



**WAYFINDING:
DESIGN FOR UNDERSTANDING**

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The Center for Health Design is a nonprofit research and advocacy organization whose mission is to transform healthcare settings into healing environments that improve outcomes through the creative use of evidence based design. We envision a future where healing environments are recognized as a vital part of therapeutic treatment and where the design of healthcare settings contributes to health and does not add to the burden of stress.

The Environmental Standards Council (ESC) is a volunteer task force of The Center for Health Design. The ESC is made up of facility executives, design professionals, regulatory agents, product manufacturers, educators, and others who meet three times year to facilitate and encourage the development of performance guidelines and building codes that support life-enhancing healthcare environments.

Wayfinding: Design for Understanding

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Each visitor—whether he or she is a patient, family member, or healthcare provider—enters the medical facility with a personal reality; each has his or her own level of “knowing,” and different levels invoke different needs. Some visitors—a first-time visitor who has never been in a hospital or has never had a healthcare problem—may not realize how different and confusing a healthcare facility is compared to a shopping mall or airport (see Box One). For these people, the hospital may be more foreign than a distant country. The visitor lacks experience, and this can lead to great confusion.

Some visitors, aware of their ignorance, don’t want to know how to navigate. They want an escort to their destination. Other visitors, who lack appropriate knowledge, know they don’t know yet are too embarrassed to ask questions so they will try to navigate on their own. Still others enter the healthcare system knowing that they are ignorant but are unwilling to stay that way. They will be proactive and seek out information. They may read up on their illness, get a map, and plan intently for the visit. They actively seek to become a knowledgeable consumer of healthcare services. They want options and answers. These people want to deal with the hospital experience and the illness on a cognitive level.

However, while these various types of visitors each may take a different approach, they are all striving for the same goal: to navigate the complex, high-tech medical environment of a healthcare facility at a time when illness, stress, and fatigue have depleted their emotional, physical, and cognitive resources.

Often, the first challenge for visitors in achieving this goal—the successful navigation of the often-overwhelming medical environment—is simply being able

Box One: The Airport Model: Progressive Disclosure

As large complex facilities with a wide variety of services and destinations, airports face challenges that are similar to hospitals. (Many travelers are not familiar with the airport layout and may be tired and stressed.)

However, often, airports are better-designed. Why? Successful airport wayfinding relies on the process called *progressive disclosure*, which provides only enough information necessary to get the visitor to the next decision-making point. For example, as travelers approach the airport on the highway, airport wayfinding provides them only with information regarding the appropriate exit. Then, once the travelers have exited, the signs provide information concerning parking locations and drop-off areas. Airports do not provide parking information on the highway signs.

Hospitals rarely employ this model, and provide too much information at inappropriate locations. Signs should direct hospital visitors with the same ease as travelers to and through airports. While signs frequently identify hospitals from highways, airport-like signs should continue to direct people after exiting the highway. The progressive-disclosure method should direct people to correct buildings, hospital parking, and patient drop-off areas. Once in the buildings, the method should direct wayfinders to the next decision-making intersection. Each sign should offer no more than three possible directional options.

to find their way around the facility. Unfortunately, most hospitals and medical centers are complex mazes of long and confusing corridor systems with bends, turns, and foreign-sounding signs. Nothing looks familiar, and visitors, often stressed with demands of an illness, can find coping with confusing corridors frustrating to say the least.

More than just a convenience, the basic ability for people to get from point A to point B—a process called *wayfinding*—with minimal anxiety and aggravation provides patients, visitors, and, ultimately, the healthcare facility with some significant benefits.

Good Wayfinding Promotes Healing

Most importantly, good wayfinding design promotes healing because being able to understand their environment provides visitors with a sense of control and empowerment, key factors in reducing stress, anxiety, and fear—feelings that undermine the body's ability to heal (Passini and Arthur 1992).

As Carpman and Grant (2001) found when analyzing the relationship between disorientation and design, “It is important to consider that wayfinding problems have their own particular cost in the healthcare environment. Stress caused by disorientation may result in feelings of helplessness, raised blood pressure, headaches, increased physical exertion, and fatigue. In addition, patients may be affected by the wayfinding troubles of visitors who, because they became lost, may have less time to spend with patients.”

