INTERPRETIVE EXHIBIT DESIGN IN PUBLIC GARDENS:
THEORY AND PRACTICE

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ABSTRACT

Many public gardens struggle with interpreting their collections to their visitors. This study examines interpretation through the exhibit development process, highlighting today’s best practices with underlying theories inherent in interpretive exhibit design. The goal is to make interpretation an easier and more effective process for public garden professionals.

To understand the exhibit design process and examine real world approaches to this process, case studies were conducted with four leading institutions: the Bronx Zoo, the Cleveland Botanical Garden, the Desert Botanical Garden, and the United States Botanical Garden. Published journal and newspaper articles, internal documents, and in-depth interviews with relevant staff and consultants were all used to gather information on the case studies. The case studies were then analyzed within the context of existing literature, including interpretive planning models and museum educational theory.

Several themes emerged from the case studies. Having an understanding of underlying educational theories used in the planning process and acknowledging these theories helps exhibition planners appropriately design educational exhibits. Creating a solid planning structure, such as tying the exhibition to the institutional mission and creating exhibition themes, is helpful during exhibit development. Many organizational management issues were recognized as important factors in the design process, including positive team building, strengthening leadership, and fostering positive organizational culture. Design and planning issues, including planning for interpretation during the design process and leaving some exhibition areas without interpretation, are important to success. By using and building upon these ideas and continuing with future research in exhibit development, public gardens can strive to
create unique and meaningful interpretive exhibits with the ability to effectively fulfill their educational missions.
BIOGRAPHICAL SKETCH

Originally from the piedmont of Virginia, Jenny spent her whole childhood in the foothills of the Blue Ridge Mountains. There she developed an early appreciation for nature while roaming around her family’s farm. As an undergraduate, Jenny earned a B.S. in Biology with a double major in Theatre from Mary Washington College in Fredericksburg, Virginia. Despite her seemingly disparate interests, she has finally succeeded in connecting those passions through the art and science of public gardens.

After college, Jenny pursued a career in environmental education, working in subtropical marine ecology and leading students of all ages on educational snorkeling adventures. She had the opportunity to live in both the Bahamas and the Florida Keys for several years and developed a strong appreciation for subtropical flora and plant ecology.

Jenny discovered the public garden field through an internship at the Rhododendron Species Botanical Garden in Federal Way, Washington. There she was introduced to the fundamentals of botanical garden collections and curation.

In January 2004, Jenny began a fellowship in Public Garden Management at Cornell University. Over the past three semesters, she has studied a diversity of subjects related to public gardens and completed an internship in exhibit development at the United States Botanical Garden. After graduation, Jenny hopes to return to the Southeastern United States to pursue a career within the public garden field.
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CHAPTER ONE
INTRODUCTION

Rationale

The motivation for this project began from personal observations while visiting public gardens. In many cases, I have found that the only information available at botanical gardens is in the form of plant labels. As a visitor, I often had questions about the garden and specific plants, and without taking a tour, the answers to my questions were difficult to find.

As a child and young adult, I visited many museums, cultural institutions, and National Parks. I have experienced all types of interpretive exhibits, from long signs with small type and no pictures (that I never read) to interactive, highly engaging devices (that I was reluctant to leave). Unfortunately, most interpretation that I have experienced at public gardens tends to be closer to the former description.

With these observations, I earnestly began to investigate interpretive exhibits at public gardens. I started talking with garden educators and examining exhibits, both in person and through journal articles or websites. In many cases, I found that planning for educational exhibits came as an afterthought, tacked onto collections in what I call “the icing on the cake” format. Concurrently I also noticed that there were many in-depth studies, publications, and discussions about interpretive exhibit development at other types of museums. This included art and science museums, children’s museums, zoos, and aquaria. This type of in-depth research is limited within the public garden field. (The annotated bibliography in Appendix C lists some of the existing public garden resources.) Through this study, I hope to expand the research available within the field of public gardens.
What kind of institution is a public garden?

While I believe that the public garden community can learn an enormous amount from other cultural institutions, there are certain factors that differentiate public gardens from other cultural institutions. Public parks and public gardens have several similar features, including: 1) they are both open to the public; 2) most parks and many public gardens are out of doors; and 3) most public gardens and many public parks emphasize natural resources. Unlike parks, public gardens contain curated collections that are similar to museum collections. The American Association of Museums (AAM), in their *Code of Ethics for Museums* (n.d., para. 2), states:

Museums make their unique contribution to the public by collecting, preserving, and interpreting the things of this world. Historically, they have owned and used natural objects, living and nonliving, and all manner of human artifacts to advance knowledge and nourish the human spirit... Their numbers include both governmental and private museums of anthropology, art history and natural history, aquariums, arboreta, art centers, botanical gardens, children's museums, historic sites, nature centers, planetariums, science and technology centers, and zoos.

As defined by AAM and for the purposes of this study, the niche that public gardens occupy falls somewhere within the museum community. Within the museum field, public gardens are most closely aligned with zoos and aquaria by virtue of possessing living collections. However, zoo and aquarium collections focus on moving animals, while garden collections focus on stationary plants. The inherent differences between plants and animals are what separates public gardens as a distinct and unique entity from zoos, aquaria, and the rest of the museum community. Therefore, some zoo, aquarium, and museum standards for interpretive exhibit development may be applicable to public garden situations; however, many of these standards may not apply to a garden’s specific situation because of the differences inherent in plants versus animals and other nonliving collections.
Public gardens exist on the cusp of two worlds, museums and public parks. As a result, two separate bodies of literature have emerged, one from the interpretive planning field, which originated in the National Park Service with Freeman Tilden’s book *Interpreting Our Heritage* (1957). The other relevant literature has come from the educational museum field. Both bodies of literature apply to designing interpretive exhibits within public gardens. However, neither of these two bodies of literature adequately address the specific needs found in public gardens, which include possessing living plant collections, facing challenges associated with outdoors environments, and providing explanation for complex scientific educational topics. Additionally, little research has been done specifically within the public garden world itself (see Appendix C: Annotated Bibliography for relevant sources). For these reasons, I will be drawing on literature and research taken from both interpretive planning and educational museum theory, and each are being examined separately within the context of the literature review.

The main focus of this research is on four case studies at leading institutions recently involved in exhibition development, including the Bronx Zoo, the Cleveland Botanical Garden, the Desert Botanical Garden, and the United States Botanic Garden. As a means of directly addressing the public garden field, I used these case studies as primary references for examining interpretive exhibit design. The Bronx Zoo was included as an example of an excellent interpretive exhibition as well as a comparison between the public garden field and similar institutions. Extensive interviews were conducted with staff and consultants involved in the exhibition development process. (The transcripts of these interviews are included in Appendix B: Interview Transcripts.) These interviews along with institutional internal documents serve as primary references when analyzing the case studies within the context of other existing literature.
Definition of Key Terms

As a means of assimilating the literature from both interpretive planning and museum education, it is useful to identify the primary vocabulary associated with each field. Interpretation is used to describe much of the educational programming that occurs at any organization that communicates informally with visitors (Brochu, 2003). These organizations are typically public parks, nature centers, museums, historical sites, and public gardens. Sam H. Ham, a resource recreation and tourism professor at the University of Idaho, in Environmental Interpretation (1992, pp.3), defines interpretation as “simply an approach to communication.” This communication is generally divided into two categories: staffed services, such as guided tours or workshops; and self-guided services, such as interpretive signage, audio tours, or brochures (Jones-Roe, 1986). The focus of this study deals primarily with self-guided interpretation.

At the same time museums, to describe similar self-guided educational programs, use the words exhibition or exhibit; an exhibit is generally described as one component of a larger exhibition, such as a sign or interactive display (Miles, Alt, Gosling, Lewis, & Tout, 1982). An exhibit, as defined by The American Heritage Dictionary of the English Language (2000, para. 3), is “a public showing.” John Veverka (1994, pp. 124), an interpretive planner and author of an interpretive planning guide, defines an exhibit as, “an array of cues purposely brought together within defined boundaries for a desired effect.” He continues (1994, pp. 125), “An exhibit is interpretive if it makes the topic come to life through active visitor involvement and extreme relevance to the everyday life of the viewer.” Therefore, an interpretive exhibit is a public display that communicates and has been designed following interpretive principles. Successful interpretive exhibits and exhibitions may take many different forms, from one interpretive panel; to a self-guided trail with
interactive stations; to a large exhibition that immerses the visitor in a particular ecosystem. They may or may not contain living plant material and may be indoors or outdoors. For the purposes of this study, I am referring to exhibits only in the form of interpretive exhibits or exhibitions. The case studies have been chosen to represent a variety of approaches and contexts to interpretive exhibit design.

For the purposes of this paper, the following definitions will be used in relation to interpretive exhibit design within public gardens:

- **Interpretation**: A communication process that forges emotional and intellectual connections between the interests of the audience and the inherent meanings in the resource (National Association for Interpretation [NAI], n.d., para. 2).

- **Interpretive planning**: The decision-making process that blends management needs and resource considerations with visitor desire and ability to pay (with time, interest, and/or dollars) to determine the most effective way to communicate the message to targeted markets (Brochu, 2003, pp. 3)

- **Exhibition**: The series of displays dealing with a particular theme, e.g. Impressionist Art or Human Biology (Miles et. al., 1982, pp. 186)

- **Exhibit**: A single unit within an exhibition, e.g. a display case or an audio-visual; a public showing (Miles et. al., 1982, pp. 186; The American Heritage Dictionary of the English Language, 2000, para. 3)

- **Interpretive Exhibit**: a public display that has been designed with interpretive principles and that communicates by providing for active visitor involvement and extreme relevance to the everyday life of the viewer
Assumptions

Traditionally within the public garden field, interpretation has consisted along a continuum from plant labels within the garden to museum-type exhibits that are completely separated from the garden. In many cases, it appeared that the interpretive efforts were merely tacked onto existing garden spaces or plant collections with little forethought given to their planning or design. Lisa Brochu, an interpretive planning consultant, suggests (2003, pp. 108):

It would be much less expensive to incorporate interpretive planning at the beginning of the process when building a new site or facility. Architects and landscape architects tend to be receptive to interpretive input if it comes before design decisions have been made. Once those decisions have been made, however, it is often difficult to convince the architect/landscape architect team to make changes. Worse yet, interpretation is often an afterthought, considered only after the site or facility is fully constructed.

Additionally, exhibits have traditionally been designed without the input of educators or without consideration for the interests of the visitors, as noted by Susan Normandia in her thesis on exhibit design (1985, pp.90):

Currently, many exhibits are designed backwards. They originate in the mind’s eye of a designer and are based on an idealized view of how visitors should behave…To ensure exhibit effectiveness, educators and evaluators must be engaged in the design process from the beginning.

In order to plan effectively and be competitive for our visitor’s attention, public gardens must start to look at what interests their visitors and provide positive and engaging visitor experiences. Businessmen Joseph Pine and James Gilmore’s book, The Experience Economy (1999), describes the shift from a service driven economy to one which values memorable experiences. They describe experience as “a series of memorable events that a company stages—as in a theatrical play—to engage [the visitor] in a personal way” (1999, pp. 2). While primarily they focus on for-profit businesses, the “Experience Economy” theory is highly applicable to cultural institutions. As Pine (2005, pp. 15-16) describes:
Of course, cultural institutions such as horticultural centers, museums, botanic gardens, and nature centers have *always* been in the experience business. Experiences are not new; what *is* new is that most every business is now getting into the experience business. So the emerging Experience Economy means that the bar is raised on all experience stagers everywhere—and cultural institutions most of all, for they have generally resisted any impulses that smacked of commercialism...Therefore, it is crucial for cultural institutions to think differently today than they have in the past. If you do not, then you will consign your great institution to a stagnant backwater of the Experience Economy, unable to fulfill your great mission of exposing visitors to precious places or amazing artifacts and of expanding knowledge under your care.

This study is based on the premise that 1) interpretive exhibit planning should be considered from the beginning of the design of a space; 2) educators, design professionals, and horticulturalists should be involved in the exhibit planning process; and 3) public gardens must look at the exhibit experience from the visitor’s perspective.

**Purpose of Study**

This study aims to bridge the gap between interpretive exhibit development in other disciplines and the practices being employed in the public garden world today. This will be accomplished by 1) compiling relevant literature from a variety of disciplines that are applicable to public garden settings, including interpretive planning, educational museum theory and research, educational theory, and existing public garden interpretive planning and exhibit design studies; 2) using the existing literature as a framework for examining four interpretive exhibitions as case studies; and 3) recommending best practices for interpretive exhibit design specifically for use in public gardens, based on the existing literature and the four case studies.
CHAPTER TWO
LITERATURE REVIEW

Within the last few decades, public gardens have started to experiment with interpretive methods of presenting educational opportunities to visitors that are well designed and planned. Within public garden literature, very little has been written about educational exhibit design that integrates both interpretive planning models and relevant educational theories; the most relevant literature has come primarily from either museum literature in the form of educational theory or from practical interpretive planning guides.

In the following literature review, a discussion of learning in museums and museum educational theory is examined with implications for the exhibit development process. Next, the literature review focuses on a discussion of interpretation and its traditional principles. Interpretive planning is then examined along with considerations used in most interpretive planning models. Finally, a discussion of innovation is explored with implications for achieving more effective exhibits in a public garden.

What is learning in a public garden?

Public gardens (as part of the museum community) are considered free-choice learning environments; that is, visitors largely come by their own choice and are thus intrinsically motivated. They engage in activities in a self-directed manner, and therefore, their methods of learning are varied (Hooper-Greenhill, 1999a) and wholly different than methods of learning in the classroom. “…Learning in museums is a byproduct of ‘fun’ oriented activities that are self-directed, self-paced, nonlinear, exploratory, and often social/family motivated” (Screven, 1992, pp. 188). In many
cases, visitors do not even come to the garden primarily for education, as described by Rice (2001, pp. 49):

Because museums are more and more being used as recreational, leisure-time, social environments, not all people come to museums in order to learn. Thus, in some situations the task of the museum educators may be to move people who have come with a different agenda, into becoming learners. In the task of moving people from a recreational agenda to a learning-centered agenda, there is no better motivator than a powerful aesthetic experience. A theory of learning that integrates into it the function of motivation is ultimately one that can reconcile affective experiences with the construction of meaning.

Rice is describing the integration of intrinsic motivation into a theory of learning. According to Perry (1992), requirements for an intrinsically motivating museum experience include the ability to instill curiosity, confidence, challenge, control, play, and communication in the visitor’s experience. To achieve intrinsic motivation, the learning theories underpinning how visitors learn and how these theories impact a garden’s interpretive efforts must first be explored. These theories have drastically changed over the past one hundred years of public garden and museum history, and consequently, interpretive planning needs to change as a result.

**Learning Theories**

Before interpretation as a field was defined, education existed within cultural institutions primarily as the job of the curator. Exhibits were largely developed by curators, who in many cases preferred to concentrate most of their energies on collections rather than education (Hein, 1998). Additionally, museums were not held to strict accountability, as public schools were. “Museums, although equally public institutions in most countries, did not establish similar approaches [as public schools] to assessing impact on their clients. It was assumed that people would learn, be enlightened, and be entertained by their visits to museums without any reference to the study of visitors’ experiences” (Hein, 1998, pp. 5). The prevailing learning theories of
the time are described in *The Educational Role of the Museum* (Hooper-Greenhill, 1999b, pp. xi):

> During the nineteenth century, and for much of the twentieth, education was mainly understood as the delivery of information to learners whose task was to absorb as much as possible. Knowledge was understood as objective, external to the knower, and transferable. In the museum, this led to authoritative, didactic displays, frequently arranged to illustrate conventional epistemological hierarchies and classifications.

This is what George Hein, in *Learning in the Museum* (1998, pp. 25), refers to as “didactic, expository education” and “stimulus-response education.” He adds:

> Contributions to didactic, expository education come from exhibitions that are sequentially arranged, with a clear beginning and end, in an intended order for visitors. Didactic labels and panel texts distill what is to be learned. Information is presented in small discrete steps, arranged in order, usually from the simplest to most complex. Here the focus is primarily on content to be taught (Hein & Alexander, 1998, pp. 40).

Together, these two theories of education loosely make up the behaviorism model and were the prevalent educational theories of the Twentieth Century (Hein & Alexander, 1998).

**Behaviorism** models are drawn from traditional classroom practices and have also been used to design exhibits. These exhibits are often filled with facts and have a clear beginning and end. They are drawn strictly from formal classroom settings and many educators are now realizing that this model may not be the best suited for learning within a museum. “We have failed to address the problem of the nature of museum learning, by continuing to use models of direct teaching drawn from the classroom” (Anderson, 1995, pp. 22).

Within the past three decades, other learning theories have become prevalent in museum exhibitions. Along with the change in theories, an altered definition of learning itself has come into play. “Learning is now seen as an active participation of the learner with the environment…and therefore, [museums] become central to any educational effort when the focus shifts from the written word to learners’ active
participation through interaction with objects” (Hein, 1998, pp. 6). These newer theories include John Dewey’s Experiential Learning theory, Constructivist theory championed by George Hein, the Contextual Model of Learning by John Falk and Lynn Dierking, and Howard Gardner’s Multiple Intelligences theory.

**Experiential Learning Theory**

The underpinnings of museum exhibitions as we know them today began with the Experiential Learning theories of John Dewey. Although Dewey was focused mainly on formal school settings, in *Experience and Education* (1938), he advocated for the use of a learner’s personal experience as a basis for teaching and learning rather than the behaviorism view of a static learner. In a museum setting, the implication is that visitors will take individual meaning from exhibitions based upon their individual previous experiences and their present experience in the museum. Dewey also acknowledged the continuity of personal experience; that one experience builds upon the previous. Within a museum, this implies that visitors’ learning is not a static operation, and learning is an ongoing, lifelong process. He also recognized the relationship between a learner’s context and the way in which they learn. In a museum setting, this means that the museum environment influences a visitor’s learning.

**Constructivism**

Constructivist theory is focused on activity and builds upon some of the basic premises of Experiential Learning theory. George Hein states (1999, pp. 76):

Proponents of constructivism argue that learners construct knowledge as they learn; they do not simply add new facts to what is known, but constantly reorganize and create both understanding and the ability to learn as they interact with the world. Further, the knowledge that is constructed through this
process is individual or social, but has no ontological status outside the mind of the knower.

This has many implications when considering the applications in a museum setting. “In meaning making, visitors contribute a great deal of their own “raw material” to the construction of the text” (Silverman, 1999, pp. 11). Furthermore, visitors “construct” their own knowledge from the meaning in the exhibit (Hein, 1998). This leads to a different focus when considering exhibit planning. “Constructivist educational theory argues that in any discussion of teaching and learning the focus needs to be on the learner, not on the subject to be learned. For museums, this translates into the dictum that we need to focus on the visitor, not on the content of the museum” (Hein, 1999, pp. 78). A shift in emphasis, from the content of the exhibit to the visitor who is viewing the exhibit, is inherent in this theory.

**Contextual Model of Learning**

John Falk and Lynn Dierking, museum educators and experts on free-choice learning, proposed a model of learning specifically for use in free-choice learning environments. They state (2000, pp. 10-11):

> The Contextual Model involves three overlapping contexts: the personal, the sociocultural, and the physical. Learning is the process/product of the interactions between these three contexts...Learning, as well as its constituent pieces, is ephemeral, always changing. Ultimately, then, learning can be viewed as the never-ending integration and interaction of these three contexts over time in order to make meaning.

This theory of learning accounts for far more contexts than any of the previous theories and is specifically aimed at museum type learning. Falk and Dierking (2000) acknowledge that there are numerous factors which influence learning within a museum, including: personal motivation and expectations; visitors’ knowledge, interests, and beliefs; the visitor’s ability to choose their learning; dynamics of the visitor’s group (i.e. a family group); facilitated learning (i.e. docent interactions); pre-
arrival orientation; design; and reinforcing events outside of the museum. The success of the museum learning is varied and based upon the successful implementation of these eight factors. For effective learning to take place within a museum or public garden, all eight of these factors should be considered when planning for interpretive exhibits.

Multiple Intelligences Theory

Howard Gardner’s Multiple Intelligences theory recognizes the different learning styles within visitors to museum exhibits. He proposes that:

…There are at least seven (and no doubt more) different intelligences that manifest themselves [in people] in various configurations of differing degree. They are: (1) linguistic (out of which writers and poets are made); (2) logical-mathematical, which traditionally leads to success in school, and of which scientists are made; (3) musical; (4) spatial (pilots, architects, chess players, and surgeons exhibit these skills); (5) bodily kinaesthetic (in which the body serves as the agent for solving problems or fashioning products—dancers or mechanics exhibit this intelligence); (6) interpersonal (understanding other people, exhibited by salespeople and therapists); and (7) intrapersonal (understanding self) (Davis & Gardner, 1999, pp. 100).

He posits that museums, when considering educational opportunities, should cater to people of all intelligences, thus making exhibits more widely accessible to all types of learners (Davis & Gardner, 1999). These multiple intelligences should also be considered when planning for interpretive exhibits.

Learning Theories and Interpretive Exhibit Design

When considering interpretive exhibit design, Experiential Learning theory, Constructivist Learning theory, the Contextual Model of Learning, and Multiple Intelligences all contribute different perspectives of how visitors learn within a public garden. Understanding learning and the theoretical underpinnings are key to creating a more effective and engaging interpretive exhibit.
**Interpretation**

*What is (and is not) interpretation?*

In 1957, Freeman Tilden, a writer and naturalist, initiated the field of interpretive planning through his definition of interpretation as, “an educational activity which aims to reveal meanings and relationships through the use of original objects, by firsthand experience, and by illustrative media, rather than simply to communicate factual information” (1957, pp. 8). Conversely, his definition also reinforced what is not considered interpretation. Interpretation is not simply delivering factual information; it must make connections between the audience and what they are observing. Although Tilden’s definition is still widely used, changes within prevailing educational theory have led to refinement of his definition. Today the philosophical field of hermeneutics, which “tries to understand how we understand” (Storr, n.d., para. 1), along with Constructivist Learning theory has taken the visitor’s role into account.

The word “interpretation” is used in...[hermeneutics]...to mean how individuals make sense of things. The process of interpretation focuses on the mental activity of the looker...There is a major difference between the way the words are used in hermeneutics and in the museum. In the museum, interpretation is done for you, or to you. In hermeneutics, however, you are the interpreter for yourself. Interpretation is the process of constructing meaning (Hooper-Greenhill, 1999a, pp. 12).

Although only a slight shift in emphasis, this realigns the way interpretive planners must consider exhibit development. Exhibit designers must consider both the interests of the visitor as well as the objects of interpretation. The National Association for Interpretation has defined an adequate working definition of interpretation which takes both the visitor and the interpreted object into account. They state (n.d., para. 2), “Interpretation is a communication process that forges emotional and intellectual connections between the interests of the audience and the inherent meanings in the
The recognition of the visitor is a powerful shift for the development of interpretive exhibits. Interpretation is generally considered part of the educational field, but it is profoundly different than most educational processes. Traditional education begins in the classroom and is generally referred to as formal learning. Butler and Serrell (2001, pp. 15) state, “...formal learning takes place in a planned way at a recognized institution such as schools, colleges, and universities. Learning is not self directed.” Conversely, interpretation generally occurs outside of the classroom and is generally referred to as informal education or free-choice learning. According to Falk and Dierking (2000, pp. xii), “Free-choice learning tends to be non-linear, is personally motivated, and involves considerable choice on the part of the learner as to what to learn, as well as where and when to participate in learning.” Consequently, free-choice learning generally will follow its own sets of principles, not readily applicable in a traditional school setting. In the past, the downfall of some interpretive exhibits has been their adherence to the same principles used in formal learning settings. The result is often a non-engaging, under-utilized exhibit.

What are the traditional principles & guidelines?

Freeman Tilden, in Interpreting Our Heritage (1957), was the first person to define interpretation as a field and present a corresponding set of guidelines on how to develop interpretation. The six principles, still widely used today, are:

1) Any interpretation that does not somehow relate what is being displayed or described to something within the personality or experience of the visitor will be sterile. 2) Information, as such, is not Interpretation. Interpretation is revelation based upon information. But they are entirely different things. However, all interpretation includes information. 3) Interpretation is an art, which combines many arts, whether the materials presented are scientific, historical or architectural. Any art is in some degree teachable. 4) The chief aim of Interpretation is not instruction, but provocation. 5) Interpretation should aim to present a whole rather than a part, and must address itself to the whole man rather than any phase. 6)
Interpretation addressed to children (say, up to the age of twelve) should not be a dilution of the presentation to adults, but should follow a fundamentally different approach. To be at its best it will require a separate program (1957, pp. 9).

While these principles have been refined and built upon by numerous experts, his guidelines still serve as a primary reference for interpretive planners.

Since Tilden, numerous other interpretive planning models have been developed by professional interpretive planners (see Appendix C: Annotated Bibliography for a listing of several additional models). Although these models all vary in the organization of the planning process and its emphasis, they generally agree on basic considerations when going through the interpretive planning process. The following is a discussion of some of these considerations with a brief look at their implications for interpretive planning.

**Interpretive Planning**

Interpretive planning is a tool for getting to the desired outcome or to an effective interpretive exhibit. It addresses the main questions concerning your exhibition: who, what, why, where, when, and how (Veverka, 1994). It helps to organize goals, concerns, ideas, and thoughts. Planning will bring out contentious issues in the exhibition, and identify possible solutions (Brochu, 2003). It can also help to raise money; by having a well-thought out planning document, the garden’s intentions are transparent to a possible donor (Brochu, 2003). Effective interpretive planning allows for a more efficient use of the institutional resources in the long run, thus allowing for more successful and engaging exhibitions (Brochu, 2003). Ideally, interpretive planning should occur during the design of the garden space (Brochu, 2003; Normandia, 1985); in this way, the design and the interpretive opportunities are holistically considered to achieve the best results. The following are some of the main considerations for interpretive planning.
Considerations for Interpretive Planning

Institutional Mission, Vision, and Philosophy

Interpretive planning should stem directly from the institution’s core mission and other supporting documents, such as a vision or philosophy (Brochu, 2003). Otherwise the exhibition and its interpretation do not relate directly to the institution itself, and visitors have a difficult time understanding what the garden is about. This also gives legitimacy to the purpose of the exhibition by supporting the goals for the institution. According to Charlotte Jones-Roe (1986, pp.10), “Interpretive planning should follow the goals and philosophy set forth in your institution’s master plan…this is a good time to clarify themes and evaluate present offerings to determine whether they contribute to the purpose of the organization.”

Exhibition Mission, Themes, Goals, and Objectives

Many interpretive planners recommend creating an interpretive or exhibition mission statement in addition to the institutional mission (Veverka, 1994). According to Veverka (1994, pp. 44), an interpretive mission statement should state “who you are…what you do and…why you do it.” Goals and objectives will help you know where you are going and the specific outcomes that you are striving for when designing an exhibit (Butler & Serrell, 2001). Specifically, “…goals are broadly stated desires of what is to be accomplished or the general idea of what is to be learned. Objectives are the clear statements of the activities required to achieve the goals” (Butler & Serrell, 2001, pp. 19). It is important to note that goals do not have to be measurable; they are broadly stated. However, objectives should be measurable and help to achieve the goals (Brochu, 2003; Veverka, 1994).

Many planners suggest creating and writing a theme for the exhibition to focus the exact communication messages (Veverka, 1994). As a result, it then becomes
easier to distinguish what information should be included in the exhibition based on the proposed theme. Additionally, Ham (1992, pp. 34) states, “Research has shown that when audiences know the theme in advance, not only are they more apt to pay attention to the rest of the presentation, but they’ll remember more of it later.” Stating the theme will help visitors understand the purpose of the exhibition.

**Visitor Studies**

Visitor studies are “framework[s] for thinking which empowers organisations to meet the needs of their visitors” (Visitor Studies Group, n.d., para. 1). Studies may include visitor behavior patterns; how exhibition design affects visitor understanding; how exhibitions affect visitor attitudes or interests; and evaluation techniques, among multitudes of other information that may be gathered about visitors and their interaction within cultural institutions (Screven, 1993). Visitor studies are increasingly becoming a means by which to assess how well an exhibition is achieving its targeted goals, and on-going research is allowing exhibit developers and designers to make better and more informed decisions with regard to the exhibit design (Screven, 1993). The following are some of the most common considerations within the field of visitor studies.

**Audience**

Basic demographic information can provide general information about a garden’s audience, such as ages, where visitors are from, group composition, sex, socio-economic information, and use patterns of the site (Butler & Serrell, 2001; Veverka, 1994). It is important to realize who is visiting the garden (or who the institution wants to visit the garden), so that the exhibit is delivered in the most appropriate manner to those audiences. The garden may also try to
reach diverse groups through different types of interpretive media (Jones-Roe, 1986).

**Visitors’ physical needs**

“Comfort is a necessary, although not sufficient, element for learning in museums” (Hein & Alexander, 1998, pp. 11). Guests must be psychologically comfortable and relaxed to enjoy the garden, made possible by easy wayfinding and orientation (Hein & Alexander, 1998; Thomas, 1986). The garden or museum must provide ample restrooms, shade, water fountains, refreshments, and other physical needs. Without feeling comfortable, it is doubtful that any educational messages will get through to visitors. It is also important to consider that orientation to the garden begins before the visitor’s arrival, often called **advanced organizers**.

Visitor studies suggest that visitors often are confused, both about their physical surroundings and about the conceptual content of exhibitions. Informing them explicitly in advance what they are going to see, what they might find, or what the intention of the exhibition is makes them more comfortable, more able to engage with the exhibition, and therefore, better able to learn. Advance organizers extend the concept of addressing visitor comfort to facilitate learning (Hein & Alexander, 1998, pp. 13).

Advance organizers include directions to the garden as well as any brochure or websites viewed before the visitor steps in the garden (Thomas, 1986).

**How long do visitors spend at an exhibit?**

A general rule of thumb is “few museum visitors spend a relatively long time in exhibitions” (Serrell, 1998, pp. 36). Various studies have been conducted on the amount of time that visitors spend at exhibits, and it is clear that the longer a person spends in an exhibit, the more rewarding their
experiences will be (Serrell, 1998). However, getting the visitor to spend any amount of time within your exhibition is extremely difficult. In general, visitors spend 30 seconds to 3 minutes at one exhibit component (Connolly & White, 2003). In a different study, “The average and median time spent by visitors to 82% of the 110 exhibitions, regardless of size, was less than 20 minutes” (Serrell, 1998, pp. 35). In the same study, visitors stopped at an average of only one-third of the exhibit components (Serrell, 1998), suggesting that visitors will not be exposed to every piece of information in an exhibition.

The same study also discussed what elements led visitors to use more exhibit elements and move more slowly through an exhibition. The four most thoroughly used exhibitions had only one commonality: they were all object based. Otherwise, factors of their success included good press, admission fees, high intrinsic appeal, good design, design for the average visitor, and repetition of the big ideas (Serrell, 1998). Serrell states about these four exhibitions (1998, pp. 42), “Many visitors apparently found their careful attention to the objects and other multi-modal interpretive experiences rewarding. Visitors’ time-consuming behaviors in these exhibitions are indicative of learning and enjoyment.” It is also important to consider that attention to exhibits “declines sharply after about half an hour” (Hein & Alexander, 1998, pp. 14). Keeping all of these statistics in mind when designing is important to the educational impact of the exhibition.

**Resources of Institution**

It is important to know before the development process what resources are available at and around the institution. These may include anything from your plant collections, resources particular to the site (i.e. a historic house), other environmental
attributes (i.e. interesting weather patterns), facilities, staff, volunteers, funding availability, and other community resources (Brochu, 2003; Veverka, 1994). Charlotte Jones-Roe (1986) suggests identifying the resources available at the institution and putting them into a resource volume to be available for staff use later. Additionally, Brochu (2003) recommends conducting an analysis of resources to determine “the implications of the information, indicating appropriate directions for taking action in light of those implications” (pp. 54). The following are a few of the resources that institutions should identify, visited in more detail.

**Funding**

The funding available for the exhibition will obviously have a large impact on the outcomes. Brochu (2003) suggests budgeting approximately $300 per square foot of exhibition space for a mix of exhibits ranging from interpretive panels to interactive exhibits. This figure, however, does not account for planning and design which should add approximately thirty percent to the fabrication figures. However, it is important to consider that good exhibition planning does not necessarily require large amounts of funding. Ham notes (1992, pp. 236), “…no study has ever found a relationship between the amount of money spent on an exhibit and its communication effectiveness.” Innovative approaches are guided more by creativity, not budget. Additionally, outside sources of funding such as grants should be considered. Donor support as well as internal funding also plays a large role.

**Staff & Volunteers**

Undertaking any planning process should have the support of the staff. Ideally, changes in programming and planning should involve and/or be initiated by key decision makers. The contribution of information and ideas
from all relevant staff members should also be encouraged (Jones-Roe, 1986). It is important to consider who, from the garden’s staff, should take part in the interpretive planning process. Planning teams may range from a few people to the entire staff of an institution, depending on the specific organization and their particular project. Many planners suggest designating a project leader or manager, who is responsible for the ultimate implementation of the exhibition (Veverka, 1994).

Other advisers, focus groups, and public involvement

If the required expertise is not available within the institution, it is wise to consider hiring outside experts, or use focus groups to assist in the development process. Additionally, some planners encourage including members of the public in the process to represent the variety of diverse audience needs.

Collections

“Botanical gardens have a unique responsibility to use living plants for teaching” (Connolly & White, 2003, pp. 28). While it seems obvious that a garden’s plant collections are part of their resources, many times the plants are overlooked. Janet Marinelli, in her article “Bringing Plant Conservation to Life,” (2001) points out a variety of ways to use plant collections for engaging interpretation, including telling interesting plant stories, being proactive, communicating positive messages, and explaining complex scientific topics.
Other community resources (other local museums, educational institutions)

In some cases, partnerships with other educational or cultural institutions may be beneficial. Playing to the strengths of each partner lends itself to stronger interpretive efforts and shared responsibilities. In this way, smaller institutions can achieve projects that would normally be beyond their resources. However, it is important to consider the effort and dedication required for a truly successful partnership (Pastore, 2000).

Media and Methods

According to Brochu (2003, pp. 125), “…media is anything that helps you communicate your message.” This may include but is not limited to signs, brochures, audio or video presentations, interactive stations, touch-screen computer programs, graphics, landscape or facility design features, food service, sales items, dramatic productions, playscapes, or art (Brochu, 2003). When considering options for the delivery method of the exhibit, Charlotte Jones-Roe (1986) suggests listing all options including the pros and cons of each. This list should include both staffed and self-guided services. In many cases, planning for self-guided services goes hand-in-hand with planning for guided services and may involve similar considerations. It is not always advisable or worthwhile to separate one from the other.

The activity levels of participants should also be considered. “Visitors remember about: 10 percent of what they hear, 30 percent of what they read, 50 percent of what they see, [and] 90 percent of what they do” (Lewis qtd. in Veverka, 1994, pp. 10). During the development of Eco-Carts at Missouri Botanical Garden, the staff selected an active instructional style, “By encouraging them [the visitors] to touch, smell, and handle objects we can open minds and stamp the messages we deliver into visitors’ memories” (Mintz & Rode, 1999, pp. 25). Conversely some
exhibits may be successful without physical participation (Bitgood, 1994). Bitgood also found that (1994, pp. 10), “While hands-on exhibits may be preferred by visitors (especially children), it does not guarantee ‘minds-on’.” It is important to consider not only whether visitors actually use the exhibit in question, but also whether they are actually learning from the exhibit. In many cases, the best way to find out is through evaluation.

**Evaluation**

Despite the best intentions, many times exhibitions do not provide the messages that they intended (Mintz & Rode, 1999). Visitors may not be looking at or interacting with an exhibit, or occasionally the intended message is not as clear as previously thought. The best way to find the effectiveness of an exhibition is to actually ask visitors through various evaluation techniques. Generally, three types of evaluation are used: **front-end**, to discover visitors’ knowledge levels before exhibition development begins; **formative**, testing of exhibit design while it is still in development; and **summative**, used to determined how effective the exhibit is after it is open to the public (Brochu, 2003).

There are many different recommended methods for conducting evaluation. (Some resources for the best methods are described in the annotated bibliography in Appendix C.) Formats used may include exit interviews, exit questionnaires, follow-up phone calls, tracking studies, visitor observation, comment cards, and a variety of other methods (Butler & Serrell, 2001; Hein, 1998). It is generally recommended that a portion of the exhibition development budget be set aside for evaluation at many different intervals throughout the planning process (Jones-Roe, 1986). This includes a portion to be used for summative evaluation after the exhibition has opened to the public. This also includes budgeting not only for the evaluation costs but for possible
changes in the exhibit. Likely there will be revisions or repairs that should be made after observing how the public interacts with some of the exhibit components. It is also important to note that although evaluation funds should be budgeted, they do not always have to be expensive. A study conducted on the evaluation of certificate programs at public gardens found that all of the study subjects conducted in-house evaluations for less than 10% of the entire certificate program budget (Warsowe, 2004). Gaining feedback into the exhibition is one of the most important steps to determine whether the exhibition is meeting the intended goals and objectives.

**Innovation**

It is possible that exhibit developers can educate themselves about current learning theories, follow all recommended interpretive planning strategies, and still produce a boring, non-engaging exhibit. The separation between a truly wonderful, fresh exhibit and a hum-drum, everyday exhibit is innovation.

The concept of innovation is one way to achieve the extraordinary. Elaine Dundon, founder of The Innovation Group Consulting, Inc., defines innovation as (2002, pp.1), “the profitable implementation of strategic creativity.” She claims that innovation is more than just creative problem solving; it also involves strategic thinking and transformational thinking. Strategic thinking involves how the creative idea fits into the organization; whereas transformational thinking is the implementation process of the creative idea. It is important to realize also that innovation does not apply to just new technologies, new products, or certain processes. “[Innovation] can be applied as well to existing products, services, or programs, or the processes an organization uses to plan and manage its activities” (Dundon, 2002, pp. 1).
Within a public garden setting, successful innovation can lead to better exhibit development processes; more effective means of communication with our visitors; or simply better educational programs. A recent issue of the *Public Garden* (Vol. 19, No. 1; 2004) highlighted innovative methods of communication, including web pages, handheld media guides, hands-on exhibits, and summer camps. By consistently striving for the extraordinary, public gardens can lead the way for better, more effective interpretive exhibits.
CHAPTER THREE

METHODS

Choosing Case Studies

I chose to look at specific examples of interpretive exhibition development through four case studies. These case studies were chosen for a variety of reasons. First, they were chosen to represent a range of media choices. Media examples range from traditional interpretive signage to computer touch screens to commissioned art. Additionally, they represent a range of time frames. The oldest exhibition opened in 1997 and the newest exhibition is scheduled to open in late Spring 2005. The case studies also represent a range of environments. One study contains no plant material; two exist out of doors, and one is inside of a glasshouse. Each of the cases studies used vastly different exhibit development processes. Lastly, the examples represent both wholly new exhibitions designed from scratch, and exhibitions that were retrofitted onto an existing landscape and with existing collections. These examples were chosen to exemplify the great breadth of diversity found in the public garden field.

On a final note, one of the case studies represents a zoo. Although this study is aimed at the public garden world, it seemed appropriate to examine the exhibition development process in a zoo in order to have a comparison between the public garden field and other similar institutions.

Procedure

The first step for this research was deciding which exhibitions to use for case studies given the specific parameters that I wanted to fill. The Tiger Mountain exhibit at the Bronx Zoo, part of the Wildlife Conservation Society, was chosen as a case
study because of the excellent reputation of many of the Bronx Zoo exhibits. Tiger Mountain also has received the American Zoo and Aquarium Association’s Exhibit Design award for 2004. Additionally, the exhibit was outside, entirely new, and provided an interesting contrast to the public garden exhibits. The Eleanor Armstrong Smith Glasshouse at the Cleveland Botanical Garden (CBG) was chosen primarily because of its unique (at least among public gardens) immersion setting. The Glasshouse puts visitors in a simulated Madagascar spiny desert and a Costa Rican cloud forest complete with plants and animals. Additionally, CBG was chosen as a new exhibit found in a conservatory. The trail renovations done at the Desert Botanical Garden (DBG) in Phoenix, Arizona, were chosen for several reasons. First, the project had been completed for several years; so the longevity of the exhibit could be explored along with the long-term assessment of its success. Also, the exhibit was outdoors and was fitted retroactively within the DBG’s existing collections. \emph{Plants are the Seeds of our Inspiration} at the United States Botanic Garden (USBG) was chosen for its unique approach to presenting ideas. Also the exhibit had not opened yet (as of April 2005), so it became an opportunity to explore the exhibit development process as it was occurring. Additionally, unlike the other case studies, the exhibit was found indoors and without living plant materials. In that regard, it is more similar to traditional museum exhibitions.

Once the case studies were chosen, the institutions were initially contacted to introduce my research and myself and to inquire about appropriate contacts for the chosen exhibition. Staff or consultants who were integrally involved in the project were contacted and asked for in-depth interviews. Additionally, appropriate staff were contacted to obtain documents relating to the exhibition development process and the underlying institutional framework. Documents included interpretive master plans,
institutional mission statements, grant proposals, executive summaries, and exhibit development notes.

A general interview guide was written, and all interviews were conducted from this general framework (see Appendix A for interview framework). Conversations generally lasted for 45 minutes to over one hour, and the interviews generally followed the framework but would deviate in order to keep the natural flow of the conversation. Open-ended questions were constructed to allow participants the greatest range for their own answers and opinions. Questions were principally devised to lead the interviewee in a description of the exhibition development process. Through this narrative, I hoped to gain insights into the unique factors of each exhibit, as well as the interviewee’s opinion about the strengths and weaknesses of the project and the process. Several questions were also directed at gaining insight into the theoretical underpinnings of the exhibition itself and the role that the interviewee had in the exhibit development process.

Seven out of the eleven contacts were emailed the framework of questions ahead of the interview; the rest of the contacts did not receive the questions ahead of time. I discovered as the interviews progressed that sending questions ahead of time allowed for the interviewees to think about their answers and refresh their memories before the actual phone conversation. All interviews were conducted on the phone with the exception of the four in-person interviews conducted with contacts from the United States Botanic Garden. With advance permission, all contacts were tape-recorded for transcription purposes.

Once the interview was complete, the tapes were transcribed verbatim. They were then edited according to guidelines set forth in Willa K. Baum’s *Transcribing and Editing Oral History* (1977). Baum is the past director of the Bancroft Library’s Regional Oral History Office at the University of California, Berkeley, and pioneered
many of the procedures used in recording oral history. The procedures call for first transcribing the interviews and then editing for clarity. This includes deleting items such as false starts, unfinished sentences, and crutch words such as “um”.

After editing, the transcripts were sent back to the interviewee for content approval and permission to print the transcript as an appendix. All approved transcripts are included in Appendix B.

The process of transcribing and editing the interviews helped me to become very familiar with the topics included in the interview. From there, I examined each case study in-depth, looking at the interviews and all documents obtained from the institution. A factual description of the exhibition and its development process was written for each case study and is included as Chapter Four: Case Studies. In Chapter Five: Analysis, the cases were examined in light of the considerations for interpretive planning presented in the original Literature Review. In Chapter Six: Recommendations, commonalities between each of the exhibitions were highlighted as well as development methods that made each project unique. Additionally, areas that need further study were considered in this chapter.
CHAPTER FOUR
CASE STUDIES

Case One

Exhibition: Tiger Mountain
Location: Bronx Zoo, Bronx, New York
Opening Date: May 2003

Interviews conducted with:

- Jon Dohlin, Tiger Mountain Project Manager, Exhibit and Graphics Arts Department, Wildlife Conservation Society
- Johnny Fraser, Director of Interpretive Programs, Exhibit and Graphics Arts Department, Wildlife Conservation Society

Exhibition Description:

This new exhibit at the Wildlife Conservation Society’s Bronx Zoo creates a naturalistic habitat for the Zoo’s six Siberian tigers. Designed to simulate the tiger’s homeland of the Amur Valley, the three-acre site encompasses wooded habitats, heated rocks for the resting tigers, a tiger pool, a spacious holding facility, and numerous enrichment activities aimed at stimulating the tigers in a variety of ways.

