

## **Reinventing a Natural History Museum for the 21<sup>st</sup> Century**

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**Given this critical time in the history of our species, natural history museums have a responsibility to become wholly relevant to people’s lives, providing profound insights into natural systems, and presenting alternatives as to how humans can better live in the world. The Utah Museum of Natural History (UMNH) at the University of Utah, Salt Lake City, is in the process of “reinventing” itself, with the above challenges foremost in mind. This process includes a major capital campaign aimed at building a new facility on a 16-acre site adjacent to the campus. Considerable attention has already been given to philosophical aspects such as vision and mission, informed by discussions with interested communities outside the museum. The new mission of the UMNH is to “illuminate the natural world and the place of humans within it.” As envisioned, this perspective will be presented using two fundamental, complementary themes — ecology and evolution—with the ultimate objective of facilitating new perspectives on nature and culture. All museum activities are currently being re-evaluated so as to reflect this philosophy. Rather than subdividing exhibits along traditional disciplinary lines, exhibitions in the new facility will be integrated, interpreting, for example, the workings of entire prehistoric and recent habitats in a web of life approach. The museum expects to serve as a place of convocation and meaning for the community, and more thoroughly to integrate traditional “front-of-house” and “back-of-house” activities. Even the building — conceived as a green, ecologically “intelligent” facility — will be interwoven into the message, becoming perhaps the most featured exhibit. Throughout, emphasis will be on the intermountain region, with visitors strongly encouraged to use the Museum as a starting point to help them connect with the marvelous natural history of the region.**

The Utah Museum of Natural History (UMNH), a member of the University of Utah system, was established in 1963 to create a central location to house various natural history collections held in disparate locations on the campus. The UMNH opened to the public in 1969, following conversion of a 1930s, Depression-era, library building (Fig. 1). Today, the museum serves as the state museum of natural history. It houses more than one million objects divided into three major collections — anthropology, biology, and earth sciences — representing all of the natural sciences, with a strong emphasis on Utah and the surrounding intermountain region. Currently, the UMNH has 35 full time and 15–30 part time staff, in addition to more than 300 volunteers. In addition to the active research conducted by four curators and several affiliated “research curators,” the exhibits and education departments are both involved in dynamic programming that reaches throughout the state. Total space within the museum building is 87,000 ft<sup>2</sup>, of which 24,000 ft<sup>2</sup> is devoted to col-

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FIGURE 1. The current Utah Museum of Natural History facility on the campus of the University of Utah. Photo by Jill Schwartz.

lections and 28,000 ft<sup>2</sup> to exhibits. In recent years, it has become increasingly evident that the present facility is wholly inadequate to support the growing collections and diverse activities of the museum. Specimen collections are now filled to capacity, staff and volunteers are overcrowded, the organization of space does not meet current needs, and visitor parking is limited to only 12 stalls!

The UMNH is now engaged in a major capital campaign aimed at a new and larger facility. The proposed building will be 169,000 ft<sup>2</sup>, approximately doubling available area. Also planned is an underground parking facility with 200 stalls. The new building will be located on a spectacular 16-acre site adjacent to the campus, situated at the interface of Salt Lake City and the Wasatch-Cache National Forest on the Wasatch Front mountain range. Nearby will be several other cultural attractions, including an arboretum, zoo, and park. At the time of writing (October, 2003), it is estimated that the new facility will be completed in less than five years, at a total cost of approximately \$60,000,000. Three consulting firms have been hired to aid in the initial planning and programming phase — a project facilitator (Hanbury Evans Wright + Vlattas, Norfolk, VA), an architectural planner (E. Verner Johnson and Associates, Boston, MA), and an exhibit planner (Ralph Appelbaum Associates, New York, NY). Master plans for architectural programming and exhibits are scheduled for completion by summer of 2004. The next phase, design selection followed by the actual design, will be completed by early 2006. Finally, we expect construction of the building and exhibits to be finished by fall of 2008, at which time we will open to the public.