Good Wayfinding Promotes Fiscal Health

Successful wayfinding systems also make financial sense. Costs associated with wayfinding problems are often hidden. For example, consider the indirect cost of lost productivity as concerned staff members take time away from patient care to give directions or walk lost visitors to their destination. One study at a major tertiary hospital estimated the cost of wayfinding problems at \$220,000 per year (Zimring 1990).

Another indirect cost of poor wayfinding is that lost visitors are late or miss their appointments as people who visit the hospital infrequently misjudge how long it takes to navigate the unfamiliar environment (Zimring 1990).

Further, successful wayfinding systems can contribute to better Press Ganey scores as Methodist Hospital in Henderson, Kentucky, demonstrated by adding interactive display stations that included touch screens designed to be user friendly and easy to navigate.

Good Wayfinding Promotes the Healthcare Facility

Ensuring patients and visitors feel comfortable with basic navigation from the minute they approach and enter the facility not only reduces stress and

frustration, it also communicates to everyone who enters the structure that the facility is organized, professional, and capable. In today's economy, with many institutions vying for increasingly scarce consumer healthcare dollars, it's more important than ever that providers consider the image they are presenting to the outside world.

Further, putting patients and their visitors at ease with a sense that the facility is well-planned and orderly brings other benefits as well: patients and their visitors are more likely to arrive for their appointments on time and with a trusting and open attitude toward staff.

Benefits of Good Wayfinding

In sum, good wayfinding promotes (Passini and Arthur 1992):

- Reduction of stress and frustration for the visitor
- Functional efficiency
- Visitor accessibility
- Safety
- Patient empowerment, improving cognitive skills in spatial understanding
- Improved bottom line

Clearly then, a good wayfinding system is critical to healthcare facilities. But how can the confusing, complex, and often hostile environment of the healthcare facility be transformed into a space with user-friendly, manageable, and intuitive wayfinding? For starters, let's discuss what wayfinding is in more detail.

What is Wayfinding?

Wayfinding is a person's spatial behavior or orientation. Spatial orientation is the static relationship to space or the environment. The concept of spatial orientation

is the predecessor of wayfinding. This relationship requires the user to form an overall mental image of the layout of the place. This image is referred to as the *cognitive map* of the setting. Cognitive mapping concerns the ability to visualize a map, and wayfinding uses the cognitive-mapping process to solve location-based problems.

Unlike spatial orientation with its static relationship to space, wayfinding is a dynamic relationship to the space. It is dynamic in that people's movement with their direct sense of orientation to place must be accommodated. Passini and Arthur (1992) describe wayfinding as a spatial problem-solving process with three specific but interrelated processes:

1. Decision making and the development of a plan of action (i.e., "I need to locate patient room 224").
2. Decision execution, which transforms the plan into appropriate behavior at the right place in space (i.e., "I need to find the elevators to the second floor and locate room 224").
3. Information processing understood in its generic sense as comprising environmental perception and cognition, which in turn, are responsible for the information basis of the two decision-related processes (i.e., "I recognize the elevators, exit on the second floor, and locate room 224").

To accomplish the problem-solving process, the wayfinder relies on five wayfinding factors.

1. Knowing where he or she is (i.e., "I have just arrived at the front door of the surgery center").
2. Knowing his or her destination (i.e., "My instructions from the physician's office indicate that I need to check in and register with the information desk").

3. Knowing which route gets him or her to the destination (i.e., “The information receptionist told me to follow the signs to the elevator and take the elevator to the third-floor surgery waiting room and check-in desk”).
4. The ability to follow that route (i.e., “I need to locate and interpret appropriate signs that lead me to the elevators, exit the elevator on the third floor, and locate the surgery waiting room”).
5. Knowing when he or she has reached the destination (i.e., “This appears to be the surgical waiting room, and the desk is most likely for registration”).

Components of a Good Wayfinding System

Thus, a good wayfinding system considers this decision-making process and the knowledge of the wayfinder, as well as good tools and clues to aid in successful decision making and clear recognition of pathways and destinations.

Tools of good wayfinding are components designed to support spatial orientation and cognitive mapping. Redundancy and overlap of these tools are also helpful to assist people with varying cognitive skills. They do so in four ways.

