary fashions, the program tells how costumes reflect social history.

The Louisiana State Museum will have several good television programs with long lives as a result of its demonstration project. Equally important, the staff have learned a great deal by going through the process of creating a first program. They found, for instance, that the focus for a public television program needs to be fairly narrow. The same show simply can’t be suitable for both a general viewing audience and instructional television.

The museum is planning to produce a second program—a thirty-minute videotape on jazz. Rather than work with a television station again, this time the museum will contract with an independent film maker. In that way staff will be able to compare the two ways of producing television programs—a comparison that is a focus of this demonstration project. Based on her experience with the first of these programs, Carboni advises investigating the potential expected viewership to determine if the audience size warrants the high costs of television production. “Money doesn’t go as far as you might think—or hope,” she cautions. She also notes the importance of drawing up good contractual agreements from the outset. As staff prepared “Rags, Hags, and Velvet Gowns,” a contractual agreement specifying that the museum had complete control over the historical accuracy of the program allowed them to insist on a change the television studio did not find necessary.

The museum is pleased with its costume program. Public response to the film is being assessed through a formal evaluation process already in place. At the end of the project the Louisiana State Museum plans to share what it has learned about different ways of producing films through a printed guide.
A conceptual framework. As expected, the participating museums looked to the Smithsonian Kellogg Project staff for a conceptual framework to guide their thinking and planning. Rather than stating a particular position or preparing a concrete message as the Exploratorium and Field Museum had done, the Smithsonian presented participants with a set of tenets that might serve as reminders of the potential of museums as learning environments.

These tenets contain no specific directives or plans for action; they are points of departure for planning the direction and focus for the demonstration projects. Taken as a whole, these tenets reflect current thinking among the leadership in the field of museum education. They are not new ideas in themselves, but the Kellogg Project at the Smithsonian is perhaps the first program to bring these ideas to the attention of policy makers for their serious consideration.

The tenets address concerns about the audience for educational activities and an expanded definition of the educational domain within the museum. They also call for increased understanding of the nature of learning in the museum setting and a sharing of that knowledge once it is obtained. The tenets are as follows:

- Museums are learning resources in communities for both children and adults. They provide lifelong learning experiences.
- All facets of the museum operation, including collections management, research, exhibit planning, and publications, are elements in the educational responsibility of the museum.
- Museums should establish education policies in the same manner that they develop fiscal plans and collections policies.
- Museums need to conduct research on the process of learning in the museum environment.
- Museums should be encouraged to explore innovative techniques for presenting learning opportunities.
- Museums should stay abreast of societal changes such as shifting populations, technological advances, and new educational needs, and be increasingly responsive to those changes.
- Museums should collaborate with other museums and educational institutions in order to achieve a central role in the educational life of their communities.
- Museums should disseminate information about what they know about learning and programming to other museums and more broadly to the lay audience in order to make the general public aware of museum offerings and especially the position of the museum as a community learning resource.

Demonstration projects. Each demonstration project was intended to demonstrate the applicability of the emerging Smithsonian Kellogg Project philosophy as stated in these tenets, and each was to fulfill one or more of the four project goals. Thus it was hoped that these demonstration projects together would examine the process of learning in museums, including adult learning; demonstrate new ways museums can educate; and/or develop collaborative efforts among independent institutions.

Outlining the parameters and substance of the demonstration projects has been a complex process for the participating museums and the Smithsonian staff. Team members from each museum were asked to learn about changes in demographics, educational needs, and new technologies and thus become attuned to new educational opportunities for museums.

Teams met for the first time at Colloquium I, “Increasing the Museum’s Responsiveness to Cultural Diversity,” in April 1983. A keynote address was delivered by Herbert Gans, Ford Foundation Urban Chair Professor of Sociology, Columbia University, and other experts spoke about recognizing population trends, ascertaining the needs of special community groups,
strengthening the ties between the museum and its community, and creating a climate for change in the museum. Colloquium participants found the program useful and stimulating, and they raised many issues of concern needing further attention:

- building support—moral and fiscal—for innovative education programming;
- developing better alliances between museums and other entities, including public and private individuals and groups, to bring about a broader definition of education;
- understanding the boundaries between museums and other educational institutions: What educational experiences should different educational institutions be responsible for?
- developing strategies designed to alter public perception about what museums are and what role they can play in education;
- marketing education aggressively as a viable museum mission;
- establishing statewide and regional planning and cooperation in education;
- exploring the use of community advisory groups to shape museum education policies;
- identifying or establishing networks for sharing information about innovations in museum education;
- altering the organizational structures of museums to accommodate and promote broader education programming;
- acquainting boards of trustees with the increased educational responsibility of museums;
- sensitizing the entire staff to the museum’s educational mission;
- developing the educational skills of all museum staff—educators, curators, and administrators alike;
- developing standards for educational practice within the museum setting;
- opening museums to wide-ranging audiences and making them more responsive to diverse audience needs;
- experimenting with new educational programs in museums and assessing their effects through comprehensive research programs;
- acquiring information about learning in the museum setting by focusing on cognitive processes, family learning, and label and object interaction;
- evaluating and documenting the educational impact of museums on diverse visitors.

Participating museums left the three-day colloquium with a great many ideas for future directions and a strong incentive to develop a project that would be innovative, provide a learning experience for visitors not previously attempted by the museum, and result in a model other museums could emulate.

The museum community, and museum education in particular, is replete with examples of creative programs and has a long tradition of sharing information about them. What sets these Kellogg demonstration projects apart from other attempts to develop new and exciting education programs is the conscious and systematic study of their development. From the beginning participating museums were asked not only to consider the innovative elements of their programs but to pay equal attention to ways they will study learning, evaluate the success of the effort, and disseminate information to other museums likely to benefit from their experience. The process of the projects, not the projects by themselves, is the innovation.

Another special feature of these projects is that they have the resources of the Smithsonian available to them. The Smithsonian acts as a clearinghouse of information for the participating museums, putting them in touch with people and ideas inside and outside the museum community. Teams from participating museums are invited to attend special programs in Washington. A lecture about mediated learning by Reuven Feuerstein, Ph.D., a psychologist and educator from Israel, was one such event, and colloquia on topics such as museums and the information age and creativity are yet another source of information sharing.

Themes for Change

The twelve demonstration projects hold the promise of advancing thinking and practice about museum learning. They are a collective effort, and, in fact, they do share some common themes. They fall into three categories responsive to current needs in the
field of museum education: those examining new relationships between museums and their communities; those experimenting with new interpretive strategies that expand education programming; and those establishing new collaborations in an effort to increase the museum’s outreach efforts. Four museums are working in each of the three areas.

Community impact. The Rhode Island Black Heritage Society in Providence designed a demonstration project around the process by which four black institutions have involved their communities in collection-building and major exhibitions. The idea grew out of the successful program the society developed for its first major exhibition based on its permanent collection, Creative Survival: The Providence Black Community in the 19th Century. Community members were introduced to the project at a public forum and then assisted staff in all phases of operation—collecting, research, exhibit building, and program planning. The Black Heritage Society, the Anacostia Neighborhood Museum in Washington, D.C., the African American Family History Association in Atlanta, and the Museum of African Art in Los Angeles are together producing a videotape documentating their experiences with community involvement that, in the words of Rowena Stewart, director of the Rhode Island Black Heritage Society at the start of the project, “will serve the educational ends of black museums, other small institutions, and the Kellogg Project.” A first draft of the videotape was viewed at the African-American Museums Association meeting in New Orleans in fall 1984. The Smithsonian Kellogg Project will distribute the videotape throughout the museum community.