The museum has used this time of radical physical change to reflect upon its vision and mission and literally “reinvent” itself, reassessing basic goals and philosophies. Along the way, we

have sought answers to several fundamental questions. What is the role of a natural history museum in the 21<sup>st</sup> century? In particular, how can we become more relevant to our community, both residents and visitors? What are the major issues that most need to be communicated to the general public? How can we best foster understanding of these issues? The remainder of this paper focuses on this process of inquiry and presents some of the answers that have surfaced. It is important to note that many, perhaps most, of these answers presented here are not unique to the UMNH. Other institutions of natural history around the country (e.g., California Academy of Sciences, Monterey Bay Aquarium), and indeed around the world, have begun to address similar issues in parallel fashion. This is no coincidence. Clearly the time has come for natural history museums to dramatically increase their relevance, given the many critical issues facing humanity, most of which are inextricably linked to natural history.

## NATURAL HISTORY IN CHANGING TIMES

### **Traditional Natural History Museums**

Traditional natural history museums can be characterized on the basis of a number of features. First, exhibit, education, and research programs tend to be organized around distinct scientific disciplines — for example, biology, geology, and anthropology. This could be called the “ology” approach. Second, exhibits tend to be object-focused. That is, the objects themselves form the basis of the message. So, for example, a dinosaur fossil, stone tool, or insect collection would include such pertinent specimen information as name, age, location, and perhaps, in the case of living animals, a brief synopsis of lifestyle. Third, traditional museums tend to have abrupt distinctions between public and private areas — that is, between “front-of-the-house” and “back-of-the-house.” Finally, relevance to community often has not been made explicit. Natural history museums have been places where people come largely to see natural and cultural objects. The primary message has concentrated on the past and present, with minimal regard to the future.

Increasingly, museums of all types are realizing that a fundamental change in philosophy and approach is necessary, in part due to growing competition amongst institutions for leisure time, but more importantly due to the state of global environments (see below). Consequently, there is a growing shift toward greater relevance, with ongoing efforts to increase the value of the museum experience. In the words of museologist Stephen Weil (2002),

Museums are quintessentially places that have the potency to change what people may know or think or feel, to affect what attitudes they may adopt or display, to influence what values they form.

But how do we go about making natural history museums more relevant, active members of their respective communities? Relevance should be a measure of how well an institution is able to meet the most pressing needs of its community. So what are those needs?

### **Global Crisis and Science Literacy**

Life on planet Earth is in crisis. Paleontologists recognize five previous mass extinctions, and it is now clear that we are in midst of the sixth such extinction. During the past century, the rate of species extinction has skyrocketed, reaching levels 100 to 1000 times greater than those prior to the arrival of human civilization. To date, biologists have formally named and described less than two million species, with an overwhelming emphasis on large-bodied forms. Estimates of the total number of living species range from 10 million to over 100 million, with 30 million being a common approximation. Between 10 and 40 percent of this vast, little understood diversity is now

imperiled. The current range of biological diversity, a product of millions years of evolution, is being extinguished in mere decades. At present rates of extinction, over half of the species currently in existence will be extinguished by the close of the 21<sup>st</sup> century. In the words of E.O. Wilson (2002),

It takes a long time—millions of years—to create species as fully developed as the ones around us. . . We are destroying species a hundred times faster than they could be created, even if we left the environment alone. We are doing the equivalent of drawing hard on our bank account; and you can't draw down on your bank account at a hundred times the rate you're putting new money in without going broke very fast.

The unique aspect of this particular mass extinction is that it is being precipitated by a single species, *Homo sapiens*. The United Nations World Resources Institute recently completed a project entitled "Pilot Analysis of Global Ecosystems (PAGE)." Involving 170 scientists representing a broad array of disciplines, this study concluded overwhelmingly that this ecological crisis is being driven by human activities. With regard to habitats, almost 60% of coral reefs are threatened; more than half of the world's wetlands have been destroyed; 80% of grasslands are imperiled as a result of soil degradation; and 20% of drylands are in danger of becoming desert. The causes of this dramatic, widespread environmental degradation are many, including deforestation, global warming, overpopulation, spread of toxic pollutants, and overexploitation of animal species. As noted in the quotation above, we are spending our environmental capital at an unprecedented rate. Without a radical and virtually immediate shift in global priorities, we are destined for ecological bankruptcy.

