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# Public Space Design in Museums

David A. Robillard

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# PUBLIC SPACE DESIGN IN MUSEUMS



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*Department of Architecture and Urban Planning  
University of Wisconsin, Milwaukee*

*A thesis submitted in partial  
fulfillment of the requirements for  
the degree of Master of Architecture  
May, 1982*

PUBLICATIONS IN ARCHITECTURE AND URBAN PLANNING

Center for Architecture and Urban Planning Research  
University of Wisconsin- Milwaukee  
P.O. Box 413  
Milwaukee, WI 53201

Report R84-7

Additional copies of this report are available for current prices  
by writing to the above address.

*To my mother Delores B. Robillard  
in loving memory*

*and to my family  
the ideal life support system  
Gert, Norbert, Bob, Bev, Don*

## Acknowledgements

I wish to acknowledge the following people for their valuable contributions to this work: Gary T. Moore, whose diligence and skill in the teaching of Environment Behavior studies encouraged me to pursue this project, and whose insights into the development and communication of design guidelines helped clarify the organization of the material; Timothy McGinty, whose knowledge and understanding of architectural design, graphic styles and techniques strengthened the development of this study; C.G. Screven whose excitement and concern for the betterment of museum environments continually reaffirmed the need for this project, and whose expertise in museum visitor research made this document possible; Charles R. Ince, Jr., President of A.I.A. Research Corporation, for selecting me the 1980 A.I.A. Research Intern, (Washington, D.C.) which provided the opportunity to conduct preliminary research in an environment overflowing with museum resources; Barry Steeves, for his editing of the final copy and training in document development; Joni Zarzynski, for her prompt and proficient typing skills; and Sandra B. Schroeder, assistant to the dean for student affairs, for her enthusiasm for the project and patience while awaiting the final outcome.

Finally, I wish to thank Luetta Al-Saadi, Roger and Laura DeYoung, Richard Kieffer, Ricki and Karen Miller, Bill Simon and Emmett Sullivan for their constant support, encouragement and understanding especially during the difficult times of the manual's production.

## Prepared by

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## Thesis Intent

This thesis was undertaken to:

- Identify implications for museum design that is available in current literature but has not been collected into a single source.
- Clarify the potential of behavioral research in affecting design.
- Address complaints about the usefulness of Environmental-Behavior Studies including charges that the research asks the wrong questions in the wrong ways for the results to be useful to designers, that the language and packaging of the reports has not kept the practitioner in mind, and that the research is often irrelevant, inaccurate and misleading.

## Thesis Committee

GARY T. MOORE, Chair  
Assistant Professor of Architecture, University of Wisconsin-Milwaukee. Major contributions to this thesis include:

- Behavioral factors in architecture.
- Design guideline development.
- Editor.

TIM MCGINTY  
Associate Professor of Architecture, University of Wisconsin-Milwaukee. Major contributions to this thesis include:

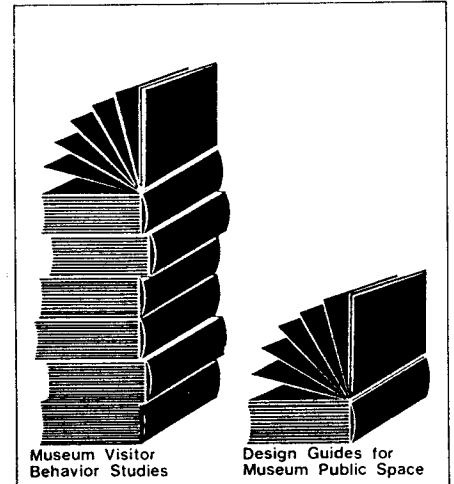
- Graphics.
- Architectural design.
- Editor.

C. G. SCREVEN  
Professor of Psychology  
University of Wisconsin-Milwaukee  
Major contributions to this thesis include:

- Visitor responses to museum materials and environments.
- Visitor reactions to museum exhibits.
- Editor.

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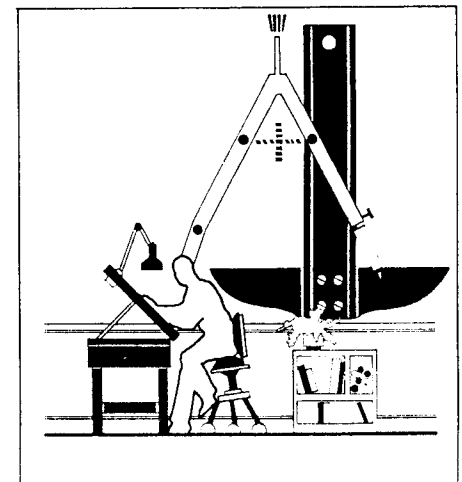
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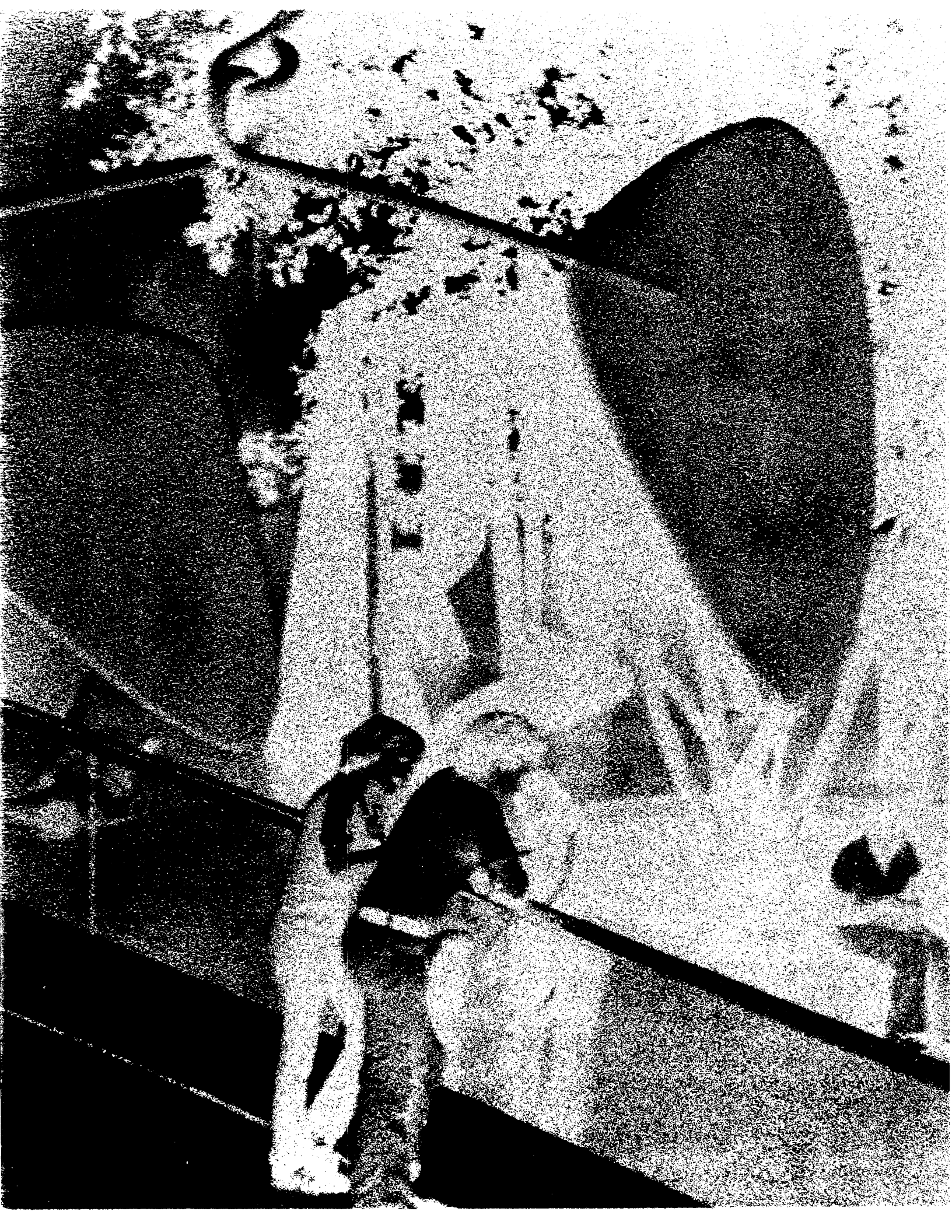
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## Bibliography



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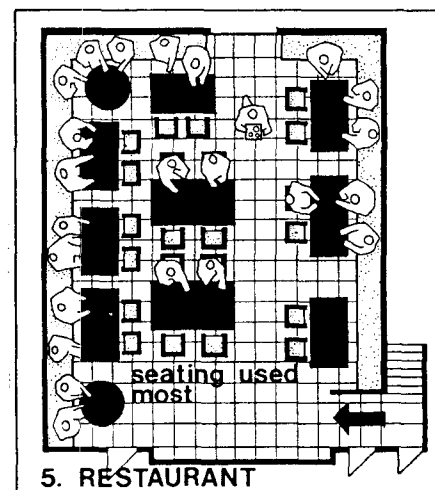
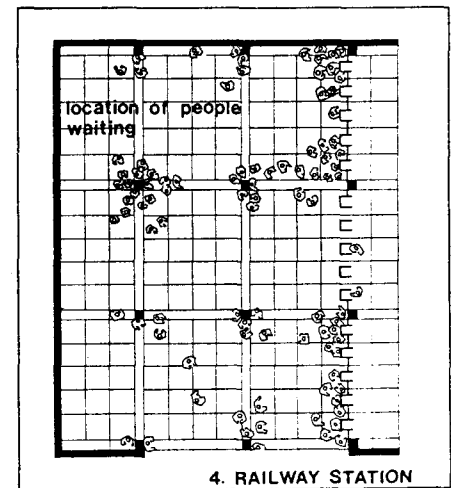
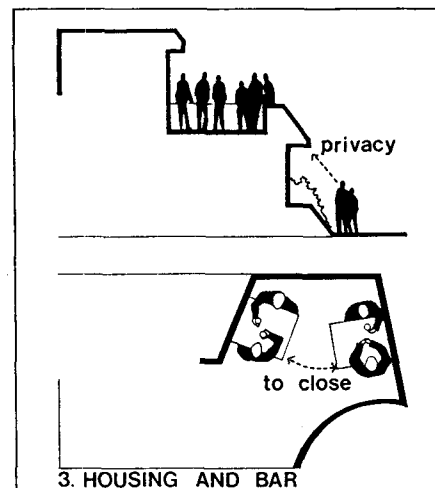
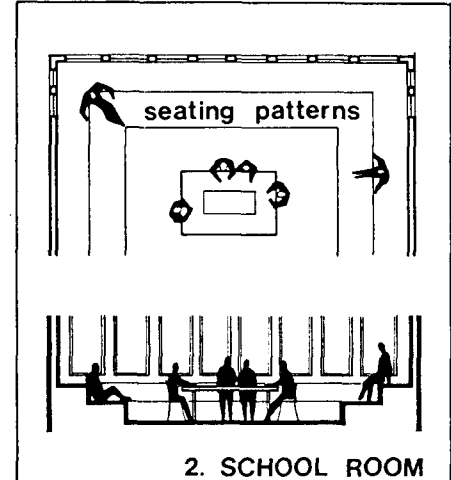
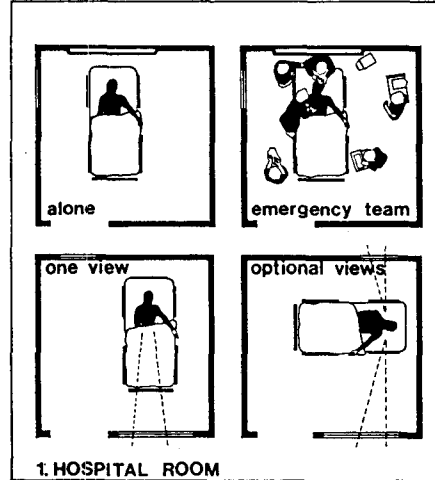
## Environment—Behavior Studies in Architecture

"SINCE EVERY KIND OF HUMAN REACTION IS CONCEIVABLE, IT IS OF GREAT IMPORTANCE TO KNOW WHICH REACTIONS ACTUALLY OCCUR MOST FREQUENTLY, AND UNDER WHAT CONDITIONS. ONLY THEN WILL A MORE ADVANCED UNDERSTANDING OF THE MAN/ENVIRONMENT RELATIONSHIP EMERGE, WHICH WILL UNDOUBTEDLY HAVE BENEFICIAL EFFECTS UPON OUR LIVES." (Mikellides, 1980)

There is an enormous interest in developing a better understanding of the design requirements for particular building types (e.g., restaurants, schools housing, bars, hospitals, railroad stations) and special user groups (e.g., children, elderly, handicapped). Environment-Behavior Studies, by examining the relationship between human behavior and the surrounding environment, has begun to address this problem. Although in an early stage of development, a great deal of useful information has evolved through basic and applied research. The findings are being developed into building programs and design guidelines, providing the architect with necessary information to make basic design decisions for specific building types and user groups.

Despite this growing body of research, which shows that scientifically based analysis can improve design the architectural profession has remained suspicious of social-scientific methodology. According to Robert Sommer, there are very few professional behavioral scientists employed full time in architectural offices. He notes that, "behavioral consultation is more the exception than the rule in architectural practice, even on major projects." (Sommer, 1980)

Although the negative attitude of most practitioners towards behavioral science has declined somewhat over the last few years (e.g. with the increase in publications and Environmental Design Research Association; EDRA conferences), today's design researcher, concerned with improving this relationship, must develop their ex-



DRAWINGS 1-5 REPRESENT A NUMBER OF VISITOR-BEHAVIOR STUDIES THAT HAVE BEEN CONDUCTED IN DIFFERENT SETTINGS, EACH HAS SPECIFIC DESIGN IMPLICATIONS: 1. HOSPITAL ROOM, (SPACE SIZE AND WINDOW PLACEMENT), 2. SCHOOL ROOM, (SEATING PATTERNS), 3. HOUSING AND BAR, (VISUAL PRIVACY WITH OVER-HANG AND AISLE WIDTHS), 4. RAILWAY STATION, (LOCATION FOR WAITING AREAS) AND 5. RESTAURANT, (LAYOUT).



Author	Book
CHRISTOPHER ALEXANDER	A PATTERN LANGUAGE.
DONALD APPLEYARD	HUMAN BEHAVIOR AND ENVIRONMENT.
ROBERT BECHTEL	ENCLOSING BEHAVIOR.
JOE BENJAMIN	IN SEARCH OF ADVENTURE AND GROUNDS FOR PLAY.
CHARLES BURNETTE	DESIGNING FOR HUMAN BEHAVIOR.
DAVID CANTER	THE PSYCHOLOGY OF PLACE.
CLARE COOPER	EASTER HILL VILLAGE.
KENNETH CRAIK	ENVIRONMENTAL PSYCHOLOGY.
MATS EGELIUS	RALPH ERSKINE: A HUMAN ARCHITECT.
ROBERT GUTMAN	PEOPLE AND BUILDINGS.
EDWARD T. HALL	THE HIDDEN DIMENSION.
CLOVIS HEIMSATH	BEHAVIORAL ARCHITECTURE.
W. H. ITTELSON	AN INTRODUCTION TO ENVIRONMENTAL PSYCHOLOGY.
JON LANG	DESIGNING FOR HUMAN BEHAVIOR.
HERBERT MCLAUGHLIN	AIA HANDBOOK ON ARCHITECTURAL PROGRAMMING.
ALBERT MEHRABIAN	PUBLIC PLACES AND PRIVATE SPACES.
WILLIAM H. MICHELSON	MAN AND HIS URBAN ENVIRONMENT.
BYRON MIKELLIDES	ARCHITECTURE FOR PEOPLE.
CHARLES MOORE	THE PLACE OF HOUSES.
GARY T. MOORE	EMERGING METHODS IN ENVIRONMENTAL DESIGN AND PLANNING.
OSCAR NEWMAN	DEFENSIBLE SPACE.
HAROLD M. PROSHOWSKY	ENVIRONMENTAL PSYCHOLOGY: PEOPLE AND THEIR PHYSICAL SETTINGS.
BORIS S. PUSHKAREV	URBAN SPACE FOR PEDESTRIANS.
AMOS RAPOPORT	HUMAN ASPECTS OF URBAN FORM.
THOMAS F. SAARINEN	ENVIRONMENTAL PLANNING: PERCEPTION AND BEHAVIOR.
HENRY SANOFF	DESIGNING WITH COMMUNITY PARTICIPATION.
PETER F. SMITH	ARCHITECTURE AND THE HUMAN DIMENSION.
ROBERT SOMMER	PERSONAL SPACE.
DAVID STEA	IMAGE AND ENVIRONMENT: COGNITIVE MAPPING AND SPATIAL BEHAVIOR.
JOHN ZEISEL	SOCIOLOGY AND ARCHITECTURAL DESIGN.

THE ABOVE CHART LISTS KEY BOOKS AND ARTICLES BY ARCHITECTS AND WRITERS WHO HAVE ENCOURAGED THE PURSUIT OF ENVIRONMENT-BEHAVIOR STUDIES IN ARCHITECTURE.

expertise on particular building types and subject matter, such as museums. The results of such efforts can then be used by other designers in a variety of applications.

There are a number of architects and writers who in various ways, are encouraging a more humane architecture and have recognized the merits of behavioral research on their designs and have applied them regularly in the design process. Museum design is one of the areas where behavioral research is most obviously relevant and helps establish models for other applications.

While the design profession has not embraced the systematic study of visitor responses to museum materials and environments, museologists, social scientists, and students have. Using audience surveys, behavior studies, experimental research, and evaluation studies these concerned groups have set out to communicate more effectively with a variety of visitors; to find out who they are, how they behave, and why they come or do not come to the museum. Their findings and conclusions, if handled with sensitivity, have shown to have profound affects on museum design and the overall success of the museum experience.

### **Purpose and Organization of the Manual**

The purpose of this manual is to provide architects and museum professionals with information on visitor behavior in museums and principles that can be applied during design to improve the quality of the museums public spaces. The information is intended to assist all architects, but specifically those architects working with museums interested in the public educational role of museums.

Chapter 1, INTRODUCTION: THE MUSEUM PROBLEM, introduces the problem, the inaccessibility of comprehensive books and articles on design guidelines for museum architecture, and the importance of the problem, the continuing museum building boom and the need for rehabilitation or replacement

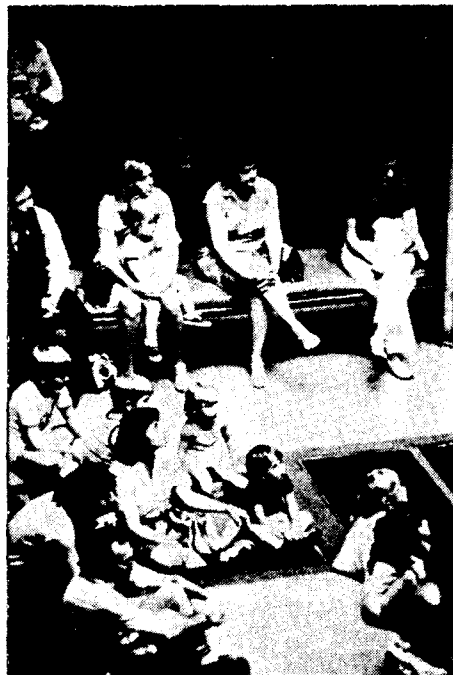
of older museum facilities. Chapter 2, **THE MUSEUM AND ITS VISITORS: A LITERATURE REVIEW**, discusses the museum visitor characteristics and a review of related literature on visitor-behavior studies. Chapter 3, **PUBLIC SPACE DESIGN GUIDELINES**, presents behaviorally-based design implications for the museums entrance hall, circulation paths, galleries and lounges. Finally the resource index contains an annotated bibliography.

**Methods of Information Gathering**

Interest in this study was developed in of a series of interviews with museum directors, curators, and designers as well as through personal observations of people touring museum exhibits. Interviews focused on several issues, including the relationship between museum personnel and architects, activities and needs of visitors, museum personnel's perceptions and preferences for use of public space, observation of visitor reactions to the different types of public space (e.g., entrance hall, circulation paths, galleries, lounges), and overall condition of existing museums. These discussions raised questions regarding the effect of architectural components on the museum experience, particularly the visitors learning experience.

Preliminary investigation of literature in the field revealed that between 1900 and 1980 over 200 references dealing with visitor behavior in museums had been recorded by Elliott and Loomis (1975), in their study, "Studies of Visitor Behavior In Museums and Exhibitions: An Annotated Bibliography of Sources Primarily in the English Language." and by Screven (1976), in his study, "A Bibliography in Visitor Education Research."

A critical look into studies shows that researchers have been able to identify some critical performance and learning criteria for measuring the impact of museum spaces on museum visitors, as well as some key issues of significance for architects.



OBSERVING THE MUSEUM VISITOR IN MUSEUM PUBLIC SPACES (I.E., ENTRANCE HALLS, CIRCULATION, GALLERIES, AND LOUNGES), PROVIDED A DEFINITIVE PICTURE OF WHAT PEOPLE DO IN A PHYSICAL AND/OR SOCIAL SETTING AND WHAT THE PHYSICAL SETTING IS. FROM LEFT TO RIGHT, NATIONAL GALLERY OF ART-WEST, WASHINGTON, D.C., NATIONAL GALLERY OF ART-EAST, WASHINGTON, D.C., AND CORCORAN GALLERY, WASH. D.C.,

**ATTENTION ATTENTION**

"Behavioral consultation on design projects is still going on. The chief impediment to its effectiveness is the lack of a solid data base dealing with the behavioral effects of buildings." Robert Sommer. "Architecture. Psychology: The Passion Has Passed." AIA Journal, April, 1980.

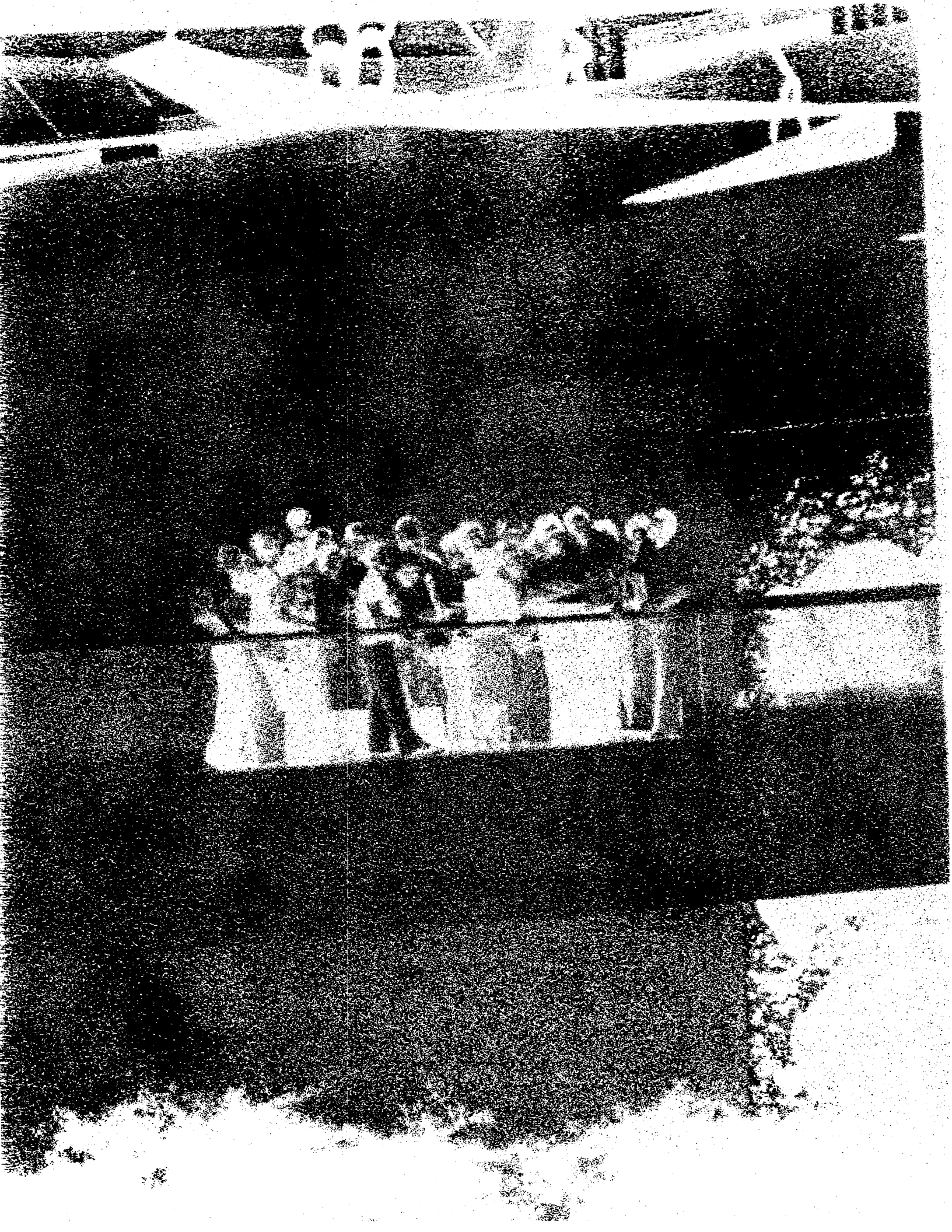
Take the QUIZ that follows, using intuition and best judgement. Your answers can be compared to those given in the manual, at the designated pages.

- 1) To improve the museum experience, the entrance hall bookshop, should be located to the right of the entry.  
True or False      **See pp.36**
- 2) Salient cues provided by the architecture (e.g., atrium), are more successful as orientation devices than maps or signs.  
True or False      **See pp.40**
- 3) Gallery spaces should contain more than two doorways to increase their usage.  
True or False      **See pp.46**
- 4) Lounge spaces should blend into the gallery areas; contrast in their design (e.g., color, lighting etc.), can disrupt the viewing of exhibits.  
True or False      **See pp.60**

The data used in the manual came from selected research papers, trade magazines, research journals, professional journals, journalism critiques, dissertations and text books. Items were chosen based on criteria suggested by Screven (1976):

- The content involves the collection of empirical data of some kind.
- The paper is accessible in a nationally or internationally circulated journal, monograph or book.
- Sampling methods and controls meet minimum scientific standards; that is acceptable efforts were made to establish the reliability of observations, obtained differences and so forth, and sampling procedures were specified.

It is hoped that this manual proves to be a frequently used addition to the designer's reference shelf. It is intended to mark a beginning towards a more conscious effort by the architectural profession in understanding the behavior of the museum visitor in public spaces. If beyond that, it helps the designer accept the challenge of finding creative and effective solutions to the problems of museum design, then both clients and the community will benefit.



# INTRODUCTION THE MUSEUM PROBLEM

# 1

It is obvious that buildings are for people. People pay for them; people use them; people design them. The design of a building consists of people making decisions on behalf of other people which affect another set of people. Therefore understanding of design, and as a consequence the performance of its products, must start with an understanding of people.



This thesis focuses on the findings of visitor behavior studies in museums. These studies strongly suggest that the architect as well as the museum professional must be understanding and sensitive to visitor's needs in order to create a balance between the museum's building components (e.g., doors, colors, room sizes, and locations, etc.), exhibits and visitors.

It is hoped that a more conscientious effort in balancing these variables will inevitably result in a more successful museum environment and learning experience.

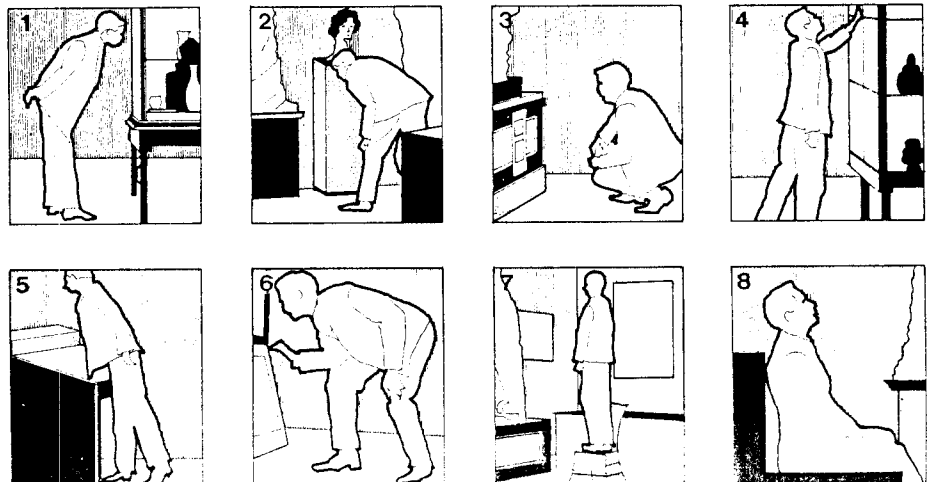
TOP- THE ELEMENTS OF A MUSEUM; BUILDING, VISITORS AND EXHIBITS. EACH MUST BE UNDERSTOOD IN ORDER TO BRING ABOUT HARMONY WITH THE OTHER ELEMENTS, WHICH WILL RESULT IN A MORE SUCCESSFUL MUSEUM ENVIRONMENT AND EXPERIENCE. BOTTOM- BODY POSITIONS DISCOVERED BY BENJAMIN IVES GILMAN THAT BRING ABOUT FATIGUE, 1. BENT, 2. MUCH BENT, 3. CROUCHING, 4. STRETCHING UP, 5. STRETCHING FORWARD, 6. HALF CROUCHING, 7. CLIMBING UP, 8. LOOKING UP. STUDY CONDUCTED IN 1909.

