

Current Concept Capsules: 140 Useful Ideas for Museums to Consider in Future Planning

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Many of these ideas are in the air or are part of our projects; others are associated with individual thinkers and/or are being applied in particular institutions, as noted and quoted.

I have credited some names and institutions as I am aware of them (mostly in the context of our museum planning work), but there are likely more people behind any good idea, so please forgive any omissions. Suggestions for additional ideas, credits and examples are encouraged.

The models that follow include societal trends, community services, institutional paradigms, positioning, learning approaches, programming strategies and management policies. Not all ideas are new, but all are relevant today. In the interests of some brevity, I have favored new ideas over well-established ideas – interactive exhibits, diversifying demographics, camp-ins, promotional sponsorships, etc. – yet they are still valid. No one idea is a “magic bullet,” intended to solve your financial future. Some concepts are specific to science centers, but most are applicable to the museum field as a whole.

The questions to ask yourself as you read the following are "Which collection of the following ideas might be sustainable for my particular institution?" And then, “Looking at our selection, can we identify a single, simple focus or model that unites that collection?” George Hein reminds us to ask of each of these whether it helps us build the social and moral goals for a democratic society.

Model A is a selection sample for an interdisciplinary museum in a small city; Model B is for a publicly supported science center in a larger market. Many other models are possible.

SOCIETAL TRENDS	
Accountability 1 Model A, B	Funding sources are increasingly demanding quantified outcomes from their funding, while museums are more comfortable with qualitative and anecdotal results.
Public Trust in Museums AAM Survey The Presence of the Past: Rosensweig & Thelen 2 Model A	Recent surveys have shown that Americans trust museums more than other sources of information. The very difficulty we have in putting exhibitions on the floor translates into a bond of trust that is one of our greatest but not fully realized assets.
Attitudes to Science and Technology 3	Science and technology are declining in popularity and developing antagonisms from some groups. In communities where there are factions who see science centers as just another church of a different faith, new names with more universal appeal that hide the science link are one direction that go with the grain, while another argument can be made for an even stronger advocacy position for science and technology that fights such perceptions.
Knowledge/Learning-Based Society Institute for Learning Innovation (Annapolis, MD): John Falk 4	We have shifted from an industrial economy to the experience economy and now to the knowledge economy, and the museum field may not have kept pace with these shifts.

<p>Growth in Competition in the Learning Sector</p> <p>5</p> <p>Model B</p>	<p>As the public understands both that learning is a lifelong process and that much learning happens outside of school, their interest in free choice learning experiences that help them and their families better understand their world and develop skills to improve their chances of success has grown. Yet this increasing interest in learning has not gone unnoticed by the commercial sector, and the marketplace has become more competitive as new forms of learning and new ventures clamor for attention.</p>
<p>Cocooning to Hiving</p> <p>Yankelovitch Survey</p> <p>6</p>	<p>The Yankelovitch survey finds that Americans are shifting from a model of “cocooning,” which focused on insular in-home activities, toward “hiving,” which continues the focus on the home, but expands its activities through forays out of the family nest out into the world to bring back experiences.</p>
<p>Changing Technology</p> <p>7</p>	<p>Science centers are expected to embrace the latest technologies, and yet this process is expensive and the new technologies typically untested. Further, today’s latest is tomorrow’s old hat, disappearing into the background as younger generations take it for granted. Our staff culture and operating policies need to constantly adapt to e-commerce, home theater, video games and new media technologies, along with changing expectations for customized 24/7 services.</p>
<p>Globalization</p> <p>8</p>	<p>Our industry is struggling with globalization when it is still difficult for museums in a single city to collaborate.</p>
<p>Indigenous Knowledge Systems (IKS)</p> <p>MTN ScienCentre (Cape Town, South Africa): Jon Weinberg</p> <p>9</p>	<p>Science considers itself global, if not universal, with its principles and ways of obtaining knowledge (the natural laws and the scientific process) applicable everywhere. Yet science exists in culture, and is often seen as just another knowledge community. Further, other knowledge communities and ways of looking at the world have often revealed insights that science has missed. Listening to and incorporating the perspectives of IKS and “celebrating all systems of knowledge” can bridge cultures in developing countries and acknowledge diverse communities within immigrant countries. Exhibits such as <i>Ethno Mathematics: The Mathematics of Beadwork</i> develops mutual respect for both the scientific knowledge community and the indigenous knowledge system.</p>
<p>Tech Nouveau</p> <p>Ars Electronica 2004</p> <p>10</p>	<p>“Tech Nouveau means the reverse engineering of nature,” says the promotional material for a European conference. The idea of reinventing nature in bio- and nanotechnology raises fascinating design and ethical questions. While nature’s designs do not always work at a human scale – flight is an excellent example – the ability for birds to fly was an emotional incentive and proof of concept that flying was somehow possible. Tech Nouveau gets science out of the abstract world of ones and zeros and microchips and into the wet complexity of living matter.</p>

<p>Heritage Travel 11</p>	<p>A growing subset of the travel industry has been defined as “traveling to experience the places and activities that authentically represent the stories and people of the past.” Surveys track the economic impact of tourists traveling more than 50 miles one way or who stay overnight.</p>
<p>The ECC Trilogy for Student Success Eric J. Jolly, Science Museum of Minnesota 12</p>	<p>Engagement, capacity and continuity: all three of these factors must be in place for a student to be successful in science and mathematics, say the ECC Trilogy developers, Eric Jolly, Patricia Campbell and Lesley Perlman. The approach, which may also be applicable for other disciplines, assumes a number of forces working together to make success possible for a student. Museums can play a role <u>engaging interest</u>; schools can help develop a student’s <u>capacity</u> through skills and acquired knowledge. Museums and other organizations can provide <u>continuity</u> though lifelong learning, links to other sources and connections to people practicing in the field.</p>
<p>COMMUNITY SERVICES</p>	
<p>Community Needs; Community Services White Oak Associates (Marblehead, MA): John W. Jacobsen Lakeview Museum (Peoria, IL): Jim Richerson 13 Model A</p>	<p>The old fundraising adage “you never raise money for what you need, rather you raise money by offering solutions to other people’s needs,” remains valid. What is new is the process of assessing community needs through structured interviews with community leaders (school superintendents, newspaper publishers, foundation chairs, Chambers of Commerce, economic development agencies, cultural affairs offices, political leaders, corporate executives, etc.) and then developing museum services in response to those needs and in collaboration with these leaders. The process is humble, as it emphasizes a museum’s role of service to the larger community’s agendas.</p>
<p>Community Gathering and Identity District Six Museum (Cape Town, South Africa) The Tech (San Jose, CA): Peter Giles Exploration Place (Wichita, KS) Boston Museum and National Park Project (Boston, MA): Anne Emerson 14</p>	<p>The idea that a museum can be a community nexus bringing together different parts of the community for cross cultural exchange and for building community identity is a positive response to Robert Putnam’s <u>Bowling Alone</u>, where he challenges institutions to develop new ways of mending the social fabric. This model is especially relevant in economically fragmented communities like Cape Town and Campinas (Brazil), but is also relevant in wealthier communities like Silicon Valley and Wichita looking for image enhancement.</p>
<p>Workforce Development Connecticut Center for Science & Exploration (Hartford, CT): Ted Sergi 15 Model B</p>	<p>Corporations are justly concerned about the quality of the workforce that they can hire and are dismayed at having to import scientifically literate workers from abroad. Science centers can play an active role in inspiring the next generation to favor science and technology careers and to help retrain displaced workers.</p>

<p>Leisure Time Buffalo Museum of Science (Buffalo, NY): David Chesebrough's Five Community Roles 16</p>	<p>“Our role in providing social outlets for individuals, groups and family units looking to spend leisure time in a quality, customer service based environment. Attendance is often marketing, not relationship, driven. For many of us this has been a prime audience area, often placing us in competition with amusement parks, malls, festivals, sporting events and other typical choices for our society in spending ever more precious time and family/individual funds. Outcomes are often measured in attendance numbers and admission income.”</p>
<p>Economic Development Buffalo Museum of Science (Buffalo, NY): David Chesebrough's Five Community Roles 17 Model A, B</p>	<p>“Our role, depending on the situation and community expectations, in returning an economic value for the community investment in our organization. This can vary from helping to anchor development in a community project such as waterfront development, attracting tourists and/or visitors to a location or region, or helping stabilize a declining inner city neighborhood. Returns to the community can come from direct support for our institution (in lieu of or addition to government support), tourist dollars expended throughout the community, increased property value or community investment in our proximity, and other indirect means. Outcomes can be measured in economic impact from visitors, dollars invested in the area around the center, increase in property values in the immediate neighborhood.”</p>
<p>Formal Education Resource Buffalo Museum of Science (Buffalo, NY): David Chesebrough's Five Community Roles 18 Model B</p>	<p>“Our role in the educational system as a fundamental resource. To date we are still most often thought of by teachers as a site for field trips. A number of institutions, though, have defined their role more deeply, providing an array of programs for students and teachers, taking a leadership role in professional development of teachers in hands-on science, serving as a science education resource for schools, and entering into contracts with schools as an integral resource at a grade level or within a topic area. Outcomes should go beyond students served to ultimately include new measures such as numbers of teachers incorporating hands-on, inquiry based teaching methods, students going on to higher levels of science and math courses, and students choosing science and math related careers.”</p>
<p>Lifelong Learning Buffalo Museum of Science (Buffalo, NY): David Chesebrough's Five Community Roles 19 Model A</p>	<p>“Our role in serving the ongoing, regular, and frequent learning experiences for interested individuals across all age levels. Older natural history museums, prior to admission charges, often were seen as models of this type of service. It's also the model of our library systems, is based on relationships, and is potentially a significant way to change lives. Outcomes might be number of engagements an individual has with the museum over each year and their satisfaction level of fulfilling their personal interest, or length of time in years an individual stays involved with the institution following a personal path of inquiry and knowledge gaining.”</p>