To compound matters, recent polls indicate that most people do not even realize that we are in the grip of a sustainability crisis, one that threatens the majority of species on this planet, including our own. On the contrary, we continue to hold onto the erroneous, outdated notion that endless economic growth is not only possible, but the preferred course of action. This remarkable level of ignorance can be attributed to a variety of factors. In the United States, as in Europe, most people live in cities and, therefore, are far removed from the natural systems that sustain us. And, apart from, or perhaps better stated, despite where they live, most people have enough difficulty dealing with the present — earning a living, raising children, meeting monthly payments on homes, cars, and the like, and in many instances simply meeting the needs of their daily diet requirements — that the future, perforce, is left to take care of itself. As a consequence, and because ecological change is a long-term phenomenon, typically on the order of decades, our society is not geared to fathom, let alone respond, to such long-term changes. Perhaps most importantly, however, there has been a failure of education, not only in these United States but in nearly every country worldwide. More specifically, in the United States, numerous recent studies underline the general lack of basic knowledge relating to the sciences. For example, in a recent Gallup poll on evolution (Alters and Nelson, 2002), 45% of Americans chose the response, "God created human beings pretty much in their present form at one time within the last 10,000 years." Only 35% those polled believed that "the theory of evolution is supported by evidence." The science literacy problem extends to those with university degrees as well, including science majors, inasmuch as most post-graduate education is concentrated on specialized training aimed at specific careers rather than the development of better community citizens (Orr 1994). Even for individuals with a basic knowledge of the current sustainability crisis, there is a tendency to believe that science will simply be able to solve any and all ecological problems that we encounter. As noted by environmentalist David Suzuki (1997), "the deep-seated beliefs and values of modern culture are both creating these problems and blinding us to their consequences."

### **Shifting Paradigms**

Specialization within the ranks of science has a lengthy history. Science has traditionally viewed nature through a mechanistic, clockwork perspective that has fragmented and compartmentalized the natural world into increasingly smaller topics of study. This perspective can be traced back to sixteenth century thinkers like Galileo and Descartes, who effectively founded the scientific method. The reductionist mindset has dominated science for four centuries, producing remarkable insights into the structure and function of the universe, from the cosmic scale down to the subatomic. It has also had obvious technological applications in areas such as communication, travel, and medicine. Within the academic realm, entirely new disciplines have continually emerged as scientists focused their efforts on successively smaller units of nature. Thus, within biology, fields of inquiry include ecology, systematics, developmental biology, physiology, cytology, genetics and molecular biology. Yet the separate disciplines recognized throughout science are largely artificial constructs—categories that relate more to how the natural world has been compartmentalized and scientific research has been practiced than to how the universe itself is structured. Moreover, in addition to its many successes, this practice of fragmenting nature has severely limited our ability to comprehend the inherent interconnectedness of nature.

The underlying assumption for these four centuries has been that if only we could dissect nature to its smallest components, all would become clear. In the twentieth century, however, many problems across numerous disciplines appeared intractable because of their sheer complexity. How can we predict the pathway of a subatomic particle, shifts in weather patterns, or ecological dynamics given all the contributing factors in each case? Increasingly, it was realized that an understanding of the components alone is insufficient. Rather, the key is often determining how those various components interact with one another.

Over the past three decades, a large-scale paradigm shift has been underway, creeping through the ivory towers of science. In contrast to its aged predecessor, this radical new view is all about connections (e.g., Capra 1996). Today, numerous disciplines are feeling the effects of this change, becoming increasingly integrative and holistic. We are actually seeing a reverse trend, with the unification of once separate fields into new disciplines, with names like geobiology and biocomplexity. Much effort is now devoted toward unveiling the complex, web-like connectedness that links all living and non-living systems. Chaos and complexity theory are both intellectual offspring spawned from this integrative outlook. Emphasis is now being directed toward such topics as dynamic systems, feedback loops, and networks.

This enlarged perspective, encompassing the entire forest, offers unique and deep insights never conceived of while concentrating solely on the trees. It turns out, however, that although this view may be new to modern science, it has an ancient pedigree dating back centuries, and probably millennia. Indigenous peoples around the world have a lengthy tradition of viewing nature through connections, of seeing themselves as fully embedded within life's web. Science and western cultures, long distracted by a mindset devoted to fragmenting the natural world, are now returning to this ancient wisdom. Given the current crisis of sustainability, such a perspective is needed more now than at any other time in the history of our species.

