DESIGN GUIDELINES THROUGH THE MORPHOLOGY OF TRANSIENT SPACE DESIGN IN HEALTHCARE FACILITIES

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Abstract

Transient space, as a programmatic element, is a major design driver of all healthcare facilities. Society today is currently reassessing the influence of transient space design onto the holistic healing process for it contains a notable portion of health qualities that the current physical assessment does not support, which in turn does not support the complete regenerative health of healthcare patients. Therefore the advancement of transient space design is critical in progressing the current healthcare treatment system. This dissertation investigates the intertwining relationships between architectural design attributes and human health. With a specific focus on healthcare facilities, the morphology of transient spaces is explored to formulate a new design strategy for creating healing environments. The project goal is to formulate an architectural design guideline on how to improve the healing quality of transient spaces in healthcare facilities. The guidelines have been derived from the results of various environmental, psychological, and medical studies that have outlined an environmental relationship to human health. Additional recommendations have been made from professionals in the field of architecture, medicine, and psychology whom have extensive experience working with the related material or research area. The design guidelines are formulated to offer clear design translations of how to implement and approach creating a healing environment. A comprehensive design guideline booklet covering the three main aspects of health in human beings (physiology, psychology, and identity) is linked with built examples to offer clear design initiatives and implementations for improving health through architectural design. Accordingly, the guidelines create an easy reference for design professionals to help increase the number of evidence-based design practices in the world of architecture, planning, and healthcare.
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1. Introduction

1.1 Healthcare Facilities and Transient Design

Hospital is derived from the “Latin word hospes for host or hospitium meaning a place to entertain.” In its original context, a hospital provided a person of poor health a place to heal. While the shape, function, and program of hospitals have changed over time, their central purpose as a place for healing remains the same. Healthcare practice has evolved through history to reflect the current social scenarios and advancements in the field. The direct correlation between healthcare design and society’s understanding of health can be seen through ancient Greek healing temples, Roman valetudinarian, Catholic churches, medieval monasteries, colonial hospitals, nineteenth century general hospitals, and even modern day private hospitals. Throughout the years, hospital design has gradually advanced to become more efficient at healing the ill, while also addressing the social health issues of the time.

The development of healthcare facilities can be directly traced through the changes of its transient spaces. Transient spaces are places of temporary usage, in which people are in transition between spaces or mental thought. Transient spaces can be defined through five different categories: collector space, introspective space, purpose space, mover space, and switchboard space. Collector space is an orienting area, with a constantly high population, high amount of activity, and is a gathering experience (such as a dining hall). An introspective space is a more personal environment that fosters a lower level of activity and noise to promote a more peaceful area for contemplation (such as a waiting room). A purpose space is a service-based area that is highly effective at a specific function and handles a constant flux of new users (such as an information counter). A mover space is an area of constant movement both physically and mentally. The users are in constant flux and thus call for a highly dynamic space (such as a corridor or hallway). A switchboard space offers orientation and way-finding elements. With a constant high population and movement, the space clarifies the building’s overall organization (such as a reception area). Together the different types of transient spaces form the driving circulation layout of the design. By defining specifically the different areas within circulation design, research is able


to pinpoint the direct correlation between the shifts in social perspective towards healthcare and its relation to circulation development.

For example, one study could correlate the ancient Catholic hospitals (1200AD) need for every room to face/view the central altar of the church, to today’s environmental psychology (1990AD) study of viewing nature from every room. Both design principles were proven to speed recovery time and promote a stronger mental health, however, each design cannot necessarily be interchanged between time periods. The fact that viewing nature today speeds our recover time reflects the current social scenario where nature is often destroyed and the majority of the world lives in dense urban environments completely separated from the natural world. However in Roman times, there were a plethora of natural integration within most living arrangements and cities were not as dense or as large as they are today. Instead, the emphasis was on one’s closeness to God and the ability for their spiritual health to guide their physical health. Therefore, these environmental behaviors of each time period were the driving force behind the architectural design and layout of the transient spaces within the healthcare facilities.

The circulation of the Catholic hospitals was formed in the shape of a cross, with an altar at the center and four wings of patient rooms, each with a view of the altar from their beds. While the design of the 1990 nature based hospital concealed the circulation on the interior of the building, to allow for the perimeter to be composed of windowed views towards nature.\(^3\) In both examples, the design of the transient spaces correlated with the social notion of health during their respective time periods. These two examples give a brief insight into the world of environmental psychology and evidence-based design that are discussed in detailed examples throughout this research.

Overall, transient spaces have historically been the main design driver of healthcare facilities and played an integral role in the healing process. While that role was significantly minimized during the industrial era of hospital reform i.e., the hospital as a machine, society and science is beginning to realize the hidden potential of this untapped space. While patient rooms and surgical rooms must meet very specific programs and codes, transient spaces are often left ambiguous and minimized. Thus, transient spaces in healthcare facilities are prime areas to rein-

\(^3\) Kurt Chiusolo, “Design anticipations through the morphology of transient spaces in healthcare facilities” (M.Arch diss., Tongji University, 2014), 119-121.
roduce the transient healing environment and improve the health (physically, mentally, emotionally, and spiritually) of healthcare facility users (patients, visitors, and staff).

1.2 Healing

In order to determine what is healing or how to heal someone, we first must understand its root in “health” and how it is defined by society. Public perception of health has morphed throughout history to follow the leading spiritual, scientific, and political milestones. Society has had many interpretations of “health” and the many factors that contribute to it, but there has also been a few underlining factors that have remained consistent throughout the ages. The ancient Greeks believed in Asclepius, a god of healing, whom would greet them in their dreams and deliver the methods they needed to heal themselves through dream healing. For the Greeks, their health was closely tied to their spiritual belief system in polytheism, thus they defined health as being favored by the gods. If their body or mind became weak, they attributed their poor health to having been sinful to their gods. The Greek understanding of health gives contemporary readers a brief look into how society’s notion of health has radically changed throughout the past two millenniums. The Greek method of dream healing, which had an outstanding track record for healing its patients, worked because it directly addressed society’s notion of health. Had the Greeks viewed health as we do today, their dream healing practice would not have been as successful. Therefore in order to understand the proper way to heal people in today’s society, we first must understand how society defines their own health.

When defining the term “healing” Patrick E. Linton, at the Fifth Symposium on Healthcare Design, San Diego, CA 1992, states, “Healing is bigger, deeper, and more far reaching than curing, but both are closely related. Healing usually involves more than just the physical vehicle, as it also touches upon the mental, emotional, and spiritual aspects of what it means to be human being. Healing comes from sources within and outside of the patient, but primarily from within.”

Presently healthcare facilities focus solely on curing patients of infectious diseases or repairing

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a physical injury (such as a broken bone or laceration). There has been little attention given to the emotional or spiritual health of the patient. In addition to current facility design ignoring the multifaceted dimensions of health and a holistic healing process, they also focus on eradicating one spectrum of illness under the already narrow confines of physical health: infectious disease. The Centers for Disease Control and Prevention have listed the top ten leading causes of death in the U.S. as: heart disease (596,577), cancer (576,691), chronic lower respiratory disease (142,943), stroke (128,932), accidents (126,438), Alzheimer’s disease (84,974), diabetes (73,831), influenza and pneumonia (53,826), nephritis (45,591), and intentional self-harm (39,518). Of the top ten leading causes of death seventy percent are chronic illnesses linked to lifestyle behavior. As the medical field continues to progress in eradicating infectious diseases, the main threat to human health is ourselves. As the number of people ill from infectious disease drops, hospitals must undergo a change in their practice and design to respond to the new leading cause of illness: chronic illness. How can the design of healthcare facilities address chronic illness? Health care facilities have the potential, through design, to both indirectly and directly impact the lifestyle behaviors of its users. A design, for example, can promote the use of a staircase in a multilevel building over an elevator, or provide motivation through the design to increase physical movement through the building. Would you rather walk directly to your patient room or would you rather walk through and experience a lush garden before returning back? Simple design maneuvers can motivate people to become more active during their time in the building and help to encourage them to remain active after they leave.