<p>Social/Community Asset Buffalo Museum of Science (Buffalo, NY): David Chesebrough's Five Community Roles 20 Model B</p>	<p>“More emphasis, and debate, in recent years has been on the science center’s or museum’s role in leveling the educational opportunities within a community. As concerns over the changing demographics of our countries to include larger minority representations, and the underrepresentation of minorities and women in science related fields, our organizations have been looked to for helping to address this issue. Teen programs for inner-city youth and reduced admission and scholarship programs for economically disadvantaged individuals, families and schools have often been strategies that our organizations have pursued to one degree or another. These measures may require longer timeframes. The Science Career Ladder at NY Hall of Science has been able to show now that their program has been in place over 15 years yielding a statistically significant increase in the numbers of participants moving on to science and educationally related college studies and careers.”</p>
<p>Agora: Trading Marketplace White Oak Associates (Marblehead, MA): John W. Jacobsen 21</p>	<p>A museum can act as a place where different parties come together to offer services to each other. In this model, the museum is a facilitator rather than a producer of programs, allowing local health organizations, for instance, to mount exhibitions and schools to stage competition finals. The AAM's “museums and communities” initiative and the inclusion of “town square” in the ACM's mission statement are examples of this model.</p>
<p>Educational Toolmakers The Children’s Museum (Boston, MA): Lou Casagrande 22</p>	<p>Our institutions focus on learning and are flexible places to prototype new resources for learning. Thinking of science centers as laboratories to develop curriculum, learning programs and new methodologies of reaching multiple intelligences is another way of contributing to our community’s learning infrastructure.</p>
<p>Curriculum Development Museum of Science (Boston, MA): Ioannis Miaoulis 23</p>	<p>Science centers can play a role in developing science and technology curricula for their school systems. When such curriculum programs are directly connected to workforce development, sponsorship from area corporations is possible. As universal testing has been mandated by the No Child Left Behind legislation, teachers are looking for curriculum programs and professional development that will help them. There are already many well-respected curriculum materials, and adaptations of national materials to local contexts may be more needed. Developing curricula for technology is a relatively new field where science centers might be active.</p>
<p>Public Understanding of Research National Science Foundation (Arlington, VA) American Association for the Advancement of Science (Washington DC): Judy Kass 24 Model B</p>	<p>Recent findings in science and technology are both stimulating and troubling to the public. Issues with genetics, environmental stewardship, nutrition, medicine and healthcare are hotly debated. The public is less interested in knowing how genetics works, however, than in understanding how this science affects them and how it can be applied ethically.</p>

<p>Environmental Sensitivity and Stewardship</p> <p>25</p> <p style="text-align: right;">Model B</p>	<p>As science-related organizations, we could take a leadership role in green architecture and sustainable materials. Science centers can take an active part in developing sustainable attitudes toward the world we live in.</p>
<p>Neighborhood Development</p> <p>The Children’s Museum (Boston, MA): Lou Casagrande</p> <p>26</p>	<p>Museums are people magnets and therefore attractive to neighboring developers. Further, museums are neutral parties who can bring together commercial organizations, city planning agencies, funding sources and others behind an urban redevelopment project. In Boston, The Children’s Museum is developing public open space with funding support from neighboring office buildings as a way of meeting requirements for open space that their sites would not otherwise permit.</p>
<p>Building the Creative Economy</p> <p>Richard Florida Exploration Place (Wichita, KS)</p> <p>27</p>	<p>Richard Florida’s book on building creative economies observes that cities that are open to new ideas, have diverse participation in all levels of leadership, support a wealth a cultural expression and are open to new forms and lifestyles, are also wealthier economically. Museums play a critical role in the cultural life such successful economies, and they may be a cause, more than a symptom, of a healthy and robust economy.</p>
<p>Bridging the Digital Divide</p> <p>The Tech (San Jose, CA): Peter Giles TryScience.org: New York Hall of Science (Corona Park, NY)</p> <p>28</p>	<p>The gap between those who are comfortable with technology and understand how to operate in a digital environment and those who feel uncomfortable and lost in technology driven situations is a source of concern for community leaders, especially in high-tech economies. In Silicon Valley, the digital divide is wide, so efforts to bridge the divide -- outreach programs, Spanish language films, neighborhood promotions -- by The Tech are appreciated and underwritten. Another example: AAAS has established the Partnership for Science Literacy to further the “value of science literacy, particularly to Hispanic and African-American minority communities.” One of the programs involved is www.tryscience.org, an on-line linkage of science-center related programs and information managed by the New York Hall of Science.</p>
<p>Why We Educate</p> <p>George Hein</p> <p>29</p>	<p>All museums take education as a central objective to their community services, yet few take strong positions as to <u>why</u> we educate, as education is often considered sufficient reason. Broadly, progressive education seeks to empower learners to change the world, while conservative education seeks to provide them with the tools to keep the current systems going. Hine says: “The deeper question of why we want to educate should drive the form of education we propose. We should remember that Dewey’s fundamental message was not about types of learning, but why this was important. The answer now is that it was a century ago, is that the approach we call constructivism is what is needed to support democracy, to educate a populace to be thinking, critical citizens. The criterion to apply to any idea is does this idea lead to the direction of supporting the social and moral goals of a democratic society, or hinder them?”</p>

<p>Public Dissemination Museo Da Vida (Rio de Janeiro, Brazil): Paolo Gadelha 30</p>	<p>Working in partnership with the schools and other organizations, museums can be effective tools for the public dissemination of public health and other information, particularly with regard to lifestyle and behavior. “The message is that science education, paired with community participation, can effectively change risky behaviors and combat pernicious health conditions,” says Paulo Gadelha.</p>
<p>Teacher Professional Development COSI (Toledo, OH): Bill Booth Science Museum of Minnesota (St. Paul, MN): David Chittenden 31 Model B</p>	<p>Inquiry based learning is encouraged by schools, yet few teachers know how to use inquiry based learning in the classroom to meet curriculum and national standards. Some science centers are taking active roles in professional development for teachers. Reaching teachers in their early professional years is most important, to provide a helping hand through their difficult learning curve. COSI Toledo has a contract with the local school system to train elementary teachers.</p>
<p>Pipeline for Science Teachers Contributed by Eric Siegel, NYHS 32</p>	<p>“The greatest leverage an urban science center has to improve science learning is through impact upon science teaching. The youth programs that already exist in science centers offer a rich source of future science teachers. [The New York Hall of Science is] exploring a way to address the critical shortage in science teaching by offering our Career Ladder participants tuition wavers at pre-service education programs at public colleges for an agreement to teach in the local system for a fixed period of time. We hope to convince the City Department of Education that this is an investment that will result in a cadre of diverse, city-wise science teachers.’</p>
<p>Partnerships for a Nation of Learners CPB/IMLS 33</p>	<p>Funding agencies are moved by real collaborations, especially among non-profits with allied missions. The Corporation for Public Broadcasting and the Institute for Museum and Library Services have a new funding initiative that supports collaborations among museums, libraries and public television. This is part of a national program to encourage a Nation of Learners. Marsha Semmel at the IMLS notes that “funded projects need to demonstrate how they will use the combined resources of museums, libraries and public broadcasting (radio or television) stations to address community needs. (See more at the web site, which will become the project's 'knowledge commons': www.partnershipforlearners.org.)” Such collaborations are also the goal of the AAM’s community and museums program, and regional foundations are typically receptive to area non-profits collaborating on joint educational and social ventures.</p>
<p>INSTITUTIONAL PARADIGMS</p>	
<p>Community Resources vs. Tourist Attractions 34</p>	<p>Science centers can be more like libraries, sports arenas, performing arts centers, parks and even zoos that locals use on a regular, repeating basis and incorporate into their family’s lifestyle; the reverse is to capitalize extremely fancy, but costly to change, visitor experiences that have must-see appeal to tourists, but are likely to be a one-time visit for residents.</p>
<p>Family Learning Center Exploration Place (Wichita, KS) 35 Model A</p>	<p>As a category, children's museums make clear who their prime audience is with no subject expectations, while most other museums are named by their subject matter (science, art and history), not their audience. The use of <i>family learning center</i> is an attempt to expand that focus to an older audience,</p>