### **Natural History Institutions in the 21<sup>st</sup> Century**

So how do we go about making institutions of natural history more relevant, increasing their potential to change attitudes and perhaps even worldviews? Given the issues presented above, one of the most pressing needs common to virtually all communities in this country is higher levels of science literacy, particularly as it relates to issues of local, regional, and global sustainability. These

issues are applicable to any community, because they can be addressed from a variety of levels. Of course, despite the grave nature of the current situation, the message need not (and should not) be one of gloom and doom. Rather it should always be founded on hope, tempered with pathways toward solutions. Confronted with the current state of the planet, visitors should receive a variety of options describing how they as individuals can be part of solutions. In addition to science literacy, another critical need is to increase peoples' level of engagement with nature, fostering what E.O. Wilson has termed "biophilia," or a love of nature (Wilson 1984). As noted by several commentators, people are unlikely to save something they do not love.

Importantly, institutions of natural history (museums, science centers, aquaria, zoos, and botanical gardens) are in perhaps the best position to fulfill these needs. Far more than public schools and universities, they have the potential to immediately take a holistic, connections-based approach to natural history, thereby enabling people to understand human interactions with the natural world. In doing so, such institutions can promote both the dissemination of knowledge and a sense of engagement with nature. Through their programs, they even have the potential to influence school curricula in positive directions. In sum, natural history institutions have the opportunity to lead the way in filling this education gap.

A key first step is to consider adoption of a more synthetic view of nature, one that moves away from traditional "ologies" and integrates scientific disciplines, in accordance with the scientific paradigm shift described above. For natural history museums, emphasis then shifts from an object focus to connections and relationships among objects. In other words, whether the objects are butterflies, potsherds, or dinosaur bones, the message is about context — in particular, ecological and evolutionary context. In contrast to traditional views, there might be a blurring of distinction between public and private areas within the museum. Importantly, greater focus would be placed on the future. Specifically, objects from the past and present time would be used to inform visitors about future likelihoods, often surrounding important and problematic issues. Ultimately, then, this new museum would have direct relevance to the lives of its visitors. Below we detail how the UMNH is in the process of adopting exactly this approach.

## UTAH'S NEW MUSEUM OF NATURAL HISTORY

### **Natural History and the Intermountain West**

Rather than adding band-aids to an aging physical and conceptual framework, the Utah Museum of Natural History has the rare opportunity of envisioning an entirely new museum with a philosophy that directly reflects changing times and the needs of local communities. The UMNH has the great advantage of being intimate with nature. The majority of Utah's population, including Salt Lake City and surrounding communities, is situated in a restricted region along the Wasatch Front mountain range. Within 15 minutes, one can drive from the core of downtown Salt Lake City into one of several mountain canyons. Within 30 minutes, one can experience habitats relating to the entire water cycle, a situation that is perhaps unique for a major urban center in this country. Moreover, Salt Lake City is literally surrounded by diverse and wondrous examples of natural history, occurring as it does at the confluence of three major ecological regions: the Great Basin, the Colorado Plateau, and the Wasatch/Uinta Mountains. Within five hours drive is Yellowstone Park (to the north) and the Grand Canyon (to the south), and closer still, within the state boundaries, are ten national parks including such world famous locales as Canyonlands, Arches, Zion and Bryce Canyon. Therefore, unlike the great majority of urban areas within the United States, residents and visitors in Salt Lake City need not limit their experience of nature to

a natural history museum. Rather the museum has the potential to serve as a portal, enabling visitors to encounter the surrounding landscape in new and exciting ways. The question then becomes, how do we go about making these experiences a reality?

### A New Mission

Realizing that all museum activities should cascade from the institution's mission, the staff of the UMNH reexamined this fundamental statement to develop a more integrative perspective. After much discussion with staff, volunteers, board members, and other constituencies, the core mission was reconceived as follows: "*The UMNH illuminates the natural world and the place of humans within it.*" Within that philosophical foundation, we then defined several subsidiary goals:

- Foster an understanding of science as a journey of discovery and wonder.
- Promote the preservation of biological and cultural diversity.
- Preserve collections in trust for future generations.
- Encourage new perspectives on and inspire passion for the natural world.
- Celebrate Utah's native peoples and cultures.
- Showcase Utah's unique and extraordinary environments.
- Create knowledge through innovative research.
- Demonstrate the myriad links connecting the past, present, and future.
- Transcend scientific disciplines to reveal the networks inherent in nature.
- Serve as a center for science literacy, acting as a bridge between the scientific community and the public.
- Empower people to make thoughtful decisions about the future.