The New York Botanical Garden is familiar to those with a special interest in the plant world but is not well known among the general public in the Bronx and other boroughs of New York City. Garden staff wished to enhance the institution’s community image and promote interaction with members of its immediate neighborhood. They approached the Kellogg Project “at the threshold of significantly increasing our presence within the metropolitan New York City area” and planned a project to help them in that endeavor. The first step was organization of a major meeting, “Serving Our Communities: An Education Workshop.” During two days some three dozen museum programs designed to reach traditional and nontraditional communities were presented. Discussions identified communities as geographical and cultural, those reflecting academic and other special interests, and intra-institutional communities such as guides, volunteers, and employees. The Kellogg team at the New York Botanical Garden has collected abstracts of presentations and is making plans to share this information with a larger professional audience.

In a related effort to reach new audiences, the Cherokee National Historical Society in Tahlequah, Oklahoma, is working to establish a network of contacts with area public schools, a first for a tribal museum. Community residents are working with staff to acquire oral histories and archival materials to develop an interpretation of their rural village. Just as important, the
society is pulling together the community of tribal museums—those institutions holding important pieces of a vanishing culture. A demonstration project planned by the Museum of Science in Boston adds a professional marketing analysis plan to the museum’s program planning efforts. The museum hopes to prepare software that will make it possible for other museums to use its computerized audience survey system.

The role of education. Another set of four museums is experimenting with new directions for museum interpretation. The Toledo Museum of Art is examining a museum staple—label copy—to see how it can function to introduce the adult learner to works of art. Labels are the museum’s most direct means of communicating information about its collections. A museum communications expert was brought to Toledo for a residency designed to assess the museum’s labeling systems. Among other duties, she met with members of the education and curatorial departments to prepare gallery introduction statements. The involvement of the curatorial staff in an interpretation project has been the key to success, for in addition to new gallery introductions, the museum now has a new system for writing labels and a museumwide commitment to public education and understanding.

Discovery Place, a member of the Science Museums of Charlotte, Inc., emphasizes personal interaction with visitors. It has experimented with staging performances that bring science to life through the “appearance” of scientists who talk about their discoveries, and its demonstration project will produce two live interpretation programs for the museum. At the same time, the museum will outline a process of developing new interactive experiences for visitors that can be used by Discovery Place, evaluated, and made available to other museums experimenting with participatory exhibits. There is still a great deal to be learned if such programs are to be scientifically accurate as well as understandable and even exciting.

At the Fine Arts Museums of San Francisco the domain of interpretation is being expanded to include conservation techniques and international law as they affect the presentation of a collection. The museum has planned its most ambitious and diverse schedule of education programs to accompany an exhibition of murals from the pre-Hispanic Mexican site of Teotihuacan. The programs include bilingual junior docents in the gallery, a tactile gallery, maps of pre-Hispanic Mexico and Mesoamerica and the Spanish colonial empire related to California, conservation training workshops, and a videotape program of the conservation process. Most unusual is the inclusion of a conservation laboratory in the gallery. Conservators work in full view of people looking at the exhibit. At the close of this show half of the conserved murals will go back to Mexico. This didactic exhibit and wide variety of education components provide a rich resource for evaluation of several types of museum presentations and demonstrations.

The Children’s Museum in Indianapolis elected to redesign a history exhibit for its demonstration project. The result, Mysteries in History, is a lively participatory exhibit that includes a built-in laboratory for studying visitor learning through the information people record in computers placed throughout the exhibit. The museum is also hosting an International Congress on Museum Learning in May 1986. More than eighty senior-level staff from twenty museums in the United States and Canada will meet for four days and discuss education practices and directions for research about museum learning.

Collaboration. Collaborations between museums and other community institutions are a relatively new phenomenon. Four more Smithsonian Kellogg museums have designed demonstration projects that extend the museum beyond museum walls.

The Oregon Historical Society in Portland is producing a videotape based on the statewide eighth-grade history curriculum. The society is involving schools and
other cultural institutions in gathering visuals from all regions of the state. The program will appear on public service television, and a copy will be distributed to every school district in the state.

The demonstration project selected by the San Antonio Museum Association, "Schools and Museums in Partnership," also focuses on increasing the quality of classroom services. To achieve this end the association created a Commission on School/Museum Partnerships. Members include administrators, principals, and teachers from all grade levels of public and private schools; members of education departments at local colleges and universities; members of the Texas Education Agency in Austin; and representatives from the San Antonio Museum Association and other cultural institutions in the city. The special features of this commission are its multilayered organizational structure that includes policy makers as well as classroom teachers (each school has a teacher serving as museum liaison) and its determination to increase curriculum-based museum programs.

The Louisiana State Museum's demonstration project involves the development of videotape and film programs for broadcast television. These programs, examining artifacts from the museum's collection in the context of cultural and social traditions and historical developments, are intended to reach audiences in parts of the state far from the museum's home in New Orleans and to establish an image of the museum as an interesting and entertaining place.

In Pittsburgh the Museum of Art and the Carnegie Museum of Natural History—both part of the Carnegie Institute and located on the same site—have determined that they could expand the educational role of the museum complex in the community through joint programming. Specifically, "the staff of each museum, as well as the trustees and administration of the Institute as a whole, would benefit greatly from an enhanced understanding of our unique educational role as two museums in this community." The Kellogg team has studied exhibits at other institutions that present both art and science, and perhaps most important, the museums view this project as an opportunity to explore interdisciplinary themes and develop an educational philosophy based on a holistic interpretation of collections.

The twelve individual demonstration projects are planned and executed in the context of their larger collective effort. Taken together, they examine and improve educational practices in museums. It is too early to evaluate the contributions of these projects; most are still being developed, and results of on-site evaluations are not yet in. But they hold great promise for the museum community as a whole. And they should be producing publications, videotapes, and documents for many years into the future. That is their mark of distinction.
Participatory Learning in Museums

“Profound experiences are very personal experiences. That is true for museum visitors, and it can be true for museum professionals,” said Bonnie Busenberg, director of education at the Rancho Santa Ana Botanic Garden in Claremont, California, as she summed up her experience as a Kellogg resident at the Smithsonian in fall 1985.

Busenberg went to the Smithsonian to study participatory education. She had written a grant proposal suggesting an overhaul of the garden’s program for elementary school children. The layout of the garden, she noted, is conducive to participatory learning based on observation, comparison, and inquiry. Forty of the garden’s eighty-six acres are presented as plant communities. It is possible, therefore, for visitors to see and compare a coniferous forest, a Redwood forest, and a desert environment that are within a few feet of one another. So, instead of conducting passive tours for school children, Busenberg suggested presenting activities that encouraged children to observe, compare, and carry out experiments.

When she arrived at the Smithsonian, Busenberg discovered that the other six residents shared her interest in participatory education, and together they visited the Discovery Room, the Insect Zoo, and the Naturalist Center at the National Museum of Natural History—all examples of environments designed to stimulate visitor participation. Busenberg was especially taken with the Discovery Room. Its elegant simplicity focused her thinking on the necessary elements of a successful participatory learning program. She realized that effective, engaging, and sophisticated interactive exhibits need not contain high tech computer games or electronic devices. The key to effective participatory education, she decided, is asking the right questions and providing a “minds-on,” not necessarily a “hands-on,” experience.