## The Problem

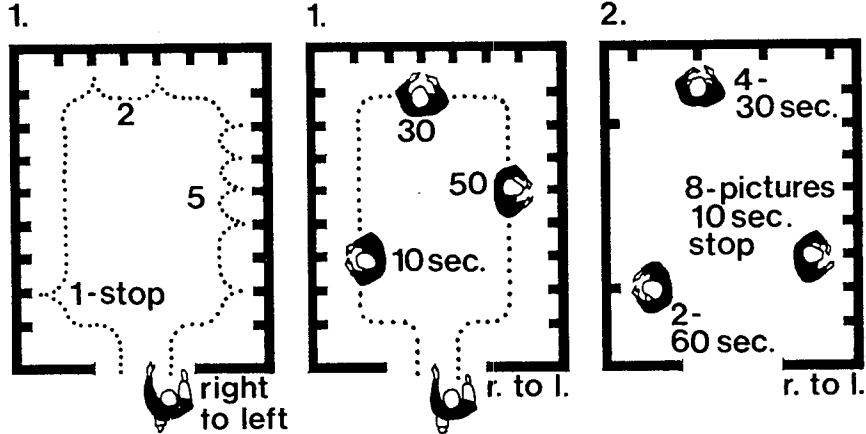
Visitor-Behavior studies in museum's began with Benjamin Ives Gilman's work in 1909. Using actual observations, he set out to determine just what kinds and amount of muscular effort were demanded of the visitor who endeavored to see exhibits as museum authorities planned to have them seen. Gilman's findings indicated that an inordinate amount of physical effort was demanded of the ideal visitor by then current methods in which the maximum number of objects were offered for inspection.

Museum research on visitor behavior didn't stop there. Surprisingly, an abundance of studies, headed by Edward Stevens Robinson and Arthur Melton took place between 1923 and the early 1930's.

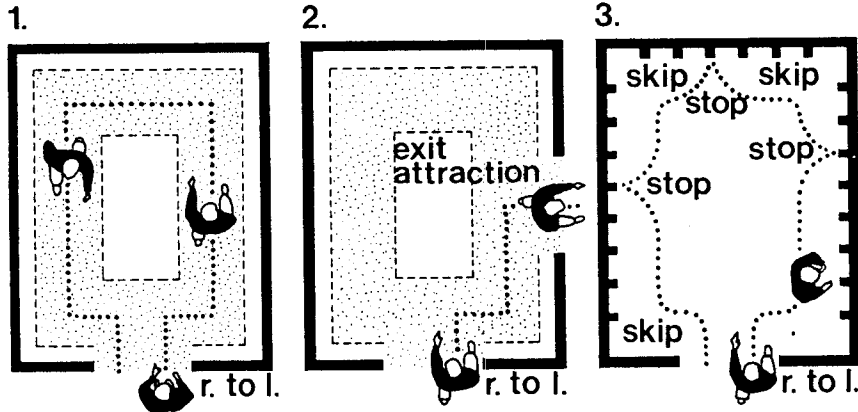
Robinson and his colleagues entered museums with stop watches and followed visitors around noting behavior (this form of data collection is often referred to as tracking or behavior mapping). The research team recorded the



## ROBINSON 1928



## MELTON 1931



RE-OCCURRING VISITOR WALKING PATTERNS DISCOVERED BY ROBINSON AND MELTON IN THE EARLY 1900'S. THE PATTERNS HAVE BEEN RE-AFFIRMED WITH CURRENT RESEARCH AND HAVE DEFINITE DESIGN IMPLICATIONS FOR GALLERY SPACES. SEE CHAPTER III.

time spent in the picture collections, the rooms entered, the number of pictures studied by the visitor in each room, and the time spent before each of these pictures. Although the number of visitors observed was small, certain general tendencies characteristic of museum visitors were remarked.

1. During the course of a visit and after a brief "warming up" period the person observed displayed a tendency to stop before a progressively smaller percentage of the pictures encountered and to make progressively shorter stops.
2. The more pictures simultaneously displayed, the smaller the average time spent in looking at each picture.
3. In large museums the likelihood that a visitor will observe any given picture is less than in smaller museums (Bennett, 1941).

Melton, working in art museums, confirmed Robinson's findings. He observed the behavior of museum visitors under normal and controlled conditions and found a number of factors which increase or diminish the effectiveness of museum display.

1. In a symmetrically arranged exhibit room there is a strong tendency for the visitor to follow the right hand wall, looking at displays to their right.
2. Exits from a museum room attract the visitor and compete with nearby displays so that stops are less frequent and of less duration before pictures or objects in the vicinity of doors leading from the room. If the visitor encounters an exit before the circuit of the room is completed, they are more likely to depart than to continue in the room.
3. Visitors distribute their attention, usually pausing for brief periods to look at individual objects and then skipping several intervening exhibits before stopping again.

Research into visitor responses to museum materials, exhibits and environments continued to appear in books, articles in the peri-

odical literature and dissertation's between 1940 and 1980. The major contributor's include: David Abbey, Robert Bechtel, Stephan Borhegyi, Homer Calver, Duncan Cameron, Lawrence Coleman, Alvin Goins, Ross Loomis, Robert Lakota, Lucille Nahemow, Arthur Niehoff, Mildred Porter, Chandler Screven, Harris Shettel, Frank Taylor, Robert Wolf, and Joseph Yoshioka.

In summarizing and reviewing the existing state of knowledge, which has resulted from the research effort, the various studies of the museum visitor can be divided into four categories:

- Visitor Surveys
- Behavioral Studies
- Experimental Research
- Evaluation Studies (Screven, 1979).

The abundance of data generated from these studies has helped set the direction for current museum research and, when properly applied, they have significant implications for museum design and have had an impact on some museum planning and design. Visitor research has also helped museums:

- Increase or maintain drawing power.
- Compete with competition from other visual media, (i.e., movies, television, magazines advertizing, literature, billboards, newspapers, fairs festivals and expositions).
- Assist the visitor and increase visitor satisfaction.
- Provide a more effective public service.
- Improve design and planning decisions.
- Make the transition from being a warehouse of cultural relics to being a genuine public service and educational facility.

## TYPES OF VISITOR BEHAVIOR STUDIES

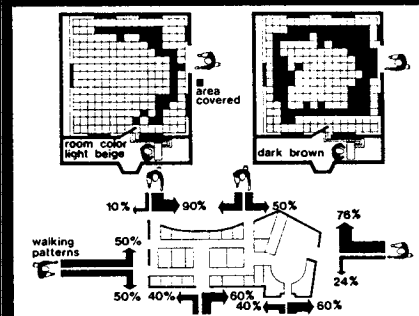
### VISITOR SURVEYS

Museum visitors (or nonvisitors) are sampled with respect to demographic characteristics, frequency of visits, reasons for coming, group characteristics, etc. Over 75 percent of museum research is in this category.

NAME	
AGE	SEX
EDUCATION	PROFESSION
HOW DID YOU HEAR OF IT?	HOW DID YOU HEAR OF IT?
WHAT IS IT?	WHAT IS IT?
WHAT HAVE YOU BEEN?	WHAT HAVE YOU BEEN?
WHAT WOULD ATTRACT YOU TO THE MUSEUM?	

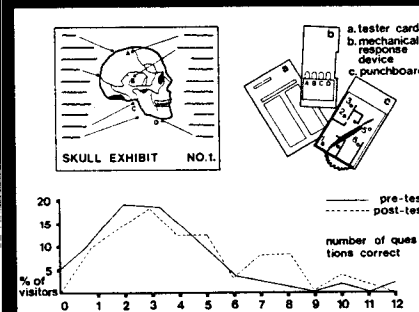
### BEHAVIOR STUDIES

Systematic observations of visitor behavior in museum spaces—how they move, react, interact, what they avoid, how long they stay, where they go, with whom, etc..



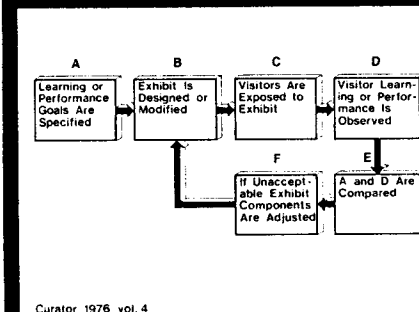
### EXPERIMENTAL RESEARCH

Studies of the effects of different exhibits or program methods on attention, time spent, learning, attitude change, etc.. Elements of the exhibit environment or pre- or post-exhibit activities are systematically varied to obtain generalizable information about their effects.



### EVALUATION STUDIES

Observation, interviewing or testing of visitors to determine if a particular exhibit achieves its chief goals or has some other desirable impact. Evaluations seek information to use in making decisions about particular exhibits, programs or methods.



Curator 1976 vol. 4

## ARCHITECTURE AND MUSEUM PROFESSIONALS CONCERN

"Outside their own experience, museum professionals have little they can rely on, particularly in areas where prior experience is rare. Substantial and complete data are not readily available and research is cumbersome as inquiries must be directed to each museum or architect in question. Even the most data-conscious architectural magazines do not provide drawings and descriptions that are detailed enough for any serious or comprehensive analysis."

Ludwig Glaeser, "Museum Architecture: Publish or Perish." *Museum News*, November, 1972.

The skeptic of psychological research in museums is quick to ask for evidence that the overall outcome from such work not only justify the expense involved but also to question whether the information gained really supports changing the way exhibits are prepared. It is hard to answer such skepticism because, at the present very little effort has gone into organizing and interpreting what the results of work already done mean and evaluate the various research strategies for their utility."

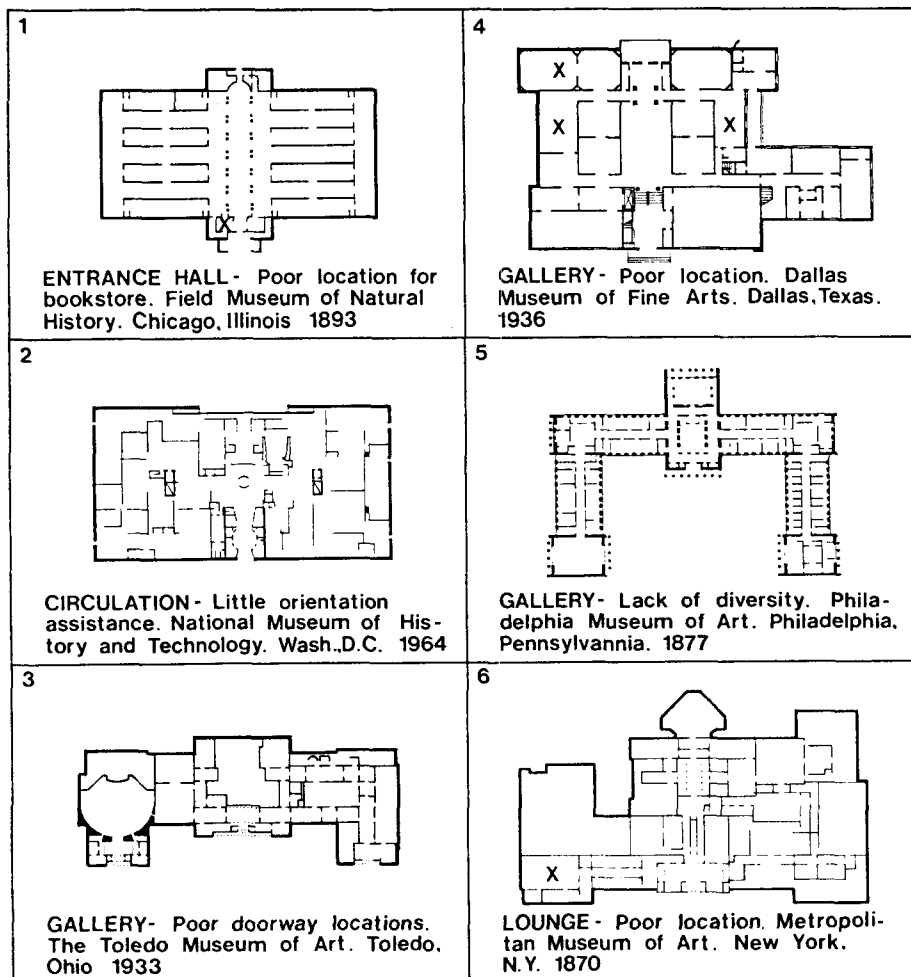
Ross J. Loomis, "Museums and Psychology." *The Museologists*, November, 1973.

## LACK OF DESIGN GUIDELINES.

Although a vast amount of information on the behavior of the museum visitor is available (predominantly in periodicals), much of it is cumbersome and difficult to translate into workable forms for practical use by the design and museum professions. According to Ludwig Glaeser, curator of the Mies van der Rohe Archive's, "the lack of adequate documentation in this area is surprising in view of the unprecedented museum building boom in the last two decades as well as the museum's special status as a building type." (Glaeser, 1972)

The inaccessibility of comprehensive books and articles on design guidelines for museum architecture looms even larger when carefully looking into some of the design decisions being made in museum public spaces. The following list, based on visitor behavior studies, represents some of the most reoccurring design decisions which could have negative impact on the visitor's museum experience:

- IMPROPER POSITIONING OF THE MUSEUM BOOKSTORE, GIFTSHOP AND INFORMATION BOOTH.
- INSUFFICIENT ORIENTATION ASSISTANCE.
- INCORRECT NUMBER OF DOORWAYS IN A EXHIBITION SPACE AS WELL AS THE WRONG NUMBER OF DOORS USED.
- IMPROPERLY LOCATING GALLERY SPACES, RESULTING IN MISSED OPPORTUNITIES.
- LACK OF DIVERSITY AND CONTRAST THROUGHOUT THE MUSEUM, RESULTING IN VISITOR FATIGUE.
- THE LACK OF LOUNGES OR REST AREAS.
- POOR LOCATION FOR LOUNGES, LOCATIONS WHICH CAUSE THE SPACE TO GO UNUSED.



If the architectural profession is to meet the needs of future museum projects, with improved design decisions, insight into visitor behavior is essential. Will there be future museum projects?



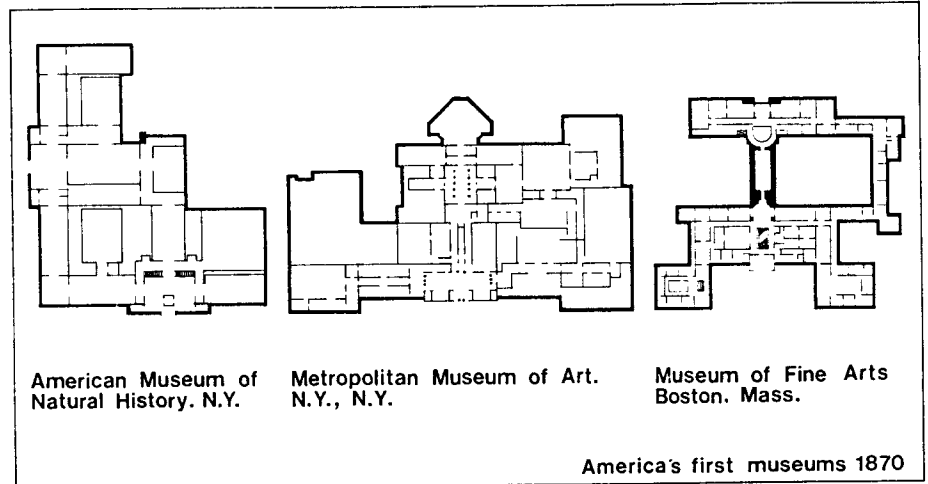
### Importance of the Problem

The Charleston Museum, Charleston, South Carolina, was the first American Museum, founded in 1773 and predating American Independence. In 1870 the United States entered the museum mainstream when the American Museum of Natural History in New York, the Metropolitan Museum of Art in New York and the Museum of Fine Arts in Boston were established. Since then Americans have been collecting objects and creating museums at an accelerating rate and museums have become a major thread in the cultural fabric of this country.

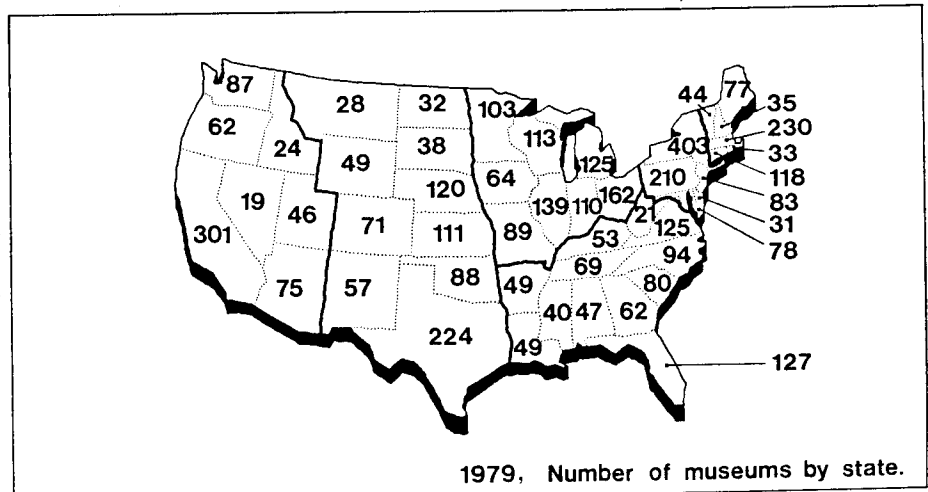
Museums in the United States are growing rapidly, as is evident when one looks at the increase in the number of facilities, attendance, and the variety of collections and exhibitions being displayed. Improved museum design in response to the best research information, can enhance this trend.

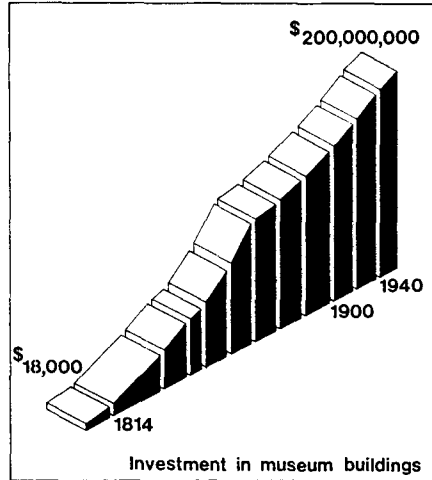
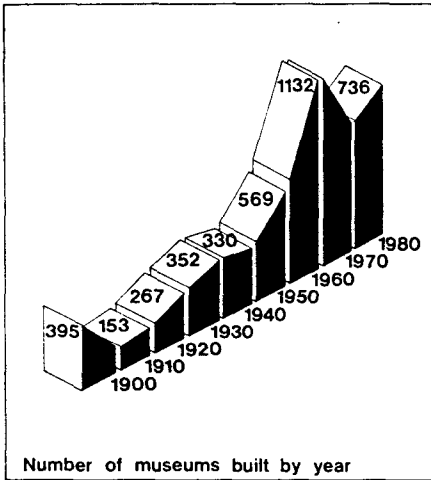
The following sections present and review statistics which suggest a continuation to the museum building boom started two decades ago.

**INCREASE IN FACILITIES.** Surveys conducted by the American Association of Museums (AAM) indicate that, if one counts small museums (those with only one person on staff and that person is without professional training), there are about six thousand museums in the United States today. There was a steady increase in the numbers of museums built from 1900 to 1939. During the 1940's fewer were constructed due primarily to World War II. Then the rate of construction increased again in the 1950's and 1960's. Approximately 60 percent of existing museums have been established since 1950 and, in the 1960's alone, there was a 53 percent increase in the number of museums, from 2,238 to 3,425. In fact, since 1960 an average of more than 100 new museums have been established in the United States each year. And the growth continues; more museums were founded in 1970 or after than were founded in all the time be-



OPPOSITE PAGE FLOOR PLAN CHART- BASED ON VISITOR-BEHAVIOR STUDIES A NUMBER OF DESIGN DECISIONS COULD HAVE NEGATIVE IMPACTS ON THE MUSEUM VISIT. TOP- FLOOR PLANS OF AMERICA'S FIRST MUSEUMS. BOTTOM- SINCE 1870 THEIR HAS BEEN A CONTINUING INCREASE IN MUSEUM FACILITIES. THE MAP BELOW SHOWS THE NUMBER OF MUSEUMS FOUND IN EACH STATE TODAY. STATISTIC FROM "MUSEUM NEWS", 1980.





TOP- NOT ONLY HAS THE NUMBER OF MUSEUMS INCREASED BUT ALSO THE AMOUNT OF MONEY SPENT ON MUSEUM BUILDINGS. BOTTOM- ATTENDANCE OF MUSEUMS CONTINUES TO GROW PLACING HEAVY DEMANDS ON TODAY'S AND FUTURE MUSEUMS. STATISTICS FROM "MUSEUM NEWS", 1980.

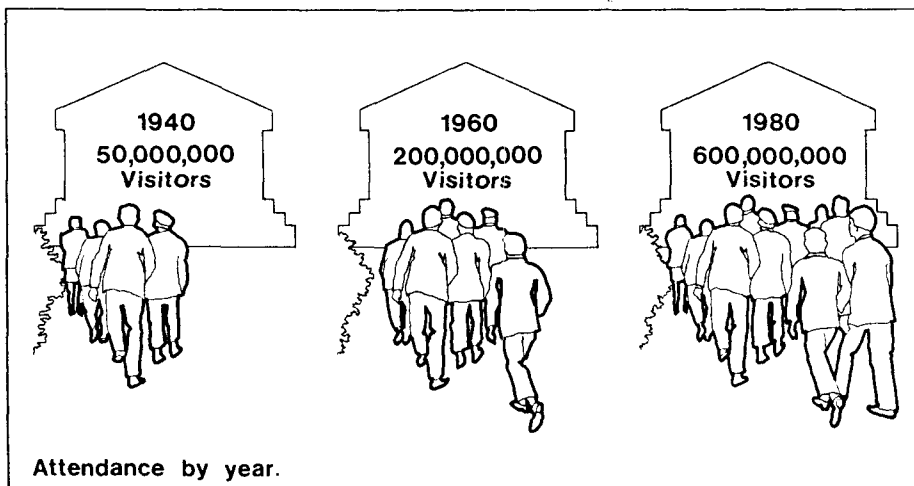
fore 1920. Recently, new museums have appeared every 3.3 days.

In order to appreciate the magnitude of our national commitment to museums, Laurence Vail Coleman in his pioneering three-volume study, *The Museum in America* (1939), calculated that the total expenditures involved in all science, history and art museums, as of 1930, was \$18,000,000. In contrast (and with due allowance for both dollar depreciation and increases in construction costs), the United States has since 1950, allocated over \$550,000,000 for art museums and art centers alone, which is more money spent on buildings for visual arts than in the previous 150 years. This massive investment has produced 10.2 million square feet of museum space—more than 13 times the size of the Louvre in Paris.

**INCREASE IN ATTENDANCE.** Museums vary in size, as measured by attendance, from those attracting fewer than 5000 visitors a year to those that count visits in the millions during a single year. Museum attendance has increased much faster than has the population of the United States. The Belmont Report conducted by the American Association of Museums in 1968, stated that the increase in museum attendance has been so rapid, and has reached such a level, that museums now have to turn down requests for service.

It has been estimated (in a variety of publications, *Museums U.S.A.*, 1974; Alexander, 1979; *Museum News*, 1980), that the number of people visiting museums increased from 50 million a year in 1940 to between 200 and 300 million in 1969 and to over 600 million in 1980.

Despite high levels of attendance, most museums expect and want to encourage further increases in the number of visitors. The American Association of Museums reported that nine out of ten of the nation's museum directors are interested in attracting more visitors to their museums. The AAM also feels that so far as can be foreseen, all the factors responsible for recent increases in museum attendance may be expected to



continue to operate. Such factors include:

- The increase in the United States population. The population of the U.S.A. from 1790 to 1950 doubled five times, increasing from less than 4 million to over 150 million in 1950. The rate of increase continues to be about 5 percent per year.
- Urbanization shows no signs of declining. The majority of major museums continue to locate near central city cores, areas which provide high concentrations of populations.
- Increased mobility. The automobile has greatly influenced the increase of museum attendance, since with increasing automobile ownership and the resultant increase in personal mobility, vast areas around cities now have convenient access to museums. A majority of the U.S. population is less than an hour's drive away from a major museum.
- People are more prosperous and have more leisure time. There is a continuing increase in the size of middle and upper classes and the number of families with both the husband and wife working

It should be noted that some of the most difficult museum statistics to obtain are attendance figures. While many museums maintain very accurate counts using ticket receipts, turnstiles and/or counters, many museum attendance figures represent estimates.

**INCREASE IN COLLECTIONS AND EXHIBITIONS.** During formative years, museums were classified into three types: art, history, and science. Today there are 6000 or more known museums, engaging in an extraordinary variety of activities. In all, 84 categories of museums exist today, 43 of which are variations of art, history and science museums. The remaining 41 are specialized museums with themes ranging from agriculture and animal farms to whaling and woodcarving, and subjects including circuses, crime, locks, money and numismatics, and transportation.

**ATTENDANCE RECORDS**.....

Attendance at Boston's Museum of Science rose from 411,483 in 1963 to 526,941 in 1967, for a % increase in 4 years.

Chicago's Field Museum recorded 1,049,000 visits in 1958 and 1,787,000 visits in 1966, for a % increase in 8 years.

New York's Metropolitan Museum of Art attendance went from 4,005,490 in 1960 to 6,281,162 in 1965, a % increase in 5 years.

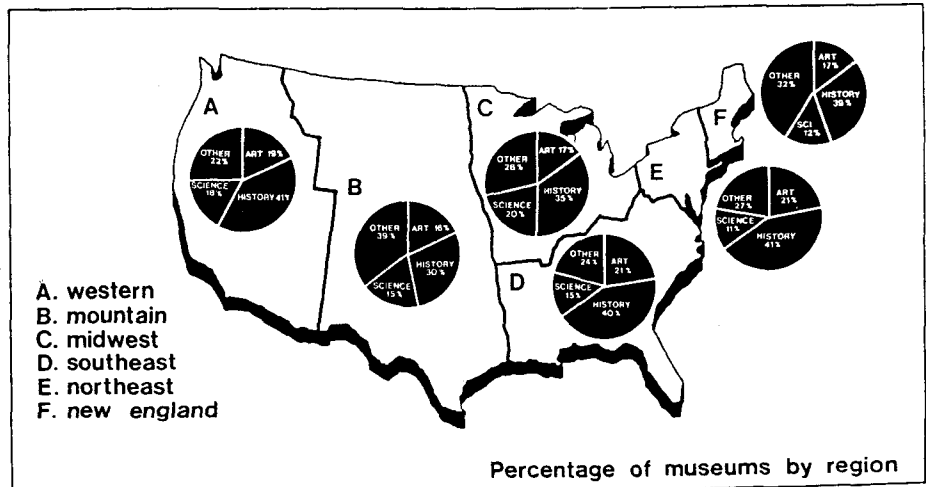
California's Academy of Science in San Francisco reported close to 3,000,000 visitors in 1967, as compared to 4,000,000 in 1980.

The American Museum of Natural History in New York reported attendance in excess of 1,500,000 in 1967, as compared to 2,500,000 in 1980.

The Smithsonian's Museum of History and Technology, during its first ten months, recorded more than 5 million visitors.

Statistics from, "America's Museum: The Belmont Report," October, 1969.

BOTTOM- THE CATEGORIES OF MUSEUMS HAS GROWN FROM THREE (I.E., ART, HISTORY, SCIENCE), TO MORE THAN ONE THOUSAND TODAY.



## Categories of Museums

ART	PARK MUSEUMS AND VISITOR CENTERS
ART ASSOCIATIONS, COUNCILS AND COMMISSIONS FOUNDATIONS AND INSTITUTES	SCIENCE MUSEUMS
ART ASSOCIATION GALLERIES	AERONAUTICS AND SPACE MUSEUMS
ART MUSEUMS AND GALLERIES	ANTHROPOLOGY, ETHNOLOGY AND INDIAN MUSEUMS
ARTS AND CRAFTS MUSEUMS	AQUARIUMS, MARINE MUSEUMS
CHINA, GLASS AND SILVER MUSEUMS	ARBORETUMS
CIVIC ART AND CULTURAL CENTERS	ARCHAEOLOGY MUSEUMS
DECORATIVE ARTS MUSEUMS	AVIARIES AND ORNITHOLOGY MUSEUMS
FOLK ART MUSEUMS	BOTANICAL AND AQUATIC GARDENS
TEXTILE MUSEUMS	ENTOMOLOGY MUSEUMS AND INSECT COLLECTIONS
	GEOLOGY, MINERALOGY AND PALEONTOLOGY MU.
CHILDREN'S AND JUNIOR MUSEUMS	HERBARIUMS
	HERPETOLOGY MUSEUMS
COLLEGE AND UNIVERSITY MUSEUMS	MEDICAL, DENTAL, HEALTH, PHARMACOLOGY, APOTHECARY AND PSYCHIATRY MUSEUMS
	NATURAL HISTORY AND SCIENCE MUSEUMS
COMPANY MUSEUMS	PLANETARIUMS, OBSERVATORIES AND ASTRONOMY
	WILDLIFE REFUGES AND BIRD SANCTUARIES
EXHIBIT AREAS	ZOOLOGY MUSEUMS
	ZOOS, CHILDREN'S ZOOS
GENERAL MUSEUMS	
	SPECIALIZED
HISTORY MUSEUMS	AGRICULTURE MUSEUMS
HISTORIC AGENCIES	ANTIQUES MUSEUMS
HISTORIC HOUSES AND HISTORIC BUILDINGS	ARCHITECTURE MUSEUMS
HISTORIC SITES	AUDIO-VISUAL AND FILM MUSEUMS
HISTORICAL AND PRESERVATION SOCIETIES	CIRCUS MUSEUMS
HISTORICAL SOCIETY MUSEUMS	ELECTRICITY MUSEUMS
HISTORY MUSEUMS	FIRE-FIGHTING MUSEUMS
NAVAL MUSEUMS AND HISTORIC SHIPS	GUN MUSEUMS
MILITARY MUSEUMS	HOBBY MUSEUMS
PRESERVATION PROJECTS	INDUSTRIAL MUSEUMS
	LOGGING AND LUMBER MUSEUMS
LIBRARIES HAVING COLLECTIONS OTHER THAN BOOKS	MINING MUSEUMS
	RELIGIOUS MUSEUMS
NATIONAL AND STATE AGENCIES	SPORTS MUSEUMS
	TOY AND DOLL MUSEUMS
NATURE CENTERS	WAX MUSEUMS

The most common type of museum in the United States is the history museum. According to the Museums U.S.A. Report, (1974), there were at least 1,821 established museums in this country in 1971-1972, of which 683 were history museums, (including historic houses, military museums and preservation projects as well as general history museums), 340 art museums, (including museums of china, glass and silver as well as folk art and textile museums), 284 science museums, (including aeronautics and space museums, aquariums, arboretums, aviaries and ornithology museums, botanical gardens, insect collections, herbariums, herpetology museums, planetariums, wildlife refuges and zoos), 186 art/history museums and 328 combinations of some or all of the above.