While the number of infectious disease incidents is decreasing, hospitals also must respond to their current treatment methods and processes to incorporate the remaining dimensions of health into the healing process. For example, if a patient was in a car accident and broke several bones and injured their head, current medical practices would reposition their bones, place a cast over the injured areas, and prescribe pain medication to help with the recovery. All of these “treatments” only look at solving the physical trauma experienced by the patient. With the exception of the pain medication which can act as a quick answer to some of the mental stress the body will be experiencing, the other treatments do not help to fully heal the patient. They may repair their physical form, however they do not address their emotional, mental, and spiritual health, which in turn directly impacts the speed of their recovery. Patrick Linton calls

upon the future of healthcare design stating,

“Hospitals need to expand beyond the medical model of curing to newly developed models of healing that recognize and consciously work with the mind/body/spirit connections researchers are beginning to understand. Healing is not just something that happens magically or spontaneously. It is something that can be consciously pursued and influenced by the person who is being healed.”

In contemporary society patients have a preconceived notion of how they are to behave in a hospital and how the curing process will flow. Patients are not told to heal themselves from within. Most patients do not go into a hospital and embrace the atmosphere, uplifting their spirits to prepare themselves for their physical cure. Instead patients are taught by society that they are removed from the healing process and that it is up to the surgery or medication to heal and cure their ailment. This social notion or confusion of the terms healing and curing have brought about a misperception in both the use of and design needs of the healthcare environment. In order to progress the field of healthcare design, we first must untangle the contemporary definition of health and healing to better outline the needs for healthcare facilities today. Healing encompasses a much broader range of stimuli and realms of human consciousness. In order to address the healing of today’s society we must understand the links between design elements/plans/configurations and their contribution to the physical, emotional, mental, and spiritual healing process. Linton concludes his definition of healing in Creating a Total Healing Environment, by stating,

“We are all in the process of healing all the time. The only distinction between caregiver and care receiver is one of acuity; both have the potential to heal from the experience. Healing seems to be a continuing process of connection, or perhaps reconnection, that people bring into their lives.”

Recent credible, clinical research has shown the direct correlation between elements in the built environment and their influence on human being’s physical, mental, emotional, and spiritual health. These studies have highlighted the major environmental contributors to human

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health and offer valuable insight for the architectural design of all spaces, especially healthcare facilities. Schweitzer notes in Healing Spaces, “Numerous studies show that stress, anxiety, depression, and loss of control are detrimental to health.” If we can first understand that what is causing the rise in chronic disease and further complications in sensitive healthcare environments is stress, anxiety, depression, and control, we can then aim to solve these problems architecturally. Each of these problems are multi-dimensional and have differentiating variables, thus making them complex to solve through only one design element. Accordingly, all aspects of human health must be analyzed in order to fully support the health of human beings in a healthcare environment. Stress can influence users through a physiological disturbance, a neurological complication, or even through attacking a user’s sense of self. The mind-body-soul connection needs to be addressed in order to fully respond to all of the environmental influences/relations to human health. Therefore, this research outlines the main architectural design strategies that influence the three main aspects of human beings (body: physiology, mind: neurology, soul: identity) and compiles credible, repeatable studies on environmental relations that have produced a particular impact/influence on one of the main health factors.

When studying the field of psychoneuroimmunology it is important to look at the various design elements stated by Gappell at both a micro and macro level of stimulation. At the macro level the behavior and psyche of humans, directly impacts our bodies at a biochemical level. Linton states, “For people in depressed states, the connection at a cellular level is physically impaired and vice versa.” At a micro scale we can begin to trace a design’s mental impact through the receiving cells in the brain, which are then transmitted to the nervous system, which in turn can produce neurotransmitter cells with the potential to make a healing connection. Basically, the way our bodies interpret the space around us can trigger even the smallest systems in our body and influence our internal, holistic health systems to heal.

Eckart Rither and Angelika Gruber-Ruther summarize their call for healing space design by


noting, “The philosophical interpretation of the psychobiology, teleology, and salutogenesis of space captures with astonishing clarity the long-neglected human need for a meaningfully structured relationship between space and self. Space is significant as a condition of possibility for being human. The health-promoting strength of human beings can be mobilized through a close connection with a space. In all situations, especially those determined by the needs of illness, being able to draw and reflect on one’s own internal strength is an essential element of recuperation. Space has its greatest possible significance in this regard, and the designers of spaces that patients experience should take this into account. The design of space is ultimately an indisputable necessity for the health of body and soul. The healing power of space, which has been far too neglected until now, is based on the evolutionary determined and psychobiologically anchored relationship between being human and being in a space. This is where people formulate their future, which is based on the history of conscious and sub-conscious memory.”

Healthcare facilities today place too much emphasis on functionality and economics, while ignoring the original intent of the building: to heal human beings. Christine Nickl-Weller and Hans Nickl note in Healing Architecture,

“Why is it such a joyless place? Is this a place that is about sickness? – or is it instead a place that is about recuperation, about health and recovery – about positive things?”

Healthcare facilities need to be designed to accommodate a human oriented healing experience. Why are the sterile attributes the highlight of the design? Health is directly affected by a person’s perception of their surroundings and self, for this reason healthcare facilities need to support this connection by offering space that allows for self-reflection by supporting a safe personal journey through their individual healing process. Christine Nickl-Weller and Hans Nickl note, “The space that patients perceive around them should therefore provide a structure that fosters feelings of dependability, security and optimism.”

1.3 Importance in Society

While over the years, healthcare design has been reformed to meet the current social scenario and changing technological advances in medicine, not all change has been viewed as progress. Many of the complaints derived from healthcare today are directly linked to the architectural design and systems, which have notably created an industrial, faceless approach to healthcare facilities. Modern criticism correlates the industrial, “efficiency first” layout as dehumanizing to the patients, by promoting the impersonal and rapid treatment of patients. Modern healthcare design emulates the capitalist social thought, leading to impersonal treatment due to overstressed and frequently changed staff. All of these criticisms stem from the architectural design and layout of modern healthcare facilities. Dutch architectural historian Cor Wagenaar has criticized many hospitals as,

“... built catastrophes, anonymous institutional complexes run by vast bureaucracies, and totally unfit for the purpose they have been designed for ... They are hardly ever functional, and instead of making patients feel at home, they produce stress and anxiety.”16

Our civilization is currently progressing into a new social paradigm, elevating the notion of healthcare past physical treatment. Our society is demanding a flexible and responsive design approach to healthcare facilities. Visitors and patients no longer find it acceptable to be held in confined, dehumanizing spaces. They seek a place to reflect, maintain a moment of peace, and work through their experience. Therefore, I foresee the circulation as the prime opportunity to adapt to the rising demand and once again evolve healthcare design by providing a new kind of environment. The research on past transient space morphology shows a direct correlation to the changing of social paradigms.17 Thus, by tracking the historical patterns and by studying the current usage/need this research will develop a new transient space design that will evolve current healthcare facilities to meet the currently forming social paradigm of the healthcare of tomorrow.

Michael Bobrow and Julia Thomas on inpatient care facilities, in Healthcare Facili-

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ties, state, “It is easy to lose sight of the calming influence that sensitive design can have on the emotional state of the patient, as well as family, visitors, and staff. Going to a hospital is stressful enough; there is no reason for the patient’s physical surroundings to amplify that aspect of the experience. We can learn from the admonition to physicians ‘to do no harm’ while trying to heal. The architect and hospital staff need only step back and visualize the most comfortable experiences and settings they have experienced and try to capture the poetry of those moments.”

They continue by adding, “Clearly a calming environment can affect the emotional state of the patient. A patient and a family can better cope with their hospital experience if they have a greater sense of control over their stay. Such a supportive environment includes easy way finding, privacy, and ease of communications, control of light, sound, and temperature, as well as the opportunity to commune with nature in a calm and beautiful landscape... Unfortunately, the design process is often overwhelmed by the functional needs of medical science, and too often the psychological needs of the patient and the family are overlooked while the body is treated.”

1.4 Design Guidelines

1.4.1 Why do we need the Guidelines?

Currently thousands of scientific studies have been conducted on various levels and realms researching the relationship between humans and our environment. The guidelines developed in this project serve as an architectural translation and summary of the many studies conducted that directly influence the built environment. Accordingly, the guidelines create an easy reference for design professionals to help increase the number of evidence-based design practices in the world of architecture, planning, and healthcare.