Entering the exhibition, visitors walk along a heavily planted trail to the Tiger Valley and Tiger Ridge habitats. These three-sided, enclosed viewing pavilions give visitors a close-up look at the tigers in their naturalistic habitat. Each pavilion also hosts “behind the scenes” programs presented by zookeepers several times daily (see Figure 1). During these programs, keepers conduct live enrichment sessions with the tigers and demonstrate a variety of ways that the Bronx Zoo keeps their animals healthy and happy. Other exhibits in the pavilions include interactive touch screens...
about animal enrichment and tiger identification, as well as interactive graphics and panels (see Figure 2).

The next portion of the Tiger Mountain is a variety of exhibit elements aimed at promoting tiger conservation. Visitors can watch short films about tiger conservation in the wild and find out what the Wildlife Conservation Society is doing to promote conservation. Interactive touch screen computers explore conservation themes in-depth (see Figure 3). Kids are drawn to the Tigers in Trouble site, which replicates a poacher’s abandoned truck. Along with props that demonstrate threats to tigers (which include crates with fabricated tiger pelts, rifles, chainsaws, etc.), visitors can play interactive games about the threats to tigers and learn more about efforts to save tigers in the wild.

During the last portion of the exhibition, visitors are able to bring their concern into action through several different means. A vortex, which collects donations to benefit tiger conservation, growls and roars when visitors give a donation (see Figure 4). There are also “enrollment stations”, computers where visitors can send themselves an email postcard. At home, visitors can then access updated information about tiger conservation in the wild and discover other ways they can participate in conservation activities.

**Exhibition Development Process:**

The exhibition development process for Tiger Mountain was initiated by a variety of factors. As Johnny Fraser (personal communication, March 7, 2005) explained it:

Projects come from—I would prefer to refer to it as harmonic convergence. International issues are coming up. We had big cat legislation that we were working on at the federal level and at the state level, which was kind of coincident. We had been doing genetic studies, in terms of the difference between subspecies of tigers and whether that matters to us in looking at the
global conservation issue in our International Department. [We were also] developing new techniques for caring for tigers in captivity as part of our animal welfare issues and our animal enrichment programs. All of these things [plus] the complaints you’re getting from guests of, “Where are the tigers?”, you just say, time to do this [exhibit] next.”

This project was funded through monies from the institutional budget, grant sources, and development efforts. All personnel and every department imaginable at the Wildlife Conservation Society, including international field researchers; the Exhibit and Graphics Arts Department; the Animal Department; Marketing; and the Education Department, pooled resources to produce the exhibit. The design effort for Tiger Mountain was truly an institutional effort, and the result was an exhibition that was considered holistically throughout the Bronx Zoo, not just as the responsibility of the Exhibit and Graphic Arts Department. As a result of the process, development, and the product, Tiger Mountain received the American Zoo and Aquarium Association’s Exhibit Design award in 2004.

Summary:

The Wildlife Conservation Society’s Bronx Zoo truly excels in its exhibit development process. Tiger Mountain’s holistic approach to exhibit development led to a solid educational exhibition, one in which not only were the design approaches well laid out, but the educational components were considered at the same time. By involving all levels of the organization in the exhibit design process, everyone’s interest and voice could be recognized. All parties were working toward one unified goal: the mission and vision of the Wildlife Conservation Society to promote the conservation of wildlife and wild lands.
Documents used in analysis:

- Wildlife Conservation Society’s website (www.wcs.org), including mission and vision statements
- Bronx Zoo’s website (www.bronxzoo.com), including press releases and exhibit descriptions
- Wildlife Conservation Society’s Saving Tigers website (www.savingtigers.com), including conservation information and Tiger Mountain information
- New York Times newspaper articles:
- Internal documents (Courtesy of Wildlife Conservation Society): Grant proposals; Exhibit program outlines; Front-end, formative, and summative evaluation reports; American Zoo and Aquarium Association Award proposal; Exhibit media programs
Figure 1: Tiger Mountain Enrichment Program, Bronx Zoo
Zookeepers demonstrate live tiger enrichment activities to visitors several times daily. (Photo © Wildlife Conservation Society)

Figure 2: Tiger Valley, Bronx Zoo
The exhibits in Tiger Valley encourage visitors to engage in observation techniques similar to those used to identify tigers in the field. (Photo © Wildlife Conservation Society)
Figure 3: Tiger Mountain Interactive Touch Screens, Bronx Zoo
Interactive touch screen computers reinforce conservation messages in Tiger Mountain. (Photo © Wildlife Conservation Society)

Figure 4: Tiger Mountain Vortex, Bronx Zoo
A vortex, which roars and growls upon receiving donations, encourages visitors to take action in promoting conservation. (Photo © Wildlife Conservation Society)
Case Two

Exhibition: The Eleanor Armstrong Smith Glasshouse
Location: Cleveland Botanical Garden, Cleveland, Ohio
Opening Date: July 2003

Interviews conducted with:

- Vickie Dahl, Project Manager and Owner’s Representative, Rhodes/Dahl
- Richard Graef, Exhibit and Graphic Designer, Ace Design
- Sandra Rode, previous Director of Educational Resources, Cleveland Botanical Garden

Exhibition Description:

Part of a complete institutional transformation at the Cleveland Botanical Garden, the Eleanor Armstrong Smith Glasshouse immerses visitors into two distinct biomes: Madagascar’s spiny desert and a Costa Rican cloud forest. Visitors enter the Glasshouse through a unique introductory theatre experience, which introduces each environment and the relationships that light and water play in shaping plant and animal life. Visitors then walk into the experience of the spiny desert, where bright light and arid conditions create stunning arrays of “Dr. Seuss-like” plant life. A giant simulated baobab tree fills the center of this space, and this environment is home to a variety of desert creatures that demonstrate the interdependence of plants and animals.

Entering into the cloud forest is completely the opposite environmental experience. Lush growth creates filtered light, and water drips from all surfaces. Butterflies and birds flit about freely, and the stark differences between the environments are highlighted. Visitors have a chance to observe free-roaming leaf cutter ants during their daily foraging. Guests can walk beneath the roots of an enormous strangler fig and peer into pockets of life created within the tree’s
buttressing roots. A canopy walk takes visitors into the tops of the cloud forest where they can closely observe bromeliads and orchids and glimpse into a field researcher’s daily life through short field journal entries.

Leaving the Glasshouse itself, the journey is wrapped up with another theatre experience called “North Coast Ohio,” which shows how these same influences of light and water created the regional Ohio ecosystems. The exhibit closes with descriptions of conservation actions in all three environments and shows what visitors can do to take part in preserving these unique ecosystems.

**Exhibition Development Process:**

The Eleanor Armstrong Smith Glasshouse development was unique in that it was part of an enormous transformation for the entire Cleveland Botanical Garden. The Glasshouse was the centerpiece of this process and aimed to create a year-round destination within Cleveland. Additionally, the Glasshouse exhibition was designed to provide a new educational opportunity for families and schoolchildren in the regional area.

Funding for this project was obtained by a tremendous capital campaign that was supported primarily by private foundations and individual support. As part of the process, the Garden worked with a number of consultants as well as all levels of departments and staff within the Garden itself. A number of new staff positions were created during the expansion and were involved in the development process, including Director of Educational Resources, a Glasshouse Manager, and an international liaison. In addition to the usual array of consultants, including design professionals, architects, and construction personnel, Cleveland also hired Rhodes/Dahl specifically as project manager and owner’s representative. This allowed for an outside party who was already familiar with interpretive exhibits to arrange all of the practicalities of the
process and to work with other consultants while specifically representing the owner. In this manner, they not only were able to be extremely efficient in a complex and time consuming process, but Rhodes/Dahl was extra reassurance during the completion of all of the required steps.

Summary:

The Eleanor Armstrong Smith Glasshouse at the Cleveland Botanical Garden (CBG) is unique among botanical garden exhibitions for including animals within its displays. The CBG chose to immerse the visitor fully within the environments of Madagascar and Costa Rica and realized that without including both plants and animals, the ecosystems could not be fully represented. It is this holistic approach to immersion which makes this Glasshouse distinctive and innovative.

Documents used in analysis:

- Cleveland Botanical Garden website (www.cbgarden.org), including mission, press releases, and exhibit descriptions
- Published articles:
  
  
  
• Internal Documents (Courtesy of Cleveland Botanical Garden): Preliminary and Final Exhibits Interpretive Plan, including project vision, philosophies, messages, and program summary
Figure 5: “Spiny Desert of Madagascar” Interpretive Sign, Eleanor Armstrong Smith Glasshouse, Cleveland Botanical Garden

The introductory panel in the Madagascar spiny desert introduces visitors to the environment.

Figure 6: Baobab Tree, Eleanor Armstrong Smith Glasshouse, Cleveland Botanical Garden

A giant simulated baobab tree fills the center of the spiny desert environment.
Figure 7: Spotting Scopes, Eleanor Armstrong Smith Glasshouse, Cleveland Botanical Garden
Spotting scopes focus on the colony of leaf cutter ants and allow visitors a close-up view of the free-roaming insects while they are foraging.

Figure 8: “Field Notes” Interpretive Sign, Eleanor Armstrong Smith Glasshouse, Cleveland Botanical Garden
This interpretive panel, one in a series of signs designed to look like a scientist’s field notebook, identifies and describes the leaf cutter ants.
Case Three

Exhibition: Desert Discovery Trail and Side Trail Renovations

Location: Desert Botanical Garden, Phoenix, Arizona

Opening Date: 1997

Interviews conducted with:

- Ruth Greenhouse, previous Exhibits Coordinator, Desert Botanical Garden
- Kathleen Socolofsky, previous Director of Interpretation, Desert Botanical Garden

Exhibition Description:

A set of looped interpretive trails, each designed around a theme and specific messages, make up the renovated Desert Botanical Garden. Ruth Greenhouse (personal communication, January 11, 2005) describes the goals and messages of the main trail called the Desert Discovery Trail:

“The goal of the Desert Discovery Trail is to convince garden visitors that deserts and desert plants are worth appreciating and protecting.” That’s the goal. We wanted visitors to walk away and appreciate desert plants more and want to protect them, instead of wanting to use tall cacti for target practice, for example.

The key messages that support that goal; these would be both affective and cognitive messages. We wanted visitors to learn that, “Deserts are natural ecosystems that cover \( \frac{1}{4} \) to \( \frac{1}{3} \) of the Earth’s land.” That, “Desert plants have structures and behaviors that allow them to live in desert environments.” That, “Some desert plants and animals are threatened and need to be protected.” That, “A wide variety of desert plants and animals can be found in deserts.” That, “Desert plants are beautiful and diverse.” And finally that, “The Garden plays a role in studying and protecting desert plants.”

Then our signs needed to support those messages and the goal. The messages support the goal, and the signs support the messages by using the actual plants as examples. For example, message two, “Desert plants have structures and behaviors that allow them to live in deserts.” There is a sign about the small resinous leaves in creosote bushes and a sign about the expanding stem of the saguaro cactus. But there isn’t a sign that says, “Desert plants have structures and behaviors that allow them to live in deserts.”
Each of the side trails follows the same model as the main trail. Interpretive stations on each trail were aimed at engaging visitors and answering their questions. For instance, the sign about the small resinous leaves in creosote bushes engaged people with the title, “What does the desert smell like when it rains?” Guests were encouraged to spray creosote leaves with water and then smell the aromas given off by the leaves. Further text then explains this mechanism as a water conservation strategy for desert plants (see Figure 11).

Additionally, wayfinding and comfort were greatly improved on the trails. Water fountains, benches, and shade were added. The side trails were all reconfigured as loops leading back to the main trail. The main trail was also paved with brick to easily distinguish it from the side trails.

**Exhibition Development Process:**

As part of a National Science Foundation grant, the Desert Botanical Garden undertook major renovations to their trail system. Previous to the renovation, there was very little in the way of interpretation or visitor comfort along the Garden’s main trails. With input from visitor studies consultants and the support of the Garden’s Director, the Garden embarked on a “Team Exhibits Week,” which trained Garden staff and volunteers in visitor studies and evaluation techniques. They were led through creativity and team-building exercises, aimed at helping the teams explore creative solutions to developing interpretation. Each of the teams brainstormed many ways to present messages that the Garden wanted to get across to visitors. Armed with these solutions, the teams then underwent extensive formative evaluation of these ideas. Each idea was mocked up, placed in front of Garden visitors, and evaluated according to the response of visitors. Revisions were conducted until all of the signs were interactive and engaging for guests.
Summary:

The complete dedication to visitor studies sets the Desert Botanical Garden renovations apart from other exhibit development processes. The strength in these exhibits lies in the fact that visitors actually look at and interact with the interpretation, and they go away from the Garden with an appreciation for what a desert is. Additionally, the Team Exhibits Week is an innovative approach for integrating many levels of staff into the development process and for creating institutional buy-in into the exhibition as a whole.

Documents used in analysis:

- Desert Botanical Garden Mission Statement, Educational Services Mission Statement, and Philosophies
- Published articles:
  


- Internal documents (Courtesy of Desert Botanical Garden): National Science Foundation Technical Report
Figure 9: “Where in the World Do You Live?” Interpretive Sign and “Do You Live Near a Desert?” Logbook, Desert Botanical Garden
By encouraging visitors to sign a logbook, this exhibit encourages guests to learn about biomes.

Figure 10: “Which Cactus is Storing More Water: Cactus A or Cactus B?” Interpretive Display, Desert Botanical Garden
An exhibit that asks questions is another effective means for engaging visitors.
Figure 11: “What Does the Desert Smell Like When it Rains?” Interpretive Display, Desert Botanical Garden
This exhibit encourages visitors to smell the resinous leaves of a creosote bush.

Figure 12: “Picture Yourself in the Sonoran Desert” Photo Opportunity, Desert Botanical Garden
Staging photo opportunities is a great way for guests to create memorable experiences of their visit.
Case Four

Exhibition:  
Plants Are the Seeds of Our Inspiration

Location:  
West Gallery, United States Botanic Garden, Washington, D.C.

Opening Date:  
expected opening, late Spring 2005

Interviews conducted with:

- Christine Flanagan, Public Programs Manager, United States Botanic Garden
- Dan Murphy, Exhibit Designer, The PRD Group Ltd.
- Lorraine Schmidt, Exhibit Designer, The PRD Group Ltd
- Holly Shimizu, Executive Director, United States Botanic Garden

Exhibition Description:

As part of the overall renovation of the United States Botanic Garden, the West Gallery exhibition is meant to be an orientation exhibition to the world of plants and their aesthetic, cultural, economic, and therapeutic importance for humans (see Figure 13). The center of the Gallery draws visitors into a spiritual “Temple” rimmed by enormous Douglas fir logs, where whispering voices recite garden-inspired quotes in several languages.

The “Garden of Ideas” is a playful look at how plants have influenced our perception of place and season and how plants influence world cuisine (see Figure 14). The “Garden” contains over thirty larger-than-life metal plant sculptures, each containing interactive elements specifically examining these themes. For instance, visitors can smell the scents that together make up the herbs found in gumbo. These scents are held in a “Bowl Plant,” one of the metal sculptures fashioned to look like an oversized poppy. Giant sunflower heads nod toward visitors while playing scenic videos that emphasize relationships between plants and human perceptions of the seasons.
In the “Café”, three tables examine the relationships of plants’ use in ceremonies, therapies, and fragrances around the world. For instance, interactive stations encourage visitors to sit and explore the fragrances used to perfume the world. Guests can discover the plant’s origin, what parts are used to produce the aroma, and actually smell the scent.

*Plants are the Seeds of Our Inspiration* is collectively aimed at exposing people to their variety of ways that plants have influenced our lives. As a non-plant room, the space is designed to give guests a fresh way to look at the plant collections found within the rest of the Conservatory.

**Exhibition Development Process:**

The U.S. Botanic Garden (USBG) process was unique in that it was driven by the goal of exposing people to the relationship between plants and humans. Christine Flanagan (personal communication, July 26, 2004), Public Programs Manager at the USBG describes the exhibition:

I really wanted this sense of aesthetic, economic, cultural, and therapeutic influences of plants on the future to be real to people. So, when Holly [Shimizu] and I went to that meeting, we felt very strongly that it was not about having a case. And in the case, you would see this very scholarly development of an idea about the domestication of wheat in the Tigris/Euphrates Valley. It wasn't about that. It was going to be more about the rhythms of our current lives and our historical lives, our cultures, as they were influenced by plants. And the rhythms, meaning not only the individual's daily rhythms and their health and their nutrition, but also about the cultural rhythms of our societies, about the religious and ceremonial observances that we have.

Each person is going to see it a little differently, but I think the beauty and the magic of this exhibit is not going to be in any one thing they see, but it’s in the juxtaposition of all things. They're going to see plants in the language. They're going to see plants in art. They're going to see plants in a ceremonial sense. They're going to understand and no longer take for granted frankincense in a Catholic ceremony, and they're going to walk away going, "Wow! I never thought of that."

Part of what this exhibit is about is helping people understand the richness of where we came from in 2,000 or more years, actually let's say 10,000 years,
versus the scarcity of where we're going to, the scarcity of diversity, the scarcity of cultural experiences, and helping them to cling to what's unique about each particular climate zone, each particular culture. People are working to try to preserve them, and working to try to preserve the cultures. Well, plants are the same thing.

I don't know if other gardens have the same sort of philosophical flow to what they do or not, but I feel it very strongly here.

Other unique factors of the process included collaboration with a sculptor for the fabrication of the “Garden of Ideas” plants and the time frame of the development of the project. The development process was extremely compressed, in that concept phase to contract phase took three months. Dan Murphy, exhibit designer, viewed this as an asset on this particular project that helped to contribute to the creativity process, since the Garden staff was willing to review choices and make decisions quickly (D. Murphy, personal communication, August 4, 2004). However, he cautioned against using this approach in other projects.

**Summary:**

*Plants are the Seeds of our Inspiration* is unique in the methods with which the big ideas are presented. As a result of the exhibit space not containing living collections and because of the USBG’s choice to not create an exhibit with panels full of text, the exhibit developers became challenged to create something unique and innovative. By presenting ideas rather than facts, this set the direction for a completely different and eye-opening introduction into the interaction between plants and people.

**Documents used in analysis:**

- Internal documents (Courtesy of United States Botanic Garden [USBG] and the PRD Group): Request for Proposals; The PRD Group’s West Gallery
Exhibit Concept proposal; West Gallery Exhibit meeting notes; USBG Mission Statement; USBG Interpretive Master Plan
Figure 13: Plants are the Seeds of Our Inspiration Conceptual Floor Plan, United States Botanic Garden (Image © 2004, The PRD Group Ltd.)
Figure 14: “Garden of Ideas” Conceptual North Elevation, United States Botanic Garden
Each “plant” is an interpretive, larger-than-life metal sculpture. (Image © 2004, The PRD Group Ltd.)

Figure 15: Early prototype of a “Case Plant”, United States Botanic Garden
This sculpture will hold a display case containing objects that are significant and representative of the relationship between plants and people.

Figure 16: Early prototype of a “Word Plant”, United States Botanic Garden
Many of the plant’s fronds will have an engraved plant-related saying, such as “Make hay while the sun shines.”
The culture panels show the influence of corn, rice, and wheat on world cultures. Rather than simply a description of the plant, the panels highlight how plants have shaped cultural identities. (Image © 2004, The PRD Group Ltd.)
CHAPTER FIVE
ANALYSIS

What is learning in a public garden?

Kathleen Socolofsky (personal communication, December 17, 2004), previous Director of Education at the Desert Botanical Garden, recognized that learning in a public garden setting is wholly different than learning in a formal setting such as a classroom. “We all grew up in formal settings, and so we always try to apply the principles of formal education to informal. And it’s just very different. At the heart of everything is this understanding and acceptance of the fact that this is a different learning environment.”

A discrepancy exists over the primary purpose for visitation to public gardens, whether it is to have an educational experience or primarily is an entertainment experience. Because visitors to public gardens are coming voluntarily and thus are intrinsically motivated, their reasons for visiting may be completely different from one another. Ruth Greenhouse (personal communication, January 11, 2005), previous Exhibits Coordinator for the Desert Botanical Garden, stated, “There was a misconception held by some staff that visitors don’t want to learn anything. They just want to walk around and observe plants. We knew that people were curious and that they do want to know things.” Conversely, Richard Graef (personal communication, January 7, 2005), design consultant for the Cleveland Botanical Garden Glasshouse said, “Casual visitors to these places, what they get out of it is so varied depending on their interests [and] depending on why they’re going there. Mostly they go to these places for a diversion and entertainment and curiosity, and they’re not really going there to learn stuff. So, you try to get them to learn something anyway.” In the future, it may help the educational process to find out exactly why visitors are coming.
Public gardens should recognize that each visitor’s personal motivations are wholly different from one another, and thus the types of exhibits that they are attracted to may be wholly different as well.

**Learning Theories**

None of the four institutions use behaviorism as a primary learning theory to inform their exhibit. In particular, Dan Murphy, design consultant for the United States Botanic Garden West Gallery, recognized that exhibits are not places to teach large amounts of information. He stated (personal communication, August 4, 2004), “We know that it is not going to be a place for didactic teaching. It's not about facts or information learning. It is about impressions and ways of thinking and ideas that help shape a bigger view of your relationships with plants.” Opposing a behaviorist model, it was also recognized that the West Gallery exhibition is not experienced in any sequential order, and all exhibit elements were designed to stand alone (L. Schmidt, personal communication, August 4, 2004).

However, setting up goals for an exhibition is loosely taken from a behaviorism theory. Cognitive goals are readily used to provide benchmarks for exhibit development and are a useful means for conceptualizing goals. In addition to using goals based in a cognitive domain, affective and behavioral change domains are also used and are perhaps more prevalent than cognitive learning goals. All of the case study sites spent a good amount of time setting the goals and messages that they wanted to convey to visitors. Although these goals can be paralleled with behaviorism, the focus is not on the content to be learned but on the visitor’s experience itself. In that way, these exhibitions do not represent traditional behaviorism.
All of the exhibition experiences utilize constructivism, although it was not always explicitly stated. It is widely recognized that the focus is on the learner, and the institutions all acknowledge that guests bring their own experiences to the visit. Johnny Fraser (personal communication, March 7, 2005), Director of Interpretive Programs at the Wildlife Conservation Society, directly acknowledged the constructivist influence when he talked about parent and child relationships, “We recognize that in zoo informal learning, there is a lot of parent scaffolding going on for children. Because parents want their kids to be the smartest child ever, the parent will often give them scaffolding experiences by suggesting or guiding them a little bit.”

Although none of the institutions specifically address Falk and Dierking’s model of Contextual Learning, many nonetheless follow their model during the exhibit development. All of the institutions considered a majority of the eight factors from the Contextual Model, if not outright, inherently within their planning process. For instance, the Tiger Mountain exhibit took all of Falk and Dierking’s considerations into account during planning. During the development process, staff discussed and planned for personal contexts: the visitor’s motivations for visiting (primarily people come to the zoo to look at the animals); visitor’s knowledge, interests, and beliefs (this was determined through front-end evaluations); and the visitor’s ability to choose their learning (visitors can opt to explore the computer touch screens) Consideration was also made for the sociocultural context: the dynamics of the visitor group (exhibits were designed with families in mind); and facilitated learning (the keeper-led enrichment demonstrations reinforce the exhibit’s messages). Lastly, physical contexts were also deliberated: advance organizers and orientation (the Bronx Zoo website has an extensive area dedicated to the Tiger Mountain exhibit); design (all elements were designed to “look” like the Amur Valley, the habitat of the tigers); and reinforcing events and experiences outside of the museum (email enrollment stations
were created to communicate with visitors upon their arrival home; through the enrollment stations, visitors receive regular email updates on tiger conservation) (J. Fraser & J. Dohlin, personal communication, March 7, 2005). By considering all of these contexts, the Tiger Mountain exhibition has already accounted for many individual variations in visitor’s learning. As confirmation of Tiger Mountain’s effectiveness, the exhibition was given the American Zoo and Aquarium Association’s Exhibit Design Award in 2004.

All of the institutions have also embraced Howard Gardner’s Multiple Intelligences Theory. Interestingly, Ruth Greenhouse (personal communication, January 11, 2005), previous Exhibits Coordinator at the Desert Botanical Garden, mentioned the theory outright in her interview, and all of the other institutions readily acknowledged that visitors learn differently. There have been many attempts to include all types of learners into the exhibit process, and it was often mentioned that media choices were dictated by different learning styles. Richard Graef (personal communication, January 7, 2005), graphic designer for the Cleveland Botanical Garden Glasshouse states, “Having a lot of different media helps get to people in their [own] ways. People learn differently. Some people are visual. Some are tactile. Some are auditory [learners]. And so, we try to reach as many people as possible in ways that they can understand.” Additionally, the inclusion of staffed services such as demonstration carts was recognized by Holly Shimizu, Executive Director at the United States Botanic Garden, as another means of reaching a different kind of learner. She says:

I would really like to have an interpreter in [the West Gallery] at busy times to be making it hands-on. “Smell this. Touch this. Move this. Grind this. Compare this,” to bring it to life because there’s no question some people won’t get it. It’s just subtle, and people are going to go, “Well, so what?” By having a person there, we can probably catch some of those people and again, that’s going to be our way to bring it to life (personal communication, August 10, 2004).
Interpretation

What is (and is not) interpretation?

By examining the National Association for Interpretation’s definition of interpretation (“Interpretation is a communication process that forges emotional and intellectual connections between the interests of the audience and the inherent meanings in the resource” [n.d., para. 2].), the “meanings inherent in the resource” play out very differently in two of the case studies. At the Desert Botanical Garden, the choice was made to base the interpretation firmly in the objects on display (i.e. the plant collections). Ruth Greenhouse stated (personal communication, January 11, 2005):

One of the things that we learned in the exhibit development is that people don’t really want to read signs that are about concepts...They want to know, “What’s that plant? Why is that here? Why is it important?”...The signs were object-oriented to draw your attention to something in the exhibit: a cactus, a plant, a bird, something that’s tangible.

On the other hand, “the meanings inherent in the resource” can take quite a different slant. At the United States Botanic Garden (USBG), the exhibition did not contain any plant collections, and the Garden itself did not own any object collections. Christine Flanagan, Public Programs Manager at the USBG, comments on this philosophy (personal communication, July 26, 2004):

[From] what I’ve seen at AAM [American Association of Museums] and heard about is, when [museums] have a collection of objects to work with, then they go out and they do the visitor studies and they say, "What do you want to know about this collection?" And that's how they come up with what the exhibit is about. In our case, we had no collection of objects. We only had ideas. It really moves you in a whole different direction.

Since the USBG’s goal was to expose visitors to the interactions of plants and humans, they provided enough factual information to support these big ideas, but they did not base the whole exhibition on facts written on panels. For instance, to expose people to the idea that plants have influenced our sayings, plant-based quotes were
engraved on one of the metal sculptures in the “Garden of Ideas” (see Figure 16). This alternative approach allowed for the USBG to explore many different options for exhibits rather than using traditional interpretive signs.

*What are the traditional interpretive principles & guidelines?*

Although none of the interviewees mentioned Freeman Tilden in their interviews, his original principles and guidelines of interpretation are readily found weaving their way through the philosophies of exhibit developers. Lorraine Schmidt (personal communication, August 4, 2004), exhibit designer from the PRD Group, mentioned at least three of the six principles in regards to United States Botanic Garden’s West Gallery.

During the Cleveland Botanical Garden glasshouse development, a conscious choice was made to include a portion of the exhibition that relates to their regional visitors’ lives. At the end of the Glasshouse is an exhibit called “North Coast Ohio.” It parallels the same principles and messages found in the spiny desert and cloud forest habitats, but its primary purpose is to relate those same principles to the habitats of Ohio. Through this exhibit, Tilden’s first principle is brought to life at the Eleanor Armstrong Smith Glasshouse.

Tilden’s second principle (“Information, as such, is not Interpretation. Interpretation is revelation based upon information. But they are entirely different things. However, all interpretation includes information” [1957, p.9]) was a highlight of some of the development processes. It was clear that the information presented in the West Gallery exhibition was aimed to be a balance between information and ideas. Lorraine Schmidt (personal communication, August 4, 2004) stated:

The balancing act is you throw an idea out there and you have to give people enough information so that a) they understand the idea, and b) they can relate to it. That’s why the balancing act is the tone, the way we write it, and having
a conversation with the visitor, rather than just dumping facts and data on them. Posing things as questions and giving them enough of an expression of the big ideas, so that they just get it.

Particularly interesting is Tilden’s sixth principle (“Interpretation addressed to children…should not be a dilution of the presentation to adults, but should follow a fundamentally different approach” [1957, pp. 9]). In regards to the West Gallery, this same principle was used, but applied to different levels of visitor knowledge.

We try very hard not to talk down [or] dumb it down for people because especially with the garden, you've got multiple layers of visitors. You've got the casual tourist…And then you have the subject specialist, and people who are quite knowledgeable. Somehow we have to hit a medium point so that we’re hopefully meaningful for both of those people” (L. Schmidt, personal communication, August 4, 2004).

**Interpretive Planning**

All of the institutions recognized the need to plan for interpretation concurrently while initially designing the space or while renovating an existing space. Additionally, all of the exhibit development processes involved educators or interpretive planning specialists. The Cleveland Botanical Garden also recognized the benefit in planning for self-guided interpretation as well as for staffed services at the same time. Sandy Rode, as Director of Education Resources, was able to use her expertise in school programming to provide opportunities for school groups to utilize the exhibition fully and integrate the exhibits into their school curriculum (S. Rode, personal communication, January 7, 2005). Without this consideration, the exhibition would have been significantly less useful for visiting school groups.

Additionally, the integration of interpretive planning with the development of the exhibit design led the Cleveland Botanical Garden to a more holistic consideration of the entire garden. Richard Graef, working as graphic designer for the project, commented (personal communication, January 7, 2005):
The format and approach of the graphics was part of the overall design concept...I also did a whole new logo and graphic identity for the institution...All the signs on the building, out front, throughout the building, all the way down to the bathrooms, were also part of it. All of those things were designed as part of the overall look, identity, and feel of the place. It was a very complete integrated design program from the outside to the inside, which is kind of unusual.

The unification of the design throughout the institution leads to clearer communication to the visitor. The visitor is able to gain a sense of what the institution is all about, reinforced visually by the design of the entire space.

Several interviews also indirectly mentioned the competing interests between design and interpretation (R. Graef, personal communication, January 7, 2005; H. Shimizu, personal communication, August 10, 2004; K. Socolofsky, personal communication, December 17, 2004). Although this topic is an ongoing debate within the exhibit development field, it was not clear from these interviews that either interest should take precedence over the other. However, it was readily acknowledged that if the goal is to have an interpreted space, the design should support that overall goal. At the Desert Botanical Garden, one of the strengths of the exhibit was the appropriate and beautiful design that was used for the exhibits. Kathleen Socolofsky described the exhibits (personal communication, December 17, 2004):

While there was a strong educational focus, the exhibits were also developed with a strong emphasis on design elements that reinforced the desert nature of the exhibits—desert-style art, colors, and exhibit furniture, etc. With the goal of changing people’s negative perceptions about the desert, the beauty of the signs and how they fit with the surrounding desert environment was a big part of the success of the exhibits.

Two interviewees also acknowledged that all areas of the garden are not appropriate for interpretation, and it is generally preferable to leave some areas uninterpreted (H. Shimizu, personal communication, August 10, 2004; K. Socolofsky, personal communication, December 17, 2004). Kathleen Socolofsky talked about “cognitive breaks” areas that are intentionally left uninterpreted, to provide spaces where visitors could rest, simply enjoy the collections, or get better views of the garden. Although
an exhibit’s goal may be essentially learning, it is also important to create a balanced exhibit where visitors do not become overwhelmed.

Considerations for Interpretive Planning

Institutional Mission, Vision, and Philosophy

All of the institutions recognize the need to tie their exhibition development back to the institutional mission. Kathleen Socolofsky (personal communication, December 17, 2004) stated, “If you have a chance to connect every single person that comes to your institution with your mission, then you should do it.” It is recognized that this is still not always done and competing factors such as funding, may instead influence decisions at the institution (V. Dahl, personal communication, February 2, 2005; K. Socolofsky, personal communication, December 17, 2004).

When an institutional vision exists, that vision can also be a source of inspiration for your exhibition development. At the Bronx Zoo, part of the Wildlife Conservation Society’s vision is (Wildlife Conservation Society, 2002, pp. 18), “…to inspire people to care about nature and to aspire to its conservation.” This helps staff to make better decisions concerning the allocation of resources to an exhibit as well as decide the content of an exhibit.

Lastly, there is an acknowledgement that a stated philosophy will also help to guide decisions. At the Desert Botanical Garden, the Education Department’s philosophy included the idea that they were going to educate visitors in an outdoor environment. Ruth Greenhouse (personal communication, January 11, 2005) expanded on the philosophy:

We also had a philosophy that the exhibits should appeal to all different kinds of learners, of all ages and of learning styles. The exhibits weren’t targeted towards scientists or towards children. They were intentionally made diverse and understandable by the majority of our learners. That was a philosophical approach.
I think people need to think about those things before they develop their master plan as well. What do they care about? A lot of people maybe come up with an interpretive plan without even thinking about the mission, their goals, or philosophical guidelines.

This philosophy guided the development of the trail systems throughout the design process.

Many institutions have an action statement as part of their mission or vision. They intend for their visitors to leave the institution inspired to act in ways that are aligned with the values of the institution. Behavior change can be one of the hardest missions to accomplish, as it often requires additional effort on the part of the visitor.

At the Bronx Zoo, action was made accessible and easy for visitors. At the end of the exhibition, a vortex that growls when a donation is made allows for visitors to readily contribute money to conservation efforts. Additionally, the email enrollment stations encourage visitors to stay connected with the exhibition’s conservation message, even after leaving the zoo (Wildlife Conservation Society, 2004). By creating exhibit elements that connect visitors to action, it becomes easier to encourage them to act.

**Exhibition Mission, Themes, Goals, and Objectives**

All of the case study sites also clearly articulated their exhibition mission, themes, goals, and objectives. In all cases, the exhibition mission was firmly rooted within the overarching institutional mission, and the exhibition mission drove the specific direction that the exhibit development would take. Without these underlying principles, the decision making process becomes arbitrary. In the case of the Bronx Zoo, their goals are framed so that they never feel like they are achieved. They are used as a source of inspiration, an ideal to strive for, rather than a standard to easily reach (J. Dohlin/J. Fraser, personal communication, March 7, 2005).

On the other hand, specific objectives should be measurable and reachable, and they also become a means on which to base your evaluations. Richard Graef (personal
communication, January 7, 2005) stated, “What are the overriding, guiding principles that you would test your design against?…Then you do your design and you test it against that criteria. You develop criteria [so that] everybody can agree on a way to evaluate what you're doing.”

All elements of the exhibition design should also support the goals and objectives of the exhibit. Lorraine Schmidt described the work of an exhibit designer (personal communication, August 4, 2004):

It’s the environment of the exhibit, that’s why Vicky’s [another exhibit designer’s] work is so critical. Everything that she does in materials and colors and the textures are all very specifically selected to make a point, not just create. She’s not doing interior design like you’re doing in your living room. She’s selecting things because it’s part of the point and part of creating an aesthetic environment that is just as important as reading the words or looking at the pictures.

The goals and objectives should drive the content of the exhibition as well as design decisions. During exhibit development, the design should be checked and rechecked to make sure that after several revisions, it still adheres to the original goals and objectives (R. Graef, personal communication, January 7, 2005; L. Schmidt, personal communication, August 4, 2004). With ever-changing challenges, it is easy for the original messages to become “lost in translation.”

Visitor Studies

Audience

All of the institutions gave lengthy consideration to their targeted audiences. In the case of the Cleveland Botanical Garden, they were targeting new audiences of families and school children and therefore, made decisions in their planning process that would make sense for these audiences. For instance, they realized that many of their new visitors would be schoolchildren, so they made a conscious decision to write text at a second grade reading level,
rather than the standard sixth grade reading level (S. Rode, personal communication, January 7, 2005). At the United States Botanic Garden, knowing that they receive many international visitors, an effort was made to present the interactions of plants and humans from a global perspective (C. Flanagan, personal communication, July 26, 2004; L. Schmidt, personal communication, August 4, 2004).

The characteristics and the notion that many people do not follow exhibits in a linear fashion led to choices of exhibits in the USBG West Gallery that can be sampled, so that each exhibit stands alone (L. Schmidt, personal communication, August 4, 2004). At the Cleveland Botanical Garden, sizes of groups were also considered during planning. Spaces were made for family groups to stop, as well as larger groups to gather for docent interactions (R. Graef, personal communication, January 7, 2005; S. Rode, personal communication, January 7, 2005).

Visitors’ physical needs

Visitors need to feel comfortable in an exhibition in order to have a positive and engaging educational experience. The Desert Botanical Garden recognized that their visitors are outdoors in a hot and dry climate and wanted to make their visitors feel as comfortable as possible. For these reasons, they added water fountains and shaded seating areas at regular intervals throughout the exhibition (R. Greenhouse, personal communication, January 11, 2005; Greenhouse & Socolofsky, 1997).

Wayfinding and orientation signs are also important. The Cleveland Botanical Garden carefully designed all signage to follow the same overall format and character for an institutional approach to wayfinding and
orientation (R. Graef, personal communication, January 7, 2005). At the Desert Botanical Garden, wayfinding was a major concern during the renovation of the trails. Side trails were redesigned in a loop, so that they led back to the main trail. The main trail was also paved in brick, so that it was easily distinguished from the other trails (Greenhouse & Socolofsky, 1997). These visual cues help to orient visitors while at the garden.

Additionally, advance organizers were used on a frequent basis to provide visitors with information before their arrival. All of the institutions used websites as their primary means for orienting visitors before their arrival. The websites not only contain specific information about the exhibitions, but they also provide directions, hours, admission fees, parking information, and regulations of the institution. In that way, the visitor knows what to expect upon arrival. Once at the institution, site maps also act as advance organizers, helping to orient visitors within the space. Visual cues may also act as advance organizers. For instance, upon arrival at the Cleveland Botanical Garden, visitors immediately notice the unusual shape and form of the Glasshouse, and this sight prepares them for discovering the exhibition found inside.

*How long do visitors spend at an exhibit?*

Several institutions acknowledged that visitors generally do not stay for a large amount of time at an exhibition (S. Rode, personal communication, January 7, 2005; L. Schmidt, personal communication, August 4, 2004; K. Socolofsky, personal communication, December 17, 2004). Consequently, exhibits should be designed so that they can provide information in a quick and efficient manner, and text should be kept to a minimum (L. Schmidt, personal communication, August 4, 2004). Information at the Cleveland Botanical
Garden and the Desert Botanical Garden was presented in a hierarchy, so that visitors could choose the levels of information that they wanted to get. Guests can read the title and get the message, or they can also read the entire sign and get the same message with more in-depth information. Additionally, the Cleveland Botanical Garden anticipated the amount of time that visitors would spend in their exhibition and made design decisions, such as how much interpretation to include and where to place the interpretation, based upon that idea (S. Rode, personal communication, January 7, 2005).

**Resources of Institution**

*Funding*

Funding is always a main concern when developing an exhibition. All of the institutions received different and varied sources of funding for their exhibitions. The Desert Botanical Garden relied upon grants, although stipulations within the grant required additional funding by the Garden itself. The Cleveland Botanical Garden primarily relied upon donations and philanthropy. The Bronx Zoo worked with a combination of grant, donations, and funds from the operational budget, and the United States Botanic Garden worked entirely within their federal budget allocation.

There is an acknowledged balance between the practical realities of a budget and the forces of creativity. The United States Botanic Garden maintained this delicate balance. Holly Shimizu states (personal communication, August 10, 2004):

We have all these great dreams, but we can’t afford to accomplish them in extravagant ways. And so, we have to come back to earth, and I don’t like to get so out there that coming back to earth is a huge disappointment. And I like to know, “Okay, we only have five hundred thousand dollars to do this.” So
let’s be thinking reasonably, so that the value engineering doesn’t come as a horrible shock.

On the other hand, she states, “You have a budget and you plan it...[but] you can’t have limited thinking because if you do, you won’t go anywhere” (H. Shimizu, personal communication, August 10, 2004). It is important to note that good design and creative interpretation does not have to necessarily cost more money; the trick is finding the balance between creativity and the budget allowances.

Staff & Volunteers

Another theme from the interviews is that there should be wide involvement of staff at all levels in the development process. This was most clearly articulated by the interview with the Bronx Zoo; when asked who made up the exhibit team, the response was “everybody” (J. Dohlin/J. Fraser, personal communication, March 7, 2005). This included members of their Research Department, Animal Department, Exhibits and Graphic Arts Department, Marketing Department, Education Department, and many other staff and consultants. Interestingly, the approach within the exhibit team itself was also hugely collaborative. As Johnny Fraser described (personal communication, March 7, 2005):

Here, there’s always mush in terms of what people’s roles are. Even though we have prescribed job titles, responsibilities, and roles—like Jon was Project Manager for this project, and I was Director of Interpretive Programs—in a way, we work in collaboration. So even though the story falls under interpretation and getting the job done falls under project management, everybody contributes to the design. Everybody’s mind is allowed to wander to help the project get better. When a job is done, knowing who did something is the last thing on our minds or should be the last thing on our minds.

Collaboration can also be seen very clearly in the development of Team Exhibit Week at the Desert Botanical Garden. This process involved teams of
staff and volunteers who went through training in creative problem solving, multiple intelligences, visitor evaluation techniques, and team building exercises. They were then given the exhibit messages, and each team brainstormed creative and fun approaches to presenting those messages to the visitors. Those ideas were mocked up by the teams and then tested with visitors through formative evaluation techniques. Not only did this process create staff awareness of the visitors’ needs, but it also created tremendous buy-in into the process of visitor studies and exhibit development (R. Greenhouse, personal communication, January 11, 2005).

Another benefit of the Team Exhibit Week at the Desert Botanical Garden was changing the institutional culture. Kathleen Socolofsky explained (personal communication, December 17, 2004), “All of the sudden when people know what visitor-centered is, and they know how to watch the visitors, they make all kinds of different decisions.” For example, she recounted a change of perception in a horticulturalist’s attitude (personal communication, December 17, 2004):

We would come up with an idea of putting a plant in the exhibit [in] a pot. And before, [the horticulturalist] would say, “There’s no way we could care for that.” But then they would get so excited [and say], “I could do that. My volunteers could go out there and water that. Or we could change that out.” Because they were into how the visitors responded.

This change in culture can have many positive effects on the institution as a whole.

Many attributes of an effective team came out the interview sessions as well. Clear communication and decision making processes, flexibility, good working relationships, and respect for team members were all mentioned as important attributes for a team (R. Graef, personal communication, January 7,
Great leadership was also mentioned as a significant element in creating an efficient team (R. Gree
Greenhouse, personal communication, January 11, 2005). Without a person to move the project forward and create motivation and organizational support, the exhibit itself may become mediocre. Despite many positive experiences, several institutions also acknowledged that team processes are not always perfect, and some people are less suited to work on a team than others (R. Graef, personal communication, January 7, 2005; R. Greenhouse, personal communication, January 11, 2005; H. Shimizu, personal communication, August 10, 2004).

The Desert Botanical Garden also acknowledged that a team approach is able to achieve greater results than individual approaches. Kathleen Socolofsky (personal communication, December 17, 2004) stated, “It doesn’t always come from one person. It comes from a team of people. You’ve got your Nursery Manager going, “But you know what? People really like the way when you crush the leaves, they smell like this.” And then, each one is like a creative solution that comes from a group of different people with different brains.”

