

About Science Centers—and This Book

For the past several decades, people all over the world have been starting science centers. There now may be as many as 1,200 of these new-style museums (about 400 of them in North America), and interest in establishing more remains strong.

In the towns and cities that are home to science centers, visitors have become accustomed to learning environments designed to be explored actively, sometimes noisily, with displays that require tweaking and probing to reveal their contents. The traditional definition of the museum— taxonomic collections behind glass cases, touchable only by scholars and conservators—has been left behind, as science centers and museums become centers for active exploration.

A family visiting a science center might encounter exhibits on gravity, levers, and pulleys, on optics and visual perception, on local ecology, on energy and electronics, and on the human body. As parents and children handle the displays, they act as both experimenters and experimental subjects. They also watch demonstrations—of the dissection of a cow’s eye, for example, or the effect of liquid nitrogen’s extreme cold on a flower—and ask questions about the dramatic and intriguing things they see. They enjoy the time spent in a safe, upbeat environment where their curiosity is both stimulated and rewarded.

Today, in the United States, small communities are increasingly founding smaller, often privately financed science centers. Meanwhile, in the major cities, some of the traditional science museums have expanded, adopting the kinds of educational goals and interactive techniques that characterize science centers. The effort to include interactive techniques that incorporate the audience’s perspective now extends beyond museums to zoos, aquariums, and even commercial enterprises. Outside the United States, patterns of growth vary as well, with some countries building large, state-sponsored science centers in capital cities and others developing numerous small-scale science resource centers. Both large and small centers offer visitors experiences that are similar at the core.

ROOTS

Science centers share a mission and a philosophy. Their mission, broadly speaking, is to help familiarize members of the public with the objects and ideas of science and technology. Their philosophy is that learning flows most effectively from situations that foster active participation in handling, observing, and asking questions about artifacts and phenomena.

Inspiration for the development of science centers came in part from Munich’s Deutsches Museum, which opened in 1925 on the heels of a succession of celebratory industrial expositions and world’s fairs. The Deutsches Museum exhibited historical collections of scientific apparatus and

industrial machinery, but it also set out to explain their workings and significance to a broad audience. Machines moved, demonstrators explained principles, and visitors handled apparatus. The museum's populist, educational mission and lively techniques were soon emulated in Europe and the United States.

In the late 1960s, after a decade of reform in science education, two institutions opened in North America that further elaborated on the concept of interactivity. The Exploratorium, in San Francisco, and the Ontario Science Centre, near Toronto, eschewed historical and industrial collections in favor of apparatus and programs designed to communicate basic science in terms readily accessible to visitors. These institutions postulated that displays and programs carefully designed to provide firsthand experience with phenomena could captivate ordinary people and, in the best of circumstances, stimulate original thinking about science.

In the succeeding decades, the educational philosophy and methods of the Exploratorium and the Ontario Science Centre, as well as a half-dozen other pioneer science centers, have been widely emulated. Science centers and like-minded museums are thriving: Attendance at ASTCs 445 members for the year 2001 exceeded 160 million, and the majority operated in the black.

Emerging science centers have built, and continue to build, on the success of their predecessors. They often present exhibits that have been tested elsewhere and proved involving and exciting enough to bring people back for more. But these new centers also seek to contribute to the repertoire of the field. They build exhibits on topical subjects (environmental science and advanced technologies, for example), and they invent educational programs to serve specific local audiences. Some participate in local economic development activities, which, for them, may be an organizational theme.

ISSUES ADDRESSED IN THIS BOOK

Regardless of an institution's size or system of governance, people starting a science center, adding one to an existing institution, or significantly expanding an institution face the same set of tasks:

- defining the roles the center will play in the community;
- developing an audience and understanding its needs;
- creating appealing exhibits and programs that inspire and support exploratory behavior on the part of visitors; and
- running the center on a financially sound and stable footing.

Each of these tasks affects the others, feeding back information that reshapes the emerging institution in its gestational years. The 21st century brings additional challenges to science centers in the accelerating pace of technological change and an audience that faces a surfeit of options for information and entertainment. Science centers and museums are exploring ways to address these new realities.

This volume describes a science center's central tasks in five sections: Starting with the Mission, Understanding the Audience, Planning the Program, Setting Up the Business, and Preparing for Change. Each begins with an overview that discusses key questions asked by museum planners or their constituents. Viewpoints of expert analysts are represented in the reprinted essays that follow, and sidebars by museum practitioners highlight perspectives and practice of people in the field. You may wish to read all five of the overviews, then return to the viewpoints and sidebars for a more detailed look.

These chapters don't offer formulas or predictive models of how science centers grow. Building an institution is too complex a process to codify, depending as it does on individual talents, local resources, and timing. But you will find examples of thoughts and actions others have utilized in creating their science centers—examples that may prove helpful in making a place for hands-on science in your community.