1.4.2 How are the Guidelines Derived?

The guidelines have been derived from the results of various environmental, psychological, and medical studies that have outlined an environmental relationship to human health.

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Additional recommendations have been made from professionals in the field of architecture, medicine, and psychology whom have extensive experience working with the related material or research area.

The research divides the guidelines into three main categories (physiology, neurology, and self) according to which element of health that design factor/element influences. These main categories were devised as a critical response to current healthcare design philosophy as well as to the current way society defines health (As referenced in section 1.2 Healing). The past era of healthcare design from 1890-1990 (the industrial era of healthcare) solely focused on the physical aspects of health, relating human illness more to malfunctioning parts in an engine rather than to a human being. This focus on physical determinants of health was driven primarily by the main causes of illness during this time period: infectious disease. Today, however, the main cause of death is chronic illness. Chronic illness encompasses areas of health outside of the physical realm, affecting the way we perceive our health, the activities we partake in, the way our health effects our personal identity, our daily routine, and other inter-related aspects of life. Therefore, our healthcare facilities must also focus on realms of health outside, but still including, the physical attributes of health. In creating a more holistic approach to healing, human health can be better understood as the common definition of mind, body, and spirit. By addressing each realm of health (mind, body, and spirit), healthcare facilities and design in general can create more efficient, holistic healing environments. Each section of the guideline focuses on one of the three realms of health: Mind – Psychology, Body – Physiology, Spirit – Self. Each of the main sections is divided into subcategories of design attributes that correlate to that realm of health. The subcategories were devised from groups of clinical studies on environmental psychology and leading architectural theories in the field of healthcare design.

Each of the three main sections/design parameters of the research contain:

1. Defining Design Factors
   a. An introduction to the area of health
   b. Definition of the specific realm
   c. Delineating the boundaries
d. Overview of the type of research necessary to understanding that area of health

e. Framing the viewpoint from which to build the guidelines

2. Research of Design Factors

a. The major design factors of that area of health are organized into distinct groups from which similar studies/research can be compiled into.

b. Each of the major design factors contain a compilation of study outcomes that cohesively strong together several guidelines within the body of the text.

c. Within the compilation of research in each design factor a guideline reference code is placed corresponding to the architectural summary of the study outcomes (Example: 3.2.1.3). The code corresponds to: (the chapter).(the section in the chapter).(the design factor).(the recommendation for that design factor in order of appearance).

3. Guidelines

a. At the end of each Design Parameter chapter every guideline created is listed in order of its design factor and appearance in the text.

b. Each guideline contains

   i. The reference code (Example: 3.2.1.3)

   ii. The guideline title (Example: On Stage / Off Stage)

   iii. A brief overview of the guideline

   iv. A graphic illustration of an example of its architectural implementation

1.4.3 How should the Guidelines be used?

Each guideline originates from a specific relationship within between the built environment and human health. Therefore, designers can first search for the area of human health that they are trying to influence. Within each area/parameter of human health, the research is organized into specific design factors that influence that area of health. Within each design factor a
summary of the research for that specific design factor is placed along with guideline recommendations. The organization of the research is laid out so designers can quickly reference the ending guideline lists (2.3, 3.3, 4.3) to see what attributes of design can be used to influence a particular design factor of a particular area of health. Each guideline contains a quick summary and graphic illustration to briefly summarize the goal of the guideline. If more information is needed on the particular guideline, readers can use the guideline reference code to locate the supporting sources and additional information about the specific guideline within the design factor section. The guidelines are meant to offer meaningful data in an open format that can be easily applied to any design, for this reason the guidelines resist offering very stringent vocabulary or numbers to allow for their universal application. For more stringent detail, the reader can refer the design factor summary and further reference the original source/study pertaining to that field. Overall, the guideline is laid out to create an efficient workflow for designers/planners to implement the evidence-based design into their daily design practices, while also offering further explanation and data if required.
2. Design Parameter #1: Human Physiology

2.1 Defining Design Factors

Within transient spaces in healthcare facilities, various stimuli are constantly interacting with the human physiology in which both effects our interpretation and experience within the space, as well as influences the body on a cellular level. This chapter summarizes the main design influences that impact the human body from a biological viewpoint (as opposed to a psychological or spiritual viewpoint discussed in later sections). Understanding the direct correlation between a physical design element and its relationship/interaction to a human body will allow the research to frame practical guidelines for the design of positive environmental stimuli.

Psychoneuroimmunology (PNI) is one of the main fields of study on design related health attributes that correlates different stress stimuli to changes in a person’s health. Millicent Gappell describes the field at the Fourth Symposium on Healthcare Design 1991 stating,

“A large body of replica experimental and clinical data has proven the connection between biological responses and human responses to sensory stimuli. The data clearly demonstrates that the mind, brain, and nervous system can be directly influenced, either positively or negatively, by sensual elements in the environment.”

Millicent Gappell describes the major environmental factors of psychoneuroimmunology in six main categories: light, color, sound, aroma, texture, and space. He states, “These have such an enormous physiological and psychological impact on the individual that a well-designed medical facility properly applying these factors can be considered good medicine in itself.”

These six major environmental factors are evaluated below, developing their practical implication for the realm of architectural design.

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2.2 Research of Design Factors

2.2.1 Acoustics

One example of psychoneuroimmunology’s influence on human health can be seen in the acoustical design of a building. At the Fourth Symposium on Healthcare Design, Boston, MA, 1991, Millicent Gappell described the tremendous influence that sound has on a person’s health by stating, “Auditory trauma, besides producing generalized stress reaction, produces physiological changes in blood capillary structure, impeding the flow of red blood cells and constricting the vascular channels. This can cause high blood pressure, heart disease, and ulcers.

Noise as a stressor causes irritation and frustration, aggravates anger, and reduces pain thresholds. Not only does it impair hearing acuity, noise has even been proven to affect adversely visual perception and cause diminished learning capacity. For the staff, noise decreases productivity and increases absenteeism.”

In “Hospital Noise and Occupant Response” by Eric Ryherd, PhD, LEED AP, the idea of designing healing inducive soundscapes for healthcare facilities was studied along with the results of recent research from the Hospital Acoustics Research Team (HART).

“The occurrence rate is essentially a measure of the impulsiveness, or fluctuating nature of the sound environment. It analyzes the percentage of time that peak (LPeak) and maximum (LMax) noise levels exceed certain decibel levels. A clear difference between the occupied soundscapes of the two units emerged via the occupied occurrence rate, with the MedSurg ICU B more “peaky.” For example, LPeak exceeded 90 dB(C) 47% of the time in MedSurg ICU B versus 20% of the time in Neuro ICU B. Subjective perception of loudness and annoyance were found to be significantly and positively correlated with the occurrence rate (p<0.01), further validating the use of the occurrence rate measure. This finding supports the idea that level (e.g., dBA) should be supplemented with fluctuation (e.g., occurrence rate), tonality, spectral quality, and other detailed noise descriptors.”


In creating optimal healing environments in a health care setting, Terri Zobrowsky and Mary Kreitzer state, “Hospitals are attempting to both reduce the sources of noise (for example, by eliminating overhead paging) and improve soundproofing with sound-absorbing ceilings and carpeting in order to reduce stress. Carpet alone can reduce ambient noise by up to 70%. Architects are also attempting to reduce noise when designing a facility’s infrastructure by wrapping ducts, providing higher levels of soundproofing in the walls, and building walls to the deck of the floor above. Designers are also paying attention to the location of pneumatic tube stations and ice makers, both of which can be sources of noise 24 hours a day.”

When addressing the acoustical design of transient space in healthcare facilities there are four primary design factors to consider: 1. Exterior Noise 2. Mechanical Noise 3. Interior Noise 4. Acoustical Vibration. Exterior noise is perhaps the easiest issue to address since it can be addressed through insulation and noise barriers within the exterior wall of the transient space. Accordingly, this guideline will focus primarily with the transient specific acoustical concerns of both mechanical and interior noise.

To address mechanical noise emanating from air handling units, medical equipment, cooling towers, chillers etc. both at source and exterior design consideration can be applied. To avoid a negative influence on user’s health, mechanical background sound levels should not exceed the design criteria for transient spaces from the 2006 AIA/AHA Draft Interim Sound and Vibration Guidelines for Hospitals and Healthcare Facilities of NC/RC(N)/RNC 35-45 and 40-50 dBA.