Increased insight into the behavior of the museum visitor will not only assist with design decisions for future museum projects but also museums needing rehabilitation or replacement.

**FUTURE NEED FOR REHABILITATION OR REPLACEMENT.** Studies have shown that the majority of American Museums occupy facilities which need either rehabilitation or replacement, giving architects and museum professionals an opportunity to improve on past designs.

In a survey conducted for the National Endowment for the Arts in 1974, most museum directors felt older museum facilities were less than adequate and that the need for rehabilitation or replacement was so great that it could not be met in a year or two. In response to the 1968 request of then President Johnson as to the condition of the American museum facilities, the American Association of Museums states, "a conservative conclusion is that the condition of most museum buildings and facilities is so unsatisfactory that the institutions cannot serve the public or perform their cultural and educational functions adequately."

The 1968 study by the American Association of Museums (AAM) pointed out that, of the 689 museums sharing quarters with

other institutions, 138 would need new quarters within the next ten years. Of the 1,053 museums housed in buildings not constructed for museum use, 630 institutions or 60 percent, would need new construction within the next ten years to adequately house and exhibit their collections for the public. And, assuming the effective life of a public building to be about fifty years, another 124 museums would need either to remodel or replace their buildings within the next two or three years.

The AAM also has disclosed that, of the museums housed in buildings designed specifically for their use, 149 were constructed before 1900, 75 were completed during the years 1901 and 1920, 233 were constructed between 1921 and 1940, 174 were built between 1941 and 1960, and 60 have been built since 1961.

### Improving Future Museums

With the success of museums in recent years (i.e., with the continuing growth in museum facilities, attendance and the variety of collections and exhibitions being displayed), there exists a challenge for architects and museum professionals to capitalize on past research and undertake current visitor-behavior studies to improve museum design. It also offers the opportunity to include the museum visitor in the design team of future museum building projects, which can increase designer's understanding of the characteristics and psychological problems of museum architecture.

This is essential if existing museums are to make the best use of their galleries and if future museums are to have an architecture that is appropriate to the characteristics of the public it serves today. It would, in fact, provide a richer variety of buildings than now exists because there are within society so many distinct groups and types of individuals, some of whom are not at present catered to.

It is well-known within architectural practice that the worth of a facility can be measured by its

### NEED FOR REHABILITATION - A CASE STUDY

THIS IS A LARGE NATURAL HISTORY MUSEUM, ONE OF THE FIVE LARGEST IN THE COUNTRY. ITS BUILDING IS 47 YEARS OLD. ITS TOTAL AREA COVERS ABOUT 800,000 SQUARE FEET, OF WHICH 437,000 SQUARE FEET ARE EXHIBIT AREA.

THE ELECTRICAL SYSTEM IN THIS MUSEUM'S BUILDING IS OBSOLETE IN DESIGN AND INADEQUATE IN CAPACITY. FOR REASONS OF SAFETY IF FOR NO OTHER REASONS, A COMPLETELY NEW ELECTRICAL SYSTEM IS REQUIRED. IT WILL COST IN EXCESS OF \$1,240,000.

MOST OF THE MUSEUM'S AREA IS WITHOUT FIRE DETECTION AND PREVENTION EQUIPMENT. TO PROVIDE THIS WILL COST ABOUT \$200,000.

THE MUSEUM'S VENTILATION SYSTEM IS OBSOLETE. IT IS IMPOSSIBLE AT PRESENT TO PROVIDE PROPER TEMPERATURE, VENTILATION, FILTERING AND HUMIDITY FOR PRICELESS COLLECTIONS AND EXHIBITS NOT TO MENTION EMPLOYEES AND VISITORS. AN ADEQUATE AIR CONDITIONING SYSTEM IS ESTIMATED TO COST ABOUT \$2,500,000.

THE FLOOR OF THE MUSEUM BUILDING HAS SETTLED BY ALMOST A FOOT. TO STABILIZE IT WILL COST ABOUT \$200,000.

ESCALATORS AND A NEW PASSENGER ELEVATOR ARE TO COST ABOUT \$275,000. NEW LOUNGE AND TOILET AREAS FOR THE INCREASED ATTENDANCE WILL COST ABOUT \$250,000. BECAUSE THE NOISE LEVEL IN SOME OF THE MOST POPULAR EXHIBIT AREAS IS UNCOMFORTABLY HIGH, ACOUSTICAL TREATMENT IS RECOMMENDED, AT A COST OF ABOUT \$200,000.

THIS MUSEUM'S TEN ACRES OF EXHIBITS, THE TRUSTEES AND DIRECTOR HAVE DECIDED, NEED OVER HAULING AND UPGRADING. MANY HAVE NOT BEEN CHANGED FOR DECADES. IT IS PROPOSED TO UPGRADE THEM OVER A PERIOD OF TEN YEARS, USING NEW AND MODERN TECHNIQUES, AT A COST OF APPROXIMATELY \$200,000 A YEAR.

ALL TOLD, INCLUDING OTHER CAPITAL IMPROVEMENTS NOT LISTED ABOVE, AN EXPENDITURE OF ABOUT \$11,500,000, IS REQUIRED BY THIS MUSEUM OVER THE NEXT DECADE.

THE BELMONT REPORT, 1968.

BOTTOM- IF FUTURE MUSEUMS ARE TO PROVIDE A BETTER ENVIRONMENT, VISITOR-BEHAVIOR STUDIES MUST CONTINUE AND THE MUSEUM VISITOR MUST BECOME PART OF THE DESIGN TEAM.

GROUP	IDEA	PROGRAM	DESIGN	CONSTRUCT
steering committee	██████████	██████████	██████████	██████████
public authorities	██████████	██████████	██████████	██████████
official interest groups	██████████	██████████	██████████	██████████
private	██████████	██████████	██████████	██████████
museum management	██████████	██████████	██████████	██████████
museologist	██████████	██████████	██████████	██████████
architect	██████████	██████████	██████████	██████████
sociologist	██████████	██████████	██████████	██████████
psychologist	██████████	██████████	██████████	██████████
civil engineer	██████████	██████████	██████████	██████████
lighting expert	██████████	██████████	██████████	██████████
acoustics	██████████	██████████	██████████	██████████
air-cond.	██████████	██████████	██████████	██████████
other	██████████	██████████	██████████	██████████
general contractor	██████████	██████████	██████████	██████████
sub-	██████████	██████████	██████████	██████████
key	██████████	██████████	██████████	██████████

permanent team member
  occasional

ability to accommodate its intended use and by knowing about the users, who have the most direct and extensive relationship with facility use. Each building prototype carries with it a different set of requirements, thus human needs must be understood and studied within the framework of each design problem.

Visitor-behavior studies conducted in museum environments support the proposition that visitor needs within these institutions are still being overlooked by both clients and designers. This omission can cause loss of time, wasted energy, decreased personal satisfaction and the loss of desired educational impact. Visitor needs often are ignored because they are not represented in the team that programmes and designs the building or its exhibits. A building design team should be established during the "needs analysis" or first stages of planning for a new museum so various points of view can be considered from the beginning. Working together, the various participants help guarantee a balanced approach.

Without the presence of the museum visitor in the design team, the owner's and museum director's concerns for operational efficiency, will focus attention on technology, resources, systems and cost rather than people.

In his discussion of The Museum as a Social Instrument, Theodore L. Low, former researcher for the American Association of Museums (AAM), states that "Museums must realize that as public institutions they have a duty to many more people than they are serving today and that every attempt must be made to expand the scope of their activities." (Coleman, 1939)

Researchers, involved with visitor-behavior studies have suggested a number of areas for further work. These can be stated as questions for museum directors, curators, designers and architects to answer, and include:

- Which galleries and exhibits do visitors miss most often and why? (Bechtel, 1977)

- How do windows and colors of walls and floors affect the use of space in a gallery?
- Why do some gallery spaces attract more visitors than others?
- Do warm colors increase visitor activity in gallery spaces while cool colors depress it?
- What does the museum visitor consider to be a comfortable social distance? (Borhegyi, 1963)
- What is the public's image of today's museums? (Cameron, 1967)
- What are the motivations underlying museum visiting?
- What paths do visitors usually take in the museum and why? (Cohen, 1974)
- Where should directional, orientation, and general information signs and maps be placed for optimal effectiveness?
- How do fatigued visitors structure their visit differently from the energetic visitor?
- Do visitors avoid some gallery spaces because of directional choices (i.e., left versus right hand turn)?

Museums in the United States are likely to grow, which will place increased demands on staff and facilities. To continue to meet the needs of museum visitors, it is important that architects and museum professionals evaluate visitor-behavior patterns that are influential in the shaping of museum environments and translate these into design implications.





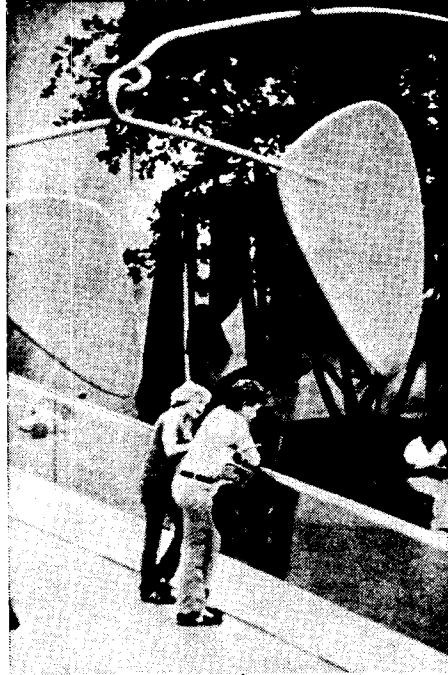
# THE MUSEUM AND ITS VISITORS: A LITERATURE REVIEW

# 2

A museum serves the community. It serves people who come once and people who come a dozen times a year, people who are students and people who come to while away a morning, people of eighty years old and people of ten years old. To communicate with the public, museum layout and exhibit design must be adaptive to the museum's diversified audience. The museum must seek ways of making their visits, as interesting as possible, giving visitors what they expect in return for their time and effort. Ideally, it should also seek to surprise and reward them.

To be able to design for the diversity of museum visitors, architects and designers should:

- Read available source materials on building-people interrelationships.
- Use expert consultants in the behavioral sciences, especially, those with experience in the museum/exhibitions field.
- Conduct their own research whenever possible.
- Carry out post-occupancy evaluations of their projects



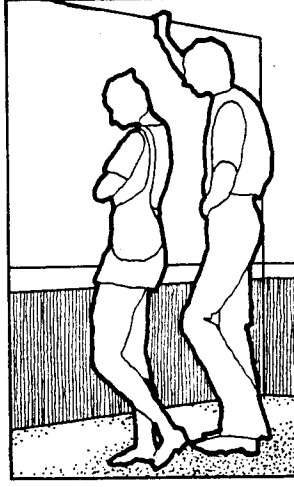
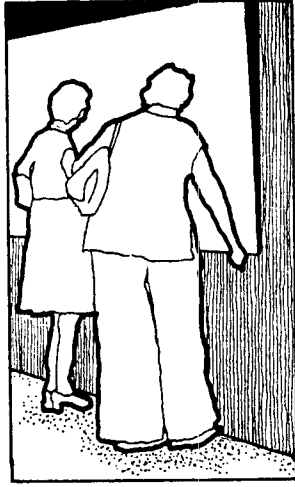
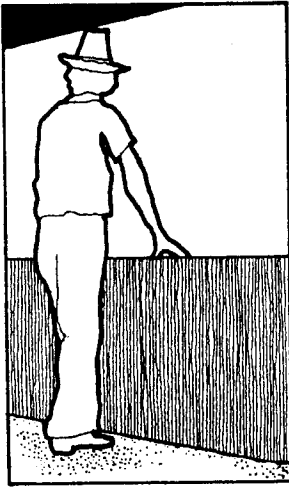
This chapter has been organized to present information relating to museum visitor characteristics and behavior. The chapter contains two major sections. In the first, museum visitor characteristics literature is reviewed; in the second, museum visitor behavior literature is reviewed.



## Summary of Visitor Characteristics

An essential part of museum administration is to regularly and systematically monitor the characteristics of people who come to see what it has to offer. Without this information, it is aiming blind in meeting the needs of its visitors. Museums, like most other organizations that provide goods and services for the public are anxious to know who is buying what they have to sell and whether their customers like what they are being offered. Monitoring visitors not only helps obtain information about the people who do come, but also about those who do not. Serious attempts to attract non-visitors

OBSERVATIONS OF MUSEUMS HAS SHOWN THAT THE DESIGNER MUST BE CONCERNED WITH ALL AGE GROUPS. THIS MAKES IT VERY IMPORTANT TO UNDERSTAND MUSEUM SETTINGS AND VISITOR BEHAVIOR PATTERNS FOR EACH AGE GROUP MAY DEMAND DIFFERENT DESIGN CONSIDERATIONS.(I.E., LIGHTING, COLOR, SCALE, LOCATION OF SEATING ETC.).



may demand quite different skills and techniques in museum layout and exhibit design from those that are apparently meeting the needs of the existing visitors.

Survey findings have shown that the vast majority (90 percent) of the nation's museum directors would like to have more people visit their museums. Consultants have suggested that efforts to attract different segments of the population have contributed to the development of new kinds of museums, resulting in new museum audiences and increased attendance. The effort in understanding the museum audience is a vital step which they feel should not be taken lightly. (American Association of Museums, 1968)

From a study of various surveys a few general conclusions can be drawn concerning the characteristics of the museum visitors. They are as follows:

- Most visitors are first time visitors and generally unfamiliar with museum surroundings.
- Attendance is usually self-motivated and surprisingly non-repetitive; for most people the first visit will also be the only visit.
- The audience to which the museum layout and exhibits must convey its message is a non-captive, heterogeneous, freely moving, hurried, or uninterested and, at best, voluntary seekers of information, often physically tired collection of people.
- Most visitors are accompanied by one other person or are alone. However, some visitors are: part of an organized group of family, friends, guided tour or school group. (Screven, 1976)

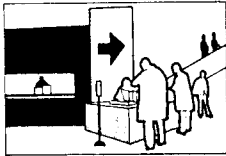

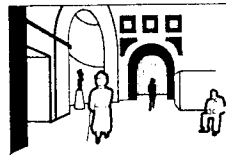
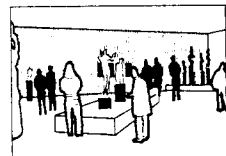

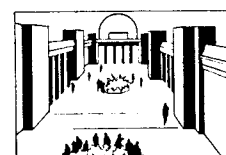
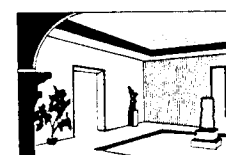
It is not only important to know who is coming to museums, but also to understand how visitors behave in existing museum environments. Having this insight, will enable architects and designers to provide more efficient and affective future museum environments.

## Summary of Visitor Behavior Literature

A critical look into visitor-behavior studies shows that researchers have been able to identify some critical performance and learning criteria for measuring the impact of museum spaces on museum visitors, as well as some key issues of significance for architects and designers. Each of the issues has a number of design implications, which will be discussed in Chapter III. The most relevant visitor-behavior issues include:

- **ORIENTATION**; orienting devices and techniques, both at entrance points and throughout the museum is absolutely essential if the museum is to ensure visitors comprehend and appreciate its goals and purposes as well as making them feel both physically and psychologically comfortable.
- **MUSEUM FATIGUE**; visitors will encounter a succession of experiences during the course of their visit which may bring on physical and mental fatigue. Museum fatigue is known to result from such factors as object saturation, disorientation, lack of contrast, as well as physical discomfort (i.e., noise, excessive heat, exhaustion).
- **ROUTE SELECTION**; it has been observed and documented that there are a number of factors which influence the route followed by the visitor (i.e., location of entrance and exit, length of route). Designing with this in mind, can decrease the chances of spaces and exhibits to go unnoticed.
- **TRAFFIC FLOW**; traffic flow is another aspect of circulation which must be considered, in order to ensure that the visitors can proceed with ease and at their own rate through the museum. The density of visitors in a given space can alter the effectiveness of communication with the public.
- **OBJECT AND GALLERY SATIATION**; a major factor in museum fatigue is object satiation (similarity of paintings or furniture as regards style, period, subject matter). The resulting decrease in interest can be controlled to some

THE CHART BELOW LISTS THE KEY VISITOR-BEHAVIOR ISSUES AND DESIGN CONSIDERATIONS FOR THE MUSEUM DIRECTOR AND ARCHITECT. THE ISSUES WERE OBTAINED THROUGH AN INTENSE LITERATURE SEARCH.

Key Visitor Behavior Issues and Design Considerations	
	<b>ORIENTATION</b> <input type="checkbox"/> Color <input type="checkbox"/> Texture <input type="checkbox"/> Circulation <input type="checkbox"/> Signage <input type="checkbox"/> Exterior Views <input type="checkbox"/> Landmarks <input type="checkbox"/> Proportion and scale <input type="checkbox"/>
	<b>MUSEUM FATIGUE</b> <input type="checkbox"/> Lounges <input type="checkbox"/> Seating <input type="checkbox"/> Orientation <input type="checkbox"/> Diversity and contrast <input type="checkbox"/> Physical discomforts <input type="checkbox"/> <input type="checkbox"/>
	<b>ROUTE SELECTION</b> <input type="checkbox"/> Length of path <input type="checkbox"/> Walking habits <input type="checkbox"/> Position of doors <input type="checkbox"/> Number " " <input type="checkbox"/> Gallery size <input type="checkbox"/> Path configuration <input type="checkbox"/> Landmarks <input type="checkbox"/>
	<b>TRAFFIC FLOW</b> <input type="checkbox"/> Display location <input type="checkbox"/> Seating " " <input type="checkbox"/> Corridor width <input type="checkbox"/> Control devices <input type="checkbox"/> <input type="checkbox"/>
	<b>OBJECT AND GALLERY SATIATION</b> <input type="checkbox"/> Diversity and contrast <input type="checkbox"/> Gallery size <input type="checkbox"/> Lounges <input type="checkbox"/> Lighting <input type="checkbox"/> Color <input type="checkbox"/> Exterior views <input type="checkbox"/> Interior " " <input type="checkbox"/>
	<b>RANGE OF MOVEMENT</b> <input type="checkbox"/> Color <input type="checkbox"/> Number of doors <input type="checkbox"/> Diversity <input type="checkbox"/> First floor galleries <input type="checkbox"/> Gallery entries <input type="checkbox"/> Right-hand wall <input type="checkbox"/> <input type="checkbox"/>
	<b>ATTENTION DISTRACTORS AND ATTRACTORS</b> <input type="checkbox"/> Gallery doors <input type="checkbox"/> Diversity <input type="checkbox"/> Walking distance <input type="checkbox"/> Windows <input type="checkbox"/> Backgrounds <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

extent by arranging exhibits to provide the greatest possible diversity. In the same way gallery satiation, resulting from insufficient contrast between adjacent galleries, can have a similar impact upon the viewer.

- RANGE OF MOVEMENT; the kind of behavior that takes place in museums is exploratory locomotion; that is, simply walking around and examining unfamiliar objects in a relatively unfamiliar place. Comparison's of visitor movement data shows that a number of variables (i.e., color, entrances and exits, walls), can influence the amount of area (square feet) covered.
- ATTENTION DISTRACTORS AND ATTRACTORS; the settings or surroundings of the exhibit are as important as the exhibit itself. Everything possible should be done to avoid conflict between the exhibit and its surrounding and enhance the ways in which museums can better communicate with their heterogeneous, transitory visitors.

( ●; definitions and descriptions of the issues came from the Communications Design Team of the Royal Ontario Museum, Toronto, Canada, 1976)

Following is a summary of each of these issues, based on literature review. The organization of this section is as follows;

- Overview of the studies.
- Primary conclusions; general principles have been consistently supported.
- Secondary conclusions; studies in this area is limited, need for further research.

ORIENTATION, Museum literature, both empirical and intuitive, emphasizes the need for museum orientation. Not only do museum visitors need to know where they are and where they are going, but also need assistance in making the best use of their limited time. In a study on visitor orientation by Cohen and Winkel (1977), it is stressed that the availability of a comprehensive orientation system is essential if museums are to ensure that visitors comprehend the goals and purposes of the museum. The absence of an integrated approach to visitor orientation may lead

to inefficient exploration of the exhibit halls with a resultant increase in frustration, boredom, and fatigue.

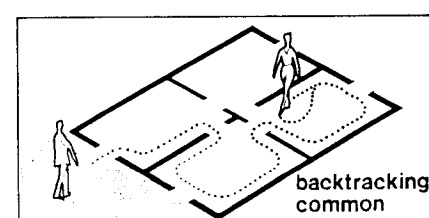
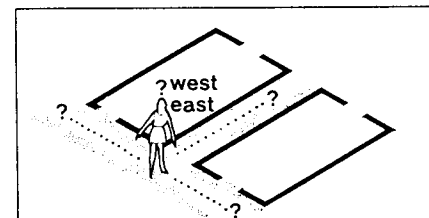
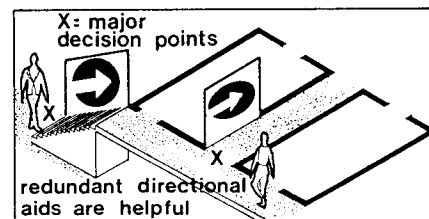
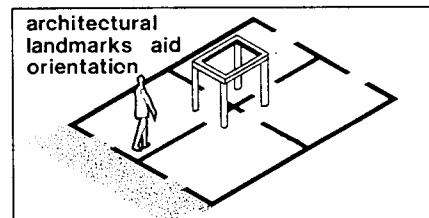
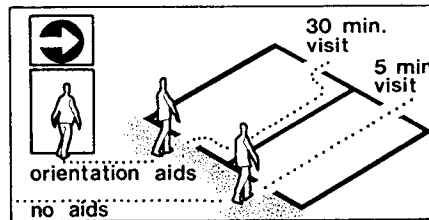
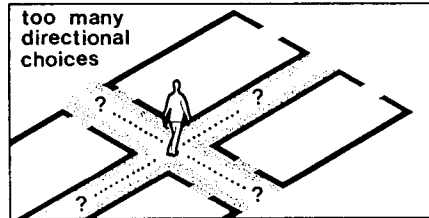
Cohen and Winkel (1977), point out that the design of an efficient and integrated orientation system demands clarification of the roles played by different devices in guiding the visitor through the museum. The study found that both maps and signs, in combination reduced the amount of disorientation and recommended the use of such integrated orientation systems. They found that maps were used to obtain an overall image of the area presented, while signs supplied specific directions.

While conducting visitor orientation studies at the National Museum of History and Technology, Smithsonian Institution, Cohen and Winkel (1977), saw the importance of linking information about the location of exhibits, other facilities (i.e., lounges, cafeteria, restrooms, etc.), the visitors themselves to salient cues provided by the architecture. For example, Lakota (1975), suggests that directional cues can be provided by color coding halls and using specific colors as back grounds for exhibit title signs at entrances. Parr (1964), concluded that if a museum has an architectural feature such as a multi-story interior court, this can become a landmark and orientation point. He noted, "because he returns to it again and again, on different levels and from different directions, the void amidst repetition becomes a redundant experience, helping the visitor to feel at ease in his surroundings."

Lakota (1975), has reported that visitors have an insatiable demand for orientating information, and concluded that many visitors feel more secure if there is redundancy in the informational system. Thus, an effective orientation scheme should allow for memory lapses by providing redundant cues at all major decision points in the museum (i.e., foyers, landings, corridor junctions, etc.).

Researchers involved with visitor orientation studies agree that it

### ORIENTATION FINDINGS



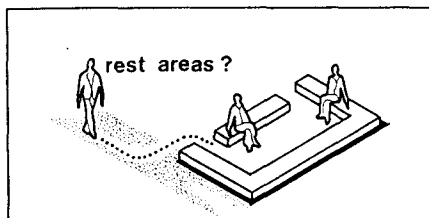
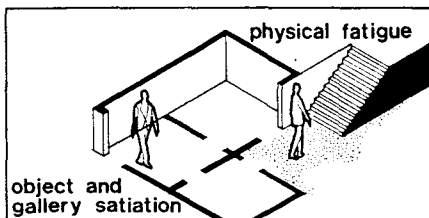
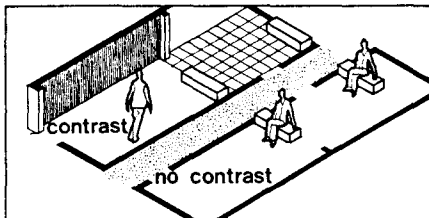
### Primary

- HAVING TO MAKE AN ABUNDANCE OF DIRECTIONAL CHOICES TIRES THE MUSEUM VISITOR. (PARR, 1964).
- VISITORS WHO USE HANDOUTS, READ DIRECTIONS, AND ASK GUARDS FOR ORIENTATION ASSISTANCE STAY LONGER THAN THOSE WHO DO NOT. (COHEN, 1955).
- THE UNDIRECTED VISITOR BECOMES BORED SOONER AND LEAVES THE MUSEUM SOONEST. (COHEN, 1955).
- INADEQUATE DIRECTORIES FOR GUIDANCE OF THE MUSEUM VISITOR IS ONE OF THE MAIN SOURCES OF MUSEUM FATIGUE. (PARR, 1964).
- ORIENTATING DEVICES COMMONLY INCLUDE MAPS AND FLOORPLANS, DIRECTORIES, SIGNS, INFORMATION STAFF AND SALIENT CUES, INTEGRATED INTO THE ARCHITECTURE (I.E., TWO-STORY CENTRAL COURT, A COLUMN, ETC.). (COHEN AND WINKEL, 1977).
- MUSEUM VISITORS NEED PHYSICAL ORIENTATION SYSTEMS (I.E., HOW TO GET TO A GALLERY OR EXHIBIT), AS WELL AS CONCEPTUAL ORIENTATION SYSTEMS (I.E., WHAT THERE IS TO SEE). (COHEN, 1955).
- MUSEUM VISITORS FIND REDUNDANT CUES AT MAJOR DECISION POINTS HELPFUL IN ORIENTATING THEMSELVES (I.E., FOYERS, LANDINGS, CORRIDOR JUNCTIONS, ETC.). (COHEN AND WINKEL, 1977).
- FEW MUSEUM VISITORS PROCEED SYSTEMATICALLY THROUGH THE MUSEUM FROM FLOOR ONE TO THREE. (COHEN, 1955).
- FEW MUSEUM VISITORS FOLLOW THE INTENDED SEQUENCE OF THE MUSEUM DESIGNERS, LEFT TO RIGHT. (PORTER, 1966).

### Secondary

- MOST VISITORS REPORT CONFUSION OVER DIRECTIONS WHILE INSIDE THE MUSEUM, SUCH AS EAST-WEST-NORTH-SOUTH. (COHEN, 1955).
- VISITORS WANT DIRECTIONAL SIGNS TO ASSIST THEM IN LOCATING REST AREAS, CAFETERIAS AND EXHIBITS WHICH ALLOW THEM TO SIT WHILE VIEWING IT. (COHEN, 1955).
- MOST MUSEUM VISITORS FIND MAPS AND PLANS HARD TO FOLLOW. (BEEKIE, 1950).
- MOST MUSEUM VISITORS BACKTRACK DURING THE COURSE OF THEIR VISIT. (COHEN, 1955).
- MUSEUM VISITORS USE MAPS FOR OBTAINING AN OVERALL IMAGE AND AREA ORIENTATION WHILE SIGNS ARE USED FOR SPECIFIC DIRECTIONS AND FINDING PATHS. (COHEN AND WINKEL, 1977).
- MUSEUM VISITORS FIND SIGNS TO BE MORE INFLUENTIAL THAN MAPS FOR ORIENTATION. (COHEN AND WINKEL, 1977).

## MUSEUM FATIGUE FINDINGS



### Primary

- A MAJOR FACTOR IN MUSEUM FATIGUE IS GALLERY SATIATION (INSUFFICIENT CONTRAST BETWEEN ADJACENT GALLERIES, ETC.) (MELTON, '35).
- A MAJOR FACTOR IN MUSEUM FATIGUE IS OBJECT SATIATION (SIMILARITY OF PAINTINGS OR FURNITURE AS REGARDS STYLE, PERIOD, SUBJECT MATTER ETC.) (MELTON, '35).
- DURING THE COURSE OF A VISIT AND AFTER A BRIEF WARMING UP PERIOD, MUSEUM VISITORS DISPLAYED A TENDENCY TO STOP BEFORE A PROGRESSIVELY SMALLER PERCENTAGE OF THE EXHIBITS ENCOUNTERED AND TO MAKE PROGRESSIVELY SHORTER STOPS. (BENNETT, '94).
- SATIATION IS A BIGGER FATIGUE PROBLEM THAN PHYSICAL BONE ACHING FATIGUE. (COHEN, '93).
- A NUMBER OF BODY POSITIONS CONTRIBUTE TO MUSEUM FATIGUE, I.E., BENDING, TWISTING, CROUCHING, STRETCHING, CLIMBING, LOOKING UP, ETC. (GILMAN, '93).
- VISITORS CONSISTENTLY USE AND INQUIRE ABOUT AREAS FOR RELAXATION, I.E., BENCHES, RESTROOMS, DRINKING FOUNTAINS, SMOKING AREAS, LOUNGES, ETC. (COHEN, '93).
- VISITORS REPORTED BEING BORED AND SPENT A LIMITED AMOUNT OF TIME IN THE MUSEUM DUE TO A LACK OF ORIENTATION. (COHEN, '93).
- WITHOUT A USEFUL SCHEME FOR VIEWING EXHIBIT HALLS, FRUSTRATION, BOREDOM, FATIGUE AND MISSED OPPORTUNITIES RESULT. (COHEN AND WINKEL, '93).

is the undirected visitor who gets bored first and leaves the museum soonest. From their studies a number of conclusions can be drawn concerning museum orientation systems:

**MUSEUM FATIGUE.** Regardless of the number of great works to be seen or the splendiddness of the presentation, visitors may still feel their attention and curiosity waning and may eventually begin to suffer from what museologists call "museum fatigue." Melton (1935), describes "museum fatigue" as a condition that is thought to occur late in the museum visit and that is characterized by a lowered responsiveness to the museum exhibits.