	implying a freedom to help families learn together in a wide range of subjects.
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<p>Current Science and Technology Museum of Science (Boston, MA): David Ellis 36 Model B</p>	<p>Keeping the public informed of the latest advances in science and technology, sometimes in partnership with professional journals, is a way of providing a public forum for the presentation of new ideas and a discussion of their implications.</p>
<p>Creativity as the Foundational Skill Al DeSena 37</p>	<p>Creativity is the skill common to science, technology, arts and humanities. The creative skills -- imagine, express, design, inquire, nurture and explore -- are inherently multidisciplinary and the basis of play and learning. Building a museum around creativity is common to children's museums and art museums, and is an approach that might be applied to science centers and family learning centers</p>
<p>The Relationship Model Institute for Learning Innovation (Annapolis, MD): John Falk 38 Model A</p>	<p>Science centers have focused on their attendance numbers, which they have tried to keep high through changing experiences and marketing, relying on the attraction of their offerings. An alternate model emphasizes the quality of a museum's long-term offerings and programs in order to develop long-term repeat relationships. The relationship model recognizes that museums and science centers can engage individuals multiple times, provided there are a range of services, resources and social contexts that will keep families and adults connected to the Center for multiple transactions for a range of related products and services. This does not mean that a quality, and constantly changing visitor experience can be ignored; on the contrary, the visitor experience is the foundation for the brand identity and the clearest public statement of the institution's core values. On this rock are built the institution's other services. The relationship model effectively diversifies the earned revenue sources.</p>
<p>Pilgrimage Sites 39</p>	<p>Some museums are in iconic locations, with broadly recognized impact on national themes and stories; others contain collection objects of transcendent appeal. Such sites become pilgrimage destinations for devotees and people directly affected by the story. Charleston's role as the African-American Ellis Island, Edison's workshop and the Kennedy Space Center are physical connections to important stories; the national museums of rock-and-roll, baseball and invention are examples of museums creating a Mecca for a subject, and the Kansas Cosmoshere and the American Museum of Natural History examples that draw because of the strength of their collections.</p>
<p>Kids Playing at Being Adults Wannado City™ (Sawgrass Mill Mall, Sunrise, FL) 40</p>	<p>A successful Mexican attraction is expanding in the United States with a \$40m commercial themed environment installed in large shopping centers that offers a concept they call "real play," in which kids (4-11) can play over 250 make-believe job roles in over 60 settings, from firefighters to archeologists. Their slogan is "Where kids can do what they Wannado.™" They describe themselves as "America's first indoor role-playing theme park." The first U.S. installation opened in Florida, the second is scheduled for New Jersey, and negotiations are underway for additional sites. The average visit will be four to five hours, costing \$24.95 for kids, and \$15.95 for adults.</p>

<p>Agents of Change Ontario Science Center (Toronto, Ontario, Canada): Jennifer Martin 41 Model B</p>	<p>Along with The Exploratorium, Ontario Science Center was an early proponent of hands-on exhibits interpreting scientific phenomena. <i>Agents of Change</i> is their new direction for the renovation of 25,000 SF of exhibits. It focuses on activities that they can do <i>with</i> the visitor rather than experiences that they create <i>for</i> the visitor. A foundational goal will be to “empower visitors in problem solving, critical thinking and scientific processes and to challenge visitors to be part of changing their worlds,” says Jennifer Martin. OSC asks “What if we abandoned our attachment to exhibits and ‘science learning outcomes’ in favor of encouraging innovation, collaboration, creativity and problem solving?”</p>
<p>Servant of Four Masters White Oak Associates (Marblehead, MA): John W. Jacobsen 42 Model A, B</p>	<p>Annual reports reveal a museum’s economic drivers. During the Attendance Decades (80’s and 90’s), we were servants of three masters: Visitors, Sponsoring Investors (private and corporate supporters), and the Community (public supporters and partners). As attendance declined at some museums, the strength of a museum’s brand to develop other services has brought ancillary income and fee-based programs out of the shadows and into management focus. A diversified collection of revenue producing facilities, in addition to admissions and its spin-offs, effectively create a second category (“service customers”) of earned revenue. This leads to the evolved Servant of Four Masters: Learners; Sponsoring Investors (private supporters); Community Agencies (public supporters) and Service Customers.</p>
<p>Forces on Program 43 Model B</p>	<p>New York Hall of Science’s Alan Friedman observes four forces on program development: Visitors; Sponsors; Subject Matter Experts (often scientists), and Staff. While these last two forces on programming are not part of a museum’s four major categories of revenue, they have significant influence and bring their own agendas and biases. Ethically, final editorial control must rest with a museum’s staff, just as a responsible newspaper has some distance between editorial decisions and publishing wants. Note that some major revenue sources are seldom involved in any program planning process: legislators and planning agencies do not join workshops; function renters are not invited, and corporate sponsors are appropriately kept at arms length. Long-term, however, an institution must serve the needs of its main revenue sources, roughly in proportion to their share. Revenue sources whose needs are not met by the programming will eventually dry up (except endowment).</p>
<p>Urban Learning Center 44</p>	<p>Combining a major public library, a community-based museum and a program facility like New York’s 92nd St. Y is the model for an urban learning center. The synergy of these different learning methodologies and resources deepens the potential impact – the museum engages, the library builds capacity through its deep information, and the programs continue the learning in more focused and committed ways. With three or more venues dedicated to learning, yet clearly differentiated (<u>not</u> a museum complex) an urban learning center will be alive with a diversity of audiences and program presenters.</p>

<p>Lab and a Network Goery Delacote (Exploratorium, SF) 45</p>	<p>The Exploratorium (SF) has developed various networks providing teacher development, temporary exhibits and other programs to other like-minded science centers. As a highly respected leader in interactive exhibits, on-line programming and inquiry based teaching methods, the Exploratorium can translate this respect into museum networks that subscribe to receive the services and programs developed in their home-based laboratory. The lab and network model can work both ways, as a museum may be a producer/distributor in one field where it has strengths, and a subscriber in others where it does not have the resources.</p>
<p>POSITIONING STATEMENTS</p>	
<p>Promoting Our Social Enterprise The Detroit Institute of Arts (Detroit, MI): Graham Beal Old Sturbridge Village (Sturbridge, MA): Beverley Sheppard 46</p>	<p>The idea that museums are an essential part of a healthy society and vital partners in the enterprise of building civic society is not widely recognized yet by community leadership, who continue to regard museums as elitist, despite data that shows Americans visit museums regularly.</p>
<p>The Infrastructure Model Inverness Research Institute (Inverness, CA): Mark St. John 47</p>	<p>Museums are part of a much greater network of learning resources and educational facilities, and should work with public television, libraries, schools, universities, publications, web sites and other educational resources to build a robust and even redundant number of options for learning.</p>
<p>Branding Gardella & Associates (Watertown, MA): Joyce Gardella 48</p>	<p>Reinforcing a museum's identity through coordinated branding and consistent values builds trust and relationships over time. The brand is the marketing dimension of a clear vision and identity.</p>
<p>Relevance Thanks to Emlyn Koster 49</p>	<p>The emphasis on the relevance of what we put on our floors to our visitors suggests a focus on their needs rather than those of science authorities or curators. It also suggests constant change, as what is relevant today is seldom what is relevant tomorrow.</p>
<p>Mass Customization 50</p>	<p>New technologies allow us to fashion and market experiences that are specific to individual tastes and responsive to the public's growing expectation to have what they want when they want it. One-to-one marketing is a related concept.</p>
<p>Embracing Diversity The Children's Museum (Boston, MA): Lou Casagrande 51</p>	<p>Demographic shifts are changing the way we need to think about the learning experiences we offer, the staff and leadership of our museums, and the services we offer our communities. The rich mix of cultures in any major city is an opportunity to explore multiple perspectives and gateways to learning. Positioning the museum as a common meeting ground to bridge among cultures requires diverse programming, staff and partnerships.</p>

<p>Cultural Ecosystem Thanks to Ann Mintz 52</p>	<p>A community of a given size and economic profile is capable of supporting only a number of cultural organizations. Like a natural ecosystem, a cultural ecosystem is limited by its food supply and other factors. Continuing the metaphor, new cultural forms will evolve to fill niches that are empty, while competition for niches that are overcrowded will push out less suited organizations. Museums need to find and then fill appropriate niches within their community's cultural ecosystem.</p>
<p>Society Scientists 53</p>	<p>Science centers have long been envious of the art museums' ability to host high society events and to attract extremely wealthy families to their boards and foundations. Art museums, by serving as social clubhouses, are capable of operating with extremely high levels of support revenue and of developing deep endowments, due to the prestige associated with high-level memberships. Certainly there are wealthy scientists and engineers, but the appeal of membership in an elite and expensive 'clubhouse' is likely to take a different form from the art world. In particular, the role of collectors, which is so important to art world trustees, will have to find a counterpart.</p>
<p>Personalized Transactions 54</p>	<p>"Nice to see you again; we're always happy to see our members show up. We've got lots of new stuff since you were here last for the <i>Titanic</i> exhibition. I'm sure you'll see our current exhibition, and, as the human stories were your favorite part of the <i>Titanic</i> show, you'll want to check out the film we're showing at 3:00 – it's full of great stories!" We are used to forms of such personalized greetings on-line, and at kiosks, but what about from live cashiers? Ticketing systems exist that could provide a museum cashier with this customized script, but is there the will to make it work operationally? Will it result in increased attendance, revenue, satisfaction and return visits? Or just turn people off as an invasion of privacy?</p>
<p>Buildings that Feel Like Home 55</p>	<p>The warm welcoming embrace of a community living room is a very different image from a beaux-arts marble museum. Museum architecture over the last century has moved from museum-as-fortress to museum-as-agera. Despite this new civic engagement and permeability, most new museums continue to be lofty places intentionally different from home, but can they be designed so that people can feel at home there, like they do in their church or their library? And what does that mean for the balance between architectural attraction and cozy familiarity?</p>
<p>LEARNING APPROACHES</p>	
<p>The Contextual Model for Learning Institute for Learning Innovation (Annapolis MD): John Falk and Lynn Dierking 56</p>	<p>Museum learning is not just about what happens between an exhibit an individual, but rather depends on the interrelationship of four contexts: the socio-cultural, the personal, the physical, and the impact of the experience over time.</p>
<p>Free Choice Learning Institute for Learning Innovation (Annapolis, MD): John Falk and Lynn Dierking 57</p>	<p>Formerly called informal education, free choice learning emphasizes the learner's freedom to choose what kind of learning and when. No one needs to come to our museums, unlike schools, and this puts considerable pressure on us to be attractive and to offer the learner excellent value.</p>