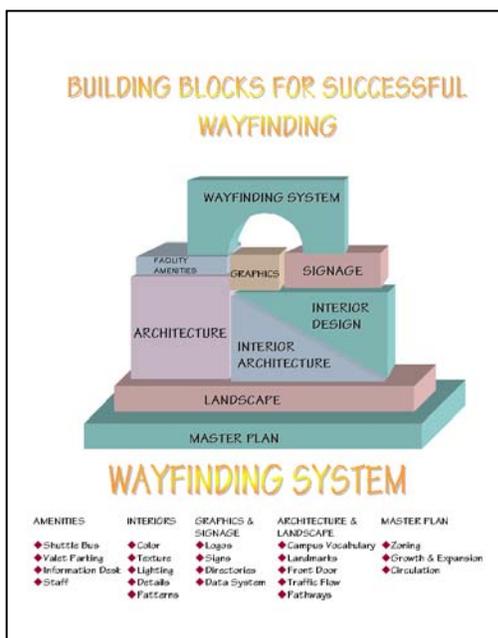
1. Some people are cognitively focused, relying on maps and written directions.
2. Others respond to verbal communication, where one person explains directions to another.
3. Others respond to visual cues such as landmarks, colors, and noticeable features.
4. Some gain understanding primarily through personal interaction with people.

For example, for the cognitively focused wayfinders, maps and signs work very well. Maps can be distributed from an electronic kiosk, with touch screen

interaction regarding the destination and best route to take. The comprehensive and cohesive signage system supports the pathways identified on the maps. For those that rely on verbal cues, the map also works well especially when a real person gives the map with both verbal and written directions. The information desk is a great place to introduce the wayfinding process. With the map in front of the visitor, he or she can explain the pathway while tracing the route. This also allows the wayfinder the opportunity to ask questions and confirm directions. Auditory directions, especially at entrances and elevators, provide added reinforcement that the visitor has entered or exited at the correct location or floor.

Landmarks, bold graphics, and artwork provide helpful clues to those who are more visually focused. Water features, sculpture, and outdoor views all provide visual milestones to help mark the pathways. Landmarks should be easily recognizable and clearly identified on the maps.

There are still others that can only manage to navigate the system with personal assistance. This requires the personal assistance of hospital staff or volunteers to escort the visitor to their destination. A successful wayfinding system also considers the way in which people receive information and establish a sense of spatial orientation. A good wayfinding system is redundant and supports all four methods.



So how do you begin to design a good wayfinding system? The Building Block Model is one method.

The Building Block Model

Good design *is* possible for hospitals. Each building has a natural circulation system

based on paths selected by users. A good wayfinding system takes advantage of that, and such a system consists of numerous components that, like stacked building blocks, rely on each other for a solid foundation. Good wayfinding assembles these blocks in an understandable manner, as described below.

Master Plan

Sometimes, hospitals and medical communities consist of a series of buildings that start out simply, with a main entrance and a primary corridor to main elevators. Yet over time, the facility may grow, interrupting the original pathways. With each expansion, buildings get new spaces, new entrances, new elevators, and new circulation pathways. Buildings become denser, corridors become circuitous, and few landmarks exist. A signage system can be added, but it is often inadequate to the horrible task—visitors still become hopelessly lost. But with a master plan, this confusion can be avoided. A facility's master and site plan can be the solid foundation upon which to build a good wayfinding system. A good master plan considers the facility's growth and expansion. With the help of a good master plan, wayfinding is still easy for people after the original facility has expanded. The master plan addresses how visitors will use future expansions—it evaluates how visitors enter buildings, find new elevators, and how buildings interconnect. In short, the master plan establishes good circulation pathways.

Landscape

The landscape on the site is another block. Trees, plantings, flagpoles, water features, and outdoor furnishings are elements that can be strategically placed to lead to building entrances and other desired destinations. Elements of the landscape can also provide memorable landmarks to mark the pathway.

Interior architecture

Another block is the building's architecture, which has a direct relationship to ease of use. For example, windows in corridors aid in visitor orientation. Essential architectural elements—entrances that are easy to identify, clear pathways, easy-to-see visitor elevators, and landmarks that create visual cues at decision points—contribute to a good wayfinding system.

Interior design

Interior design, interior architecture, and architectural blocks work together to optimize a wayfinding system—color palettes, materials, and lighting support a good wayfinding system. For instance, interior finish materials can delineate visitor pathways from staff pathways, and varying color palettes with departments or floors can facilitate wayfinding. While lighting makes signs more visible, it can also provide direction on circulation pathways.