Studies conducted by Gilman (1916), Robinson (1928), Melton (1931), and Neal (1976) have shown that "museum fatigue" is a result of such factors as object satiation, disorientation, lack of contrast (e.g., in exhibit and gallery design and layout) and physical discomfort (e.g., excessive heat, exhaustion, and noise, etc.). These studies were based on direct observations of visitor behaviors such as leaning against conveniently blank walls, slower and shuffled walking, decreasing viewing time, an increasing number of skipped objects and exhibits.

The early studies of Robinson (1928), gave definite evidence for the reality of the decrement in the interest of visitors. In a study at the 69th street branch of the Pennsylvania Museum of Art Melto (1935), was able to determine the decrement in the interest of the visitors under nearly optimal experimental conditions and found that the time visitors spent before a painting once they had stopped decreased only very slightly during the museum visit, but the frequency with which visitors stopped before paintings exhibited a marked decrement. The visitors were looking at only two-thirds as many paintings at the end of their visits as they were at the beginning.

Gilman (1916), conducting studies at the Museum of Fine Arts in Boston was able to determine that museum fatigue does exist. Photographs were taken with the

object of determining by actual observation just what kinds and amount of muscular effort are demanded of the visitor who endeavors to see exhibits as museum authorities plan to have them seen.

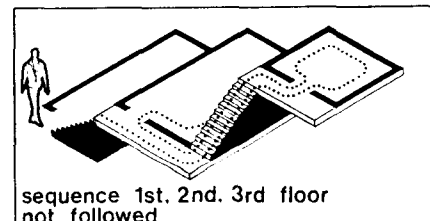
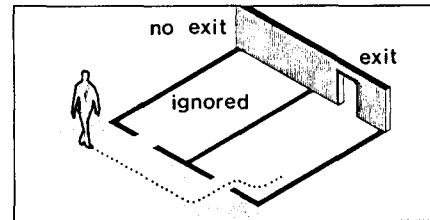
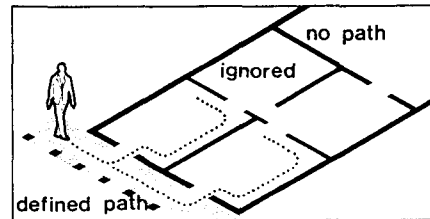
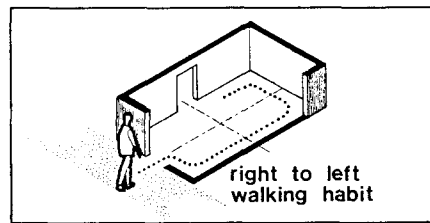
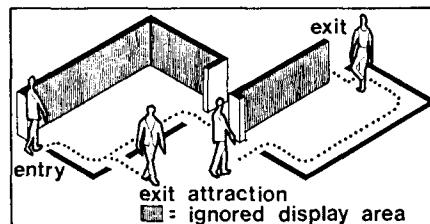
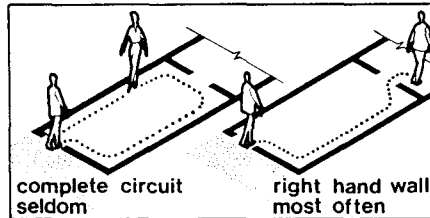
The pictures obtained indicated that an inordinate amount of physical effort is demanded of the ideal visitor by the present methods in which museums offer most objects for visitor inspection.

**ROUTE SELECTION.** Why do visitors select certain routes over others? Where is the best place to locate major exhibits and exhibition halls? Why do some exhibits and exhibition halls go unnoticed? These and similar questions have been investigated by a number of researchers and their findings and conclusions are presented in this section.

The first study conducted by Robinson involved several art museums. By following visitors around the museum Robinson (1928), noticed a general preference to turn to the right. He noted that, "we have recently been measuring the strength of the habit of walking to the right as it appears in museum behavior. We find this tendency to be so strong that left walls in long halls and galleries are markedly inferior to right hand walls as places of exhibition." Porter (1938), Weiss and Boutourline (1962), also noticed all other things being equal, more visitors will walk through galleries along the right hand wall.

Melton (1931), also working in art museums, confirms this observation. He also noted other factors which influence the route followed by the visitor. Objects located along the shortest route between the entrance and exit of a gallery receive the greatest amount of attention. He also noted what he terms "exit-attraction". Melton found that exhibits nearer the exit had less chance of being seen. Thus, the presence of the exit draws the visitor out of the hall so that he pays little attention to the last few exhibits. Melton found that experimenting with changes in exit location influenced visitor behavior.

### ROUTE SELECTION FINDINGS



#### Primary

- VISITORS WILL SELDOM MAKE A COMPLETE CIRCUIT OF THE GALLERY. THEY WILL GENERALLY VIEW ONLY THE RIGHT-HAND WALL REGION. (ROBINSON, '93).

- EXITS ARE ONE OF THE STRONGEST DEVICES FOR TERMINATING A ROUTE SELECTED BY VISITORS. (MELTON, '35).
- VISITORS TAKE THE SHORTEST ROUTE BETWEEN THE GALLERY ENTRANCE AND EXIT. (MELTON, '35).

- AFTER ENTERING A GALLERY MOST VISITORS WILL TURN TO THEIR RIGHT VIEWING EXHIBITS IN A COUNTER-CLOCKWISE SEQUENCE. (MELTON, '35).
- THE FACTORS WHICH INFLUENCE A VISITOR TO TURN RIGHT AFTER ENTRY INTO A GALLERY INCLUDE: POSITION OF THE EXIT DOOR; GUIDANCE DEVICES AT THE ENTRY (I.E., PHAMPLETS, PAINTED FOOTPRINTS ON THE FLOOR, SIGNS, ETC.); THE DISTANCE OF THE WALLS FROM THE VISITOR AT THE POINT OF ENTRY; THE OVERALL SIZE OF THE GALLERY AND WALKING HABITS FROM THE STREET. (YOSHIOKA, '342).

- FACTORS WHICH CAN SIGNIFICANTLY INFLUENCE THE PURSUIT OF A ROUTE INCLUDE: THE LOCATION OF ENTRANCES AND EXITS; THOSE PATHS WHICH ARE FAIRLY DIRECT FROM ENTRANCE TO EXIT BUT AT THE SAME TIME ALLOW SOME EXPLORATION; ATTRACTIVE EXHIBITS AND LANDMARKS; PATHS WHICH CAN GIVE THE SENSE OF "STREETS AND AVENUES" COMMUNICATED BY AISLE WIDTH AND REGULARITY. (WEISS AND BOUTOURLINE, '362)

#### Secondary

- VISITORS WILL NOT ENTER GALLERY SPACES WHICH DO NOT HAVE EXITS OR EXITS THAT ARE READILY VISIBLE. (PORTER, '33c).
- WHEN RETRACING STEPS IN GALLERIES VISITORS WILL GO DIRECTLY FROM DOOR TO DOOR. (ROBINSON, '93).
- MOST VISITORS WILL NOT PROCEED THROUGH THE MUSEUM SYSTEMATICALLY (I.E., FIRST FLOOR, SECOND FLOOR, THIRD FLOOR, ETC.). (COHEN, '33).

Porter (1938), working at the Peabody Museum of Natural History at Yale, concluded that the Hall of Invertebrates was receiving little attention, because it contained no visible exits. She noted that, "perhaps the fact that this hall does not lead into any other hall is also an important factor in preventing the casual visitor from traversing its length." Porter also found that the brief attention may have been influenced by the power of the "exit gradient". The main entrance hall with the stairway to the third floor may serve as an attraction greater than the exhibits in the Hall of Invertebrates.

Weiss and Boutourline (1962), followed visitors through the United States Science Pavilion, at the Seattle World's Fair and found an important determinant of paths taken through the pavilion is the location of the entrances and exits. They noted, "the most usual paths will be among those which permit some exploration of the hall, but which also represent a fairly direct route from the entrance to exit." Another factor important in determining the paths taken through the pavilion was the sense of "streets" and "avenues" which was communicated by aisle width and regularity. They also noted that the visitors were unwilling to go into areas where exits were not readily apparent.

Weiss and Boutourline also felt that "landmark exhibits" determined the path that a visitor followed. They feel that various qualities make an exhibit a "landmark exhibit". These may be beauty, curiosity value, educational value, or some quality of the exhibit itself which leads to an appreciation for it.

Finally Yoshioka (1942), studying visitor behavior in the Medicine and Public Health Building at the New York World's Fair in 1939, noted a tendency of visitors to leave by the first exit on their route. He stated that, "the decision of an individual to use this or that exit seems to depend upon the sufficiency of psychological satisfaction, determined by the degree of the exploratory tendency acquired by the time the particular exit is reached."



**TRAFFIC FLOW.** Traffic flow is another aspect of circulation which must be considered to ensure that visitors can proceed with ease and at their own rate through the museum. The density of people in a given space at a given time can affect the quality of communication aimed at visitors.

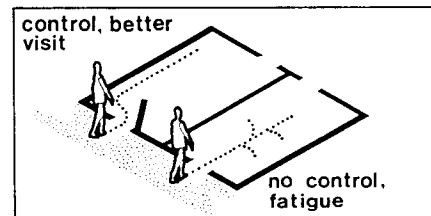
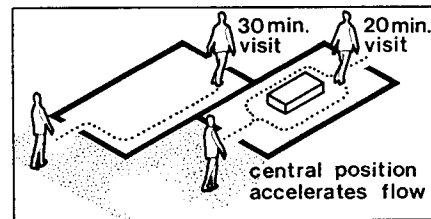
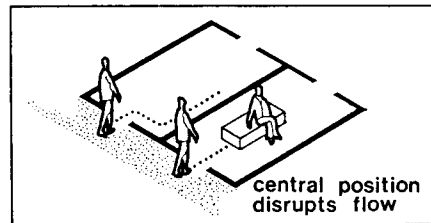
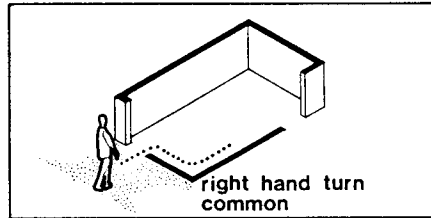
Most museums, large and small must deal with the special circulation problems of guided tour groups and large concentrations of visitors in front of one particular exhibit. Museum educators frequently mention the need for corridors and exhibit space of adequate width so that groups and individual visitors do not have to interfere with one another. To better control such crowding, the Historical Society Museum in Chicago, which has a large daily number of school groups, has a traffic coordinator who keeps track of where various groups are within the museum at any one time.

Yoshioka (1942), after conducting studies in the Medicine and Public Health Building, at the New York's World Fair 1939, concluded that the presence of other visitors will affect a visitor's behavior. He notes, "the crowding of so many persons into an exhibition hall creates quite a different situation from that found in most museums." The fixed behavior pattern of the right turn preference, noted by Robinson (1928), Melton (1931), and others might be present, but the large crowd probably causes new behavior patterns. Bechtel (1967), concluded, knowing that one is being watched leads to less time spent in a gallery and less use of an area.

Wright (1958), evaluating displays for museums of science and history, concluded that gallery spaces that control visitor circulation provide a better viewing environment and offer a less fatiguing experience than those without controls.

Borhegyi (1963), studied several Art Museums and found it is a mistake to group sculptures in the middle of the room and hang paintings along the wall. The traffic pattern is disrupted, and people mill around in confusion, bumping into one another. He

#### TRAFFIC FLOW FINDINGS



#### Primary

- TRAFFIC FLOW FROM RIGHT TO LEFT OCCURS MORE OFTEN THAN FROM LEFT TO RIGHT. (MELTON, 1931).

- GROUPING SCULPTURE, SEATING ETC. IN THE CENTER OF A GALLERY DISRUPTS TRAFFIC FLOW. (BORHEGYI, 1963).

- CENTRAL DISPLAY ISLANDS TEND TO ACCELERATE THE RATE OF FLOW. (LOKOTA, 1975).

#### Secondary

- GALLERY SPACES THAT CONTROL FLOW PROVIDE BETTER VIEWING ENVIRONMENTS THAN THOSE WITHOUT CONTROL. (WRIGHT, 1958).

notes, "people simply do not know how to approach the things in the middle of the gallery."

Borhegyi (1965), studying flow and crowd pressure at the Milwaukee Public Museum has noted that museum visitors almost invariably turn to the right when entering an exhibition hall. They follow the exhibit cases along the wall moving from right to left, reading labels in each display from left to right. This according to Borhegyi results in a slow and disrupted traffic flow and the visitors information retention factor is at a minimum.

Borhegyi also found that different areas in the galleries and exhibits should be designed for different types of crowd flow. He concluded, "areas of constant crowd flow (e.g., bends in corridors,) should have terse, repetitive exhibits, areas of crowd stoppage (e.g., entry), with easily digestible general exhibits and areas of variable crowd flow (e.g., middle of the gallery, alcoves out of the circulation path), allowing the visitor to make leisurely choices among simple and complex exhibits.

Bernardo (1972), points out that crowding is a factor which contributes to museum fatigue. He also notes, "the actual capacity of a museum to handle people efficiently is a function not of the area or volume of the museum building, but of the width of its corridors and aisles."

Lakota (1975), studying large numbers of people moving through museums noted that a constriction in the circulation path (e.g., a central display island), resulted in an accelerated rate of flow around it. He suggests, "visitor flow should be treated with great care, and that the visitor's pattern of movement should be determined by what the visitor wants to see rather than by the pressures of crowd flow."

**OBJECT AND GALLERY SATIATION.** Researchers have shown that a major factor in museum fatigue is object satiation (similarity of paintings or furniture as regards style, period, subject matter, etc.). They point out that the

resulting decrease in interest can be controlled to some extent by arranging exhibits to provide the greatest possible diversity. In the same way it can be assumed that gallery satiation, resulting from insufficient contrast between adjacent galleries, can have a similar impact upon the viewer.

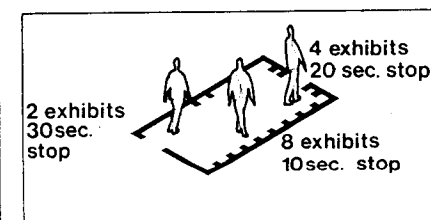
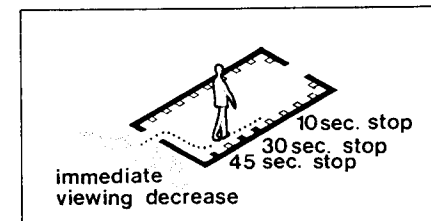
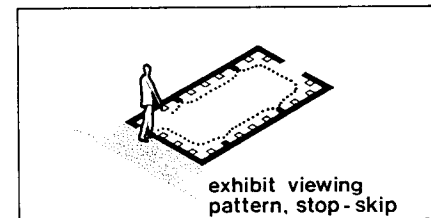
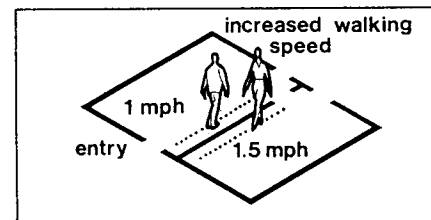
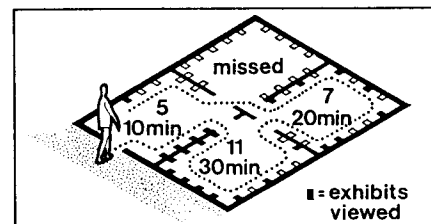
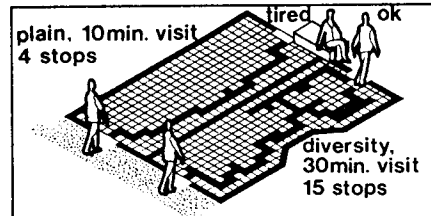
Porter (1938), studied the behavior of visitors in the Peabody Museum of Natural History at Yale University. She found that visitors stayed longer in the first hall entered than in any succeeding hall and that the speed of the visitors definitely increased in each hall until they reached the hall of Invertebrates. In this hall the number of feet traversed was so small in comparison with the other four halls that the time spent per foot was nearly doubled.

Porter discovered that in each of the halls preceding the Hall of Invertebrates there are peaks of interest wherever there is variation in the mode of display; for example, at the five lighted habitat cases the frequency of stops ranges from 21 to 32; whereas, at the cases of uniform size and arrangement the frequency of stops ranges from 0 to 10.

Learning experiments have shown that the more monotonous a stimulus becomes, the more the attention wanders, and that any change from the habitual tends to attract and hold attention. Melton (1931), found that on the average the attraction-value of paintings tended to decrease as the visitor progressed around the gallery from right to left. With this in mind Melton suggests that the objects shown in sections of the museum passed early in the visit should be selected with high receptiveness of the visitors at that time in mind, and the selection of the objects that are to be displayed in the sections of the museum passed late in the visit should likewise be in accordance with their receptivity.

Robinson (1931), observing visitors at the Buffalo Museum of Science found that the time they spent before a painting once they stopped decreased only very slightly during the museum visit,

### OBJECT AND GALLERY SATIATION FINDINGS



### Primary

- THE LACK OF DIVERSITY AND CONTRAST IN EXHIBIT AND GALLERY DESIGN (I.E., LIGHTING, CASE DESIGN, SPATIAL CONTRAST, ETC.), SHORTENS VIEWING TIME OF THE EXHIBITS AND AREA COVERED. (MELTON, 1931)
- THE LACK OF DIVERSITY AND CONTRAST CAUSES GREATER FATIGUE PROBLEMS THAN THE PHYSICAL EXERTION OF VIEWING EXHIBITS. (COHEN, 1975).
- VISITORS LOOK LESS LONG AND SKIP MORE EXHIBITS AND GALLERIES AS THE VISIT PROGRESSES. (ROBINSON, 1931).

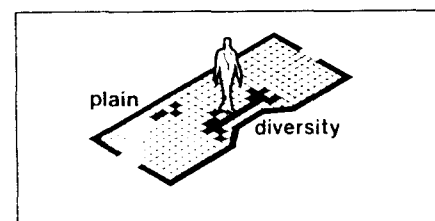
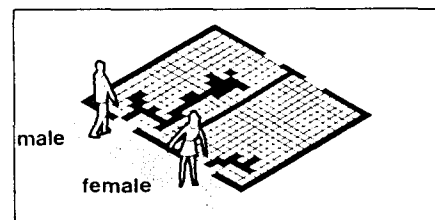
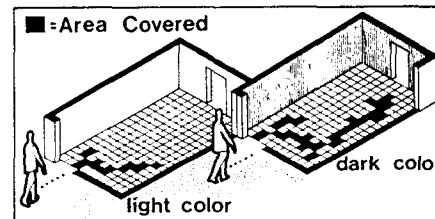
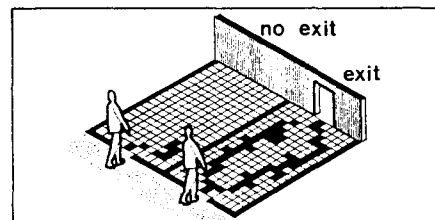
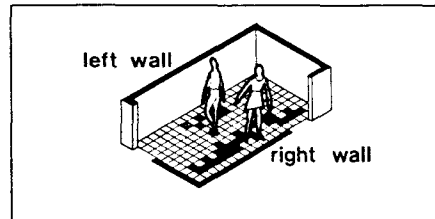
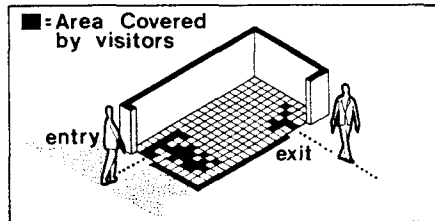
- VISITORS WALKING SPEED INCREASES AS THEY TOUR THE MUSEUM. (PORTER, 1938).
- VISITORS STAY LONGER WITHIN FIRST GALLERIES THAN IN SUCCEEDING EXHIBIT ROOMS. (PORTER, 1938).

- VISITORS DISTRIBUTE THEIR ATTENTION USUALLY PAUSING FOR BRIEF PERIODS TO LOOK AT INDIVIDUAL OBJECTS AND THEN SKIPPING SEVERAL INTERVENING EXHIBITS BEFORE STOPPING AGAIN. (BENNETT, 1941).

### Secondary

- THE AMOUNT OF TIME SPENT IN FRONT OF AN EXHIBIT AND THE NUMBER SEEN DECREASES IMMEDIATELY AFTER ENTRY TO THE MUSEUM. (MELTON, 1931).
- IN LARGE MUSEUMS THE LIKELIHOOD THAT A VISITOR WILL OBSERVE ANY GIVEN PICTURE IS LESS THAN IN SMALLER MUSEUMS. (BENNETT, 1941).
- THE MORE PICTURES SIMULTANEOUSLY DISPLAY PLAYED, THE SMALLER THE AVERAGE TIME SPENT IN LOOKING AT EACH PICTURE. (MELTON, 1931).

## RANGE OF MOVEMENT FINDINGS



### Primary

- VISITORS USE MORE AREA AROUND THE ENTRY OF GALLERY SPACES THAN AT EXITS. (MELTON, 1931).

- VISITORS USE MORE AREA ALONG RIGHT-HAND WALLS THAN LEFT-HAND WALLS OF THE GALLERY. (ROBINSON, 1928).

### Secondary

- VISITORS USE LESS AREA WHEN A GALLERY SPACE DOES NOT CONTAIN AN EXIT. (PORTER, 1938).

- VISITORS USE MORE AREA IN GALLERY SPACES WHICH USE DARK COLORS FOR WALL SURFACES, FLOORING AND CEILINGS THAN GALLERIES WHICH USE LIGHT COLORS. (BECHTEL, 1967).

- MALES COVER MORE GROUND THAN FEMALES ON A GIVEN VISIT. (BECHTEL, 1967).

- MALES TAKE MORE FOOTSTEPS IN GALLERIES THAN FEMALES. (BECHTEL, 1967).

- THE MOST MOVEMENT AND AREA COVERED OCCURS AROUND AREAS WHERE A MAXIMUM AMOUNT OF INFORMATION IS AVAILABLE. (MAGHEW, 1967).

but the frequency with which visitors stopped before paintings exhibited a marked decrement. The visitors were looking at only two-thirds as many paintings at the end of their visit as they were at the beginning. This decrement set in immediately after entry, thus decrement in the interest of the visitors must be taken into account anywhere in the museum.

Cohen (1974) concludes that satiation is a problem causing greater fatigue than the physical exertion of viewing exhibits.

**RANGE OF MOVEMENT.** The kind of behavior that takes place in museums is exploratory locomotion; that is, simply walking around and examining unfamiliar objects in a relatively unfamiliar place. Comparison's of visitor movement data shows that a number of variables (e.g., color of floors and walls, location of entrances and exits, etc.), can influence the amount of area (square feet) covered.

Melton (1931), and Porter (1938), have each found that certain areas of a museum are used more extensively than others; for example, first floor areas, areas around the gallery entries, areas with large amounts of information, right hand side of galleries and galleries with two or more doorways are used more extensively.

Niehoff (1949), obtained information about the amount of area used by visitors on each floor. He found, by asking visitors which floors they had visited, ninety-one per cent had visited the first floor, sixty-three per cent had visited the second, while forty-one per cent had reached the third floor.

Bechtel (1967), used a hometer to obtain exact movements and times within the floor space in an art gallery. This consisted of an electric floor grid system sensitive to visitors movement. He tested whether the same room with light wallpaper and rug will induce better use of the area than dark wallpaper and a dark rug. The study showed that

visitors tend to use more area in the dark colored room even though the amount of light was constant in both rooms. Bechtel also noted that men cover more ground on a given visit, have more footsteps recorded, and are a little slower than females. Bechtel also noted that men cover more ground on a given visit, have more footsteps recorded, and are a little slower than females. The time spent in the room was about the same for both males and females.

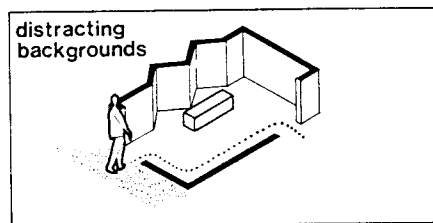
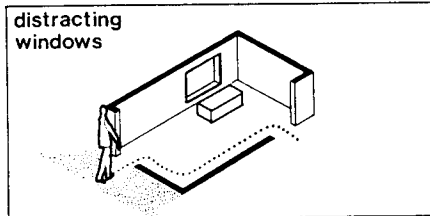
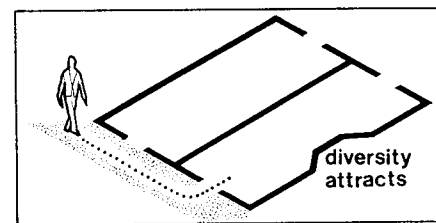
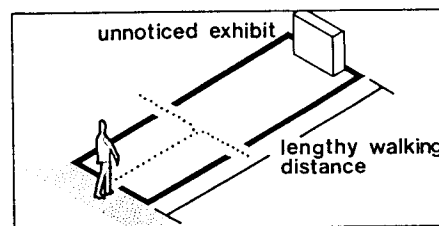
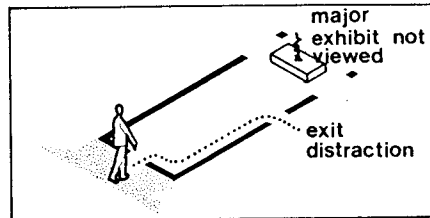
It was also discovered that knowing that one is being watched makes the visitor spend less time in the room, use less area, fewer footsteps and spread out their footsteps more evenly.

**ATTENTION DISTRACTORS AND ATTRACTORS.** The settings or surroundings of the exhibit are as important as the exhibit itself. Every thing possible should be done to avoid conflict between the exhibit and its surrounding and enhance the ways in which museums can better communicate with their heterogeneous, transitory visitors.

Melton (1931), analyzing exhibit installation at the Pennsylvania Museum of Art in Philadelphia and the Museum of Science and Industry in New York, learned that by the time some visitors reached the exhibit in question they were already growing fatigued and still others had their attention distracted from the exhibit by secondary characteristics of the gallery. For example, Melton cited doorways leading to other galleries as a prime distractor, a overly long walk to the exhibit and the visual conflict with nearby exhibits.

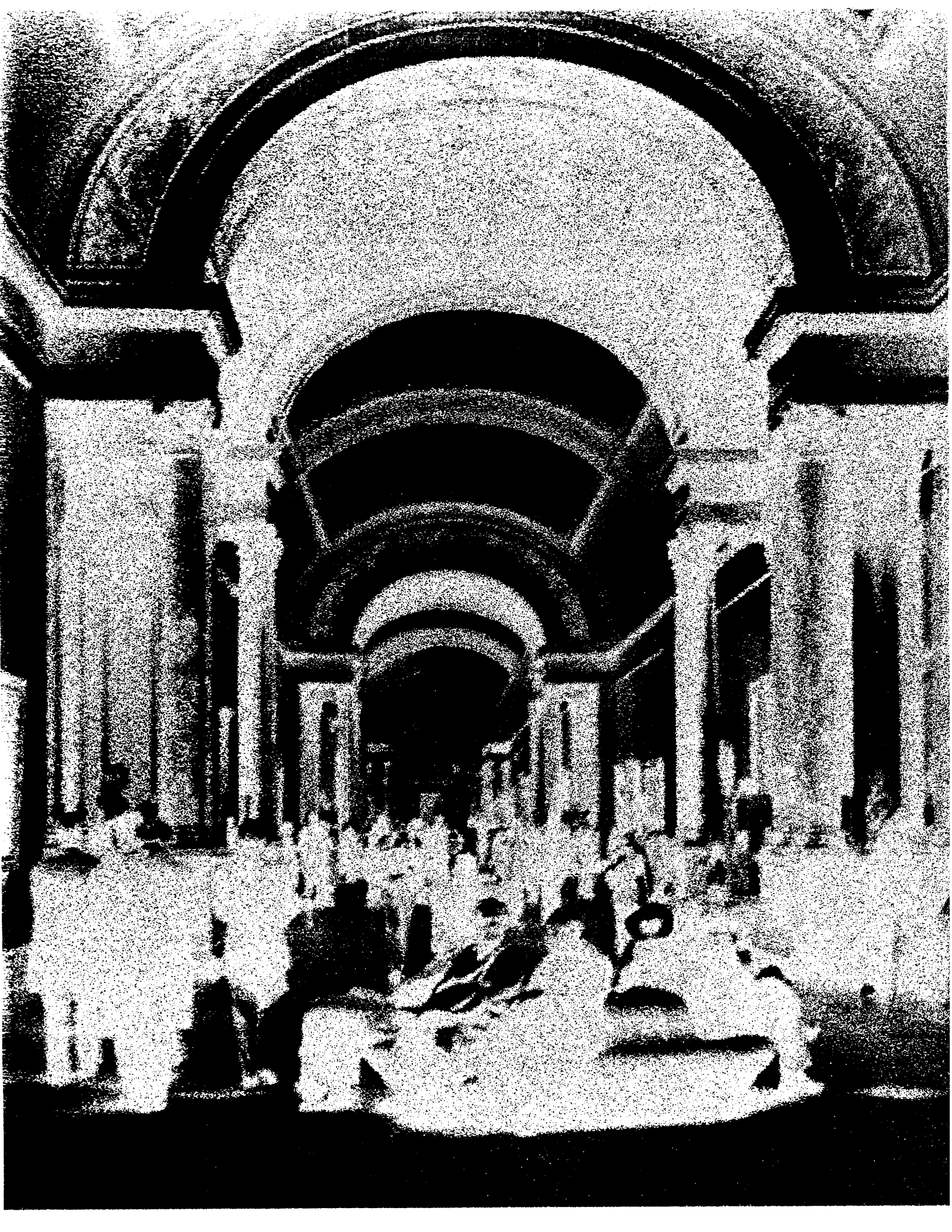
Porter (1938), and Calver (1939), suggest that windows in the field of view, discouraging vista's, distracting backgrounds (e.g., textured wallpaper, etc.), and gallery spaces with little diversity (e.g., lighting, color, exhibit case design, etc.), can distract visitors from viewing exhibits.