In short, this mission recognizes the need for the Museum to become directly relevant to the community, to encourage people to engage with nature in new ways, and to make informed choices about issues relating to natural history. In addition, the revised mission fully embraces the ongoing paradigm shift in science described above, seeking to break down traditional disciplinary boundaries and present the natural world from a connections-based, web of life perspective.

### The Story of Life

Science is perhaps best communicated through stories, since they are an effective means of presenting information in an engaging manner. So, given the institution's revitalized mission, what is the primary story that will best serve our needs? Ultimately, it was decided that two related themes — ecology and evolution — best communicated our message in a unified manner. At its essence, ecology is the web of life, the totality of all the intricate, interwoven relationships that connect all organisms and their environments. Key ecological concepts include feedback loops, energy flow, chemical recycling, and sustainability. Evolution, in contrast, is change through time, the history of life's web, including a range of short- and long-term processes that, together with ecology, have generated the wondrous world around us. Important evolutionary concepts include mutation, natural selection, adaptation, and symbiosis.

Although traditionally separated for educational purposes, these two themes are truly inseparable from Nature's perspective. Ecology without evolution is largely a description of the relationships within a given ecosystem. Lacking any reference to time and origins, these relationships appear two-dimensional. Conversely, evolution without ecology is often restricted to Darwinian natural selection, an examination of long-term processes and effects. Without the infusion of an ecological outlook, evolution is virtually irrelevant to the daily lives of humans. Unified into a single, powerful perspective, these complementary themes provide a refreshing window through

which to view all of nature. Importantly, these two themes do not exclude other areas within the natural sciences. Rather they are fully inclusive, encompassing all aspects of natural history. The key departure here is one of perspective, broadening the focus to search for links instead of dissecting the world into its component parts. I emphasize here that the UMNH is not alone in walking this new path; other institutions have also embraced this revised philosophy.

Envision walking into an exhibit hall with three large dinosaur skeletons of Late Jurassic age (about 150 million years ago). One is a menacing predator, *Allosaurus*, the others a long-necked herbivore, *Apatosaurus*, and another plant-eater with plates and spikes, *Stegosaurus*. At first glance, the scene looks just like many others recreated in museums around the world. Looking closer, however, you see that there are also fossil remains and reconstructions of various other Late Jurassic animals from western North America — turtles, crocodiles, mammals, even insects — as well as a range of plants, from low-lying ferns to giant conifers. Rather than simply naming the organisms, the interpretative information concentrates on the role that each played in this ancient habitat, from the plant producers to the various animal consumers. Building upon concepts presented elsewhere in the exhibits, visitors learn of the cyclical flow of energy that characterized this Mesozoic ecosystem. Also addressed is the possible coevolutionary relationship between conifers and dinosaurs, with the trees and the long-necked herbivores achieving enormous sizes at approximately the same time earlier in the Mesozoic, perhaps at least partially in response to this plant-herbivore interaction.

In sum, the long-term plan of the UMNH is to dispense with the traditional halls of paleontology, botany, zoology, and anthropology. In their place will be a series of exhibitions with more integrative themes that will offer a truly connected perspective on the natural world. In particular, the dual and complementary concepts of ecology and evolution will enable us to tell the biggest story of all — that of who we are, how we got here, and our intimate links with nature.

### Short-Term Effects

Big ideas are one thing, implementation another. Certainly, wholesale change of an institutional philosophy is a nontrivial task. It became clear to the museum staff early on that we could not maintain the traditional style of communication in the face of this new mission. As a result, the UMNH has been going through a (sometimes awkward) growing process as we attempt to redefine ourselves, with much higher levels of integration between and among divisions. For example, over the past two years, curators have spent considerably more time interacting with education, exhibits, and communications staff than in years previous. We have also focused tremendous energy on consensus building, with committees and teams often composed of individuals with varying talents across departments. The primary goals of this strategy are greater efficiency, higher levels of creativity, and greater communication through the establishment of within-museum networks. This process has also involved regular consultations with interested constituents on campus, in the regional Salt Lake area, and around the state. In particular, we are proud of the relationship developed with regional native cultures through both an active Indian Advisory Committee and ongoing consultation with Utah's native nations. The UMNH anthropological collections span the human history of the region, and they have particular importance for the living native peoples of Utah. Thus these collections must be managed and programmatically interpreted within the context of that relationship.