Other advisers, focus groups, and public involvement

All of the institutions also acknowledged that the required expertise was not always available at their home institutions. Consequently in all cases, consultants were hired to fill in the gaps in expertise. Consultants included design firms, such as the PRD Group Ltd. at the United States Botanic Garden; Rhodes/Dahl as owner’s representative and project manager for Cleveland
Botanical Garden; an industrial design firm at the Bronx Zoo who designed tiger merchandise; and Visitor Studies consultants at the Desert Botanical Garden.

The Desert Botanical Garden also widely acknowledged the role of the public in their exhibit development, “[They] repeatedly emphasized the importance of visitors from two main perspective: (1) as the primary audience for fulfilling the educational mission of the institution, and (2) as the primary source of support (financial, participation, word-of-mouth-marketing) for the institution” (Desert Botanical Garden, 1997, p. II-2). It was only through the evaluative feedback from their visitors that they were able to come to their final exhibition design. If the end result is to be effective for the public, allowing for their input is essential.

**Collections**

Institutional approaches to the role of collections varied widely, depending on the particular situation. In the case of the Bronx Zoo, the animal collection drove a major portion of their exhibition design. They focused on what is required and best for their tigers’ health and welfare. On the other hand, since the Cleveland Botanical Garden was working with a blank slate, they built their collections around their intended goals and messages.

The United States Botanic Garden had a completely different situation, given that the West Gallery was not a plant space. They discovered that they needed to address the competition between the plant collections and the exhibition spaces, and approach the exhibition in an entirely different manner than in their plant spaces. Dan Murphy (personal communication, August 4, 2004) stated:
A key issue is how to be compatible, but not competitive with the actual planted gardens, the different places you go and visit. Beauty is important in this, because that's a motivator for people to come. It has to be lovely and inviting, stimulating visually, but it can't use the same vocabulary as the gardens themselves. It has to be something that’s different, because this is an orientation exhibit. This is something that you look at. The goal is to give you tools to look at the Conservatory.

For instance, rather than creating an interpretive panel that simply explained the rice plant and its use as a food, this same topic was presented within a different context (see Figure 17). The exhibit compares three different cultures based upon rice, wheat, and corn. Rather than focusing on the plants themselves, this exhibit looks at the plants’ influence upon these different cultures, creating a slightly different emphasis than in the plant based areas within the Conservatory. The Bronx Zoo approached the problem in a similar manner. Johnny Fraser (personal communication, March 7, 2005) stated, “Most people come for exhibit learning, so there isn’t as much competition between [exhibits and] animal experiences, [which are] are a different part of the whole experience.”

Other community resources (other local museums, educational institutions)

Two institutions chose to pool resources from other museums or institutions. The Desert Botanical Garden formed partnerships with Arizona State University as well as Arizona Game and Fish Department (Desert Botanical Garden, 1997). In the case of the Cleveland Botanical Garden, they went outside of their immediate area and formed partnerships with organizations in both Madagascar and Costa Rica, including the Antsokay Arboretum in Madagascar and the Tropical Science Centre and Lankester Garden in Costa Rica (Holley, 2003).
Media and Methods

It is clear that museum institutions recognize that a variety of media and methods are preferable for reaching diverse audiences. All of the institutions used a variety of methods, including traditional interpretive signs, interactives, computer touch screens, video, and audio. While technology was acknowledged to hold tremendous potential, especially to children who have grown up within a technologically adept society, it is also acknowledged that technological equipment tends to break (J. Dohlin/J. Fraser, personal communication, March 7, 2005; H. Shimizu, personal communication, August 10, 2004; K. Socolofsky, personal communication, December 17, 2004). Thus many public gardens are hesitant to use technology because of this attribute. Additionally, it is generally acknowledged that the media and methods should not be developed before the exhibition goals and messages (S. Rode, personal communication, January 7, 2005). Many times, developers are caught up in how they are going to present their messages and overlook the best methods for actually presenting messages.

Evaluation

Whereas evaluation used to be considered an optional resource for improving exhibits, it has been widely accepted as mandatory feedback to use in the exhibit development process. The Desert Botanical Garden used evaluation as a primary tool for exhibit development.

Many institutions understand the importance of well-designed exhibits and are successful in their approach to exhibit design through subject-matter specialists, artists, and educators. However, they often neglect an important resource in achieving visitor satisfaction: the visitor themselves. The Desert Botanical Garden has created an innovative process that involves visitors in exhibit development through front-end and formative evaluation. This process results in connecting visitors with garden messages and producing visitor satisfaction (Greenhouse & McGinn qtd. in Exemplary Interpretation, 2001).
From the positive results exemplified by Desert Botanical Garden process, it is wise to plan for evaluation both in funding allocations and in the exhibit planning process. The results are clear that evaluation leads to insights in the development process.

Additionally, front-end evaluations can guide the type of information that should be given to the visitor. Gaps in knowledge can be successfully addressed, so that the exhibit can relate to visitors’ existing knowledge. At the Bronx Zoo, this was critical for getting visitors to understand their conservation message. Johnny Fraser (personal communication, March 7, 2005), Director of Interpretive Programs at the Wildlife Conservation Society, stated:

One of the things that people didn’t have coming into our exhibit was a sense of literacy, in terms of where tigers are found in the world and where this action could be effective. We reveal that in the exhibit because by being able to connect place with conservation issue, [that] is the link that people needed to make that intention conscious, both cognitively and affectively. Not only do they care, but they know where to care. Once they get that, it completely changes their interest.

Also, front-end evaluation may also be addressed by looking at common visitor questions. By surveying their docents and staff who had the most daily interaction with visitors, the Desert Botanical Garden was able to address commonly asked questions, which included not only content based questions but wayfinding problems as well (R. Greenhouse, personal communication, January 11, 2005; K. Socolofsky, personal communication, December 17, 2004).

It was also acknowledged that occasionally formative evaluation becomes very difficult. This may happen in the case of new exhibitions, where there is no existing environmental context to conduct evaluations, or where liability from construction does not allow for outside visitors (S. Rode, personal communication, January 7, 2005). In this case, evaluations are conducted off-site, and therefore results may be irrelevant to your particular situation (C. Flanagan, personal communication, July 26,
In the cases where formative evaluation can be conducted within the proper context, the results of the evaluation should be used to make changes to the exhibit elements. During revisions between the formative evaluation and the production phase, once again the exhibits should be checked to make sure that they have retained the original concepts and changes made during formative evaluation (Desert Botanical Garden, 1997). Oftentimes, messages are eroded away with each progressive revision of the exhibit.

It is also important to note that results of summative evaluation should not only be used to remediate parts of the current exhibition, but in a longer range view, each exhibition can build upon the previous exhibition (J. Dohlin/J. Fraser, personal communication, March 7, 2005). Without evaluation, it is difficult to determine the history of the successes and weaknesses of an institution’s exhibits.

Evaluation should be based upon the exhibition’s goals and objectives (R. Graef, personal communication, January 7, 2005; S. Rode, personal communication, January 7, 2005). Therefore, this is an added reason for taking extra time to write clear goals and objectives. When writing objectives, it is very important to decide whether visitors should come away from the exhibit with specific information. If the philosophical approach of the exhibit is not based in factual information, the exhibition’s objectives (and therefore the evaluations) should not be based upon learning certain facts or figures.

**Innovation**

Jon Dohlin (personal communication, March 7, 2005), of the Wildlife Conservation Society, sums up the purpose of innovation for museum institutions very clearly, “Innovation for innovation’s sake doesn’t really hold any interest to us, either philosophically or programmatically, if it’s not furthering what we’re doing…We’re
not really interested in innovation, unless…it’s innovation as a means of telling our message more effectively.” There is also an acknowledgement that innovations may not qualify as innovations if they are not successful and if they don’t work. Innovations do not necessarily have to be more complicated or advanced; in many cases, they are very simple. They can help visitors to focus on complicated environments. As explained by Kathleen Socolofsky (personal communication, December 17, 2004), “Innovative doesn’t mean bigger or more bells and whistles or more distractions. You’re already distracted. Innovative is if you can get the essence of it in the simplest thing possible that doesn’t take away, but enhances people’s view or understanding of the environment.”

It was also acknowledged by Sandra Rode that innovation depends on your context. She states, “What is new for a small botanic garden might just be everyday stuff for a really big botanic garden. And likewise, what’s new in a botanical garden might be something that’s been done for a long time in some other settings” (personal communication, January 7, 2005). This reinforces the notion that public gardens need to continue to communicate with each other about new approaches to exhibit development, thus keeping the whole field moving forward.

In order to get to innovation, the organization culture and team structure is very important. Team dynamics need to be open and inviting, so that members feel free to explore new ideas (R. Greenhouse, personal communication, January 11, 2005). Leadership must be willing to allow for innovation, and participants must be willing to be open to it.

Innovation may come in several forms, such as innovation in the exhibit development process or utilizing innovative media in an exhibition. All of the case study exhibitions demonstrated innovation in at least one way: innovation in the overall exhibition approach (exemplified by the presentation of ideas in the USBG’s
Plants are the Seeds of Our Inspiration and by the immersion approach in the Cleveland Botanical Garden Glasshouse), innovation in the exhibition development process (exemplified by the Team Exhibits Week at the Desert Botanical Garden), and innovation in the exhibition media selection (exemplified by the tiger enrichment programs and the computer touch screens in Tiger Mountain at the Bronx Zoo). A variety of factors within the exhibit development process led each of these institutions to unique and innovative exhibits, providing excellent examples to inspire creative exhibit development in the future.
CHAPTER SIX
RECOMMENDATIONS AND FUTURE RESEARCH

The following recommendations are gleaned from the analysis of the four case studies examined in Chapter Four and Five in this study. The full discussion of these points is found in Chapter Five: Analysis, whereas these recommendations are simply distillations of the core elements. This is not meant to be a comprehensive list of recommendations, nor a recipe for developing interpretive exhibits; instead, it represents themes learned from the four case studies included in this research. Comprehensive resources for exhibit development are listed in Appendix C: Annotated Bibliography.

Recommendations

1) Develop an understanding of educational theory and interpretive planning.

Acknowledge which theories and models are being used during the planning process. A working knowledge of both educational theory and interpretive planning models will help gardens to understand how these theories and models work in an institutional setting. By consciously acknowledging which theories and models are relied upon and are applicable to exhibit design, the strengths and shortcomings of these theories can be addressed. Any assumptions within those that may not hold true in a public garden setting can be challenged, and the institution can better address how to change those assumptions to fit institutional needs. Johnny Fraser of the Bronx Zoo acknowledged that their exhibit team draws upon a variety of theories during the exhibit development process (personal communication, March 7, 2005). These theories in essence become tools with which to strengthen the educational impact of the exhibition.
2) Revisit past interpretation and exhibit designs.

Learn about what has been done in the past in interpretation and exhibit development by others at public gardens and related institutions. Look at other types of institutions for examples and inspiration, as well as within the public garden field. The USBG was able to draw inspiration for part of their exhibition from a completely unrelated exhibit that Christine Flanagan had visited (H. Shimizu, personal communication, August 10, 2004). By possessing knowledge of that history, the foundation is laid for building upon successful and not-so-successful exhibit development models. Any of the resources listed in the annotated bibliography in Appendix C are great sources to begin to understand the history of interpretive planning models and exhibit development.

3) Recognize that learning within a public garden is different than learning in a traditional classroom or formal setting.

Visitors come to public gardens of their own accord and for a variety of reasons; therefore, interpretation cannot be approached in the same manner that a teacher would approach curriculum development. The principles on which exhibitions are based should be wholly different than traditional classroom practices. For instance, recognizing that visitors do not follow exhibitions in any set patterns, each exhibit element at the USBG was designed as an entire unit that could be experienced individually (L. Schmidt, personal communication, August 4, 2004). Each exhibit element should reinforce the exhibit’s theme, and therefore, if the visitor skips one exhibit, the entire exhibition message is still communicated to them.
4) Make sure the exhibition wholly represents the garden’s mission.

Visitors to a garden should be able to gain a single integrated sense of the garden that directly reflects the institutional mission. The exhibition should reinforce and enhance that image; otherwise, the exhibition becomes largely irrelevant. Public gardens want to make a positive and distinct impression upon their visitors, so that they become enthusiastic and engaged with the institutional goals, and therefore, are apt to support the garden in the future. For example, *Plants are the Seeds of Our Inspiration* at the United States Botanic Garden directly relates to the garden’s mission of demonstrating the aesthetic, cultural, economic, and therapeutic influences of plants on humans.

5) Create an exhibition theme and mission.

Not only does this help focus institutional efforts in exhibition development, but the exhibition mission specifies what the garden would like their visitors to leave with. Along with the institutional mission, it should be the guiding principle along which many decisions are made. The exhibition theme should be the “storyline” that runs throughout the exhibition. Once the visitor leaves the garden, the theme should be what they remember about their visit. All of the case studies created exhibition themes and missions, and were able to use these as frameworks for making decisions about exhibition content. Excellent references for developing exhibition mission statements and themes are listed in the interpretation resources section of the annotated bibliography in Appendix C.

6) Involve as many levels of stakeholders as possible in the development team.

The makeup of the exhibition development team may be the most critical portion of the exhibit design process. By involving staff, volunteers, and visitors at all levels, a well thought through exhibit is insured. While a team development approach
generally takes more time, often the outcome far exceeds what one person could create. This was exemplified by the team approach taken at the Desert Botanical Garden during Team Exhibits Week.

7) Create buy-in and strengthen organizational culture through the exhibit development process.

By involving many layers of stakeholders, buy-in is created for the project. Once team members are invested in the project, they will begin to care about it, and this translates into an amazing level of support throughout the entire institution. Additionally, organizational culture as a whole can be strengthened when everyone is working towards one end goal. Again, the Desert Botanical Garden exemplified this point through the use of the Team Exhibits Week.

8) Seek out a great leader for this process.

To create all of these changes, a good leader must facilitate the process. The leader could be the project manager, the director, or someone with a vested interest in the exhibition. The person’s position does not matter as much as their ability to garner institutional support for the project and to motivate people to help move the project forward. For large projects, many institutions also hire outside consultants as project managers, such as the role that Rhodes/Dahl served in the Cleveland Botanical Garden Glasshouse process. Rhodes/Dahl was able to focus on moving the project forward, and thus helped to create a more efficient process overall.
9) **Plan for exhibition design, interpretation, and educational programming while the layout of the area is being designed.**

The best way to create fully effective exhibitions is to incorporate interpretive planning, educational planning, and design into one process. Consider all of the uses that may develop for the project site, including educational programming, events, and tours. It is much easier to incorporate all of these uses from the beginning than attempting to retroactively redesign the space to facilitate education and interpretation at a later date. The Cleveland Botanical Garden was able to incorporate a variety of different uses into the Glasshouse biomes, simply by planning during the design process. Group tours, demonstrations, and school groups of all ages are able to effectively use the space, simply because planning was incorporated from the beginning.

10) **Evaluate!**

Evaluate the exhibit and interpretation as much as possible. Build in funds for all stages of evaluation, front-end, formative, and summative. If formal evaluation is not possible, plan to conduct informal evaluations. By understanding how effective the garden’s educational efforts are, a benchmark is created to measure the garden’s progress in the future. The Bronx Zoo’s Tiger Mountain exhibit used extensive evaluation. From front-end evaluation, exhibit designers were able to address areas where more information was needed for their visitors. Additionally, summative evaluations from Tiger Mountain are already helping to inform the development of the Bronx Zoo’s next exhibit (J. Fraser, personal communication, March 7, 2005). Having this information can help to justify the garden’s efforts and expenditure of resources for these exhibitions as well as help to secure future funding.
11) **Decide on the best methods and media to communicate the messages only after the messages have been set. Do not let media drive your design.**

It is very easy to get excited by new technology and let that drive exhibit development. However, first ask if this is the most effective approach for getting the exhibition’s messages across to garden visitors. Sometimes, a very simple, low-tech method is effective. A conscious choice was made at the USBG to only use low-tech media; the messages were more important to the exhibit designers than the use of fancy gadgetry. Although DVD videos are planned for the exhibit, the giant flowers that hold the video screens were designed with covers, so that if they are broken, visitors will not be able to tell (H. Shimizu, personal communication, August 10, 2004). In that way, the messages and the exhibit can remain intact if technology fails.

12) **Do not let the messages get “lost in translation.”**

Constantly revisit the exhibition’s messages during the exhibit development process, and make sure that in every stage, the poignancy of the messages is not “lost in translation.” Since changes are being made at every review stage; double check that the final product is as effective at delivering the messages as the first initial concept. Richard Graef, exhibit designer for the Cleveland Botanical Garden Glasshouse discussed revisiting the initial concepts after finding that “you have to have an exit door right where you thought you had rocks.” (personal communication, January 7, 2005). This checking and rechecking is key to keeping an effective exhibit.

13) **Create memorable experiences.**

Public gardens want their visitors to come away from their gardens awed and inspired. Create experiences in the exhibition that will make visitors proclaim, “Wow!” and remember their experience for years. The Desert Botanical Garden created an
excellent take home experience by staging a photo opportunity underneath a giant saguaro cactus (see Figure 12). The exhibit included a flat camera stand with a sign that said, “Picture yourself in the Sonoran Desert,” a place for families to gather underneath the cactus, and another sign (placed so it was in the photo) that proclaimed, “Greetings from the Sonoran Desert, Desert Botanical Garden, Phoenix, Arizona, USA.” There is little doubt that visitors looking over old photo albums would forget that visit to the garden.

14) Constantly strive to create more effective exhibits and interpretation. By constantly striving for more effective communication methods, exhibition developers are able to look beyond what currently exists. By building on previous knowledge, public gardens can achieve their mission in a more effective manner. The Bronx Zoo is constantly revisiting and building upon previous exhibits to create more effective interpretation. Their end goal is to better achieve their mission, and the only way to accomplish that is by constantly improving. Do not settle for mediocrity!

15) Realize that some areas can be left without interpretation. Public gardens are sensorally rich experiences and visitors should not be overwhelmed by these experiences. The Desert Botanical Garden purposely designed “cognitive breaks” for visitors to rest their eyes and minds (K. Socolofsky, personal communication, December 17, 2004). All areas of the garden do not need to nor lend themselves to being interpreted.
16) *Share ideas!*

There is no better way to learn about great methods of developing exhibits and interpretation than through colleagues. The Cleveland Botanical Garden exemplified this process through their collaboration with colleagues in both Madagascar and Costa Rica (Holley, 2003). By constantly sharing ideas and tips, the public garden field becomes increasingly more effective and relevant.

**Future Research and Conclusion**

Future research in interpretive exhibit design within public gardens is practically limitless. As a basis, public gardens should more thoroughly understand what learning is within a public garden and how the learning process works. Currently, the Institute for Learning Innovation (www.ilinet.org) is conducting research on free-choice learning as to how this type of environment differs from traditional formal settings.

Additionally, better methods of evaluation need to be developed. Many public garden missions are related to affective and behavior changing goals, and ways to determine if these goals are actually being accomplished need to be developed. Ongoing research on the effectiveness of new and different media and methods are also needed. As new technology is available, the advantages and disadvantages of each of these technologies should be explored. The Visitor Studies Association (www.visitorstudies.org) is another great resource for ongoing research in evaluation and visitor studies.

As an ongoing project, a vast amount of information can be gleaned from other fields of study. Museum and visitor studies research are the most directly related; however, work in organizational development could be used to facilitate team development processes. The fields of psychology, education, human ecology, and
environmental studies could also be relevant to understanding human and plant interactions that occur within our garden settings.

The possibilities are endless; institutions are always able to learn more, and with an increased understanding, public gardens are better equipped to deliver their messages to their audiences. As Johnny Fraser of the Wildlife Conservation Society stated, “If we commit to a learning organization, we are committed to learning from everything we do. So, everything is a good idea, but the next one will be better” (J. Dohlin/J. Fraser, personal communication, March 7, 2005).
APPENDIX A
INTERVIEW GUIDE

In general, questions during interviews were asked according to the following format. However, natural conversation occasionally steered the course of the conversation away from these particular questions. In some cases, unique factors in the institution’s exhibit development process led to other lines of questioning. Those instances are reflected in the individual interview transcripts.

1) How do educational goals/interpretive goals fit into exhibit design and planning?
2) How does the mission/vision/interpretive master plan/philosophies inform interpretation?
3) How do you define innovative exhibits? What makes them innovative? How do you achieve innovation? What’s the biggest impediment to innovation?
4) What was your role in development?
5) Who and what departments took part in the exhibit development process?
6) Where did the motivation to undertake this project come from? How did you start?
7) How did you decide what kind of design & media would be appropriate for your audience?
8) What do you want individual guests to come away with?
9) Do you think the goals were achieved?
10) What do you think are the strengths of your exhibit? Weaknesses?
APPENDIX B
INTERVIEW TRANSCRIPTS

The following interviews were transcribed verbatim and then edited according to guidelines set forth in Willa K. Baum’s *Transcribing and Editing Oral History* (1977). The procedures call for first transcribing the interviews and then editing for clarity. This includes deleting items such as false starts, unfinished sentences, and crutch words such as “um”. After editing, the transcripts were sent back to the interviewee for content approval and permission to print the transcript as an appendix. All approved transcripts are included in this appendix.

Verbatim transcripts read quite differently than reading prose or other literature. Baum sums up some of the issues:

Transcribing is a work of art, a little akin to translating from one language to another, but with less latitude allowable. The spoken word has many dimensions with which to convey fact and feeling: pitch, loudness, strength, speed, pronunciation, sounds that are not words. In putting a spoken performance down on paper, the transcriber has only words and punctuation to work with. With these, he must try to be accurate as to the information that was related, to use the words that the narrator used, and to catch as closely as possible the flavor and feeling of the speaker (1977, pp.26).

For these reasons, the interviews do not follow strict grammatical rules; the interviews were transcribed to preserve the original wording and intent of the speaker. This method was used for an accurate representation and record of the original interview.

Transcripts start on the following pages:

Tiger Mountain, Bronx Zoo, Wildlife Conservation Society

Jon Dohlin & Johnny Fraser

Eleanor Armstrong Smith Glasshouse, Cleveland Botanical Garden

Vickie Dahl
Richard Graef 133
Sandra Rode 148

Desert Discovery Trail and Side Trail Renovations, Desert Botanical Garden
Ruth Greenhouse 173
Kathleen Socolofsky 191

Plants are the Seeds of Our Inspiration, United States Botanic Garden
Christine Flanagan 211
Dan Murphy 231
Lorraine Schmidt 249
Holly Shimizu 261
Interview with Johnny Fraser, Director of Interpretive Programs and Jon Dohlin, Project Manager, Exhibits and Graphics Arts Department, Wildlife Conservation Society

Date of Interview: 7 March 2005

Location: Phone Interview

Interviewer: Jenny Evans

Transcriber: Jenny Evans

Topic: Tiger Mountain Exhibit Development

Note: Number in parentheses indicates approximate tape counter indices.

Begin Tape 1, Side 1

Dohlin: Your first question is—how do educational goals and interpretive goals fit into exhibit design and planning? I think Johnny would agree with me [in that] I don’t think exhibit design can be thought about without educational goals being an integral part. If you’re talking in the more general sense of the architectural aspects of exhibit design, then we’re constantly going back and forth between what we want to say and how we want to say it, both architecturally and with other forms, be it graphic or tactile or visual sightlines.

Fraser: To add to what Jon’s saying, we believe that architecture is a storytelling medium. We have two kinds of jobs with our exhibits, the back of house job, which is animal care [and] animal research, where we look at longitudinal studies of the animals in our collection and learn more about them. That is a back of house activity. We do cognitive psychology studies with our animals; we look animal enrichment as part of their life with us. They are our
collaborators. That part of planning is strictly animal driven. Architecture and site planning around that is about learning from the animals in the facility.

When you think about the public aspect of what we do, create exhibitions, everything from there is driven from a guest perspective of achieving our mission of saving wildlife and wild lands and using our collections to demonstrate how people can be involved in those issues, whether it's thinking about them, understanding them, taking physical action, contributing to conservation, or really just growing their awareness and concern. So, those are the two things we concern ourselves with, care and welfare of the animal and how we learn from the animals that are in our collections, and how the public learn from their experiences with us.

Dohlin: The two things that Johnny pointed out, the back of house and the public experience, both of those are very collaborative with other departments, particularly the Animal Department. The back of house aspect is driven by the Animal Department; in other words, they’re telling us what they need for husbandry purposes [and] for animal enrichment purposes. In the public experience, it's much more of a collaborative effort, back and forth, where we say, “This is what we want to do.” And they say, “Here’s what we can safely say the animals will accommodate or what will help the animals [and] what will work against the animals.”

Fraser: We’re crossing into the second question there—which is how does the mission, vision, interpretive master plan, and philosophies inform interpretation? Jon basically laid it out. We work with conservation psychology theory, education theory, new theories in architecture, new theories in planning, how people experience space, [and] we look at affective measures in order to assess our work. Our mission is really creating conservation action. So, we have three
dimensions, we have cognitive learning, affective learning, and behavioral change. Those are the three dimensions that we try to affect in our exhibits.

Exhibits are novel experiences; they happen once in a blue moon to people. We recognize that we can repeat messages that they’re already hearing in public in order to add to and make real behavioral change intentions. Mostly we work within an affective, social family context to help people grow a better understanding of their families’ relationship to wildlife. And we work with specific cognitive tools in order to get them there. That’s the kind of stuff that informs us. It comes back to taking the mission and saying, “We save wildlife and wild lands.” Here’s a tiger. How does a tiger, and “We save wildlife and wild lands,” relate to how people experience tigers? And that was the front-end study that you saw.

**Dohlin:** (64) There’s also the more mundane or on the ground aspects of the fact that we have to look at this exhibit as existing within the framework and the context of the entire Zoo. So, we’re learning from other exhibits [about] what is successful and not successful. It’s almost like Stewart Brand’s book *How Buildings Learn*. We open an exhibit with great intentions that it will be complete and done. But inevitably, it happens pretty rapidly, within the first year or two, it undergoes quite a bit of change because we fine-tune it in response to use. Things that we thought would work, don’t work. And things that we didn’t think would work, work really well. So, we’re constantly informing all our new exhibit work with what’s gone before.

Also, [we are] placing it within the context of the visitor experience. Moving from point A to point B, what do we want people to see? When do we want to give them a break? What’s not only the narrative art within the exhibit
itself, but within the Zoo experience itself, and how is this exhibit going to fit into that?

Fraser: Everything else we’re going to say is based upon what Jon just said.

Evans: Going from there, how do you define innovative exhibits? And what makes them innovative?

Fraser: In spite of being innovators, our job is not innovation. Our job is to find better ways to help people care for the wild and protect wildlife. So, for us, the only innovation we’re concerned with is more effective tools.

Dohlin: (83) Innovation for innovation’s sake doesn’t really hold any interest to us, either philosophically or programmatically, if it’s not furthering what we’re doing. If you look in all zoos, but the Bronx Zoo’s a perfect example, there’s lots of things that are repeated over and over again that are essentially unchanged from the ’50’s, ’60’s, ’70’s; there’s certain things that work. We’re not really interested in innovation, unless as Johnny said, it’s innovation as a means of telling our message more effectively.

Fraser: We have an innovative Children’s Zoo that’s 25 years old right now. It’s still effective, and so we’re rolling out those same tools in other ways. For us, the impediment to innovation is not looking at what your outcome is in a clear way, but just trying to make something neat. Because something neat is not innovative. Innovation comes from achieving an outcome in a new way that is more efficient and effective.

Dohlin: So that answers the question [of] how we define innovation and what makes something innovative, how it performs its essential storytelling task.

Fraser: Here, there’s always mush in terms of what people’s roles are. Even though we have prescribed job title, responsibilities, and roles—like Jon was Project Manager for this project and I was Director of Interpretive Programs—but in a
way, we work in collaboration. So even though the story falls under interpretation and getting the job done falls under Project Management, everybody contributes to the design. Everybody’s mind is allowed to wander to help the project get better. When a job is done, knowing who did something is the last thing on our minds or should be the last thing on our minds. The fact that it’s effective and right and it worked is the good thing. If two people came up with that idea together, that’s better. So, it’s EGAD [Exhibit and Graphic Arts Department] work, that’s sort of the way we think.

Dohlin: In fact, one of the first questions that you were asking, and I was struggling to answer—we’re trying not to think of it as exhibitry filled with something, but rather a coherent whole that’s working in concert. We struggle with that ourselves all the time. Something that we’re really trying to move away from is this view like, “Oh, I’m an architect. I do the architecture. And then the interpretive folks come along and fill it. Or place on its walls…” We can go back to what’s innovative. That’s where we’re moving, in terms of innovation, is looking at exhibitry as an integrated, entire message from the fasteners to the colors.

Fraser: One thing to think about in terms of roles is that most people here have at least two, if not three, professions or experiences before they come to zoo design. So, while Jon and I are both architects, Jon was a teacher as well, so he understands the learning process, cognitive development, how kids learn, [and] how families experience things. My undergraduate work was not only environmental studies but also performance art and film, and I have some theme park background. When you ask around here, we’ve got another guy that used to work with an industrial design firm doing NASA stuff. Our Manager of Interpretive Programs is also a professional traditional Indian
dancer. As a group, you don’t learn zoo design; you learn ways of thinking and
suddenly you realize zoo design is your calling. If you have an experience, it’s
brought to the table as part of who you are as a person. So we don’t hire a
thing, we hire a full person, and we try to honor that.

Evans: How many people do you have working on the exhibit process at once?

Fraser: At this point, we just have to go, “Gack!” Our [EGAD] Department is
currently sixty-five people. We’re the largest zoo design firm that I’m aware
of. We have artists in house, so that’s what makes us unusual. We have about
twenty-five people who just physically fabricate stuff, which most design firms
don’t have. We’re, at a national level, a mid-size design firm.

In terms of other departments, because we live inside the Wildlife
Conservation Society [WCS], the exhibit development process is helped by
hundreds of people. At this point, we can’t even break them down because all
of our field scientists, if you had anything to do with the project, [you were
involved]. If you go online and look up Ullas Karanth’s name—he is head of
our India program [and] he works out of our Asia Division in International—
his book was not only part of our work, but he came in and sat with us for
days, went through photographs, and talked about what was going on with
tigers. Everybody in the field working on tigers, who’s even remotely
associated with WCS, was part of this project.

Our Marketing Department was part of the project. Our retail
products—I sat with an industrial design firm who does our retail products.
And we brainstormed a whole bunch of issues based on the cognitive research
we did, to come up with the custom retail products, including trying to invent
the first happy plush tigers. Because all of the plush tigers are vicious, or
stupid. Finding an intelligent looking plush tiger that was happy was actually a commission because it doesn’t exist in the market.

So, how many departments took part? Everybody. Our Education Department has an international curriculum that’s tested. We brought teachers over here who were part of our field training program. They walked through the exhibit before we went to our final remediation and were talking about how they do things in the field with their school programs that are in areas where tigers are found.

Dohlin: So, in answer to that question, everybody.

Fraser: Which is our favorite number.

Evans: (141) But did you contract out with other people as well?

Fraser: Yes. Construction is contracted.

Dohlin: Fabrication of a lot of the specialty items. We work with architects as consultants in developing the construction documents.

Fraser: We also were out there with spray cans doing some camouflage painting. Jon and I were out there the night before opening with spray cans. Really, a good work of art is something that never finishes. Again, that gets back to—what is your role? Making it right.

Evans: Did this project come from just needing a new tiger habitat?

Fraser: We actually had a tiger habitat already in the park, which is part of our monorail experience. Projects come from—I would prefer to refer to it as harmonic convergence. International issues are coming up. We had big cat legislation that we were working on at the federal level and at the state level, which was kind of coincident. We had been doing genetic studies, in terms of the difference between subspecies of tigers and whether that matters to us in looking at the global conservation issue in our International Department. [We
were also] developing new techniques for caring for tigers in captivity as part of our animal welfare issues and our animal enrichment programs. All of these things [plus] the complaints you’re getting from guests of, “Where are the tigers?” you just say, time to do this one next.

**Dohlin:** Within that, you start looking at—where do we have a gap in our visitor experience? Where do we have existing developable sites that we could use for this? How is this going to fit in with our zoo-geographic orientation in the Zoo, if it is going to fit into it?” Things like that all enter into play.

**Fraser:** (157) That actually brings up a point. We completed successful breeding programs for wolves that were being reintroduced into Southern states. So, our wolves were moving out and back in with U.S. Fish and Wildlife, and we had a hole in the exhibit because we completed a project. And that project was twenty years, I guess, it ran. It was a long-range project, but at the end of it, there was a significant hole in terms of our charismatic animals. So we needed a mega-charismatic animal at that point in the Zoo. As Jon said, when you look at the whole experience, we recognized there was a hole in the middle of the park that we needed to fill.

**Evans:** Once you knew that it needed to be done, how did you decide the design and media appropriate for the audience?

**Fraser:** It follows up on our Congo [Gorilla] exhibit, in terms of what we were trying to do tactically because it is on the opposite corner of the park to our Congo exhibit. So, there is some need to reinforce some of the basic messages, get people through some of the complexity of making decisions in conservation issues in the field. And we know with tigers, from our front-end evaluation, that people transfer the concept of a tiger into generalizable to all wildlife.
And that meant we could put some effort into the very complex understanding of the principles of conservation.

Dohlin: And then also, you have to recognize the fact that we’re working both with our audience and with the animals. So, a lot of that is driven by the animals. What kind of design and media are going to be appropriate for the tigers? So, we’re constantly flipping back and forth between those two things trying to get them in harmony.

Fraser: (173) Answering the second half of your question, was it purposefully designed to be appealing to children? No. We appeal to families. There’s a real difference [and] there’s some real confusion. People think of coming to the zoo as a thing you do with children, but there’s an aging down process that happens when adults come to the zoo. They want to have some of those same experiences [as children], that wonder of childhood. We recognized that it’s the social relationships of the parent and the child. So, if you look at the exhibit plan, you’ll see that some of the kiosks and touch screens are set apart from where the interactives are, so that there can be a conversation and exchange between families. If you look at some of the photographs, you [will] see how people are discussing and involved in sharing the information. It’s not one-on-one learning. We look at the conversation happening within the family unit.

Evans: The reason I asked that question—one of the evaluations said that primarily the use of the technology was by children, but it didn’t go into whether it was children doing it themselves, or whether they were talking to their parents.

Fraser: We recognize that in zoo informal learning, there is a lot of parent scaffolding going on for children. Because parents want their kids to be the smartest child ever, the parent will often give them scaffolding experiences by suggesting or
guiding them a little bit. But touch screens are going to get used by kids; that is a seamless media in their world, where parents are a little more standoffish about it. But [the parents] will discuss it with them and go through the issues. So, some of the material on the touch screen is more challenging than if you were designing this for a grade two class.

**Dohlin:** (186) Parents not only want their kids to be the smartest kids, they also want to feel like they are really smart parents. So you have to layer information, so the parent can be the conduit of some of that information. They can have the information in the exhibit to answer their child’s question, like, “Why are there guns in this box?” Things like that. The tactile experience may be designed for the children, [but] the actual transmission of the information behind that might have to come through parents.

**Fraser:** Question eight, I think we’re going to jump through pretty quickly. You’re starting to hear our mantra here. What do we want individual guests to come away with, aside from what we said in the stated goals? We’re really serious about the stated goals. That’s it; that’s what we want.

And, do we believe that increased appreciation for tigers leads to conservation behaviors? Yes. It is demonstrably shown that intention to act, [and] that coming away with increased appreciation, caring, and concern, or empathy—if you look at Wes Schultz’s work—there is a linear relationship between that and intention to act. In our pre-testing [of] the affinity group program, we tested that at the end of the Congo exhibit. And it was outrageously successful at motivating people to be concerned and to talk with legislators. Saving tigers is one of those motherhood things that it’s hard to say no to. One of the things that people didn’t have coming into our exhibit was a sense of literacy, in terms of where tigers are found in the world and
where this action could be effective. We reveal that in the exhibit because by
being able to connect place with conservation issue, is the link that people
needed to make that intention conscious, both cognitively and affectively. Not
only do they care, but they know where to care. Once they get that, it
completely changes their interest. We’re still netting 5% of the people [who]
walk through the gates, join our affinity program, which beats any direct
marketing program you’ve ever seen.

Do we think the goals were achieved? We never think they’re
achieved.

Dohlin: (210) They wouldn’t be goals then.

Fraser: Summative evaluation taught us a lot. We did some remediation in there. We
fixed a few things in terms of sightlines. We learned a heck of a lot.

Dohlin: How exhibits learn. And our next exhibit will reflect a lot of those lessons.

Evans: Does it become an iterative process?

Fraser: Every exhibit is an experiment, and if we commit to a learning organization,
we are committed to learning from everything we do. So, everything is a good
idea, but the next one will be better. We’re working on a project for
Madagascar right now, and through the whole thing, we keep saying, “But we
learned this from Tiger [Mountain]. But we learned this from Congo [Gorilla
exhibit]. Let’s look at the model from twenty years ago. Let’s look at the…”
I mean, we were looking at stuff that was done in the ‘40’s recently, just to say,
how did that learning work? How did that immersion experience help context
what we’re doing now? This is a scholarly profession.

Yes, changes were made in response to summative evaluation,
including increasing some space, moving some kiosks, taking some stuff out
because we were a little overloaded for the popularity. This is more popular
than we ever expected it to be. We designed it for about half the capacity we started to get. So we ended up having to widen it up and open it up because we just couldn’t keep people out.

Evans: Wow! That’s amazing.

Fraser: Maintaining that intimate one-on-one experience, when you’ve got a forty thousand-person day in the park, is hard for us.

Evans: What are the strengths of the exhibit?

Dohlin: I always get back to one statement—which is, it’s the animal. In the end, our hope is to pass along lessons, while you are doing what you ostensibly came here to do, which is to see animals. So in that case, I would say Tiger Mountain is very successful in bringing these very charismatic carnivores down to an incredibly close view. They look happy, and they act happy. The enrichment program far exceeded our expectations in terms of the tiger’s participation because that’s something we can’t force nor foresee. All of those things are very successful in Tiger Mountain.

Fraser: (230) The design, in terms of the layout of where the guest is and where the tigers are, and the tiger’s interest in being around where the guests are, is an effective design strategy. It incorporated animal psychology in planning all of its phases. Some of the stuff that people really asked about, [such as]: how do you interact with tigers?; what it’s like to know them?; then they get to meet the keepers. [That] makes all that other exhibitry, that contextual experience of going through the exhibit, relevant and valuable. I don’t think we could have had the depth of educational material around that exhibit if we didn’t have the animal/keeper relationship, and the animals consciously interested in being at the exhibit glass.
These tigers can see people inside the exhibit, and little kids are really interesting to them. That creates a whole exchange which is—kids realize the animal-ness of a tiger. That is huge learning thing that when families go through that, there’s no going back. That is an awareness that a child walks away from here with in their viscera.

The amount of space it takes to get to that experience allows us to establish a really nice context for the guest. [The experience] is not only coming in [to the exhibit] as a sudden surprise, [but the experience] is organized for them before they have it. We think that that’s an effective way of hitting our conservation story.

A couple bits and pieces we fixed, we anticipated technology that wasn’t quite there.

Dohlin: The outdoor electronics have always been…
Fraser: …buggy.
Dohlin: It’s been a frustration for us because we’re just a little bit ahead of the technology.
Fraser: Frankly, we invented the touch screen that’s there. We ended up specifying all the parts; it got built; and it’s been failing, but now there’s one on the market. We included our consulting firm, who put together parts that were available on proprietary on the market, but no one had put them together for this kind of use outside. In effect, we anticipated by creating the first assembled thing.
Dohlin: (247) If you look at ATM technology for example, although it’s outdoors and stands up to industrial-level wear and tear, it’s also a very controlled environment. We tried to stretch that envelope, and it hasn’t been entirely successful.
**Fraser:** There’s new stuff out on the market now, but that exhibit’s three years old from when we designed [it]. For technology, that’s the Jurassic period.

The other thing we would do, if we were planning it again, would have been to make the experience a little more complex, a little bigger, and incorporate some smaller animals into the preamble before you got to the tiger experience. That would have made a richer, more contextually appropriate learning experience. [But] you also have to work with the money you’ve got and the space you’ve got.

**Dohlin:** There were real world constraints on this. We went through a lot of design iterations to get down to where we were able to meet budget, so that’s one of the things that we lost.

**Fraser:** Including a roof over the touch screens.

**Dohlin:** One thing that I am personally dissatisfied with is in the tiger enrichment stations, where we have this pull down stage. In our planning process, since this hadn’t been done [before], the vast majority of our tigers were not socialized to do this. We had no idea how they would act in front of a crowd of people. So, although we thought this would be a great thing, we couldn’t really confidently design the entire exhibit around the spatial relationship around that stage. For all we knew, the tigers would never come down there, so we couldn’t just do that. As a result, its kind of fish and fowl in there, in the sense that it’s a very good experience when that stage is up, and you get great views of the animals. When that stage comes down and the animals are there, it’s the strongest part of the exhibit. The sightlines [and] the crowd handling of that situation, if we had known what we know now, it would have been done a little bit better. We could have raked [the seating], and made it more of a stadium-like atmosphere around that stage.
Fraser: In terms of the interpretation, I would have liked to have done some more preamble before people got to the tigers. That, for me, is the big regret because the [visitors] get to the tigers so fast. There is a group within our audience that wants to see a tiger and then split. We recognize there’s a small portion that does that and we could have done a little more for that audience segment.

Most people come for exhibit learning, so there isn’t as much competition between—animal experiences are a different part of the whole experience. It’s not about competition; it’s about complementary expanding thinking. There’s an article by Sue Allen, [and] what happens is, people have synthesizing conversations when they’re looking at living animals. They’re reminded of things from their past. And even if they’re there alone and there’s somebody else in the room, they will turn and talk to them. Because they need to synthesize what they’re feeling and what they’re learning into their past experience. They need to have a conversation around a conditional truth for that moment. That happens when you look at a live animal because you’re recognizing a consciousness.

They talk about the cognitive relationship between/within the material, but it’s repeating, “Oh I see, they want me to do this. Oh, I understand this is related to that.” They haven’t synthesized it into their real truth for the moment. When they start looking at the animals, or when a parent looks at a child looking at an animal, all of the sudden, the whole complexity of what they’ve been talking about, comes out. So, looking at animals is a different experience than the learning through an interactive, than the reading a panel. They all come together only during the looking; it’s all part of the single conversation.
If you have too many things or too many words, it’s overwhelming for people to hold it in their mind until they get to see the critter; so they just don’t. They jettison the material. The real balance is having just the right volume of contextual material to make that synthesizing conversation effective, on target, and towards our mission. [A mission that] is about using affective cognitive materials to create intent to behave differently.

Evans: Does it work the same way then, if the other experience is after you see the animal?

Fraser: (283) Not as successful, but it can work. It depends on the question the animal viewing provokes. If some of that synthesizing conversation comes back to, “But I don’t know this, and I don’t know that,” then they will hunt and look for those answers.

Evans: And then you’ve answered those questions.

Fraser: The reason for the truck and the film is really to come right back with, “Now you’ve seen them. Have you really thought what’s going down?” When they see those things, all the sudden, this is where we get into that level of cognitive dissonance of, “Whoa! I didn’t know it was that bad.” Or, “It’s great that somebody is actually dealing with this, because that’s how I feel, and somebody should be dealing with this.” So, in a way, we try to say, WCS is living your values. That’s a core concept for us in a lot of respects.

We first need them to realize and articulate their values. And then, they can understand why we’re committed to conservation. They sort of know we are [committed to conservation], but they don’t realize it’s the thing they want happening in the world too. When they say, “I wish someone was out there saving tigers.” And then, we turn around and say, “We’re doing it. And we’re doing it effectively, but we could use your help in legislation, national issues,
being connected to what’s going on, and being aware of how world politics is affecting conservation issues.” That’s how they get engaged. They realize that “we” are actually “they”. We are part of the same value system that they are.