### ATTENTION DISTRACTORS AND ATTRACTORS. FINDINGS



#### Primary

- GALLERY DOORWAYS (PRIMARILY THE EXITS), DRAW VISITORS TOO THEM CAUSING EXHIBITS TO GO UNNOTICED. (MELTON, 1931).
- HAVING TO WALK A LENGTHY DISTANCE TO EXHIBITS DISCOURAGES VISITORS TO SEE IT. (MELTON, 1931).
- VISITORS PAY MORE ATTENTION TO UNUSUAL OR UNKNOWN ENVIRONMENTS. (NAHEMOV, 1972)
- THE MORE MONOTONOUS A GALLERY OR EXHIBIT IS THE MORE ATTENTION WANDERS. (PORTER, 1938).

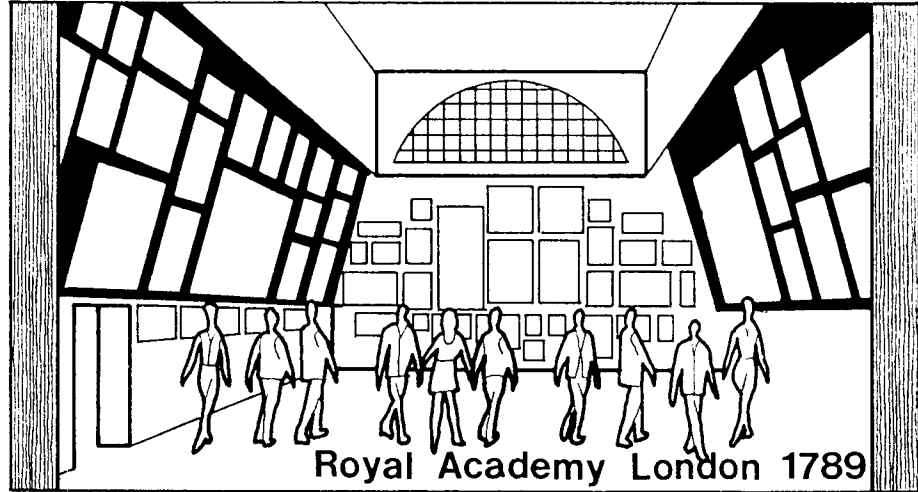


# PUBLIC SPACE DESIGN GUIDELINES

# 3

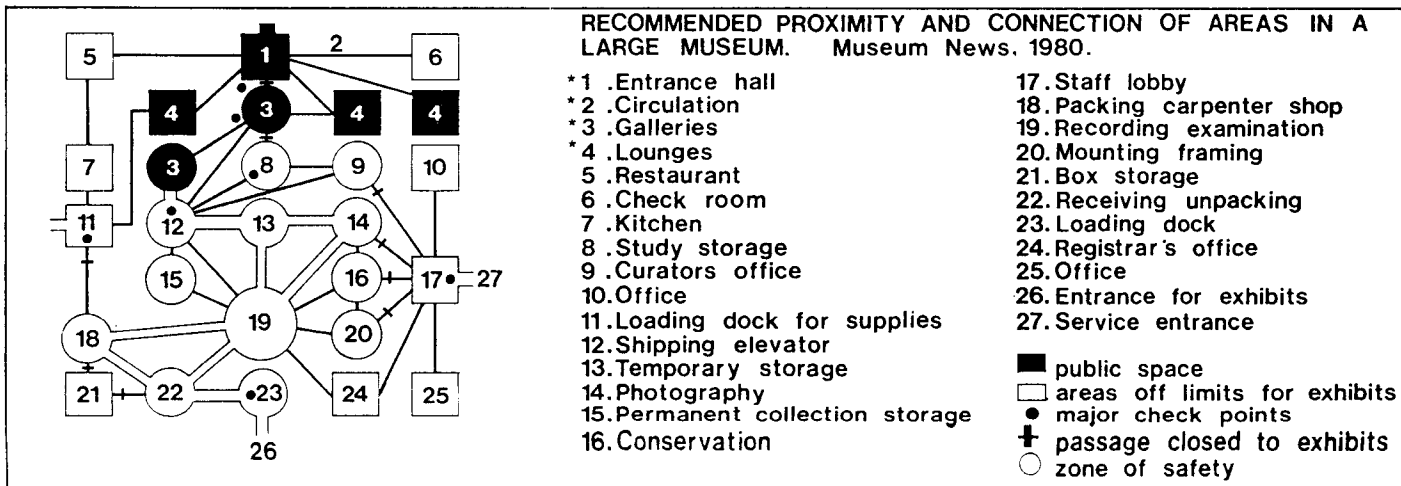
It became apparent after observing people tour the exhibit galleries and conducting interviews with museum directors, curators, and designers, that a museum environment is not neutral its quality and atmosphere directly affect those who visit it. Preliminary investigations of this nature, raised a number of questions concerning the impact of architectural components on the visitor's museum experience, in particular their learning experience. For example;

- Do different colors and light lighting devices affect the length of time spent viewing an exhibit?
- Are certain backgrounds more conducive for viewing exhibits (e.g., wallpaper, painted wall, etc.)?
- How often does the average visitor use rest areas, and when does fatigue set in?
- How do visitors decide what path to follow?
- Do visitors find maps, signs, or cues given by the architecture to be most helpful with orientation?
- Do visitors find diversity and contrast in gallery design and layout distracting?

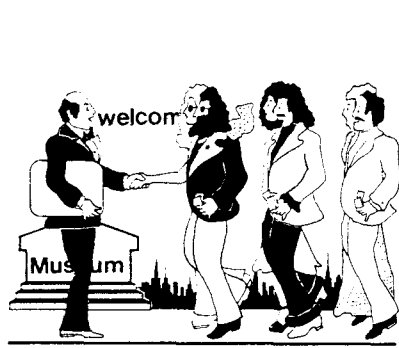


TOP- DESIGN OF PUBLIC MUSEUM SPACES HAS COME ALONG WAY FROM THE 16TH AND 17TH CENTURY STOREHOUSE TECHNIQUE. THEY CAN CONTINUE TO IMPROVE BY UNDERSTANDING DESIGN IMPLICATIONS BASED UPON VISITOR-BEHAVIOR STUDIES. BOTTOM- THE FOUR MAJOR PUBLIC MUSEUM SPACES DEALT WITH IN THIS CHAPTER INCLUDE; THE ENTRANCE HALL, CIRCULATION GALLERIES, AND LOUNGES. CHOICE OF THESE SPACES RESULTED FROM PERSONAL OBSERVATIONS OF MUSEUM ENVIRONMENTS, INTERVIEWS WITH MUSEUM DIRECTORS AND LITERATURE SEARCH.

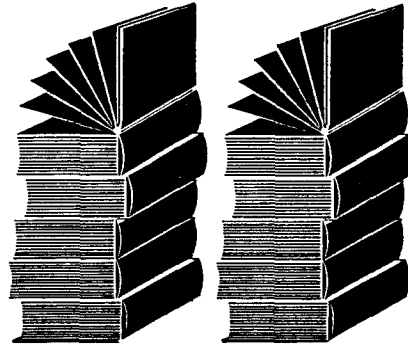
If future museums are to be recognized as institutions offering a public service and not as the 16th and 17th century notion; that museums were merely storehouses, than architects and the museum professional must begin to understand the components of the spaces that visitors will most likely come in touch with. For



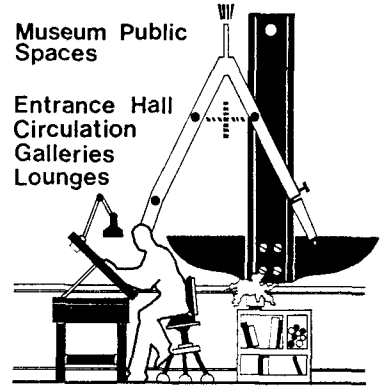
THREE STAGES OF ENVIRONMENT-BEHAVIOR STUDIES



MUSEUM VISITORS  
1



DESIGN GUIDES  
2



ARCHITECT  
3

TOP- THE STEPS OF DESIGN GUIDES. BOTTOM- ALTHOUGH THERE HAVE BEEN NUMERIOUS VISITOR-BEHAVIOR STUDIES, THEY HAVE BEEN CONDUCTED IN DIFFERENT AREAS. THE CHART BELOW GIVES AN ESTIMATE ON THE PERCENTAGE OF STUDIES CONDUCTED IN EACH OF THE FOUR MAJOR PUBLIC SPACES.

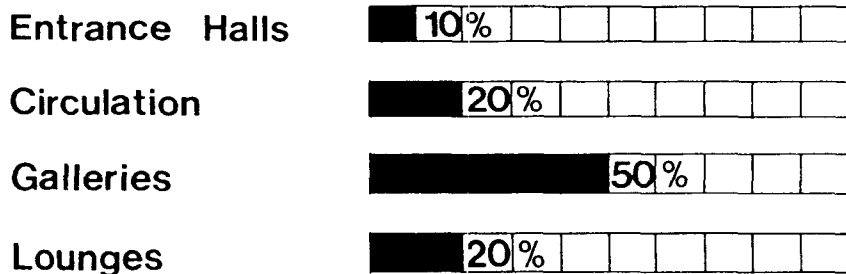
this reason I undertook a study concerned with the experience of the general public in the major public spaces of the museum (e.g. entrance hall, circulation paths, galleries, and lounges). It should also be noted that most research on museum environments has focused on the behavior of the museum visitor. Little research has been completed on the semi-public and private spaces of the museum (e.g. offices, library, storage, etc.).

The purpose of Chapter III is to present a listing of the key behavioral issues of museum's public spaces, as identified in earlier chapters, then to translate these issues into performance-based design guidelines that can be used during the design process. Application of these guidelines will hopefully assist museums in providing a more useful public service and will help attract and communicate with visitors by making the museum experience both pleasant and interesting.

Chapter III is divided into four sections, with each section composed of the following elements:

- Discussion of major design issues.
- The type of museums most likely to be affected, such as art, history or science.
- The quality of research data relative to the issue, such as whether evidence is from repeated studies with similar results, one study with good results, or a study with weak correlations.
- Major design recommendations.

PERCENTAGE OF VISITOR BEHAVIOR STUDIES CONDUCTED ON EACH SPACE TYPE.





The four sections are as follows.

ENTRANCE HALLS

- Locating the information booth and bookstore.

CIRCULATION

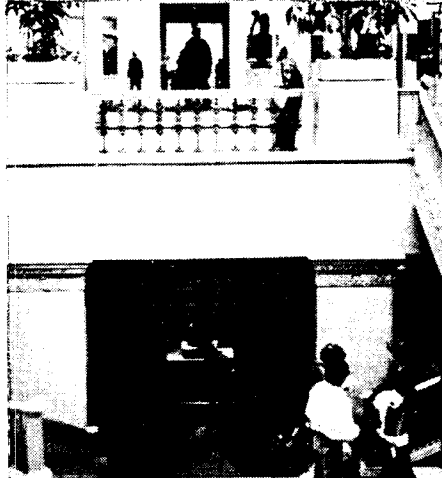
- Assisting with orientation.

GALLERIES

- Doorways; the number and position.
- Hall locations.
- Diversity and gallery design.

LOUNGES

- Interior design.
- Size, location, and frequency



### Entrance Halls

Good management of visitors in a public museum requires a well arranged entrance hall. Care should be given to planning this space as well as certain rooms connected with it (e.g., security room, cloakroom, gift shop, book store, restrooms, utility room for wheel chairs and children's push carts, information desk, lounge/waiting area, stairways, escalators, and elevators etc.).

Entrance halls are museum service zones serving a variety of needs, including a place for coats and packages to be left, where post-cards, guidebooks and reproductions are bought, notices are displayed, directions given, friends are met and parties assembled, and where security checks can be carried out. In order to serve all of the stated functions the entrance hall must be fairly spacious.



It is important for the entrance hall to be attractive for first and last impressions of the institution will be made on its characteristics.

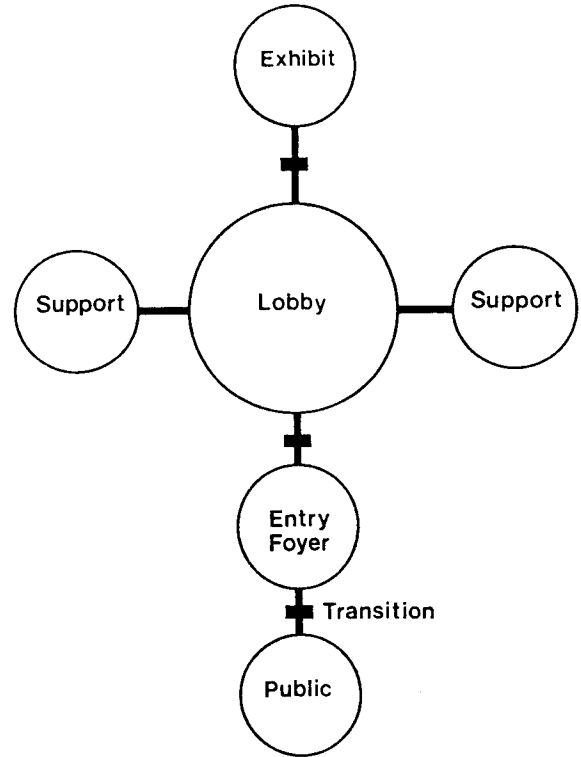


TOP - A PHOTOGRAPHIC STUDY OF VISITOR-BEHAVIOR IN MUSEUM ENTRANCE HALLS, LEFT TO RIGHT, PHOTO'S 1-3, CHICAGO'S ART INSTITUTE, PHOTO'S 4-5, MILWAUKEE'S PUBLIC MUSEUM. OPPOSITE PAGE - GENERAL INFORMATION ON ENTRANCE HALLS, INFORMATION FROM AUTHOR'S OBSERVATIONS, AIA/INTERN WASHINGTON, D.C., 1981

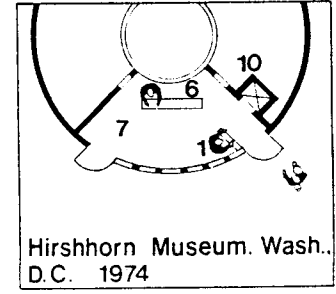
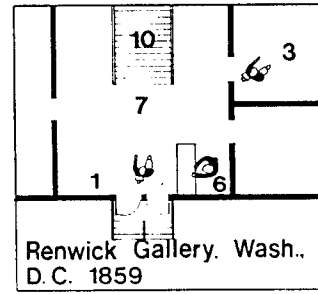
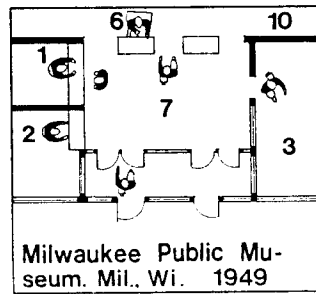
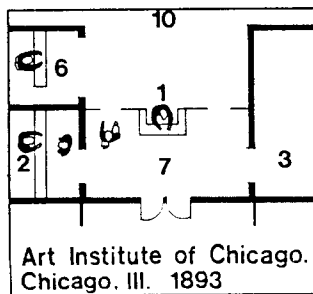
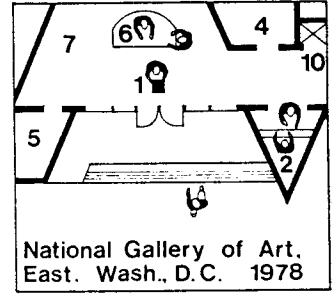
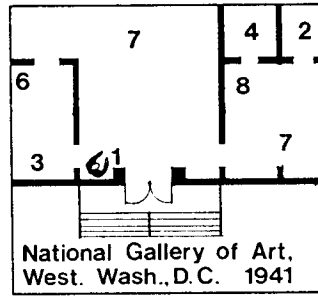
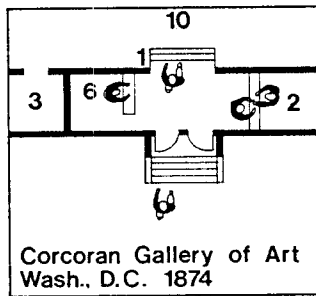
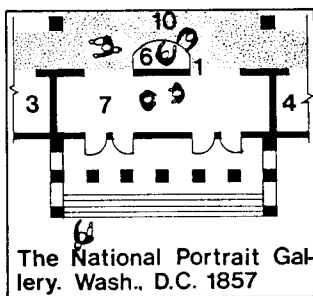
**MOST COMMON ENTRY SPACES**

- |   |   |
|---|---|
|  1. Security   |  6. Information      |
|  2. Coat Check |  7. Waiting Area     |
|  3. Bookstore  |  8. Amenities        |
|  4. Restrooms |  9. Smoking Area    |
|  5. Storage  |  10. People movers |

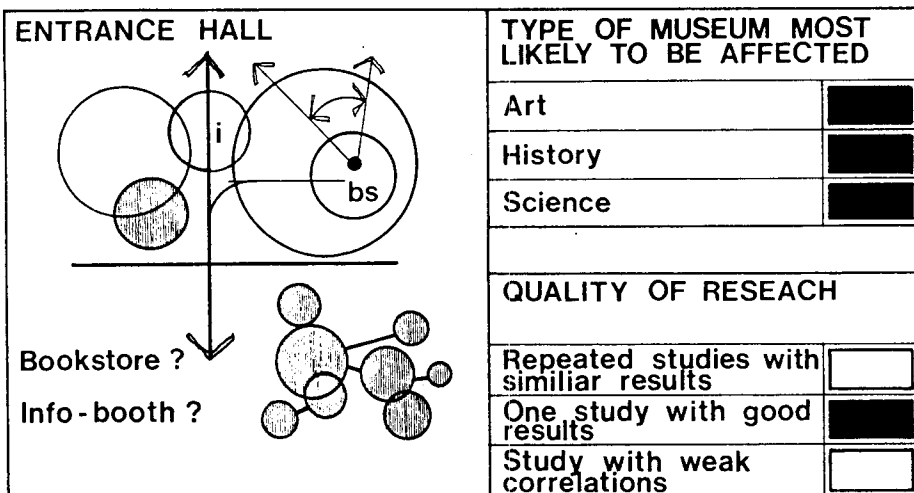
**ENTRY SEQUENCE SPACE RELATIONSHIPS**



**ENTRANCE HALL CASE STUDIES**



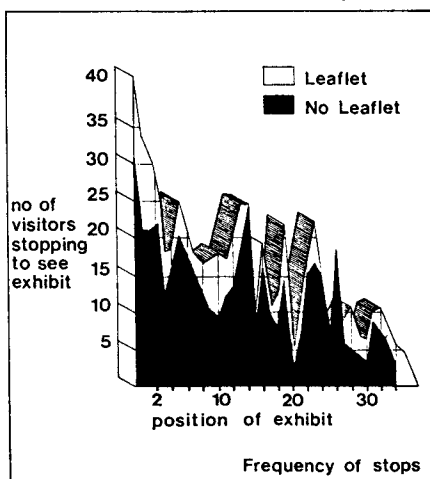
NOTE - Information from authors observations, AIA/RC intern project, 1981



ENTRANCE HALLS - LOCATING THE INFORMATION BOOTH, BOOKSTORE AND GIFTSHOP.

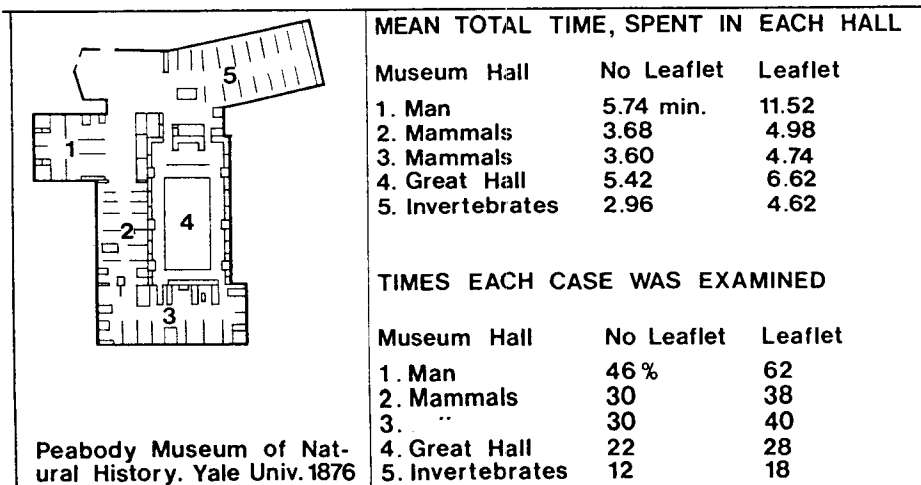
**ISSUE:**

BECAUSE THE GUIDANCE PAMPHLETS, BOOKS AND MAPS FOUND IN INFORMATION BOOTHS, BOOKSTORES AND GIFTSHOPS HAVE THE CAPACITY TO ASSIST WITH ORIENTATION, REDUCING FATIGUE AND EXHIBIT SELECTION, A SPECIAL EFFORT SHOULD BE MADE TO ENCOURAGE VISITORS TO USE THESE AMENITIES.



**JUSTIFICATION:**

Robinson (1931), Porter (1938), Mason (1936) and Cohen (1973), interested in assisting the casual or first-time visitor who will be unfamiliar with the museum's layout and content, have shown that people who are provided with some form of itinerary, be it a hand-out, leaflet, guidance pamphlet with maps and pictures of feature exhibits, or books, stay longer in museums see more exhibits, see the exhibits that interested them the most, and cover more area with less fatigue. The aids help reduce total confusion, fear of strange surroundings, and fatigue and can provide a museum visitor with an idea of how to approach the museum according to their interests.

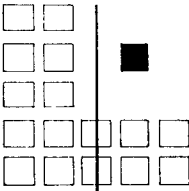
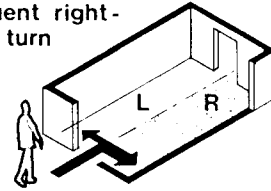
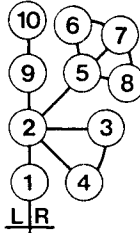
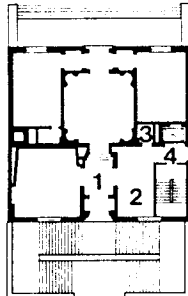


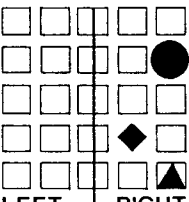

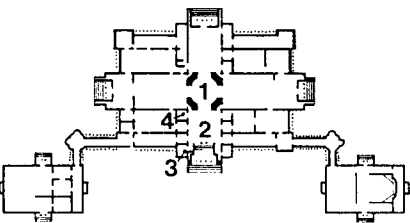
According to Cohen (1973), visitors without itineraries will wander through the museum in a relatively unpremeditated fashion, walking until they find an exhibit of interest to them. This, can result in a fatiguing and frustrating process. Using a post-museum visit questionnaire at the National Museum of History and Technology, Washington D.C., Cohen found evidence showing that the undirected visitor gets bored first and leaves the museum soonest.

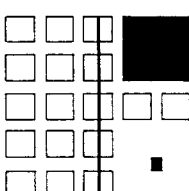
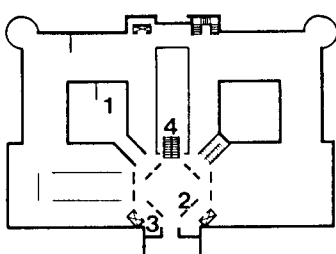
**DESIGN RECOMMENDATIONS:**

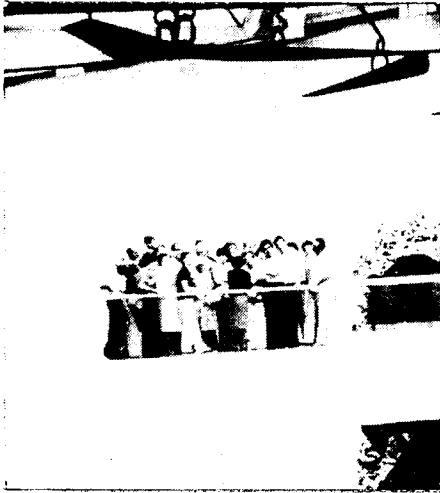
- For a space to be articulated as being of special importance or significance, it should be visibly unique. This can be achieved through the use of exceptional size, a unique shape or a strategic location.
- The strategic placement of spaces calls attention to them. Placement can make them as being the important elements in a composition. Although not conclusive, studies indicate that visitors bring with them a street habit of turning to the right upon entry into a space. Thus other things being equal, the location likely to have the heaviest traffic would be to the right of center.
- Spaces can be made visually dominant (and thus important) if their shapes are clearly different from the shapes of other elements in the composition.

- A space which is significantly larger than the other elements around it may dominant an architectural composition.

 <p>LEFT   RIGHT</p> <p><b>RIGHT OF ENTRY BEST LOCATION FOR INFORMATION BOOTH, BOOKSTORE AND GIFTSHOP.</b></p>	<p><b>Frequent right-hand turn</b></p>  <p><b>Space Relation</b></p> <ol style="list-style-type: none"> <li>1. Entry</li> <li>2. Lobby</li> <li>3. Bookstore</li> <li>4. Information</li> <li>5. Waiting area</li> <li>6. Coat check</li> <li>7. Storage</li> <li>8. Restrooms</li> <li>9. Security</li> <li>10. Exhibits</li> </ol>  <p>L   R main access</p>	 <p><b>Art Museum Wichita Kan. 1935</b></p> <ol style="list-style-type: none"> <li>1. Lobby</li> <li>2. Info-bookstore</li> <li>3. Coat check</li> <li>4. Restrooms</li> </ol>
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 <p>LEFT   RIGHT</p> <p><b>DRAWING AT- TENTION BY SHAPE</b></p>	<p><b>Primary Shapes</b></p> 	 <p><b>Museum of Science and Industry. Chicago, Illinois 1933</b></p> <ol style="list-style-type: none"> <li>1. Bookstore</li> <li>2. Information</li> <li>3. Coat check</li> <li>4. People mover</li> </ol>
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 <p>LEFT   RIGHT</p> <p><b>DRAWING ATTEN- TION BY SIZE</b></p>	 <p><b>National Museum of Natural History. Wash., D. C. 1911</b></p> <ol style="list-style-type: none"> <li>1. Bookstore</li> <li>2. Information</li> <li>3. Coat Check</li> <li>4. People Mover</li> </ol>
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## Circulation

In planning the museum the architect should devote primary attention to the problem of circulation. Circulation spaces form an integral part of any building organization, and occupy a significant amount of space within the museum's volume. The visitor should be led into the museum and through it naturally and easily without feeling that they are in a maze and without being interrupted. There should be continuous controlled circulation, at least through each main division of the museum, so that the director and his staff may arrange the material in each of these divisions to be seen in an orderly and intelligent sequence.

The form and scale of a circulation space, must accommodate the movement of people, give orientation assistance and allow visitors to arrive at the desired galleries as directly as possible, or to select along the route those galleries the visitors chooses to see. Thus, the question of circulation must be studied attentively, so that the arrangement and the itinerary will be clear not only to anyone looking at the ground plan of the museum, but also to anyone walking through the rooms.

A variety of types of circulation systems are used in museums offering different possibilities for crowd control and surveillance. The most common systems are the straight, linear, open, chain, comb, fan, and spiral paths. Research has shown that confusion arising from poorly thought-out circulation systems creates significant stress for the museum visitor.

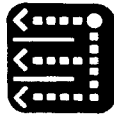
TOP- A PHOTOGRAPHIC STUDY OF VISITOR-BEHAVIOR IN MUSEUM CIRCULATION SPACES. LEFT TO RIGHT, PHOTO 1, NATIONAL GALLERY-EAST, WASH., D.C., PHOTO 2, CHICAGO'S ART INSTITUTE, PHOTO 3, THE LOUVRE, PARIS, FRANCE. PHOTO'S 4-5, VERSAILLES MUSEUM, FRANCE. OPPOSITE PAGE- GENERAL INFORMATION ON CIRCULATION. INFORMATION FROM AUTHOR'S OBSERVATIONS, DURING AIA/INTERNSHIP, WASH., D.C..

**MOST COMMON CIRCULATION PATTERNS**



**1. Straight**

1.1.1. A STRAIGHT CIRCULATORY SYSTEM, THE TRAFFIC FLOW IS DICTATED BY THE INTERIOR SPACES, WITH ENTRANCE AT ONE END AND EXIT AT THE OTHER. THE CIRCULATION PATTERN IS ONE OF THE LINEAR FORMS OF THE CIRCULATION VARIATIONS OF THAT FORM.



**6. Branch, Gallery-Lobby**

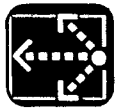


**2. Linear**

1.1.2. CIRCULATION IS DICTATED BY DESIGNED DESIGN OF THE BUILDING. VISITORS COMMONLY USE THE SAME ENTRY EXIT. THE USER TRAVELS THROUGH A CONTINUOUS LINE OF TRAVEL, NOT NECESSARILY ON THE SAME PLANE.

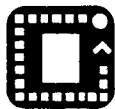


**7. Branch, Linear**



**3. Open**

1.1.3. THE DESIGNER HAS NOT INCLUDED PERMANENT DISPLAY WALLS INSIDE THE GALLERY SHELL. INDIVIDUAL EXHIBIT DESIGNERS DETERMINE THE PLACEMENT OF EXHIBITS. THE DISPLAY AND CIRCULATION ELEMENTS ARE ONE ENTITY. ANY EXHIBIT SPACES OF THIS TYPE TEND TO BE SYMMETRICAL. ENTRY WAYS ARE NOT DESIGNED TO IMPLY ANY DIRECTION OF TRAVEL.