Several design considerations can be used to meet this design criteria sound limit:

- Fan Selection
- Filter performance
- Terminal boxes
- Vibration isolators


• Duct attenuation

• Airflow velocities

• Cross-talk

In addition to controlling the source of the mechanical noise, the design of the mechanical equipment’s storage will also have a significant impact on noise and vibration transmission. By isolating the mechanical equipment either physically or through the use of insulating room panels, the excess acoustical disruption from the previous design examples can be further mitigated (2.2.1.1). Mechanical noise is addressed in this context because it can disrupt the ambiance and create an added stressor to the environment. However because the design implication can only mitigate these issues and not harness them for a method of healing they will only be addressed in this technical sense. For an in depth explanation of each of these techniques, please refer to the Green Guide for Health Care Technical Brief: Acoustic Environment 2007. One example of mechanical isolation can be seen in the circulation tower within the courtyard of the Rey Juan Carlos Hospital. The elevator shaft is physically separated from the main ring of patient rooms and is placed within the inner courtyard of the hospital. This design strategy isolates and contains the noise of the elevator, preventing any disturbance in the patient rooms.

Mechanical acoustical design is a technical design problem, while interior noise from users represents a multifaceted view of acoustical health. Sound isolation is an important concern for transient space design because this area inherently promotes social activity. However, in a healthcare setting privacy and comfort are key to promoting social engagement which in turn improves both patient’s and visitor’s health. Therefore speech privacy is a concern for healthcare transient space design. As outlined in the Green Guide for Health Care,

“To improve speech privacy, it is necessary to either improve the noise reduction or increase the background sound level.

- Noise reduction- Noise reduction can be improved by adding barriers to block sound and/or be reducing reflections from room surfaces by adding sound absorptive finishes (2.2.1.2).

- Background sound – Electronic background sound systems can provide uniform, controlled sound levels throughout an area. Distributed ceiling-based systems can achieve speech privacy over open areas such as waiting rooms (2.2.1.3).”

ZGF’s design of the depressed seating areas at the Randall Children’s Hospital is an effective solution of containing the noise from patient conversation through the design of noise reducing materials and forms. Similarly, LEVS Architecten’s courtyard design for The Architect offers the subtle sound of running water coming from its central water fountain, thus creating a serene background sound to cover any unwanted noise.

Speech privacy in public spaces is equally important for both staff and visitors. Staff conversations have been shown to be highly disruptive in terms of acoustical stimuli in a recent study that measured the impacts various acoustical stimuli had on patient rest. The study states,

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“Staff conversations, as well as paging, were also shown to be highly alerting. The threshold curves for voice stimuli are consistent with the arousal recollections reported by our subjects and documented as troublesome in healthcare quality surveys. Voice level exposures can be modified behaviorally as well as through design and construction solutions. Some variation was identified among sleep stages, with light sleep (NREM2) showing the least protection from voices as well as other acoustic disruptions.”  

The study recommends controlling sound transmission at nurses’ stations through materials and layout, special allocated consulting spaces to speak away from open areas, as well as lighting cues that can clue staff members of audible behavior.

One example of how to create sound isolation through design can be seen at Tripler Army Medical Center’s Neonatal ICU. A series of sound monitors were placed along the inner corridors of the racetrack floor plan. Each monitor constantly measures the sound of its immediate environment and reflects a specific color of light to indicate the level of sound being transmitted (2.2.1.4). If the level of sound generated in a space was low enough to not disrupt the newborn babies resting on each side of the corridor, the monitor will illuminate a green light onto the ceiling. If the sound level increased and approached the limit of sound allowed in the transient space, the monitor will illuminate the area with a warm yellow light, alerting people in the space that the volume of their speech or activity was approaching a disruptive level. When the level of sound emitted in a section of the transient space that was above the allotted decibel level, the sound monitor would illuminate the ceiling in an alerting red light. The change of color illumination of the transient space is very apparent to the people within the space and thus intuitively alerts them of their sound level. This design approach addresses the source of the noise directly, by constantly monitoring the sound level throughout the transient spaces outside of the neonatal care units.

Another acoustical design element of the Neonatal care ICU at Tripler Army Medical Center is the design of the room partitions. Etched glass artworks sandwich each side of the racetrack corridor, providing both a visual delight from the art as well as a sound barrier between the transient space and the quiet patient rooms (2.2.1.5). Transient space does not need to be completely isolated from the building form to become an active space; with the proper design, the space can be both active and responsive to its adjacent medical rooms. As seen in Figure A-2, the large glass doors allow for visual clarity into the room to monitor the baby’s health, while the art etching provides a level of opaque privacy for visitors within the patient room.

While art in healthcare facilities has been proven to enhance patient experience, a recent study of two Chinese hospitals surveyed the medical staff on their perception of design factors related to the physical environments in hospitals showed that “Subjective design factors were ranked lower than those related to service delivery.” Consequently, while the artwork may enhance the transient space, it is more critical that it functions efficiently, is easily maintained, and can be cleaned. The etched glass provides the best of all worlds, by offering a maintenance free, easily cleanable surface that also provides auditory and visual privacy. Additionally, trapezoidal nursing stations were placed in between each patient room to allow the nurse to monitor the baby’s health from outside the patient’s room. These trapezoidal cutouts offer a variation in the walls of the transient zone, which provide for excellent places to mitigate sound transmission (2.2.1.6). One of the best design solutions to mitigate sound transmission is to bounce/deflect the sound waves off of multiple surfaces, weakening their strength before they pass through to the patient rooms. The glass’s insulation as well as the physical layout of the wall placement and nurse station aids in the design’s holistic strategy to manage the acoustical levels of the space, while enhancing the atmosphere, physical and social activity of its users, improving both patient and visitor experience, while creating a more efficient workflow for the nursing staff. Additionally, complex surfaces can be placed within the ceiling design to maintain the acoustical level of spaces without compromising social connectivity.

A third example of acoustical control can be found through sound therapy. The concept follows the same logic as recommended by the Acoustic Environment Technical Brief stated above (reference background sound 2.2.1.4), where organized digital soundtracks or live music

are brought into the transient space of the hospital to dominate the soundscape of that environment. The concept has many advantages in that the music can mask any mechanical of human generated acoustical nuisance, while also filling the eerie hospital silence with ambient music. Susan Mazer and Dallas Smith have created soundscapes in several hospitals in the U.S. and state, “Music –organized sound- has meaning beyond itself. We, as individuals, connect who we are, what has happened to us, what is currently happening to us, and how we feel with music that is playing.” They developed a music-in-residence program at Washoe Medical Center in Reno, Nevada. Within the first day of performing live music within the hospital the nurse manager had reported that her staff were “far less stressed than usual,” several cancer patients on chemo-therapy had specifically requested to be wheeled out of their rooms into the halls to better hear the music, and nurses had also reported that “patients who had been on morphine every hour and a half had not asked for medication in more than three hours.” Therefore, within the first day of the program they were able to alleviate stress from both staff and patients (to the point where they were no longer requesting pain relief medication) and cancer patients undergoing stressful treatments were motivated to go outside their rooms, into the public hallway where they could better hear the music, with the potential side-effect of increasing their social interaction and mental cognition of their condition.

The transient space in this example transformed into a therapeutic public concert hall. The program had mentioned some technical difficulties at first because the space was not designed for this acoustical program, thus future healthcare facilities need to include flexible transient space programming that can accommodate acoustical demands of both digital and live soundscapes (2.2.1.7). Flexible transient areas for acoustical performance can be found in many existing designs whose focus was geared towards sound isolation. One example of flexible transient areas


for acoustical purposes can be found in the bicycle parking and entrance of the Children’s Nursing Home by K+S Architects. The containers were designed to block the external noise from the surrounding road, however the form, placement, and area provided for bicycles would also serve as a functional performance space, containing noise from travelling to surrounding sites, while promoting noise transmission to the adjacent healthcare building. While this may not have been the original intent of the designers, this space serves as a good example of the kind of flexible transient environments that can harbor acoustical performance for sound therapy and social interaction promotion.