**Dohlin:** You raise a question [in your last question] that is one that we are utterly confident about. In an increasingly urbanized world, nothing can compare to the zoo experience as both a visceral affective experience and an educational opportunity. There are fewer and fewer opportunities for people to experience nature, particularly animal life. People love nature films, but that is all very, very mediated, and children really know the difference. People still come to the zoo for that reason.

It gets back to what I said before, it’s about the animals. There’s no other place to see live animals. Given that head start that we have, we’re not competing with anything because there’s nothing like that. If we can place our educational and interpretive goals within that context, we’re way ahead of the game. And we don’t feel like there’s anybody that can compare.

**Evans:** (302) Are there other things that I should know, or that you think I should address in looking at the exhibit?

**Fraser:** We’ve loaded you up at a phenomenal level for what you’re doing. The next place to look is so big, that we would open up the complexity of what is learning with living collections. As a question [that] is a very big question, that is probably outside the scope of this paper.

One of the things that the Tiger [Mountain] exhibit has done for us is helped open up our thinking about—how do we explain or discuss the ethic and care for wildlife and the empathy that underlies the American Zoo and Aquarium Association’s professional animal welfare issues? Why do we want to close down roadside zoos? What’s the difference between this exhibit and
exhibits which are about exploiting the tiger for commercial gains without the reciprocal benefits to their peers in the wild? How do we deal with the emotions of zoo-going, which can be quite complex in the family, because the family social dynamic gets very layered?

The Tiger Mountain exhibit reveals some of these concepts in very interesting and very rich ways [such as] the social interactions within families, in terms of how parents are concerned. Is the tiger a protector or an attacker? These are concepts that you could spend years in that exhibit studying. So, basically, I’m saying avoid all that. [Laughing]

Fraser: We’re coming back to acknowledging that the environment that you’re in, especially in a novel environment, is a learning place. It’s about learning and it’s about processing, using your processing tools for coming to terms with the zoo language and the zoo experience and controlling that language with an educational goal in mind.

So, unlike a lot of gardening, horticulture, [or] architectural design, once you move into the field of exhibits, you suddenly step into a parallel universe that looks to specifically say—how did that thing, result in that thought? As opposed to an internal continuity and logic, you’re now trying to take your design thesis and turn it, so that it exposes itself to the audience. So that people can read it in languages that they have no training in, because that's not the way the world’s organized.

[Informal conversation continues]

Evans: Well thank you.

Dohlin: Good luck, Jenny

Fraser: And I’m looking forward to reading it, too. It’s an exciting project.

Evans: Thank you so much. Bye.
End of Interview

End of Tape 1, Side 1
Interview with Vickie Dahl, Rhodes/Dahl, Charleston, South Carolina

Date of Interview: 2 February 2005
Location: Phone Interview
Interviewer: Jenny Evans
Transcriber: Jenny Evans
Topic: Cleveland Botanical Garden Glasshouse Development

Note: Number in parentheses indicates approximate tape counter indices.

Begin Tape 1, Side 1

Evans: Can you give me an idea of your role in the process?

Dahl: Rhodes/Dahl was the project manager and owner’s representative for the entire project. So, we were there before anyone else. We were hired before Sandy Rode was there, or anybody was there.

And a quick background, the Cleveland Botanical Garden was an existing institution, a 501(c)3 institution that was pretty sleepy. It had started in the ‘30’s as a garden center, and was mainly a club for a lot of garden clubs in Cleveland. There are ninety garden clubs in Cleveland. And it’s a small place, acreage wise; I think it’s only ten acres. It had lovely gardens, and it had about a 50,000 square foot existing building. They were free because there really wasn’t anything there to really pay for, except to see the gardens. So, they were kind of a sleepy place; they had a staff of about twenty-five or so at the time. They did run education programs; they ran a lot of adult education programs, and they ran very few school group programs. Some of the school group programs they ran off-site.
When they hired Brian Holley, who is the current Executive Director, Brian came from the Royal Botanical Gardens. Brian was a much more energetic fellow, and they hired him under the auspices of doing something with the Center. They created something called Vision 2004. And it was a completely new vision where they actually would attract more of the general public and be able to do more school classes. Part of doing that, of course, was to create an attraction, and to create educational programs that you could do on-site.

In maybe 1999 or so, we were approached by the Kelvin and Eleanor Smith Foundation, people we already knew. Actually, it might have been 1997 or ‘98, they approached us and said, “We have been asked by the,”—they still called it the Garden Center, but they had renamed themselves as the Cleveland Botanical Garden. In fact, Mrs. Kelvin Smith, Eleanor Armstrong Smith was the founder of the Garden Center, so this Foundation had a longtime history with the Garden Center. It’s a Foundation that does nothing but give money to cultural institutions in Cleveland. Anyway, we happened to know them, [because] we had done another project with them. And they said, “We’ve been approached to give money to the Cleveland Botanical Garden. Could you go in and assess whether or not this is a worthy thing to do?” And we did.

We went in and met everybody, met members of the Board and Brian, and we listened to what they wanted to do. And then we had Tom Martin’s office in Boston do an economic feasibility study—we do those on almost all of our projects—to look at whether or not, if we really changed the nature of the attraction, enough people would come that they could afford to at least pay for the new operation. They never thought they’d attract enough people to be completely self-sustaining. It’s very hard, when you’re under 300,000 people
a year, to be completely self-sustaining, especially if you do the educational programs they wanted to do. So, the study turned out to be very good.

The Kelvin and Eleanor Smith Foundation gave their gift, and as part of the gift, we were going to be the owner’s representative. And it turned out very felicitous for everybody because we liked Brian and we liked the Board members a lot. It was definitely an underdog institution on the circle, as they say, University Circle. Nobody ever expected the Garden Center to do anything. And I think to some degree that appealed to the Foundation because they’re slightly contrarian. They liked the idea, especially since it was connected with Eleanor Armstrong Smith.

The idea, at the stage that we did the feasibility study, was really not very well formed. We did the study, but the idea wasn’t very well formed on exactly what we would do. We knew we wanted to build a conservatory because that would winterize the facility. We knew it would get people there in the winter, and we knew that was a whole new interpretive opportunity. We knew we wanted to add classrooms and desperately needed to add classrooms. And we knew that we were going to need more offices because we were going to have more people. We needed a new entrance; we needed ticketing; we needed a much better store. We knew all those things, but those are physical things.

We knew we were going to do something with the Conservatory that would be sexy. It was going to be tropical or there was something that would draw people in Cleveland in the winter to it. Of course, you wouldn’t put temperate plants in a conservatory. You certainly wouldn’t put Cleveland plants in a conservatory. Anyway, we knew all that.
Then began the process of, “Everyone says we have a project [and] we have the first gift,” [but] it was [the Garden’s] job to do the rest of the fundraising. It was our job to help the owner figure out exactly what they wanted to do. We’ve done a lot of nonprofit, natural history interpretation projects; that’s almost all that we’ve done. About half of the job is managing the owner; the other half of the job is managing the design and construction teams. And the owner management actually is more work. It’s more pleasant work, but it’s more work because a good project only happens if you have a good owner. And that’s short language for a very complicated topic. They need a good Board; they need to be able to raise the money; they need great leadership; they need to have vision; they need a lot of things, and they need to be able to follow through. And they need good help and advice from someone like us, who can say, “This is what you do next. This is how you do it.” So, we had to form a project and decide [on the] elements that we wanted to do.

Once we decided what the elements were, the next big step was to say, “What are the educational goals and interpretive goals of those elements?” Rhodes/Dahl would not have ever developed the educational goals or the interpretive goals, but we would have recommended the people to hire to do it. And very early in the design process, when the project was being formed, we suggested they use Richard Graef as an Art Director. Now, Richard also would not have formed the educational and interpretive goals. He’s a designer. Brian and we determined that he needed to hire a new person for education, and Sandy Rode was hired. And we suggested also that they hire someone who could do interpretive planning, since Sandy, as good as she is, had never really developed an interpretive plan before for a public serving institution. And this person who did the interpretive planning could then go on to
copyright the work for all of the graphics, which was formidable. In the Glasshouse alone, I think there are 110 signs, [that are] very carefully placed. So shortly thereafter, we suggested they hire Chris Parsons, who’s from WordCraft.

And so, the team [who was] forming the educational and interpretive goals was Sandy and Chris, under Brian’s direction, [and] with help from us. We knew Chris; they didn’t. Brain hired Sandy; we knew Richard, [and] they didn’t. So, we facilitated that happening.

We facilitated things [and] we were kind of the practical masters of the show. When Brian wanted to do five biomes in an 18,000 square foot Glasshouse, we were the ones that would prove to him that we couldn’t and that it didn’t make any sense to do that. You’d be walking in one door, then the next one and the next one. It’s way too small to do that. So we would do things like help them get the physicality of it figured out. We would arrange the meetings, and do all that kind of stuff.

As we began to talk about what biomes we wanted to do in the Glasshouse, the development of the interpretive goals happened. Really, Brian was the one who said, “I want to talk about climate. I want to talk about geography. I want to talk about the effect that these things have on plants, and then plants on people.” It was really Brian’s idea that he wanted to talk about those things. And then it was Sandy and Chris’s job to figure out all the possibilities of the stories and would they [the visitors] make sense out of it. It was Sandy’s job furthermore to do all of the educational programming for it. Chris may have helped her with that, but that was Sandy’s job to do it. Linda and I would have nothing to do with that, and Richard had nothing to do with that. We don’t know anything about that.
As we got down to Madagascar and Costa Rica, then the interpretive goal became more specific and clear and Chris actually put an interpretive plan together. (114) It’s very long, and very specific, and it works in a hierarchical format, which is—what are your main interpretive goals and mission with this new Glasshouse? Then, [it goes] down to the very specific, smallest sign, which are the identity signs that actually identify plants. In between, is a whole hierarchy of information. And the hierarchy of information matches the hierarchy of the signs. So, the important ideas are given at the beginning. As you go through the Glasshouse, you will see signs of different sizes, weights, and prominence, and those are different kinds of information to be expressed. Obviously, the bigger the sign, the more information you can impart on it, in some form or another, whether it be visual or written. So, that was how the interpretive and educational goals fit into the exhibit design and planning.

I actually can’t imagine working without them, although I know people who have. I know exhibit designers, and I happen to know a project right now, that they have designed all of the main signature exhibits without a theme, and there’s no thread of a theme that goes between them, [or] among them. That’s common. And that is often common if you hire exhibit designers without interpretive planners or educators, or if you put a project together without a project management or owner’s representative team, like us, who have done it a number of times. Richard wouldn’t do that; he actually does believe in the interpretive plan, and I don’t think would do it without an interpretive plan. But other exhibit designers with more bow waves, do. So, it does happen. You can end up with exhibit designs without interpretive plans or educational goals. Not on our projects, it can’t [happen] because we’ve done it a number of times. Intellectually, it doesn’t make any sense to us, so we just don’t go there.
I have to admit, it’s a fine dance between design and interpretation. It always is a fine dance. The interpretive people will come down on the side of having lots of information, lots of goals, and drive the exhibit designers crazy. And the exhibit designers, who are three-dimensional designers, come down on the side of, “Forget those educational types, let’s just come up with the best orangutan exhibit that’s ever been done.” So, what it takes is really good management to make them all pull together and work together, and not have one side dominate the other side.

**Evans:** Which is where you come in.

**Dahl:** (140) Which is where I think we come in. The owner certainly would come in there, too. The owner can do that, but the owner doesn’t know how to manage—I mean that’s not their job. They know how to do what they do. They know how to state the things they want to have happen.

Usually, the owner for us has the biological information. We don’t; we’re not biologists. We’re architects and managers and things like that, although we don’t practice architecture. Usually, the exhibit designer doesn’t have the natural history information either. They’re good questioners and they’re smart people and they’re three-dimensional designers. So, the owner has the information, usually.

If you have a project with the owner not having the information, then you’ve got another kind of issue altogether. And that does happen, we’ve done those actually; we did one here. We did an aquarium where the initial owner was the City of Charleston. They didn’t have any biological information. We had to create the whole thing. We had to create an owner’s team that provided the information. And then we created the interpretive and exhibit team around that. We had a storyline, and we had exhibit designers. We believe that’s the
right way to go about doing it. But there are people who don’t do it. That’s the long answer to that question.

Let’s see, the second one—how does the mission, vision, interpretive master plan, and philosophies inform the interpretation? Chris works very much in the order that you’ve written that sentence. In other words, you have a vision and you know what you want to do. Then you create the interpretive plan around that. It just doesn’t happen; that you’re going to say—well, I guess it could happen—that, “Gee. I want to do Costa Rica.” Then you let your interpretive planners go off and say, “These are all the things I want to do about Costa Rica.” Then you come in and say, “Now, what do we want the visitor experience to be like in Costa Rica, based on these interpretive goals?” That is exactly what’s happening, but it’s happening simultaneously, rather than linearly. So, you do have a goal to begin with.

Our goal was to create a Glasshouse that attracted people and winterized the facility, got people in there in the winter. Then the goal was, “We want to talk about the impact of geology and climate on plants.” And what better way to do that than to show two diametrically opposed biomes: the desert of Madagascar and the cloud forest of Costa Rica. That was a good way to go, juxtaposition, and show the differences between the two. Hopefully the visitors are getting it. Then, those things inform the interpretive plan.

Evans: (167) Before then, did you tie it back into the mission?

Dahl: The mission of the institution as a whole?

Evans: Right.

Dahl: Yes. If the mission of the institution is to make known the world of plants, to appreciate and love the world of plants, then as you can see, that’s a very, very large mission; you could do almost anything with it you want. You could be
over there doing research. Obviously, to make known the world of plants is a very educational mission. It’s a very expository mission. It says, “To make known the world of plants and to love plants, means you want to show them in some beautiful thing that would make people appreciate them.” In those words, as simple as they are, and as glib as they are, are the main activities that you would do. Expose the plants to people and make them so beautiful and make the environment that they’re in so beautiful that people will appreciate them.

First of all, Cleveland did not have these collections. Unlike New York Botanical Garden, it did not have a collection of Costa Rican plants, and it did not have a collection of Madagascar plants. So the collection had to be purchased, or traded or gotten in one way or another. But the point being that it wasn’t a curator driven process, where a curator said, “I’ve got eighty versions of this *Euphorbia* and I want all *Euphorbias* next to each other, so that people can see the difference between the *Euphorbias.*” That’s a very different approach. There wasn’t a collection and we were not as didactic. We felt that people needed to understand our concepts. They needed to understand the natural environment.

Then, I have to say that this is the kind of program that Linda, Richard, and I have done over and over again, we had to do these plants the way you would find them in nature. So it’s a very different botanical approach than most botanical gardens.

**Evans:** Do you find that easier, in terms of getting across your educational message, or is it just different?

**Dahl:** (188) It’s a different kind of educational message. You’d have to ask Sandy that question, but it’s a different educational message. Looking at the
differences between *Euphorbias* seems to me would be a very taxonomic approach. Out of the fifty *Euphorbias* you’re looking at, you might be able to point out that *Euphorbia A* is from a dry climate and *Euphorbia B* is from a very wet climate. You might be able to point that out, but it would all be pointed out in words on signs. It would not be pointed out intuitively.

**Evans:** By experiencing it.

**Dahl:** Exactly. We are strong believers in that. I really can’t say that other than the fact that that’s where Richard and Linda and I come from, that there’s any particular right or wrong way to do it. We all started in zoo and natural history work, and in that kind of work, putting animals in their natural environment was the right thing to do. And it was the right way to send the message to the visitor. So, we’re just used to it. For Brian and Sandy, I think they strongly believed that this is intellectually the right way to do it. And I do too; I have to say I wouldn’t do it any other way. Although, I have been to plenty of botanical gardens where there are 80,000 *Euphorbias* sitting there together and it’s kind of interesting. But I don’t know that I would be interested in doing that kind of botanical garden. That’s kind of a curator’s thing. You don’t need interpretive planners and exhibit designers and project managers for that. Your curators go, and they plant all of those *Euphorbias* next to each other. It’s a very different kind of approach. Yes, we were definitely driven by the mission to attract people and to educate people.

The third question’s harder—how do you define innovative exhibits? And what makes them innovative? Innovative is to each of us—it’s a very individual question. It may also be a very intellectual question, in the sense that maybe there’s a true answer to it. But what one person calls innovative and another person calls innovative may be two different things, so it has to do
with how experienced you are. For me, an innovative exhibit, because I’ve done a lot of work in exhibitry, I put a real strong test on what an innovative exhibit is.

I don’t think the Glasshouse at CBG is innovative per se in the whole world of exhibitry. But in the world of botanical gardens, it’s innovative. So, it’s relative. The fact that we chose to do it Naturalistically, rather than taxonomically, is innovative. Not entirely, there are other places that have done it, but not as well and as thoroughly.

Cleveland went to a lot of expense to make it really look different and a lot of expense to add topography to the exhibit. You actually rise and fall in the exhibit as much as ten or fifteen feet, not counting going up to the overlook. So there’s some artistically well done pieces in it that are innovative by any botanical garden [standards] I’ve ever seen. They may not be entirely innovative by the very best zoo exhibits you’ve ever seen, which are mostly at the Bronx Zoo and other places like that. They might be equal to that.

Evans: But for the botanic garden world…

Dahl: It’s very innovative. How much longer it will be, I don’t know. You’re only innovative when you first do it. Someone usually copies you.

The beginning and ending experiences, the turning leaf experience is innovative [because] no one’s ever done it before. It’s a very unusual theatre. So, how you define innovative is no one’s ever done it before. Does that mean it will be successful? Not necessarily. It’s a new way to provide information to visitors or experience to visitors, one or the other or both. In the case of the turning leaf, it’s both. And that is truly innovative. So, new. If we looked it up in the dictionary, new would probably be one of the words that would define innovative. That’s one way I would define innovative, that I have never
seen it before, personally. I suppose something can be innovative and not successful. I think the turning leaves are successful.

Ideally, the word innovative would mean a new way of looking at something and a successful way of looking at it. That it does work. That it does capture the visitor’s interest and that they go, “Aha! I get it.” That would be innovative to me. So, I guess that answers my version of what makes them innovative.

It [is] always very interesting to go around [to see other exhibits]. There are sometimes things that are very successful, and they’re just a very simple new way of having done something. It doesn’t mean they’ve developed [it]. It’s [one of] the interesting thing about exhibitry; it doesn’t mean that it’s a whole [new invention]. In the case of the turning leaf, it’s a whole new technology and a whole new thing. [Innovative is] a very interesting word because there are exhibits that are just plain old exhibits. There’s nothing new about them and nothing different about them, except because of the topic and because of the way the people decided to do the exhibit, it’s totally fresh and completely effective.

In the Holocaust Museum, as you exit, that big huge plastic container of shoes. That’s not innovative exhibitry, when you think about it, but no one had ever done it before. It’s a fresh and different way of looking at that topic. It didn’t take any words; it didn’t take anything. You got the idea—a totally, very successful exhibit. A very sad, but successful exhibit. I don’t know whether you’d call that innovative, but it’s very effective. Something doesn’t have to always be innovative to be effective, I don’t think.

Evans: How do you go about getting to innovative? Or if not innovative, something new and fresh, like you were describing?
Dahl: (249) You definitely have to be young and energetic, which I’m not anymore. Because I’m not an exhibit designer, you have to manage that process and hope that you have married the right people together. There’s only so much that a manager can do, that I can do to make that happen. One of them is to pick a great exhibit designer and have a great project with an interesting topic. But how somebody thought of that wall of shoes, I don’t know. It’s possible that they saw that collection of shoes and the idea just came to them. In that particular case, they really want to hit home the emotion; you just feel battered at the end of that. Somebody has said, “It’s not a brilliant exhibit; it’s just very effective, so it is brilliant.” I don’t know how you get the most innovative exhibits.

From a manager’s point of view, you need to marry the information with the exhibit design. You need to have very good information presentation on part of the owner, or the collection. And [the] information presentation comes with a passion, so that when someone is talking to you [or] to the exhibit designer about this shoe or this plant or this fish, they are talking about it in some way that triggers some appreciation on part of the exhibit designer to do something that he’s never thought of doing before.

For example, we were in Tacoma, Washington, working on an aquarium, and the biologist/aquarist, whose name is John Rupp said he had been diving in the Tacoma Narrows. Of course, there’s this huge current going through there, but he said, “We were diving and it was just unbelievable. There was a whole wall of Metridium, just a wall. It was a rock just totally covered with Metridium.” And Metridium are white [anemones] and they’re really quite beautiful. All of us instantly knew what he meant, the whole room full of people, exhibit designers and biologists. There were about ten of us.
So we came up with an idea for a very narrow, front-to-back tank that was literally a jewel tank of a wall of *Metridium*. Now, is that innovative? Actually, in the tank world, it is—to have a really narrow tank and be able to feed [them] because you have to get the food right down in front [of them] or the water has to circulate in such a way that the food gets there. So it’s a difficult tank to do, but would it be beautiful? Absolutely. It would have been absolutely gorgeous and it might have made people look at *Metridium* in a way that they have never looked at *Metridium* before. So, it was the passion of John Rupp saying that to us which—what would we have thought? I’m not a diver; I don’t know. Then, it was a good exhibit designer who took it to the extreme.

Thinking of Richard, by the way, the kelp tank at Monterey Bay Aquarium, the biologist/aquarist at the time thought that the kelp tank could only be teeny. It was Richard who kept—we call it Richard’s fat pencil—Richard who kept making it bigger and bigger and bigger, to the point where the biologist was really nervous. And said, “I don’t think this is going to work.” Well, it’s one of the best exhibits ever done. It’s absolutely gorgeous. Linda gets calls from people who say it’s spiritual. They stand in front of this tank and there’s some kind of advanced state as this kelp is moving back and forth.

That was a technology then that was entirely new. Those were the biggest windows fabricated at that time. When we went on to do the Outer Bays water tank on the other side, the technology had changed, so the plates were way bigger. [With] the ability to make a mullion-less window, now they’re bigger still.
Richard probably didn’t have a clue. It’s not his job to figure out technically—well, it is eventually—but he didn’t have a clue whether it could be built. And the biologist I’m sure was worried about it. So, he just kept going with the idea until it got to a place, where it was the same scale as if you were standing at the bottom of Monterey Bay.

So, it’s good information usually, and it’s obviously imagination, and the ability to try doing something that you’ve never tried doing before. We can manage that, but we can’t guarantee that the person with the pencil is really going to be able to do that.

Sometimes, exhibit design, when there’s not a true owner, when the information gets a little introverted on the part of the exhibit design firm—sometimes it doesn’t; sometimes the exhibit design firm is really good and can pull it off—but occasionally you can tell that the exhibit design firm went off on their own without really a good true owner guiding them. So, that’s something that we try to manage. You can’t manage that innovation. You can try, but you can’t really make sure it’s going to happen.

Evans: How did you guess that the immersive approach was the most appropriate approach, given that the Botanical Garden wanted to expand their audience?

Dahl: (302) We all thought that the immersive approach was the only way to expand the audience. We really didn’t think we were going to get there to look at fifty versions of *Euphorbia*. That’s a very narrow audience. If you’re in a giant city like New York City, who are used to very interesting competitive intellectual things to do, you might find a lot of people who want to look at fifty different *Euphorbias*. But in Cleveland, which is not that big of a city, we didn’t think that was going to work.
I don’t even know that we consciously said that, but we all, from the beginning, knew that immersion was the only thing to do. I think that we all were there. That’s just the kind of people we are. And we didn’t have to convince Brian, the owner; the owner was there too. So was Sandy. We all went off on, “We’re going to make it exactly the way it is.”

And in fact, I’m sure Sandy and Richard told you, we were supposed to go, but I couldn’t, they went off to Madagascar, and I did go on the Costa Rica [trip], we went to the places. So we went to a great deal of effort to make them look exactly like the places we went to. I think we all knew instinctively that that was the right way to do it, especially to attract a new audience. We had to make it romantic and exciting, and that wasn’t going to be a taxonomical presentation. We just knew that.

Did the designers help formulate the content and delivery methods of the interpretation? Yes and no. You probably have already gotten that. Richard was like an art director for the whole Glasshouse. In the sense of the way he was designing it and the way he wanted to create topography, so at some point we were down low in a river valley with a river gushing through. It was a combination of his design, trying to get as much exhibit out of the square footage that was in the room that allowed for certain areas to have certain kinds of interpretation. So, there was that art and design that went on.

Richard was also the graphic designer. Richard, Sandy, and Chris set the hierarchy of the graphics presentation. They said, “We’re going to have focus panels. We’re going to have focus panels plus. These are the concepts that are going to go on the focus panels plus.” Richard would draw the sizes of those panels. It was a three-dimensional thing, plus an intellectual thing that said, “This is how we want to present the information and interpretation.”
Richard was right there with them, coming up with the sizes. So the three of them really worked together to do that.

Then people like Linda and I would look at it and say, “We liked it.” Or, “We didn’t.” Or, “You’ve got too many signs. It’s going to drive somebody crazy.” Brian would look at it. Brian let Sandy and Chris develop it, [and] they’d question him about certain things. He got pretty involved in, not the detail of the concepts, but whether he liked this concept here or that concept there. So, it was a team effort to do that. Rhodes/Dahl spent a lot of time managing it and a lot of time paying attention to it, and reading it, and saying, “This made sense or didn’t make sense, [or] this has gotten too didactic.” Richard also would critically sometimes look at the content and say, “I think that’s too complicated.”

Evans: It’s interesting that you say a comment like, “This is too didactic.” Did you find that the education [staff] wanted to put in all of this information?

Dahl: Yes. Sandy was terrific. Sandy was unusual in that she gets it. She understands communicating with the public. [But] it’s kind of like it’s a disease; she couldn’t help herself.

However, I’ve got to say, all of the best interpretive people that we know of, many of them from California, either came out of the education side, or are very dedicated to it. So, all of the interpretive people are allied with the education people. The difference is that most of them have been through this science-writing course at UC Santa Cruz. And they’re really good at getting complicated ideas down to very straightforward English that the general public can understand. So they’re very good at it. But yes, the education people in general, will try to just throw way too much of it around.
That is one of the roles that we would play and Richard would play. We would often say, “That’s just too much. Don’t do that.” Sometimes we wouldn’t agree with the flow intellectually. But it wasn’t as if we were god, and they had to do the work. We all did that together as a team, and we decided as a team that this was a great interpretive plan. Most of the credit has to go to without question, Sandy and Chris Parsons and Brian. Richard and Linda and I were critiques. Richard did the three-dimensional stuff that went with it. But it was a real team approach.

When you say, “What kind of specific design that was appropriate for your public,” are you talking about…

Evans: I’m talking more about experiential designs.

Dahl: We rely on our educators to tell us, “These are concepts I can get across in the following way for the following age groups of people.” Unless we vehemently disagree with them, we almost always [agree]. What would the basis of our disagreement be, except our own intuition? We rely on them to make those decisions.

And then we should have our own inherent sense of—to do a spotting scope, for example, almost everybody can do a spotting scope. You need something good to look at; you have to have it in a place where people feel comfortable using it. It’s got to be off the beaten track a little bit, so that people aren’t lined up and bumping into each other. It can’t be bumping all over the place, so that what you’re looking at is jerky. There are simple physical things. Usually your exhibit designer takes care of those physical things, and worry about it one way or another. They will tell you [if] they think this is the right place for it or not the right place for it.
But in terms of it being an appropriate thing to do for your audience, we usually rely upon the educator member of the teams to do that. Sometimes, we think of things ourselves, all of us do as a team, and then we question whether they’re the right thing to do or not. And [we] often turn to someone like Sandy and say, “What do you think? Do you think people are really going to do this?” It helps to have a really good person like Sandy on the team. And you do not always have that.

**Evans:** Another part of the reason why I ask is because it takes extra effort to get to the spotting scope.

**Dahl:** (358) Exactly. Well, Linda, Richard, and I have done these over and over again on a lot of projects. So we’re kind of used to it, but it is very helpful to have a Sandy along on the team to really test ideas out on her, [to see] whether they’ll work or not work. Sandy was very good. She was extremely good at what she did, and we liked her a lot, on top of it all. She was very helpful, and you rarely have someone like that.

Just because you have a biologist who’s a passionate information giver, doesn’t mean they know anything about methods or styles of learning, or anything about the public except what would be an attraction to the public or what would be beautiful. They know all of that, but they don’t often know what is appropriate for that particular audience. So having Sandy was a big help.

**Evans:** What do you want the guests to come away with?

**Dahl:** (366) Mine is probably more generalist and glib than Sandy’s was, but I want people to come away feeling, “Wow! That was really cool! I’m going to come back here again.” Maybe the first time they didn’t pay attention to everything; next time they’re going to come back and they’re going to pay a lot
more attention. They want to be in that space because there are lots of things to look at and lots of things to do. And I want them to go away saying, “Wow! Plants are a lot more interesting than I thought.” Yes, I do want them to also take one of our main goals, which is, “Wow! There is relationship between the weather, the climate, and plants.” It seems glib, but obviously there is and [also] geology and plants. And I would like them to understand our goals for the exhibit. They’re a little harder to get at.

I would say my first thing is, “Wow! This is really cool. I want to come back here. Plants are a lot more interesting than I thought. And there are things living all over those plants, in them and around them. I haven’t seen enough of it, and I want to come back and see more.” That’s the first thing I want. Next, I would like it if they got, or someday eventually got, the relationship between plants and geology and climate.

Evans: It’s interesting that you say, “Someday they will get…”

Dahl: Maybe they get it. I don’t know whether they do. Sandy knows better; she’s done some evaluation. We hit them over the head with it in the turning leaf at the beginning, but it’s in a theatre setting. I think that they understand from the theatre that they are going to see some really neat things. I think they’re going to understand that Costa Rica can be wet and damp and Madagascar can be dry and hot. But I don’t know if they understand why. And I don’t know if we’re real good at doing that or not. But I can’t say, Sandy would know better, from having done evaluation.

I think the very first thing about all exhibits should be an emotional response. A big powerful, “Wow!” And then it gets more sophisticated after that, and you hope that they really start to pay attention. And you have to make them pay attention. One way to make them pay attention is to make it be
beautiful, or to make it be ugly; the corollary is very true, too. Sometimes the really powerful exhibits, like all those shoes, that’s not a beautiful exhibit, but it’s a very powerful exhibit. And so, you have to make it be very powerful, one way or another.

And hopefully, stop them from their busy life. Then, they will pay attention. Just because someone’s there, doesn’t necessarily mean you can grab them. You’ve gotten through half of it—and I suppose the CFO’s happy [that] you’ve already collected their admission—you’ve gotten them in the door, and you would think that going there would make them be interested automatically, but I don’t think that’s necessarily true. Maybe that’s an old-fashioned point of view. The most successful exhibits are the ones that literally stop me in my tracks. “Wow!” It’s an emotional response initially, and then sometimes, that’s all it is. [With] the shoes, that’s what it is.

But with the kelp tank, then you want to understand what the kelp tank is all about and the fishes that are in it. And “Look at all those lazy fish! I never noticed that fish are sitting around doing nothing.” There are all kinds of really wondrous things about it. Then you can get deeper and deeper.

Evans: It’s the hook, then.

Dahl: Exactly. Maybe that’s the old-fashioned way of looking at it, I’ve always felt that, even if they’re there—I’ve seen people go to places and they just march through. They’re there either because their mother took them and they had to go, or they’re there because, “It’s a new thing. I need to see it.” Somehow, you’ve got to speak their language, and usually that language is something dramatic.

In terms of—was the individual guest learning achieved? That’s a good question for Sandy. I know she had a lot of things that she hoped people
would learn. We did test runs with people before; we did evaluation after, formative and summative evaluation. Chris Parsons does a lot of that work too. Sandy was good at it. I believe we had very good successes, at least with the early stuff before. I don’t know afterwards, since I was gone. I don’t know how successful that all turned out. I’m sure it probably was pretty successful.

Evans: She talked a lot about, especially about the evaluations of the theatres; I think it was a little more extensive with the theatre experiences.

Dahl: They are in a very contained space.

I think it’s pretty successful exhibit for what our goals were. And I think it’s very pretty and it’s turned our beautifully and the plants are looking fantastic. So, all those little side things for all of us, it was really nice. We doubled the size of the institution physically, so they now have a really nice physical plant. And it was a great project to work on, really fun. We had a really good team and a nice owner. So, I’m very happy with the situation.

Evans: Is there anything else that you think I should know?

[Informal chatting continues]

Dahl: Richard’s one of those rare individuals. He’s a really good art designer, and he has a great eye for understanding. There are very few people who would have laid out those Glasshouses the way he did. We didn’t use a landscape architect; we used Richard and he's real good at that. And he can do it on interior spaces too; he’s extremely good at it. He’s very difficult to work with, not as a personality, he’s wonderful to work with as a personality; but he’s getting old just like I am.

It’s hard and it takes a lot of passion on the part of the owner to pull it off because we were a far-flung team. Chris was from California. Richard was from California. We were from down here [Charleston, SC]. The
architect was from Boston, and the engineers were from New York. And it’s expensive, and it takes a lot of commitment to pull it off. And to pay money to do it and pull it off. In Cleveland’s case, I think it worked out really well, but it takes an owner who really has some sense. Well, good luck to you.

Evans: Thank you. And thank you so much for your time and information.


End of Interview

End of Tape 1, Side 1
Interview with Richard Graef, Ace Design, Sausalito, California

Date of Interview: 7 January 2005
Location: Phone Interview
Interviewer: Jenny Evans
Transcriber: Jenny Evans
Topic: Cleveland Botanical Garden Glasshouse Development

Note: Number in parentheses indicates approximate tape counter indices.

Begin Tape 1, Side 1

[Conversation about background of Jenny’s research]

Evans: (56) How does exhibit design and planning fit with educational goals?

Graef: The design process brings about the media or the actual visitor experience, the physicality of what the visitor sees, does, and how the messages are staged. The design is the vehicle for staging all of the education, the information, [and the] media, whether it’s an immersive habitat, a video, a graphic panel, some sort of interactive experience, [or] the visitors’ first impressions when they approach the institution, all the way from the parking lot. What’s that experience like and what are the ways that it can be reinforced and made consistent? It’s a process of figuring out how to do all that, and then documenting it in a way that it can be built. That’s the most fundamental relationship.

Evans: The educational goals, mission, vision, interpretive master plan, [and] philosophies, does all of that inform the design, and how?
Graef: (74) Yes, it does. It’s like a script for the design, although the design process might sometimes be a little bit back and forth, in that designers are usually considered communicators to one degree or another. That side of the equation often has ideas and attitudes about philosophies and approaches that might help the institution articulate their idea or their mission or their goal. Often, an institution will have lots of ideas about what they would like people to know, and they [the ideas] might be complex. There might be many layers of information and they would like to get it all out there in one big mouthful.

That doesn’t always work, and part of the job of the design team is to filter that, ask questions of the clients, and clarify the priorities. What’s really important? What are we doing here? How are we best able to simplify these things into manageable concepts that people can absorb? What are the overriding, guiding principles that you would test your design against?

It’s a matter of taking different information, education concepts, goals, or something that you want to get across to somebody, and having a format for what you want the visitor to walk away with and [on] how many different levels. Then you do your design and you test it against that criteria. So, you develop criteria [so that] everybody can agree on a way to evaluate what you’re doing. Sometimes you can’t [tell if you are meeting your criteria] because, unless you have the luxury of [an] up-front evaluation process, you can’t always tell. You have to go from experience, good judgment, and faith. You put it [the design] out there, and then the evaluation can take place. Then, depending on the results of that [evaluation], then those things can be modified over time.
Anyway, the design is the way that the institution goes about realizing their goals.

**Evans:** How do you define innovative? What makes an exhibit innovative? What combination of factors brings together this creative enterprise?

**Graef:** We all like to try to be innovative because we get tired of doing things the same old way. But sometimes the same old way is a good way because it may be tried and true. So, there’s certain things that we do that are consciously not “innovative” because being innovative to be innovative is not necessarily a goal in itself that’s particularly valuable. It’s so intimately tied in with the message and the method that you’re delivering.

Innovation could be new technology or some interesting new use of technology that hasn’t been used in an exhibit or educational context before. It might be a new format or new twist on something old. [It] might be something unexpected. [It] might be something from outside the normal boundaries of what you might be thinking, different viewpoints presented, [or] another perspective. And that could be staged any number of ways. It might result from some inspiration when you digest a bunch of information and come up with an idea of how to do it. It might be dramatic; it might not. It might be very simple. It might be one of those simple “aha” things that’s, “Why didn’t I think of that before?” It’s a lot of different things. And it comes out of trying to communicate effectively and appropriately and trying to find ways to interest people, to get their interest. And sometimes it means being clever.

Then sometimes, you can’t do it. Sometimes it’s just about impossible. There’s no budget for it. Or maybe it’s some very simple thing that you wouldn’t expect to be innovative. But, it usually is fresh and unexpected.
And it doesn’t necessarily have to be earth shaking, or even technically marvelous. It can be very simple.

**Evans:** Maybe you could give me a quick overview of when you came into the picture as a designer, and a very general overview of the process that followed.

**Graef:** They didn’t really start off with the exhibits out front with the architecture, as would have been ideal. They started with the architecture; they hired an architect first. They did have a program that they wanted to do. They wanted to have an immersion habitat that showed a number of different of plant regimes, different climates to show the effects of varying amounts and kinds of water and light, basically that affect plant communities. Beyond that, I don’t think they had thought it out too much. I might be putting my foot in my mouth, but they hired the architects first. Under ideal circumstances, you wouldn’t; you would hire the exhibit designers first, you would come up with your exhibit concept, and then you would hire an architect to build a building around it. That’s the ideal way to do it.

The architects had an idea about this glasshouse form. Everybody knew they wanted a glasshouse, I think, or maybe they didn’t. I’m really not quite sure.

In any event, they did evolve a rudimentary program that they wanted to show various habitats. They started off with four or five of them, and they worked with that for a while. Basically, I was asked by the project managers, who I had worked with before, to meet the clients and see if perhaps I might be a good fit. So, I went out there [to Cleveland] and got the program from them, in terms of what they were trying to convey [and]
the different habitats that they wanted to do. And then also, what the architectural parameters were [and] how big this glasshouse was. Then they asked me, “How would you fit this stuff in here?”

Basically, after taking a look at it, we had gotten it down to three habitats and then you couldn’t effectively do that in the space that was required because of a lot of different factors, not the least of which was you had to have a whole chamber to go between different atmospheres. So that takes up a lot of floor space, [and] there just wasn’t room. Finally, I said, “How about doing the two extremes? And do both of them really, really well.” That’s where we got to and they liked that idea. They liked the way I had arranged the plan in a preliminary way. So, we hit it off pretty well; we had a good rapport.

It started with getting a whole lot of information about the plant regimes, about the habitats, about the climates, [and] about the messages that they wanted to deliver. They hadn’t formulated all of them, but they had the basics. My job was to sort through all that and to begin to develop the circulation pattern, the visitor path, and the visitor experience. What it would be like to walk through these habitats [and] how to stage certain dramatic plant forms like a large baobab tree. They would never get a large, live baobab tree in there; it had to be artificial, which gives you a lot of opportunity to make it just the way you want it. On the Costa Rica side, we wanted to have a big strangler fig, with big roots that you could walk around and walk through, which is pretty dramatic. There’s no way to ever get one of those things in there, so that had to be artificial. Those were the two main artificial elements. There were a few artificial logs and a bunch
of artificial rocks. So, there’s the landscape and there’s water and there’s waterfalls.

My job was not only to orchestrate the character of the glasshouse interiors, in terms of how to stage it and how to make it so that when you walk through, you don’t see everything at once. You walk around different visual barriers, like heavy plantings or rocks, so that things are revealed as you go along. That all had to be coordinated with the architect’s work and the shape of the glasshouse and the height of the glasshouse.

One of the problems that we encountered was that the big strangler fig, where it was positioned in the walkthrough, we asked the architect to make a high point in the glasshouse. They didn’t like the way that looked from the outside, so they made it a low point. So, there were certain things where the architects just wouldn’t give, but where they should have. We worked with that anyway, and it was less than ideal.

I had to coordinate all of the exhibit stuff with the architecture, with the air handling people, the air conditioning, where the air was going to come in and go out, how to disguise that in rockwork and potted plants and how to conceal these things. That was a whole effort in itself, trying to manage the vents, so that you’re not aware of these things. How to camouflage them, that was another thing. And then there was light and shade and wheelchair access, and making sure that the slopes were all ADA compliant and the egress—all the code stuff has to be integrated. It starts to get really, really complex. It has to coordinate with all the electrical, all the plumbing, all the lighting, the architectural engineering, the air handling, all of those things, and more that I can’t even think of. It gets quite complicated.
And try to make all of this retain the basic concept because it starts to get eroded away. Suddenly you find you have to have an exit door right where you thought you had rocks.

**Evans:** Did you go back to the original concept over and over to try to maintain that integrity?

**Graef:** Yes.

**Evans:** So, it’s a concept revision.

**Graef:** (222) Yes. All these different consultants [and] all these different disciplines have to coordinate with each other. And that includes the exhibitry. Sometimes you reach a situation where something has to give. Sometimes the architects can give. Sometimes the engineers can give. Sometimes the exhibit design has to give. And that could be because of cost, because of engineering factors, it could be for a variety of reasons. You have to be flexible. You have to be able to adapt because all the answers aren’t there when you start.

It evolves as a very complex team effort with a lot of different people. Basically if you have a good team and everybody’s on the same page, then everybody knows what they’re going for. Everybody tries to do what they can to make that happen. Sometimes we’re not so fortunate and there are turfdoms, and people don’t like to give up anything. They don’t like to change and so that can be a problem. It’s quite a process. It is really interesting because there are so many angles to it.

**Evans:** You say that you’re all going, hopefully, to the same place in the end. How did you come to the agreement of what the visitor experience would be like? Was that something that the Botanic Garden said, “We know what
our visitors are like, and here’s the characteristics that they need.” Or was it a team approach?

**Graef:** (241) This was not a new institution, so they weren’t just starting from scratch. However, they were going after a different market. They had done a lot of homework in that they had done some research. They had a grip on who their visitor audience was going to be or who they wanted it to be. We tried to tailor the program to benefit those visitors. There were a lot of different kinds of messages that they wanted to get across.

There’s also a large cross section of audience, particularly in age, because this used to be kind of a garden club. And so, there were a lot of seniors as part of their clientele. Then there was a whole audience of younger people that they wanted to engage. And a big audience of school kids that they wanted to reach with a lot of conservation driven messages. Some of the messages were very fundamental, simple ideas like water and light affect plants. Here are two radically different habitats that show real dramatic differences in water and light.

Somewhere in the middle of all of this, Sandra Rode came on board, and she began to help focus the educational messages. She was brought in basically to develop the educational program, and much of that has to do with the visitors. She worked on developing the messages that we wanted to deliver along the way.

A lot of that was done via fairly standard graphics because there wasn’t any other way to do it. You can’t not do it; you can’t do it with all video, because there was absolutely no way to afford that. We decided not to do it with handheld walkthrough guides because that was a mess to manage, and people don’t use them effectively anyway. So, we put graphic panels
around, to tell you what the plants are, to tell you about the animals, and to
tell you about the animal/plant interactions. All of these messages
reinforcing the big idea, of course.

Evans: (266) How did you get from what you wanted the visitors to know down to
the graphic panels?

Graef: The graphics were all written by a professional exhibit writer, Chris
Parsons. And she also helped to develop the overall message that I spoke
about earlier. What are we trying to get across in each one of these message
stations? What do we want the visitor to be able to walk away [with],
once they’ve read this? She worked from that point and developed the
whole interpretive plan, which is basically a synopsis of the whole program
from big idea down to detail, including the final text.