<p>Educational Theory George Hein 58</p>	<p>“Educational theory is broader than learning theory and includes four components: how people learn, what they learn, how we go about implementing it (i.e. Pedagogy or exhibit design, curriculum, etc.) and, most important, why we educate. Constructivism is an educational theory, not a learning theory. The distinction is important because we have to ask not only how people learn, but what they learn. The crucial and controversial part of constructivism is that people construct their own meaning; it isn’t only about how they go about this, but what the result turns out to be.”</p>
<p>Learning Theories George Hein Science Services (White Plains, NY): Ted Ansbacher Self Reliance Foundation (Washington DC): Bob Russell 59</p>	<p>Dewey, Piaget, Vygotsky, Spock, Gardner, Czicksentmihalyi, Bateson and Langer have each contributed learning theory that has implications on museum learning. Inquiry-based learning, developmental learning levels, social learning, unstructured play, multiple intelligences, flow experiences, spiral learning and mindfulness have each had their vogue, and more theories are doubtless in the wings as neuroscience understands more about how the brain works. As Ted Ansbacher says, “A good theory of learning not only describes and explains what takes place in a museum, it also is needed as a foundation for developing new exhibits and programs. From the many theories and their variations, a consensus is emerging that the experience-based approach of Dewey and current constructivism models which stress the individual’s active participation in making meaning from direct experiences, are most appropriate for museums. [This approach shifts] the educational focus away from information transfer and onto providing meaningful experiences – the particular strength of museums with their real objects and phenomena.”</p>
<p>Interdisciplinary Exploration Place (Wichita, KS) Lakeview Museum (Peoria, IL): Jim Richerson 60</p>	<p>Science centers have focused, appropriately, on science, technology and math. Art and history museums have similar subject focuses. However, some science centers are now broadening their appeal by introducing connections to the humanities and the arts, while others are going even further to focus on the creative learning skills that are the basis of all these disciplines.</p>
<p>Lifelong Learning NAGCELL Report (UK Museums) 61</p>	<p>As the boomer bulge ages, the ability to offer services to older audiences becomes important. The new model recognizes that families learn together as a social group and that visits are often multigenerational social outings.</p>
<p>Adult Audiences in Science Centers Dana Center (London Science Museum, London, UK): Graham Farmelo Museum of Science (Boston, MA): Ioannis Miaoulis 62</p>	<p>Can science centers appeal to adults on their own? Traditionally, we have been family if not children-oriented experiences where adults feel out of place among throngs of the noisy kids. Yet, current science and technology is both sophisticated and central to adult life, and we may play an important role as a forum for adults.</p>

<p>Social Learning and Family Learning The Franklin Institute (Philadelphia, PA): Minda Borun 63 Model A, B</p>	<p>The old model thinks of visitors as individuals, while this model acknowledges that most visitors come in social groups and that the experience of any exhibit or theater has to work for the group as a whole. The PESEC study found seven characteristics that characterize a good family-learning exhibit.</p>
<p>Museum Schools See ASTC's Dimensions (Jan/Feb '04) for list 64</p>	<p>A number of museums have developed close associations with schools, some on-site and some nearby. Charter and magnet schools are run in partnership with the local school district. Preschools can be more independent, although typically licensed. Outside of formal schooling, some museums are offering weekend, after school and summer classes. Charter and magnet schools are sources of rent revenue to some museums that are also able to use their facilities at other times for other programs.</p>
<p>The XX Learning Center Science Center of Iowa (Iowa Learning Center) (Des Moines, IA): Mary Sellers The Tech (Noyce Learning Center) (San Jose, CA): Peter Giles 65 Model B</p>	<p>Museums have long had program spaces and classrooms; the new idea is to gather these together physically and to plan for their operation in multiple modes for different audiences. School groups are a foundational audience, and a number of enhanced classrooms around a central orientation and group lunch space can be informed by their needs; however other audiences, such as summer camps, adults evening social/learning programs, after school workshops, and weekend family programs can generate substantial revenue. Collecting program spaces with a broad educational mission is also a naming opportunity.</p>
<p>Teacher Support & Professional Development NY Hall of Science (Corona Park, NY): Alan Friedman 66 Model B</p>	<p>Formal teacher education is typically handled by higher education, and museums complement pre-service and in-service training with teacher support and continuing education. Helping teachers develop their skills at teaching science -- training the trainers -- is a way of leveraging resources for greater impact on science education. Helping teachers early in their careers is particularly important, as there is a high dropout rate at this stage.</p>
<p>Challenge-based Learning 67</p>	<p>Invention contests, like Dean Kaman's FIRST Robotics, challenge teams of kids to design something using a prescribed kit of parts that is able to score points achieving specific goals, like lobbing a ping pong ball through a flaming hoop. Done with fanfare and logistical support, such contests are both great fun for the participants and clear learning experiences that build problem solving and teamwork skills. On a smaller scale, museum exhibits that let visitors try their skill and post their score are also challenge-based learning experiences.</p>
<p>PROGRAMMING STRATEGIES</p>	
<p>Program Partners White Oak Associates (Marblehead, MA): John W. Jacobsen The Tech (San Jose, CA): Peter Giles</p>	<p>Joining with other organizations to create the programs that we offer on our floors and in our learning centers is an idea that various institutions have been experimenting with for a long time, but the idea might take on new importance if we can find a way to leverage both the expertise and the financial contributions of program partners while maintaining our brand identity and editorial control. As the public understanding of research becomes more important, the inclusion of organizations, particularly</p>

<p>Connecticut Center for Science & Exploration (Hartford, CT): Ted Sergi 68 Model B</p>	<p>corporations and university research facilities dealing with current science and technology, becomes as important as the involvement of artists is to a contemporary art museum. Accreditation and ethical guidelines preclude corporations from dictating content of exhibitions, yet we clearly need the help and funding of outside partners to develop such programs.</p>
<p>Skill Development vs. Content Transfer Museum of Science (Boston, MA): Larry Bell Exploration Place: (Wichita, KS) Science Center of Iowa: (Des Moines, IA) Mary Sellers 69 Model B</p>	<p>The transmission of factual knowledge, also called the deficit model of filling up the visitor with information, is giving way to new forms a learning that emphasize the development of skills and the exploration of concepts -- <i>Doing</i> science, rather than learning <i>about</i> science. This approach is more open-ended and allows for multiple outcomes, but it can prove difficult with funders who are trying to use museum experiences to communicate pre-defined messages to the public.</p>
<p>The Museum Without Walls White Oak Associates (Marblehead, MA): John W. Jacobsen National Cable Television Museum and Center (Denver, CO): Robert Russo Pacific Science Center (Seattle, WA): R Bryce Seidl 70</p>	<p>The standard model relies on the museum visit as the core learning experience; this new model emphasizes outreach and an extension of the museum brand into grass-roots efforts in the schools and communities. In some instances, the 'mother ship' is relatively modest, while the outreach programs are the institution's principal means of achieving its mission.</p>
<p>Distributed Network of Satellites Al DeSena 71 Model B</p>	<p>"Our industry really needs to take a hard look at the strengths and weaknesses of having a single, large, central (often) location. I'm coming to believe that if we want to foster long-term, lifelong learning relationships with the regional population, we need to be much closer to where they live. We need to have a proximate, community presence that is distributed around town where the centers of population are. People need to be able almost to walk to one of these community centers and do it on a regular basis to engage in activities that relate to the core vision and goals of the museum. There is a flow between them and the central location (which is still needed) – of people, of ideas, materials, events, etc. These community centers could be new, but that's unlikely. It's probably much more realistic to establish long-term, comprehensive relationships and services with organizations that are already distributed around town (YMCA, 4H Clubs, Girl Scouts, branch libraries, senior centers, etc.)"</p>
<p>Revenue Sharing 72</p>	<p>Some commercial organizations that produce and distribute popular exhibitions, giant screen films and laser shows are increasingly interested in direct participation, if not total control, over the admissions revenue and marketing. This model is being forced on the science center world, with the argument that it may benefit science center revenues in the long-term. This has not been a problem with laser shows, which are generally regarded as sideline ancillary income in off hours, but creates more stress when applied to a science center's core learning experiences.</p>