The responsibility of the educator is to find and then pose pertinent questions. And the best questions pinpoint visitors’ observations and hold a fascination for people of all ages. The Discovery Room, for instance, was designed originally for children, but the quiet mothers and fathers I saw there were as enraptured with what they were doing as were their children—and that’s the mark of a well-designed activity.

While in Washington, Busenberg experienced participatory learning firsthand through the object reflection assignment required of all Smithsonian residents. She admits approaching the assignment with considerable trepidation. “What,” she asked, “do I know about learning from objects—especially objects I have not studied thoroughly?” Yet, her greatest insights resulted from reflections on a sculpture, Man and Horse, in the Hirshhorn Museum and Sculpture Garden. By looking at
something unrelated to her area of expertise, Busenberg simulated the experience of most museum visitors and found that factual information was not a prerequisite for enjoyment.

Upon returning home, Busenberg learned that the participatory education program for elementary school children had not been funded. She was, however, able to plan a similar program for junior high school students. She is working with area teachers to design the program and has arranged a meeting with elementary school teachers in hopes that they and the garden will work together in the future.

Rancho Santa Ana Botanic Garden is currently designing new display gardens and an education building. As part of this project, Busenberg is planning an ethno-botany garden about California Indians, and her approach to the new exhibit was “2000 percent molded” by her Smithsonian experience. The ethno-botany garden will be radically different from other areas in the larger garden because it will tell the “whole story.” The area will contain more than plants. Busenberg will place structures and implements from the environment among the plant life—a strategy she hopes will stimulate visitors’ questions. She recognizes that visitors need assistance if they are to make connections between the environment and the lives of people who inhabited it. Simply seeing an oak tree, she argues, is not sufficient. She intends, for example, to include a large mortar stone in her exhibit. Visitors will be encouraged to grind an acorn and wonder about what it was like to grow, gather, and prepare nuts for use.

The change Busenberg is attempting is not easy. She describes her week in Washington as a “terrific gift from heaven.” It reminded her that museum education is not a “hack job”; it is a profession. And even today when she finds herself at loggerheads with colleagues over her new ideas, she returns to the materials she collected in Washington for encouragement.
Smithsonian Residencies

More immediate are results of the experiences of senior-level museum professionals who have participated in residencies at the Smithsonian. The Kellogg Museum Professionals at the Smithsonian Program brings together museum directors and senior staff to study and work with their colleagues at the Smithsonian Institution and other museums and organizations in the Washington area. Residents investigate key issues, problems, and practical aspects of increasing the educational impact of their respective museums.

For the present, eligibility for participation is limited to those 120 senior-level museum professionals who were selected to attend one of the six Kellogg Regional Workshops held in 1983-84. In this way the Kellogg Project encourages continuity, building an ongoing Smithsonian Kellogg Community of museum professionals committed to the project’s aim of expanding the educational role of museums within their communities.

Since summer 1984, twenty-seven participants, representing each of the six regions and including the states of Alaska and Hawaii, have gone to Washington, D.C. Based on specific concerns expressed in letters of application, individual residencies were designed so each participant would meet with other professionals at the Smithsonian and in the Washington vicinity who have addressed similar problems or are dealing with related issues.

A curator of education from Alaska, for instance, acquired specific information about producing museum publications to enhance the public image of her museum statewide and provide a more complete interpretation of the collection for the people of Alaska. Other residencies focused on meeting the needs of the older generation, strategic planning for a major art exhibition, and developing cross-cultural museum exhibits.

Experience with the Kellogg Museum Professionals at the Smithsonian Program has assisted staff in identifying the distinctive features of this residency. It is clear what distinguishes it from other senior-level study opportunities in the museum field is its customized approach, which actually builds residencies around the specific needs of the participants. Kellogg Museum Professionals are provided with a wealth of opportunities to meet one-on-one with peers to discuss specific concerns. In the course of arranging the July 1984 residencies, for instance, from ten to fifteen individual meetings were scheduled for each resident. The program also strives to focus on museum professionals who are at critical points in their own, or their museum’s, development.

An essential objective of the Kellogg Museum Professionals at the Smithsonian Program is creating a learning environment relevant to museum professionals. Learning in the museum, as differentiated from learning in the school classroom, involves the evocative and powerful presence of the object. While there is much discussion about the central and unique role of the object in museum education, there is little research. The Smithsonian Kellogg Project is asking residents to explore this topic by selecting three objects on exhibition that they find particularly meaningful and writing detailed, personal reflections on their responses to them. These essays give participants the opportunity, during their residencies, to think seriously about objects as catalysts for learning and inquiry and, more important, about how their own thinking processes are activated by specific objects. Given the wealth of insights and personal references acquired through these reflections, Smithsonian Project staff believe they could, in time, form a rich and significant body of information on the potential power of the object in the learning process. The Smithsonian Kellogg Project is producing a film about learning through objects.

At the end of the week, each resident submits a report describing the residency and analyzing its results. The thoughtful
commentary and quality of several of those reports make them helpful to other museum professionals. Robert A. Whyte, San Francisco Museum of Modern Art, describes the consensus he discovered about what is effective and what is not effective in such programs. Bonnie Busenberg, Rancho Santa Ana Botanic Garden in Claremont, California, outlines procedures for museum-school collaboration. Copies of these and other residency reports are available upon request from the Smithsonian Kellogg Project.

One undeniable strength of this program is its ability to stimulate museum professionals to increase their museum's educational impact on the community. Several times each week residents gather for group discussions. These focused, yet informal, sessions give residents opportunities to test out new ideas, share information, and brainstorm. They are always a highlight of the residency. One participant commented, for instance, that her residency at the Smithsonian was "such an intensely personal experience. . . . It gave me new enthusiasm and stimulation for a job that I already love." Another reported returning home "feeling highly committed to my position [as curator of education at the state museum]." The program thus increases knowledge, establishes a network of museum education professionals, and renews individual enthusiasm.

A Smithsonian Kellogg Community

The Smithsonian hopes it is building a professionwide consciousness about museum learning issues. Of equal importance is the learning taking place at the Smithsonian. In an effort to move beyond the show-and-tell quality of many museum-training programs, the Kellogg Project staff worked to develop a conceptual framework to guide their efforts. In the process they gained insights into the practice of education in museums that they are using to help museums provide more meaningful learning experiences for visitors.

The Smithsonian, as organizing agency, has had to learn how to best use its resources on behalf of participating museums and to keep lines of communication open. Defining roles and clarifying expectations were perhaps the most difficult part of the process. The Smithsonian staff, rightly, did not want to dictate a formula for change. They were certain that changes were inevitable for museums in light of recent shifts in demographics and expanding concepts of education, but as the Smithsonian embarked on this project, the nature of the change for museums was not clear to anyone.

Most crucial was identifying the type of change needed in museums and realizing that the answer would be different for each museum. The basic functions of museums—the responsibility to collect, preserve, research, exhibit, and interpret—were not questioned; at issue was the manner by which these museum functions were performed. As this important realization emerged, the Smithsonian was learning what it meant to be a catalyst for change. In the process the staff began to identify some of the concerns facing museums as they take a new look at their learning potential. They gave focus to scattered thoughts and amassed a wealth of perspectives and resources. The concentration of this knowledge in a single, and unique, institution could prove one the most beneficial outcomes of the Smithsonian Kellogg Project.