So, the graphic panels were derived from these subjects and from the
content of each of the ideas that they wanted to be presented. Every
graphic was specifically written around an idea and the image on the panel
was chosen to illustrate that. Often, it was just an ID. Sometimes, it’s a
whole panel about the environment and it might have a number of images
on it. We would design the graphics, and we would request certain kinds
of images, and the Botanical Garden staff would search for those images.
They’d send off copies of photos that they’d obtained from various
resources. We would go through those and see whether they visually fit
the picture or not and choose them or send them back to try to find more.

Putting together the graphic panel program was really another whole
entire [project]. Back and forth on the writing, editing it to fit the panel,
writing to fit certain photographic standards that we developed, writing to a
certain age/grade level, [and] audience, so that enough cross section of
people could understand it, all of that [was part of the process]. So, [the]
graphics were fairly complex.

Evans: It sounds like there was a lot of back and forth between the education staff
in terms of developing those [graphics] and very close communication
between you.

Graef: (290) It was. And it was even a separate contract to produce those panels.
We first came up with a type style, the basic sizes and shapes of the panels,
and the colors. They were designed to blend into their respective habitats.
The look of them we had designed, not knowing what they content was yet,
although we did figure out the levels of information. There was a
hierarchy of information established early on, so that we could design the
formats accordingly.

Evans: Something like, “Plants are influenced by light and water.” And there
would be a more specific message under that.

Graef: Right, down to identifying a certain plant or animal, an ID panel. There are
different sizes and formats, and then we designed the hardware to mount
them up. When it got down to actually laying out each and every panel, we
had an illustrator on board who drew plants and animals, and we had
people searching for photos from various resources, stock photos. They
had some of their own photos in house. Ultimately, you don’t always get
exactly what you want, but you get as close as you can, given the time and
budget, and it all got done.

Evans: (301) Do you think it was more beneficial that you, as one design firm,
worked on both the panels and the overall conceptual design? Do you
think it made it more unified?
Graef: Oh, absolutely. In fact, the format and approach of the graphics was part of the overall design concept. In other words, the panels were designed to physically work in the space, in terms of their size and placement and their color. And they were designed around certain amounts and levels of information in this hierarchy. All of that was worked out as part of the general overall design concept.

I also did a whole new logo and graphic identity for the institution. So, it also fit into that and was influenced by that. Then, all the signs on the building, out front, throughout the building, all the way down to the bathrooms, were also part of it. All of those things were designed as part of the overall look, identity, and feel of the place. It was a very complete integrated design program from the outside to the inside, which is kind of unusual. But in their case, they were enlightened enough to want that.

Evans: How did that project compare to your average design project? It strikes me that many botanical gardens have unique factors. I guess all design projects have unique factors, though.

Graef: (316) Well, they do. It was different in the respect that it was about plants, but it went way beyond just plants. It integrated live animals into the plant display. Not only was it integrated in terms of the plant/animals relationships, [but] these animals were chosen for very specific relationships with plants, like pollinators or soil conditioners. There were live birds and there were reptiles and amphibians and insects and leaf cutters ants. There were a lot of animals in there, and they all had something to do with the plants. So it helped complete the picture. There are very few botanical gardens that have taken that approach, and they
really pushed hard to get as much of that in without becoming a zoo. So I think that was pretty unique.

The other unique thing was they were willing to look at the whole thing, all the way from the logo, their stationery, and business cards, all the way down to the plant IDs and everything in between. They were really willing to look at the big picture.

The other [unique aspect] was—I’ve been pretty lucky with a lot of clients, and I’ve had pretty good rapport—but these were a really great group. They’re really tuned in to what they’re doing and it was infectious. It got me excited; it was great working with them. They’re wonderful folks. And that goes a long way to creating a successful project. So, the combination of a lot of favorable people and events.

The glasshouse is fabulous. It’s really nice, it’s different, and it’s unique. As an aside, it’s an architectural vision that Graham Gund, the architect, had. He envisioned this glasshouse as a crystal or jewel, unlike a standard glasshouse, which is usually kind of formal. This thing is very free form and angular and faceted. It didn’t end up being quite what he wanted to do initially because of engineering problems and costs. It had to get simplified a lot.

Graham Gund had an idea for the Glasshouse form, and it got the client excited. This was before they hired anybody else. And so that’s the vision that I walked into, for better or for worse. I think it was good. It was really difficult to make happen. It was a very challenging structural thing to do, but it got done and it was pretty cool.

**Evans:** (343) What do you want each visitor to come away with?
Graef: Hopefully, they will walk away with some of the fundamental messages that we set out to deliver. That’s what it’s all about. Some of the evaluations that have taken place suggest that some of the fundamental stuff is happening.

Casual visitors to these places, what they get out of it is so varied, depending on their interests, depending on why they’re going there. Mostly they go to these places for a diversion and entertainment and curiosity, and they’re not really going there to learn stuff. So, you try to get them to learn something anyway. Hopefully, you get them engaged, so you try to make it as wonderful as you can to peak their interest and to get them excited. And show them things they haven’t seen or see things in ways they haven’t seen them before. Hopefully, you get enough interest so that everybody walks away with something.

Some people are going to get a lot more out of it than others. You try to give enough to people in enough different ways that you can reach a lot of different people. Kids are one thing. Having exhibits that are down at their levels and at their level of participation is important.

Having a lot of different media helps get to people in their [own] ways. People learn differently. Some people are visual. Some are tactile. Some are auditory [learners]. And so, we try to reach as many people as possible in ways that they can understand. A lot of it is just gut stuff. It’s emotional. It’s being there. Some things come out when they get done, things you didn’t expect. I would hope that people would walk away with some greater affinity with the natural world. And also, some inspiration to perhaps try to do something about it, some conservation action.
And we did wrap the exhibits up, after going through the two habitats, to bring people back to Cleveland. The last experience paralleled Cleveland with what you had just seen. So people could take this home with them, and have it relate to their everyday experience. That came along later in the program [development]. It seemed like there was something missing and that’s what finally came to pass.

There is one [more] question here. Do you think the learning goals were achieved? I’m sure that many of them were, but Sandra [Rode] would be able to answer that question. She has done more on the evaluation end. There was evaluation going on even before the opening, even before the graphic panels were produced. They had mocked them up and they walked people through to see if they were getting the gist of things. So, there was some done along the way, and I’m sure they’ve done some since. So, Sandra, although she’s not on staff anymore, she would be a lot more conversant about that than I am.

I think overall it’s effective. How effective at all the levels? I don’t know. There’s a whole level of education that brings kids in and is more formal. And they have docent interactions. That was another thing in the design, in the layout, in the circulation, we designed wide spaces where groups could gather because we knew that school groups would be coming in groups of ten or fifteen kids. And we had to have places for docents to be stationed with plug-ins for live feeds and various things like that. All of that stuff was designed into it too. Spaces for little gatherings, that’s part of the planning.

A very important part of this whole thing is the kids. It’s all about the kids really. The other folks, you’re either preaching to the converted or
you peak somebody’s interest, but really in the long run, it’s the kids you need to reach. So they have a pretty strong school program there. And I think that’s where all of this is going to start making the difference, trying to get good programs for schools.

[Informal conversation about time frame of Jenny’s project]

Evans: Thank you very much.

Graef: Great talking to you, and good luck with this.

End of Interview

End of Tape 1, Side 1
Interview with Sandra Rode, previous Director of Educational Resources, 
Cleveland Botanical Garden

Date of Interview: 7 January 2005
Location: Phone Interview
Interviewer: Jenny Evans
Transcriber: Jenny Evans

Topic: Cleveland Botanical Garden Glasshouse Development
Note: Number in parentheses indicates approximate tape counter indices.

Begin Tape 1, Side 1

[Conversation about background of Jenny’s research]

Evans: (13) The main goal of my project is to figure out how educational and interpretive goals fit into exhibit design and planning. What do you think?

Rode: One of the things that was exceptional among the Botanical Garden at Cleveland was that we really set out what those [goals] were, and then decided what to put on display. Botanical gardens usually have a good idea of what they want to display and then decide, “What do we want to show with that?” The educational and interpretive messages were really integral and almost predetermining in the case of this project.

Evans: In terms of plantings and the collections and the animals that you chose, is that what you mean?

Rode: Right, and also then in determining what medium we used. The first interpretive planning meetings we had, it hadn’t been determined what the
habitats were that we would even use. We set forth an interpretive philosophy before we even got down to that.

**Evans:** (28) You mentioned the interpretive master planning and philosophy, how does that specifically inform the interpretation?

**Rode:** The first part of it, we established, who are we trying to address? What do we expect to help them do while they’re visiting? Then we would repeatedly come back to how long it would take for people to experience various things. And how long we thought [their] attention span was, based on the audience we were going after. It determined how much interpretation can we put in. What are the parts that will be the best places to display that? We’d already determined what [the] message is, what can we hook it to that will work for this audience?

**Evans:** Since you’re talking about audience, did you already have in your mind, or did Cleveland already have in their mind, a good sense of the audience? Or did you figure out who your audience is? And then, how did you decide what kind of design was appropriate for them?

**Rode:** (41) The Garden already had one type of audience, but what we were interested in was greatly expanding that audience. In particular, we wanted to reach more families and more young people. There already was substantial senior citizens participation, and the more affluent middle-aged people were a base that we already had. So, it’d partially been determined by the Board that these were our priorities, to get the families and schoolchildren, but we articulated that specifically when we set out to do the interpretive planning.

[We] anticipated what levels of visitation we would have. How many people might be traveling in a group, based on the fact those were our
targets? And that determined really significant things like, how big should the path be? How big is a stopping point if that many people are traveling together? Real basic layout questions were established from that initial conversation and description.

Then we established what reading level we needed to work with. If we’re going for schoolchildren, it was more appropriate to use a sixth-grade, rather than the standard museum approach of eighth-grade reading levels. We wanted it to be a more active experience than botanical gardens typically had. And given that we were picking this set of audiences, we knew some things about what that would mean and what we were going to have to do to get people to be more active. All of these things play into your question about how did that affect our interpretive planning.

**Evans:** Maybe you could give me a quick sense of the timeline too, but where did the original motivation for this project come from? I read about a document called Vision 2004. Did it come from there, or was it from some other source? And how did you go about starting the whole process?

**Rode:** (65) Where did it come from, and how did it get started? I can address that question. Brian [Holley] and Vickie Dahl will be able to address that question pretty satisfactorily. Back in the early 90’s, I think ‘92-’93, the Garden decided that it needed to reach out to the community. It could not continue to just serve gardeners. And so, that meant they needed to have some revenue, which they didn’t have at the time. And to increase the visitation in order to produce a stable revenue, they needed to have something that people could be attracted to in the winter time.

At that point, the Board decided that not only were they going to become a botanical garden, but that they probably needed to build a
conservatory. And they did an initial feasibility study, which is what museums usually do when they’re going to anticipate some kind of expansion. They hired a firm to do that and they produced a report, which was relatively unambitious. But it looked reachable, and the Garden then began to approach some important local possible donors. When they approached one of the ones that was quite important, that Foundation said, “We would be willing to give you the $7 million starting gift, which would be really important to the fundraising process. But we would only be willing to do that if you get a feasibility study done by somebody that we respect and know better, who’s gone through this type of thing, and we’re confident of their record. If you will do that,” and then they put some other stipulations, “we will indeed give you a $7 million challenge grant.” So, the Garden decided this makes sense. And they had another feasibility study done.

Well, these folks--this is Rhodes-Dahl--this is where they came into the project. They were asked to do this feasibility study. They were very excited by the prospect and felt the Garden could do far more than whatever they put in the first project description. They felt that the Garden was capable of expansion on the level of about $35 million; the Glasshouse could be much larger than was originally envisioned. There really could be a transformative effect on the whole institution, rather than simply building a little glass addition, which is essentially what the other proposal did, was stick a little glass building on one side [and] maintain the other physical structure very similar to what it already was. So, this one was going to be a huge expansion.

The Garden’s budget at that point was less than $500,000 a year. So, the operating budget was going to go up to something more like $10 million
by the time this was completed. To raise $35 million, when you’re operating at that level and entirely off of endowment funds, is a big stretch. But the Board decided that it was a worthy goal, and they would support it. They personally would support it with their monies, as well as their mouths and their effort and time.

The next thing they determined they needed to do was to hire a director. And I can’t tell you what the transition was there, if somebody left or if they simply had an emptiness at that point, but Brian Holley was approached one time. He was happy up in Toronto and [said], “I’m not really interested; you don’t seem to be particularly noteworthy.” He turned them down. And they came back to him sometime later, after doing some other kinds of searches and asked him to come down and meet some members of the Board. He met with members of the Board and he was actually pretty excited by the type of people and their real commitment to the project. And so he came aboard.

At that point, things really began to take off. They put together a vision of what the Garden would be like in ten years. That is the Vision 2004 document. And it set forth some goals for how the major functions that existed at that time would grow. For example, the horticulture growth was the establishment of these glasshouses. But it wasn’t listed under the education goals. And at that point, the education goals really only had the word “schools” in them one time. There was no idea of international programming. At that point, there was a department that was a part of the visioning process that was called Information Services, and that, at that time, included the Library, whatever they had in the way of planning for interpretation, all of their PR. It was a huge amount that was enveloped
under one person who was doing all these things. The education goals were
at that time--the Garden was principally involved in public programming. It
didn’t really have much of a role in schools, and that’s what accounts for this
missing chunk that later became quite important. They realized that schools
needed to become more a part of their thinking. But the Vision 2004 does
not reflect a very strong emphasis on that.

Evans: (119) Once that was put together, how did they go from, “We know we want
to expand and we think we want a conservatory” to what ended up in the
Conservatory? How did they come up with this immersive ecosystem
approach?

Rode: I will be able to give you only pieces of this because I come in 1999. And so
there’s five years there, where I’ve had a lot of conversation with the people
who were there. And I have probably as much information as anybody who
wasn’t there did. But, Brian [Holley] and Vickie [Dahl] will be the people
who know that five-year period the best.

They began to look about for partners who could help them envision
what this expansion of the facility might look like to match the vision. And
at some point, they contracted with both a cost estimator and an architect.
And they chose Graham Gund who did have connections with the Cleveland
area. They liked his type of construction, which was very bright and light.
When you see it, the entry space that you come into, where there’s a lot of
maple and a great deal of light streaming in, is very characteristic of what
he’s done in most places. He had also built a lot with glass. So, they began
the search for an architect and they identified a cost estimator that Rhodes
Dahl was very familiar with, so that in the initial planning, they could
repeatedly value engineer before they got to the point where it really gets
painful, much later on. And Scott had dealt with these types of projects with them before. Having one who was on the owner’s side would put a different slant on how they could review proposals from outside parties.

Brian was very interested in doing something that was model shattering for botanical gardens. And he really wanted to do something that was immersion. They had decided and talked about that approach by the time I came on the scene. In that period of time, they began exploring concepts and they worked on getting conceptual drawings. And that’s part of how you select the architects, of course.

They initially thought they could build as many as five different biomes. But as they began to look at the property more seriously and visited other gardens that had conservatories and saw how much space it took to create an environment that really felt like you were someplace, they realized they couldn’t begin to do that. So it first contracted to four, and then, just before the time that I was hired, it had contracted to three, and they finally decided that two was really an ambitious undertaking for the amount of space that was available, if they picked something like the cloud forest that could take advantage of the space. They were building a ravine so they could take advantage of the vertical space, to grow really tall plants. And that was a better approach than the prior idea, [which] had been that there might have been a little more layering. That was how they were going to squeeze three in.

So that led to immersion. That led to two environments. And it’s pretty clear that we wanted to reflect the diversity--have a strong contrast in the types of habitats, have some that were really exotic to attract people’s interest, having them from very different regions of the world, providing
some feeling of exoticness as well as some that are a little closer to home. These [habitats] are both very valued because they have biodiversity levels that are really high, and they are threatened in different ways. So, all of those factors went into the decision about what will actually be the environments that are in there, once we decided it was going to be immersion.

They really hired me, selected a graphic designer, and selected interpretive planner all at the same time. The first meeting that was held tried to tackle, “How will we interpret this? What will it be?” We were all there.

Evans: (160) How did all of you work together?

Rode: You keep hearing us all talk about teams, because really we constituted that team when we were all in place. [We] sat down in March 1999 and tried to identify what were the predetermined pieces as far as the audience, what type of experience we wanted to give the visitors beyond just immersion, and what were essential services to provide to the visitor. So the interpretive team met several times between March ’99 and December ’99, when we felt we had flushed out the interpretive plan to the point that we had identified some essential classes. I don’t mean in the biological sense, but grouping of plants to include. We had a whole series of messages. We had a sequence of messages we thought was probably workable [and] that we could fight into our path and through our path. We had defined our hierarchy of messages. And we had gotten to the point where we were ready to embark in the future on actually preparing the graphics. By that time, we were ready to select styles.

Evans: Can you just quickly run down…

Rode: (173) Who were those people again? Vickie [Dahl] was the participant from Rhodes Dahl throughout all times for interpretation. At the outset, Richard
Graef from Ace Design. Chris Parsons, from WordCraft, as the interpretive planner and writer. Brian Holley, Director. And then, intermittently, Mark Druckenbrod, who’s the Horticulture Director at the time. And once, the Conservatory Manager, Cynthia Mazer, was involved, she was hired in 2000, she was a member of the interpretive team. And then the other person who was pretty constant throughout the whole period would be Voira Randrianasolo. And he was an individual from Madagascar who was a biologist that we hired. At a different time, going back to 2001, one of the people who had been with the exhibit firm we contracted with became part of the Rhodes Dahl team and then was on our internal interpretive team. And that would be John Carson. By the end of ’99, you didn’t have Cynthia or Voira or John. There were about 5 people as I recall.

One of the reasons I was hired so early was because they wanted to have somebody who was on the scene who could assure that the educational components would support future educational programming. And who knew that from having used conservatories, and knowledge of what would be taught in the schools, and how it could be done in a museum setting.

Evans: Can you go into a little bit more about what evaluation you used, and when and how?

Rode: (185) One of the things we did not do extensively was front-end evaluation. We really did not go out and survey the community and ask them, “How much do you know about Madagascar? And how much do you know about the cloud forest?” We did hear quite a bit of that indirectly, as we began approaching donors because they didn’t know where Madagascar was. They didn’t have any idea what a spiny desert was. Because there was a rain forest
at the zoo across town, we heard a lot of, “Why would you do a cloud forest? Isn’t that the same as a rain forest?”

And so we knew those were important issues, that people just didn’t even know the basic pieces about. And because the interpretive planner and Rhodes Dahl had worked a lot with exhibits in environmental situations, we also knew some things about the general public’s understanding of important concepts we were dealing with. And I had a lot of understanding about what that would mean in school levels. We operated from a whole bunch of assumptions based on that.

When it came time for formative pieces--I think it’s pretty standard--but when we got to the point where we were actually preparing copy for any of the graphics, then I circulated them among people on the staff, some people who were not at all involved in this team, a receptionist, somebody who was a clerk in Development, so we could get a range of responses to the wording and find out if we were way over people’s heads. If something we thought was obvious, was totally opaque. We went through that when we were doing any of the preparation of labels. Then I would send back all of the responses to Chris and indicate which I thought were most important, if there were clashes [about the information], which there sometimes were. People had opposing viewpoints. But once we had defined a style, we had some things that some people didn’t always pay attention to. They had some other information available to them to think about, when they were doing this assessment. So we did that all along the way.

When we began selecting images, we actually did the same thing. Richard sent us rough printouts that had the picture mounted with the graphics and I posted them on the windows. I passed them around. I got
people to express if they could, if they read all of that, I asked them, “What’s the message that you’re getting here? Can you tell me what it says in some other words? What else would you like to know about this subject? Does it tell you something you’re interested in?” So, we could retune at that point, or we could choose different pictures to get at what we were doing. Those are the formative steps we did.

We really wanted to put the signs up and actually have people walk through with them in order. Even if we didn’t have the plants, we had a rock structure built, so people could at least see the physical lay of the land. We thought we could reprint pictures of the plants and the animals and blow them up to proper scale and just stick them up. They would just be cardboard stick-ups near the signs and questions, so that people could try to refer to the features in question and we’d know what would happen. We went through getting all those made. And had permission, we thought, from the contractors to do this. And then, everyone decided that we were not as far along as we needed to be with the theatre, which was to be evaluated at the same time. So we postponed until later.

We ended up first evaluating the theatrical experience. We had a pendant type of structure hung in an area that was draped with black cloth and shaped in the right fashion for our theatre. We turned out the lights and we shone three projectors at this turning wheel and had people come and see it, to find out what their reaction to it was. Nobody ever built one like that. So, we didn’t even know the most basic things. We thought it was crazy-wild, but if people couldn’t interpret the images, or if they were so mesmerized by the technology, that wasn’t going to work. So, we did that in November 2002.
And we thought that by the end of December, we’d be able to do that in-situ signage stuff. January came, and as noted in my article [Public Garden, Volume 19, Number 2, 2004], we actually set everything up, put the signs in place, [and] went home. I came in the next day, and I was told that I couldn’t do it. We had recruited people to come in and it was the middle of the holiday. It was snowy and people had agreed to come in. And we had gifts to give them as a thank you.

It was determined that the contractors could not surrender liability for the situation, and so we could simply not allow them to be in that position. And so we couldn’t do that type of testing.

Then, when I wanted to do it two months later, we weren’t really in a much better situation. There were other risks available to the people who used it. So we had to wait until construction was nearly complete, when we couldn’t really influence the general layout of the path. And we had some of the large plants in place. And then we stuck up all the signs. And at that point, we were actually able to give people a chance to walk through an installed version of the theatre at the end of their experience.

In between there, the only additional piece that we were able to do is, I engaged Catherine Eberbach to help us with the planning for our family science packs. She wanted to use the signage we had developed and some props to try and decide what subject matter would most interest people for activities. And so she took some of those signs that we had developed and the plant prop-ups and set them up and interviewed people, really in much the same way you would interview someone to find out about a sign’s efficacy. So we got some information from that and I particularly interviewed her hard
to find out if there were any that were really failing. She only used a subset of the signs, but we did revise two completely based on those results.

Then we ended up having the second evaluation of the theatre production. At that point, people got to see the preliminary versions of our conclusion theatre. So, we did have some pretty extensive evaluation of our multimedia presentations and less formal, but fairly ongoing evaluation of our signage.

Evans: (251) Did you find the informal evaluation helpful?

Rode: Oh yes. There were some times when I would have thought everybody knew that. And then people disagreed about the point of view that some of the signs should espouse. We had already decided a certain perspective we were going to take. So, finding out that people read it as something other than what we’d expected meant, “Let’s see if we can figure out what to do about that.” For the most part, we did not end up having to do lots and lots of sign rewriting because we changed animals. We held our animals to be the last “signs”.

One of the things that changed was the style of art that we used for some of the signs. There’s some group signs, where we have a bunch of types of plants sketched. And we wanted people to be able to recognize a family of plants rather than individual plants. This was tricky to try and get an artist to do. It was really clear to us in our minds, but it’s hard. Usually you send artists a photo and they try to reduplicate it. We didn’t want them to do that. We wanted them to look at five or six photos and try to get the gestalt of what it looked like and then draw it. And then we needed to approve it. So that proved to be one of the challenges. That’s the type of evaluation that we did.
Evans: (263) After all of this evaluation, you had set out particular goals that you wanted guests to have as they walked through. What were they? And have you found that they were achieved?

Rode: The first thing, we needed to differentiate what we were doing in the Glasshouse from what was happening in the whole Garden, because there might be other things we’d attach somewhere else and the Garden’s goal initially was that. Overall, the Garden experience should produce an understanding that plants are essential to life and that we really enjoy them. The Glasshouse, in particular, ought to show people that plants are an integral part of living systems. And then, subsequently, when we found that we had the space for the conclusion, and it is really an evolved space…

Evans: And this is the Ohio [portion of the exhibit]?

Rode: Yes. We decided that we really didn’t have enough time and space within the Glasshouse itself to address the importance piece of how we could help protect these [Ohio] systems, and that it was essential that we did so. And so that was jogged out to the “North Coast Ohio”. Initially, we thought we could do all that in the Glasshouse and we discovered we couldn’t. We divided them further and said, “If we’re going to have an introductory experience, we don’t want to progress to the whole message, we’ll just be satisfied if people understand that light and water control where everything is.” And then we’ll show them as they come through, how it’s determining how plants live, what they look like, and then animals. And then they will also see how plants and animals interact in these environments. Those are really the basic ideas we wanted people to get. And then, that these are uniquely diverse environments. They’re really overarching things that you could demonstrate with a variety of examples in our settings.
How well do we know that people have gotten those messages? We know that everybody’s absolutely fascinated with the two places. There’s no problem. They understand that they’re wondrously diverse and that they’re completely exotic, different, and wonderful. They come out of it valuing the two places, which is a part of it. They recognize that they are completely different, so that’s a part of that question about light and water. Now, do they recognize all the subtleties that are attached to that? Only those who spend enough time to read more of the signage do that.

And a lot of people come out, although this did not happen during our testing, and say, “Well, why did you pick those two examples?” When you come to see the place, you will see that that’s the very first question we answered for them, before they even go in the Glasshouse. There’s a huge map on the wall that shows them where these places are. It says, “Why did we choose these two places?” It says that in as many words, “We picked these places.” So, that is just a symptom of how people behave. I don’t think we could have done anything more powerful to get them to understand that question, “Why did you pick these places?” It’s just that people jump right in, and they ignore a lot of the things you do to get their attention about why. And that question pops up later in the experience for them. Or it pops up before they even come, as to, “Why should I go?” What you do on the site doesn’t have that much influence on their understanding of that.

Also, the marketing people frequently felt that a lot of the visitors don’t understand those things. Part of the reason for the difference of opinion is that they look for the visitor to understand and be able to rename specific examples that were put before them. And while I think that’s really nice, and I am more concerned with that with some schools, where they’re reaching
more specific objectives, I don’t really expect the overall visitor to learn that. And that is one of the reasons that we did not label every single plant. It’s a highly contentious issue in botanical gardens.

**Evans:** I’ve found that’s been in common with all of the gardens that I’ve talked to [about] these exhibits. They’ve firmly felt that it’s not a didactic experience. You’re not having to name off every single plant.

**Rode:** It may be a didactic experience, but what we’re not trying to teach you is the Latin alphabet.

**Evans:** Or specific types of trivia.

**Rode:** (304) It’s not a fact collecting experience. We’re going for ideas, the big ideas.

**Evans:** What I’m really trying to look at through this project is innovation and exhibits that exemplify innovation. How do you define innovation and what is it that makes an innovative exhibit?

**Rode:** (309) Even the most basic definition of that word is something new that you’re doing, that you’ve made up. It somewhat depends on what universe you’re working in. What is new for a small botanic garden might just be everyday stuff for a really big botanic garden. And likewise, what’s new in a botanical garden might be something that’s been done for a long time in some other settings. And we could switch that around too.

I’ve recently been talking with people at science centers and they’re designing exhibits that will, for the first time, have living things in them. That’s considered innovative for them, and they’re interested in talking to me because I went the other way. I’ve put exhibits of a kind that are not normally found in a botanical garden, into it.
What makes an innovation, and how do you go about doing it? One of the ways you go about doing it is you have to start with some people who are knowledgeable about what the norms are in the field and who are never satisfied with what’s been done before. And some of the time, we were just playing around. I’ve already said that to you in a number of ways. You spend time together and you try to play off each other’s ideas. I can say this, as a person who frequently works in a linear fashion, or I do this sparking-off thing in all kinds of directions within my head and it can be more difficult for me to try to do that with other people. But that really had a lot to do with it because somebody may think of a really different way of approaching the same thing. You were going along a line and somebody says, “We’ve done that sixteen hundred times.” And somebody else says, “But if we did it this way,” and then somebody else says, “That makes me think of,” and you’re off and running and doing something wild and crazy.

The leaf cutter ant exhibit, for example, is the only leaf cutter ant exhibit that has the animals free to roam in a setting where they’re not inside plastic. You are there, and you can look through a telescope and see them, but in fact, if you were standing in the right place, you could also touch them. Every exhibit in the world that has displayed them up until this time, that was not true…

**Evans:** Because it’s a horticulturalist’s nightmare.

**Rode:** It turns out it’s not, but it is a permitting nightmare. And nobody had really tried to do it before, but it was one of Brian’s ideas early on. He said, “We have to have leaf cutter ants.” And Cynthia said, “Ohhh [groaning],” being the person who would have to do the horticulture and the animals. I had seen leaf cutter ant exhibits and really didn’t find them that compelling. So I said,
“We’re going to spend an awful lot of money for this.” But when we started actually playing around with it, we threw it at our exhibit designers and said, “We want to put them in an environment where they can be seen. And we’d like for people to see them forage. How could we do this within this physical setting that you’re building? And give us an idea of how much it would cost, so we can decide if we have enough money left in the budget to add it in.” Because this wasn’t part of the initial interpretive plan. But it came along at a point where we felt we didn’t have enough excitement for the visitors in a certain section. And we said, “We need to do something really exciting here. What are we doing that’s breaking the mold?” And so we went back to that particular idea.

And when they came up with the log and said, “We could have these vines.” Originally, these vines that fall out of the fig tree were going to be the ones [to use for the ants]. They [the ants] could go all the way up to the top of the tree and they could come back down the rails, and they could be right there next to visitors. It turned out that was a little more expensive. So, we didn’t go quite that far, but even just having them out in the open.

Then we had to dodge back to, can we get permission from the permitters? Cynthia’s job was to go back to her buddy at USDA and find out if this would ever be allowed. Then you find out that the biology of these ants is such that they have to have fungus to survive. The fungus is only in their colony. If one or two of them fall off whatever you put them on, they can individually eat, but they can’t reproduce [without the fungus]. And they can’t get back home if you put the right kind of entrance and enclosure on the site. So, we simply designed a Teflon funnel, then had the vine coming out through it, and if they fell off the vine at the entrance, they would slide back
down through the Teflon into the enclosure where they lived. And as I said, if they fell off the vine, they couldn’t swim off the island. So, the island was another piece of it. But then, this all looks very natural. So, the idea of how can we do it naturally and saying, “What can we do to really dazzle the visitors?”

Another example of where we really fought—and we had some bickers going back and forth at times—and struggled with how we could do what we wanted to do, is over by the butterflies. Near the exit, we felt that we didn’t have enough snazzy stuff going on. And we had been struggling with a way to get people close up to see butterflies. And it’s a typical thing, lots of butterfly houses show people pupae emerging as butterflies. Somebody said, “Everybody does this. What’s really so exciting about this thing hanging on the wall? And how many visitors will actually be there when it’s crawling out?” Because that’s what we didn’t see when we went to see them. They were fascinating, if you happened to see something there, but you couldn’t tell which [butterfly] was related to which [pupae] usually. The butterfly was already out, and was just around in the glass. So, we had this directive from Brian how it had to be there, he really thought that was a dazzling thing for people.

Then there were all kinds of habitat requirements to not damage the chrysalises, so we had a balancing act about where we could put it in the physical space and achieve the right environmental conditions to keep those things alive. We needed it to be small enough so that we could get graphics around it. And we went through a whole series of designs and we spent nearly a year back and forth between John Carson, Richard, myself, the individual we had found who was an expert on these animal enclosures, on
how we could make this happen. And we had a whole plan, and it was kabashed at the last minute.

I was suddenly given, “We need the signage for it in 48 hours.” Up until that point, I had not actually been the one who had been writing the labels. At that point, I said, “What is it I’ve always thought was always missing from these butterfly exhibits?” We never close the circle. And from the standpoint of what they need to learn at school, every school kid has to learn the whole [life] cycle. And the cycle is what makes it distinctive. So, we need to put the cycle there. And we never talk about the pupa. So, we’ll put something in there about the pupa.

When you see the case, look at that and see if it looks any different from other ways of treating it. From the ways that visitors are behaving, I would say, “Yes. It does.” And we managed to achieve that goal. But it was a long struggle in that particular case.

When it actually came in, it was one of the last exhibits to arrive. And first of all, we found that it didn’t open properly. There had been some miscommunication between the person who did the graphics and the person who actually built the box. You couldn’t open the box once you had the graphic in front of it. So, it had to go back and be reengineered in the matter of a week and a half before the opening.

Then when it came in, we found that it was getting too hot from overhead sun, because it’s a see-through enclosure. We wanted people to be able to see the vegetation behind it, keep it as natural as possible. And we also had it opened above to let natural light in. It was overheating, and so we installed a thermometer to check what the temperatures were like and it was just baking. So we had to put some shade cloth over the back of it. You
could see that from above, if you stood right above it and looked down, but most visitors were not going to do that. And the plants were quickly going to grow over, so that it wouldn’t be that obvious. So, that’s an example of how something evolved in response to the question of how to keep it unique, teach people something, achieve our visitor experience desires, and then grapple with, “If the animal dies, it really isn’t worth it.” All that money for nothing.

Evans:  [Informal conversation continues] I think that’s all of the questions I have, unless there’s anything else you can think of, that is of particular interest or that I should really know…

Rode:  (380) Back to your original question, about how education and interpretation play in here, one of the distinctive things that you haven’t asked anything about is how does this relate to our future education programs, because that was one of the distinctive features here. I was developing programs at the same time that we were going through this. And I was developing experiences that schools would have when they visited, as we were doing it.

When we decided what animals will we put in there, for example, we had some choices in some locations. We had some animals we absolutely wanted to see in there, but I took the position, for example, that one of the things that every child has to learn is the difference between vertebrates and invertebrates. And there are certain classes of animals they have to learn. So we should try to have every vertebrate class represented in there because if we could do that, we didn’t have to only teach what are the habitats and what are the adaptations, which is what everybody was going to think we could only do. There were lots of places in town that could do that, so there were other choices we made along the way about organisms, to support being able to use it as a teaching environment for other concepts.
When we structured individual exhibits, if I wanted the kids to be able to really interact with them, we needed to structure pieces that allowed that. You will find there are two scopes that point at the ants on their foraging line, so kids could actually count how many ants were moving across at a certain time and compute rates.

**Evans:** And do science experiments?

**Rode:** (391) We tried to get magnifiers installed in the leaf cutter ant exhibit. That proved impossible--it’s a physical impossibility; we had enough money, but you just can’t do it. You’d have too much reflection trouble. But we were back and forth in that fashion.

The fact that we had leaf cutter ants and we had behavior, meant that I could have behavior studies of both crawling insects and flying insects because we had butterflies in there. We could actually look at the habitats preferences by their behavior. Then, we had to actually look at the space and see what would they [the students] be able to do. We’re not going to let them off of the path to do this, but how can we work with it.

Because I was involved early on, we could do those kinds of depth things at the beginning. And frequently, it’s a simple matter, it’s such a little distance between what is possible and what is not possible. If you just have that discussion early enough, you can still influence what’s happening.

Some of the plants are really close to the path because I said, “We have to be able to get this close enough that children who are old enough could touch it. And find out just how spiny that is.” We’ll tell those kids who are too small that they can’t do that, or that they can only do it with a teacher nearby. And we won’t have every child do it, but it needs to be close enough.
That’s beyond what you were asking earlier or what you were following up on earlier, but I think those are integral to what you can really do in a museum when you’re designing with education and interpretation being your real goal. You need to think about the programs that you’re going to be able to use in that space because the people who spend more time in there are the people who are able to do a program. And they will have the concentrated opportunity to focus on something. If you don’t create things for them to focus on and give them access to those, you’re back in the classroom, pulling an animal in. And saying, “Well, let’s go look at it in the Glasshouse, now that we’ve seen it from two inches away.” Which is more exciting? Two inches away probably. That’s really disturbing to everyone who’s involved, after they spent millions of dollars to build this. That’s an important point to think about if you’re talking about education and interpretive material’s interaction with exhibits.

**Evans:** I think this is the norm [for programming to be] put in after the exhibit is done. Granted, they thought about it, but it wasn’t laid out in quite the same way.

**Rode:** (408) There might be almost the right set of plants there to do a study of useful plants of some kind, for example, but then there was one class that was left out that would really cinch it for kids. That’s the kind of difference that you can make if you have programming planning going on at the same time, or you have somebody at least who’s coming in and out of the discussion and saying, “I’ll do this. Could you do this for me? Would it be possible for this to happen?” And then they can go back and say, “What can we do to our plan to make that happen?”
Evans: [Informal discussion continues] Thank you so much for your time. And I’m looking forward to going [to the Garden].

Rode: Good luck.

End of Interview

End of Tape 1, Side 1

Addendum:
In order to insure that, in general, the same interview questions were asked of all respondents, additional questions were asked and answered after the original interview by email.

Evans: What do you think is the biggest strength of the Glasshouse?

Rode: Strengths:

a. Successful interweaving of plants and free-ranging birds and butterflies and lizards.

b. Drama of the mist and butterflies.

c. The extent to which docents are able to assist visitors (when present)

d. The commitment to let plants be "messy" so that natural litter is present, without encouraging disease. Most forest conservatories are over-straightened and artificially sterile as a result.

e. Dramatic night lighting

f. The early import and accommodation of the plants permitted impressive growth within months of the opening. Plants do like the environs (as much as the breeding animals did).

g. Visitors could find oases as desired on hot days in the desert.
h. The scopes entice visitors to watch the ants and look for birds.

i. The epiphytes did well; Conservatory experts everywhere said this would be our greatest challenge.

j. International visitors from the countries of origin admire its authenticity!

Evans: Biggest weakness? (Or do you know yet?)

Rode: Weaknesses:

a. Graphic style does not include as much humor/wit as I'd hoped.

b. In the end, there were no multi-sensory exhibit elements a la water stream on creosote at Desert Botanical Garden.

c. Members do find it attractive enough to visit often. And want the BotaniCool cart activities to change more often so their children have more things to do.

It has set a very high standard for all programming and exhibitions at the Garden. When they [the other exhibits] do not reach the same very high level and large scale, folks express disappointment. It will simply take time for the organization to find ways to stabilize as it grows enough to meet that standard in all its efforts. (It's still a small staff--so holiday shows etc. have not benefited from a year of planning and 12 folks working on them intensively. Like most gardens, CBG doesn't have that luxury.
Interview with Ruth Greenhouse, previous Exhibits Coordinator, Desert Botanical Garden, Phoenix, Arizona

Date of Interview: 11 January 2005

Location: Phone Interview

Interviewer: Jenny Evans

Transcriber: Jenny Evans

Topic: Desert Botanical Garden Renovation

Note: Number in parentheses indicates approximate tape counter indices.

Begin Tape 1, Side 1

[Informal conversation about background of Jenny’s research]

Evans: (50) Maybe you could give me an idea of what your role was at the Garden, and what your role in this process was.

Greenhouse: Just to summarize a long career, I was doing some hands-on interpretive workshops at the Garden about ethnobotany. And the Garden was kind of unsophisticated at that time. This would have been in the very early ‘80s before we were accredited [by the American Association of Museums] and before a lot of things happened there, that brought it more into modern times. I realized that a better outdoor setting to teach people about desert ethnobotany was needed. I proposed to the Garden staff and the Board that we create an ethnobotany exhibit. And they said, “Okay.”

I was operating as a lone ranger because there wasn’t a lot going on. There had been a lot of turnover in the Education
Department, and I was working through grants. There was also a lot of turnover of Directors; although each new Director that came along supported my efforts. Then, a new director of education (Kathleen) and a new executive director (Robert Breunig) came on board, and they supported the process and added new ideas and expertise and support and really made it happen. So I first met Kathleen in 1985.

We received a grant from the National Endowment for the Humanities, which funded this exhibit with me as project director. I worked with a landscape architect, garden staff, and consultants to design the trail complete with interpretive signs and a trail guide. Kathleen was instrumental in working with me to develop some programmatic elements along [with] the exhibits, so it would be user-friendly to docents and more useful to people in a learning situation. I was very tied to the content and I knew it was of interest to the public. But I really wasn’t thinking about other Garden programs, as much as Kathleen was.

This was essentially the Garden’s first comprehensive approach to designing a trail from the ground up. It would be comparable to a museum having a blank room and saying, “Let’s put in an exhibit of Chinese art.” So we designed the trail, including the plants, structures, signage, guidebook, and the hands-on stations, all at the same time. But we were constrained, of course, by the lay of the land and what could be done there.

After that trail opened in 1988 to the public, I became Exhibits Coordinator. It wasn’t too long after that that Kathleen had proposed a comprehensive interpretive master plan to the administration. My role
was to help her with that. That was the NSF [National Science Foundation] grant that you’re familiar with. Actually, in between that I worked on the interpretive signage for the Garden’s Desert house, before the NSF grant.

So, as Exhibits Coordinator, Kathleen and I really worked closely together. I helped with the grant management. Initially, one of our PhD science staff was the key [Principal Investigator]. And when he left the Garden, Kathleen became the key project director and I was project co-director.

Evans: In terms of motivation for that project, it seems like it was a natural progression from the project of designing the ethnobotany trail to the one with the NSF grant.

Greenhouse: Yes. There was a lot of talk about doing some improvements to the buildings in the Garden. Meanwhile, the main trails were in pretty bad repair and there weren’t good places for people to sit. And there wasn’t good interpretation. The ethnobotany trail was called Plants and People of the Sonoran Desert. That trail was nice and new, popular and well received. And Kathleen said, “We shouldn’t be spending money on buildings until we get our trails in shape because that’s what the visitors see.” And she made a compelling argument for that.

The Director said, “Okay, then go get a grant.” [He] pretty much challenged her and said, “If you think that’s so important, then you get the money and do it.” And she did. She did such a good job of pulling together this huge scope of work that the NSF accepted the proposal. She had built into the grant quite a lot of commitments that
the Garden would need to make to fulfill their end of the bargain and to do improvements that the NSF wouldn’t pay for.

We used the Plants and People trail as a prototype saying, “We have a trail that follows these certain principles that’s very successful. And we’d like to apply the same principles to redoing the rest of the trails.” The main trails were a maze. They were disorganized and had no rhyme or reason and no interpretive flow at all. Whereas, [in] the Plants and People trail, there was thought behind the design. The main trails had no shade or water fountains, but that trail did. The main trail had no signage or any good interpretive tools. The Plants and People trail did.

So, the NSF liked the proposal but wanted more than just interpretive signs. They wanted innovative exhibits. Actually, two things happened, they said, “We want innovative exhibits. And we want you to get very experienced and well-known visitor services people, exhibit evaluators on board.” We did that, and it was combination of Kathleen’s creative thinking, the challenge of the NSF, and the information we got from the exhibit evaluators that resulted in a new and creative approach to exhibit development.

Evans: (155) This visitor-centered approach, how did you get to that? What made you decide that was the correct approach or the best approach?

Greenhouse: When I did the signs for the Plants and People trail, we worked with a really good out-of-state consultant, a person who was an artist and experienced museum exhibit designer. She worked really hard with me on the template for the signs. I supplied the key messages and ideas for graphics and found all the examples for the illustrations. She did the
design for the signs and had artists draw the final art. We had the copy professionally edited. We thought they were great, and I guess they were okay, for the time.

So we used that same method in the first draft of signs for the trail renovation funded by the NSF, thinking, “We know what we want to say. Let’s write the interpretive signs. We know the key messages.” We did a rough draft of the key signs that talked about adaptations and what is a desert, the basics things you would expect people to want to know about.

When the grant-funded exhibit evaluators came to the Garden, we didn’t know anything about visitor-centered design. It’s a funny story because I thought with their expensive consulting fees, we’re really going to get our money’s worth. They’re internationally known, and they know their work.” So I was a little skeptical when they said, “Let’s see what you’ve done”, didn’t offer a scholarly critique, but rather, said, “Okay. Let’s enlarge these on the Xerox machine, just like they are, these rough drafts. Put them out on the trail on a little wooden stake, hide, and see if people stop and look at them.” And I thought, “This is what we’re paying for?” But the results were well worth the cost.