<p>Learning Spaces White Oak Associates (Marblehead, MA): John W. Jacobsen 73 Model A, B</p>	<p>Flexible platforms for learning that are designed for certain kinds of learning based on their architectural character and built-in infrastructure are a framework for thinking about museum exhibit galleries and theater spaces. Some learning spaces are good for aesthetic contemplation, while others are suited for hands-on experimentation. The old model asked the architect for undifferentiated blackbox spaces; this new approach seeks a variety of architectural spaces, each designed for different types of learning. There are ten categories of learning spaces in the physical context framework: Contemplative Galleries; Showcases; Tunnels of Wonders; Theaters/Presentations; Immersion Environments; Hands-On Arenas; Discovery Worlds; Workshops & Studios; Icons, and Open Spaces.</p>
<p>Delta Museum Approaches White Oak Associates (Marblehead, MA): John W. Jacobsen Exploration Place: (Wichita, KS) Connecticut Center for Science & Exploration (Hartford, CT) Lakeview Museum (Peoria, IL): Science Center of Iowa (Des Moines, IA): Boston Museum and National Park Project (Boston, MA) 74 Model A, B</p>	<p>A museum designed for change is a Delta museum; art museums are inherently easy to change, but science centers have formerly required huge investments to throw out the old and buy entirely new units. Thinking of learning spaces as flexible platforms that are equipped to host a succession of changing experiences is part of the Delta museum concept that facilitates change in parallel ways to a theater's ability to host a succession of plays. The Delta approach calls for a long-term <i>experience platform</i> in each learning space (geared for the architecture of the space, the particular learning skills and the selected thematic content), and a <i>scenario</i> layer that can be removed and replaced with the new content and visitor experiences relatively inexpensively.</p>
<p>Is it 'Visitor,' 'Guest,' 'Learner,' 'Participant' and 'Partner?' Science Center of Iowa (Des Moines, IA): Mary Sellers ('participant') Jeanne Vergeront ('learner') 75</p>	<p>Different museums have been calling their visitors by different names, with significant implications for the relationship. While all these roles are important in most institutions, the choice of a prime title establishes significant expectations among the staff and public. Jean Vergeront says, "Even though I tend to be an advocate for thinking about the visitor as learner, I think all the titles are valid as a set; they reflect how people visiting museums have many different dimensions and ways of relating to the museum (and the reverse). The use of several titles highlights the multiple relationships the museum has with its audiences and focuses the museum's attention on supporting those relationships."</p>
<p>Exhibit Clusters The Franklin Institute (Philadelphia, PA): Minda Borun Exploratorium (San Francisco, CA) 76 Model A, B</p>	<p>New research indicates that exhibits that are adjacent and thematically connected can work together to influence a deeper level of learning and longer dwell times. The idea of clusters of exhibits rather than collections of individual units is a way of both strengthening learning and addressing the different learning styles and developmental stages of multigenerational social groups of visitors.</p>

<p>Theme Installations 77</p>	<p>Linking a giant screen film, a temporary exhibition, educational programs, web sites and other methodologies around a theme expands the impact that any single installation might have. Theme installations increase the critical mass and allow for multiple perspectives and different learning styles; they also amortize coordinated marketing efforts and promise a scale of impact that justifies a return visit and makes the press take notice.</p>
<p>Exhibitions About Something Relevant White Oak Associates (Marblehead, MA): John W. Jacobsen 78 Model A, B</p>	<p>The temporary exhibitions that seem to draw are <u>about</u> topical interests in the public eye: <i>Titanic</i>, <i>Star Trek: The Exhibition</i> and <i>Leonardo da Vinci</i>. The topic makes it marketable – newspapers have something to explore and human stories to tell; the new topic seems a good reason to go; visitors go home and talk about the topic with friends, who in turn go because everyone is talking about the topic. By contrast, pedaling a bicycle to light a light bulb is an A-ha! learning experience, but it is not marketable as a topic -- even a roomful for such hands-on energy exhibits may be a theme or subject, but it is not a frequently changing, currently hot, marketable topic with human stories.</p>
<p>Exhibits and Theaters White Oak Associates (Marblehead, MA): John W. Jacobsen 79 Model A, B</p>	<p>The old model is that a science center's exhibits are its core product and its theater experiences somehow secondary. The new model recognizes that both media are successful learning resources that operate on different, but complementary levels. Multi-venue science centers are recognizing that its venues should be presented equally to be public, with all united by the brand. In this model, visitors do not select between the <u>museum</u> and the giant screen theater, for instance, but rather between the <u>exhibit galleries</u> and the theater, both part of their museum experience.</p>
<p>Museum Networks & Collaborations 80</p>	<p>The idea that museums should work together to produce programs that they share and save through economies of scale started in the 80's and continues to be an idea that makes sense. Unfortunately, the not-invented-here-syndrome, and the human urge to create anew mean that networks have not caught on in many of the areas where they make sense economically, such as planetarium productions and more traveling exhibition networks. Standardization is a related concept that would help science centers exchange programs (scenarios) if their learning stages had similar infrastructure (experience platforms).</p>
<p>Production Houses or Road Houses? 81 Model A</p>	<p>Many museums try to have in-house production talent and shops. The chance to create exhibits, programs and presentations is one of the museum field's assumed perks. Staff likes to produce new programming, often claiming that outside programs "don't fit our unique needs" or "can be done less expensively by our own team." Yet a more efficient model might be that ten to thirty percent of the museums are geared up to be top-quality producers in a category, while the majority operated more like movie theaters, as stages for changing programs produced and distributed nationally by others.</p>

<p>Digital Dome Theaters White Oak Associates (Sanbornville, NH): Victor Becker International Projects Consultant (Vancouver, BC, Canada): Ian McLennan Evans & Sutherland (Salt Lake City, UT): Jeri Panek Spitz (Chadds Ford, PA): Charles Holmes Sky Skan (Nashua, NH): Steven Savage</p> <p>82 Model A</p>	<p>New technologies are allowing seamless video projection on a dome. Once brightness and resolution reach acceptable standards, we may see a convergence of giant screen film theaters and planetariums using digital systems. This convergence is not there yet and its likelihood and desirability is the subject of intense debate in the giant screen and planetarium fields.</p>
<p>Hollywood Films On Giant Screens IMAX® 83</p>	<p>The development of 3D entertainment films and now the recent ability to digitally re-master Hollywood films like <i>Black Stallion</i> and <i>Matrix: the Revolution</i> are putting new pressure on, or offering new opportunities for science centers to program purely entertainment films in their IMAX® theaters.</p>
<p>Digital Cinema Theaters White Oak Associates (Lakebay, WA): Mark Peterson Science Museum of Minnesota (St Paul, MN): Mike Day 84</p>	<p>Digital cinema, as an alternative to giant screen film, is already viable in certain conditions, like a small destination theater. The format allows for more flexibility and significantly lower set-up and operating costs. Building the library of digitized films is an issue, as is the limited screen size (at current brightness and resolution), which also limits seating. Film libraries are starting to grow, and distributors, including science centers, are entering the field. The films are not as easy or cost-effective to market as giant screen films, and the experience is not all that different from advanced home theater set-ups. Advantages include ability to use the system for other digital information, like the Mars landings, and low-cost filming that may allow for in-house production. Digital 3D Cinema is economically feasible using digital animation, and several science centers have converted auditoriums into add-on venues within the exhibit halls, thrown in with a higher admission charge.</p>
<p>Functional Design Ansel Associates, Inc. (Port Richmond, CA): Joe Ansel 85</p>	<p>“Pioneering interactive (Exploratorium-style) exhibits were often praised for their functionality, copied widely, but sometimes derided for their scruffy appearance. In the past three decades, exhibition designers have often sought to enhance and improve such simple exhibits with complex design, expensive materials, fancy media, and extensive textual interpretation. Some argue that such well-meaning efforts often: 1) reduce the impact of the exhibition itself, 2) impede necessary changes in the exhibition during evaluation, 3) adversely effect creativity in exhibit building, 4) retard necessary ongoing changes and 5) waste money. A new model is arising which advocates simple design, real phenomena, potent creative content, flexibility and change in exhibitions, all combined with minimal descriptive and explanatory text.”</p>

<p>Co-Design Northern Light Codesign (Amsterdam): Joost Douma 86 Model A, B</p>	<p>The very old model depended on curators envisioning exhibitions, and the next model moved toward visitor research influencing exhibitions. Now, co-design implies the active involvement of outside visitors, community groups and research organizations in the joint development of exhibits.</p>
<p>Scenography Deutsche Arbeitsschutzausstellung DASA (Dortmund, Germany): Wolfgang Müller-Kuhlmann 87</p>	<p>Some European exhibit designers are using symbolic imagery and conceptual art installations to add layers of poetic meaning to their exhibitions, such as the ticking metronomes that appeared in one of their installations of the Titanic exhibition. Müller-Kuhlmann says, “Our special way is not to add symbolic imagery to a given content, but it is to organize the contents in a way that they can be expressed in the holistic appearances of rooms. Sometimes the form of such a room and its central elements seem to be symbolic, but from this side of our theory, it has to be a necessary form (not symbolic or as a metaphor) with regard to ‘meaning.’ This means that you have to analyze and prepare the topic of your exhibition with regard to its possibilities to be presented in an adequate and meaningful exhibition room.”</p>
<p>Universal Design Museum of Science (Boston, MA): Betty Davidson Jeff Kennedy Associates (Somerville, MA): Jeff Kennedy 88 Model B</p>	<p>Maximizing the intellectual and physical access to our learning resources so that all people can use them and understand them regardless of abilities and prior knowledge. Universal design helps everyone have better and more meaningful experiences.</p>
<p>Fee-based Programs 89 Model B</p>	<p>Another traditional idea that is taking on new potentials as attendance revenue declines. Fee-based programs -- scheduled classes, events, workshops, film series, a teacher training, summer camps, pre-schools, overnight camp-ins, lectures and other programs that participants pay for -- can generate revenue for museum spaces in the evening and during slow times and are a way for a museum to deepen its relationship with motivated individuals.</p>
<p>The Programmable Museum White Oak Associates (Marblehead, MA): John W. Jacobsen 90</p>	<p>Many museum spaces are underutilized much of the time. Exhibit halls and school program rooms may be jammed for some times, but empty the rest of the time. A programmable museum uses technology and staff to change the operating mode of its public spaces so that more audiences can utilize them for more purposes at more times. Multiple operating modes can include: Public visitors; camp programs; function rentals; docent tours; camp-ins, and maintenance modes.</p>
<p>“Tupperware Get Togethers” Al DeSena 91</p>	<p>“Several parents (educated, stay-at-home moms with little kids, for example) who already have frequent social contacts with other parents and kids. We train them to be able to do our kind of thing in their homes, but we also have unique things for them to do at the museum. So, you have a continuity of learning experiences that are regular. You also have a built-in word-of-mouth advertising vehicle.”</p>