And as their dissemination efforts continue, more and more professionals will be drawn into the active, ongoing Smithsonian Kellogg Community, renewing their commitment to improving and expanding the educational role of museums in their communities.
Central Themes and Lasting Contributions
As different as the three Kellogg Projects appear in form, they share important common themes. The projects are alike in their focus on the museum as an educational institution. This focus constructs a vision of museums as vibrant centers of learning, and related concerns have defined the activities and curricula of the three Kellogg Projects.

It is no longer sufficient to talk about museums as having the capacity to provide enrichment for people of all ages, and the time has long since past when a museum's educational value could be simply taken for granted—and essentially ignored. The Kellogg Projects are guiding hundreds of museums, and thousands of museum professionals, beyond talk. Through these projects dreamed-of ideals are becoming concrete objectives and programs.

The ten themes presented in this section summarize current issues in discussions about museum learning. They also highlight the contributions of the three Kellogg Projects. Discussions and programs at the Exploratorium, Field Museum, and the Smithsonian Institution were grounded in the conviction that providing opportunities for learning is an essential museum function. Participants strove to determine what museums should teach and how they can teach best. Educators, directors, and curators all worked to develop a theoretical foundation for their educational efforts. They hoped it might guide their decision making, which in the past had often seemed more idiosyncratic than systematic. Participants turned to each other for information about organizational structures that worked to facilitate good teaching in programs and exhibits. Animating all these discussions was an effort to formulate a clear understanding of the museum audience and a responsible assessment of the museum's rightful position within the community, institutions concerned with education. Finally each Kellogg Project involved systematic evaluation that, taken together, generated an agenda for museum learning research.

Emerging Themes

Given this unrelenting chorus of concerns about museum education, future efforts to improve the quality of learning in museums would do well to focus squarely on these issues. Collectively they define the parameters of current thinking about the museum as an educational institution. The ten themes tell a great deal about museums and how museums view their educational responsibilities and opportunities. They are the common ground.

1. Museum functions. For most museums, education is only one of several functions. Museums are responsible for their collections—for increasing and improving them, for studying and exhibiting them, and for caring and conserving them. A few museums are devoted entirely to education; the Exploratorium is perhaps the best-known example. Science centers and children's museums also see themselves as primarily educational institutions.

More typical are museums like Field Museum, in which a multitude of functions—collections, research, exhibition, education—vie for priority and resources. While nearly all museums are chartered as educational institutions, it is the collections function that has generally been given top priority. Education has been viewed as an ancillary activity or, in some museums, as an inevitable result of the exhibition function, requiring no special attention. If visitors see an exhibit, the argument goes, they will naturally learn something.

Through the Kellogg Projects hundreds of museums are being encouraged to strike a new balance between their education and collections functions, a balance that places education and learning on equal footing with collecting and conservation. Specifically, the Kellogg Projects are prodding museums to articulate a philosophy of museum education. Museums as diverse as the Lakeview Museum of Arts and Sciences in Peoria, Illinois, and the Museum of Science in Boston are spelling out the rela-
tionship between the mission of the whole institution and the goals and objectives of the education department. These museums are recognizing the importance of a clear, concise, written educational mission that defines the museum's audience, specifies interpretive strategies appropriate to its collections and goals, articulates its educational aims, outlines its educational programs, and clarifies the educational philosophy underpinning the entire exhibit-planning process.

2. **What museums teach.** Central to an educational philosophy and policy is an understanding of what museums should, can, and do teach. Of course a museum cannot *not* teach; its very presence is a statement and carries a message. Yet some museums, especially art museums, do not view themselves as educational institutions. One art museum director began his involvement with the Kellogg Projects arguing that art museums provide not an educational experience but an esthetic experience since they offer visitors opportunities for appreciation and enjoyment. Early on art museums were the least represented of museum types participating in the Kellogg Projects. And while that imbalance may be attributed to the decidedly scientific nature of the collections at the Exploratorium and Field Museum, comments from art museum staff members suggest that these museums do not see themselves as being in the education business. Participation by art museums was assured in the Smithsonian Kellogg Project by virtue of its selection process, and indeed, four of the twelve participating museums are museums of art. Recently 25 percent of participants in Field Museum Kellogg workshops come from art museums.

The Kellogg Projects are attempting to introduce an expanded definition of museum education and learning to encompass the experiences art museums offer. Emerging working definitions address lifelong learning efforts and differentiate the kind of "learning" taking place in a museum from the mastery of cognitive material that characterizes learning in more formal educational settings. One thing is certain: museums are not schools. There is a growing frustration with museum programs that resemble classroom lessons. The Kellogg Projects focus on the unique qualities of the museum setting and show museums how to base their lessons on objects, natural phenomena, and visual rather than verbal literacy.

Participating museums are looking beyond factual information. They are exploring their potential for stimulating contemplation, values clarification, and a sense of connection with people, places, times, and things not part of the immediate environment. The results include two science museums conceived and now being built—one in India and the other in Barrington, Illinois. At a museum in Toledo introductory labels are being written expressly for an adult audience interested, but not formally educated, in art history. And no fewer than four museums are structuring stronger relationships between local cultural institutions and schools. Through these efforts and others like them museums are no longer leaving learning outcomes for visitors to chance. Staff from curatorial as well as education departments are working to articulate the museum's curriculum, and they are shifting the focus of museum education from schooling to personal development.

The International Congress on Museum Learning in Indianapolis in May 1986 calls attention to what museums teach. Such a meeting has been a long time coming and is indicative of the importance museums are placing on their educational responsibility. But first, as the agenda for the congress suggests, there is a need to come to some agreement about what it is that museums teach.

3. **How museums teach.** If one looks at current practices, museums would seem to hold the view that they teach through special programs. Most museums participating in the Kellogg Projects report that their planned education efforts are primarily de-
signed for schoolchildren or are special events designed to supplement exhibitions. Educators produce lectures, film series, ethnic festivals, and evening or weekend classes. While few would argue that exhibitions are the centerpiece of a museum’s public programming, traditionally little conscious attention has been given to the educational dimensions of exhibitions. Thus museum education, despite all its programs and activities, remains on the periphery of the museum’s central functions.

Museum exhibits are still designed largely by curators and designers, reflecting the museum’s commitment to academic and esthetic—and not necessarily educational—standards. Principles of cognitive and affective learning have not traditionally informed exhibit development. The Kellogg Projects are united in their focus on the exhibit as the most powerful teaching medium in the museum and thus the center of education activities. Reports from Exploratorium residents and Field Museum Kellogg Fellows document a changing emphasis in museum education departments and a more central role in exhibit planning for museum educators. And as many as half of the Smithsonian-coordinated demonstration projects involve educators in exhibit development.

Museum educators from participating museums are joining exhibit development teams. In Kellogg Projects the preparation of an exhibit is seen as requiring the curator’s mastery of the collection, the designer’s attention to esthetics, and the educator’s knowledge of communication and the museum audience. Through the Kellogg Projects museum educators are extending their base of expertise to include concept formation, developmental psychology, and information about how people acquire attitudes, beliefs, and values. This shift from program planner to exhibit developer has redirected the role of the museum educator.