After placing several drafts out on the trail, we learned that they didn’t attract visitors. They had the right information, everything we thought was good. But as we watched visitors, they just ignored them. And we learned—who are these interpretive signs for? They are for visitors. What if visitors don’t even stop and look at them? And then we thought—are those signs successful? We might think they’re great.
The designer might think they’re great. But are they really good, if nobody reads them?

Then they [the consultants] started to tell us about the specifics of studies that had been done on museum visitors and signage. What causes visitors to walk right by an exhibit rather than to stop? What are our educational goals and affective goals or the kind of experience we want our visitors to have? They gave us tips on how to meet our goals.

Those consultants, Stephen Bitgood and Arlene Benefield shared museum studies articles with us, for example their article about the differences between informal education and formal education. It was about voluntary learners versus captive learners in a classroom, and I started thinking about myself. I read magazines backwards; voluntary learners don’t go in a certain pattern. Intellectually, their articles appealed to me so much. It was this revelation that learning in a museum is totally different than learning in classroom. We should approach this differently.

At around the same time, Chandler Screven, the guru of visitor studies, was doing a workshop at the Phoenix Zoo, which is right next door to the Garden. Kathleen has such an appetite for new information; [she] decided to go to all of his workshops. Screven had a process for developing what he would call visitor-friendly exhibits and the process of formative evaluation, where you have ideas about what you’re presenting [and] you put them out in mock-up form. Then you interview visitors, watch and observe them, and listen to them. You make changes to your mock-ups accordingly, before you ever finalize anything. In his workshop at the zoo, he had the participants observe
the exhibits to see whether people were looking at them. Then they had to come up with really creative ideas to get the same message across, but in a different way.

The closest example I can give, is, I remember going to an exhibit at the Sonoran Desert Museum and the title of the exhibit was “Commensalism.” What in the world is commensalism? It was an exhibit about prairie dogs. Screven would say, “That’s going to turn off 99.9% of your visitors. You need a hook, something interesting like, “Why are prairie dogs and burrowing owls good neighbors?” I don’t know; think of something that would really get people’s interest. And then maybe later, you say, “This is what scientists call commensalism.” The typical curators would use that (commensalism) as a title for an exhibit, rather than something more engaging.

Evans: Right. Like a textbook chapter.

Greenhouse: (206) Yes. And that was really common, especially at the time. You could see all kinds of Exhibit 101 mistakes: tiny, tiny print; too much scientific jargon; no clear message. So we dove headfirst into learning about visitor friendly exhibit development, all the dos and don’ts, all the ways of testing signs and exhibits. And how to measure the success of what a good exhibit is.

Then we had a problem. We had three trails to create signs for and no signs. That’s where the innovative, creative process came into play. Kathleen came up with this. Employing all of the learning theories that we were familiar with that we weren’t really using effectively, she realized [that] we needed to get people of different intelligences (ala Howard Gardner) on the creative side. It can’t all be
education people and museum people, who are frequently heavily linguistic. We needed the kinesthetic horticulturalists; people who were more auditory; people that were visual—many different kinds of people to give us input into how to get some of these points across. Because our visitors would represent all those different kinds of learners.

So with the Director’s support, we created teams of volunteers, content experts, designers, and different kinds of people to come up with creative and different ways of getting certain messages across. We knew the messages. We knew we wanted to say, “Cacti store water.” But, what’s a fun, interesting, exciting way to get people involved in learning that idea? Is it to have a sign that says, “Cacti store water.”? Or is it more fun to have a sign that says, “Which cactus is storing more water? Cactus A or Cactus B? You figure it out.” That was one of our signs. We had a big succulent prickly pear pad and a skinny dehydrated prickly pear pad. And people had to use their own observation skills to look more closely at the difference between them.

We employed many different ways of getting people to learn about things, not just one way, so we could appeal to more than just the people who like to read signs. Some approaches were visual, some auditory, some with facts, some with games, some with jokes, as many different ways as possible.

Evans: Bringing all of these different intelligences together, was that the inspiration for the Team Exhibits week, where all of those different groups of people who worked at the Garden or volunteered at the Garden, developed the different approaches?
Greenhouse: (240) Yes, because where else are you going to get that much
brainpower? Most people think that they have the knowledge to do it
all by themselves. But, the truth is that Kathleen and I did spend hours
tweaking and rewriting copy after the creative approaches were tried
and deemed successful. You’ll see the basic creative ideas from the
teams. But there was so much ownership that the teams often felt that
they actually developed the whole thing.

Evans: Even after the whole week was done and the grand ideas were laid out,
there were still refinements.

Greenhouse: Refinement and retesting as well, lots of versions. And we had to go
through a scientific review and make sure things were correct. But it
was all those new ideas that came out of it. If you had a hundred
people in Team Exhibit Week, we didn’t get 100 new creative ideas,
we might have gotten 10 or 15, maybe. But it’s still worth it because
it’s more than what you would get if there were just a couple of us.
[And] it had other benefits, like fostering buy-in.

Evans: Speaking of buy-in, I’m amazed that you both managed to convince,
especially the Director, but also the Board, to allow the vast majority of
employees to spend a whole week developing.

Greenhouse: (254) That is why Screven and Bitgood were so impressed with
Kathleen. I think they even told her, “It’s one thing to tell people what
they should do.” They’ve never seen it done. Nobody does it. And I
think that’s no exaggeration. I think she pulled off a miracle. But it’s
timing. Things happen sometimes in life where the stars converge and
good things can happen. But it takes really good leadership and she
was a good leader.
There were certain people that turned out to be uncomfortable with the process. They weren’t good team players or they were easily frustrated. And it’s important to gently find another type of job for them, like they can be the photo-copier, or printer, or observe visitors. Sometimes Kathleen would send me to certain teams like, “This team’s having some problems. Can you work with them?” It’s not perfect. You start to identify people who are super at the process, who just love it and are good at it. So you can hone it down and make it a little more efficient. It’s not going to be automatically perfect.

The other thing is that sometimes it’s a surprise, and the people who you predicted were going to be the most problematic, can be actually pretty good. One of the things that she did to prepare was to have training in why a visitor-centered approach is good. This helped to alter people’s conceptions or preconceptions about exhibits and about how the museum experience is.

Evans: So when they ask the questions, you have the answers to back it up.

Greenhouse: (273) Yes. She did all kinds of things, like asking them as a group to remember a museum experience that they had in their life that meant something to them and to describe it. And I would say, ten times out of ten, it’s always something affective that they remember. It wasn’t, “I read a really good sign about commensalism.” It was, “I saw the biggest dinosaur in the world.” Or, “I got to touch this.” Or hear that. It’s always something inspiring or really special. Or the curator was there, the real person who discovered it. Just something wonderful. She also did a lot of self-assessments for the multi-intelligences, so people could feel good about, “I like to make up songs.” Or, “I like to
do puzzles.” So that they didn’t feel like the only good sign is one that’s well-written and has pretty pictures. We did creativity exercises with an artist to get your right brain going.

We also had the participants observe visitors, so that they would realize, “It’s the visitor that counts.” I remember the days when we used to chuckle about visitors, “Did you see that visitor? He was totally lost, and didn’t know how to get out of the Garden. Ha ha ha.” As opposed to, “Wow. We have some really serious problems here.” But it wasn’t part of the core value system. And a lot of times, it’s not that staff doesn’t care about the visitors; it’s that they are isolated from them. Even Executive Directors don’t get out to observe visitors, or to talk to visitors, or to just watch what’s happening.

Evans: It’s so hard, coming from the perspective of always being there. You know where you’re going. You know where every plant in the garden is. You don’t get lost. Or you know all of the facts.

Greenhouse: And you’re so preoccupied. So, anyway, that’s a little background.

Evans: What did you want the guests to come away with? What was the main goal that you had for each individual visitor?

Greenhouse: (293) I don’t want to give to simple an answer. We went through a complex process with staff where we developed a goal for each trail. And then, each goal would have four or five messages that we wanted to communicate with visitors.

I mentioned that we didn’t have our teams come up with what messages that they needed to develop exhibits for. We gave them the messages. And it was their job to come up with a creative way to communicate them. Otherwise, how would they know? A lot of our
messages were based on front-end evaluation. We had analyzed what questions our visitors had. And we had educational goals. We worked very hard with the staff ahead of time to develop the goals and key messages for every trail.

For example, take the main trail, the Desert Discovery Trail. I’m going to read these to you because they were all very carefully thought out. “The goal of the Desert Discovery Trail is to convince garden visitors that deserts and desert plants are worth appreciating and protecting.” That’s the goal. We wanted visitors to walk away and appreciate desert plants more and want to protect them, instead of wanting to use tall cacti for target practice, for example.

The key messages that support that goal; these would be both affective and cognitive messages. We wanted visitors to learn that, “Deserts are natural ecosystems that cover ¼ to ⅓ of the Earth’s land.” That, “Desert plants have structures and behaviors that allow them to live in desert environments.” That, “Some desert plants and animals are threatened and need to be protected.” That, “A wide variety of desert plants and animals can be found in deserts.” That, “Desert plants are beautiful and diverse.” And finally, that “The Garden plays a role in studying and protecting desert plants.”

Then our signs needed to support those messages and the goal. The messages support the goal, and the signs support the messages by using the actual plants as examples. For example, message two, “Desert plants have structures and behaviors that allow them to live in deserts.” There is a sign about the small resinous leaves in creosote bushes and a sign about the expanding stem of the saguaro cactus. But
there isn’t a sign that says, “Desert plants have structures and behaviors that allow them to live in deserts.”

**Evans:** There were specific examples.

**Greenhouse:** Yes. One of the things that we learned in the exhibit development is that people don’t really want to read signs that are about concepts, just conceptual signs. They want to know, “What’s that plant? Why is that here? Why is it important?” For example, what if you went to a museum and there was a conceptual sign about burial practices around the world. But to your left is a mummy, and nobody (or no sign) is there to tell you about the mummy. What you want to know is, “What is this mummy? Where did it come from? Why is it here? Why is it important?”

The signs were object-oriented to draw your attention to something in the exhibit, a cactus, a plant, a bird, something that’s tangible. And every trail had one goal and five to six key messages that we really worked hard on.

We used a concept mapping process with our science staff. We might have scientists that think, “The most important message is that cacti have crassulacean acid metabolism.” She [Kathleen] would write everything down everybody said, and my job was to organize those, to see what was connected and what messages those ideas really were representing. The bigger message.

**Evans:** (327) All of the trails, did they all connect to a larger message?

**Greenhouse:** We thought [of] the main trail, the Desert Discovery Trail, as the fundamental desert message. “The desert and desert plants are worth appreciating and protecting.” I would say that every side trail supports
that overall goal, and the mission of the Garden was included in the introductory signs, and the mission state that the Garden’s goal is to educate about, exhibit and conserve desert plants.

**Evans:** (335) Maybe, we should go into the theoretical questions, because all of this that we’ve been talking about gets into the theory behind it. My main question is how the educational and interpretive goals fit into exhibit design and planning?

**Greenhouse:** Prior to the exhibit, the educational goals were met by docent tours, workshops that people would have to register for, the Garden’s quarterly journal, and teacher training, with some school field trip support materials and references. In the volunteer training and in the development of all of those materials, there were definitely educational goals for teaching people about deserts and desert plants, but the whole reason for wanting to do a good interpretive signage project was so those same messages could be communicated when there were no docents on the trail.

We knew that our visitors had questions. There was a misconception held by some staff that visitors don’t want to learn anything. They just want to walk around and observe plants. We knew that people were curious and that they do want to know things. So the exhibits could advance the messages that supported the educational goals.

**Evans:** How do the mission, vision, interpretive master plans, and philosophies and all of those theoretical backgrounds in botanical gardens, how does that inform then the interpretation or education?
Greenhouse: There were two parts. One is developing the goals and messages, the conceptual part. But the second part is the design part. How do people move around and get this information?

The Desert [Botanical Garden] has a very clear, very succinct mission, which was really helpful because the Garden’s mission specifies that the Garden deals with desert plants and desert conservation. We didn’t have to figure out where to put in a rose garden or a Zen garden because that would have made it a totally different challenge. So the mission guides the interpretive messages. But the mission has to come first.

The vision has to do with a vision for innovative ways of communicating those messages. We tried to have vision in creating fun and interesting, interactive exhibits. The Plants and People [trail] had unique ways for people to have ethnobotanical experiences.

There’s vision for the learning methods and then, there’s vision for design. And the vision for the design had to do with the maze of trails. We needed an organized trail system where people didn’t get lost and could easily find one trail from another. We based it a little bit on the Disneyland idea to have Main Street USA and the other areas clearly designated [so] you know where you are. You know when you’re in Tomorrowland that you’re not in the other places. So it works.

The vision was both for the physical layout and so that people would have really good experiences in their learning. The interpretive master plan came out of that, [and] was also guided by the Education Department philosophy, that the Garden wanted visitors to be learning
outside in the environment, instead of inside in an exhibit hall. Some botanical gardens might say they have great exhibits, but they’re all indoors. Our approach was to teach people in the environment with real life examples. We also had a philosophy that the exhibits should appeal to all different kinds of learners, of all ages and of learning styles. The exhibits weren’t targeted towards scientists or towards children. They were intentionally made diverse and understandable by the majority of our learners. That was a philosophical approach.

I think people need to think about those things before they develop their master plan as well. What do they care about? A lot of people maybe come up with an interpretive plan without even thinking about the mission, their goals, or philosophical guidelines.

Evans: How is innovation defined? How can institutions or people go about getting to innovation?

Greenhouse: (386) In the exhibit that we worked on, the innovation was in the comprehensive approach—from developing the messages to training and using teams, to the extensive use of formative evaluation. If it was text on the sign with some words, I wouldn’t consider that very innovative.

The results can be seen in the exhibits. For example, because we had so many visitors from other states and other countries, we asked them to look at a map of the world that showed the deserts of the world, and then to see if they lived near a desert or how far they lived from a desert. They really got exited about that. It’s interactive. They got to see for maybe the first time that where they come from is close to or far
away from the natural deserts of the world. And it just brings into their consciousness. I think that was innovative.

Visitors enjoy the spotting scopes that help them see a woodpecker’s nest or a certain plant that they normally wouldn’t be able to discern.

The self-tests that are much more than just guessing games [are innovative]. A guessing game might ask: “What do you think the name of this plant is?” Well, how would anybody ever know? It’s a mindless question, but I think well thought through interactive games are good. Any method that is interactive and at the same time, gets people excited and teaches them something at the same time, is innovative. It can’t just be a gimmick and be innovative. Innovative has to have more to its definition. It has to “work.”

Evans: How do you get people to be innovative?

Greenhouse: (406) I think that they need to be open to exploring ideas. And be patient with the process, in terms of letting people be involved in it and getting diverse opinions and thoughts from other people, without shutting them down. It’s like in brainstorming, where if you brainstorm with the attitude that some ideas are really bad, you never get to the good ideas. If you are patient, eventually the good ideas float to the top. Being open to it is part of it. Then, you have to have the environment, the process where people can be creative and contribute. And that makes everybody more creative because it gets exciting once it’s done in a positive way. And if people aren’t overly judgmental.

Evans: Do you think there’s anything else that I should know or questions that you have for me?
**Greenhouse:** Because I worked at the Botanical Garden for twenty years, I had worked with many different Executive Directors and Education Directors. I have had years of experience in exhibit development. Innovation and good results can’t happen in a constraining, oppressive environment, but good things can’t happen in an absence of leadership, either. Good leaders are inspirational, trustworthy, and must be smart enough to get rid of the bad, focus on the good, and make some measured and careful decisions. It’s not going to happen by accident.

**Evans:** Thank you.

**Greenhouse:** You’re welcome.

[Informal conversation continues]

**End of Interview**

**End of Tape 1, Side 1**
Interview with Kathleen Socolofsky, previous Director of Education, Desert Botanical Garden, Phoenix, Arizona

Date of Interview: 17 December 2004
Location: Phone Interview
Interviewer: Jenny Evans
Transcriber: Jenny Evans

Topic: Desert Botanical Garden Renovation

Note: Number in parentheses indicates approximate tape counter indices.

Begin Tape 1, Side 1

[First 20 minutes of interview is missing]

Socolofsky: (0) He [Les Rowe, former exhibit designer for the Phoenix Zoo, and one of the exhibit designers for this project] said people were climbing over [the back of his truck], trying to read them [the signs]. And he said, “I’ve never seen anything like this. We didn’t have this at the Zoo.” So he changed his whole mindset about exhibits.

He [Paul Mirocha, artist for this project] was into, “It’s how they look aesthetically. It’s the colors. It’s the design.” And he became a convert, too. Because it’s more than just [the design], it’s a question that hooks them [the visitor] in, or building off their interests that they had before, all these elements.

But I still think the design needs to be beautiful. I don’t think it’s all or nothing. I’ve even heard at the Visitors Studies [Association] conference, they divided a whole audience between design driven and
educationally driven, and they wanted you to take one point or the other. I don’t think it has to be one or the other, but I do think education should come first and then, the design should follow that, in my mind.

If bottom line, you’re going to invest money and say that we are teaching something and we are communicating something and we are making a difference somehow in people’s lives, then you have to put that first. The design can follow that and be fantastic. The problem with design is often it’s just one person’s idea of what is pleasing.

**Evans:** Right, that will please one person in the public, but not necessarily [everyone in the public].

**Socolofsky:** Right. But if you do the testing and you find [signs] that get fifty percent of the people engaged, then that keeps working. But the design can’t take away from that; it should enhance that.

**Evans:** (24) What were your goals for the guests?

**Socolofsky:** I’m not looking back over what goals we actually wrote. The biggest thing for me was to develop an understanding and an appreciation for the desert that would make them want to protect it. A desert has often been seen as a neglected or unimportant landscape and the development of a lot of our big cities [is happening] in the desert areas. If people don’t have an understanding of that, there are bad consequences. A desert isn’t the easiest thing to appreciate, on your first visit or on your first experience or when you first move there. It’s just different. So I wanted them to really connect with it and understand the connections between the plants and the animals and the people, so they can make better decisions.
Back to your question about the mission, it was easy for me to see that at the Desert Botanical Garden [because] the mission had stayed the same since the ‘30’s, when it was founded.

**Evans:** (41) The mission from the Articles of Incorporation was the same one that you had?

**Socolofsky:** Right. It had changed slightly with the wording. But I remember the founder said, “We want to protect the desert that is fast being destroyed.” I remember reading her words and that was [written] in 1937. Imagine where Phoenix is now, the sixth largest city in the country. I look at a lot of institutions, and it’s not as clear as to why they were started. So, we were able to build off that long history, and then add in the pieces so that people could understand it better and appreciate it and protect the desert.

**Evans:** (57) Do you think interpretive planning is always informed primarily by the mission and then, through the vision or master plan?

**Socolofsky:** I think it should be. And I think it’s tempting to take money from a donor and go off [in] a different direction. There had been talk for years about this idea of a desert wildflower trail and it was to show people the beauty of the wildflowers. Sometimes the magazines show the fields of flowers and maybe that only happens once every seven to ten years. So people come and they’re upset that they don’t see the field of flowers. It’s sort of a trivial thing, or more of a marketing thing and driven by a donor. And so there was a lot of talk, and I managed to avoid having to develop that trail because it just didn’t seem to have as much relationship with the mission. But after I left, it developed. I go
there [now] and it’s okay, but I don’t think it has the substance. That’s just my opinion. And they had to force some of the interpretation.

I’m in situations here where I’ve got some history and I’ve been forced on certain things, so I understand how that happens. But as much as possible, it should come right out of the mission. A lot of the stuff that we did with the Drucker Foundation for Nonprofit Management has to do with defining nonprofits as changing people’s lives. If you spend all this money having these collections and they aren’t really changing anyone’s lives or doing anything much, except for a handful of scholars who might study them, what’s the point of having them? If they don’t tie back to what your essence is, I don’t think that’s very good.

I’m very much a strategic thinker, so I’m like, “Wow! Think how many people you can influence if you’re out there with your daily visitors. And think how many more visitors you can attract, if you have word of mouth marketing that it’s this incredible place.” In a practical sense, do you take two people and have them plan a workshop for ten people for the whole summer, or do you take two people and have them develop all the docent hands-on activities, and be out there everyday? Or spend your time up front; really get everybody involved in some quality exhibits that are there day in and day out?

(83) It just seemed obvious to me, but it isn’t always obvious in how institutions spend their resources. If you have a chance to connect every single person that comes to your institution with your mission, then you should do it.

Evans: Right. Did you see an increase in visitors, or was that tracked?
Socolofsky: (88) I’m not sure that was tracked, but we had a lot of word of mouth marketing. So many people would tell us that people had told them to come. We interviewed a lot of people and we kept a log. I don’t have the information on that, but we had a thing where people could write their impressions or thoughts afterwards and they tracked that for a long time. It was incredible what people wrote in terms of the experience that they had. And how it transformed their thinking of the desert, and then, “I’ll be back.” So, we did get a lot of feedback that seemed like it really made a difference.

Evans: (94) I’m always intrigued about how you arrange interpretation and signage with the collections in terms of competing with the collections. How did you decide how much is too much? How did you go about deciding the right amount and the right places?

Socolofsky: (98) That was hard and actually, it was helpful that we had been working with the messages and the scheme of the trails in our programs ahead of time. Even docent tours had worked over the years to pick different spots that were good for teaching certain things. So we had a real understanding of what you could teach through certain areas of the collection. There were a lot of factors involved with it.

When we worked with Dr. Screven, he talks about what he calls providing a “cognitive break.” He thinks it is important to have—I don’t know if he would say it quite like this—but to have areas where you walk along and you aren’t bombarded. And so we did purposely create some [cognitive break] areas. And when we got through, the biggest complaint was that we didn’t have enough [signage]. So, we evidently did okay on that.
What we found is when there were natural areas—we have a cactus house and a succulent house—in natural areas like that, you can put more things in a smaller clustered area and then leave some blank spaces. If you imagine the visitor experience, you might spend some time there, and then you just want to leave it and walk for a while on to the next. So you leave walking/viewing areas. It’s kind of hard to explain. That was one way we did it—was grouping things and leaving cognitive break areas.

Another way, we had layers; some of the collections areas were for more in-depth teaching, like with a university class. You didn’t want to put that [information] on the signs [so] maybe a university class would come in and add a sign there or do a test there. Those areas really weren’t that great for the public because, how long is somebody going to sit there and distinguish between this cactus and that slightly different cactus that looks exactly the same?

We had beds of those kinds of things, and so we ended up putting a simple interpretation that let people know what it is. It’s there, if somebody wants it, but it wasn’t designed as the same visitor-centered message. It was visitor-centered in the sense that, if you’re interested in what all of these cacti are from Northern Mexico, here, this sign will tell you. But we didn’t really go to great lengths to make it more interactive, so those fade away to the average visitor. That was part of it, too. Some things we feel an obligation to let people know, for people that are interested, but to most people, those are background. And they’re not big; they’re just small for people who want them. So, that layered thing helped too.
We did more testing than any place I’ve ever heard of before. Once we got the signs working, we put them all out. We experimented with the flow and where they should go. And what they looked like when they were all out on cardboard at the same time. I don’t know of any other institution who’s done that. They may have, I just don’t know, because that takes a while. We were really just obsessed over it all.

But it was exciting, and we learned some better placements. Placement is a really key thing, too. We found that if there’s a big attraction ahead, they’re not going to stop. They’re distracted.

Another thing that we learned [is] about how you pick the collections. This is supported in visitor studies research too, that people are drawn to big objects. We would think, “We’re really bored with the saguaro cactus. We’re going to talk about the little gall on this tiny burr sage next to the saguaro cactus.” Well, good luck! We finally realized, these people are here for the first time, and if they’re attracted to something, then play off that, and teach the messages there. That other level can come on a tour or in a guidebook. So that was part of it too.

Quite frankly, a lot of the collections that were just hundreds of one thing aren’t really that appealing to visitors in general. It’s probably more the giant saguaro that has the woodpecker nest in it and the holes down below with all the critters living. That’s what people are interested in. We didn’t need to bother littering all the collections beds [with signs] because it was more [about] these bigger objects that had more mass [and] that had interesting stories about ecology or about
plants and animals. But you need to know what has potential to teach what. You don’t want to litter it up, if it’s not going to be very interesting [or] if it doesn’t have a message connected to the mission. You might be better just with a plant label.

**Evans:** It’s interesting talking to people that say things like, “littering the garden with signs,” maybe they have this experience of having signs that aren’t very effective.

**Socolofsky:** (152) I think so. We just interpreted our Redwood Grove, here at the [UC Davis] Arboretum. I tried to bring everybody up to speed on all the literature. We did a big training process and we involved the whole staff and volunteers in a team exhibit week. And we’re now working with a design firm that understands the visitor-centered approach and they’re willing to work with us, take our text, and turn it into what we want. That’s worked out really well.

At first, people were so leery of putting these signs out there but we haven’t had one complaint since they went in, because they’re so interesting. People are gathering around them.

Also, you have to be sensitive to the environment. In this particular case, they kind of fade away until you come upon them, even though they’re big, but the colors and the design is very appropriate. And I think that’s important too. That’s what I mean about it not being one or the other; that design element is very important. In this particular case, they needed to not be distracting from the overall design.

**Evans:** Because nobody wants to go into a grove of redwood trees and see fuchsia signs.
Socolofsky: (163) That sounds obvious, but I think it helps. You hear people say that, but I’ve decided it’s mostly the people who know all the information. So they have no motivation. Or you know how it is when you know something, you really think everybody else knows that. You already have all the information. You wouldn’t need that.

However, if you went to a different museum and you didn’t have the information, you might want that. I don’t know what it is, but we got maybe one person during the testing of the signs saying we were going to ruin the grove.

We also have an overall goal for an exhibit that we design, and in that particular case, we wanted it to be a place for relaxation and meditation. It needed to have that whole feeling. And we were going to put a memorial wall in there. So we had to keep to that bigger goal, even as we did the education. And everybody said we really did a great job of doing that.

Evans: (174) That comes to another ongoing debate about the purpose of whatever it is you’re showing, whether it’s strictly display garden. If you want to tie education to it, how do you do that without ruining the display?

Socolofsky: That’s the problem with display gardens in general. I’m sure there’s a place just for a beautiful garden. And if that’s what it is, maybe that’s what it should be. But those of us that have missions that require us to, as Peter Drucker says, “change people’s lives,” have to do more.

But we might choose to have some areas that are just beautiful. In fact, we’ve been working on that. We have a lot of sunny areas because we’re along an old creek bed. At some of the banks, I’m like,
“This isn’t a good place to teach people. What are they going to do? Crawl down and fall in the water?” Let’s have some areas that are beautiful. But let’s decide that and let’s not interpret it, and let it be a cognitive break. So that’s how I start to rationalize it. Have these areas that are more intensively designed for education and then have some areas that are maybe just horticulture display or beauty. And don’t try to make that education.

Part of our mission is to show people that plants adapted to Mediterranean climates can be great additions to your landscape and can save water. And just having beautiful displays of the grasses or the different things can give people a message too, without actually having to say it.

Evans: When you did your signs, did you hire a writer?

Socolofsky: (182) That’s a really good question. We hired a writer, and she wrote the entire first trail. Then we really got into all of the formative evaluation and we had everybody review the signs. We went through this big catharsis, and we decided this isn’t the way to do it. This sounds like a textbook. This doesn’t work at all. We actually ended up having her write a guidebook for us because her writing was more appropriate for a guidebook that people carry with them. But it didn’t work for the signs.

So we trashed the whole thing and we started over with developing the team exhibit week approach. She was understanding because we said, “We feel an obligation. We think we can do this at a different level and we feel an obligation to try this.” We brought her in and we explained it to her. And then, she wrote the guidebook instead.
Evans: It seems to me that there’s different sorts of writers. Maybe the literature and the knowledge about exhibits and signs has come far enough that there are people that are really good at writing signs, whereas there are people that write guidebooks. Maybe they didn’t exist when you started out, I don’t know.

Socolofsky: (205) Well, the company that we work with now is Geographics, at the [UC Davis] Arboretum. When I did the Desert Botanical Garden project, I had to coordinate the fabrication of all of the signs and all elements and work with all of the artists. It was so draining. And when I came here, there’s no way, it’s a smaller institution. There’s no way we can manage that. So we need to find a company where we can do the development of them [the signage]. Then they can design them, work with us, and take our words and improve them. And get them sent to us so that we can put them in the ground; literally, go all the way to installation.

Dawn Hassett is the President of the company and she has a Master’s [degree] in writing. And she specializes in visitor-centered interpretive writing. She’s very good, but still, as good as she is, we chose to use the team week because each sign takes on its own character. That’s one of the things that makes it feel more innovative, this approach.

I’m really building it off the whole model of creative problem solving. When you have a challenge, “Here’s what you’re trying to communicate and here’s the plant and some of the objects you might use.” And then, “Let’s try some different approaches that really attract visitors and hold your attention and communicate. Get them involved.”
We hold ourselves to a high standard in terms of [saying that] people need to look at the plants. They need to be interacting with each other, talking about it. We want to see that whole participation with the plant or the object.

That doesn’t always come from being in another place writing about a plant. And it doesn’t always come from one person. It comes from a team of people. You’ve got your Nursery Manager going, “But you know what? People really like the way when you crush the leaves, they smell like this.” And then, each one is like a creative solution that comes from a group of different people with different brains.

That’s important too, because people are so different and have different learning styles. If you vary it, some might be more towards the tactile and some might be more centered on something else. Somehow, involving a lot of people with different styles and different knowledge and different approaches and different creativity produces signs that are all different. If one person does it, no matter how good they are, the signs would tend to be more the same. And so, that’s part of why I like to do the process.

What we did have at the Desert Botanical Garden, we had editors afterwards that really went though [the text]. And we worked with Dr. Screven about how to take out as many words as possible, how to take out chunks of text and put them as captions to photos and tell the story with the photos. [We] did a lot of editing afterwards and had people involved with that, but we didn’t have people just write them. So we brought a lot of writers in, but after [the exhibit development process].
Evans: (236) How do you define an innovative exhibit? And what makes it innovative?

Socolofsky: The best ones—I don’t know if there is a most innovative—are not over-designed. They’re simple, but powerful. They grab people; people don’t have much time in informal environments. They also have to be ones that highlight your plants, in particular at botanic gardens, or your environment. They somehow just have to catch people and get them participating. And so there are all kinds of different solutions.

I think that’s why I like to use that team approach, where you get the person who says, “Nobody knows where the hole is in that cactus. What if we put a tube so they could actually look, and a spotting scope and they could see where that hole was.” Or, “Nobody can find that little cactus under the bush because they don’t know where it is, so let’s put a little ring around it.”

They’re simple. It’s counter-intuitive. Particularly in outdoor environments, some of the best things are simple. Because they don’t compete with the environment and they help you focus. The environment is so complex that they narrow it down for you and help you focus. But people think, just off the top of their head, that an innovative exhibit would have more stuff or…

Evans: Or be more complicated.

Socolofsky: (252) Yes. I do think there’s some exciting things that could happen with PDA’s and people being able to access layers of information and make more choices. And we’re going to start exploring some of that. There could be a lot of innovation that could happen with the handheld
technology and computers, but I still wouldn’t want to see what we put in the environment be obtrusive or taking away.

They have to work, too. You have to really observe visitors and find out whether they work. Maybe it’s that each one is particularly designed for a learning goal and connecting with a certain plant and developing enthusiasm or inspiring people. Maybe innovative just means each one is tailored to the specific challenge and it does what it’s supposed to. Innovative doesn’t mean bigger or more bells and whistles or more distractions. You’re already distracted. Innovative is if you can get the essence of it in the simplest thing possible that doesn’t take away, but enhances people’s view or understanding of the environment.

**Evans:** One of the ways that you said it earlier made a lot of sense to me, was two different worlds coming together and the result is not necessarily something that is that unique, but that somehow is innovative because you’re bringing a whole new spin [to it].

**Socolofsky:** (266) Yes. I was thinking, what is the difference in what we did there and what we’re trying to do here? At the foundation was knowledge about how people learn in informal settings. And I think that’s huge. We all grew up in formal settings and so we always try to apply the principles of formal education to informal. And it’s just very different. At the heart of everything is really this understanding and acceptance of the fact that this is a different learning environment. And we need to have people involved who understand it and know how people learn and know how to measure it.
I think the art piece is really important and design piece. You’ve got the bigger design of the whole area and it needs to be coordinated with the design of the exhibit. At the Desert Botanical Garden, the writer wrote this thing like, “Notice the beautiful flowers on the side of the path. They range in hues from orange to…” And she’s writing all of this flowery stuff, literally. We read it and we thought, “That’s kind of stupid, when you really think about it.” I mean it might be good if you were writing a book, but all you need to do there is create a compelling array of the flowers. Maybe they’ll see it themselves. The design itself can communicate. So, at some level, you might just be saying, “We don’t need to write a sign about this.” We’ll just do it, so that they see it and they’ll make their own meaning.

Evans: Right. And direct people’s attention to it.

Socolofsky: Right. Anyway, the education is key. The art is key and design, because it can serve as part of your educational or affective goals. It’s got to be considered, but it can’t drive the whole thing, in and of itself.

There’s this whole visitor studies thing, and the formative evaluation is absolutely critical. When I try to explain it to people, it seems a little random, but our process really isn’t too random. It’s more of a creative problem-solving thing. You’re given really clear goals and challenges and specific things to work with. Then within that realm, you come up with creative solutions and you test them.

Because my background—I got my Masters in Educational Leadership—I’m really interested into organizational development, leadership, team building, [and] how to structure things. And so that was really key to what I did. I was actually working on my Master’s at
the same time I was doing the NSF project and I thought, “This is really an organizational challenge because I have all of these Curators, Horticulturalists, a Director, and I need to get them all into a new way of thinking.” That was really an underpinning of that whole process I developed. It really changed everything because the Horticulturalists were saying—we would come up with an idea of putting a plant in the exhibit [in] a pot. And before, they would say, “There’s no way we could care for that.” But then they would get so excited [and say], “I could do that. My volunteers could go out there and water that. Or we could change that out.” Because they were into how the visitors responded.

Then that translated to the whole culture of the institution, which I’m noticing here, too. All of the sudden when people know what visitor-centered is, and they know how to watch the visitors, they make all kinds of different decisions. So, that’s a big piece of what I believe in and that I haven’t really documented very well. But that’s where I’m coming from. The education, the art and design, the visitor studies and evaluation, and the whole organizational culture development around visitor-centeredness [is important].

Evans: Wow! It’s so complicated.

Socolofsky: It kind of is.

[Informal chat about other contacts for Jenny’s research]

Socolofsky: (327) On the art, that just shows that even though the education was driving it, the art was critical. We wanted someone who really knew the desert, inside and out. And so, it wasn’t like it was minimized. It’s not the end unto itself.
So, I hope this was helpful.

**Evans:** It was very helpful. Thank you so much.

[Informal conversation continues]

**End of Interview**

**End of Tape 1, Side 1**

**Addendum:**

In order to insure that, in general, the same interview questions were asked of all respondents, additional questions were asked and answered after the original interview by email.

**Evans:** What do you think were the strengths of the Desert Botanical Garden trail renovation? Weaknesses?

**Socolofsky:** Strengths:

- Exhibits (educational goals, messages, etc.) were a part of a greater educational program that included docent tours, trail guide publications, docent hands-on discovery carts, exploration games for student visitors
- Exhibits were developed as a part of a complete renovation of the Desert Botanical Garden- its trail system, way-finding system, visitor amenities program, and educational program
- Evaluation was a key part of the process- before, during and after. This led to exhibits that interested visitors and kept their attention long enough to communicate our important messages. Unlike exhibits that have not gone through any formative evaluation, these
exhibits continue to engage visitors in the learning. One of our national evaluation experts told us that he had never seen such interaction visitors who did not know each other. For example, visitors would call strangers over to the exhibit to discuss what they were learning and to encourage them to participate with the exhibit. He said that it is very unusual for exhibits to gather so much attention that groups who do not know each other begin speaking to each other about the exhibits and the plants.

- The focus on the exhibit development was to get visitors to interact with the plants- to notice them, perhaps smell or touch them, appreciate them, etc. so that they would gain a better appreciation of the plants and the environment. I believe that one of the strengths of the Desert Botanical Garden project was that the exhibits were successful in getting visitors to examine the plants, not just look at the exhibit text.

- Another strength was the use of participatory elements in the exhibits- flip labels that could test visitors' understanding of a concept, auditory elements in the exhibit, use of real plants in the exhibits, spotting scopes and focus rings to direct visitors' attention, etc. These elements really increased the visitor participation with the exhibits, making it fun for groups of visitors to interact with the exhibits and each other.

- While there was a strong educational focus, the exhibits were also developed with a strong emphasis on design elements that reinforced the desert nature of the exhibits- desert-style art, colors and exhibit furniture, etc. With the goal of changing people's
negative perceptions about the desert, the beauty of the signs and how they fit with the surrounding desert environment was a big part of the success of the exhibits.

- The exhibits were developed by interdisciplinary teams of horticulturists, educators, volunteers, scientists and novices through a creative problem-solving approach. I think that this led to a variety of approaches instead of the usual standard templates that are used in exhibit development. This variety attracted visitors with different interests and different learning styles and kept the exhibits from becoming boring.

- There was a big emphasis on making sure that the exhibits highlighted the collections, but did not detract from them. I think we succeeded in this area. In some cases, we went to great lengths to leave large areas uninterpreted so that visitors could have a better view of the plants and the environment and also have a "cognitive break" from the learning activities. This seemed to work for most people, with some people even complaining that we didn't have enough exhibits.

Weaknesses:

- The changing sign system that was designed to highlight seasonal changes in plants and on-going horticultural and scientific research was one of the weakest parts of the exhibit development. While the changing signs worked well in the formative evaluation stages, the institution was not able to develop a strong system for creating and maintaining the changing sign system.
There were also problems with maintenance of some of the changing and technical elements relating to the exhibits—such as hands-on items with the exhibits, the flip systems, the temperature sensors, etc. It took a while to sort out the upkeep on these elements, but the problems were mostly solved in the long run.
Evans: (10) How do educational goals or interpretive goals fit into exhibit design and planning?

Flanagan: It seems like a simple question. It really isn't to me, because I would ask you, "Are you talking about the goals for the exhibit or are you talking about the overall goals for the institution, as in educational master plans or an interpretive master plan?" And you might say the answer is all of the above. I would say, in our case, I took the specific goals and messages that are in the interpretive plan, as they mapped to the landscape plan of the Conservatory. Then when you get to each site, you take those broad goals and you map them into the goals that are each specific.

Evans: It's like a nesting framework.

Flanagan: (23) Right. And it's iterative, because they're very general at first. Then as you go down the hierarchy, they get more and more specific. In our case, you start with the mission, which is as general as the five importances. Eventually you get down to something as specific as the very specific
messages in the Desert House that support the big idea of the Desert House.

**Evans:** It’s the same thing in the exhibit spaces.

**Flanagan:** Yes.

**Evans:** I’m also looking at Desert Botanical Garden. A lot of the design that they did was based on questions that visitors had, which seems to be a very different approach than what happened here. Do you have any opinion on that? Or is it just different? It's not certainly better or worse, but why did you go about it the way that you did?

**Flanagan:** I think one of the differences is that the Desert Botanical Garden is embedded in a chunk of Sonoran Desert. Their entire site is dominated by a natural landscape through which they've built trails and added a few buildings. And in some cases, they've added a created part, which is they have a little pond/wetland area where they talk about the riverine habitat. But that environment basically determines—it's the living image of their overall mission, whereas our primary garden is essentially a concrete landscape. It can be anything we want it to be. Essentially, what's been imposed upon the Botanic Garden was the legacy of the great North American, and for that matter, Northern Hemisphere Conservatory, which is that you have a Desert House and you have a Palm House. You have floral displays and you have all those things that are "supposed" to be in conservatories. The other thing that's imposed on it is the idea of shows. You have big, what I used to call, floral operettas.

**Evans:** The orchid shows. The holiday shows.

**Flanagan:** (58) The holiday shows, the spring shows, the mum shows, and so, they're really very, very different. A visitor going to the Desert Botanical Garden
walks in, and they're there because they're visiting the Desert Botanical Garden. They don't really expect to see a classic conservatory. If there were another botanic garden created in downtown Phoenix, it could be whatever it was going to be. Chances are, it could be very similar to ours, but that's not what they were about. To me, it makes sense that they would have a very visitor-centered approach that addresses the expectations of their visitors. They are going to learn about the desert and they’re fully centered in answering their questions about the desert.

The way they went about it with the formative evaluation, that comes out of all of [Chandler] Screven's philosophies about effective delivery of information, is exactly right. I would love to have done a lot of that here. The reason we originally didn't do it here is that the environment that I faced in '96 and then in '97 when we closed would not have permitted that approach. I mean the administrative environment because the expectation was that the Conservatory would be renovated and when it opened, it would be finished. And there was no sense that we would be able to have a half finished exhibit that we would then do testing on.

Evans: So it couldn't be a work in progress?

Flanagan: In fact, it was a work in progress, but each progress was more or less closed to the public. Now that we have a physically intact Conservatory open to the public, we could certainly do what the Desert Museum did. In fact, that's what we intend to do with our visitors' study this year, is say, "Does this answer the questions you have about the desert, once you're in the Desert House?" It's very hard to bring the public into what's clearly an artificial exhibit and then say, "Does this address their expectations?" unless you have a lot more. Now that we're where we are, we could do
that, but it would have been very hard to do that from the get go.

Somehow you have to decide what it is you're going to do. Very early on, before I came, there were some design charrettes done about what the Conservatory would be, if it ever were to be renovated. And at that time, everyone was thinking it would be renovated. And that's where the original master plan came from for the Eastern half being all about plant evolution and adaptation, and the Western half being all about humans in relation to plants. And the two center houses being in the intermediate zone between the two. And out of that came the master plan that we currently have, with regard to the master landscape plan for the Conservatory, with regard to the Desert's here, [et cetera]. Then that was taken one step further, which is that the landscape designer said, “Here are ten to fifteen structural plants that will be included in each house.” In some cases, it was no structural plants.

Evans: That are important to reinforce whatever theme it is?

Flanagan: (96) No, it was ones that they thought would be important to being a desert. But there was never any statement of what the exhibit was about, other than to say, “This is about a desert, and this about tropical rainforest, and this is about a Garden Court.” What does it mean to be a Garden Court? Everything that was written about that was mostly about how the visitor was going to physically move through the space, rather than what the visitor would learn or get from the space.

So, when we did the interpretive master plan, we really started with the mission. And we started with the given landscape plan, in the sense that we knew what each house was from the master plan that had been developed. And I use the plan in a traditional landscape architecture sense.
From an educator's point of view, there was no meat in it. So then we imposed the mission on that plan and went through it, house by house as we did the interpretive master plan. And we said, “This half of the Conservatory is ecology and evolution. These are the stories we'll tell here, and these are the stories we'll tell here, and these are the stories we'll tell here.” We wrote that plan up with its big ideas and specific messages. At some point, after we had the interpretive master plan and we actually had to specify the plan and actually produce the signs, before we went into that exercise, we went out on the [National] Mall and we did some evaluation of those specific goals.

**Evans:** I saw the medicinal plant one, a survey that said something like, "What plants do you think are soothing?"

**Flanagan:** There was a questionnaire done for every house. (117) We used it as a way of doing a couple things: 1) Were the specific messages and the big ideas we had called out to address in the houses, were they going to address what the public said they wanted to know? And the second thing we did is, we formed a team that included gardeners and public programs people for each house of the Conservatory. As those teams began their work, they began to express reservations and doubts about parts of the landscape plan because they were, in some cases, not traditional for a conservatory. And the gardeners felt uncomfortable on a number of different accounts. Since we had no budget to do an evaluation, we formed an evaluation team that included gardeners. And I trained them in how to take a survey and I sent them out on the [National] Mall.