Unfortunately, most medical centers are not designed for people to easily find their way around, rather, the focus is on medical protocol. Often, the circulation system of entrances, bridges, connectors, corridors, and elevators are confusing even for a seasoned user. Corridors are rarely set up on a grid system, like those used in city planning. In fact, with the exception of recently completed facilities, few model systems exist. However, a good architectural plan, which considers the building's function and the flow of people and equipment through it, is an essential component of a successful wayfinding system. Good architectural planning creates buildings with direct pathways that are simple to navigate for all users.

Signage

As the block model continues, the signage block supports the good bones of the facility. Signs can build on good interior design to perfect a wayfinding system. In a medical setting, signs provide four types of information:

1. Informational (i.e., where to find assistance, hours of operation, etc.).
2. Directional (i.e., for the radiology department, turn left).
3. Identifying (i.e., identifies an area, such as the oncology department).
4. Regulatory (i.e., radiation in use).

All types should be incorporated into the design in a logical, consistent, and user-friendly way.

Graphics

The graphic block, like signage, also contributes to a good wayfinding system. The adage that a picture is worth a thousand words is especially true in wayfinding. Using symbols, wayfinding graphics should repeat the messages from signs. This technique helps communicate with those who do not read. Even preschool children understand the international symbols for “no entry” and “bathrooms.” Other common symbols—those for telephones, ATM machines, and changing stations—also help in wayfinding. Symbols also assist those who may be too embarrassed to ask. Wayfinding graphics should consistently use the facility’s logo, and the logo should appear on signs, printed material, and badges worn by staff. This consistency shows that all messages come from the same facility. Lettering should be easy to read.

Facility amenities

The final block of the wayfinding system is the facility amenities, which include all services that make wayfinding easier. The best wayfinding amenity is people on staff who show they care about visitors’ ability to find their destination. Visitors usually feel comfortable questioning staff members, and conspicuous name badges should identify them. Optimally, appropriate staff can identify lost visitors and offer help before the wayfinder even asks.

Information desks staffed with smiling people are helpful and hospitable. Some facilities provide valet parking, and this makes parking and finding the front door easy. Clearly marked busses can shuttle visitors from remote parking areas to a variety of designations and make the hospital experience less stressful.

Visitor information centers, like the concierge desk in hotel lobbies, can receive visitors and provide a variety of functions. Most importantly, it is the identifiable place where visitors and patients can ask questions. Visitor information centers need to provide basic information about services, procedures, and locations of departments, bathrooms, and restaurants. The centers must be centrally located and the first thing visitors see when they enter the facility. The people who staff these centers are as important as the place itself. The staff should be able to demystify the environment and give clear, appropriate directions. A happy, smiling face should greet visitors and assist in the arrival process. A pleasant face can do much to alleviate the visitors' fear and anxiety.

Finally, nothing is more basic to good wayfinding than a map. In clear graphics, the map should include the name of the facility, major locations, an arrow that shows which direction is north, and a you-are-here identifier. Maps become even more useful when a staff member reviews the map with the visitor and traces an appropriate path for him or her. Maps should be posted at key entrances, elevator banks, and at transitions between buildings. Directional signage supports the map's directions at all major intersections.

What then does successful wayfinding design look like in the real world? The following case study is a good illustration.

Case Study: Potomac Hospital, Woodbridge, Virginia

Like many successful hospitals, Potomac grew to the point where a new hospital was the only way to meet the growing needs of the community. So a new patient tower, which opened a year ago, is now located behind the current facility. This allowed patients and visitors to enter the familiar current entrance and make their way through the existing facility to reach the new multistory hospital.

In the design phase of the new hospital, a wayfinding study was executed to determine how to assist visitors in finding their way through the existing facility and how to relate to a new multistory building. The current facility was all on one floor. The wayfinding study provided many exterior site and interior recommendations that could be designed into the new project's architecture, landscaping, interior design, lighting, graphics, art program, new signage as well as changes in work flow and facility amenities.

As wayfinding was part of the planning and design process, wayfinding support was seamlessly integrated into the site, building, and interiors. The exterior planning included site enhancements, gardens, outdoor dining, a shuttle-bus system, valet parking, and coordinated graphics and signage. Parking and buildings were clearly identified with graphic design, signage, and landmarks. Corridors with supporting lighting and architectural detailing all supported the intuitive pathway of the visitor.

The new interior design and art program played a key role in the wayfinding system. For instance, art and sculpture were deliberately included to provide meaningful landmarks, as well as carefully selected because, for art to provide meaningful landmarks, it must include strong and familiar icons that helps the wayfinder identify with the subject matter.