4. The place of museum education in the museum. Over the years the development of a central role for education within the operating framework of the museum has been impeded by factors that might be described as political. Separate, and often isolated, education departments have too narrowly focused their work on audiences. Educators perceive themselves as working exclusively with audience needs, while other members of the staff work with the collections, conduct research, and perform administrative duties.

In the Kellogg Projects, education is seen as a central museum function, and all those who work in the museum are held to share in the institution’s educational responsibility. These projects—especially those at Field Museum and the Smithsonian—have purposely involved all types of museum professionals, not just museum educators. They have promoted the view that although the educator is the learning expert, the entire museum staff needs to value the institution’s service to its audiences, much as all museum professionals, regardless of their specific job assignment, generally acknowledge their primary responsibility to the collection. The involvement of directors, curators, and exhibit designers in the Kellogg Projects has been critical; without them, the projects would have addressed the already converted.
An Interview with Kellogg Project Directors and Coordinators

Five people intimately involved in their museum’s Kellogg Project were asked to reflect on their experiences and comment—from their special vantage points—on the surprises and accomplishments of their programs as well as future directions for museum education. The respondents are: Carolyn Blackmon, chairman, Education Department, Field Museum; Sally Duensing, associate director, the Exploratorium; Jane Glaser, program manager, Office of Museum Programs, Smithsonian Institution; Teresa LaMaster, Kellogg Project coordinator, Field Museum; and Philip Spiess III, Kellogg Project coordinator, Smithsonian Institution.

► As you reflect on your several years’ experience with the Kellogg Project, what has surprised you?

Sally Duensing: What is most surprising at the Exploratorium is the enormous and continually increasing interest in starting new museums in this country and abroad. We never anticipated the worldwide interest in “interactive exhibits” and the vast range of interpretations of what “interactive exhibits” means.

Philip Spiess: What has surprised me most—and yet it should come as no surprise—is the paradox that, on the one hand, museums are agonizing over the same educational questions that they have for the past eighty years or so, and carrying out educational programs that are, by and large, similar to those of eighty years ago, while on the other hand, surprisingly large numbers of museums are doing some extraordinarily interesting things educationally.

► How has participation in your Kellogg Project affected your work and your thinking about the educational role of museums?

Carolyn Blackmon: To date, close to four hundred people have participated in Field Museum Kellogg workshops. As they learn, so have we. The challenge is to bring the past into the present and to emphasize that all things change over time—and will continue to change beyond what we can foresee.

Jane Glaser: I do not believe it is merely circular thinking that our original conceptions about museums and learning seem to have been confirmed and reinforced by the Kellogg Project. Those ideas which we had—ideas not singular with us, but ones that seemed to be afloat in the museum profession—were brought to ground, tried for their workability and practicability, and, we feel, shown to be sound. These ideas are expressed in the Smithsonian Kellogg Project’s basic tenets.

SD: I’ve learned that the educational role of the Exploratorium and other museums is not merely to stimulate, but also to satisfy. Through a rich collection of exhibits on one idea, visitors can make numerous interconnections; through experiencing an idea in multiple examples, visitors come away with a strong understanding of a concept.

Teresa LaMaster: My experience with Field Museum’s Kellogg Project convinced me that the most important questions for the museum profession continue to be the most basic ones: What are the functions and roles of museums in contemporary culture? How do people make ob-
jects meaningful? How do we understand and interpret objects? What is learning — its aims and processes? Asking these questions leads us to uncover the values and assumptions that clandestinely dictate the ways we do our jobs. Moreover, I have found that the nuts-and-bolts problems—the allocation of budgets, the assignment of roles and tasks, and the creation of reporting structures—are often linked to a conflict over the values imbedded in the assumptions we make about our work. The most philosophical of questions are tied to the most practical of problems.

- What, in your mind, are the greatest accomplishments of the Kellogg Project at your museum?

PS: The accomplishments to date are fourfold: (1) development of a sound project out of a very amorphous goal; (2) significant raising of the awareness level of museum professionals, especially senior professionals, regarding museums as educational institutions and environments; (3) establishing quality programs, most notably the Kellogg Museum Professionals at the Smithsonian Program; and (4) the development of a unique network of museum professionals of varying backgrounds, disciplines, and positions.

SD: We provide residencies that are forums for discussion and reflection rather than workshops where we tell others what to do. A primary function of the residency is to raise questions, discuss traditional and nontraditional ideas, question what is a “good” exhibit and what is the role of a museum.

CB: Our approach at Field Museum provides opportunities for constructive analysis and informed decision making. The Kellogg Project provides for a new level of consciousness raising — particularly in its emphasis on internal communication and group dynamics.

- What would you like to call to the attention of museum professionals about museums and their audiences?

JG: What was—and what remains—the single most important task, if we are to improve museums as “learning environments,” is to inculcate the museum profession with the ideas that museums are educational institutions. This is especially true in the case of museum directors, many of whom give lip service to the idea but express by their actions a lack of interest in the truly educational aspects and activities of their institutions. Second in importance is the necessity of teamwork among departments within the museum in all phases of planning and executing exhibitions and other museum activities. Third, museums must provide opportunities for research and development on learning in museums.

CB: We simply have to take museum learning seriously. We can no longer separate research and public education in our museums. The internal fights we have involving egos and ter-
ritoriality blind us to the real reasons many of us work in museums. Museums matter—as I was reminded during Field Museum’s recent exhibit *Te Maori*. The curator of the exhibit and representatives from all of the Maori tribes came from New Zealand with several others for opening ceremonies blessing the objects and officially presenting them to the people of Chicago. The ceremonies were genuinely moving; the objects communicate powerful messages about human beings. I hope our Kellogg Project helps museum professionals step back a bit, reflect, and remember that their work can change people’s lives for the better.

► And what next...?

PS: There is, I believe, a general agreement that what is needed next is a wider understanding of how museums effect learning and how museums can more broadly interact with the public in order to make themselves more central to the educational life of their communities. This will require general and specific research, a sifting of the literature in a variety of disciplines, and, above all, the dissemination of any knowledge gained to the museum profession as a whole.

SD: There is a continued need for long-term staff residencies in museums and staff exchanges between the U.S. and foreign museums. Also, more special topic seminars ought to address specific issues and ideas facing museum professionals. Professional development and exchange must be considered as an ongoing function of museums. The need is much like the one addressed through sabbaticals in universities. Providing staff with the means for thoughtful reflection and exposure to new ideas keeps them—and thus the museum—alive with new ideas. It is hard to break down old ways of doing things, even if they are known to be ineffective. The typical separation of functions in a museum of curator, designer, and fabricator allows little communication or understanding of the end goal and should be changed. The entire museum can be thought of as an education department—not a museum with an education component.

TLM: Various people within the museum community are looking to formulate a theoretical base for their work. To my mind, this search should take the direction of questioning our most precious assumptions. Various disciplines—philosophy, literature and criticism, history, psychology—can contribute to this enterprise. Study in this intellectual tradition, along with creative and rigorous reflection on the wealth of our own practical experiences, provides the tools for developing leaders within the profession to think and write about these difficult and important questions. The Kellogg Project has helped make clear the need for such work and has been instrumental in creating a more closely knit museum community whose many voices can begin to speak to these issues.
Discussions at Field Museum education workshops have been helpful in identifying some of the difficulties museum education has faced. As a field, it suffers from a lack of prestige that many be due, in large part, to its humble origins. Historically, education functions in museums have been associated with volunteer service and schoolchildren. Museums have long turned to volunteer docents to meet staffing needs for tours and school groups. Only recently has the field of museum education begun to emerge as an academic discipline in its own right, and it has not yet achieved the status of equal among the other disciplines in museum work.