2.2.2 Lighting

“Richard J. Wurtman, M.D., a neuroscientist at the Massachusetts Institute of Technology, states: ‘It seems clear that light is the most important environmental input, after food, in controlling body function.’”31

Lighting is a complex design tool that provides not only practical functions, but also has a direct influence on human’s emotional, mental, and physical health. Lighting design has three main design considerations: 1. Illumination of a space for visual clarity 2. Ambience creation 3. Photobiology. Through the study of photobiology, the study of lights effects on life, it has been well understood that the sun’s natural cycles and form of light have made a deep impression in human behavior and biology over time.

Natural daylight is always the preferred lighting design strategy for creating comfortable, clear, healing transient spaces (2.2.2.1). In “Daylight, View and Good Circulation in Hospital Design,” Ed Jackmauh references historical uses of natural day lighting design to act as both a preventative measure and a recovery aid in healthcare. He notes the negative impact of the rapid expansion in healthcare facilities during the industrial revolution with design propagated by the invention of the light bulb. His research concluded that the biggest downfall of healthcare facilities of that time was the heavy reliance on new technology. Jackmauh’s design philosophy relies on a grassroots, “common sense” approach to healthcare design that incorporated primar-

ily: natural lighting, good views, and a strong circulation design. The design of the Weill Cornell Medical College served as a proper example of his healthcare design principles in which all public transient spaces were filled with natural daylight, views, and water features. The transient spaces in this healthcare facility example used the public transition as the design driver and therefore created a successful, efficient healthcare facility in New York City. Access to natural sunlight may help orient the focus of users with concentration differences that experience a shortened attention span when in a space illuminated by fluorescent lights. Natural lighting has also been shown to “make a significant difference in depression.”

As noted in *Psychoneuroimmunology*, “The human system evolved under the influence of the sunlight spectrum to which particular light-sensitive and light modulated organ systems are specifically adapted. Light, coming into the pineal gland through the retina of the eye, influences endocrine control, timing of our biological clocks, entrainment of circadian (sleep/wake) cycles, sexual growth and development, regulation of stress fatigue, and suppression of melatonin – a central nervous system depressant used for treatment of Seasonal Affective Disorder (SAD). Sunlight is vital to the absorption of calcium and phosphorus from the diet for the normal mineralization of bone. In infants and children, it is essential for growth of strong bone structure and for full development of immunological defenses against disease. Phototherapy has replaced blood transfusions for neonatal jaundice.”

Sunlight has many defining characteristics that must be implemented into the transient design of healthcare facilities in order to maintain a natural lighting balance from a biological perspective. One of the main defining characteristics of light on Earth is the rising and setting of the sun each day. Hospitals lit by harsh fluorescent lights 24 hours a day isolate people from the natural cycles


of the Earth and disorient their internal clocks. Accordingly, the light design must reflect on and simulate the diurnal sun cycles (2.2.2.2). This can be implemented through exposure of natural sunlight through an exterior window. Windows allow users of the space to become exposed to the daily sun cycles and maintain their internal clocks and biological responses to the changes in lighting over the day. In areas where natural sunlight exposure cannot be reached (such as: an existing healthcare facility with a double loaded corridor / racetrack design), sun cycle simulation can be integrated into the artificial lighting system to dim the lights when the sun is setting or rising and shut off during the night. Mimicking the amount of light offered throughout the diurnal sun cycle through artificial simulation helps orient users to the outside world and offers comfort by not disrupting their natural bodily cycles. Sun cycle simulation lighting designs are currently being used in the Neonatal ICU of Tripler Army Medical Center to help orient newborn babies to the rhythm/cycle of the sun and daily routines.

Artificial lighting, when used, needs to provide the full spectrum of day lighting produced naturally by the sun. Fluorescent lighting is interpreted by the human pineal gland as darkness and therefore has been shown to “produce a significantly less pronounced reaction of the stress hormones ACTH and Cortisol” in comparison to full-spectrum lighting. Additionally,

“Full-spectrum light provides prophylactic control of viral and staph infections and produces significant improvements in physical working capacity by decreasing heart and pulse rate, lowering systolic blood pressure, and increasing oxygen uptake.”

For this reason, full-spectrum lighting is the preferred lighting option to best simulate natural sunlight (2.2.2.3). Additionally, phototherapy lighting options also help in simulating the biological effects of natural lighting where sunlight is not yearly available and can be used as treatment of Seasonal Affective Disorder (SAD) (2.2.2.4). For example, in Denmark, where seasonal lighting is very limited during winter months, the Danish Institute for Study Abroad (DIS) has installed “sun lamps” within the student lounges to allow students to study while their bodies absorb the benefits of natural sunlight, even when sunlight outside throughout the country is very limited.

Lighting design is directly linked to users’ perception of safety and comfort within a space (See

Chapter 3.2.2. Visual clarity of a walkway and its immediate area offers users a clear picture of what or who they are approaching. Landscaped vegetation is a beautiful design element with tremendous positive impact on public health, however at night, overgrown shrubs and larger foliage can provide a place for perpetrators to hide and thus create a sense of danger with they are not properly illuminated. Higher lighting levels of circulation spaces in assisted living environments have been noted to “empower residents with increased confidence, mobility, and function.”

Therefore, focal lighting should be used to highlight high traffic areas, purpose spaces, or areas where danger is present to improve clarity of the major functions within the transient area (2.2.2.5). Desk lamps, movable reading lights, and pathway illumination all give visual clarity to a specific function within the transient space that encourages usage, safety, and comfort. “Areas of decision-like entries, reception lobbies, and elevators require increased lighting levels, up to 100fc for close work like reading instructions or signs.”

In addition to highlighting the highly trafficked/functional areas, a soft diffused lighting design should provide for the general illumination of the transient area (2.2.2.6). Providing a soft diffused light has many design variables including the source of the light, how the source light becomes obstructed/reflected, the roof angle, wall placement, depth of room from source light, and the material within the room. Glossy materials on the countertops, flooring, or furniture will reflect the light further into the room, however the intensity of the light reflected may be too strong for ill patients. It is best to eliminate veiling reflections to diffuse the contrast between the light source and its targeted area. Glaring and direct/spot lighting creates a contrasting environment that can disorient and confuse users. Additionally, contrasting lighting level in different transient spaces should be minimized to relax and help maintain a constant orientation of visual perception. If the eye must constantly

36 Cynthia A. Leibrock, Design Details for Health, 21.
37 Cynthia A. Leibrock, Design Details for Health, 25.
38 Cynthia A. Leibrock, Design Details for Health, 80.
adjust to contrasting lighting environments, excess stress is added to the user experience and can be especially disabling or daunting for elderly or visually impaired users. Light-colored carpeting is one design element that has been noted for increasing light quantity in a space, while decreasing the glaring of the floor, in comparison to reflective tiles or wood. Natural lighting is the most preferred lighting source and thus should be reflected onto the ceiling of space via a light shelf or otherwise diffused through a shading device to prevent harsh, direct sunlight from blinding the users of the space. Shimizu Corporation’s 100Office demonstrates the proper use of diffused natural day lighting through the use of a soft white, perforated metal screen on their exterior windows. A soft, diffused light brightens the interior space, without harsh reflections or direct spotlights. At night, or in areas where natural light is inaccessible, it is recommended that the artificial lighting source be hidden from direct view and diffused softly throughout the space.

“A less institutional appearance is achieved when only the light is seen, not the source of the light. Exposed lighting systems are often harsh and glaring and can visually take over a space. With concealed lighting systems, the emphasis is placed on the beauty of the room and its occupants rather than on the light fixtures.”