**4. Loop**

1.1.4. PERMANENT PARTITIONS BECOME MORE DOMINANT IN THE DESIGN. ROOMS AND SPACES ARE Juxtaposed INTO ZONES WHICH LEAD THE VIEWER AROUND SOME CENTRAL ENTITY SUCH AS COURTYARDS, DRIVEWAYS AND OFFICE GROUPINGS. ENTRANCE AND EXITS ARE THE SAME PLACE.



**5. Branch, Lobby-Foyer**

1.1.5. A TYPE OF CIRCULATION SYSTEM WHICH HAS A CENTRAL AREA FROM WHICH IT IS AN APPROPRIATE AREA FOR EXHIBIT MATERIAL. THERE IS NO VISUALLY IMPLIED CIRCULATION.

**KEY CIRCULATION DESIGN CONSIDERATIONS FOUND IN MUSEUM SURVEY**

Repeating orientation cues

Variation in path widths, primary and secondary routes

Large landmarks and focal points

Centrally located people movers

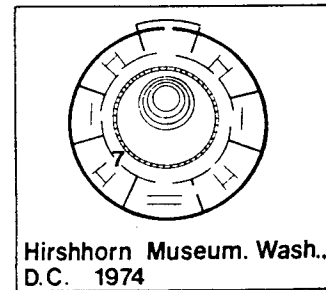
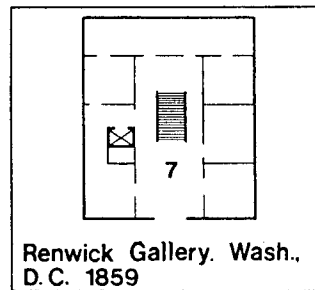
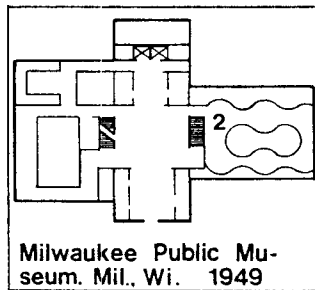
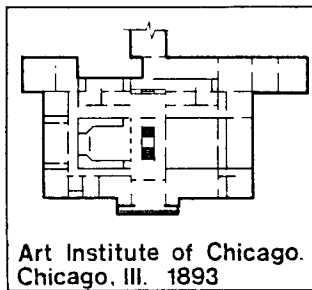
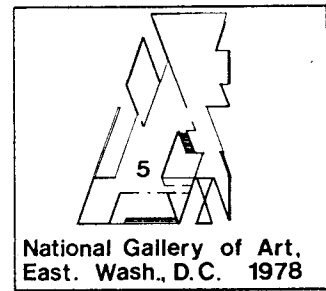
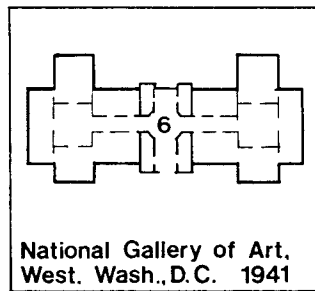
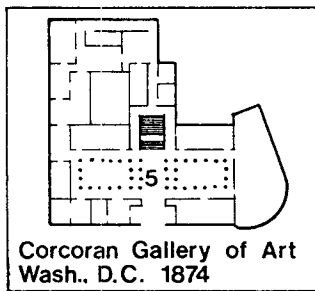
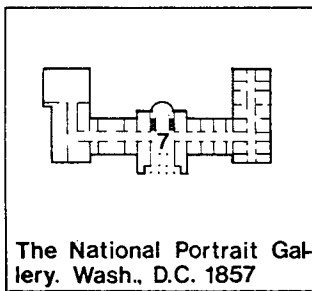
Easy traffic flow

Lighting different than other spaces

Textures different than other spaces

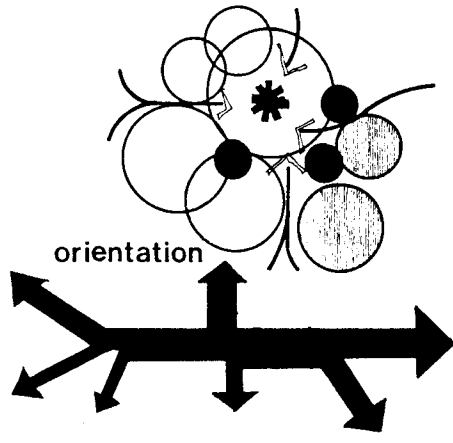
Unobstructed sight lines

**CIRCULATION CASE STUDIES**



NOTE-Information from authors observations, AIA/RC intern project. 1981

**CIRCULATION**



**TYPE OF MUSEUM MOST LIKELY TO BE AFFECTED**

Art	<input checked="" type="checkbox"/>
History	<input checked="" type="checkbox"/>
Science	<input checked="" type="checkbox"/>

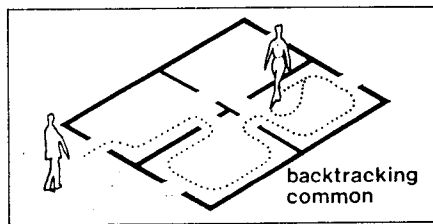
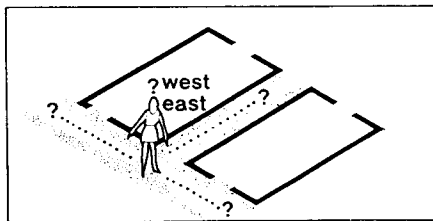
**QUALITY OF RESEARCH**

Repeated studies with similar results	<input checked="" type="checkbox"/>
One study with good results	<input type="checkbox"/>
Study with weak correlations	<input type="checkbox"/>

**CIRCULATION - ASSISTING WITH ORIENTATION.**

**ISSUE:**

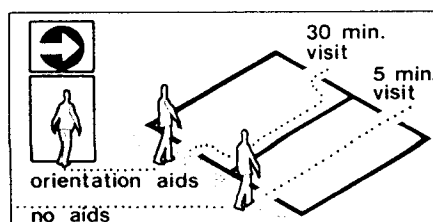
CIRCULATION AND ORIENTATION INCLUDING SPATIAL CUES ARE INTERDEPENDENT. THUS, THEIR IMPACT ON VISITORS AS THEY MOVE THROUGH MUSEUMS MUST BE CONSIDERED SIMULTANEOUSLY. OTHERWISE, THE RESULTING CONFUSION FROM POORLY THOUGHT-OUT CIRCULATION SYSTEMS AND INADEQUATE SPATIAL CUES MAY BECOME A MAJOR SOURCE OF MUSEUM FATIGUE. TO COMBAT STRESS AND CONFUSION, VISITORS NEED A STRONG MEMORABLE ORIENTING SYSTEM.



- MOST VISITORS REPORT CONFUSION OVER DIRECTIONS WHILE INSIDE THE MUSEUM, SUCH AS EAST, WEST-NORTH, SOUTH. COHEN, 93.
- VISITORS WANT DIRECTIONAL SIGNS TO ASSIST THEM IN LOCATING REST AREAS, CAFETERIAS AND EXHIBITS WHICH ALLOW THEM TO SIT WHILE VIEWING IT. COHEN, 93.
- MOST MUSEUM VISITORS FIND MAPS AND PLANS HARD TO FOLLOW. FEEKIE, 93.
- MOST MUSEUM VISITORS BACKTRACK DURING THE COURSE OF THEIR VISIT. COHEN, 93.
- MUSEUM VISITORS USE MAPS FOR OBTAINING AN OVERALL IMAGE AND AREA ORIENTATION WHILE SIGNS ARE USED FOR SPECIFIC DIRECTIONS AND FINE-TUNING PATHS. COHEN AND FEEKIE.
- MUSEUM VISITORS FIND SIGNS TO BE MORE INFLUENTIAL THAN MAPS FOR ORIENTATION. COHEN AND FEEKIE.

**JUSTIFICATION:**

The importance of the circulation system in a museum is to assist visitors with orientation. Most visitors are not part of a group tour, so a deliberate effort must be made to ensure that casual visitors are warmly greeted and assisted in finding their way through the museum. Good orientation and circulation systems are important, not only in helping visitors to be comfortable but in assisting the visitor to learn. Although there has not been a great deal of research conducted on circulation and orientation there is some evidence that fatigue arising from the confusions of poor orientation can reduce the time spent in the museum and the number of exhibits seen.



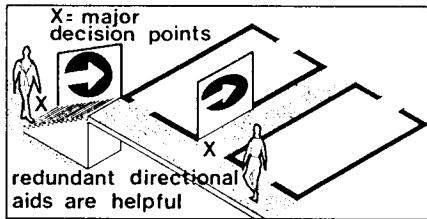
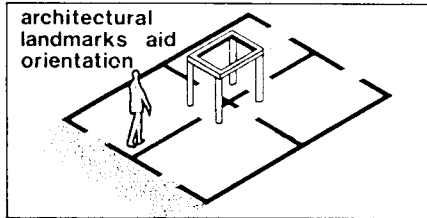
- VISITORS WHO USE HANDOUTS, READ DIRECTIONS, AND ASK GUARDS FOR ORIENTATION ASSISTANCE, STAY LONGER THAN THOSE WHO DO NOT. COHEN, 93.
- THE UNDIRECTED VISITOR BECOMES BORED SOONER AND LEAVES THE MUSEUM SOONER. COHEN, 93.
- INADEQUATE DIRECTORIES FOR GUIDANCE OF THE MUSEUM VISITOR IS ONE OF THE MAIN SOURCES OF MUSEUM FATIGUE. PARR, 94.

The studies of Cohen (1977), are the most recent in this area and support the above conclusions. Undirected visitors receiving no assistance from maps and signs became bored sooner and left the museum earlier than visitors with maps and signs. In this study, visitors were asked for their suggestions concerning signs, maps and orientation methods. Visitors suggested placing signs and maps at major decision points along the circulation route (stairways, elevators, escalators, foyers, landings, corridor junctions, entrance to gallery spaces).

In addition to maps and signs,



other means of assisting with orientation are important. Cohen (1973) found it important to link information about the location of exhibits, other facilities and the visitors themselves to the architecture. An architectural feature such as a multi-story interior court can be incorporated into the circulation system and serve as a landmark and orientation point. Such a device helps visitors maintain their sense of orientation, thereby reducing the wear and tear of decision making. Because the visitor returns to the interior court numerous times, possibly on different levels and from different directions, the void amidst becomes a repeated experience, helping visitors feel at ease in the surroundings. The field museum in Chicago uses a large two-story central court to assist in orienting visitors as they continually return to the courtyard, entering or exiting from the surrounding halls.



- ORIENTATING DEVICES COMMONLY INCLUDE MAPS AND FLOORPLANS, DIRECTORIES, SIGNS, INFORMATION STAFF AND SALIENT CUES, INTEGRATED INTO THE ARCHITECTURE (I.E., TWO-STORY CENTRAL COURT, A COLUMN, ETC. COHEN AND WIKEL, 1977).

- MUSEUM VISITORS NEED PHYSICAL ORIENTATION SYSTEMS (I.E., HOW TO GET TO A GALLERY OR EXHIBIT), AS WELL AS CONCEPTUAL ORIENTATION SYSTEMS (I.E., WHAT THERE IS TO SEE). (COHEN, 1973).

- MUSEUM VISITORS FIND REDUNDANT CUES AT MAJOR DECISION POINTS HELPFUL IN ORIENTATING THEMSELVES (I.E., FOYERS, LANDINGS, CORRIDOR JUNCTIONS, ETC.). (COHEN AND WIKEL, 1977).

- FEW MUSEUM VISITORS PROCEED SYSTEMATICALLY THROUGH THE MUSEUM FROM FLOOR ONE TO THREE. (COHEN, 1973).

- FEW MUSEUM VISITORS FOLLOW THE INTENDED SEQUENCE OF THE MUSEUM DESIGNERS, LEFT TO RIGHT. (PORTER, 1967).

Lakota (1975), the Royal Ontario Museum Design Team (1976) and Cohen (1973) all agree that effective circulation and orientation systems can provide for memory lapses through the use of repetitive cues. Cohen reported an almost insatiable visitor demand for orientation information. Some visitors feel more secure if they have redundancy in the informational system.

**DESIGN RECOMMENDATIONS:**

- Circulation must offer a variety of focal points, vistas, and changes of mood. (as done on a larger scale in town-planning policy)
- Provide an **ORIENTATION CENTER** where visitors can map out in their minds the overall configuration of the paths in the museum. With this, orientation within the building and understanding of its spatial layout will be clear.

**TWO BASIC TYPES OF ORIENTATION**

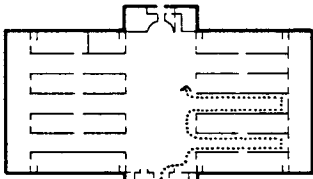
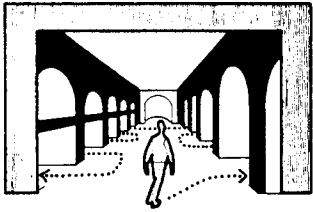
**CONCEPTUAL ORIENTATION**  
"what is there to see"?

- Orientation centers
- Information desk
- Tours
- Theme grouping of halls

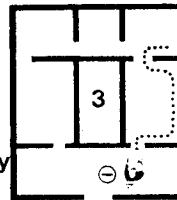
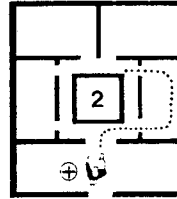
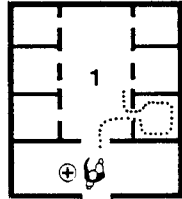
**PHYSICAL ORIENTATION**  
"how do I get there"?

- One comprehensive system
- Many directional cues
- Landmarks
- Maps and signs

**SPATIAL LANDMARK**



Field Museum. Chicago, Ill. 1893

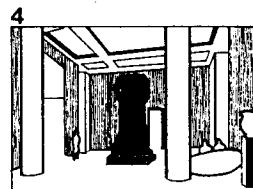
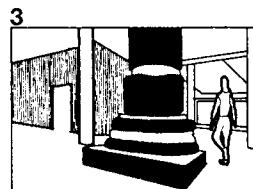
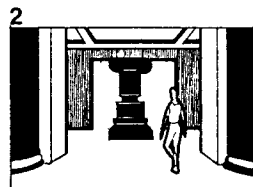
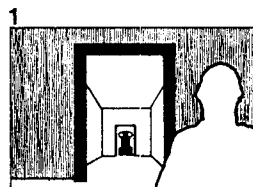
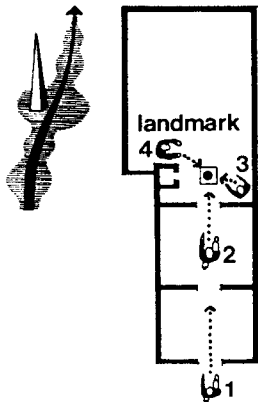


Groupings of rms.  
1. Nave-to-room  
2. Corridor-to-room  
3. Room-to-room

⊕ re-orientates, provides diversity  
⊖ maze affect, fatiguing

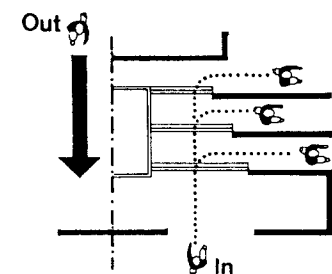
- Provide, within the orientation system, a repetition of LANDMARKS (e.g., tall open domes, atriums, multi-story interior courts, etc.), that through contrast and diversity act as directional cues.

**OBJECT LANDMARKS**

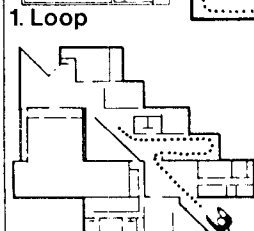
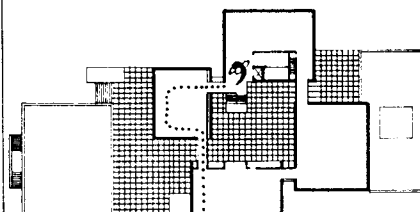


Landmark guides visitors to exhibit room

**RIGHT TO LEFT CIRCULATION**



Existing museum circulation patterns most likely to ensure a right to left sequence - Loop Straight



1. Museum of Art. Syracuse, NY. 1937

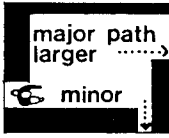
2. Fine Arts Center. Boston, Mass.

- It has been observed and documented that most visitors turn to the RIGHT when entering an exhibit hall. Since it is likely that the same behavior will occur at the scale of the museum, general circulation patterns should be designed with this in mind.


- The intersection or crossing of paths is always a point of decision-making for the visitor approaching it. The CONTINUITY and SCALE of each path at an intersection can help visitors distinguish between major routes leading to major gallery spaces and secondary paths leading to lesser spaces.

**CONTINUITY AND SCALE OF PATHS**


1. Two choices



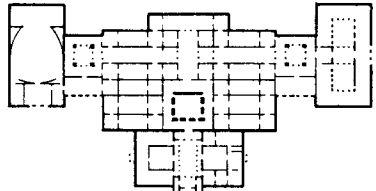
2. Three paths



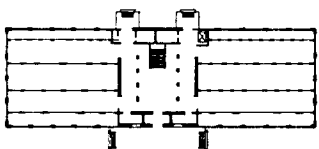
3. Four equal paths



Baltimore Museum of Art 1929

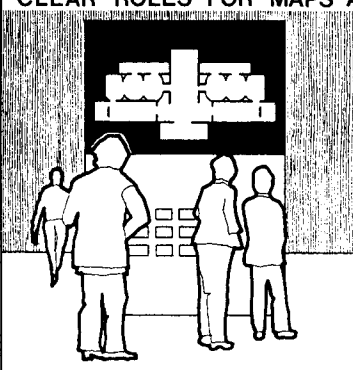


Dallas Museum of Natural History. Dallas, Texas 1936



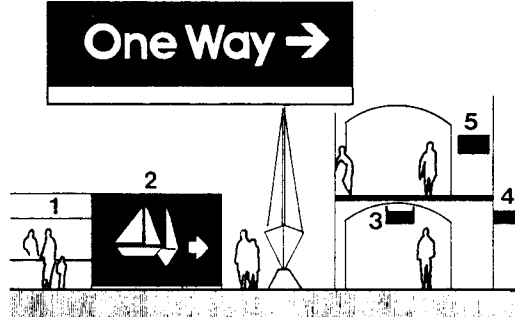
- The design of an efficient and integrated locational system demands clarification of the roles played by different devices in guiding the visitor through the museum; MAPS should be used for obtaining an overall image of the area presented, SIGNS, should be used for specific directions.

**CLEAR ROLES FOR MAPS AND SIGNS**



MAPS - role, overall image

- Names of halls clear
- Understandable symbols


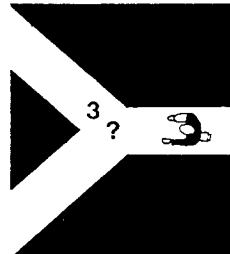
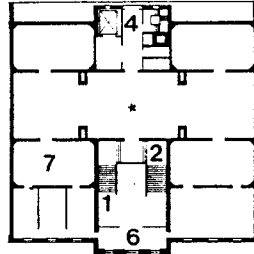


SIGNS - role, specific directions

- Sign band
- Painted
- ceiling mounted
- projecting
- Wall
- Floor

- Locate maps, signs and distinctive architectural landmarks at each major DECISION POINT (e.g., stairs, elevators, escalators, foyers, landings, corridor junctions, and at subject divisions in the museum).

**LOCATIONS FOR MAPS, SIGNS AND LANDMARKS**

- Stairs
- Landings
- Corridor Junction
- Elevators
- Escalators
- Foyers
- Subject Division

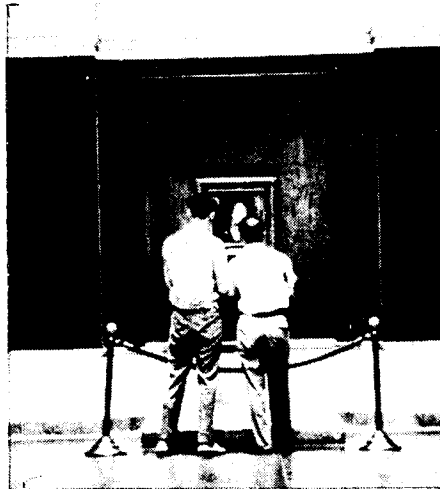
\* Museum of Art. Richmond. Va. 1936



## Galleries

Exhibition is the characteristic and pivotal function of museums. The public judges the institution by the character of exhibits, and the building very large largely by the character of exhibition space. The factors most influential in determining the character include; the division of space, scale and proportions, groupings of rooms, circulation and the interior.

The physical design of a building influences what exhibits can be held there. Architects should strive for flexibility in designing exhibit spaces, so that exhibits can be changed easily and arranged in accordance with a wide variety of object sizes and subject matter.

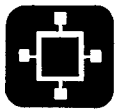


TOP- A PHOTOGRAPHIC STUDY OF VISITOR-BEHAVIOR IN MUSEUM GALLERIES. LEFT TO RIGHT, PHOTO'S 1-2, MILWAUKEE PUBLIC MUSEUM, PHOTO'S 3-4, NATIONAL GALLERY-EAST, WASH., D.C., PHOTO 5, LONDON'S SCIENCE MUSEUM. OPPOSITE PAGE- GENERAL INFORMATION ON GALLERIES, INFORMATION FROM AUTHOR'S OBSERVATIONS DURING AIA/INTERNSHIP, WASH., D.C.,

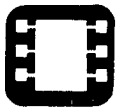
**MOST COMMON GALLERY GROUPINGS**



1. Room-to-room



2. Corridor-to-room



3. Nave-to-room



4. Open

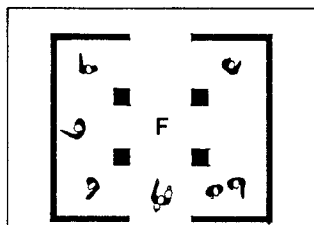


5. Linear

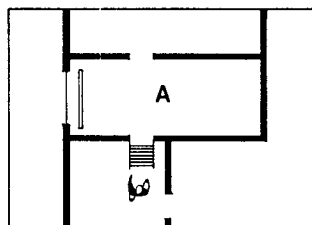
**KEY GALLERY DESIGN CONSIDERATIONS FOUND IN MUSEUM SURVEY**

- A. Diversity between galleries
- B. Sightlines to circulation paths
- C. Maps and signs at gallery entry
- D. Interior designed to exhibit; scale, color, etc.
- E. Outside views
- F. Division of space by columns

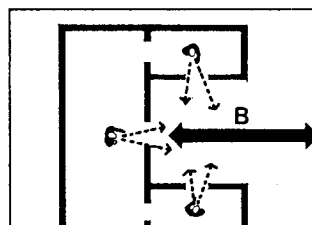
**GALLERY CASE STUDIES**



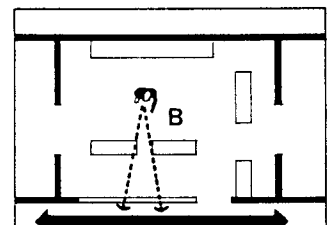
The National Portrait Gallery, Wash., D.C. 1857



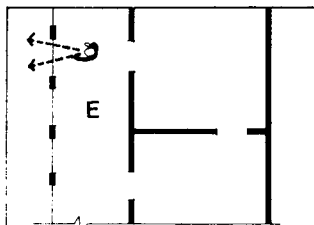
Corcoran Gallery of Art, Wash., D.C. 1874



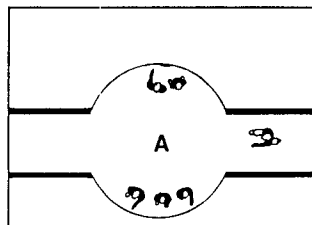
National Gallery of Art, West, Wash., D.C. 1941



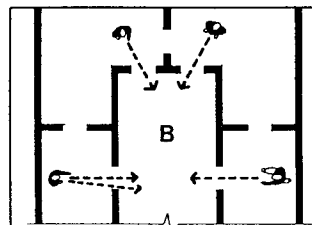
National Gallery of Art, East, Wash., D.C. 1978



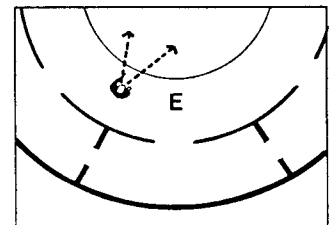
Art Institute of Chicago, Chicago, Ill. 1893



Milwaukee Public Museum, Mil., Wi. 1949



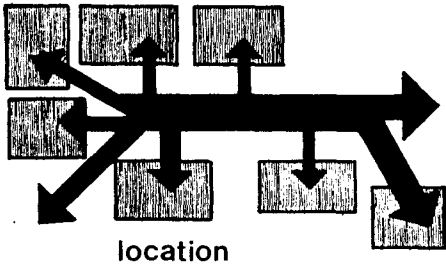
Renwick Gallery, Wash., D.C. 1859



Hirshhorn Museum, Wash., D.C. 1974

NOTE-Information from authors observations, AIA/RC intern project. 1981

**GALLERIES**



<b>TYPE OF MUSEUM MOST LIKELY TO BE AFFECTED</b>	
Art	<input checked="" type="checkbox"/>
History	<input type="checkbox"/>
Science	<input type="checkbox"/>
<b>QUALITY OF RESEACH</b>	
Repeated studies with similiar results	<input checked="" type="checkbox"/>
One study with good results	<input type="checkbox"/>
Study with weak correlations	<input type="checkbox"/>

**GALLERIES - LOCATION.**

**ISSUE:**

A GALLERY'S LOCATION SHOULD NOT BE UNDER-ESTIMATED, FOR IT WILL HELP DETERMINE THE EXTENT TO WHICH THE SPACE WILL BE VISITED AND THE ATTENTION IT WILL RECEIVE.

**JUSTIFICATION:**

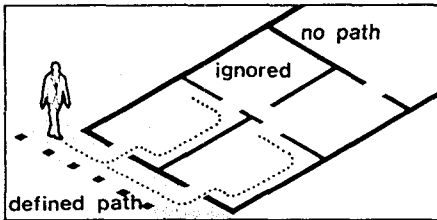
In designing a circulation system and deciding on the location for galleries, several known aspects of visitor behavior should be considered.

Melton (1931) and Weiss and Boutourline (1962) found that visitors are attracted to galleries that are conveniently located. Conversely, galleries that were located away from a well-defined path (e.g., paths which give the sense of "streets" and "avenues"), were less likely to be visited.

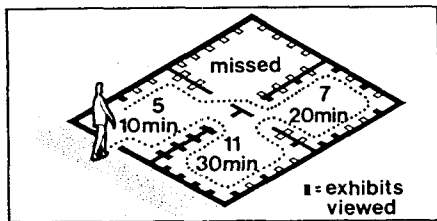
Porter's (1938) studies have shown that galleries located near the museum's entrance had a high level of visitor attendance. Robinson's (1931) and Melton's work in this area support Porter's notions. They discovered that during the course of a visit visitors stayed longer in galleries located on the first floor and made progressively shorter stops in galleries as their visit progressed.

Niehoff (1949) and Cohen (1973) observed that visitors view first floor exhibition areas longest, make more stops and cover more area within them. Exhibit spaces located on the second or third floors have much less success in attracting and holding visitor attention.

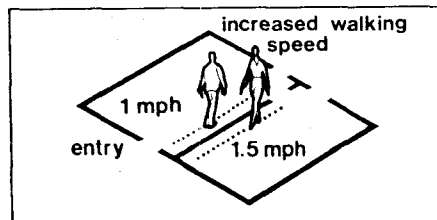
Thus to increase viewing of the



- FACTORS WHICH CAN SIGNIFICANTLY INFLUENCE THE PURSUIT OF A ROUTE INCLUDE: THE LOCATION OF ENTRANCES AND EXITS, THOSE PATHS WHICH ARE FAIRLY DIRECT FROM ENTRANCE TO EXIT BUT AT THE SAME TIME ALLOW SOME EXPLORATION; ATTRACTIVE EXHIBITS AND LANDMARKS; PATHS WHICH CAN GIVE THE SENSE OF "STREETS AND AVENUES" COMMUNICATED BY AISLE WIDTH AND REGULARITY. (WEISS AND BOUTOURLINE, 1962)



- VISITORS LOOK LESS LONG AND SKIP MORE EXHIBITS AND GALLERIES AS THE VISIT PROGRESSES. (ROBINSON, 1931).



- VISITORS WALKING SPEED INCREASES AS THEY TOUR THE MUSEUM. (PORTER, 1938).
- VISITORS STAY LONGER WITHIN FIRST GALLERIES THAN IN SUCCEEDING EXHIBIT ROOMS. (PORTER, 1938).

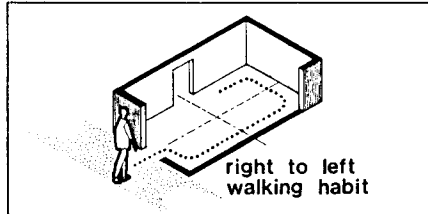
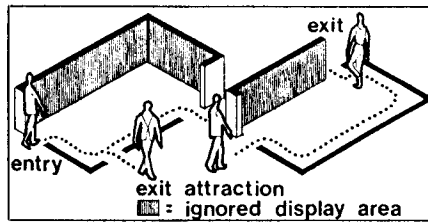
major exhibits, the main floor should have the principal exhibition space and the second floor should be used for less important exhibits. Museum expert Lawrence Coleman noted that, floors above the second are no longer considered entirely suitable for exhibition nor are they redeemed for this purpose by elevators. It is a matter of observation that a sizeable part of the visiting public will not ascend to a third and fourth floor of exhibits. Floors above the second give the place for study, storage, curatorial work, library stacks and administrative offices

In addition to the level on which major exhibits are located, previously discussed findings indicate other locational factors. It must be remembered that the positions of entrances and exits are important determinants of the routes of most visitors and that most visitors turn to the right on entering a symmetrically designed gallery and continue around the space in a counter-clockwise direction. In addition, more than 50 per cent of the visitors pass only the objects along the wall toward which they first turn before leaving the gallery. This suggests that the most important gallery should be located to the right of the museum's entrance with succeeding halls positioned in a right to left order.