By promoting the full educational responsibility of the museum and spearheading efforts to specify subject matter expertise for museum educators, the Kellogg Projects are helping to combat these destructive stereotypes. The San Antonio Museum Association and the Oregon Historical Society, for instance, define the school visit as a planned learning activity rather than an unstructured field trip. Teacher-training programs, preparation of collections-based materials for the schools, and participation in museum-school partnerships that jointly develop the curriculum of the school and the museum are in evidence at each of the Kellogg Projects.

5. A theoretical foundation. The day-to-day demands on museum education departments necessitate primary attention to the specifics of program planning. Thus people came to the Kellogg Projects seeking new program ideas and tips for improving existing programs. Nearly all went away with that information, but they went with something more, too. They were stimulated to look beyond the day-to-day and to explore the philosophical and theoretical foundations of their work.

The presence of a well-defined philosophy of education is a hallmark of the Exploratorium, for instance. And even participants who did not agree with all the elements of the Exploratorium’s approach appreciated how a strong sense of direction focuses and improves educational efforts and creates a sense of shared mission among all the museum staff. The projects at Field Museum and the Smithsonian are also making a concerted effort to move discussions about museum education to a higher level of abstraction—Field Museum by guiding museums through the process of identifying goals and objectives for education departments, and the Smithsonian through constant reference to its set of tenets.

6. Organizational structure. Key to the functioning of a museum education department is its organizational relationship to other museum departments and the extent of its involvement in all museum activities. The very language used to describe the staff in this department, and to signal status and position, has been troublesome. “Curators of education” are not curators in the sense that a curator of twentieth-century art, for instance, is the resident expert on that portion of the museum’s collection and responsible for all aspects of it. Curators of education are department heads. Their responsibilities are generally limited to education department programs and a few special events. They are rarely involved in planning for the entire museum.

The Kellogg Projects are encouraging museums to examine their organizational structures and to title and place educators in positions commensurate with the contribution they have the potential to make. In the Smithsonian Kellogg Project, several participating museums have promoted their educators and given them new titles. As assistant or associate directors for public programs, for instance, educators are being consulted more frequently. They are privy to more information about museum activities and responsible for additional decision making. In these museums the educational function, more visible on a daily basis, plays a larger role.
7. Definition of the museum audience.
The profile of typical museum goers—white, middle and upper class, highly educated, professional—is long established and well documented. And museums have generally directed their services toward audiences with these economic and demographic attributes. Today, however, museums are actively engaged in expanding their audiences. This effort requires more than providing additional services for people predisposed to museum going; it demands that museums redefine their notions of audience and in so doing create new ones.

In the Kellogg Projects, audiences are being discussed not only in terms of demographics but in terms of their interests, learning styles, and information needs. People, these projects assert, come to the museum curious about its holdings. It is the museum's responsibility to honor that expectation, respect the learner, and provide an environment conducive to exploration and discovery.

All museum goers are not equally prepared for the experience, and they do not share equal levels of interest in a given topic. It has become obvious to Kellogg Project participants that there is no single museum audience; there are many audiences. Museums in the Kellogg Projects are being encouraged to experiment with interpretive strategies that meet the needs of these different audiences, from the beginning learner to the connoisseur. At the Exploratorium differing needs are served by a variety of exhibits on a single topic. Museum exhibits and other programs are referred to as a curriculum complete with opportunities for both general exposure and careful study.

The Kellogg Projects are also exploring methods for teaching visitors how to get the most from their museum experiences. Orienting visitors to the museum as a special place for learning and personal enrichment is emerging from Field Museum workshops as a new function of museum education. Museums are thinking about ways to teach method as well as content—ways to help visitors learn how to decipher the natural world, appreciate works of art, and perceive meaning in material culture. It is too early to report results of the Smithsonian residents' studies of museum objects, but certainly their intent, too, is to increase our general understanding about how people learn.

8. The museum and its community. As museums broaden their audiences, they are defining themselves not only in relation to their collections but also to their communities. New collaborations with community organizations are being established, as typified by projects at the Rhode Island Black Heritage Society and the New York Botanical Garden, and more voices are heard in museum planning than ever before. Many museums are moving away from constructing their programs in isolation. Instead museums are becoming responsive institutions that work with community representatives to determine what the museum can add to the quality of education and the quality of life for the citizenry.

The Kellogg Projects are improving museum-community relations in a variety of ways. In 1981 the Exploratorium held a Science Media Conference in San Francisco to initiate conversations among representatives of various media contributing to public science learning. Conference participants began to articulate those aspects of the task best assumed by various media—museums, television, film, radio, newspapers, magazines, and books. Museums participating in the Smithsonian Kellogg Project are establishing community advisory groups, and Field Museum has strengthened its Chicago Educators Network as part of its Kellogg Project. Common to all of the community programs is a collaborative spirit and the realization that the health of museums depends on their awareness of trends in society and their ability to work with other institutions to meet community needs.
9. **Effectiveness.** Museum professionals often confess that they have no idea what makes an exhibit effective. Their evaluations are usually idiosyncratic and are nearly always based on the quality and extent of the collection, the thoroughness of the scholarship, and the general ambience or esthetic quality of the space. A handful of museums evaluate the learning effectiveness of their exhibits and other programs, but after more than sixty years of research in museum evaluation, there is still no general consensus about the criteria for a good teaching exhibit. The difficulty stems from an ill-conceived notion of the learning potential of the exhibition as a medium of communication.

Evaluation of the learning potential of exhibits is important to each of the Kellogg Projects. While no project is undertaking research, each is presenting the evaluation question to its participants. All are being encouraged to begin exhibition planning with a clear statement of learning objectives for visitors. Of particular importance is the focus on object-based learning. The tradition of seeing label copy as the primary communicator of the exhibition's content is being challenged as museums explore ways to present their messages in the powerful visual mode.

10. **Research on museum learning.** Systematic, empirically based study about the nature of learning in the museum is desperately needed. The call is not for evaluation studies of the effectiveness of individual exhibits and activities but for broad programs of research designed to address fundamental questions about how people learn in the museum.

The Kellogg Projects have called attention to the dearth of information about museum learning as staff search for literature and research studies that simply do not exist. Participants have wondered about the differential effects of varying interpretive strategies: What difference does it make if a period in history is interpreted through label copy or a live performance? They have asked about the communicative power of objects: Can visitors learn something even if they don't read labels? They want to know about the capacity of visitors for decoding information-rich design features: What do juxtapositions of objects suggest? How can visitors be prompted to examine an exhibit and to pay attention to more than its obvious and most compelling features? There is little research available to provide answers to these and other questions.

There is also no body of knowledge about the longer-term effects of museum use. Do museums heighten curiosity and stimulate further exploration of a subject? Do museums provide their visitors with a reasoned perspective on controversial issues? Are museums essential to a society that values democratic ideals?

Some evidence suggests that increased educational attainment brings with it increased appreciation of democratic social and political values like the right to vote secretly and speak freely and worship as one chooses, the importance of conserving our
natural environment, and the basic equality of all people. Could it be that the museum as an institution reinforces and amplifies, for adults, the values our schools attempt to inculcate in our children?