<p>Exhibit Units vs. Exhibition Themes 92</p>	<p>Some exhibit developers start with the individual visitor activity and develop a list of such units, while others start with the overall story line or theme for an area, and then work down to what units will realize that theme. Inductive vs. deductive approaches is another way of looking at this choice. Some institutions boast that they have 200 – 400 interactive exhibits, while others emphasize five to 10 thematic areas or learning stages.</p>
<p>Two-way Learning Museum of Science (Boston, MA): Larry Bell American History Workshop (Brooklyn, NY): Richard Rabinowitz 93 Model A</p>	<p>There has been increasing interest in getting visitors to communicate back to museums. Starting with visitor response mechanisms, some museums have been exhibiting visitor contributions to other visitors. Telling Lives®, developed by the American History Workshop and prototyped at the New York Historical Society, is an oral history project that invites visitors to answer a series of open-ended questions documenting their own history in a particular subject, such as schools or weddings; collectively the videotaped interviews can be indexed and searched by historians or other visitors.</p>
<p>People-to-People Programs Connecticut Center for Science & Exploration (Hartford, CT): Ted Sergi 94 Model B</p>	<p>Museums can bring motivated volunteers together with interested learners. Volunteer programs are well established, and the new idea is to expand the department to coordinate many categories of community people-to-people programs, building on the urge that scientists, artists, college students and retirees have to pass along their experience and practice their teaching skills. In addition to floor explainers, volunteers can serve as mentors, online advisers, scientists by mail, project coaches, content advisers and other roles that bring people together with people in a safe and supportive environment. P2P programs work best in markets with large knowledge communities in the museum's domain.</p>
<p>Clubhouses 95</p>	<p>Museums can provide open-ended, resource-rich spaces for teenagers to work on projects together. The Boston Computer Club is an early example, and other after-school and weekend project spaces are possible for hobbyists from rocketry to animation. A mixture of tools and equipment with informal social and workspaces in an open-ended structure with volunteer mentors can attract a number of regulars. Participation might be through annual dues, similar to sports clubs.</p>
<p>Public History; Public Science American History Workshop (Brooklyn, NY): Richard Rabinowitz 96</p>	<p>Academic history focuses on covering subjects that were influential in their time, while public history looks for stories from the past that are relevant to today's audiences; academic historians will teach the broad impact of Jeffersonian democracy, while public historians today might focus on the implications of Jefferson's slaveholdings on the retardation of civil liberties. Public science might be a parallel approach that explores aspects of science that directly affect today's audiences. Rather than dealing with principles of magnetism or the solar system, public science might focus on personal health care, how to use new home technologies, and how to care for gardens and pets.</p>

<p>Paying to Sit Down White Oak Associates (Marblehead, MA): John W. Jacobsen 97</p>	<p>Museum fatigue has been estimated to set in after forty minutes to an hour and a half of walking around exhibit halls; at that point, visitors look for a place to sit down and relax. Some part of the success of giant screen theaters is due to this phenomenon, yet some science centers with IMAX or other paid theaters also offer free demonstration theaters and relaxing alcoves, which may cannibalize attendance that would otherwise use the paid theaters and cafes.</p>
<p>Distance Learning and Internet 2 98 Model B</p>	<p>Science centers have the potential to play a significant role in the development of Internet 2, the protocol for two-way video and audio communications. Audiences in the center can interact with explorations of the bottom of the ocean, medical specialists in operating theaters in hospitals and astronomers during eclipses. Dr. Ballard's Jason Project is an example using telepresence to allow classrooms to direct submersible robots in their explorations.</p>
<p>The Virtual (Web) Museum Exploratorium.org (San Francisco, CA) TheTech.org (San Jose, CA): Peter Giles 99</p>	<p>The online museum has evolved significantly in the last decade, with offerings of in-depth information, virtual tours or the museum, e-commerce and interactive Web activities. Institutions like the Exploratorium can have global impact based on significant investment and experience with their web site, while practically every science center now shows local teachers how to connect the science curriculum to the center's exhibits and programs.</p>
<p>Science is an Activity Museum of Science (Boston, MA): Larry Bell 100 Model B</p>	<p>Providing exhibits that help visitors <u>do</u> science rather than just receive information about science is a model used to organize the many of the Boston Museum of Science's areas: <i>Seeing the Unseen</i> gets visitors to observe; <i>Investigate It!</i> gets them to experiment, and other areas involve them in interactive classification, hypothesizing and the other main processes of doing science, using the constructivist method of building their knowledge frameworks through direct experience.</p>
<p>Explainer Intern Programs NY Hall of Science (Corona Park, NY): Alan Friedman 101 Model B</p>	<p>Grant funded programs that bring students onto the floor of museums to help visitors have more meaningful experiences meet two critical needs: inexpensive floor staff paid by others, and workforce training and empowerment for underrepresented populations. Further, one of the best ways of learning is teaching others. Alan Friedman says, "Our programs are for secondary school through college, and I think the continuity of the experience is very important. Many stay with us for six to eight years. The program is broader than just underserved or at risk populations; the term I use is 'underrepresented.' We are trying to encourage interest in science, technology, engineering and math, and teaching for any population that is underrepresented in these fields. Depending on the time and place, those populations may include women, minorities, first generation immigrants, etc. Others who have championed into programs include ASTC, through Youth Alive! and the Exploratorium (which coined the term "explainer")."</p>

<p>Non-Verbal Contemporary Science NY Hall of Science (Corona Park, NY): Alan Friedman 102</p>	<p>The hands-on, experiential nature of science centers creates an expectation in visitors that is at odds with the passive reception of verbal information. Contemporary science is complicated and often requires verbal interpretation to communicate its principles and discuss its social implications. How this happens in a hands-on environment is not clear. Suggestions from Alan Friedman include the use of multiple media and layering, the creation of guided, longer duration but still free choice experiences, and increasing the use of social interactions among visitors and floor staff.</p>
<p>The Connected Museum Unified Field (New York, NY): Eli Kuslansky Design + Communication (Montreal, Quebec, Canada): Claude Parent 103</p>	<p>New technologies are allowing new relationships among visitors, the institution and the broad field of science and technology. The idea of the connected museum as a seamless information web, suggests that the physical exhibits and theaters offered within a museum can be part of a larger network of in-depth information and connections to people and other places. Like libraries, science centers now have the potential of being deep learning resources across time. In this context, the physical elements offer experiences that spark interest in ways not possible on-line, while the easy ability to connect to related information before, during and after the visit allows that spark to grow into lifelong interest.</p>
<p>Is Interactivity a Means or an End? 104</p>	<p>The one common element that visitors want from exhibits is interactivity, according to most of the visitor research studies that have explored the topic. Hands-on involvement with the exhibit has been a prerequisite for science centers since the Exploratorium and Ontario Science Center. But do people really like hands-on interactivity? Or is it something that they think their children will tolerate largely because it puts the kids in control, and not as passive receivers of lectures and information? One problem with interactivity is that it is not a draw in itself. A new fleet of hands-on exhibits will seldom attract a new audience; rather, hot relevant topics such as those for traveling exhibitions and GS films are what draw audiences. Interactivity is an adjective that can make these offerings even more attractive, but so can the involvement of famous names or rare collections.</p>
<p>Citizen Science National Science Foundation (Arlington, VA) MOSI (Tampa, FL): Wit Ostrenko Fleet Science Center (San Diego, CA): Jeff Kirsch 105</p>	<p>Museums are a good conduit for citizen science projects involving amateurs in the collecting and reporting of data. Organizations such as the Urban Bird Studies at the Cornell Lab of Ornithology are partnering with museums, with support from the National Science Foundation and others to monitor migrations, fluctuations in frog populations, acid rain levels and other sampling and reporting steps that involve people in doing real science.</p>
<p>Put Scientists on View Natural History Museum (London, UK): Sir Neil Chalmers 106</p>	<p>Whether a museum has its own research staff or lives in a community with a base of volunteer scientists, including practicing professionals in the exhibit experience can be popular with visitors. If they are provided with the proper training, scientists on the floor can be role models and science ambassadors for the field, as well as passionate spokespeople interpreting the content and making the connections to individual visitors more apparent.</p>