When art is located in such a way that identifies a story or communicates a theme, it further strengthens the bond. At the Potomac facility, unique themes tell different stories for each floor. Themed art relates to needs of the occupants. This approach intuitively provides a different meaning to each floor. Diversifying art by floor avoids confusion as to what floor the visitor is on. Potomac Hospital's art program portrays familiar landmarks of the Potomac River region. For example, the theme for the intensive-care/critical-care floor reflects nature of the river, using artwork, sculpture, and design elements to support the designed environment. Nature along the banks of the Potomac River provided an appropriate and soothing background for the sickest of patients. The oncology floor embraced the four-seasons theme, which symbolically expresses transition, journey, and hope. The medical surgical floor expressed icons of building elements found on the banks of the Potomac, such as bridges, buildings, and lighthouses. The main floor of public space provided a colorful and upbeat theme of boats on the Potomac. The pediatric department followed a life-under-the-river theme, with a sunken ship and underwater creatures that identified children's rooms, signage, and wayfinding cues. Each floor uniquely created a sense of place with which the visitor could identify.

The art program comes together on a long corridor connecting the existing and new building. A graphic wall illustrates the story of the Potomac River on a 60-foot wall map, colorfully illustrating the art, nature, and history of the river. This introduces the visitor to the delightful art and journey they will find within the building. Everyone remembers this major landmark. It provides a strong connection with the community landmark, helps make sense of the pathways of the building, provides information as well as delights with positive distractions.

Potomac Hospital's wayfinding success took more than three years to investigate, envision, design, and implement. The investigative stage evaluated

what worked and what did not. Community, staff, and administrative focus groups uncovered wayfinding obstacles. The visioning stage evaluated what might be possible to assist the visitor experience. Elements such as valet parking, shuttle buses linking the campus, clear walking paths, and cohesive kiosk directories provided much-needed information. The design phase developed optional pathways, landmarks, numbering systems, graphic design details, signage systems, maps, and facility amenities that would support a positive wayfinding experience. New wayfinding concepts such as site amenities, architecture, and interior design were integrated into the design of the new hospital.

The approach was a seamless project integrated into the planning and design of the new construction project. Wayfinding was not an afterthought, but carefully designed into the project. This allowed elements such as curved bulkheads and lighting to be built-in, allowing wayfinding to intuitively lead to sources of information. The same firm that worked closely with the architectural and landscape architectural firms did the wayfinding, art, graphic, signage, and interior design. The hospital felt project and team integration was the greatest contributor to the successful wayfinding program.

Some of the best wayfinding outcomes were:

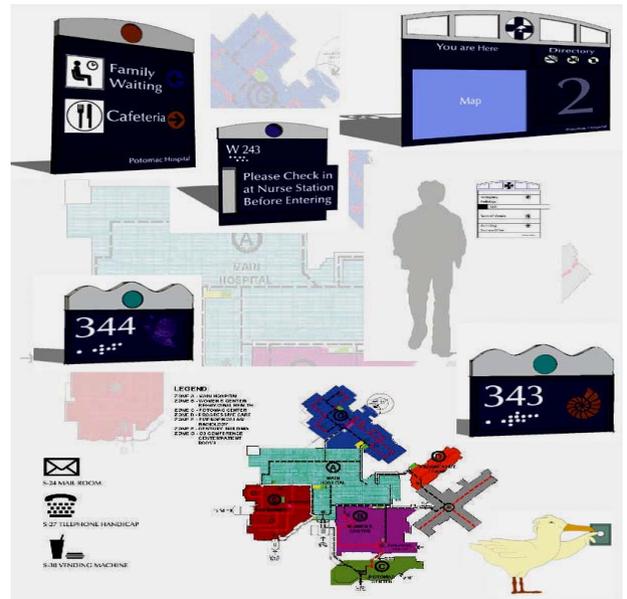
- New numbering system that linked phone numbers with room numbers
- New user-friendly consistent names of destinations that all could understand
- Valet services and shuttle bus linking the campus destinations
- Site amenities that provided better pathways to desired buildings and entrances
- Architectural and interior design features that provided intuitive pathways
- Strong integrated art program that became landmarks and meaningful sense of place

- Comprehensive new signage system linking clear communication, wayfinding information, easy-to-read graphics, and hospital branding
- Clear and simple map program that consistently linked directories with hand-held maps, landmarks, and signage

The new wayfinding concepts of facility amenities supporting signage, well-thought-out nomenclature, a user-friendly room numbering system, electronic directories, art program, and maps all supported sound wayfinding practices designed especially for the unique needs of the visitors and campus.