All of these questions suggest a provocative agenda for research. There is hope that some Kellogg participants, having identified the needs, will lead the way in establishing research programs that are mindful of the importance of starting in an exploratory mode and of shaping conceptual frameworks and methodologies appropriate to the museum.

The three Kellogg Projects show remarkable convergence on these ten themes. Enthusiasm and commitment are evident among participants in all the projects, and that is a welcome outcome. Even more important for the long term, however, are the differences already apparent in the museum community that have direct links to the opportunities afforded individuals and museums by the Kellogg Projects. At least two new science museums, the Nehru Science Center in Bombay, India, and Science Place in Barrington, Illinois, have been created and are now directed by former Exploratorium Kellogg Fellows. A mid-level education staff member at the National Museum of Natural History who attended Field Museum’s exhibit workshop sought, and was awarded, a fellowship to return to school for training in philosophies of education, exhibit design techniques, and evaluation methods. When she returns to the museum, she will conduct audience studies and contribute to exhibit development; she readily admits that it was her Kellogg experience that set her off on these pursuits. And the International Congress on Museum Learning convened in May 1986 in Indianapolis is a milestone event, the results of which are eagerly anticipated. Sessions reporting on the congress are already slated for the annual meeting of the American Association of Museums in New York City in June 1986 and for several professional regional meetings the following fall.

These events are representative of the groundswell of change taking place within museums. And while many factors contribute to fundamental change of such scale, there is no question but that the Kellogg Projects have come just at the right time for museum education. And they are providing precisely what is needed—opportunities for committed professionals to reflect, learn from one another, advance general understanding of museums’ educational contributions, and improve their practice. The Kellogg Projects have provided professional development of the highest quality for hundreds of museum professionals. And as the projects briefly sketched in this monograph attest, the general public is already reaping the benefits. That the projects have accomplished so much in less than a decade is impressive. Yet, there is still considerable work to be done.

Toward a Self-Renewing, Innovative Profession

John Gardner, author of *Self-Renewal: The Individual and the Innovative Society*, points out that in a self-renewing society what matters most is a system or framework within which continuous innovation and renewal can take place. Surely this system is a legacy of the Kellogg Projects. They establish for the first time the museum as educator for the profession. Traditionally, the most highly qualified museum professionals have received their training at universities. Doctoral programs served to acculturate students to the milieu of academe with its particular standards for teaching, research, and publication. Although museum internships have long been established, they have not been mandatory either to fulfilling degree requirements or to qualifying for appointment to a museum staff position. Mastery of subject matter has remained the primary training emphasis.

By way of contrast, training for the
Program Evaluation

Evaluation has been an integral part of each Kellogg Project. Project staff stress the importance of evaluation to Kellogg residents and participating museums, and they practice what they preach. Each Kellogg Project has developed a formal evaluation procedure guided by a professional evaluator.

The Dissemination Program at the Exploratorium has been evaluated by Susan Gordon and Mark St. John. They observed Kellogg residents and found that information about participatory exhibits was valuable to people from museums of all types, and that Exploratorium concepts were applicable to other museum settings. Gordon interviewed residents during their stay. She found that the structure of the residency was as important to its success as was its substance; participants appreciated a regular schedule as well as free time and opportunities for interaction with other residents. She learned that while some information was best transmitted through copies of Exploratorium publications such as catalogs, cookbooks, teacher materials, and magazine articles, all residents followed the lead of the Exploratorium staff and spent time on the museum floor watching visitors interact with exhibits.

Judy Diamond conducted an overall evaluation of the Dissemination Program at the end of five years and, with Sally Duensing, prepared an evaluation report. Diamond gathered comments from residents and identified areas in which the Exploratorium Kellogg Project made an impact on participants. The Exploratorium served as a model and research facility for other museums; residents copied Exploratorium exhibits and were pushed to think about exhibit form and function. Several museums now have added in-house exhibit development facilities based on the Exploratorium model; others began prototyping and experimenting with exhibits and involving more staff in the exhibit development process. Residents also made lasting professional contacts.

At Field Museum evaluation has been central to program revisions. An evaluator, Beverly Serrell, and a project writer, Helen Voris, observe each workshop session. They meet regularly with the project director and coordinator and discuss strengths, weaknesses, and future directions for the education and exhibit workshops. Through this process Field Museum staff have learned about how best to structure professional development experiences for museum professionals and are now able to include activities that respond to the variety of ways adults learn.

Participants at Field Museum’s Kellogg Project are asked to evaluate workshops at their conclusion and again at three- and nine-month intervals. Evaluations immediately following the workshop assess the usefulness of workshop features such as keynote speakers, activities, lectures by Field Museum staff, and group projects and discussions. Evaluations at three and nine months focus on the long-term effects of the workshops. The project is accumulating a wealth of information through these evaluations.
and plans a publication summarizing their results.

Robert Wolf, a museum evaluator and director of the Indiana Center for Evaluation at Indiana University, has guided evaluation activities for the Smithsonian Kellogg Project. He, too, attends all Kellogg functions—colloquia, workshops, lectures, and meetings with directors of participating museums. Wolf has prepared briefing papers for the staff and advises the program on focus and direction. In addition, he worked with staff from each of the twelve participating museums as they developed demonstration projects, making sure each had clearly articulated goals and objectives and included an evaluation component. Now that the demonstration projects are well under way, each museum has contracted with an on-site evaluator who will assess their success and impact.

This coordinated evaluation effort is the largest ever undertaken in the museum field and introduces both evaluators and museums to the procedures, special conditions, and nuances of evaluating museum programs. For several evaluators this is a first experience working with museums, and for several museums it is a first experience with formal evaluation. The scope of this effort is testimony to the Smithsonian's commitment to evaluation. It will produce information about the impact of specific demonstration projects as well as about appropriate museum evaluation procedures generally.
medical profession involves both academic courses and apprenticeships in a hospital setting. Furthermore, certain hospitals have emerged as centers of excellence for teaching and research in certain medical specialties. Massachusetts General Hospital, for instance, specializes in residencies focused on technological advances in diagnosis, and medical people from all over the world go to that hospital to study. The Kellogg Projects might be seen as formalizing the role that individual museums, as recognized leaders in their specialties, can play in developing the principles of museum work and in training practitioners. One can imagine, for instance, the continued development of the Exploratorium, Field Museum, and Smithsonian as teaching museums, as centers providing regular opportunities for professional development.

The Kellogg Projects developed at each museum reflect the advance in museum education these institutions have made on their own. These projects have allowed staff at the Exploratorium, Field Museum, and the Smithsonian to synthesize their own thinking and to present it systematically to other experienced museum professionals. They are advancing knowledge about the museum as an educational institution while they are raising the consciousness, as it were, of museum professionals across the country about the importance of the museum’s educational role. Through this process, the practice of museum education moves beyond the purely idiosyncratic and instinctive. And to return to the medical profession analogy, as this happens, the overall level of practice improves. In medicine there are set formulas, or protocols, for the treatment of ailments; procedures are standardized and disseminated throughout the medical profession. So, too, principles in museum education are now being identified, frameworks developed, and practices shared.

The concentrated attention to the philosophy and practice of museum education undertaken by these three museums has resulted in their emergence as centers of learning about the museum as an educational institution. Not incidentally, Kellogg Projects staff have learned a great deal about how best to provide quality professional training for museum professionals, and the projects have amassed a wealth of resources. They, and perhaps other well-selected institutions, would be splendid candidates for permanently established centers for professional training in museum education.