The following strategies are recommended in considering the location of museum galleries.

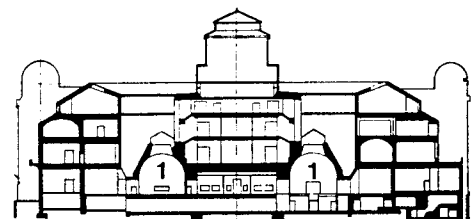
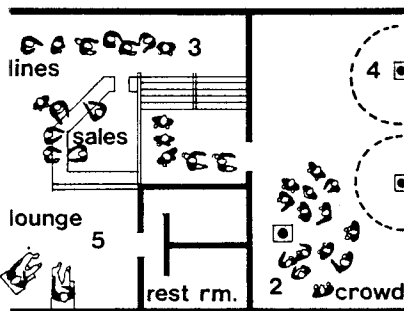
**DESIGN RECOMMENDATIONS:**

- The characteristics of major gallery spaces that could have an effect on the overall building scheme include:
  - High ceilings, for larger exhibits.
  - Adequate floor space to handle large crowds.
  - Adequate and controlled circulation.
  - Plenty of wall space.
  - Plenty of creature comforts (e.g., seating, restrooms, drinking fountains, etc.).
- Less important gallery's should be placed on upper floors.



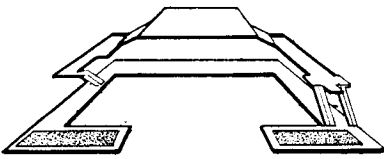
- EXITS ARE ONE OF THE STRONGEST DEVICES FOR TERMINATING A ROUTE SELECTED BY VISITORS. (MELTON, '53)
- VISITORS TAKE THE SHORTEST ROUTE BETWEEN THE GALLERY ENTRANCE AND EXIT. (MELTON, '53)
- AFTER ENTERING A GALLERY MOST VISITORS WILL TURN TO THEIR RIGHT VIEWING EXHIBITS IN A COUNTER-CLOCKWISE SEQUENCE. (MELTON, '53)
- THE FACTORS WHICH INFLUENCE A VISITOR TO TURN RIGHT AFTER ENTRY INTO A GALLERY INCLUDE: POSITION OF THE EXIT DOOR; GUIDANCE DEVICES AT THE ENTRY (I.E., PHAMPLETS PAINTED FOOTPRINTS ON THE FLOOR, SIGNS, ETC.); THE DISTANCE OF THE WALLS FROM THE VISITOR AT THE POINT OF ENTRY, THE OVERALL SIZE OF THE GALLERY AND WALKING HABITS FROM THE STREET. (YOSHIOKA, '942)

**MAJOR GALLERY DESIGN CONSIDERATIONS**

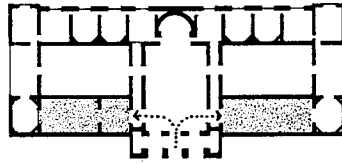


1. High ceilings
2. Adequate floor space
3. Adequate & controlled circulation
4. Larger exhibit rooms
5. Creature comforts

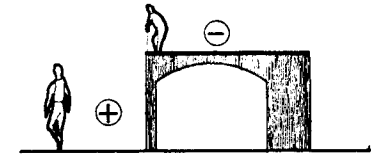
**LOCATIONS FOR MAJOR GALLERIES**



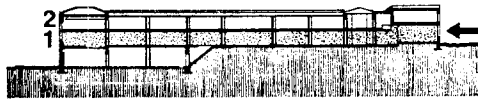
Next to main entry



Detroit Institute of Art. 1927



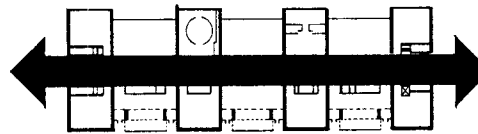
Ground floor



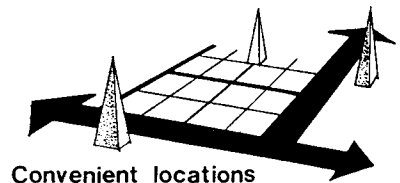
Corcoran Gallery, Wash., D.C. 1874



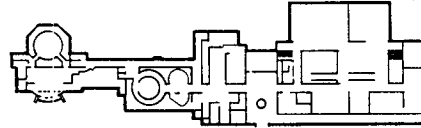
Along well defined paths



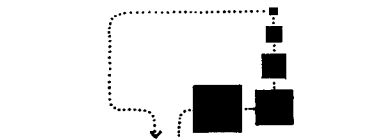
National Air & Space, Wash., D.C. 1946



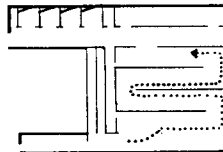
Convenient locations



Boston Museum of Science. 1949



First in a right to left circuit

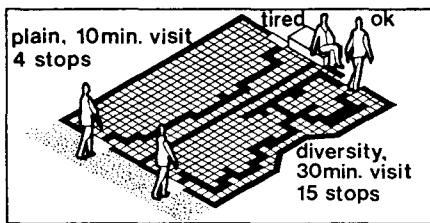


Scaife Gallery, Pittsburgh, Penn.

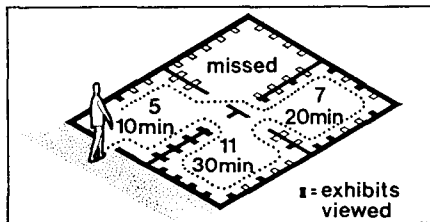
- Locate main gallery spaces in areas of the museum which receive the highest degree of visitor attention and require a minimum of walking and effort to get too. In most cases these would include:
  - Next to the museum's entry.
  - On the ground floor.
  - Along well defined major circulation paths.
  - Convenient locations.
  - First in the sequence of galleries or at the beginning of the major circulation path in a right to left sequence.



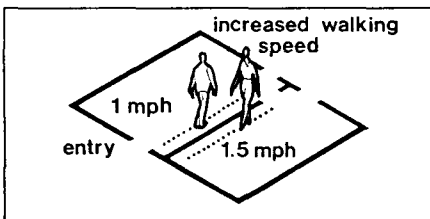
GALLERIES	TYPE OF MUSEUM MOST LIKELY TO BE AFFECTED
<p>diversity</p>	Art <input type="checkbox"/>
	History <input type="checkbox"/>
	Science <input type="checkbox"/>
	QUALITY OF RESEARCH
	Repeated studies with similar results <input type="checkbox"/>
	One study with good results <input type="checkbox"/>
	Study with weak correlations <input type="checkbox"/>



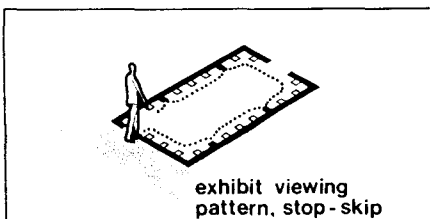
- THE LACK OF DIVERSITY AND CONTRAST IN EXHIBIT AND GALLERY DESIGN (I.E., LIGHTING, CASE DESIGN, SPATIAL CONTRAST, ETC.), SHORTENS VIEWING TIME OF THE EXHIBITS AND AREA COVERED. (MELTON, 1931)
- THE LACK OF DIVERSITY AND CONTRAST CAUSES GREATER FATIGUE PROBLEMS THAN THE PHYSICAL EXERTION OF VIEWING EXHIBITS. (COHEN, 1955).



- VISITORS LOOK LESS LONG AND SKIP MORE EXHIBITS AND GALLERIES AS THE VISIT PROGRESSES. (ROBINSON, 1951).



- VISITORS WALKING SPEED INCREASES AS THEY TOUR THE MUSEUM. (PORTER, 1938).
- VISITORS STAY LONGER WITHIN FIRST GALLERIES THAN IN SUCCEEDING EXHIBIT ROOMS. (PORTER, 1938).



- VISITORS DISTRIBUTE THEIR ATTENTION USUALLY PAUSING FOR BRIEF PERIODS TO LOOK AT INDIVIDUAL OBJECTS AND THEN SKIPPING SEVERAL INTERVENING EXHIBITS BEFORE STOPPING AGAIN. (BENNETT, 1942).

## GALLERIES - DIVERSITY IN GALLERY DESIGN.

### ISSUE:

A MAJOR FACTOR IN MUSEUM FATIGUE IS THE LACK OF DIVERSITY IN GALLERY DESIGN WHICH, IN TURN, REDUCES VISITOR INTEREST IN EXHIBITS.

### JUSTIFICATION:

A number of studies conducted by Melton (1931), Porter (1938), Robinson (1938), and Nahemow (1971) have shown that both the time spent and the number of exhibits viewed decrease as the visit progresses. According to these researchers, to help visitors pace themselves requires the creation of diversity and contrast in exhibit and gallery layout and design. The results of such efforts will be a reduction in physical and mental fatigue for the museum visitor.

Learning experiments, conducted by Porter (1938) and Nahemow (1971) have shown that the more monotonous a stimulus becomes the more attention wanders and that any change from the habitual tends to attract and hold attention. The benefits of diversity was further illustrated by Porter (1938) at the Peabody Museum of Natural History; in each of the halls preceding the Hall of Invertebrates, peaks of interest occur wherever there is variation in the mode of display. For example, at five lighted exhibit cases, the frequency of stops ranges from 21 to 32 viewers, whereas, at the exhibit cases of uniform size and arrangement, the frequency of stops ranged from 0 to 10 viewers. Porter's observations seem to agree with the theory that the general decrease in interest exhibited by museum visitors is due not to physical factors of the visitor as much as to monotony of the method of

display leading to mental fatigue.

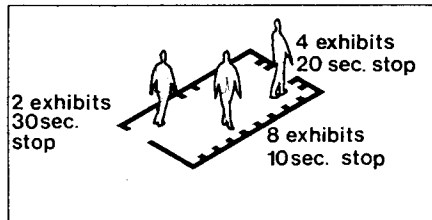
Some of the most conclusive research, supporting the need to create exhibit and gallery diversity, has come from suggestions of the visitors themselves. Cohen (1973) questioning the departing visitors, discovered that many leave feeling both frustrated and overstimulated. Few stopped to look at exhibits located toward the end of their visit. Melton (1931) explained this lack of interest in certain portions of the museum in terms of object satiation, which was a function of the homogeneity of the methods of display. According to Melton one solution to this problem was to vary exhibit displays and gallery design.

Since satiation seems to relate more to mental fatigue than to physical fatigue, a lack of diversity is likely to result in a museum that quickly tires the visitor. Melton (1931) noted that any single approach to gallery design, no matter how meritorious, can be tedious if used consistently and without relief.

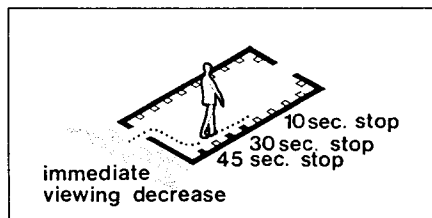
It should be cautioned that diversity and contrast can be abused. The overall integrity of a museum should not be jeopardized by a carnival atmosphere or visual chaos. Dramatic effects and contrasts can be as boring as uniform blandness.

**DESIGN RECOMMENDATIONS:**

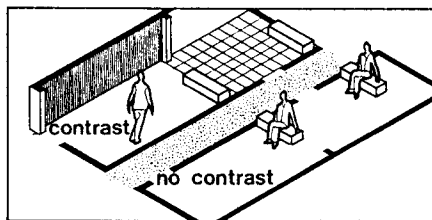
- Provide variation and diversity within the gallery by varying exhibit case arrangements and style.



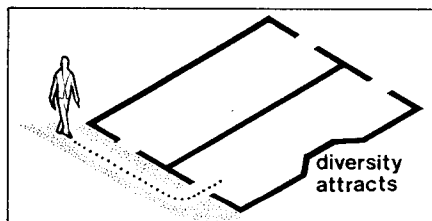
- THE MORE PICTURES SIMULTANEOUSLY DISPLAY PLAYED, THE SMALLER THE AVERAGE TIME SPENT IN LOOKING AT EACH PICTURE. (MELTON, 1931)



- THE AMOUNT OF TIME SPENT IN FRONT OF AN EXHIBIT AND THE NUMBER SEEN DECREASES IMMEDIATELY AFTER ENTRY TO THE MUSEUM. (MELTON, 1931)
- IN LARGE MUSEUMS THE LIKELIHOOD THAT A VISITOR WILL OBSERVE ANY GIVEN PICTURE IS LESS THAN IN SMALLER MUSEUMS.. (DENNETT, 1941)



- A MAJOR FACTOR IN MUSEUM FATIGUE IS GALLERY SATIATION INSUFFICIENT CONTRAST BETWEEN ADJACENT GALLERIES, ETC. (MELTON, 1931)
- A MAJOR FACTOR IN MUSEUM FATIGUE IS OBJECT SATIATION SIMILARITY OF PAINTINGS OR FURNITURE AS REGARDS STYLE, PERIOD, SUBJECT MATTER ETC. (MELTON, 1931)



- DURING THE COURSE OF A VISIT AND AFTER A BRIEF WARMING UP PERIOD, MUSEUM VISITORS DISPLAYED A TENDENCY TO STOP BEFORE A PROGRESSIVELY SMALLER PERCENTAGE OF THE
- VISITORS PAY MORE ATTENTION TO UNUSUAL OR UNKNOWN ENVIRONMENTS. (NAHERNOW, 1972)
- THE MORE MONOTONOUS A GALLERY OR EXHIBIT IS THE MORE ATTENTION WANDERS. (PORTER, 1958)

**VARYING EXHIBIT ARRANGEMENTS**

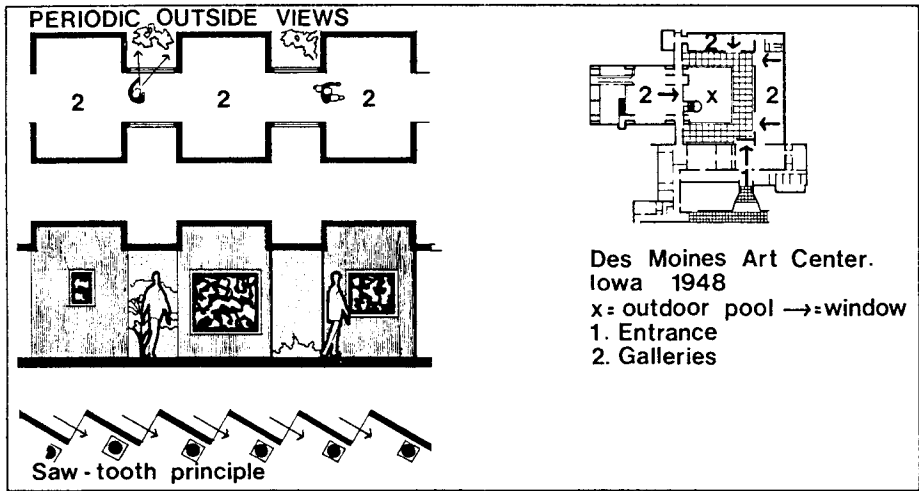
Curved Straight Alcove

measurements of adult & 6 year old in relation to cases

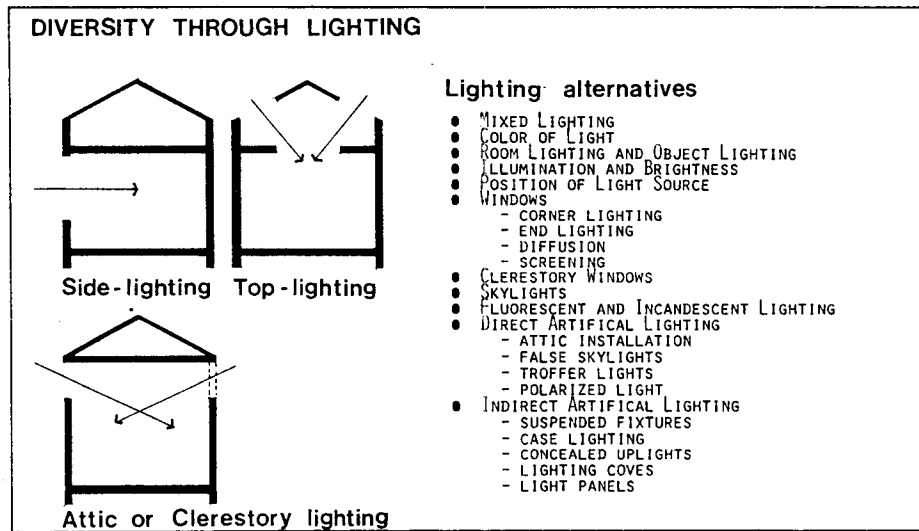
5-9 5-3 3-10 24 8-1

45° 45° 45°  
30° 30° 30°

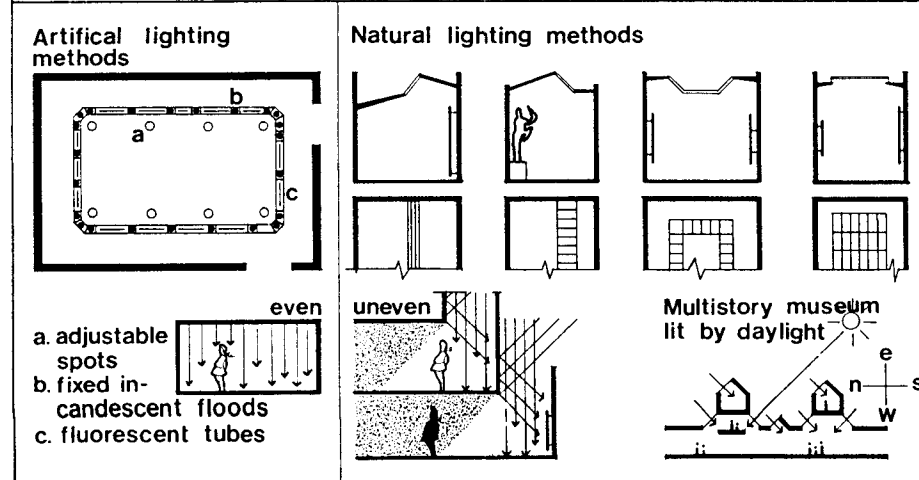
Comfortable head movements



- Provide periodic outside views to contrast with artificially lit galleries.


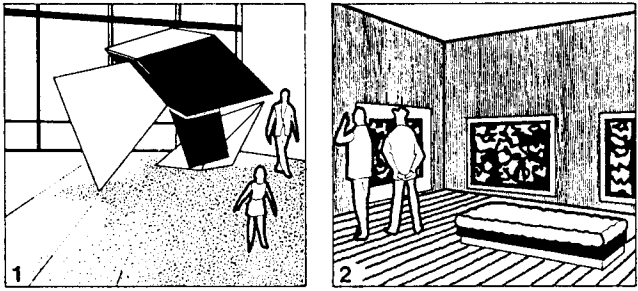
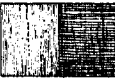

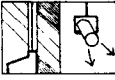



- Use lighting to create contrasts among galleries (e.g., a gallery with a low level of ambient lighting and dramatic highlighting is very different from a gallery which is uniformly lit to an average level).

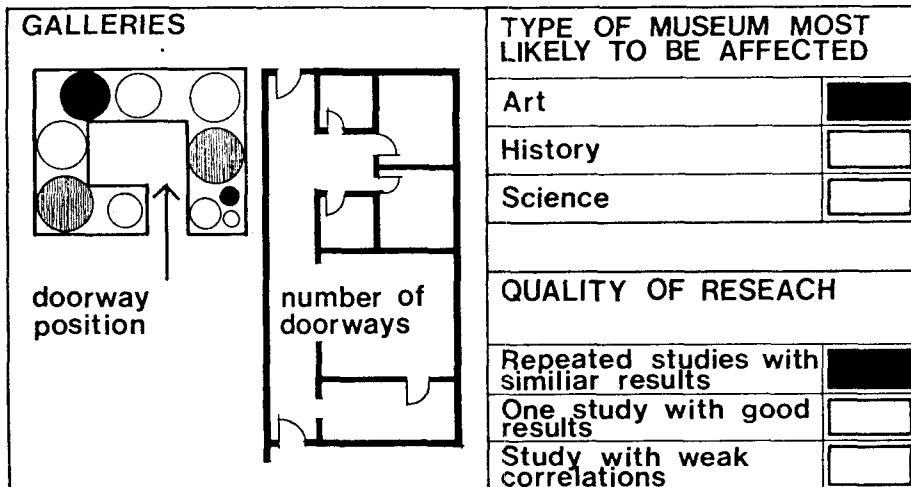


- Create diversity by designing each gallery appropriate in style and character to the artifacts presented within it (e.g., a gallery housing a Greek temple will be different from one exhibiting Roman coins or modern sculpture).

**DIVERSITY WITH INTERIOR DESIGN**

	Flooring	
	Textures	
	Color	
	Lighting	
	Scale	

1. Sculpture  
2. Paintings



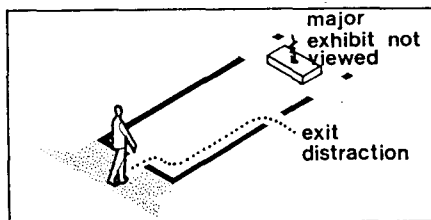
**GALLERIES - DOORWAYS: THE NUMBER AND POSITIONING.**

**ISSUE:**

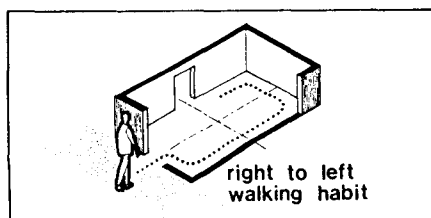
THE NUMBER AND POSITIONS OF THE ENTRANCE AND EXIT IN GALLERY SPACES DETERMINE THE ROUTES OF THE MAJORITY OF VISITORS. THEY DEFINE WHERE VISITORS GO AND WHAT IS MORE LIKELY TO BE LOOKED AT. IN GENERAL, UNDERSTANDING HOW THE MUSEUM VISITOR MIGHT RESPOND TO THE NUMBER AND PLACEMENT OF DOORWAYS, CAN HELP IN THE DESIGN OF MORE EFFECTIVE DISPLAY SPACE FOR BOTH VISITORS AND EXHIBITS.

**JUSTIFICATION:**

Doorways are one of many of a building's architectural elements and their capacity to influence communication exceeds any of the other building elements such as lighting, windows, etc.. Essayist Phyllis McGinley has referred to the door as a human event of significance equal to the discovery of fire (Gutman, 1972). Methodical studies conducted by Robinson (1931), Melton (1933), and Porter (1938), at the Peabody Museum of Natural History and the Pennsylvania Museum of Art, support this proposition. Tracking studies which have recorded the frequencies of stops, have shown that the number and positioning of doorways are more important in determining the frequency of stops and the order in which they are viewed than any characteristics of the objects themselves.



- GALLERY DOORWAYS (PRIMARILY THE EXITS), DRAW VISITORS TOO THEM CAUSING EXHIBITS TO GO UNNOTICED. (MELTON, 1933).



- AFTER ENTERING A GALLERY MOST VISITORS WILL TURN RIGHT AFTER ENTRY INTO A GALLERY EXHIBITS IN A COUNTER-CLOCKWISE SEQUENCE (MELTON, 1933).
- THE FACTORS WHICH INFLUENCE A VISITOR TO TURN RIGHT AFTER ENTRY INTO A GALLERY INCLUDE: POSITION OF THE EXIT DOOR; GUIDANCE DEVICES AT THE ENTRY (I.E., PHAMPLETS, PAINTED FOOTPRINTS ON THE FLOOR, SIGNS, ETC.), THE DISTANCE OF THE WALLS FROM THE VISITOR AT THE POINT OF ENTRY, THE OVERALL SIZE OF THE GALLERY AND WALKING HABITS FROM THE STREET. (YOSHIOKA, 1942).

Reviewing floor plans of museums has shown that the number of doorways used in galleries range from a few as one to as many as four. Although research conducted on this issue is neither extensive nor highly refined, there are indications that suggest galleries containing two doorways will be more successful in promoting coverage than a space containing one doorway or one containing more than two doorways.

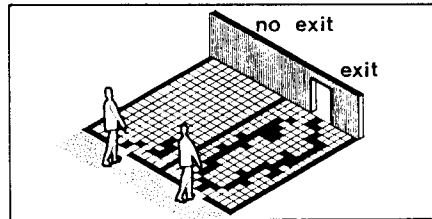
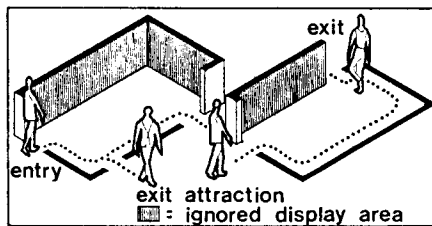
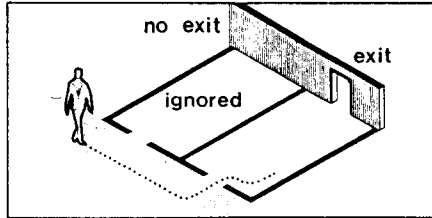
Melton (1933), after conducting casual observations of gallery space that was being ignored by visitors at the Peabody Museum of Natural History, surmized that

visitors were using less area or were not entering this gallery space because it had no apparent exit (a dead end space). Lawrence Coleman (1939) also alludes to this behavior pattern in his book *Museum Buildings* (1950). Coleman reports that "a room with one opening for both entrance and exit impose a circuit which visitors sometimes perform only mentally while standing at the doorway." A space containing two doorways, an entrance and exit, have what Robinson and Melton (1938) termed "exit attraction". Their general findings on the attraction power of the exit include:

- Visitors take the shortest route between the entrance and exit.
- The first exit reached usually terminates the route even if the visitor hasn't seen the whole gallery.
- Visitors use less area in galleries with no exits.
- Exits positioned before major exhibits have caused them to go unnoticed.

Tracking studies conducted by Weiss and Boutourline (1962) showed that an important determinant of paths is the location of the entrances and exits. They noted that visitors were unwilling to go into galleries where exits were not readily apparent. Further research is needed in this area however.

Galleries containing more than two doorways may also be ineffective display areas. At the Pennsylvania Museum of Art in Philadelphia, Melton (1931) conducted experiments to see if the number of doors used in a gallery space would effect exhibit viewing time. They did. Every doorway added to the space decreased viewing time. On the average, visitors spent 73 seconds before the new door was opened, and 23 seconds after the new door was opened.



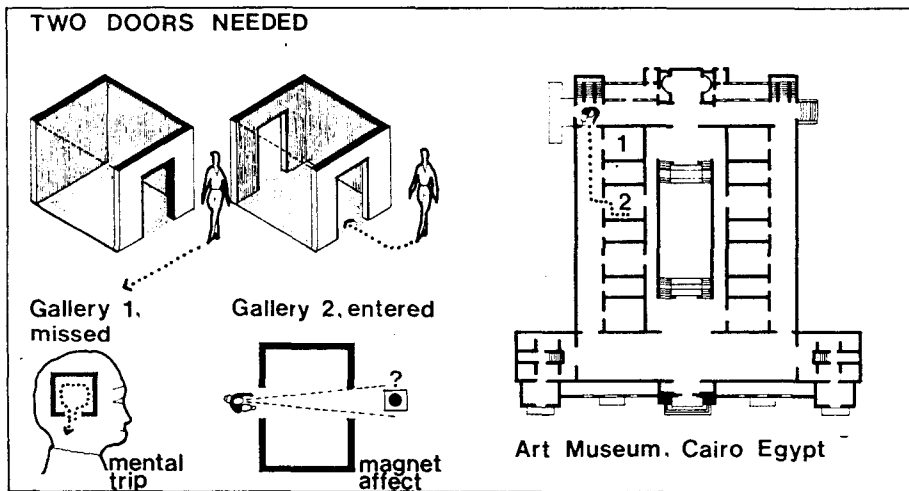
• VISITORS WILL NOT ENTER GALLERY SPACES WHICH DO NOT HAVE EXITS OR EXITS THAT ARE READILY VISIBLE. (PORTER, 1938).

• WHEN RETRACING STEPS IN GALLERIES VISITORS WILL GO DIRECTLY FROM DOOR TO DOOR. (ROBINSON, 1938).

• EXITS ARE ONE OF THE STRONGEST DEVICES FOR TERMINATING A ROUTE SELECTED BY VISITORS. (MELTON, 1938).

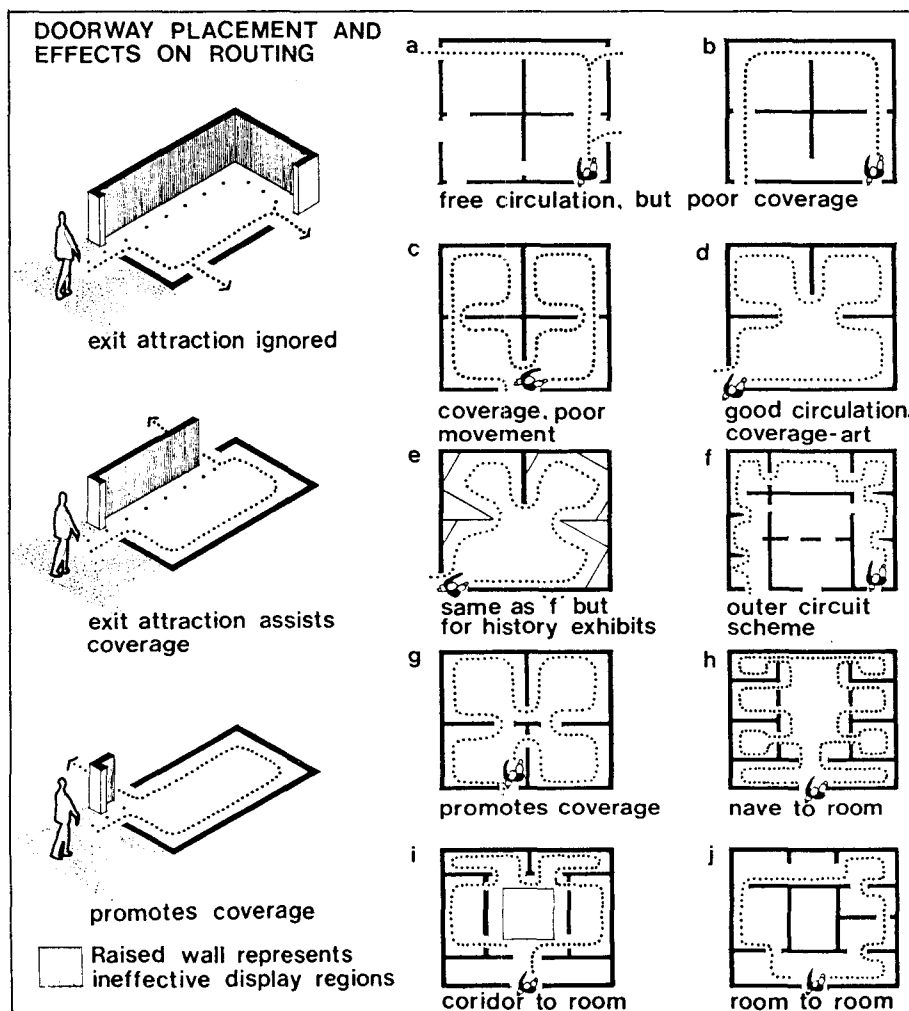
• VISITORS TAKE THE SHORTEST ROUTE BETWEEN THE GALLERY ENTRANCE AND EXIT. (MELTON, 1938).

