PUBLIC SPACE DESIGN GUIDELINES

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 in its quality and atmosphere directly affecting 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 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?

If future museums are to be recognized as institutions offering a public service and not as the 16th and 17th century 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


1. Entrance hall
2. Circulation
3. Galleries
4. Lounges
5. Restaurant
6. Check room
7. Kitchen
8. Study storage
9. Curators office
10. Office
11. Loading dock for supplies
12. Shipping elevator
13. Temporary storage
14. Photography
15. Permanent collection storage
16. Conservation
17. Staff lobby
18. Packing carpenter shop
19. Recording examination
20. Mounting framing
21. Box storage
22. Receiving unpacking
23. Loading dock
24. Registrar’s office
25. Office
26. Entrance for exhibits
27. Service entrance

- public space
- areas off limits for exhibits
- major check points
- passage closed to exhibits
- zone of safety
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.

<table>
<thead>
<tr>
<th>Space Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrance Halls</td>
<td>10%</td>
</tr>
<tr>
<td>Circulation</td>
<td>20%</td>
</tr>
<tr>
<td>Galleries</td>
<td>50%</td>
</tr>
<tr>
<td>Lounges</td>
<td>20%</td>
</tr>
</tbody>
</table>
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 postcards, 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.
MOST COMMON ENTRY SPACES

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

ENTRY SEQUENCE SPACE RELATIONSHIPS

Exhibit

Lobby

Support

Entry Foyer

Support

Transition

Public

ENTRANCE HALL 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
ENTRANCE HALLS - LOCATING THE INFORMATION BOOTH, BOOKSTORE AND GIFTS.

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 unmeditated 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 dominate an architectural composition.
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 visitor 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 4, 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

2. Linear

3. Open

4. Loop

5. Branch, Lobby-Foyer

6. Branch, Gallery-Lobby

7. Branch, Linear

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

- 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
### 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.

### 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.

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 (stairs, elevators, escalators, foyers, landings, corridor junctions, entrance to gallery spaces).

In addition to maps and signs,

### Table: Type of Museum Most Likely to Be Affected

<table>
<thead>
<tr>
<th>Type of Museum</th>
<th>Most Likely to Be Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art</td>
<td></td>
</tr>
<tr>
<td>History</td>
<td></td>
</tr>
<tr>
<td>Science</td>
<td></td>
</tr>
</tbody>
</table>

### Repeated Studies with Similar Results
- Most visitors report confusion over directions while visiting the museum, such as east-west, north-south.
- Visitors want directional signs to assist them in locating rest areas, cafeteria and exhibits which allow them to sit while visiting it.
- Most visitors find maps and plans hard to follow. (Cohen, 1977)

### One Study with Good Results
- Most visitors report backtracking and difficulty in traversing the museum on their visit. (Cohen, 1977)

### Study with Weak Correlations
- Visitors who use maps, read directions, and ask guards for orientation assistance stay longer than those who do not. (Cohen, 1977)

### Diagrams and Illustrations:
- Circulation routes and visitor orientation aids.
- 30 min. visit vs. 5 min. visit comparison.
- Orientation aids: no aids vs. aids.
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 visitor’s own position 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, there by 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.

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
- 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.

- 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
   - major path
     - larger
     - minor
2. Three paths
   - large
   - equal
3. Four equal paths
   - large orientation area

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
1. Names of halls clear
2. Understandable symbols

SIGNS - role, specific directions
1. Sign band
2. Painted
3. Ceiling mounted
4. Projecting
5. Wall
6. 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**

1. Stairs
2. Landings
3. Corridor Junction
4. Elevators
5. Escalators
6. Foyers
7. 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 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.
### 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 - 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
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 the third and forth 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 counterclockwise 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.

**MAJOR GALLERY DESIGN CONSIDERATIONS**

1. High ceilings
2. Adequate floor space
3. Adequate & controlled circulation
4. Larger exhibit rooms
5. Creature comforts
<table>
<thead>
<tr>
<th>LOCATIONS FOR MAJOR GALLERIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Next to main entry</td>
</tr>
<tr>
<td>Ground floor</td>
</tr>
<tr>
<td>Along well defined paths</td>
</tr>
<tr>
<td>Convenient locations</td>
</tr>
<tr>
<td>First in a right to left circuit</td>
</tr>
</tbody>
</table>

- 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 - 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.

**QUALITY OF RESEARCH**

- Repeated studies with similar results
- One study with good results
- Study with weak correlations

**JUSTIFICATION:**

A number of studies conducted by Melton (1931), Porter (1938), Robinson (1938), and Nahemow (1971) have shown that the more monotonous a stimulus becomes the more attention wanderers and that any change from the habitual tends to attract and hold attention. The benefits of diversity were 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.
- 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).

DIVERSE THROUGH LIGHTING

Lighting alternatives
- Mixed lighting
- Color of light
- Room lighting and object lighting
- Illumination and brightness
- Position of light source
- Windows
  - Corner lighting
  - End lighting
  - Diffusion
  - Screening
- Skylights
- Fluorescent and incandescent lighting
- Direct artificial lighting
  - Attic installation
  - False skylights
  - Troffer lights
  - Polarized light
- Indirect artificial lighting
  - Suspended fixtures
  - Case lighting
  - Concealed uplights
  - Lighting coves
  - Light panels

Artificial lighting methods
- a. adjustable spots
- b. fixed incandescent floods
- c. fluorescent tubes

Natural lighting methods

Multistory museum lit by daylight
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).
### 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.

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, surmised 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 were 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 21 seconds after the new door was opened.
**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.
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
ISSUE:
MUSEUM VISITORS BECOME PHYSICAL- 
LY AND MENTALLY FATIGUED DURING 
THE COURSE OF THEIR VISIT. TO 
AID THE PACE OF EXHIBITS VIEWING, 
LOUNGE INTERIORS MUST BE DESIGN-
ED 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 been shown that most museum visitors become increasingly fatigued and bored during the course of their visit. They skip some 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 they seek the opportunities to sit down, it is evident that 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.
Manfred Lehmbrock author or 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.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>gallery</td>
<td>lounge</td>
<td>1.</td>
<td>2.</td>
<td>3.</td>
</tr>
</tbody>
</table>

LOUNGE AMENITIES
- Seating
- Smoking area
- Restrooms
- Exterior views
- Carpeted floors
- Drinking fountain
- Plants
- Music
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 1960'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 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...
left sequence after entry and seldom progress around the total
gallery, ultimately resulting in the left-hand wall being of im-
fierior display value. Position-
ing 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 rec-
commended in considering the lo-
cation, size and frequency of
museum lounges.

**DESIGN RECOMMENDATIONS:**

- To combat museum fatigue,
disperse a series of small
places for resting through-
out the museum offering more
amenities as the visit pro-
gresses.

- 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 af-
fected for display purposes.

- Since visitors have an insa-
tiable demand for orientation
a carefully considered system
of rest areas can be inte-
grated with an information
system. For example, rest
areas can be extensions of
clusters of galleries, acting
both as rest areas and tran-
sition areas, with necessary
directions and other infor-
mation.

- 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 in-
clude: along or near a well
defined path, near major ex-
hibition areas, or near ma-
ajor 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
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.).