Whether or not the Kellogg Projects will have a lasting effect on the museum community is still too early to judge. What is already evident, however, is that discussions about museums and education have been more clearly focused, and people who have dismissed education as outside their primary area of interest have now embraced the cause and its accompanying issues with some relish. During the seven years of the Kellogg Projects, museum educators have witnessed a profound change in perceptions of their work.

The seeds of this change were sewn more than a decade ago as museum educators began to receive graduate training and education departments were established in museums. More recently, the Commission on Museums for a New Century offered a clear mandate for the museum community’s attention to education concerns. Now others are joining educators as advocates for the public, and the territoriality that has characterized the visitor as museum education’s domain is diminishing. Attention to the educational mandate of the museum has exploded as an important issue facing the whole museum community. It is a new era. And while the Kellogg Projects did not single-handedly bring about this change, they surely had an important part in it.

One of the earliest, and best, students of innovation, Homer Garner Barnett, wrote that “the essence of change...lies in the restructuring of the parts so that a new pattern results, a pattern the distinctness of which cannot be characterized merely in terms of an increase or decrease in the number of its component elements.” It is in
this sense that the Kellogg Projects are providing real innovation. The curricula at each of the museums do not simply suggest ways of adding new programs to the familiar list of education offerings. Each Kellogg Project restructures the education issue. The Exploratorium has people rethink how exhibits should be developed and even challenges the traditional view that teaching exhibits are more naturally suited to science concepts than to works of art. At Field Museum participants are encouraged to redefine their roles and to examine the relationship between the mission of the overall institution and the museum’s education programs. And demonstration projects at the Smithsonian experiment with new forms of interpretation, community involvement, and collaboration.

From all of this is emerging a new set of commitments and a new basis for the practice of museum education. Surely all nonnatural changes are initiated by individuals. External conditions, however, have a marked effect on individual innovative potential. The Kellogg Projects are creating the conditions that increase innovative possibilities for museums devoted to public education. Some of the conditions positively affecting the generation of new ideas about museums as learning environments are:

The accumulation of ideas. This slim monograph alone attests to the inventory of ideas the Kellogg Projects have generated. The philosophy of the Exploratorium, the principles of exhibit development at Field Museum, and the tenets of museum education drawn up by the Smithsonian Institution have never been so clearly put forth. Furthermore, the professional contacts made by hundreds of Kellogg participants are inducing new levels of communication among colleagues and an increased sharing of ideas that are prompting, in turn, new combinations of ideas and innovative avenues of approach to problem solving. With increasingly well-

developed channels of communication should come a continuously expanding set of resources available to an ever-larger group of professionals.

The concentration of ideas. Ideas lose their efficacy if they remain disparate and disconnected in time and place. In the past few years, specific Kellogg-supported projects brought together ideas about exhibit development, electricity exhibits, and museum learning. In addition, the staff of the three Kellogg museums have accumulated vast quantities of information about practices and perspectives, needs and future directions for museum education. They are themselves becoming resources, their staffs the profession’s most informed experts on trends in the thinking and practice of education.

The collaboration of efforts. New ideas are enhanced if several individuals simultaneously and cooperatively explore their implications. Collaborations occur on several levels in the Kellogg Projects. First, the three Kellogg museums, though sponsoring different programs, share the project aim of improving practice in museums. Without exception, participants report that one of the greatest benefits of projects was the opportunity to meet colleagues and discover that “there are others out there who believe as I do.”

None of these conditions for innovation—the accumulation and concentration of ideas, the opportunity for collaboration—is a natural phenomenon. They do not take place inevitably. They need to be prodded into being, then sanctioned. The Kellogg Projects do just that. Successful diffusion of new ideas requires that people see how the new way is better than existing practice. Everett M. Rogers, an expert on diffusion of innovations, reminds us that “like beauty,
innovations exist only in the eye of the beholder." Demonstration of the advantage of new practices and ways of thinking is at the heart of the evaluation efforts under way for each Kellogg Project.

The final verdict is far from in on the Kellogg Projects in Museum Education. Those who have had the opportunity to participate in them have embraced their messages wholeheartedly. But in many ways the work has only just begun. These Kellogg Projects have, for instance, piqued interest in and even won endorsements for the importance of evaluation. Now efforts are needed to train professionals in evaluation methods and to support evaluation activities.

Requests for more literature on the nature of learning in the museum setting will have to be answered by the funding of audience and museum learning research programs at several museums in the country. And museum education will become central to the overall operation of the museum only to the extent that efforts continue to involve directors and curators in education.

The eye of this beholder witnessed many new ideas and approaches throughout the three Kellogg Projects. This splendid beginning will stand the test of time to the extent that the effort not stop short of its aim. The work needs to continue.
How to Participate in the Kellogg Projects

The Kellogg Projects will continue at the Exploratorium, Field Museum, and the Smithsonian for at least one more year. Museum professionals interested in residencies and participating in workshops should contact the following people for information about program details, schedules, and eligibility.

**Exploratorium—Summer Residency Program**
Sally Duensing or Gloria Gragg
The Exploratorium
3601 Lyon Street
San Francisco, Calif. 94123
(415) 563-7337

**Field Museum—Education and Exhibit Workshops**
Teresa La Master
Kellogg Project Coordinator
Field Museum of Natural History
Roosevelt Road at Lake Shore Drive
Chicago, Ill. 60605
(312) 922-9410

**Smithsonian—Kellogg Museum Professionals at the Smithsonian**
Margo Del Vecchio
Kellogg Project Assistant Coordinator
Office of Museum Programs
Smithsonian Institution
Washington, D.C. 20560
(202) 357-4061

Each of the Kellogg Projects is planning publications that will be available to all museum professionals. The Exploratorium’s *Cookbook III* is scheduled for publication in 1987. The Smithsonian Kellogg Project has several videotapes and one film in production, and Field Museum staff are planning a series of publications based on information they have accumulated about museum education practices.
Further Readings about Education, Museums, and Innovation

Education in America

Museums and Education


Innovation and Change
Acknowledgments

The Exploratorium

The effectiveness of the Exploratorium Kellogg Project for the past six years is due to the skill, expertise, and willingness to share of its faculty—the entire Exploratorium staff. The Exploratorium wishes to make a special acknowledgment of Frank Oppenheimer. His love of teaching and learning, his understanding of the importance of interaction and exchange between museums were—and continue to be—the guiding points of all our dissemination efforts.

Museums are thought of as cultural institutions and not as educational institutions. But I do not see any essential difference between the two descriptions. To me, the whole point of education is to transmit culture, and museums can play an increasingly important role in this process. Therefore, they are basically educational institutions. It is a mistake to think that preserving culture is distinct from transmitting it through education... Whether they like to admit it or not, curators are educators.

Frank Oppenheimer
Acceptance speech, AAM Distinguished Service to Museums Award, June 1982

Field Museum of Natural History

Field Museum Kellogg Project owes its success to the creativity and continuing commitment of its Education Department staff and the talent and effort of the project's four hundred participants. Both staff and participants share an eagerness to learn, and it is that spirit, above all else, that enables the Kellogg Project to make a contribution to the entire museum profession. Their work, along with the support of the Chicago Board of Education, education staff of Chicago's major cultural institutions, and all staff of Field Museum, is gratefully acknowledged.

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