<p>Places for Intergenerational Dialog 107</p>	<p>Eclectic environments with conversation starters for everyone inspires dialog among a visiting group. For most, visiting a museum is a social experience – family, friends, dates, group tours and schools. Exhibits that develop the social experience of groups by engaging, say, a family in a common exhibit interactive create a shared family experience that can be referred to later. <i>Kansas in Miniature</i> is an animated model set fifty years ago in order to inspire conversations between grandparents and children. Social learning among generations can be encouraged by design of the space and by exhibit and program design.</p>
<p>Flexible Classrooms 108</p>	<p>Museum classrooms need to differentiate their value from typical school classrooms, studios and labs. Museum classrooms (see The XX Learning Center) are also under pressure to serve more audiences than just school groups; adult education classes, birthday parties and corporate training rooms need different images and support systems from a fifth grade group. Yet total flexibility becomes bland in any mode. Some balance of adding value through unique features yet remaining flexible should be pursued. A quantified analysis of the potential demand and revenues from each audience sector (school groups, summer camps, etc) and a researched list of features desired by each sector will help guide priorities.</p>
<p>Master Concept Contributed by Jean Saint-Cyr, Design + Communication</p>	<p>“Fundamental to the planning process is the identification of a core idea acting as a connector and framework -- a <i>master concept</i>. Building on the master concept structures ideas, guides the design process, and provides a backbone for the experience. The objective is to provide a high impact, unique and coherent overall experience capturing the soul of the institution and reflecting its community. Many museums have branches and fruits, but no trunks. What I mean -- and what the French call “<i>idée magique</i>” or “<i>idée maitresse</i>” -- is something like a physical framework, like the trunk of the tree. Why can't public spaces become museum experience spaces where we can establish the master concept and provide organization for the rest of the experience?”</p>
<p>Develop Programs First 109</p>	<p>Traditionally, exhibit planners and designers do their thing, and educators and program developers look at it and figure out their programs in response to the exhibits; in the case of permanent exhibits, floor staff are constantly conceiving new programs to bridge between the unchanging exhibits and their museum’s changing and diverse audiences. In some museum settings, interchanges with knowledgeable floor staff score highest on satisfaction surveys. One approach to planning exhibit halls is to start with the live program exchanges with visitors. Programs happen in time and space, and to some extent can appear and disappear. With the right forethought, staff demonstrators can call forth a stage, where once there were only exhibits. Planning a strategic sequence of potential program places is one way to organize a large gallery.</p>

<p>Open Collections Natural History Museum (London, UK): Sir Neil Chalmers</p> <p>110</p>	<p>Opening collection storage areas to visitors on tour, and even through self-guided tours, is generating excitement at the new Darwin Center (Natural History Museum, London) and the Luce Center at the New York Historical Society. Some extremely large collections, like the Canada Science and Technology Museum or the wooden boat collection at Mystic Seaport would need vehicles to move audiences efficiently through them, allowing for interpretation as subtle as a tour guide or as theatrical as a themed dark ride.</p>
<p>“Theater Brings in Audiences”</p> <p>111</p>	<p>This quote from an ASTC participant reflects a widespread belief in theater’s popularity. Despite recent softening in some settings, giant screen theaters in museums still draw audiences to new films, and at the other end of the scale, a good museum storyteller sitting on a bench can attract a crowd of children. Theater quality is not as predicable as exhibits. Good theater draws, while bad theater – which is remarkably easy to achieve – repels. The issue is that audiences are trapped in time; they can’t walk out of bad theater, but they can just skip a bad exhibit; the bad exhibit does not register on their overall satisfaction, but the time wasted trying to listen to a mumbling presenter sure does. In a museum setting, theater offers a change of pace from exhibits: Theater offers a chance to sit, relax, let someone else run things for a while, be passive. Theater also offers the educator powerful tools to create different kinds of learning experiences from collections and exhibits: Linear narrative; emotional and comedic engagement; spectacular effects; and the core of show business – entertainment.</p>
<p>Historic Bias Toward Exhibits</p> <p>112</p>	<p>Museums are defined in both the public and professional minds as places with collections and exhibits. Exhibits have long enjoyed a priority among a museum’s learning methodologies, and this is reflected in an historic bias toward exhibits. Education programs, theater and films are sometimes regarded as ancillary, begrudgingly sustained because the public and supporters want them. Yet, from the learner's perspective, each museum medium has its role, all united by a common mission and the brand. But should family learning centers move beyond exhibits as their central business, and focus instead on learning as their core business, using whatever learning methodology works best among exhibits, theater, programs and on-line media?</p>
<p>True Interactivity</p> <p>113</p>	<p>True interactivity is a two way street. In museums, interactivity has come to mean hands-on activities, even if it is only lifting a flap or pushing a button. On the Web, interactivity promises the user the ability to speak back to the source and affect its next move. What happens when web savvy kids encounter only the one-way interactivity common in most science centers? The odds of engagement decline, and with them the chance to make the experience into an open-ended and personalized learning opportunity. Of course, the best true interactivity is the interchange that visitors have with docents and staff. The challenge is to develop truly interactive (two-way) unstaffed exhibits that are more than a computer terminal.</p>

<p>Smart Museum Craig Rosa (The Tech) 114</p>	<p>The Tech Museum of Innovation offers an optional RF-emitting ID tag that allows visitors the chance to link their on-site experience to their home computers for later follow-up. For instance, visitors can step through a sequence where they are doing real genetic engineering creating bacteria that glow in the dark; a few days later back home, they can log on to see how their Petri dish culture is growing. This image of a glowing Petri dish can also be sent to friends, and the email arrives with a coupon for visiting The Tech.</p>
<p>Web Pals Holly Hughes (St. Louis Science Center) 115</p>	<p>Connecting Nairobi street kids with African American teens in St. Louis is an example of using technology in a museum setting to build understanding across cultures while building skills in communication, scientific experimentation and computer literacy. The teen program run by the St. Louis Science Center started out with a challenge to two teams in each city to run a series of experiments in growing sweet potatoes using genetic engineering, but soon found that just the basics of growing plants was the first step. What mattered in the end -- and what made the program successful with both sets of teens -- were the real personal connections made among the web pals.</p>
<p>Creativity Training Peter Giles (The Tech) 116</p>	<p>Based on their existing Tech Challenges for teens, The Tech (San Jose) is translating some of the challenges they have developed into corporate training programs, much like Outward Bound does. There is currently funding for successful programs training teens after school; can this R&D investment, once field tested by one of the toughest markets – teens outside of school, be leveraged to find new revenues in corporate training? Peter Giles sees that creativity training and team building exercises for corporate project teams might address an important need to build team spirit and commitment among a newly assembled corporate team at the start of a long project.</p>
<p>BUBL Rochester Museum and Science Center 117</p>	<p>The Bathysphere Underwater Biological Laboratory (BUBL™) is a program developed and funded by the Rochester NY area BOCES (a school support agency) in collaboration with the Rochester Museum and Science Center. BUBL is a different take on the Challenger Center program. BUBL takes two groups of kids on a simulated journey that descends to do research projects at the bottom of Lake Erie in two linked bathysphere labs. There are two Doron simulator cabins with a motion based short film experience of the journey “down to the ocean floor,” with observations, sample collections and a few close calls and emergencies along the way. Once down, the kids walk into labs with “views” outside and a list of experiments and tasks, including fixing a part that broke on the ride down. Kids return with a second simulator ride. When not in use by BOCES, the Museum is able to include the simulators in the visitor experience, where they have been among RMSC’s most popular offerings.</p>

MANAGEMENT POLICIES	
<p>Triple Net Accounting 118</p>	<p>The idea that a responsible organization should respond to three bottom lines is spreading to museums. In addition to its economic well-being, museums are starting to monitor their impact on their culture including the staff and workplace conditions and their impact on the environment. The Oregon Museum of Science and Industry tracks five summary indexes: two social, two economic and one environmental.</p>
<p>Simple Focus or Diversified Complexity? <i>Good to Great</i> Roy L Shafer Company, (Columbus, OH): Roy Shafer 119</p>	<p>Should we follow the hedgehog concept (do one thing very well), or that of the fox (do many things craftily)? As we are led to diversify our revenue sources and our range of services (see Servant of Four Masters), is it possible to have a meaningful, focused Core Ideology that embraces the full range of museum activities from publications to curriculum development to travel programs to screenings of Hollywood films in the IMAX to corporate functions rentals? The idea of core ideology is to focus institutional attention on its core business, but if this means turning away revenue, then the approach may get questioned.</p>
<p>Shift from Earned Back to Support Revenue 120</p>	<p>Starting in the '80s, there was considerable pressure to develop our earned revenue, and institutions prided themselves on reaching 80 or even 90 percent earned revenue. Today, institutions are looking at support sources to finance community services that are independent of attendance revenue and ancillary income, such as school services, teen workshops, endowment income and other forms of support revenue. David Ellis reminds us that a balance of sources is needed, with no source dominant.</p>
<p>Know Yourself; Know Your Intent Randi Korn & Associates (Alexandria, VA): Randi Korn Roy L. Shafer Company (Columbus, OH): Roy Shafer 121</p>	<p>A new focus on clarity about who we are, how we want to be seen and experienced by others, and what we intend to accomplish in our communities. This started with a focus on values and core business statements, and has evolved into statements about the kinds of experiences you want to provide visitors, which naturally dovetails with evaluation and visitor research. Core business statements try to encompass everything an institution stands for in a few words, as an institutional mantra, as in “Inspire the Innovator in Everyone” (The Tech).</p>
<p>Sustainability 122</p> <p style="text-align: right;">Model A, B</p>	<p>An old idea that keeps changing definition. Outsiders, often including board members, assume that sustainability refers to covering operating costs through earned income, particularly gate admissions. For nonprofits, however, the term needs to include sustainable support sources in addition to earned revenue. Economic sustainability -- -- meaning steady sources of revenue and manageable levels of expense – is a moving target in the changing economy. Once established, few museums close, so in one sense they can be said to be sustainable; however this is seldom a comfort to managers struggling to meet payroll or retire debt. Science centers constantly need to shift emphasis to make up for declines in some forms of revenue through increases in others or expense reductions.</p>