Potomac Hospital Exterior Wayfinding System



Potomac Hospital Interior Signage

A Checklist for Developing a Good Wayfinding System

In summary, the following components are helpful in creating an understandable environment for the visitor.

- Apply the progressive-disclosure model of wayfinding.

- Identify all parking, buildings, and entrances.
- Use consistent graphics, color, and logos.
- Create a user-friendly handheld map, and repeat that map in lobby directories.
- Develop an appropriate wayfinding system that is specific to your facility.
- Incorporate environmental cues such as landscapes.
- Include windows in corridors for outdoor orientation.
- Design main entrance drop-off areas.
- Offer valet parking.
- Provide easy and well-identified parking.
- Clearly delineate handicap parking and access routes.
- Establish clear routes to primary destinations.
- Train all staff in giving directions—the same way to the same place.
- Have a highly visible visitor-information center.
- Develop a sensible room-numbering system.
- Identify all destinations in the same vocabulary.
- Use symbols and icons to bridge language barriers.
- Provide clear, concise, and consistent signs that have strong contrast and visibility.
- Clearly light all signs.
- Use lighting to feature landmarks.
- Provide easy access to patient education.
- Offer learning centers with extended hours, high visibility, and a friendly staff.
- Differentiate public elevators from staff and clinical elevators.
- Display clocks in primary waiting areas.
- Provide telephones in emergency areas, waiting areas, entrances, and dining areas.

- Clearly identify restaurant and toilet facilities.
- Provide guides and wheelchair transportation for visitors in need.
- Avoid convoluted corridors.
- Remove clutter from corridors.
- Post estimated journey times (see Box Two).

**Box Two: Wayfinding Tip: Post Journey
Times**

No one enjoys being late, and, likewise, staff does not like late or missed appointments. To ease this stress, a healing environment should make appropriate information concerning the length of time it takes to get from the front doors to the final destination available. That is, consider posting estimated journey times whenever possible.

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Evidence-Based Design Website Resources

- Academy of Neuroscience for Architecture: www.anfarch.org (an organization that promotes and advances knowledge that links neuroscience research to a growing understanding of human responses to the built environment)
- InformedDesign: www.informedesign.umn.edu (a research and communications tool for designers)
- Association of Healing Healthcare Association: www.healinghealthcareassoc.org (an organization dedicated to inspiring and supporting healthcare models that exemplify human caring and healing)
- The Center for Health Design: www.healthdesign.org (an organization that supports healthcare and design professionals in their quest to improve the quality of healthcare through evidence-based building design)
- National Academies Press: www.nap.edu (publishes more than 200 books a year on a wide range of topics in science, engineering, and health, capturing the most authoritative views on important issues in science and health policy)
- National Center for Infectious Diseases: www.cdc.gov/ncid (a government agency that conducts surveillance, epidemic investigations, epidemiologic and laboratory research, training, and public education programs to develop, evaluate, and promote prevention and control strategies for infectious diseases)

- Planetree: www.Planetree.org (a nonprofit organization that works with hospitals and healthcare centers to develop and implement patient-centered care in healing environments)
- *Research Design Connections*: www.researchdesignconnections.com (a newsletter for people interested in research-backed design)
- Society for Environmental Graphic Design: www.segd.org (an international non-profit educational organization providing resources for design specialists in the field of environmental graphic design, architecture, and landscape, interior, and industrial design)

Author Biography

Barbara J. Huelat, AAHID, ASID, IIDA, is nationally recognized for her award-winning work and human sensitivity in healthcare design with more than 30 years creating healing environments. As a practicing interior designer, she has served more than 200 healthcare clients with visionary solutions for patient-friendly spaces. Her design expertise covers virtually all types, components, and sizes of domestic and international healthcare facilities.

Huelat has served on the board of directors for The Center for Health Design from 1988-1994 and is currently serving as the board of regents for the American Academy of Healthcare Interior Designers.

A popular speaker and author of *Healing Environments; Design for the Body, Mind & Spirit*, Huelat lectures frequently for the design, medical, and consumer audiences and publishes articles on a spectrum of healthcare design topics. Her firm, Huelat Parimucha Healthcare Design, based in Alexandria, Virginia, is dedicated to design that improves and supports positive patient outcomes.