As illustrated in Section 2.2.1 Acoustics (2.2.1.5), artificial lighting systems also offer subtle digital information about the function or current activity of a tested environment (2.2.2.7). In the acoustics example, a sound monitor constantly evaluated the level of noise produced in a space and displayed the level of noise in three distinct colors: green-acceptable noise level, yellow-moderately disruptive, and red-disruptive noise level. The real time feedback of user’s behavior allowed people to adjust their activity within the transient space based on the environmental criteria needed for that part of the healthcare facility. Another example can be found in any modern building complexes’ emergency evacuation routes. Green or red exit routes are illuminated overhead on through floor lighting to guide users along a safe evacuation route in case of an emergency within the building. This is an extreme example, but the same logic can be used with modern technology to help with way finding and orientation. A color coded system could be designed to alert patients of the level of security/privacy of an area, distinguish between a public area and a private work space, or alert users of a dangerous area (such as a stairwell or x-ray room). RFID chips in patient cell phones or bracelets could also allow technological

40 Cynthia A. Leibrock, Design Details for Health, 80.
systems within the transient spaces to guide them to their next destination through light colored monitors in the floor tile or wall. This technique is similar to how a keypad works in hotel doors, where a red light is flashed if you try to enter the wrong door and a green light and beep indicate you have arrived at the right location. There are many possibilities with the integration of modern technology into the built environment and informative lighting systems are one realization of this design strategy. A simpler, less technologically focused, yet effective approach can be seen in the Residential and Nursing Home Simmering by Josef Weichenberger Architects + Partner. In areas of movement, such as high traffic corridors, strip lights guide users through the space, outlining the boundaries and direction of the corridor. While in areas of rest or ‘stay activities’ the lighting scheme is outlined by circular illuminated pendulums, framing the social and resting aspect of the area.

2.2.3 Aroma

Millicent Gappell, IFDA, describes scent as “the silent persuader, influencing mind, body, and health.” He further states that “scent and emotions are very closely intertwined,” with impulses from aroma stimuli causing a reaction in the brain at a faster rate than visual and audio senses because it connects directly to the seat of our emotions, the limbic system.\(^4\) Aroma design has the potential to positively effect people’s emotions through stress relief while also mitigating the negative scent triggers within the medical facility (such as material waster, human waste, and ammonia).

Healthcare Facilities should incorporate aroma design into the way finding practices of the build-

\(^4\) Millicent Gappell, “Psychoneuroimmunology,” 118.
Residents rely on tactile clues, like actual objects or air currents, for orientation. Fragrances and visual shapes are also important orientation clues. Spaces can be differentiated using the scents of childhood: pine trees, flowers, burning leaves, the smell of hay, and even the fragrance of suntan lotion.”

Different transient areas can utilize fragrance changes to create a sense of place or destination within a large facility complex (2.2.3.1). A waiting room could be filled with fresh flowers and offer the impression of spring, while a second waiting room down the hall could utilize pinecones to offer the impression of autumn. The concept is to help tell a story within the healthcare facility that both comforts patients and creates a memory map of the facility at the same time. This is particularly important for elderly patients whom hearing and vision might be impaired. Scent travels quickly to the brain and alert the patient that they are entering into a new space or scenario. Scent mapping can be designed through the physical placement or arrangement of an aroma source within a space, or through a digital aroma diffusing system that can be incorporated into the ceiling design of the space (2.2.3.2). Similar aroma diffusing systems have been designed for both spa and retail stores to both aid in relaxation as well as strengthen a brands image. The clothing retailer Abercrombie and Fitch uses an aroma diffusing system within all of their retail stores to continually disperse the scent of their signature cologne throughout the store. This design helps to strengthen their brand’s image as well as attract shoppers to visit their store. The electronic diffuser design approach was used in the design of the Mae de Dues Hospital, where diffusers were placed strategically throughout the hospital to disperse a lemongrass based scent to help reduce the mental tension of its occupants.

42 Cynthia A. Leibrock, Design Details for Health, 41.

In addition to or in-lieu of an electronically diffusing system, fresh sources of aroma should also be designed for. Fresh flowers and plants offer a multitude of benefits to ill patients (2.2.3.3). It has been widely noted that nature has a strong positive influence on patient’s mental health, ability to handle pain, and overall stimulation. Live plants have also been proven to clean indoor air and provide a pleasant aroma (2.2.3.4). Philodendrons, golden pothos, spider plants, peach lilies, and English ivy are all prominent at absorbing indoor air toxins such as formaldehyde, benzene, and trichloroethylene (the three most common indoor air pollutants). Through cleaning the air, live plants make a space healthier to be in by decreasing the indoor air pollution, thus enhancing the aroma of the space. Similarly, by increasing the rate of air changes in a room, unpleasant aromas accompanied by stale air can be quickly removed from the space and replaced with fresh air (2.2.3.5). The logic is similar to the introduction of live plants in that cleaner air fosters a better aroma. Stale or uncirculated air, especially in healthcare facilities where infectious illness is housed, creates an unpleasant aroma within a space. While no current naming of this scent is offered, the bodily senses this displeasure in the air and reacts accordingly through physical discomfort. Increasing air change can be designed through both mechanical and natural ventilation systems. The El Carmen Hospital Maipu by BBATS Consulting & Projects + Martinbo + Raby Arquitectos offers several outdoor spaces that transition to ‘in-between’ spaces that are both indoor and outdoor environments. A screen louver system allows for balconies to have the privacy and protection of indoor space, while allowing fresh air to penetrate through, offering the clean scent of the outdoor environment. Similar designs could further harness the natural ventilation through the inner courtyard to remedy the medical scents of the transient spaces that have less stringent air control limitations, thus allowing them to be naturally ventilated.

Another major source of indoor air aroma in healthcare facilities originates from the medical waste, equipment, and procedures. While these scents are disruptive to a comfort-

44 Millicent Gappell, “Psychoneuroimmunology,” 118.
ing environment, they are not avoidable, as they are necessary to fulfilling the medical testing and treatment, at a biological level, of the patients. Accordingly, the medical waste and treatment areas should be organized to contain their scents through the layout of the program spaces (2.2.3.6). For example, medical waste containment or a janitorial closet filled with chemical aromas should not be place adjacent to a communal waiting, eating, or congregation area. Unavoidable strong aromas should be designed for containment and segregation from the communal transient areas in which users maintain a continual and prolonged presence. A reverse strategy can also be implemented on large-scale healthcare complexes in which multiple sources of negative aroma are generated and disbursed through the building. In this scenario transitional spaces themselves can be organized/contained to preserve fresh air and prevent negative aromas from entering the space. The Rey Juan Carlos Hospital by Rafael De La-Hoz organizes the main transitional spaces in a central interior courtyard, physically separated from the patient rooms by a glass curtain wall and a corridor ‘buffer’ zone. Thus, the transitional spaces within the courtyard are protected from the medical aromas of the patient rooms, while still offering easy access/circulation and functionality to the hospital.

Additionally, non-absorptive materials aid in the containment of the negative aroma sources to ensure their scent does not remain in the space after their removal (2.2.3.7). Non-absorptive materials aid in maintaining a fresh scent throughout all transient spaces by improving the frequency of total air change as well as aiding in the cleaning of the room. Hard, non-absorptive materials are easier to clean human waste from and thus leave no interior fibers for the aroma of the waste to become trapped within.

2.2.4 Texture

Texture refers to the empirical sense of touch, however in a design-sense texture can be
produced in both physical objects that people interact with, as well as flat design elements that translate visually as having a stimulating feel (if touched). This section will offer design insights into both realms of texture and their impact on creating a healing environment within transient spaces.

Texture in the flooring materials can aid in orienting people with differences in vision through connecting transient zones (2.2.4.1). A change in the texture of the floor material can indicate the presence of stairs, elevators, an intersection of corridors, or entrance into a new room. The textural difference can be used to indicate non-physical changes as well including the entrance to a hazardous area, a prohibited room, or the change in program/function of a space. An example of this application of texture in design to transmit knowledge can be seen in the sidewalk design of most international cities. Small linear textures guide the visually impaired down the sidewalk to prevent them from swaying into the road. Upon approaching an intersection the texture changes to a series of small circular bumps, which act as a speed bump to slow the walker down to a complete stop before entering the intersection. This same textural design language can be applied to healthcare setting to guide patients and visitors throughout the facility while subtly proving orienting and function information about the spaces they are entering or passing by. This design scheme can be seen in the floor texture of the Doctors West Hospital Emergency Department, by Trinity, where blue and green circular forms provide clear denotation of a change in program of the transient environment. Hard wood flooring flows down the main thoroughfare while the green and blue circular forms pop up in front of doorways, offices, and counters to inform users of a change in function without the use of a wall, partition, or grade change.