And we went everywhere from in front of the Conservatory to down by the Smithsonian asking these questions. We had developed a list of
questions. Everybody had to turn in questions they wanted to ask and we went through the questions, honed it down to one page, and then went out and got responses. And then we analyzed them. The results of that were very interesting. In some cases, we found out that we were going to have to change our plans a little bit, not much, but a little bit. In some cases, we were able to address the concerns of the gardeners.

An example of that would be--the gardeners were very concerned about calling the Jungle, the Jungle. They felt it had a pejorative and racial overtone to it. And so we developed two questionnaires that were identical, except the terminology. One of the questionnaires referred to it as the Jungle and asked people what their expectations were. The other people said, "We're developing a tropical rainforest." And then it had identical questions, "What are your expectations?" And when we got back and analyzed the results, there were no significant differences in the expectations or reactions of public to the term, except that some people thought the Jungle sounded fun. And it was really refreshing because once we went through that exercise and showed conclusively that there wasn't any significant difference, the gardeners completely dropped the issue. It seemed to satisfy their concerns, which was very helpful to us.

(142) An example where we developed some new ideas was we looked at the Medicinal House that had been the one house in the Conservatory that actually had received a lot of attention from the landscape architects. They had separate contract to go ahead and develop fully the whole exhibit design and the messages, the big idea and the specific messages for the Medicinal Plant House. They hadn't done it for any other house, but they had a contract to do it for that one house, for some reason, and I don't know
why. So we took their specific messages and the goals and developed a questionnaire. And went out on the [National] Mall and discovered that the public had so surpassed (and they had done that in 1993, and this was 1998), they had so surpassed the knowledge that had been out there in 1993, because of the very recent upsurge in interest in herbal medicine. We felt that the big idea and the specific goals of the house were irrelevant. And so we went back and redid the whole house.

The other thing that we did when we looked at the master landscape plan--there was a Mediterranean House that was originally scheduled for the Plant Exploration House. And we said, "What's this about?" and after interviewing people who had been involved in the design charettes they said, "We don't know." There wasn't ever any really clear indication of what it was supposed to be other than just a pretty house. So, we petitioned for a change order in the drawings and went and actually were able to convince the administration that it needed to be more than that and that it needed to address the mission. And that's when it became the Plant Exploration House.

In that sense, it was kind of a nod towards the philosophy of asking your visitors what they need to know. And we did have some specific things we could ask them, because at that point we were able to test the interpretive master plan.

Evans: How did that lead into the East and West, or more specifically, the West Gallery? Were the big plans for that done at the same time, when the renovation was done?

Flanagan: No. The renovations for the East and West Galleries were really simply room renovations, physical. They were renovated to include a skylight and
renovations of the walls and wiring and all that, but they had nothing defined for them. The master plan was fairly vague, in that it said we would talk about the biology of plants in there and use it as a way of addressing museum style exhibits, in ways to address issues that really couldn't be as effectively addressed in the living plant space. We've always seen them as a place to do something related to plants that couldn't be as well done in the living plant space. So, we drew the distinction between living and dry.

**Evans:** Because of the wet conditions and all of that, that are in the Conservatory.

**Flanagan:** Because you can't put objects, and you can't put textiles and things like that in the living houses. On that note, we saw Plant Exploration as being a very interesting duality because that would be a place where we might try to do both things. We might try to have short-term temporary exhibits that might include vitrines in a living house, so that we could actually accent it with a real plant.

**Evans:** But it probably couldn't be super-valuable kinds of objects.

**Flanagan:** Either super-valuable or be in there very long.

**Evans:** Did the renovation get done and then you turned the attention to East and West Galleries? Did you do all of the East first and then you started on the West? Or did it coincide at the same time?

**Flanagan:** In the budget planning for the Conservatory, it was always seen as a phase, you'll do the Conservatory, and then the next year, you'll get a capitol outlay for--well, it was the Conservatory, one Gallery and then the other Gallery. And how it actually works is that you get an outlay for the design in one fiscal year and the construction in the next. So, it's been a long process. In terms of the East, we had an outlay for the construction of the
East and the design of the West in the one year. Originally, it was supposed to be the West done first and then the East, but because of uncertainty about when the National Garden was actually going to go, because it was going to go every year almost since 1998, it was decided that we would do the East first and then the West.

Evans: Just because it's [the West Gallery] adjacent to the National Garden?

Flanagan: Yes.

Evans: Was it always planned that they were the yin and yang?

Flanagan: Yes, that comes from the pre-1996 plan. Let me put it this way, nobody really said what they would be, but I always envisioned that they would continue with the East-West dichotomy. And so that meant, ecology and evolution had to be in East, and human centered uses of plants had to be in West.

Evans: You sat down to do the West Gallery, and my understanding is that you and Holly had already come up with brainstorm of what you wanted to showcase. So, what I want to know is how you came up with that stuff? Were there many conversations with people all over the place? The sense I got from Vicky is that you went to the start-up meeting and talked, and then the design came from that.

Flanagan: (201) The design came very quickly, but I would say that Holly and I did not sit down and talk a whole lot. Because of the interpretive master plan being finished in basically '98 or '99, I knew what the West Gallery was going to be. Over the years of networking and going to meetings, I was gathering ideas, and I was watching my colleagues grapple with one thing or another. And some very seminal books came out like Guns, Germs, and Steel and there was the wonderful old book called Plants and Man.
I've been very aware that I think society is losing its roots, in terms of understanding how we got to where we are, in relation to our natural environment. I think there's a very poor understanding about it. People seem to think that they are in control of their own destinies. I think that the space program shows us that that all we have to do is think about it and we can do it. Well, maybe...but you can't do it. You can't make products out of something that doesn't exist. Now, in a way, we have. You can make synthetic fragrances. You can sort of make synthetic fragrances. You can make it, but you can't capture the full complexity of a naturally produced fragrance. How can you make a squash if you don't have a plant? How can you make a natural medicine if you don't know that you've lost it? How can you grow healthy crops if you've polluted your soils? There are some things that you can't go back on and it's an environmental message, but to me, it's more of an empathic understanding, an emotional understanding that we are stuck here. We have a codependence with our environment, and plants play a big part of that.

I really wanted this sense of aesthetic, economic, cultural, and therapeutic influences of plants on the future to be real to people. So, when Holly and I went to that meeting, we felt very strongly that it was not about having a case. And in the case, you would see this very scholarly development of an idea about the domestication of wheat in the Tigris/Euphrates Valley. It wasn't about that. It was going to be more about the rhythms of our current lives and our historical lives, our cultures, as they were influenced by plants. And the rhythms, meaning not only the individual’s daily rhythms and their health and their nutrition, but also about the cultural rhythms of our societies, about the religious and
ceremonial observances that we have.

And part of the thing that really shocked me was years ago, when I was working at a different institution and they said that we had to do holiday workshops. I was very scornful of them because I felt like it was about making money and there wasn't any meaning in it. And then I said, "I understand that we have to do this. And we make money off of holiday workshops, but I am at least going to make some meaning out of it." So that's when I started reading about the ancient meanings that were ascribed to holly and mistletoe and oaks and the Yule log. I had sung for years about Yule logs, but I had no idea what the Yule log really was and why one used a Yule log. To me, it was a word in a song and meant really nothing more. I have a feeling that's what it is for most people. For some people, in fact, it's a cake.

Evans: I don't even know what a Yule log looks like.

Flanagan: Most people think it's a cake that has icing with mushrooms on it, fake mushrooms, because they eat the Yule log. There's this Yule log party that you have, and for all I knew, that's what a Yule log was. Well, it actually isn't, and if you want to read about Yule logs, you can do it in the book I gave you today (The Golden Bough by Frazer).

So I did this whole presentation/exhibit about conifers and about evergreens and about ancient Celtic rituals surrounding the winter solstice. And I learned a whole lot about these traditions that we'd inherited. And how many of them have been co-opted by Christianity because they needed to move a population and impose Christianity on these people who followed the Druid religion. So they took over their own traditions and co-opted them to becoming Christian traditions. But a lot of it doesn't read
true, in some sense, in the Christian religion. You go back and they talk about holly as being some symbol of Christ and you go "Why is that?"

Based on where Christ lived, you know there's no holly down there. Which it turns out that holly is actually this Celtic plant that has these symbols.

(254) What struck me, at the same time as learning this scholarly information behind it, was to see the enthusiasm and the meaning that these holiday workshops had for the people who attended them. Some of them had come every year. Some of the women brought their daughters. Some of the grandmothers brought their daughters who brought their daughters, and it was three generations in a holiday workshop. When I was there, they had been doing these things for 25 years, and the holiday workshops were about making wreaths, but they were also about sharing. It was like quilting, only it was quilting with plants. And there was this tradition of getting together to jointly do this ritualistic project or crafting in association with the season.

And I began to understand that it really was a lot more than about making money. And it was a lot more than about decorating your house, although these people may not have realized that, even though that's what they thought it was about, in one sense. They also knew it was about this really wonderful experience of coming together and drinking hot cider and talking with each other. And making these beautiful wreaths, then walking away with something that you would really be proud to put on your door and to show the spirit of the holidays. And it was all about the use of natural plants to do that and the fragrance of it at the same time. People were just consumed with the fragrance of it and taking the natural
fragrance to their house.

And it was really a life changing experience for me, to go from this scornful attitude about the holiday workshops and having them be a real pain, because of the chaos that went through the whole institution, to understanding the role it played in the lives of the populations around the garden that hosted it. And realizing that, in this rural setting of a town of 125,000, it was a huge deal. It drew people from four or five counties surrounding it.

People in Washington no longer have access to stuff like that because it really didn't happen in an urban setting anymore. The juxtaposition of the highly urban Washington garden with the other garden, which was more semi-rural, the fact that those people still did that and the people in town didn't do it. They were just as happy to go buy a wreath and get whatever they could from the experience. And then there were the people who were just as happy to buy an artificial one and put it in their box and bring it out every year. Again, without the slightest clue of why they were doing it. And that's where I got this drive towards reestablishing our human traditional relationships with these plants.

Some of it had been born in myth and magic, yes, but some of it was about observing the changing of the seasons and understanding the rhythms of the earth. And I think Holly shares that view. She came about it through her own personal course, but we both brought that same sense of importance and mission to it. We were really able to talk about the ideas very clearly, even though I don't think that we had really spent a lot of time talking with each other about it.

Evans: What do you want the people that visit the West Gallery to come away
Flanagan: (279) I want them to be much more thoughtful about what they see around them, and what they do in their everyday lives. I want them to go to the grocery store with a different viewpoint. I want them to do their seasonal gift giving and traditions, understanding that what they do is more than just about what their grandmother did or what their mother did. It really has to do with what we've been doing for thousands of years. And that all of these things relate to the natural environment that we evolved with. And therefore, to understand that we have a responsibility, that our future and the quality of our life depends on maintaining that environment.

And supporting all of these traditions, because having a plastic wreath is not the same as having a natural wreath, and being able to make a wreath is not the same as being able to go and buy one. And understanding why mistletoe is imbued with all this magic that surrounds it is to understand the relationship of early humans to their environment, much more so than we even understand now.

And also, in a very thoughtful way, to say, “What are our children learning from the environment that we are setting?” Because we're all very aware that we can learn about the traditions that are documented in these scholarly writings and in film and in books and in photographs, but everyday we're making our traditions that two generations from now we'll look back on. Are those the traditions we want to be making? Is somebody two years from now going to feel nostalgic about the plastic Christmas wreath that somebody went and bought? It seems absurd, but it's true. At some point, people are going to understand that a plastic Christmas wreath is made in a factory somewhere, probably in some
country that doesn't have a clue about why it's a North American or Northern European tradition. And it's really not going to even mean much more to them, and they're going to quit buying it. And ultimately, our quality of life is going to be the poorer for it.

At the beginning of the day, each of us lies in bed, and we say, "Should we get up today?" And if the answer is yes, then, it's yes to do what? And it's yes to carry out our daily goals and aspirations, but in the end, what does it matter? It matters if you've had a rich experience. It matters if you've carried out some altruistic goals, if that's what's important to you. It matters if you've made money, I suppose, if that's what's important to you. But at some point, having the sense of lived a full life isn't going to happen if you've stayed in your immaculately clean house that has complete order to it, and if you haven't included natural parts of your environment. To me, living a full life requires you to experience your environment and understand your relationship to it.

**Evans:** I don't mean to be a skeptic, but do you think that's possible in one room in the U.S. Botanic Garden that somebody may visit for a half-hour?

**Flanagan:** (306) I think it's possible in the sense that it's going to happen differently for every individual person. Each person is going to see it a little differently, but I think the beauty and the magic of this exhibit is not going to be in any one thing they see, but it's in the juxtaposition of all things. They're going to see plants in the language. They're going to see plants in art. They're going to see plants in a ceremonial sense. They're going to understand and no longer take for granted frankincense in a Catholic ceremony, and they're going to walk away going, "Wow! I never thought of that."
Every time without question, maybe one out of one hundred people that I talk to, when I've pointed out to them how often they make reference to a plant in a hyperbole or metaphor or a traditional saying, they look at me as if I've given them some gift because they've never thought of it that way. When you say, "Make hay while the sun shines," they don't think of it as hay. They think of making progress when it's propitious to make progress. That's how we all take that saying. But the whole point of the saying, in us bringing it to them, is that this came at a time when hay was very much a part of virtually everybody's life because we lived a rural life. And plants have given us that richness, our language. I think it'll happen.

It's taken me my whole life to get here. I don't expect anybody to get where I am or where Holly is in a thirty-minute visit, but I think they're going to have their eyes opened. The same thing happens when I say to people--comparing a corn, wheat, and rice culture, they've never thought of doing that. They've never thought of it that way. And they can see immediately that that's going to have these overtones. Is it profound? I don't know if it's profound, but I think it's important.

Evans: But if it's embedded in their brain, somewhere, at some point, it may become more profound.

Flanagan: (322) One of the things that you hear people decrying right now is that places are losing their identity. You can go on Main Street USA and see an Arby's, a McDonald's, a JC Penney, or whatever, that every mall across the U.S. looks virtually identical to every other mall. And it's true in our grocery stores. And it's true in our landscape to a certain extent. You can go to Phoenix, Arizona, and you're going to see a lot of Eastern landscape plants that have no business being there.
Part of what this exhibit is about is helping people understand the richness of where we came from in 2,000 or more years, actually let's say 10,000 years, versus the scarcity of where we're going to, the scarcity of diversity, the scarcity of cultural experiences, and helping them to cling to what's unique about each particular climate zone, each particular culture. We're beginning to see people decry that in lots of ways. The loss of native languages. People are working to try to preserve them, and working to try to preserve the cultures. Well, plants are the same thing.

Why do we have mistletoe? We should understand that. Why does an African culture have the plants that they have? They should understand it. It's part of who they are.

I don't know if other gardens have the same sort of philosophical flow to what they do or not, but I feel it very strongly here. And I think our mission does make us unique in botanic gardens.

(338) The other thing that is probably important to what you are doing is also to understand that the garden has no research mission currently. We have no scholars on staff, and our scholars that don't exist here also do not have object collections. For us to say that we were going to have some scholarly cabinet that did a great discourse on cultural imagery of plants would really mean that we would have to go out and buy that. We would have to contract with some other museum to create that for us or some scholar to create that for us. And then we would have only that one specific message. It's a robust message, but there's one. And neither Holly nor I could see us doing that.

So we chose instead to take this axis. Remember I drew the three axes, and I said, "Now imagine something that cuts through that at an angle?"
Our Garden of Ideas is at an angle, where we say, "It's a corn-based culture. How does that give rise to the images and the rhythms and the way you need to harvest and the way you need to preserve? What it does to the soil and how you have to replenish and how you have to farm?" It's a whole different way of looking at it, a very oblique way of looking at it, which gets to a lot of meanings very quickly. We couldn't do it the other way, even if we really wanted to. At least I don't see how we could have.

In the end, any exhibit is like that; everybody has to make a decision about what the exhibit is about. And it can't be about everything. And so, it's about what you have to work with. And, just as the Desert Botanical Garden had a desert to work with, what I've seen at AAM [American Association of Museums] and heard about is, when they have a collection of objects to work with, then they go out and they do the visitor studies and they say, "What do you want to know about this collection?" And that's how they come up with what the exhibit is about. In our case, we had no collection of objects. We only had ideas. It really moves you in a whole different direction. I think that that's probably the key difference.

Evans: And rather than [using] a collection plan?

Flanagan: Our galleries are really not--there's no plants. There are a few plants; certainly in the East Gallery, we managed to marry it into our collection. We felt that that was very important. But not to the West Gallery, because it is more human centered. It's more about the products and the results and the derivatives. I think that that's absolutely the whole story right there.

Anything else?

Evans: I don't think I can ask any more questions without going back and reviewing that. Then I probably will think of some more.
Addendum:
In order to insure that, in general, the same interview questions were asked of all respondents, additional questions were asked and answered after the original interview by email.

Evans: How do you define innovative exhibits?
Flanagan: Innovative to me means that an exhibit somewhat uncannily meets a visitor’s expectations, while coincidentally creating an unexpected experience of genuine wonder, inspiration, or insight. Innovative exhibity doesn’t necessarily have anything to do with being beautiful (which is often an issue in horticulture). It is more about the aesthetic being true, and creating an immersion into the experience that is envisioned by the curator.

Evans: How do you achieve innovation?
Flanagan: It starts with finding an unusual or new perspective, which is then used as a lens to focus the design.

Evans: What makes them innovative?
Flanagan: Certainly not saying so. As a curator, I know I have created innovation when a visitor registers surprise, or they read, (or see or hear, cock their head,) read again, and then really look; they really attend to the exhibit. As a visitor, I know they are innovative when I walk away and feel like something for me has changed—an attitude, a perspective, an insight. There are some exhibits that I remember feeling so centered and engaged in the subject matter—as if were the whole world right there…
Evans: What's the biggest impediment to innovation?

Flanagan: The increasingly more ignorant and more sophisticated populace.

Sophisticated, because of the technology and television that is available in our everyday lives; Ignorant, because you can’t assume a broad base of knowledge. So presenting from the basic to the advanced in an innovative way, keeping it fun, fresh, and “new” is a challenge.

Evans: How did you decide what kind of design and media would be most appropriate for your public?

Flanagan: I would have to say that we design with a lot of constraints—crowds, wear and tear, small path size, limited space, and low staffing levels. So, sometimes what I think might be best just isn’t possible. We take into account our multigenerational and multicultural audience, and we try to deliver our main messages in several different ways (visual, auditory, hands on, immersion, etc).

Evans: What do you think is the biggest strength of the West Gallery?

Flanagan: Our ability to juxtapose reflections of the cultural, economic, aesthetic, and therapeutic importance of plants as facets of core principle that plants have influenced civilization. Just walking into the room, it will speak this idea in volumes, no matter where you look, in both powerful and subtle ways. I think the exhibits, taken as a whole, will evoke a kind of awe.

Evans: Biggest weakness? (Or do you know yet?)

Flanagan: We don’t know yet but I am wondering how deeply the messages will penetrate across the bandwidth of visitors. I also hope that the juxtaposition of so many competing elements isn’t aesthetically confusing.
Begin Tape 1, Side 1

Evans:  (description of project)

Murphy: (philosophies on schools)

Evans: (sorting out documents)

Murphy: Before going into the specifics of these individual parts, if you're trying to understand the process or how this stuff happens, the process serves the goals and the products serve the process. To understand how the project works, if you don't focus on the goals, then none of the architecture or sequencing of events is important. I'm sure you have some sense of that, but the key thing is that with every project, there are unique variables. In a sense, the unique is the typical. And you always look for the things that are unique to anchor the whole creative process of what to do.

If you look at the start of the design process as empty buildings and empty pages, how do you fill them up? And it's important to me, when I talk about design, to distill anybody's expectations that design is creative
inspiration. It is not an inspired process. It's a professional process of work that's focused by the use of creative tools to explore alternatives and confirm consequences. And to really set directions for things that people can respond to and evaluate.

A lot of what we do is create tools, so that people can envision what we're talking about in a real way. Obviously, there's a lot of inspiration and creativity involved. But none of this just leaps out of someone's head. When you're looking at the sequence of stuff, it's not driven by the process.

Even working for the government's not driven by the process. It's driven by the goals and the unique characteristics of this project, which are important. The real engine of its success are—the people in any project is a real variable. Christine Flanagan is a unique person to work with/for because she's so damn smart. She is so creative in her own mind. She's very visual, and she has a really strong sense of who her public is. These are things that are important, because you have to think about the design process as—what is the message and who's the audience?—because we're trying to create the glue that links those two things together. The variable there—of knowing that Christine is an extraordinary person and that's not a repeatable thing. If you don't have a Christine, this project wouldn't be ending up the same way.

And one of the things that we know from working with her on the previous Gallery is that she looks at ideas as tools. They're not burdens or they're not obligations. They're tools. Both the East and West Gallery, their fundamental goal is to give people a new way of looking at plants. As a basic goal, then the questions become, “Okay. If that's our goal, then
what are the tools we need to give them [the visitors]? What way do we want them to be looking at plants?” We knew that coming into this. We had an understanding of the intellectual landscape in which this project was developed, which in some projects you might not, because we'd already worked on a project with Christine. So in that sense, these products may not be typical.

The other thing was, for whatever reasons, the project had been dormant to a point where when it got activated, [and] it was under a very tight time schedule to get the funds committed for fabrication. We had to get serious progress happening quickly. And in that sense, it may be a good thing to be looking at.

[Discussion about documents from project planning]

Murphy: (120) Every now and then, you run into a client that hasn't really got an idea of what they want to do. And then you spend a lot of time trying to figure out what you want to do. In the best of terms, we call that a planning or a programming phase. And when they don't know what they want to do, we have a long concept phase.

There are phases of work that are identified in here [refers to Request For Proposals (RFP)], that are important in terms of the landscape. It has progressive levels of detail and there are deliverables that are identified. And then there's this overall, “Why are we doing this stuff?” The Fact Sheet is probably for you the most important thing. In response to this [refers to RFP], we wrote that [refers to PRD's original proposal]. Christine can tell you how she responded to this [PRD’s original proposal]. This was not what we proceeded to do, but it was the next step in the
sequence. And it gave them an idea of how we responded to what they said.

This is part of the contract negotiation [refers to contract document], which I won't give you, but suffice it to say that there is negotiation of scope and deadline.

**Evans:** Then I have a walkthrough [document dated April 24, 2003].

**Murphy:** This is the first time we actually got together [refers to a different document: Meeting Notes from April 1, 2003].

**Evans:** So this was the summary of the start up meeting.

**Murphy:** (136) Exactly. You can see what we were trying to do. They [USBG] wrote what they thought. We wrote back what we thought that we understood about what they thought they thought. And then we got together to figure out what we actually did about that. The messages that indicated the ideas that were the tools for a new way of looking at plants. The idea that there's a relationship with plants that wasn't just a functional relationship, like eating them or using them for shade. The idea was more of a spiritual, emotional, personal relationship with that. So we tried to define what that relationship is, in terms that could actually be communicated.

Now you see here [refers to text in “Meeting Notes” document], the exhibit approach, "After consideration of many frames for this context." If this is what we want to say, how do we frame that so it can be received? And you see also here, as I mentioned, the schedule is very compressed [refers to timeline in “Meeting Notes” document].
One of the things that's really cool, I will add to the list of many cool attributes that Christine has—she is a totally decisive person, which is rarely mated with such a creative mind. If you take the ingredients of her strong scholarship, her creativity in relating to the public at large, and her ability to be so decisive, you've got a very unique person—totally wonderful in every way.

In the design process, the first thing we try to identify is, “What's the point? What are we trying to communicate?” Because exhibit design is communication design.

**Evans:** You had the writing that the Botanic Garden had provided, and you guys made a response to that. Then, everybody got together. When you got together, was it very clear from Christine's conversations that they had in their head exactly what they wanted? Or was there a conversation between PRD and the Botanic Garden, trying to come up with the goals?

**Murphy:** (158) The second thing. I think if you read this [refers to RFP], you'll know the level of their idea development. Then you read our proposal back, and you'll see an attempt to respond to that, in a physical environmental context. But it was actually this first meeting where we began to get a sense of, “What are we really saying? And how do we want to express that?” And that was very much a dialogue.

We didn't have a meeting so that they could tell us what they told us. We had a meeting where, “And we said this. And you said this. And what are we really going to do?” The product is these meeting notes, but the process of that meeting, which was a couple hours, that's probably one of the most important things for us to do and for them to do, is to have that
discussion. And that's talk. It’s an odd design product, talk, but it is a way to understand what we're going to say and how we're going to express it. And confirm who we're expressing it to, and at what level of detail. We did that, but it was very interactive.

Evans: You said Christine knows specifically in her head, who the public is. How did you decide what kind of design would be appropriate for that public?

Murphy: (172) There's a couple of key points about the public of the Botanic Garden, which are true at any garden. Some of the constituents are true. You've got enthusiasts and experts, who tend to be very narrow in their focus, but very deep. And you've got generalists that come driven largely by the sense of beauty of what they're going to see. [They’re] not necessarily equipped with a huge amount of curiosity or a huge amount of information. And those groups tend to be families, so there's an age diversity that you have. Christine also had to deal with the Congress, and that's a different constituent. Probably all gardens have local clubs and societies that they have to deal with. But the sense that those that have a long attention span are very narrow in their focus, and those that are very general in their focus have a short attention span.

The big motivator is the beauty of the environment. It tells you a lot about what kind of exhibit these need to be in both Galleries, but in particular we're talking about the West Gallery. A key issue is how to be compatible, but not competitive with the actual planted gardens, the different places you go and visit. Beauty is important in this, because that's a motivator for people to come. It has to be lovely and inviting, stimulating visually, but it can't use the same vocabulary as the gardens
themselves. It has to be something that's different, because this is an orientation exhibit. This is something that you look at. The goal is to give you tools to look at the Conservatory.

And so, the audience issues are knowing that we want to draw them in with beauty. We want it to be relevant, but not competing with the kind of impressions they have of the Conservatory. We know that it is not going to be a place for didactic teaching. It's not about facts or information learning. It is about impressions and ways of thinking and ideas that help shape a bigger view of your relationships with plants. I'm not sure that I can give you much more detail on how that directly relates, but it does directly relate.

The next meeting was here. I don't think we have a product of that meeting. I could actually look back and find out when it was, but this is April 1st. I think we probably indicated that we were going to have an interim review on April 17th. So we had April 17th, and I think I have meeting notes of April 17th.

Evans: That was when people came here [to the PRD offices] and you presented the context. We're going to have a Café. We're going to have a Temple.

Murphy: (197) Exactly. I can't quite trace this for you, when we went from this level of discussion, the April 1st level [to] when we began to frame it as the Temple, the Garden of Ideas, [and] the Café. That, I think, happened here. I don't honestly remember, but I don't think that this was a, “What about this kind of thing?” I think we floated those ideas on the phone. And then, we built a model to illustrate those ideas. But it was a fairly big leap from what we had talked about to what we were showing them. It wasn't an
uninformed leap, so I have a feeling that we talked about it. There may have actually been something that was exchanged in between. I'm not sure. There may have been some sketches. Again, I'm remembering this poorly, but I doubt that we would have gone from nothing to this.

The way we use models, which is why the model no longer exists, is that they're a working tool. They're not a finished product. They are built and rebuilt, built and rebuilt. So there's not a lot of investment in any particular phase.

In it [the model], we did illustrate something that looks very much like what's actually going to be put in place. And we knew what the ingredients we were working with. We knew there were issues that they wanted to address through specimens. We knew there were things that couldn't be addressed through specimens. And we had generated a fair number of ideas that seemed to strike the right tone, in terms of the emotional experience for visitors. It would be lovely. It would be surprising. It would be contemplative. It would be very different. The idea of designing the Garden of Ideas—I don't think we initially started out with the idea of that being commissioned art—but we had worked with Christine in commissioning art for the East Gallery, so that was probably on the table pretty quickly.

We presented that, and as I said, this project was on a tight schedule. We did quite a lot of work in that time period. It could have taken longer. It couldn't have taken less. The only reason that it was productive is we have a good relationship with people who express themselves clearly, with a strong sense of what the role of such an exhibit is. But also who are
decisive.

We had a three-step plan, I'm remembering, that was confirmed. This was the three-step plan [refers to “Meeting Notes” document from April 1, 2003], which was content, concept, and contract. I didn't quite dwell on this, but going back to the first meeting that three-step plan is important, in terms of addressing the compressed schedule. It started in April and had to be done by end of May, two months to design this Gallery. At that first meeting, we not only talked about what we wanted to do, but how we were going to do it? And that's another place where they're decisive. They realized that to get this done—and the motivator was getting the funds committed—they were going to have to make decisions. So we tried to create a plan in which decisions could be made.

Content was the focus of the first meeting; as of that meeting, we considered it complete. So the next thing was, by late April, we were going to have a concept. This April 17th presentation was the interim. We presented something to them; they were able to absorb it. The model helped them to visualize it [and] they could see the relationship of content to visitor experience expressed. That, then, set our direction in terms of concept. Then, we went and developed that further, based on their input. Then you get the meeting of April 24th, which is the concept milestone design presentation. Do you have that?

Evans: I have the West Gallery Exhibit Content Walkthrough.

Murphy: Okay. This was part of the concept presentation. We had the model, and these are the notes of that meeting, if you would like to have the notes of that meeting.
Evans: Sure, if you don't mind.

Murphy: I don't think there's anything in there that's terribly stimulating, but if you're interested in what the process is. When you have a meeting, it's kind of important to have a reason for the meeting, then, to know if you've accomplished that reason, and [finally] what you're supposed to do about it. So that's what the notes are. In terms of your analysis of the project, it's probably more important to know that this level of discipline is an integral thing. You can't move a project forward unless you make decisions and confirm those decisions and then move on from that. In this particularly accelerated thing, what are we doing next?

And April 29th is the next important date. On April 29th, we presented the concepts to the Architect of the Capitol, Mr. Hantman.

Evans: Vicky was describing that. She said that a couple of changes were made from that meeting.

Murphy: She wasn't at the meeting, but yes, a couple of changes were made.

Evans: He wanted a bench.

Murphy: He wanted a floor, to separate the temple more from the field. Suffice it to say that he, being, I guess the technical term is "the boss", what he says is really, really important. And so, there were changes made.

Evans: But at that point, there weren't any major changes made.

Murphy: (245) He confirmed the concept.

Once we had the concept confirmed, then we went into the technical issues of scope and defining that scope for procurement. We stopped
asking the original design questions and we went into, “How are we going to get this implemented on budget?” As you may already know, that took two tries. We had, at that point, confirmed that we were going to use an artist to do the Garden of Ideas. You've probably seen drawings at this level of detail that show what needed to be made and how that was going to be done and what the Botanic Garden was going to provide. You probably know that the thing went out to bid and then had to be negotiated with value engineering design alternatives to certain things. Ultimately, it got under contract in the right amount of time. And then went into the whole production phase, which you're more familiar with because you've been part of that.

The final product of that first two month period, two and half months or three months, by the time it was actually under contract, was a confirmed contract to do it. That's very unusual to go from blank page to signed production contract in three months for any kind of institutional project.

Evans: What is a more typical time frame?

Murphy: A year could be typical. A year is too long, but you asked typical. What would be correct would be maybe six months.

Evans: In terms of design process?

Murphy: (264) By using the term correct, I'm using the wrong term. This process was perfect for this project and for this client and for this team of people. It was thrilling to go and to balance as much creativity with as much decisiveness as we did. My point in saying that that's a short period of time to achieve this in is so you don't think that as a model for other institutions,
this would be something you could just quickly translate. And say, “What does it take to do an orientation gallery, three months?” On the East Gallery, we had a much longer period of time.

The thing that made it work was the attributes of Christine, and Holly as well, to be decisive and progressive in her oversight of the project. Particularly Christine, in the ability to define, visualize, evaluate, and confirm on a very tight series of deadlines. That's pretty special. And no matter how much time you've got, you still have to go through those steps. You still have to define content. You still have to develop a concept. And then you have got to get to a contract. And that was our three-step plan and that would be true in any project.

I'm pretty proud of what we did, but I'm also very aware that it was in partnership with some extraordinary people at the Botanic Garden to be able to do it. All of these pieces of paper are either things that were offered to them as tools for decision-making, or a record of decisions we'd heard made. And so what you get from that is you get the frame of the picture, but you don't get the picture. And the picture is that working relationship of working with a fairly clear understanding of the sequence of decisions being made. And the fact that it happened in three to four months was a necessity. Because of the character of the people working on it, it became a virtue. And it was great because of that. Had we taken more time for something like this, I'm not sure it would be as fresh as it is. And so it's good for this project, but not a model for all projects.

**Evans:** Maybe you could give me a sense of, from all of the conversations that took place, how your team came up with a Temple? Was it through
sketching, or did you have brainstorming sessions, or were words like “temple” thrown around in the previous conversations? How did that manifest?

**Murphy**: (286) I said earlier that design is hard work. It's not inspiration, but I'm not really telling the truth when I say that. Processing what we hear is a real creative exercise. It tends to involve a lot of words initially. So things like “temple”, “garden of ideas” are likely to have come out before we started drawing anything that looked like a Temple or a Garden of Ideas. In terms of, “This is what we're talking about. This is like a Temple. This is like a Garden of Ideas,” quite likely, on our drive back from that initial meeting on April 1st, we were already thinking along those lines. What happens is, we come back and there's, “What are the ideas?” Words are the tool for that.

What does the space tell us? There are functional things about the space. There's all those doors, all those windows. In that Gallery, center was important. Unlike the East Gallery, there are different places you could go. [In the West Gallery], we wanted to draw people into the center. Regardless of the discussion of temple or not temple, we knew that to really bring people into the Gallery and to give them a sense of being in the space, we wanted to draw them to the center. There's a strong sense that we had in responding to the space.

I think that we had the idea that this was not an exhibit that used text and photographs and specimens to communicate. There was something else that had to be invented. And that invention had to be visually stimulating, contemplative, and activity-oriented, or engaging in some way.
So we knew that we had to think of ideas that were going to be like that. I suspect by the time that we had gotten back from the meeting, we probably sat down and talked a bit. Vicky was a key part of that. I'm not sure who else might have been part of that meeting, but there were other people [as] part of the meeting.

I think that probably within 24 to 48 hours, we had come up with a zoning plan of—this idea concentrates here, this idea concentrates there, this idea concentrates there. [There’s] the centering in the gallery, and then there's two other zones we can create because that's circulation driven. I bet we had that attitude towards the space within 48 hours.

We were using some of the words. We were using the space planning. Between the meeting on the 1st and the meeting on the 17th, there's not a written part of the narrative of what we were describing. But we had taken the content ideas, and they had morphed because of looking at those verbal ideas and those spatial ideas. We had to reorganize the content. From the first meeting we came up with a couple of different zones. We thought once we looked at them, they were better if they were squozed together a little bit. It's distilling. They become a denser, richer thing by compressing them. And so there was a redefinition of the content by the conceptual ideas.

How they got expressed before the meeting on the 17th is primarily through the technique of just working on the model and having to think about them visually. I think we knew it was going to be a Temple. We talked about the use of tree trunks and Druidic context and vines through that. We talked about the Garden of Ideas as manufactured plants, that
they were going to be objects of exhibitry or art, not fake plants. But yet, that these ideas embedded in a landscape of plants is a neat stimulation that there's a connection there. This is an abstraction that is actually all there, and if you go out and look at the Conservatory, there are ideas in that landscape too. That's designer speak and that's what I mean by the words part. But you start to, when you come up those things, then you begin to visualize it. So the making of the model [and] how we were going to approach things, that all happened as an exercise with the model as the entire tool. And it was the entire tool for the discussion on the 17th, too.

**Evans:** You talked about the goals for the exhibit and that was the driving force of how you came up with the design. Once it gets built, what do you want an individual visitor to walk away with?

**Murphy:** (324) From my point of view, the goals and the communication objectives are the key element to design. They need to be very big because, I've been doing exhibits for a long time, I am absolutely convinced that exhibits are not a place to teach information. They're a place to shape a way of looking. What we want is for someone to come out of the Gallery with a new way of looking at plants, new ideas about plants and how they relate to them. And that idea can be in terms of a literal concept about the use of plants in language, or the use of plants in ceremonies, or the use of plants for things they really don't think of in plant terms. Everybody knows that corn is a plant, but when you look at some of the fragrances and essences, not everybody knows that. When you look at plants as a cultural snapshot, the scent of food which instantly, you know that you're in a Mexican restaurant with you blindfolded or in an Indian restaurant. Those kinds of
things, that informational based way of looking [at it].

The other aspect of it is the visual aspect of seeing plants interpreted through those techniques that are pretty cool. And by looking really interesting, people will be more comfortable looking at plants, seeing that plants exist outside of hothouses. And this is one of Christine's points, there are plants out there, too, and you've seeing about half of the plant. The rest is under the ground. You don't even know that. And these kinds of things are just being more comfortable, thinking that what's inside an institution and what's outside are connected. We're hoping that people come out with that.

A new way of looking at plants, that either is informational based or just in terms of comfort with having seen and looked in a different way. And being able to approach them in a different way and in a different kind of environment. That would be the objective. I don't think that Christine would answer it much differently. I don't think that she has specific teaching points that she expects people to come out in possession of. I think it's really this idea of being more stimulated to think of plants in these terms, relationships with plants. If people come out of there thinking in a new way, and for most people any way would be a new way, about relationships with plants, other than just looking at them, or spraying stuff on them, that's the objective.

And I feel pretty confident that that will happen. People will find this an attractive and interesting place to be and that's a good thing as far as learning. If people stay in there longer, they're more likely to absorb more. And the more that they absorb, the more likely they're to come out being
slightly different in their way of thinking than when they went in.

Evans: That’s all I have. Thank you very much.

Murphy: My pleasure.

End of Interview

End of Tape 1, Side 1

Addendum:

In order to insure that, in general, the same interview questions were asked of all respondents, additional questions were asked and answered after the original interview by email.

Evans: How do you define innovative exhibits? What makes them innovative? How do you achieve innovation? What's the biggest impediment to innovation?

Murphy: Innovation is a newly effective way of connecting ideas and experience. It rarely emerges by accident, so I guess the way you achieve it is to have a commitment to the goal of stimulating visitors to look at their world in new ways; the way you fail to achieve it is to lack that goal or the skills to honestly evaluate your efforts to achieve it.

Evans: What do you think are the strengths of the West Gallery? Weaknesses? (Or do you know yet?)

Murphy: The Gallery will be a distinct and interesting destination in a place of wonders. It may not so much be an experience significant unto itself, but it
will be a great synergistic addition to the overall experience of the Gardens...and that is its goal: to give visitors another way of looking at plants. I feel it does that, is lovely, and completely unlike anything people will see anywhere else.
Evans:  (0) Maybe you can give me a quick sense of your role and when you came into it [the process]. Were you there from the very beginning?

Schmidt:  I was not involved in the beginning. I attended one of the very first start-up meetings that we had, and out of that came that paper [meeting notes document from April 1, 2003] that I emailed to you and Christine. There were some very broad take-home messages that we articulated. Then I was not involved in the next stage and a half, which is our concept design phase. The distillation of those take-home messages and the actual translation of those messages into physical space was really done by Dan and Vicky.

By the time I came back into the process, we were ready to move into design development, and so I was working with a structure that Christine and Holly and everyone at the Garden had already approved. I don’t know how other design firms work, but here, that’s fairly typical of our process. My job is to take all of the concepts and make it real. Where I picked up was to look at—I’ll use the three tables as an example—ceremonies,
therapy, and fragrance were three very broad general ideas about the
importance of plants in those three categories of our lives.

**Evans:** And the categories were already laid out?

**Schmidt:** (18) Yes. Those three things were already identified. And we already
knew that there would be tables and that they would have some very
simple interactives, like you pick up a bottle and sniff, or you flip those
panels. And we also knew how many we had space for, but what those
things were and what we were going to say about them and what images
we were going to use, was a blank slate. That’s where I came into the
process.

So, working with Christine, Holly, and Amy Pollack, we together came
up with a very broad laundry list of all the possible kinds of plants that
would be appropriate for ceremonies, for example. And we knew we had
to ultimately end up with eight. We came up with a list of probably twice
that many, so that I had some maneuvering room in terms of what I could
find. Then the process began of the dual chicken and egg situation—that
images could we find?—which in turn helped narrow down the list. There
were a couple of plants on the list where we ran into so many barriers; we
just had to take them off the list and go to the next one. And you came into
play in that process, so you know the difficulty of finding those pictures.
You could probably write about that better than I could, if you speak to it.

Particularly in a situation of botanic gardens, where visitors still come
primarily to see the plants in the Conservatory, finding these wonderful
exhibit galleries, for a lot of visitors, is a surprise. I’ve been in the East
Gallery enough now to watch people come in the door and go, “Oh!” They
didn’t come there to see the exhibit. They just find it and it’s a wonderful experience. The point is that they have very little time.

When you’re looking only at a few words to get across what is, in some cases, a complex message, finding just the right statement and just the right, “These are the two things we want people to know about this plant and its use in ceremonies,” and that’s all the space and time that we have, that’s a real editing task primarily.

The other thing is being able to confirm the accuracy of the information. You go back and make sure that we’ve represented—I’m using ceremonies because it relates to our example—we’re talking about for the most part other cultures, and so we have to make sure that we’re a) saying the right information, but also phrasing it in such a way that we’re not inadvertently saying something that could be offensive. So that’s an important part too. It’s really getting down into the nuts and bolts and the details of the expression, “making it real.”

**Evans:** (51) You mentioned that most people come to the Conservatory to see the plants and they happen upon this exhibit. How do you attract from that competition? There was an exhibit at the zoo, and nobody was there. I think because there’s no way that exhibit could have competed with the gorillas next door. So, how?

**Schmidt:** In the East Gallery in particular, what Christine and I tried very hard to do was frame everything as if we were having a conversation. What we did not want to do was lapse into the schoolbook biology textbook tone that is, in my opinion, a total turnoff. So we tried to phrase things as questions. We tried to say “you.” How are things different from you? We always tried to make our headings as engaging as possible. One way of expressing
it would be “using a hook” to gain people’s interest. And when they first walk in the door, that whole first area of panels that they see is that hook. And I’ve watched people, they read the first one or two paragraphs, the headings, and then they look at the banners, and we’ve got them. All of the sudden it’s like, “Oh, this looks interesting.”

And everything is short enough—and this goes back to Dan and Vicky’s contribution in that Gallery—we knew the visitors would probably graze through the exhibition. So what we did not want to do was create something where they had to start at a certain point, and they had to A to B to C to D to get the messages. They can stop at any one unit; each one is self-contained. They can read all of them. They can read one of them. It doesn’t matter. And that’s the other reason why that’s user friendly to people. And why, once they’re in the Gallery, why they tend to stay.

Evans: (73) One of the things I found fascinating, actually within the last week, was an email you sent about the culture panels. You went back after you had done the culture panels and we had approved all of the text and said, “How does this relate to the big idea?”

Schmidt: And you need to insert the ideas, yes?

Evans: Right. Has that been done for everything? It’s so hard for me to judge because I know that one-half of the Garden of Ideas is supposed to be about place and season, and I know that the other half is supposed to be about cuisine in world cultures. But how do you do that for the person walking in the door?

Schmidt: That’s what the headings are all about. And so there’s little signposts, so to speak, to give people a clue what this is about. And that’s where I realized, before this went into production, we needed to make sure that we had given
people enough signposts. And I realized that we had a couple of opportunities to polish this up a little bit, and that was why I was suggesting that to Christine.

And it was an easy fix, it wasn’t like we had to throw out everything and reinvent the wheel. It was a matter of swapping out words, literally. But it was an opportunity—we do this frequently, one more time before it goes into production, which is definitely a point of no return—we make sure that we go back to the original concept and how we stay true to what we promised.