<p>Mission, Margin & Market Roy L. Shafer Company (Columbus, OH): Roy Shafer 123</p>	<p>Businesses succeed through a successful combination of the related trinity of factors: understanding your core business and values; knowing what you are best at; and finding the economic driver that works in the marketplace.</p>
<p>Economic Drivers <u>Good to Great</u> Roy L. Shafer Company, (Columbus, OH): Roy Shafer 124</p>	<p>The business model of knowing and focusing on your key economic driver has had promising results in business that may be translatable to science centers. Walgreen's, for instance, focuses on the highest profit per customer transaction and the highest number of such transactions, and, while they realize that they have other sources of revenue, these indicators have the most direct correlation to overall profitability. For science centers, the key economic driver has been the average ticket price and attendance volume, but in this economy, the key economic drivers might need to change or be thought of in broader terms.</p>
<p>Desktop Index Monitors Science Museum of Virginia (Richmond, VA): Walter Witschey 125</p>	<p>Once an institution has identified its key economic indexes, on both the revenue and expense sides, some managers are developing a summary reporting process so that top managers can see daily changes to indexes and address immediately any areas that show in red when they vary beyond an acceptable tolerance.</p>
<p>Data Driven Innovation White Oak Associates (Marblehead, MA): Jeanie Stahl Science Center Network (Louisville, Toledo, Richmond, Wichita, Shreveport) 126 Model A</p>	<p>Analysis of operating data, especially when compared with a number of comparable institutions, can identify areas where an institution might be under performing or excelling. Once the data identifies areas that are outside the norm, then the members of a collaborating network can work together to develop innovative solutions that all can share.</p>
<p>Shrinking Budgets 127</p>	<p>The reduction of admissions revenue, the hesitancy of funding sources and the drying up of public funds have resulted in significant cutbacks in cash layouts for marketing and program development and staff layoffs, resulting in low morale and declining hope.</p>
<p>Expanding Non-Admissions Revenue Audubon Institute (New Orleans, LA): Ron Forman 128 Model A, B</p>	<p>As attendance declines and competition increases, finding ways to earn revenue from function rentals, merchandising, food services, program fees, intellectual property rights, franchise ownership and other entrepreneurial sources that maximize existing relationships and the value of the brand may be part of the solution. (See also <i>Servant of Four Masters</i>.)</p>
<p>Professional and Leadership Development 129</p>	<p>Our field has often relied on outsiders to fill staff positions, with the net result of needing to train them in the way museums work. Certainly there are benefits of new perspectives, but there are also inefficiencies and errors made. Museums are surprisingly complicated operations, especially to businesspeople used to single-minded focus and independent operations.</p>

<p>Matrix Organization Charts Museum of Science (Boston, MA): Ioannis Miaoulis 130</p>	<p>There are several new ways that science centers have been thinking about staff relations and how different departments and efforts can better work together. The old org chart model is hierarchical, while new ones favor interdepartmental projects and connections among staff that are not all routed upward through executives and managers. Some of these charts look like concentric circles, with the visitor in the center, while others are more like orbits, with projects for the future on one side and current operations on the other and lots of connections across the center. Matrix organization charts allow for ad hoc collections of expertise appropriate to particular projects and encourage staff to work in different combinations from the old departmental silo model.</p>
<p>Local Back-of-House Consolidation Chattanooga Museums 131</p>	<p>In difficult economic times, some museums are collaborating with other museums in their area to consolidate some back-of-house functions like human resources, purchasing, insurance and other common administrative expenses that can be pooled and centralized.</p>
<p>Strategic Pricing 132</p>	<p>Admission fees for science centers have traditionally been kept low, while aquariums, art museums and other institutions have somehow justified higher costs to the public. Price resistance and elasticity are testable in the marketplace through visitor research and through trials; yet science centers are hesitant to move from traditional fixed, even dollar prices toward admissions policies that are as flexible as airlines or as high-priced as aquariums and commercial entertainment centers.</p>
<p>Team Project Management NY Hall of Science (Corona Park, NY): Alan Friedman 133</p>	<p>The development of museum programs and exhibits are team efforts, and our profession needs to develop roles and expectations for team members' participation in projects. "A small team of four to five people, perhaps a content specialist, a designer, an engineer/fabricator and evaluator, with project management vested in one or more of those individuals, is capable of focusing on a certain amount of detail; perhaps ten separate elements of presentation (ten distinct experiences for the visitor) might be a reasonable yearly output for this team," says Alan Friedman. Larger projects would assume more teams and a management structure.</p>
<p>Tax Levy Cincinnati Museum Center (Cincinnati, OH): Douglas McDonald St. Louis Science Center (St. Louis, MO): Douglas King Museum of Nature and Science (Denver, CO): Tom Swanson 134</p>	<p>Institutions with strong citizen support can successfully pass tax levies that add a millage tax to city or county personal taxes. St. Louis has joined other museums to assure free admission to the exhibit halls through a tax levy. Denver's museums use millage as a subsidy to keep them operating, but do not offer free admissions. Cincinnati recently responded to an emotional appeal to help keep up Union Terminal that houses several museum experiences. This was a cause citizens could agree to, as the historic structure's maintenance was a clear need. The tax levy will generate \$3.6 to \$3.8 million per year.</p>

<p>Focused Operating Hours COSI (Columbus, OH): Kathryn Sullivan, PhD. White Oak Associates (Marblehead, MA): John W. Jacobsen</p> <p>135 Model A, B</p>	<p>Recent economic problems have caused some museums to shorten their operating hours, yet this tactic may be an efficient way to concentrate attendance while reducing operating expenses in healthy museums. No one likes visiting a museum when it is empty, and every museum has its valleys. In some small markets, the valleys are low enough to create an unsatisfying visitor experience for those few who show up. Theaters, civic centers and sports arenas are widely regarded as successful by their communities, yet they are closed much of the time; but when they are open, there are crowds.</p>
<p>Stop Calling it 'Unearned' 136</p>	<p>The language we use can set us up for difficulties. Labeling the two parts of a museum's revenue as earned and unearned, or even worse calling the support portion an operating subsidy, turns the museum's fund raisers into beggars and supplicants. Successful museums attract support funding because they offer their sponsoring investors real value for their capital or operating contributions. To be sustainable – to happen year in and year out – every revenue source needs to be mutually beneficial. Supporters have to want to continue their support and to feel that you are offering better value than the other non-profits.</p>
<p>Cycle-tuned Governance 137</p>	<p>We feel a lot of heat when the subject of Board relations comes up, but hear no agreement on a single solution. From the perspective of a large, well-established science museum, David Ellis feels the Board needs to be active in its oversight of management, making sure debt and other risks are appropriate. Other museum directors want the Board to set policy, raise funds but stay out of management, yet start-ups often need board members to dive into staff responsibilities. The Carver Model of Policy Governance is very good for established museums and delineates one possible division between management and board. In practice, a museum may need different kinds of board relationships at different stages of the cycle from development, to growth, to stability, to decline and to rejuvenation and over again. When this cycle took twenty years, the Board could evolve, but when it takes only five, board member expectations/terms may not change fast enough.</p>
<p>Incur No Debt Dennis Wint (Franklin Institute) 138</p>	<p>Scratch the surface of a financially troubled museum, especially one with a new building or addition, and you are likely to find debt. Not just debt to cover some long-term pledges, but debt to cover a shortfall in fund raising, which is often described as debt to complete a construction project. Such debt is sold at the time by the promise of the campaign gifts to come and the surge in attendance revenues after opening the new facility. However, no museum runs enough in the black to retire any amount of substantial financing, as the real estate folks call debt. Debt also tends to be long term, and does little to endear the director who incurred the debt to the future directors who are saddled with it.</p>

Do Not Encumber Your Successor

Dennis Wint (Franklin Institute)

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Museums are meant for the ages, while staff come and go. Of course museums need to evolve, even revolutionize, but personal idiosyncrasies should not be institutionalized. Through personal connections, a children's museum got Frank Gerry to design a most outlandish expansion, with a huge price tag; then that director left, and the in-coming director was expected to raise the money for the project, which no longer had a champion. It took years for the idea to die before a wiser expansion could be pursued. The most troubling are the long-term promises: "Give money to this capital campaign, and we'll never need to come back to you," said one museum's founding chairman, confounding his successors.