Cynthia A. Leibrock notes, “Orientation can be improved or reduced by pattern. Eliminate bold patterns, stripes, and undulating patterns in subacute care.” Patterns can also be

45 Cynthia A. Leibrock, Design Details for Health, 253.
46 Cynthia A. Leibrock, Design Details for Health, 86.
derived through a collection of design elements such as door frames. Too many repetitive elements cause disorientation and signifies a loss of “place.” Leibrock notes, “For example, doors repeated the full length of double-loaded corridors (corridors with rooms off both sides) are confusing. Long corridors themselves can be disorienting.” Therefore textures created in a broader sense from the collection of several design elements must be organized together to offer a sense of place or destination differential (2.2.4.2). The elements should be blended together to create a uniform design both texturally as well as in the color scheme. Similarly a striped pattern of elements can bear the resemblance to bars, while a wavy texture/pattern of elements can appear to be in motion thus further disorienting and dizzying for patients mobility through those transient spaces. In the design of the Catch the Tree Spa by LAND Arquitectos the ground texture transitions from a stone pathway – to warm colored steps – to a grey stone terrace. Each change in texture aides in organizing and framing the activity within the space, evoking a sense of arrival, journey, and a final destination.

How patients will experience a transient space is specific to their illness or cause for being within the healthcare facilities. In hospital settings, for example, most patients experience transient spaces in a supine position, thus lying down on a gurney viewing the walls and ceiling. In these scenarios it becomes more important to differentiate the texture between the ceiling and walls in comparison to the walls and floor. Contrasting textures should be used to differentiate between different programmatic functions as well to help orient people who may be navigating the transient space in a non traditional way (such as on their back or in a wheel chair) (2.2.4.3). Similar uses of contrast can be used to help define boundaries such as doorways. Since most doors in hospitals are left open, the doorframe must clearly indicate from the transient space that

47 Cynthia A. Leibrock, Design Details for Health, 252.
48 Cynthia A. Leibrock, Design Details for Health, 214.
49 Cynthia A. Leibrock, Design Details for Health, 252.
there is an entrance to another programmatic space, thus alerting users of whether or not to enter that space. It is well noted that, “Value contrasts of more than two digits on the grey scale are adequate to increase the imagery of objects.”

Texture can also be designed to produce a sense of comfort and safety for the users of the space (2.2.4.4). “For people with schizophrenia and others who suffer from distortion of perception, keep colors and textures as unambiguous and understated as possible. Limiting textures and colors in interior décor is helpful for the many people with mental illness who are susceptible to sensory overload. Low-intensity colors, especially for background surfaces, are most appropriate for this population.” Wood is one building material renowned for its warm and subtle texture. Wood ceilings, floorings, and doors are all textural design elements that can add warmth and comfort to a transient space while further creating a sense of home and care. The Nenzing Nursing Home by Dietger Wissounig Architects creates a warm, wood framed transitional space between the interior nursing environment and the rolling green hills of the exterior. The wood texture aids in balancing the transition of moving from a confined interior space to the nature filled outdoor environment. The wood texture couples together with the program of the design to ease this transition and bring comfort to its users.

Similarly, healthcare facilities must create confidence in their patients that their treatment will be successful administered at that particular facility. Healthcare facilities can offer this impression through the use of texture in their transient spaces by using strong, clean, and clear construction materials that in turn give patients confidence that the facility will be effective (2.2.4.5). White marble at a front administrative station is one of example of how the clean white marble texture can offer the impression of a clean and sanitary environment. Contrastingly, carpet with dark and unambiguous textures can offer the opposite impression, with patients being uncertain if the facility is clean or maintained well, thus losing confidence in its service.

50 Cynthia A. Leibrock, Design Details for Health, 214.
51 Cynthia A. Leibrock, Design Details for Health, 214.
Texture design also must create comforting physical interaction within the space (2.2.4.6). One example of a sensitive design approach to texture can be seen in the Ambulatory Services Building at Brigham and Women’s Hospital in Boston, Massachusetts, where transient space handrails were detailed with floating wooden handrails.\(^5^2\) By avoiding the cold touch of metal found in most handrails, the wooden handrail offers a smooth and warming texture that encourages its use and promotes movement in the space. Additionally the visual line of wood that it creates through the space helps to comfort visitors by framing the nature vegetation below in a warm wooden frame. With the same language of soft touch design, Gappell notes in Innovations in Healthcare Design,

“The tactility of the space may be enriched by interesting surface treatments, a variety of fabrics and finishes, and differing scale in furnishings to provide an environment that is both comfortable and comforting.”\(^5^3\)

Texture is an important design tool in terms of lighting and perception. “Texture makes tones appear darker, absorbing important ambient light.”\(^5^4\) Therefore texture must be incorporated into the lighting design scheme to promote light diffusion and visual clarity of a space and not divert the lighting potential towards a confusing textural scheme (2.2.4.7). One example of using texture as a light enabler can be seen in the design of the Sunhouse by Christensen & Co. Architects. The yellow-orange flooring texture of the transient spaces carries the natural sunlight across its surface, highlighting the strong contrast in material and direction between the glowing orange floor and the clean white walls. The simple texture avoids distortion or ambiguity and aids in the visual clarity of the transitional area.


\(^5^3\) Millicent Gappell, “Psychoneuroimmunology,” 118.

\(^5^4\) Cynthia A. Leibrock, *Design Details for Health,* 214.
2.2.5 Color

Color is our eyes interpretation of visual light reflecting off of physical objects in space. Therefore color has a direct impact on how people perceive and use a space. This section will focus on how color design in transient spaces in healthcare facilities effects our physical reaction and health when we experience a space. Color design however has been a grey area in architectural and scientific studies with people on both sides of the spectrum stating color’s influence or lack of influence on human emotion/mood. Respectively, this guideline focuses primarily on the physical design implications of color and on the scientific data supporting how our bodies react to the changes in color, rather than focusing on the individualistic view on health through personal color preference.

Color can have a wide range of effects on people; thus color must be designed to meet the needs of the specific user and should always err on the side of caution with influential color usage.

“For people with schizophrenia and others who suffer from distortion of perception, keep colors and textures as unambiguous and understated as possible. Limiting textures and colors in interior décor is helpful for the many people with mental illness who are susceptible to sensory overload. Low-intensity colors, especially for background surfaces, are most appropriate for this population.”55 Therefore color palettes need to respond appropriately to their user base, function, spatial layouts, surrounding environment and local culture (2.2.5.1). In Psychoneuroimmunology, Gappell notes,

“Color choices should be guided by geographic location, each of which has different light qualities, natural color palettes, and regional preferences. What is appropriate in the Arizona desert is not appropriate in the Canadian north woods or in foggy San Francisco.”56

The color palette of the Health Centre and Houses for Elderly by IPOSTUDIO blends the surrounding color of the landscape to the exterior rock wall of the center. The healthcare facility blends into its surrounding environment and culture through the use of appropriate color choice

55 Cynthia A. Leibrock, Design Details for Health, 214.
56 Millicent Gappell, “Psychoneuroimmunology,” 117.
in material and scale. The distribution and variation in stone color aided in the overall regional characteristic of the building’s integration with the site, thus creating a strong sense of place.

Contrasting colors are a helpful tool in creating visual organization of a space by highlighting the changes in elements such as floor-door-wall or flat surface-stair-railing (2.2.5.2). Antonio F. Torrice notes in Color for Healing,

“Nothing is worse for a senior citizen than trying to find a railing that is the same color as the wall; they can’t see it, just as they can’t see a bedspread that matches the carpet when they try to sit on the bed.”

“Brightly colored grab bars, door frames, levers, and switches, for instance, are easier to find than those that blend into the background… Color values that contrast by more than two digits on the gray scale are adequate to increase the imagery of objects.”

Color can denote or clarify a change in transient area program, caution against an approaching danger, aid in way finding, and offer non-verbal clues as to activity of the space. In addition to highlighting certain design elements through contrasts, color can also change peoples’ perception of the spatial layout, shrinking or expanding the visual plane of a space. Colors can be used to enhance the visual perception of a space through expanding a small room or shrinking a large space to enhance comfort (2.2.5.3). “Warm colors seem to advance and cool colors to recede. With the use of cool colors, time is underestimated, weights seem lighter, objects seem smaller, and rooms appear larger.”