This philosophy has led to productive partnerships, expressed most fully in an exhibit entitled *Utah's First Nations*, which ran during the 2002 Winter Olympics.

Importantly, while keeping one eye on building a new institution, we realized that the funda-



mental shift in our programs must occur in and beyond our present, more limited facility. Thus we have built several in-house exhibits of a more integrative nature, in part to try a variety of approaches and test gauge audience response. One of these highlights the geology, flora, fauna, and human history of a major laccolith feature in southern Utah known as the Henry Mountains. The exhibit interweaves these topics, demonstrating how each is intimately related to the others. Integrative outreach programs have grown five-fold in as many years, with new programs such as *Field Crates*, *Museum on the Move*, and *Scientist in the Classroom* reaching the most remote communities in the state. In another example, the UMNH has partnered with faculty in the Department of Geology and Geophysics to initiate a major educational program sponsored by a substantial grant from the National Science Foundation (GK-12 program). Project WEST (Water, Environment, Science and Teaching), as it is called, will team eleven graduate students from the University of Utah with public school teachers over a period of four years. The resulting classroom and fieldtrip activities aim to communicate key environmental issues to students throughout targeted regions of Utah, using water as a theme.

### Public Collections

In the traditional museum setting, visitors confront boundaries that separate public programming from research and collections areas. Although collections and research form the conceptual basis for most natural history museums, their associated activities are largely hidden from public view, making it extremely difficult for these institutions to incorporate collection resources into their educational programming. Museums have sought to circumvent these problems through such efforts as building fossil preparation laboratories in public spaces, placing more objects on display, or by providing “virtual” electronic access to collections. Nonetheless, the traditional boundaries between programming and collections have remained firmly in place. For the vast majority of museum visitors, direct access to collections is entirely precluded or, at best, restricted to infrequent special events.

To overcome these issues, we envision an innovative program that will facilitate new ways of integrating collections resources into public programming. One means of achieving this goal is to develop specific inclusive themes, select representative specimens from within each collection, and then provide visitors access through a directed tour. The variety of themes is essentially endless and would be developed jointly by collections and education staff. Perhaps the most obvious candidates are places: for example, the Wasatch Mountains or Arches National Park. Classes of students, and perhaps public tours, would be guided through the various collections areas, witnessing firsthand some of the museum’s holdings relating to that particular place. The docent might first highlight the rocks and related geological activities that formed ancient soils. Next she/he could introduce some of the native plants from the botany collection. Then it might be to the entomology and vertebrate collections to address pollinating insects and birds, culminating with the archaeological remains in order to address human occupation of the area. Once again, emphasis would be placed on the connections between collections (e.g., source rocks for making stone tools, bird-insect-plant interactions) rather than simply the objects themselves. To enhance the experience further, some of the specimens chosen from each collection would be touch specimens. In each collection area, permanent storage units would be set aside to showcase materials selected for a particular theme. Themes would change regularly to provide a fresh perspective or to enhance other museum programming such as temporary exhibits.

### **A Building with a Message**

In keeping with the vision of integrating all aspects of science and illustrating connections among disciplines, we envision that the new museum building will be “green” and “ecologically intelligent.” That is, following recent architectural successes elsewhere, we are considering a building that serves as a model of sustainable design. Possible features include: 1) state-of-the-art, sustainably harvested building materials; 2) alternative energy sources such as geothermal cooling systems; and 3) waste recycling employing communities of microorganisms. These green design components and others — for example, seismic protection — will allow visitors to gain an understanding and appreciation of the building’s ecology. In this way, the building itself will be featured as a primary exhibit and educational tool, suggesting alternative choices that minimize environmental impact.