• VISITORS USE LESS AREA WHEN A GALLERY SPACE DOES NOT CONTAIN AN EXIT. (PORTER, 1938).



**DESIGN RECOMMENDATIONS:**

- In general, a small one room gallery should have two openings, one entry and one exit. A room with one opening for both entrance and exit imposes a circuit which, the visitor sometimes performs only mentally while standing at the doorway.



- Promote coverage in a one room gallery by using a minimum number of doorways and by locating entrances and exits where they will not draw visitors out of the gallery too soon. An exit at the far end of the room gives the wall at the right a good chance of having attention. An exit near at hand in the right wall may make the room almost ineffective. But an exit in the left wall granted attractive exhibits, gives the room a fair chance of being three-quarters observed.
- In a room to room arrangement doorways should be balanced to right and left of center, with only occasional axial openings. A uninterrupted prospect of the long route ahead is usually found to have a depressing effect on visitors.
- To save the middle part of each wall for display, the doorways are best placed well off center if not near a corner.
- Locate exits along the left-hand wall, this region is least traveled by visitors.
- If a gallery space is close to any major landmark (e.g., museum's entrance, staircase, escalator, etc.), the entry to the gallery should not be in direct sight with this landmark.
- To decrease the "attraction power" of an exit disguise the exit by reducing its visibility, position the exit very near to the entry, and position the exit beyond major exhibits.



## Lounges

Most museums include facilities which cater to the well-being of the visitor. The most common include: gift shops, restaurants and visitor lounges. All of them assist in reducing fatigue, brought on by physical exertion and visual overload.

Perhaps the most crucial and complex set of amenities is the system of transition and seating areas. These serve the visitor in a number of ways. They encourage relaxation, change the pace of activities, and provide the visitor with a suitable place and time for reflection. Rest areas in museums are transitional spaces where people can socially interact, meditate, or simply rest their feet.

Properly locating these rest areas intermittently among the gallery spaces is vital for a successful museum visit. Visitors who are both physically and psychologically at ease with their environment are more likely to be a receptive audience.



TOP- A PHOTOGRAPHIC STUDY OF VISITOR-BEHAVIOR IN MUSEUM LOUNGES, LEFT TO RIGHT, PHOTO'S 1-3, NATIONAL GALLERY-EAST, PHOTO 4, THE LOUVRE, FRANCE, PHOTO 5, HIRSHHORN MUSEUM, WASH., D.C. OPPOSITE PAGE- GENERAL INFORMATION ON LOUNGES. INFORMATION FROM AUTHOR'S OBSERVATIONS DURING AIA/INTERNSHIP, WASH., D.C.,



**MOST COMMON LOUNGE TYPES**



1. Entry waiting areas



2. Seating along circulation



3. Seating in galleries



4. Lounge rooms



5. Cafeteria seating

**KEY LOUNGE DESIGN CONSIDERATIONS FOUND IN MUSEUM SURVEY**

Exterior views

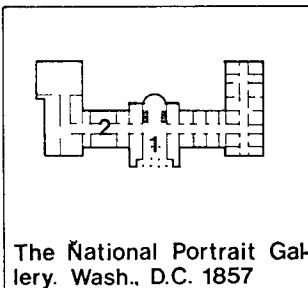
Out of circulation paths

Comfortable seating

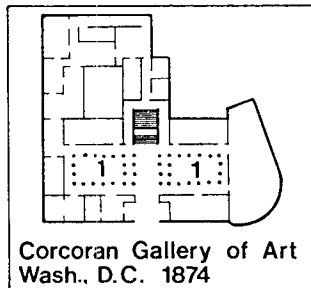
Group seating

Highly visible

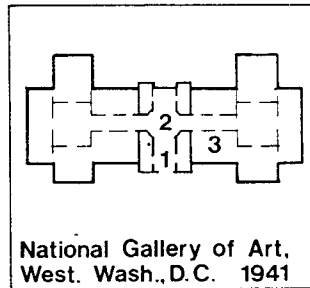
**LOUNGE CASE STUDIES**



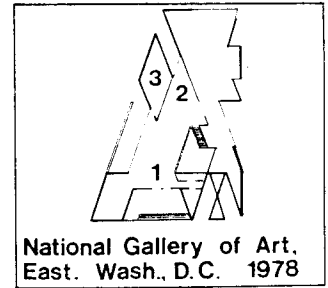
The National Portrait Gallery. Wash., D.C. 1857



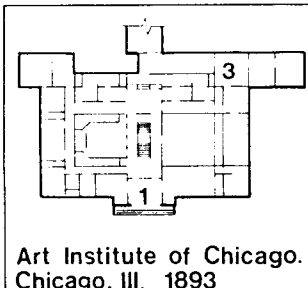
Corcoran Gallery of Art Wash., D.C. 1874



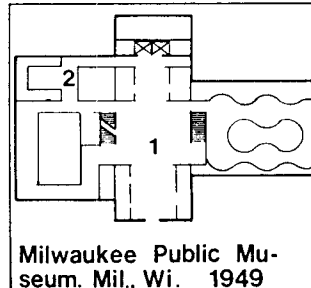
National Gallery of Art, West. Wash., D.C. 1941



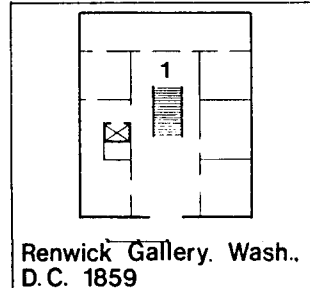
National Gallery of Art, East. Wash., D.C. 1978



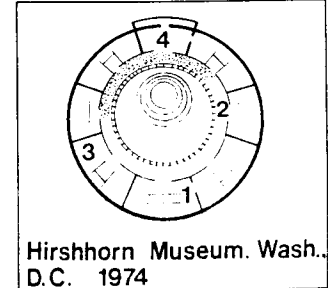
Art Institute of Chicago. Chicago, Ill. 1893



Milwaukee Public Museum. Mil., Wi. 1949

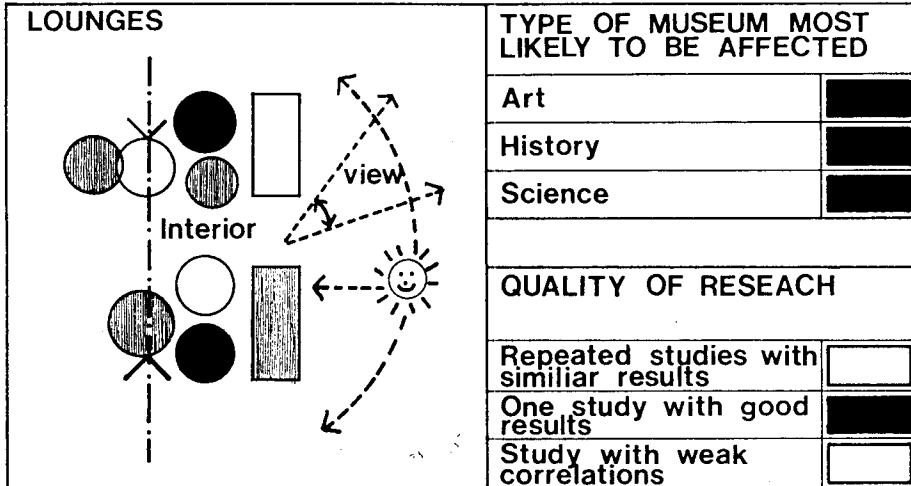


Renwick Gallery. Wash., D.C. 1859



Hirshhorn Museum. Wash., D.C. 1974

NOTE - Information from authors observations, AIA/RC intern project. 1981



**LOUNGES - INTERIOR DESIGN.**

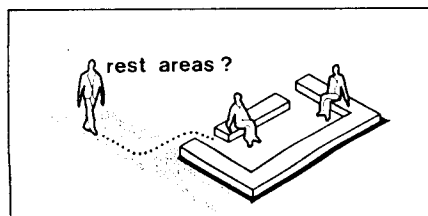
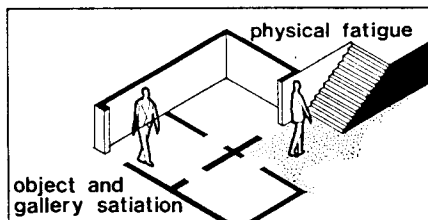
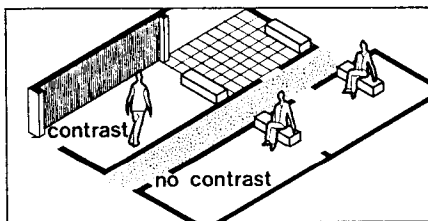
**ISSUE:**

MUSEUM VISITORS BECOME PHYSICALLY AND MENTALLY FATIGUED DURING THE COURSE OF THEIR VISIT. TO AID THE PACE OF EXHIBIT VIEWING, LOUNGE INTERIORS MUST BE DESIGNED TO APPEAL TO A STATE OF MIND SUITABLE TO RELAXATION.

**JUSTIFICATION:**

Visitor behavior studies conducted by Melton (1931), Robinson (1935), Porter (1938), Bennett (1941) and Cohen (1973) have shown that most museum visitors become increasingly tired and bored during the course of their visit. They skip more exhibits spend less time and cover less area as the visit goes on. These same researchers, however feel there are ways in which a museum can assist the casual visitor to reduce fatigue by better pacing their visit. One of the most important factors here is the presence of appropriate resting places.

Little research has dealt specifically with the role of lounges and other interior design features in reducing fatigue. One study by Cohen (1973) polled visitors leaving the National Museum of History and Technology in Washington, D.C. The study concluded that given the size of the visitor population and the frequency with which it seeks the opportunity to sit down, it is evident the museum could be more helpful in providing varied areas for relaxation. The study revealed that visitors would like more places for relaxation and suggested that lounges should include restrooms, drinking fountains, smoking areas and plenty of comfortable seats. Such amenities can enable visitors to leave lounges refreshed to see more exhibits.



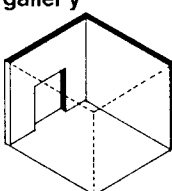
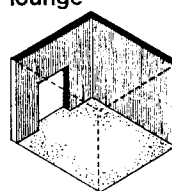
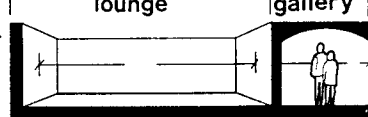



- A MAJOR FACTOR IN MUSEUM FATIGUE IS GALLERY SATIATION INSUFFICIENT CONTRAST BETWEEN ADJACENT GALLERIES, ETC. MELTON, '35
- A MAJOR FACTOR IN MUSEUM FATIGUE IS OBJECT SATIATION SIMILARITY OF PAINTINGS OR FURNITURE AS REGARDS STYLE, PERIOD, SUBJECT MATTER ETC. MELTON, '35
- DURING THE COURSE OF A VISIT AND AFTER A BRIEF WARMING UP PERIOD, MUSEUM VISITORS DISPLAYED A TENDENCY TO STOP BEFORE A PROGRESSIVELY SMALLER PERCENTAGE OF THE EXHIBITS ENCOUNTERED AND TO MAKE PROGRESSIVELY SHORTER STOPS. BENNETT, '94
- SATIATION IS A BIGGER FATIGUE PROBLEM THAN PHYSICAL BONE ACHING FATIGUE. COHEN, '73
- A NUMBER OF BODY POSITIONS CONTRIBUTE TO MUSEUM FATIGUE I.E., BENDING, TWISTING, CROUCHING, STRETCHING, CLIMBING, LOOKING UP, ETC. SILMAN, '55
- VISITORS CONSISTENTLY USE AND INQUIRE ABOUT AREAS FOR RELAXATION I.E., BENCHES, RESTROOMS, DRINKING FOUNTAINS, SMOKING AREAS, LOUNGES, ETC. COHEN, '73
- VISITORS REPORTED BEING BORED AND SPENT A LIMITED AMOUNT OF TIME IN THE MUSEUM DUE TO A LACK OF ORIENTATION. COHEN, '73
- WITHOUT A USEFUL SCHEME FOR VIEWING EXHIBIT HALLS, FRUSTRATION, BOREDOM, FATIGUE AND MISSED OPPORTUNITIES RESULT.

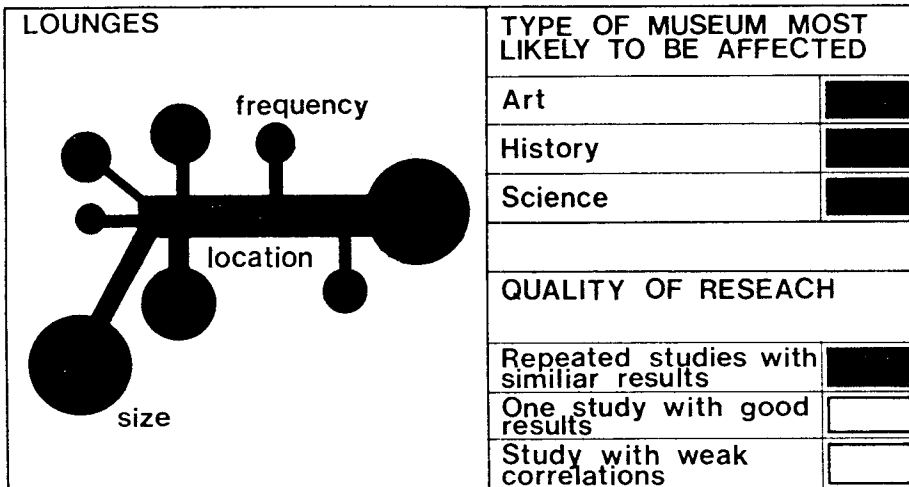
Manfred Lehbruck author of Museum Architecture (1978), stated that as the eye normally leaps from one object to the other, the fact of concentrating on static forms and colors requires an effort which may be measured by the contraction of the pupil; to compensate the eye must be given the opportunity of moving, according to a certain rhythm. For example, from near vision, which is fairly tiring, to distant vision, which is relaxing, from bright colors to restful neutrality, from light to dark, from small to large and vice versa.

Further research could increase the designer's knowledge of the effects of interior design on visitor fatigue.

**DESIGN RECOMMENDATIONS:**

- Bring visitors into natural surroundings for lounging (e.g., spaces with outside views, exterior courtyards and gardens, etc.).
- Provide, in aesthetically pleasing settings, the amenities visitors most often requested, including comfortable seating with accessory furnishings, a smoking area, restrooms, carpeted floors and drinking fountains. Also, as part of the decor in lounges, live green plants should be used. Recorded music can also be relaxing to visitors.

<p><b>CHARACTERISTICS OF LOUNGE INTERIOR</b></p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>gallery</p>  </div> <div style="text-align: center;"> <p>lounge</p>  </div> </div> <ol style="list-style-type: none"> <li>1. Bigger than gallery</li> <li>2. From light to dark</li> <li>3. Bright colors to restful neutrality</li> <li>4. Near vision to distant vision</li> </ol>	<div style="display: flex; justify-content: space-between;"> <span>lounge</span> <span>gallery</span> </div> <ol style="list-style-type: none"> <li>1. </li> <li>2. </li> <li>3. </li> <li>4. </li> </ol>
<p><b>LOUNGE AMENITIES</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Seating</li> <li><input type="checkbox"/> Smoking area</li> <li><input type="checkbox"/> Restrooms</li> <li><input type="checkbox"/> Exterior views</li> <li><input type="checkbox"/> Carpeted floors</li> <li><input type="checkbox"/> Drinking fountain</li> <li><input type="checkbox"/> Plants</li> <li><input type="checkbox"/> Music</li> </ul>	



LOUNGES - LOCATION, SIZE AND FREQUENCY.

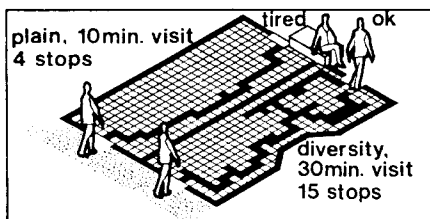
ISSUE:

BECAUSE VISITORS HAVE BEEN FOUND TO GROW MORE FATIGUED AS THE VISIT PROGRESSES AND BECAUSE THEY PREFER SPECIFIC PATHS AND QUADRANTS OF THE MUSEUM OVER OTHERS, SPECIAL ATTENTION MUST BE GIVEN TO LOCATION, SIZE AND FREQUENCY OF REST AREAS.

JUSTIFICATION:

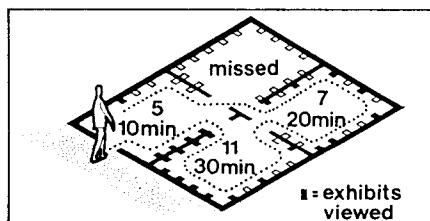
Museum visitors become physically and mentally fatigued during the course of their visit, even when they are enjoying their visit and are impressed by the museum. The amenities of a museum, those facilities that cater to the well being of the visitor such as restaurant, shops and rest areas, can be considered an integral part in combating museum fatigue. To aid the pace of exhibit viewing, perhaps the most crucial are the rest areas. These can serve visitors in a number of ways, including: encouraging relaxation, changing the pace of activities, providing the visitor with a suitable place and time for reflection or just for getting their bearings.

The extent of the research conducted on visitor lounges is very limited. However a large body of data that explores the habits of the tiring visitor does exist and is all that is now available to make some general assumptions about the location, size and frequency of visitor lounges. Hopefully, with this work and further studies of favorable lounge characteristics, these spaces will be better equipped to combat museum fatigue. Studies investigating visitor fatigue in museums have taken place since the early 1900's. The general consensus of these studies is that most visitors leave the museum feeling that they have been over-stimulated. Work conducted by Cohen

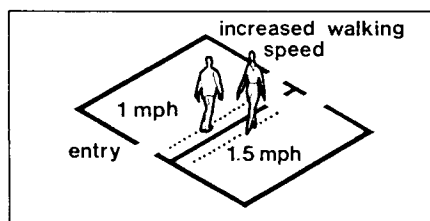


- THE LACK OF DIVERSITY AND CONTRAST IN EXHIBIT AND GALLERY DESIGN (I.E., LIGHTING, CASE DESIGN, SPATIAL CONTRAST, ETC.), SHORTENS VIEWING TIME OF THE EXHIBITS AND AREA COVERED. (MELTON, 1951)

- THE LACK OF DIVERSITY AND CONTRAST CAUSES GREATER FATIGUE PROBLEMS THAN THE PHYSICAL EXERTION OF VIEWING EXHIBITS. (COHEN, 1953).

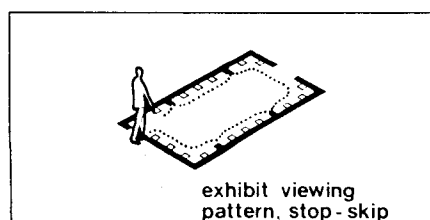


- VISITORS LOOK LESS LONG AND SKIP MORE EXHIBITS AND GALLERIES AS THE VISIT PROGRESSES. (ROBINSON, 1951).



- VISITORS WALKING SPEED INCREASES AS THEY TOUR THE MUSEUM. (PORTER, 1958).

- VISITORS STAY LONGER WITHIN FIRST GALLERIES THAN IN SUCCEEDING EXHIBIT ROOMS. (PORTER, 1958).



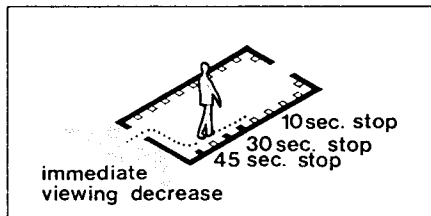
- VISITORS DISTRIBUTE THEIR ATTENTION USUALLY PAUSING FOR BRIEF PERIODS TO LOOK AT INDIVIDUAL OBJECTS AND THEN SKIPPING SEVERAL INTERVENING EXHIBITS BEFORE STOPPING AGAIN. (LENNETT, 34).

(1973) at the National Museum of History and Technology, Washington, D.C., found that over three-quarters of the visitors polled used some device to rest on during their visit (e.g., benches, seats, leaning against walls and ledges or sitting in the cafeteria), half reported being tired upon leaving, and others complained about not being able to find the relaxation areas.

The types of visitor lounges found in most museums today range from a single cushioned chair or bench to rooms filled with the amenities of home (e.g., drinking fountains, restrooms, a variety of comfortable seats, plants, recorded music, etc.). An examination of the placement of these two types of lounges shows that major lounges are being located around the main lobby area while the single seats are scattered throughout the museum.

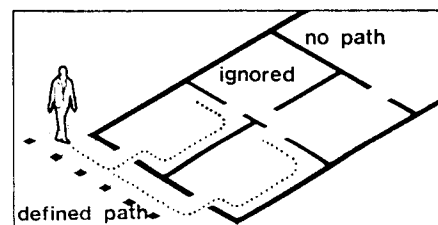
Both types of lounges are appropriate in museums, however studies of walking and viewing habits of visitors indicate the greatest need for rest areas is later in the museum visit. Melton (1931), Porter (1938), Niehoff (1956), Reekie (1958) and Borhegyi (1963) have shown that as the visit progresses the visitor views fewer exhibits, shortens viewing time at each exhibit, spends less time in each gallery and increases over-all walking speed. With the visitor becoming increasingly fatigued as the visit progresses, lounges should offer a greater level of comfort in the later part of the visit.

Studies of visitor walking patterns by Robinson (1928), Melton (1931), and Yoshioka (1942) indicate that visitors do prefer examining certain quadrants of the museum over others. Locating lounges within or near these areas would seem to be a means of increasing their use. Areas found to be most frequently used included the paths that were well-defined and appear as "streets and avenues", major exhibit areas, and major architectural landmarks. Within gallery spaces visitors have been found to proceed in a right to

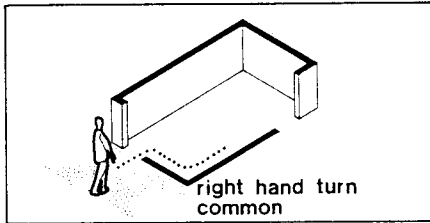


### Secondary

- THE AMOUNT OF TIME SPENT IN FRONT OF AN EXHIBIT AND THE NUMBER SEEN DECREASES IMMEDIATELY AFTER ENTRY TO THE MUSEUM. (MELTON, 1931).
- IN LARGE MUSEUMS THE LIKELIHOOD THAT A VISITOR WILL OBSERVE ANY GIVEN PICTURE IS LESS THAN IN SMALLER MUSEUMS. (BENNETT, 1947).



- FACTORS WHICH CAN SIGNIFICANTLY INFLUENCE THE PURSUIT OF A ROUTE INCLUDE: THE LOCATION OF ENTRANCES AND EXITS, THOSE PATHS WHICH ARE FAIRLY DIRECT FROM ENTRANCE TO EXIT BUT AT THE SAME TIME ALLOW SOME EXPLORATION; ATTRACTIVE EXHIBITS AND LANDMARKS; PATHS WHICH CAN GIVE THE SENSE OF "STREETS AND AVENUES" COMMUNICATED BY AISLE WIDTH AND REGULARITY. (WEISS AND BOUTOURLINE, 1962)



● TRAFFIC FLOW FROM RIGHT TO LEFT OCCURS MORE OFTEN THAN FROM LEFT TO RIGHT. (MELTON, 1952).

left sequence after entry and seldom progress around the total gallery, ultimately resulting in the left hand wall being of inferior display value. Positioning of seating on the left side of the gallery would utilize the area offering comfort to the viewers while not infringing upon any prime display space.

The following strategies are recommended in considering the location, size and frequency of museum lounges.

DESIGN RECOMMENDATIONS:

- To combat museum fatigue, disperse a series of small places for resting throughout the museum offering more amenities as the visit progresses.
- Since the heaviest visitor traffic occurs along right hand walls, seating areas in exhibition areas should be located along left-hand walls, the region least affective for display purposes.
- Since visitors have an insatiable demand for orientation a carefully considered system of rest areas can be integrated with an information system. For example, rest areas can be extensions of clusters of galleries, acting both as rest areas and transition areas, with necessary directions and other information.
- To effectively combat museum fatigue, lounges should be located where they will be used, such as along the most frequently followed routes. Specific locations can include: along or near a well

defined path, near major exhibition areas, or near major architectural landmarks of the museum.

- Lounges should be spaced at intervals throughout the exhibit halls where visitors will be able to sit down and rest for a time before going on to other exhibits.
- A space designated as a

**LOUNGES**

More amenities as visitor moves on

1. Seating in gallery  
2. Alcove  
3. Lounge room

Visible but out of circulation

Hirshhorn Museum Wash. D.C.  
1. Interruptions  
2. Partial enclosure, good

Outside view

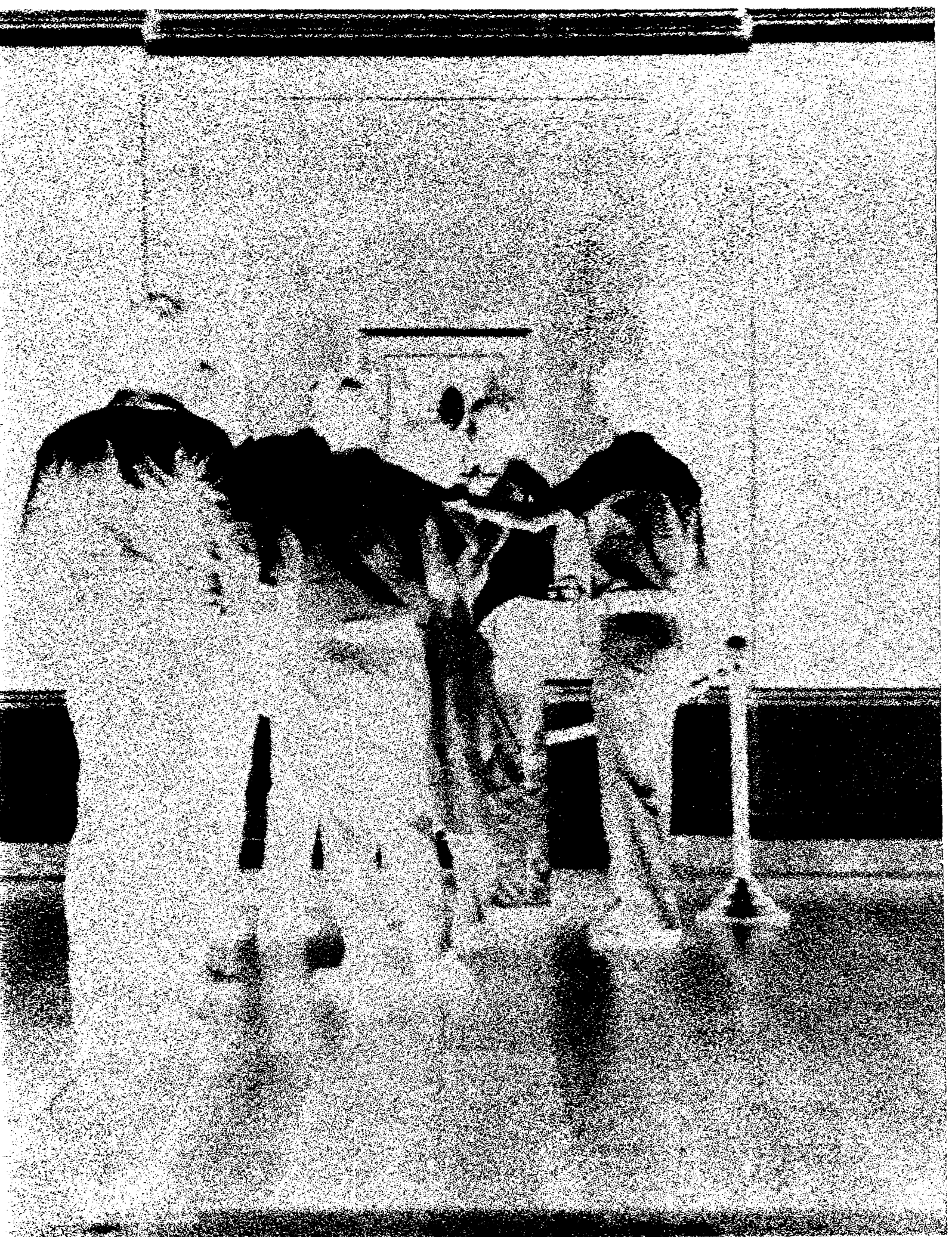
Tumacacori Museum, Arizona

Locations

•• Lounges  
Near landmark  
Along major paths  
Left side of Gallery

lounge area should be highly visible but present a minimum of visitor movement for instance, they should not be placed in the middle of exhibition halls or in busy corridors, since both areas are not conducive to relaxation or meditation and will continue to stimulate the visitors senses.

- Rest areas providing natural surroundings are particularly relaxing (e.g., outside views, courtyards, etc.).





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