Evans: (91) When you’re writing the text or picking the pictures or picking out smells, how do you keep the audience in mind, especially in regards to the text?

Schmidt: I can only answer that from a personal perspective, but I think what helps is that I know nothing about biology or botany. I mean, I absolutely know nothing. And the last time I was exposed to this was freshman year in high school. And so, part of what I do, in my own mind, is to look for the things that help me make sense of the subject. I’m coming at this from exactly the same perspective as most of our visitors are going to, and they don’t know either. So, let’s make sure that we are not throwing in ideas or concepts or even words that are not explained or are not familiar or not on the message.

And we always go back to square one and that concept phase and try to identify the take-home messages and overall themes. But the messages and the teaching points are, when the visitors go out the exit door, what we hope that they have learned. These three things. I always try to come back to that, if I’m sorting out the information. If we’re telling people this, then
how does this support what we want them to learn? And how could we phrase it in such a way that is accessible to them?

We try very hard not to talk down [or] dumb it down for people because especially with the garden, you’ve got multiple layers of visitors. You’ve got the casual tourist with their sunburned knees drifting in off the Mall; they don’t have a clue where they are. And then you have the subject specialist, and people who are quite knowledgeable. Somehow we have to hit a medium point so that we’re hopefully meaningful for both of those people.

And one of the things that has pleased Christine and me the most about the East Gallery is—she heard back from some people who were, they’re not scientists exactly, but they were definitely subject specialists, people who had quite a bit of knowledge about specific areas of botany. And they were so complimentary because they said, “I know a lot about x topic because that’s my field, but I never thought about it in the context of all of these other things.” And they were finding the East Gallery a joy to be in, because they were suddenly seeing their own area of expertise in a larger context. And they realized—and this is probably true of a lot of scientific disciplines—it’s real focused on [and] specific on one thing, but they don’t know a whole lot about the topic next door. And so that pleased us as much as seeing casual visitors coming in and having a good time.

Evans: (121) It seems that your role is a lot of information gathering and putting it out there for people to read. And one of the things that Dan said was he didn’t see exhibits in general as places to learn information. You’re gathering all this information. Do you want people to know it? Or, the
idea that I got from Christine and from Dan, that it was more exposing people to these ideas...

**Schmidt:** I agree with what Dan is saying, and I think what he meant was that we’re not doing a book on a wall. We’re doing an expression of big ideas, not little facts. We’re trying to stay away from the little facts. So, we don’t want to dump in dates and names and that kind of stuff….

**Evans:** Trivia…

**Schmidt:** …what I consider trivia. To some scientists, details are important. But not to us, not to a visitor, especially if you’re standing on your feet and you’ve got twenty minutes to see the entire exhibition. The balancing act is you throw an idea out there and you have to give people enough information so that a) they understand the idea, and b) they can relate to it. That’s why the balancing act is the tone, the way we write it, and having a conversation with the visitor, rather than just dumping facts and data on them. Posing things as questions and giving them enough of an expression of the big ideas, so that they just get it. Brevity is a big a part of it. We have a lot of information that needs to be condensed down into fifty words.

So it’s all part of a package. It’s the environment of the exhibit, that’s why Vicky’s work is so critical. Everything that she does in materials and colors and the textures are all very specifically selected to make a point, not just create. She’s not doing interior design like you’re doing in your living room. She’s selecting things because it’s part of the point, and part of creating an aesthetic environment that is just as important as reading the words or looking at the pictures. So it’s definitely a balancing act in that regard.
Referring to exhibits [in general], it’s not where people go for information. If they want to know all of the statistics, let them buy a book in the museum shop and take it home and read it. Or they can go on the Internet and click any one of three thousand sites that come up with infinite levels of detail. But what we want to do is change people’s focus or change people’s perspective. And again, if that’s all an exhibit can do, it’s a terrific contribution.

**Evans:** As I was listening and learning about the process of the West Gallery, one of the things that really struck me was the approach. The reason is because I’ve been also looking at another botanical garden, and their approach was entirely driven by visitor questions. So they took their main path, and they knew over here, they have a saguaro cactus, and over here, they have a barrel cactus, and over here, they have another type of plant. And they knew that people came down this path and said, “Oh! Is there water in that saguaro cactus?” And so they based their interpretation entirely on trying to answer particular visitor questions. As I’ve been looking over that and the U.S. Botanic Garden, they are very different approaches to interpretation. I thought maybe you could also address that, is it context, or is there something else going on?

**Schmidt:** (185) I think that goes back to the mission of the United States Botanic Garden to—where’s the other garden?

**Evans:** Phoenix.

**Schmidt:** Phoenix. I’ve never been there. I don’t know this to be true, but I’m guessing that their interpretation is focused on desert plants, so they have a much more specific mission than what the United States Botanic Garden does, which is presenting plants from literally, all over the world. Because
it is the United States Botanic Garden, [they are] taking a much more
global view of the plants.

In large part and from our perspective, part of the mission of both of
these Galleries [is] not to just focus on a particular kind of plant or a
particular region, but to get some basic overviews of plants. Almost like
helping introduce people to a new language, we’re giving very basic
vocabulary, so that when they go into the Conservatory, it doesn’t matter if
they go into the rainforest or if they go into the endangered species area or
the economic, health plant area, the vocabulary is the same. The language
is the same. And they can begin to look at these different plants, hopefully
with a little more facility on their own part to understand what it is they’re
seeing when they see the real live stuff. It’s more of a global, basic entrée
into the world of plants. Other gardens may address a specific place or be
region specific.

Evans: We know what the overarching goal is, but what do you want each
individual person to take away from the exhibit? Or to go out thinking?

Schmidt: (205) I think for both the East and the West Gallery, is plants are really
important, one. And plants are really important to me, number two. And
that three, I better start paying attention because my environment wouldn’t
exist without them.

Evans: It’s essentially a change in their perception.

Schmidt: We think so, probably more for the casual visitor than for the subject
specialist. But for the casual visitor, if they can have that, “Oh! Aha!”
moment, then we’ve done our job. And that gets back to reinforcing what
Dan said to you, which is, exhibits are not to convey lots of information.
They are to change your mindset or create awareness or instill in visitors,
hopefully, a desire to learn more. And if we can do that, we have done our jobs. So it’s a real simple reaction that we’re hoping [for]. It sounds simple. It sounds so simple to say, “Plants are important.” But it’s not. If we can get that “aha” moment in visitors, then that’s a major contribution.

**Evans:** Do you think it’s possible—in one visitor, they only come to Washington once, they’re from California, so they’re in Washington for a week, and they come to the U.S. Botanic Garden for two hours and they go through the West Gallery for twenty minutes—do you think it’s possible?

**Schmidt:** Absolutely. And again, getting back to all of the things we talked about, how do we communicate? How do we create the text so that we can create a hook to get them involved? How do we make statements short enough, simple enough, direct enough, in words that they can understand, that if they glance at a panel, they get at least the top layer, the first hierarchy of an idea? So, yes absolutely. Did Christine say the same thing?

**Evans:** Overall she did. She thinks that it takes a very long time to make the message profound. And it may not be as profound in people’s minds until they are stimulated by many other things in their lives as well.

**Schmidt:** Well, that’s true. I don’t think that “aha” moment necessarily comes on the spot. And in many ways, in my own mind, I have an analogy that visitors are like middle school kids. I have a lot of nieces and nephews, where we will do something or they’ll go on an expedition, or they’ll see a movie, or they will meet someone, some experience in their lives. And at the time, there’s no apparent reaction. And usually, it takes sometimes six months later, it will come out as, “I remember when so and so said to me, blah, blah, blah.” And they relate it to something that’s going on in their lives six months later. And that to me is so full. That’s just as important as if
they had it on the spot, and said, “So and so said something important to me.”

It doesn’t matter when the connection hits, as long as it does eventually. There are a lot of people, especially some of the tourists who are overloaded with experiences on the Mall; it probably doesn’t register until they get back home. And that is part of the point of the East Gallery, which is, when you go back home and you’re in your own surroundings, look around you, these same things are going on. In fact, we try to say that a few times in the East Gallery. When you go back home, look in your own backyard, these things are growing.

[Discussion continues informally]

End of Interview

End of Tape 1, Side 1

Addendum:

In order to insure that, in general, the same interview questions were asked of all respondents, additional questions were asked and answered after the original interview by email.

Evans: How do you define innovative exhibits? What makes them innovative? How do you achieve innovation? What's the biggest impediment to innovation?

Schmidt: I believe an exhibit is innovative if it introduces me to new ideas, helps me understand a topic from a different perspective, or makes me think about a topic in ways I did not before. I do not define “innovative” as “techniques” (meaning interactives or computers) unless those techniques help deliver
the ideas or perspectives clearly. It all goes back to the basic goal of delivering a “big idea” with clearly defined messages.

Evans: What do you think are the strengths of the West Gallery? Weaknesses? (Or do you know yet?)

Schmidt: No comment. [We] will know when it opens.
Interview with Holly Shimizu, Director, United States Botanic Garden

Date of Interview: 10 August 2004

Location: United States Botanic Garden Administration Offices, Washington D.C.

Interviewer: Jenny Evans

Transcriber: Jenny Evans

Topic: United States Botanic Garden West Gallery Exhibit

Note: Number in parentheses indicates approximate tape counter indices.

Begin Tape 1, Side 1

Evans: (0) How do you think educational goals or interpretive goals fit into exhibit design or garden design?

Shimizu: Specifically the West Gallery or in general?

Evans: Either one, or both. I’ve been addressing West Gallery.

Shimizu: What I’d like to do is to begin generally. I see the whole range, the pendulum. I see the whole pendulum of—to what degree interpretive goals should drive design. For example, from the motto of Chris Wood’s Chanticleer. It’s that beautiful garden, where the only goal is to make a beautiful garden. The interpretation is the experience of walking through the garden. The philosophy is: you don’t need signs because they take away from the experience of being in the garden. And he used to get angry with the people at AABGA [American Association of Botanical Gardens and Arboreta] because he would say, “You think you have to put signs everywhere.” You don’t. You have to make an experience for the plants.
And in fact, I like having the range. I don’t want to have an exact formula because I like the uniqueness of gardens. I like to appreciate and experience all different kinds of gardens.

Another example for me would be Japanese gardens. I spent a lot of time when I was little in one, and then I stayed in Japan a lot. I don’t want signs. I don’t want interpretation because that’s a spiritual experience for me. That’s ultimately way more than enough and you don’t want to detract from that. I’m a great defender of that sort of an experience. I think that what drives a Japanese garden is the emulation of nature as the whole experience.

But, on the other side, I like some organized activities. I’m not a huge fan of them, but I prefer the West Gallery as an approach. I like the freedom, when you go in any kind of exhibit, to take it in, in your own way. I don’t want people to feel like you have to start at A, and you have to go A, B, C, D, E, F, like you have to follow a path. I don’t learn well that way; I learn well my own way. It’s distinct to my personality, but I know there are a lot of other people like that. They’re not systematic [in] the way they learn. I like to go to the things that interest me, or I love to get things in a subtle way.

And the West Gallery is the way to get things in a subtle way. But I also want to learn in a creative way. I want to not even know that somebody is trying to get a message across to me. Because I want to go, “Oh wow! I didn’t know that. Can you believe that? That is so great!” And I want to experience it as a revelation, and uncover things. I think that the West Gallery will do that. I don’t like the didactic approach in public gardens very much.
I’m going to go to one extreme. We have the book exhibit [Plants in Print: The Age of Botanical Discovery]. I loved that exhibit, but that exhibit doesn’t mean very much unless you read, or you have it interpreted. As a way for exhibits and gardens to be interpreted, I prefer having it done through a person. I always have found that a person explaining things—they don’t even know everything—but they can say, “Look at this. Can you imagine that this is the oldest book on botany?” And everybody’s going, “Wow!” If they [the visitor] had read that, it wouldn’t imprint their mind the same way.

Also, I have seen a pattern that a person’s response to a garden is hugely influenced by the person that tries to interpret it for them, to tell the story. I like stories. I like interpreting through stories, or even making people see things in a way they’ve never seen before. I experience that with art, and I like to give that experience to people with plants. I would like to walk through the Jungle, when sunbeams are coming through, and say, “Look at the leaves. Look how it’s sparkling. Look how the undersides of the leaves are a different color. Do you know why?” And make them think. I think you can elevate people’s enthusiasm through your own enthusiasm and your own way that you tell the story.

I also recognize that there are a lot of people that would prefer to read a sign, that would prefer to read a brochure or listen to an audiotape. But also you need to recognize that a lot of people aren’t willing to take that kind of time. A lot of them are, in our case, hot, exhausted, and they’re really looking for a refreshing experience, and I really don’t want to disappoint them with something heavy. We’ve strived for reaching all kinds of different levels, which I hope doesn’t force you to feel like you
have to read something to get something out of it. And you don’t because you could just sit in the Garden Court and you can just enjoy the space. You don’t need to read anything. The whole place smells good. It sounds good. It’s reaching the many senses. I feel that way too about the Jungle, that you can just be in there. And I value that about gardens as much as I value anything. I think especially if you live in apartment or a condo, you don’t really have access to that, that we might give you that. And I think that’s important.

So, going back to the West Gallery, luckily I got here in time to help be part of that early seed, of, “What do we want to do?” And from my standpoint, one of the things I was very clear on, is I said, “We are not having an exhibit that is based on cases and panels. We’re not doing that. I consider that old-fashioned. I think it’s fine for the books, but I don’t think it’s fine for the West Gallery.” We have the great exhibit in the East Gallery, which Christine did. And I love it, but I didn’t want this to be anything along those lines. I wanted it to be like an uncovering of the “Oh my gosh, wow!” I think it’s going to do that; I hope it is. I know that you’re not going to have ever seen anything like it before, because it is very original. I know it’s a risk, that people might not get it. And it’s a risk that they might think it’s tacky, but I don’t think so. Obviously I think it’s a good risk, and I’m pretty excited about it.

I’m always very nervous about technology because it breaks. I’ve seen that over and over that most of all of it gets broken. And so I really insisted that we have an exhibit where even if it’s broken, you don’t know it. So that you get a cover for the flower, so that when the video’s broken, which it will be, nobody knows it. I’m not at all a fan of technology
exhibits for the most part, unless you can guarantee to me that it’s not going to break often. The other problem with them is, and I’ve seen this, they’re dependent on one person. A person comes into a garden, they’re really techno-oriented and they’ve got this fabulous idea. They implement it, they leave, and then it never works again, and there’s no champion for it. Nobody should do that. I try to think about that, that if any of us left, what can you depend on? Nothing? Then you have this giant hole—that happens a lot with technology. So, I’m just speaking for myself; I didn’t want a lot of technology in the West Gallery.

I wanted experience and fragrance and the world. And all of these childhood things will come back to you, when you’re sitting around brainstorming about these things. I grew up in Philadelphia and we used to go to the Franklin Museum. And there were two favorite exhibits. One was this smell exhibit, where you had to smell everything and identify it. And every time I went there, I wanted to go there. The other one was walking in the heart, which thumped like a heart, and you walk through all of the different compartments, “bum-bum, bum-bum, bum-bum.” I think that you have to do the experiential, to reach out, because adults like it too. We pretend that we do it for children, but we really do it for our adults, too.

As an overriding goal, I want the Botanic Garden to be exciting. I want it to be a place where things happen and you’re surprised. And I want the West Gallery to be like that. I want you to be very surprised. First of all, you might say, “Why even is a botanic garden doing this?” But then you realize, after you’ve spent a little time in there, you didn’t realize that almost everything in our lives is connected to plants. You leave there and
if that revelation has hit you, then we’ve been successful. And I think it will.

And I love the idea of the Temple because I think it will have--I hope that the whole Gallery will have a personality of originality. I feel that that was the drive throughout. But it won’t be harsh. It’s not going to be jerky or abrupt, but it’s going to be subtle revelations about plants. I feel pretty confident in that.

**Evans:** When I was talking to Christine, we were trying to discern exactly how the process went from the mission statement to the interpretive master plan to the design for the West Gallery. Can you clarify how that went?

**Shimizu:** (110) Yes, because I missed a chunk of it, since I was away and working in Richmond. My understanding of that is--we have this fabulous mission; we buy into this mission as well. Then the interpretive master plan was done, which I think is a great guide and we want to adhere to that; I’m in 100% agreement with that. And so the way it fell out is the Eastern half [of the Conservatory] is dedicated to the environment and its relationships to plants and vice versa [the Western half of the Conservatory] with the humans and their relationships to plants.

I think that everything in the [West] Gallery exhibit is in relation to our human interaction with plants. We tried to touch on what we could find as the most interesting and exciting examples of that, the cultural and architectural and medicinal [connections]. And then connect [these ideas] with other houses. But I hope we haven’t left out any huge gaps in terms of human interaction with plants. I see it as a perfect tie into the mission, setting the stage for what would come next, as you move through the Garden. I think it’s a good logical procession of that.
I do think, because it goes back to something I said before, that I would really like to have an interpreter in there at busy times to be making it hands-on. “Smell this. Touch this. Move this. Grind this. Compare this,” to bring it to life because there’s no question some people won’t get it. It’s just subtle, and people are going to go, “Well, so what?” By having a person there, we can probably catch some of those people and again, that’s going to be our way to bring it to life. I’d love to think down the road we might have a position, part-time or full-time, where we could have an interpreter. We have volunteers and that’s wonderful, but it’s not enough for me. I want interpreters who can have fun, and let go, and really bring it to life. Make it alive. They’ll make it relevant without reading, hopefully. I’m certain if we had a good interpreter, we could make that West Gallery alive.

Whether it will do it on its own, remains to be seen. We all have those fears. What if it’s a flop? I have those fears about the East Gallery. I’m like, “I don’t know, maybe [it’s] a real flop.” But I don’t think it’s a flop, no. I don’t think it’s for everyone, but I think it’s a great success for what it is, if we can keep everything working, and not too abused. That’s one of the other things that I brought in. I came into that one late, so I didn’t really get to influence very much, which is good. I’m glad I didn’t, but we’re committed to keeping it of quality, so we’ll spend what we need to keep it working.

**Evans:** In my earlier interviews, we talked about how you and Christine communicated what your vision for the West Gallery was to PRD. And a lot of it, I understand, happened in the start up meeting.

**Shimizu:** Yeah, I think it did.
Evans: So, how did you do that? I have some written documentation--I have the RFP [Request for Proposals] and various emails that went back and forth--but since I wasn’t at the meeting, or in any of the conversations, can you give me an idea?

Shimizu: (149) My recollection, and obviously I could be wrong, you know how we all see everything our own way, my recollection is that I felt like it was okay for Christine to lead it. I’m sure she did the RFP on her own, and I might have read it over. I don’t remember. I know that we were in total synch regarding the overriding interpretive goal. We were 100% on board, because I already am really interested in the uses of plants. That’s actually my greatest interest anyway, is useful plants. How we accomplished it, I’m sure we had different ways of thinking how we would get there, but I think we were very lucky because I feel like we had mutual respect. And I have only the highest respect for Christine, so I would never stomp on her idea. But we were also so comfortable that we could just agree and we would not be mad. She could say something and I would just say, “No, I don’t see it that way. I totally disagree.” I’m not sure, but she might have been more interested in having a reading exhibit with cases in it. I just said, “We’re not doing that.” And then she didn’t argue with me, but she said, “Yeah. It could be a good time to think of something different.” I think, but I could be wrong, maybe she wanted it all the time.

Anyway, I know that I was kind of adamant. And I was worried that maybe I’d upset PRD because I think they were going down a road. All of the sudden, I come in and I go, “We’re changing it. We’re not doing it this way.” But then everybody started to think that this was better to be different. It’s better to be original. Maybe they wanted that all along. I’m
not really sure [and] I’m not certainly taking the credit for it. I just know that I felt strongly about that.

It seemed to me to be very much a collaborative process of brainstorming and really thinking outside the box to come up with a way to convey how we value plants in our lives. And PRD was fabulous in listening to me and Christine ramble about what we thought might be able to make this work. And Christine has certain fixations which I don’t agree with. For example, she has this fixation on coins and plants on coins. And I just said to her, “Look, I don’t think it’s that big a deal. Coins, maybe one or two, but we’re not doing an entire exhibit on coins. I don’t think it’s important enough. The food and the perfume and the economy, all of those things are more important.” And that was okay. She would laugh about it, and I’m sure she probably did that to me, too. I can’t really remember ever having hard feelings.

Having worked with PRD [before], we already knew that they were really great to work with and that they weren’t going to try to dominate us. They don’t try to do that, and they really are able to listen and respond because they’re competent.

We’ve got all these great dreams, but I want reality. What can we afford? We’re not spending that much on this exhibit. In my opinion, it’s very low budget. We have all these great dreams, but we can’t afford to accomplish them in extravagant ways. And so, we have to come back to earth, and I don’t like to get so out there that coming back to earth is a huge disappointment. And I like to know, “Okay, we only have five hundred thousand dollars to do this.” So let’s be thinking reasonably, so that the value engineering doesn’t come as a horrible shock. And [then] we’re
going, “Oh, this is horrible. I don’t even want to do the exhibit anymore because I can’t get what I want.”

For example, on the East Gallery, when we were working on that, we were having to make all of these huge budget cuts. Somebody said, “Well, we won’t be able to do the flowers. And we definitely won’t be able to do the lights.” And I said, “We’re doing the lights. I don’t care what else we cut, but we’re not giving up the lights because the lights make it fun. And you haven’t seen lights in a fiber flower before. So, we’re doing the lights.” So we kept them in there. I didn’t want to have to go down a disappointment road again. I think we might have been a little bit better at keeping ourselves on budget track.

I was very nervous about working with Mike Milbourne because I didn’t like all of his work. I’ve had a lot of trials in my career working with artists, and that’s putting it mildly. So I’m very cautious about it. It’s not that I don’t love their work. I don’t want to get involved with them because suddenly their problems become your problems. So I’m very reluctant, but at the same time, we knew him and he was interested in working here. So, it seems like its working out, but he’s really a challenge, because he keeps wanting to change and grow and get more. We’ve got a budget and we’ve got a plan. And we’re going to stick to the plan and you have to say, “I’m trapped. We have to meet budget and meet time constraints.”

But one of the things that really makes exhibits--and someone from a very well known exhibit design firm said, “The fun of it, frankly, is the people.” It’s the people that you work with. It’s the fun that you have moving through this together. We have had that. There’s been a few testy
moments, that I know that I’ve been a part of and probably created and generated. But we move through them. You’re not walking around mad and you’re not harboring resentment. You just move through them. Then you end up happy with the final product. I think we have that—with PRD and with our contractors—certainly we think Scott Harper [from D&P] is just fabulous. So we were very, very glad to work with both of them again.

I was very nervous about, if we got PRD the second time around, would it be too much of the same? I was very concerned about that [and] so I spoke about that. I’m not interested in sameness. And I’m not even interested in the connections between the East and the West Galleries. They can be two different worlds as far as I’m concerned. And they can appeal to two different kinds of people. Two totally different kinds of experiences are fine for me. Because the U.S. Botanic Garden has been trying to carve out its own identity for a long time and it has started to do that. And a lot of that can be done through being original, not by copying. And so, we didn’t want to copy.

One disappointment, possibly with the West Gallery is—I know that Christine had it in her mind, and I agreed, that we would get a whole group of people together who were involved in humans and their involvement with plants. And we would talk about, “Okay, what do we want to show? And how do we want to do this?” Christine loves those sorts of things. We bring all of these people in and you go through these processes and you have a facilitator, very inclusive. I was concerned about the time and the money, because we ran out of time, and we didn’t have the money and we didn’t do it.
So it’s true that the Gallery is more of a reflection of me and Christine and maybe Amy [Pollack], and I’m trying to think who else might have been involved in this. And that’s probably a downside, maybe Christine and I aren’t the best two people to have had the input into this, but I think that was our reality. We tried to be worldly. We both have lot of experience, so that certainly could be a downside because we only have our own experience, and that’s all we have. And maybe another person will come in and say, “You missed it. You missed the boat.” That’s a possibility.

**Evans:** You said something about “the ramblings that Christine and I went on with PRD.” Did you use things like, “We want to have a Temple and we want to have a Garden of Ideas,” or was it more concept [oriented], where “We want to represent the spiritual qualities…”

**Shimizu:** (222) It was more concept [oriented]. It wasn’t specific. We never said, “We want a Garden of Ideas or we want a Temple.” What we probably said was, “We want to show the relevance and importances of gardens as a spiritual sanctuaries.” And Christine had seen this exhibit in Boston at the Christian Science Museum building, which had water and then it had these ideas coming out on light. Somehow, through turning and water and shadow, sayings would come out on the wall and you read these sayings. She had come back from a meeting in Boston and she said, “Oh my gosh, I saw this exhibit.” And she got me all excited and that probably influenced having the Temple and these talking columns. I think she mentioned that and we’re all going, “Isn’t that neat?” And somehow, we ended up with talking columns, which is not the same, but it’s along those lines. And we both felt the spiritual importance of plants was important. Conceptually we
knew, and then somehow we ended up with a Temple through brainstorming, lots of ideas. It was a lot of fun.

And then the Garden of Ideas, I’m not sure how that happened, but we probably knew that we wanted to teach about food and [about places and seasons]. How are we going to fit them together? The only way we might fit them together would be to do the sculptures and video. I can’t really remember that pathway.

Even the pathway for the Café, I’m not sure how that happened, except that we were thinking about the interactive, the need to smell and move and do all of those things, and somehow that evolved. Every part of it was a journey. It was all concepts to reality and we never dictated any of that. It was through this navigation that we would get to something. It seems like a blur to me now, but we always got there.

It goes back to the most critical thing, which is being able to listen. And that’s true with all designers, landscape architects and architects, I judge them by being able to listen. If they can listen and then give you back what you’re trying to say, and you may not even be able to articulate it, but if they can listen, process, and give it back to you then you have a win-win. And I do think they’ve [PRD] been able to do that.

Usually they didn’t dominate. The one person at PRD that does dominate is Dan. And so, Dan and I went head-to-head sometimes. And we’re both strong, and I didn’t always want to go his way. So, it was a lot easier for me to have the staff there. Because they were much better at not trying to tell me how it should be, because I didn’t like being told that. So, we had moments like that, but he always extracted himself once we got moving. That was good for me. He’s very strong, and he doesn’t take
what he would feel was criticism. He doesn’t take it well because his ego gets bruised. And where his staff isn’t the same, so I did a lot better, than when he was there. I remember once, along the line, Christine said to me, “It seems to me, Holly, that you and Dan have a problem.” And I said, I don’t remember, but yes, we had some conflict because I don’t want him telling me what I have to do. And I resent that and my hair stands up when he tells me, “This is what you have to do.” I’m like, “No, it isn’t what I have to do.” I think any designer needs to know that they serve the client. They don’t dictate to the client and so, we worked it out. But I felt there was stress there. But not now, no. That was early on, he extracts himself.

[Break in tape for phone call]

Evans: You’ve also alluded to the goals of the Gallery, but what do you want individual people to come away with, once they’ve been in the Gallery? It’s probably not a universal experience.

Shimizu: No, it probably won’t be. I think the generality is that I want people to go, “I took it for granted that plants influenced our sayings so much, our food, that we connect them so much with cultures. And we connect them so much with art and architecture, and all those things.” I feel like there are going to be enough examples in there that you’re going to leave there saying, “I didn’t even know there were so many different kinds of wood, or materials used to build these chairs.” I like the wheat, the corn, and the rice [panels], and the cultural connections with those. I think that will speak to people because they’re different ethnic backgrounds. And America is a melting pot, plus the fact that we have so many international visitors here because of tourism. I feel certain that this is going to make people think, “Wow! I never really connected the plant relationships of
some of these things.” I’d like them even—just the Capital [column] as an example that’s in there—for them to realize that it’s acanthus. But that Capital [column] bothers me right now because it’s there [and] we need an interpretive sign to explain why the plants are there, and that they’re important in design and architecture and the influence of plants on artists.

So specifically, it would be learning some new--this isn’t really so much about facts as much as it is about awareness. It’s cultivating an awareness of how we’re intertwined with plants. That is what I hope will happen in a few ways through the experience of that Gallery. I think that’s it, and something that will stimulate you. I think it will stimulate you.

I love the talking Temple. I love that. I think that’s one of the really neat things. I hope it really works; I love that.

Evans: Is it whispering, or speaking?

Shimizu: (276) I’m not sure, but voice is very important. I’m going to be very picky about who the voice is. I went to Holland, and I went to some art museums. And they had the best audio tours, and a lot of it was the voices. It was the voices and the way that they spoke. It’s gentle, yet informative, musical, but not overdone, and most importantly too, it wasn’t too much. They didn’t try to tell you everything. They tried to tell you just enough. You don’t want to get a headache from trying to learn, because you’re going to feel like you’re back in school, but enough to make you appreciate it and see it and understand, but not every detail. The voice is very important. I’m very interested in voices anyway, it’s probably because I did TV for a long time. And so I understand the importance of voice. And I did radio, so I’m in tune to that, the sound, so I want a good voice. I want a good accent. I listen to books, too. I only listen to certain readers, and I
won’t listen to the readers that I don’t like. I like a lot of Brits. They’re very clear and they use language very well.

So, I feel pretty confident that whatever it is, whether it’s language, art, architecture, some revelation will happen as you walk through the Gallery, if you just look a little bit. I’m certain of that.

**Evans:** That was my next question. Is it possible, that one person coming through the Gallery, that’s there for fifteen minutes, that’s hot and tired, they’ve only been to the U.S. Botanic Garden once, and they’ve been through in fifteen minutes, do you think they’ll get that?

**Shimizu:** (289) If they stay in the Gallery more than just a couple of minutes, I think they will, yes. I feel certain that we’ve tried to have stuff in there that would get your interest, even if it’s for a minute. There’s something in there that you’re going to go, “This is crazy. This is wild.” First of all, the Garden of Ideas is crazy anyway. And, we’re opening ourselves up for criticism because people are going to go, “Those people are wacky. They are just absolutely wacky.” Because it’s not conventional. I would so rather be confused with that than being called dull. I think dull is the ultimate insult; there’s nothing worse. If somebody said, “Your place is really dull.” Or if they said to me, “You’re really dull.” I’d think, “This cannot happen.” I don’t think it’s a good thing to be labeled. And I don’t think there’s any way this Gallery will be labeled dull. No.

But it might be the opposite, they might say, “It makes no sense whatsoever.” If I get really criticized for it, I’ll probably rethink it, because now I’m basing it on hope and faith, that it’ll be okay. But it’s risky. It is risky. I need to face that, because here we are on Capital Hill, we’re working for Congress, and we do have to be conservative here. So, I’m
trying to think how informed we’ve kept my boss on this. I hope we’ve kept him informed enough.

**Evans:** Well, he went through at least one meeting that I’ve heard about.

**Shimizu:** Yeah, he did. So hopefully, everything will be okay, and everybody will think that the originality makes it fun, makes it okay. I certainly hope so. I don’t know of any other exhibit quite like it. But botanic gardens have been moving out of the traditional perception of botanic gardens for how many years? Ten years? At least ten years I think?

**Evans:** But, we’re following behind the museum world. We tend to be a little slower, but the museum world is moving away from that Smithsonian-esque…

**Shimizu:** Very traditional, walk-through look. The one-dimensional experience. But we want to have multi-dimensional, sensory, total experiences. You’re right. I guess we are behind them.

**Evans:** I don’t mean that in a bad way. It just happens that way.

**Shimizu:** It is true.

**Evans:** Because we also have to deal with plants and horticulture.

**Shimizu:** And the science of botany, perhaps, and what that is and what that means. Whereas say, the National Arboretum, deals with being a research organization, focusing on research and struggling between display and research and the allocation of resources. And I think it all goes back to visitor satisfaction. So I’m very happy that Katie has just gone to this evaluation thing [the Visitor Studies Association annual conference]. I’m very excited to see how people respond to our Garden because I don’t know. I generally see the sunny side of things, but I do like the reality of the negative, too, because that’s a guide to how we want to change it.
I learned from a very interesting woman that I met at the [Botanic Gardens Conservation International] International Meeting in Barcelona. I had never been focused on evaluation because it’s not my background. She said, “That’s the whole basis of a great place.” For example, the Eden project in England, the reason it’s so great is they have a full-time person paid to do visitor evaluation. Everything they do is based on visitor evaluation. And so, we had a great talk on the bus. It totally opened my eyes to the need to get that and respond to it and let yourself be open to that. And I feel very anxious to get that and to respond to it and to be challenged by it. We can change anything. All I see is a world of possibilities.

Even in the Gallery, if people don’t like something, we’ll change it. We can find money. A lot of the staff think I’m crazy, because they are all like, “How are you going to pay for it?” We just find money. We’re very lucky. You can find money if you have to. You have a budget and you plan it, but you can always find it if you have to. And that way, you can’t have limited thinking, because if you do, you won’t go anywhere.

[Break in tape for phone call]

End of Interview
End of Tape 1, Side 1

Addendum:

In order to insure that, in general, the same interview questions were asked of all respondents, additional questions were asked and answered after the original interview by email.
Evans: How do you define innovative exhibits? What makes them innovative?

Shimizu: Creative ideas, original plans, new ways of thinking about ways to appreciate plants.

Evans: How did you decide what kind of design and media would be appropriate for your audience?

Shimizu: Brainstorming, people we know, [and] successful exhibits we've seen.

Evans: What do you think are the strengths of the West Gallery? Weaknesses? (Or do you know yet?)

Shimizu: Strengths: original, surprise; Weaknesses: people might think it is strange, but I don't know yet.
APPENDIX C
ANNOTATED BIBLIOGRAPHY

Note: An asterisk (*) denotes resources that originated specifically within the field of public gardens.

Exhibit/Exhibition and Garden Design and Planning Resources


This book covers the learning theories and operational aspects (finance, marketing, human resources) of interactive museums and science centers. The section, “The future of hands-on exhibitions” is interesting for its consideration of how people spend their leisure time. He also makes broad comparisons between hands-on institutions and traditional museums. This book is useful for a thorough look at using any interactive exhibits within an institution.


Though this article focuses primarily on zoo exhibit design and its history, some concepts can be extrapolated for garden use. Particularly interesting are the author’s views on how visitor’s perceptions are affected by context. He also provides some guidelines for creating immersion exhibits.


This article is an excellent case study of the development of the Rose Hills Foundation Conservatory for Botanical Sciences at the Huntington Library, Art Collections, and Botanical Garden. It explores the process involved in creating their Conservatory and strategies for involving their visitors interactively with the exhibits.


This issue of *Curator* examines perspectives on promoting conservation in museums, particularly zoo and aquaria. Several interesting case studies are described, and the exhibit design approaches could be extrapolated to public garden settings.

A great article highlighting innovative ways that botanical gardens can make their collection come alive for visitors. Marinelli reinforces the idea that plants can be just as exciting as pandas and provides encouraging solutions for gaining visitor’s interest.


A great resource aimed at museum professionals who are designing exhibits. This book advocates designing the exhibit from the visitor’s perspective. It considers many components of the planning process, including design principles, design team, type of exhibition, and media formats.


An innovative look at issues that are facing science exhibit development. Taken from a conference aimed at discussing these issues, many of the topics are thought provoking and relevant to garden audiences. The volume also contains case studies of twelve exhibits that were considered innovative and excellent by museum peers, as well as ideas for creativity while developing exhibits.


Aimed at museum professionals, this textbook-like manual covers the basis of exhibit design. Although written in 1982, the book still has lots of useful information, and is a good primer for designing educational exhibits.


Through the examination of the Bronx Zoo’s Children’s Zoo, Normandia argues for a bottom-up exhibit design approach, based upon visitor needs and abilities.


A good description of components needed for an intrinsically motivating museum experience. Perry gives concrete examples with the exhibit, *The Color Connection: Mixing Colored Lights.*

Through case studies and the evaluation of four demonstration gardens, Price makes a case for improving educational opportunities within the gardens utilizing design principles. She advocates for the integration of garden design and educational exhibit design to achieve more effective demonstration gardens.


Russell presents general considerations for designing experiential exhibits (vs. informational exhibits). His ten recommendations are very helpful and directly applicable to public garden exhibits.


Scheid highlights the idea that good displays are key to furthering the purpose of collections and education. He provides five basic principles for good display.


This book is an excellent resource when writing labels. It includes technical details as well as editing advice, aimed specifically for museum professionals. It also includes a list of resources.


Thomas explores the pros and cons of several different interpretation methods, other than using docent-led interpretation. This is a good concise introduction into the different types of low-tech interpretive media.


This article describes a case study of a design competition for an educational themed garden. The winning garden design, called Windgong, is at the Utrecht University Botanic Gardens in the Netherlands.
Innovation Resources


The summary of this book highlights an organizational approach for achieving innovation. Dundon builds upon the idea of creative problem solving, stating that other components are needed for innovation to be successful. This is a good primer for anyone wanting to strive for more effective interpretive exhibits.


This issue of the *Public Garden* tackles communication, highlighting many innovative ways to communicate with the public. Articles discuss website communication, handheld media guides, interpretive master planning, and a variety of educational programs. This issue is great for an updated look at how public gardens are improving their educational programs.

Interpretation Resources


This book builds on and updates Tilden’s Six Guiding Principles of Interpretation. The authors expand on Tilden’s original concepts and relate these concepts to the present day. Aimed mostly at programmatic interpretation (nature walks, educational classes, etc.), its recommendations can be extracted to non-programmatic interpretation (i.e. exhibits).


This book gives a broad overview of planning interpretive projects in a practical and flexible framework. The author looks at various facets of planning through the 5M’s: Management, Marketing, Message, Mechanics, and Media. It is complete with excellent and interesting examples for thorough interpretive planning and development.


This sourcebook is from a seminar presented by the American Association of Museums. It includes a compilation of seminar notes, information and statistics from the National Interpretation Project as well as sample documents (Mission statements, evaluation forms, interpreter training documents, etc.) from many museums involved in the project.

A great practical guide, covering all aspects of interpretation, from conducted activities to self guided media. Easy to read, and a good overview of traditional interpretation practices.


Hyland describes attempts at Longwood Gardens to engage young visitors in interpretive exhibits. Although written in 1986, the article gives great insights into early interpretive efforts, as well as guiding principles for design of interpretation for children.


Although written in 1986, Jones-Roe give a great step-by-step approach to interpretive planning. This articles is specifically aimed at public garden professionals and also includes a useful worksheet for determining which types of media to use.


This article describes the development of Eco-Carts at Missouri Botanical Garden, including key considerations that were used to formulate the carts.


This is the homepage for the National Association for Interpretation. Although there are not a lot of resources specifically on this website, there are links to many other useful websites, and there is information on the organization itself, which produces several interesting publications.


This resource is filled with case studies from public gardens that are trying to teach biodiversity. The volume contains information on biodiversity as well as informal learning and teaching techniques. It is extremely helpful for sparking ideas.


This must-read, classic work offered the first definitions and principles of interpretation. It is still relevant to anyone involved in interpretation.

Veverka, J. & Associates (n.d.). *Interpretive planning and interpretive training*. Retrieved April 18, 2005, from http://www.heritageinterp.com/ This website is the homepage for John Veverka & Associates (author of *Interpretive Master Planning*), a consulting company in interpretive planning and interpretive training. This website is full of great information, especially the “Library” section, where Veverka has placed numerous articles on interpretation and interpretive planning.

**Museum Education/Educational Theory Resources**

American Association of Museums. (n.d.). *American association of museums web site*. Retrieved April 18, 2005, from http://www.aam-us.org/ The web site for the American Association of Museums (AAM) is extensive and filled with resources and links. Their bookstore has numerous useful references for any public garden professional, and the web site also details information for becoming accredited by AAM. As a member, you can also access their resources page, which is filled with documents, articles, and examples from other museums.


Chadwick, A. & Stannett, A. (Eds.). (1995). *Museums and the education of adults*. Leicester: National Institute of Adult Continuing Education. This is a compilation of essays concerning adult education within museums. It focuses on adult educational theories, and contains case studies concerning access to educational resources for different populations of adults. Several additional case studies are presented with the focus of museum staff training in adult education. The though provoking essays help to challenge assumptions based in museum education.
Dewey’s classic work on education, this text explores the interaction between learning and personal experience. Dewey recognizes two main points of experience: continuity and interaction, and discusses the implications of these concepts in education and learning. He also contrasts the differences in traditional versus progressive education. This work has many implication for learning within museums or public gardens, and is the foundation for many later educational theories relevant to museums.

This anthology of articles examines various components of learning in a museum setting. Topics include learning theories, audiences, disability, exhibit planning, case studies, writing text, and evaluation. A broad scope of authors contributed to this work, to create a well-rounded, comprehensive outlook on museum learning.


Building upon *The Museum Experience*, Falk and Dierking delve further into their Contextual Model of Learning. They discuss the implications of this model within the context of museum education. This is one of the most inclusive educational models for use in museum settings. This book is highly recommended for any public garden educators.

This book is a look at the various educational theories and visitor studies that have contributed to the field of museum education. Primarily the author advocates the use of constructivism in a museum setting, and provides parameters for a “Constructivist Museum.” He also elaborates on numerous methods for studying visitors within a museum environment.

This book is a concise monograph of the status of learning in museums. It includes sections on visitor studies research, educational theory, and museum education practice. It also includes an extensive reference list.
An excellent collection of papers, ranging in content from communication and educational theories to developing effective exhibits and evaluation techniques. A combination of theory and practical applications are employed in a well-rounded thought provoking volume.

An inspirational collection of essays written by museum professionals. They highlight challenges for museum educators and future directions for education in museums.

A discussion of how museum education and communication theory relate. Silverman goes on to discuss the relationship of communication to the meaning for visitors in a museum setting and how exhibit design affects meaning-making.

**Visitor Studies Resources**

An excellent article discussing three components of exhibit success, including the criteria for success, design approaches, and research and evaluation strategies. The design approaches were particularly interesting, in light of this paper, as the author critiqued three basic approaches to design: subject matter, aesthetic, and hedonistic approaches. He discusses the implications of these approaches within the context of exhibit design.

A discussion of some principles of exhibit design that relate to visitor behavior, including the characteristics of the exhibit objects or animal, the characteristics of exhibit architecture, and the characteristics of the visitors. A good summary of possible reasons for certain visitor behaviors; however, at this point, updated and more in-depth research is available which builds upon these concepts.

This article is part of the larger work, Reaching Out to the Garden Visitor. The article focuses on informal learning (vs. formal & nonformal), reasons for the increasing focus on informal learning, methods for facilitating informal learning, and how to affect outcomes for garden visitors. It also gives a very general, step-wise approach to planning, and a few means for evaluation. This is a good short introduction to informal learning.


This excellent case study describes the renovation of Desert Botanical Garden. Socolofsky describes the process used to develop the new space, called “Team Exhibits Week,” which is centered in visitor studies processes.


This issue of the Public Garden explores evaluation in-depth. The articles cover basic methods of interpretation as well as focus on recent efforts at public gardens in evaluation. This is a must read for garden professionals thinking about evaluation.


This article is a useful resource for anyone writing museum labels or signs. It examines the function and context in which labels are used, as well as suggestions for improving various types of labels.


Screven gives a historical overview of visitor studies in the United States. He also ends with some working principles for exhibit design based upon visitor studies.


This is a summary of an enormous amount of tracking studies conducted in diverse museums. The author looks at the amount of time visitors spend at particular exhibit elements, as well as the amount of time based upon the overall size of the exhibit. It is a wealth of information on how visitors spend their time in exhibits. While she correlates some of the tracking information to exhibit design, primarily she focuses on the data from the study.

This is the website for the Visitor Studies Association. Although the web site is not very extensive, it gives basic information about the organization, links to their newsletter, and information for ordering their publications.


This thesis examines the evaluation of certificate programs at public gardens. It is a great resource for garden professionals thinking about starting certificate programs. It is also useful for examining the some of the challenges and considerations found in evaluation, or to look at models of evaluation in educational programming.
REFERENCES