The location of the building will also be a key element in its message. The planned site, nestled into the Wasatch Front mountain range (Fig. 2), commands a spectacular view of Salt Lake City and its surrounding valley, including the Great Salt Lake and the Great Basin Desert. It also occurs at the boundary of the city and the National Forest, a literal and symbolic interface that will be featured in the new Museum. Appropriate use of windows will not only offer spectacular views, but also provide opportunities to connect the museum’s primary story directly with the surrounding area.

### **A Museum Without Walls**

The 16-acre site on which the new museum will be situated offers additional opportunities for exciting, hands-on interpretation. With the guidance of docents, visitors will be invited to experi-



FIGURE 2. The site of the planned museum facility, situated at the nature/urban interface between the Wasatch Mountain Range and Salt Lake City. Photo by Derek Smith.

ence the habitat surrounding the building. Key features include the rocks (tectonic history of the Wasatch Front) and various lifeforms — bacteria, fungi, plants and animals adapted to the arid desert habitat. Taking advantage of the remarkable vistas, telescopes could be used as aids to help contemplate such topics as climate change, urban sprawl, and water use (through the Great Salt Lake). A nature path up the mountainside will take more intrepid visitors through a series of montane communities. They might be able to choose between a docent lead tour or a leisurely walk on their own, with interpretive signage adding to the experience. In this way, the UMNH will blur the boundary between inner and outer worlds, encouraging visitors to see the latter with new eyes (Fig. 3).



FIGURE 3. Concept rendering of proposed landscape gallery in new museum facility by Ralph Applebaum Associates, Inc. Features include visible collections, a functioning, hands-on “Rock Lab” accessible to visitors, and a viewshed interpreting the surrounding terrain.

Given the great size of the Utah, many citizens will never come to the Museum’s physical location. Therefore, in order to fulfill our mandate as the state’s natural history museum, the UMNH must engage in active outreach. Fortunately, we already have several successful programs firmly in place, such as *Museum on the Move* and *Scientist in the Classroom*. These efforts have been augmented by traveling exhibits that are loaned to schools and nature centers throughout the state. In addition, the UMNH plans to greatly increase its website presence, reaching audiences in Utah, the intermountain west, and beyond. Among other offerings, the website is expected to include virtual exhibits, curriculum materials developed as part of education programs, and photographs of objects in the collections.

### **A Place for Convocation and Creativity**

In keeping with the goal of greater relevance, the UMNH plans to become a center of convocation for the local community, a place where key issues relating to natural history are presented and opened for further exploration. We hope that the new museum building will serve as a location for meetings of organizations such as natural history societies and other interest groups, facilitating discourse on topics related to the Museum’s mission. Public lecture series and open discussions could address such difficult topics as water and land use, among others. These series could also be linked to temporary exhibits presenting key elements on all sides of the debate.

The University of Utah, an RU-1 institution, offers many fine opportunities for productive linkages. As part of the University of Utah community, the UMNH is working toward stronger ties with various academic departments. These include a number of departments directly related to natural history, including Biology, Geology and Geophysics, and Anthropology. A planned rotating exhibit space in the new museum will feature ongoing campus research of direct relevance to natural history. In addition, a variety of nontraditional university connections are being explored. For example, students in the Department of Architecture have played with various design concepts for the new museum as part of their curriculum. Moreover, although we have just begun to make contacts with Fine Arts faculty from such departments such as Music, Theater, and Modern Dance, these conversations have already fostered creative ideas about incorporating performance space into the new museum as a novel means of interpreting natural history. In the long run, a key goal of the UMNH is to strengthen its role as a window between the university campus and the outside world.

### CONCLUSION

Natural history museums and related institutions are ideally positioned to help forge a path toward greater science literacy and engagement with nature. The UMNH has taken up this challenge with a new, integrative philosophy and plans for a vibrant new home on the margin of the University of Utah campus. The museum is fortunate in being situated in an area of magnificent and easily accessible natural diversity, and we plan to use this remarkable proximity to help achieve our goals. While recognizing the importance of a new building, we also understand that any true connection with nature will not occur in enclosed spaces, even a magnificent new museum. Only through direct, hands-on interactions with landscapes are people likely to forge strong, long-lasting links with the natural world. In accordance with this view, we view the museum largely as an interpreter, helping people understand the language of nature and thereby enable them to experience natural environments with revitalized senses. We hope that this description of an ongoing adventure in re-envisioning a natural history museum will aid similar institutions as they contemplate their respective futures.

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