One example of using color to expand a small space can be found in many residential home designs, where the white ceiling color extends down the first 1-2inches of the wall until meeting a contrasting wall color to give the appearance of a larger ceiling, thus a

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58 Cynthia A. Leibrock, Design Details for Health, 82.

larger room. In the design of the Juan Carlos Hospital by Rafael De La-Hoz, the expansive transient space was visually divided and organized through a change in surface material/color. The warm brown wood ceiling and side wall shrink the perceived distance of the space while the bright tiled flooring creates a strong contrast, orienting users to move down the open corridor. The right-hand sidewall changes material/color slightly above head level to additionally shrink the height of the space and make people feel more comfortable by orienting the material change to a perceivable human scale. Thus the color change helps to comfort users by making the space ‘feel’ scaled to a personal level, while still remaining wide open for when larger crowds occupy the area.

Similarly, different color hues can create different ambiances within a space (2.2.5.4). A recent studied on color in healthcare design has noted,

“Thermal comfort is also affected by color; people feel cooler in cool-toned rooms and warmer in warm-toned rooms, although the actual temperature may be the same.”60 Additionally, “Warm color hues are often associated with extroverted responses and social contact. A quiet, relaxing, or contemplative atmosphere is created by cool tones.”61

In the Children’s Nursing Home “Tsukuba-Aijien” by K+S Architects warm wood tones create an

60 Millicent Gappell, “Psychoneuroimmunology,” 116.
61 Cynthia A. Leibrock, Design Details for Health, 82.
intimate, extroverted communal gathering space, enhancing the social value of the shared dining and kitchen area for the children.

While color can be used to enhance a space’s visual organization and aid in way finding, it is always best to err on the side of caution in color design as to not over-do or over-stimulate the space using color. For example, “Primary colors (red, yellow, and blue) and strong patterns are pleasing at first but they may eventually become tiring. Highly saturated colors may also be too controversial, triggering unpleasant associations in the mind of the guest.” Additionally, color schemes may be less apparent to the visually impaired and elderly users. Yellowing of the lens of the eye during aging causes patients and visitors to perceive colors differently than the general population, often interpreting blue, blue-green, and violet colors as gray since color perception of the blue range is lost first.\textsuperscript{62} Thus it is more important to differentiate through the gray scale, by at least two digits per change, to provide visual clarity and definition for a transient space (2.2.5.5). A clear delineation in program space is marked by the high grey scale change in the design of the New Lady Cilento Children’s Hospital by Lyons + Conrad Gargett. The grey floor texture meets a strong contrasting change in color along the entrance wall and floor, marking the entrance of each specific hospital unit off of the main corridor.

2.2.6 Space

“The space we create controls us, and the way the physical space of service settings is arranged can strongly enhance or inhibit the program of care.”\textsuperscript{63} The transient space design not only

\textsuperscript{62} Millicent Gappell, “Psychoneuroimmunology,” 117.

\textsuperscript{63} Millicent Gappell, “Psychoneuroimmunology,” 119.
must consider each individual component of design influencing human physiology, but also the broader arrangement of all these elements to form the overall space.

First and foremost, transient spaces must be made relative to the human beings who will be using them (2.2.6.1). The size and proportion of the space must respond to the human body and avoid an overtly large, institutional feel. Using residential dimensions and design element within a healthcare transient space can also aid in user comfort and remind them of a home-like environment. Smaller, private areas within large transient environments bring comfort to patients and help humanize a space. Since most transient spaces are communal, public interaction and movement need to account for in the human dimensioning of the space. ADA guidelines offer a minimum requirement for hallway accessibility, however if a communal space houses a hundred people every hour, than the space must balance providing for the large fluctuation of people as well as maintaining a smaller, humanized scale.

One example of balancing the two requirements can be seen in the entrance design of the Hilton Hawaiian Village Waikiki Beach Resort in Waikiki, Hawaii. A large open-air gathering space greets guests as they enter the hotel complex from a private street. This area is maintained on a single flat level and designates a change in transient use through a drop in elevation to the northern side of the entrance area. The elevation change adds a level of privacy to the northern entrance space, which is used as a café/bar/lounge, largely because it requires effort to descend the stairs or ramp with one’s luggage. Thus by dropping the floor level of the adjacent space, the design was able to cut a huge open transient space into more tangible, humanized dimensions. Additionally the column supports cut small lounges from the larger space. These waiting areas or lounges are visually connected to the same entrance area, but feel like a different space because of the placement of the columns, the resulting size of the area, and the spaces adjacency to a koi pond and palm tree lined view of the beach. This entrance design includes many human scaled design elements/strategies features that maintain a comfortable, relatable atmosphere in a space that has a sizable area and large fluctuation of users. Small changes in elevation, structural column division, furniture arrangement, and spatial offsets are all ways a large space can be architecturally designed to maintain a comforting human scale transient space.

Spatial arrangement and layout in architectural design speaks about how a field of relationships and adjacencies relate to one another. Therefore the areas that are adjacent to the tran-
sient area are what shape and define the transient design. These adjacencies offer a dialogue and source of users for the transient space in which must be designed for. Accordingly, the transient space must be responsive to the needs and function of its adjacent spaces/rooms (2.2.6.2). If a transient space leads to a recovery room, for example, than the transient space needs to reflect on the needs associated with that particular user. For this scenario the adjacent transient space needs to be welcoming and accommodating to the user’s physical needs, while also providing motivation and therapeutic design properties to help the patient recover. Additionally, if the adjacent areas are all recovery room, than acoustical control and activity vibration are key design features to maintain within the transient area to maintain a peaceful healing environment both in the transient space and within the adjacent recovery room. In the Residence and Day Center for the Mentally Handicapped by Aldayjover Arquitectura y Paisaje a central open courtyard offers day lighting and views of bamboo groves to the adjacent transient and medical areas. The layout of the healthcare facility floor plan creates an open central element that can offer a break in the programming while additionally offering an amenity for each adjacent space. The design strategy reduces the scale of the building and creates an engaging dialogue between the vegetated, light filled courtyard and the medical services.

In a similar logic to the guideline above, the adjacent spaces play a key role in transient design, but particular programmatic features can also enhance user experience and help to mitigate stress within healthcare facilities. Transient spaces should maintain a close proximity to nursing stations and other medical staff (2.2.6.3). Both patients and visitors gain comfort and confidence in having medical staff nearby. Proximity to nurses has long been attributed to improving the health and confidence of healthcare users as seen in the 1875 design of John Hopkins Hospital in which the nurses station was placed at the center of a circular open ward, allowing each patient a view of a nurse and vice versa. Additionally proximity to nursing stations has also been the focal point of many nurse efficiency studies, which aim to cut down on

64 Millicent Gappell, “Psychoneuroimmunology,” 119.
the travel time nurses must take to fulfill each task through circulation design. In the late 1950s Yale University’s School of Public Health began to conduct efficiency studies in hospital layouts according by studying the traffic patterns of nurses. The Yale Traffic Index, developed by John Thompson and Robert Pelletier, categorized the traffic patterns of nurses into fourteen main sections, which encompassed about 91% of all nursing traffic. The Yale Traffic Index concluded that 19.1% of nurse travel time was from patient room to patient room, 16.7% from nurses’ station to patient room, 14.1% from utility room to patient room, 9.8% from nurses’ station to utility room, 6.1% from nurses’ station to elevator, and 5.8% from nurses’ station to medical clinic. Therefore transient space design has a direct impact on nurse efficiency and the corresponding health outcomes of the healthcare patients and visitors. In the design of the Dartmouth-Hitchcock Medical Center, nurse’s stations were carved into the edges of the main corridor to provide a close proximity between the nurses and patients. This design strategy has been proven to increase nurse efficiency, cut down on travel time, and increase visual surveillance over intensive care patients. The same design strategy has also been implemented in the new Neonatal ICU at Tripler Army Medical Center in Honolulu, HI. Single nurse stations were placed in between each patient room to allow staff members to closely monitor each newborn, for who seconds of travel time could mean life or death. The nursing stations also provide impromptu meeting areas for visitors to meet and consult with medical staff.

“Social science generally uses the term ‘space’ to refer to socially interwoven relationships and relationships with societies. At the same time, it is becoming more and more evident within the field of social science that social space is largely defined by the constructed environment. Because constructed space is often the main precondition of social space.”

Spatial arrangements and built social spaces must be inherently incorporated into every transient space design to promote social interaction amongst healthcare users (2.2.6.4). Transient design can promote social encounters through the grouping of public facilities, seating arrangement, allocated areas for private conversations, widening corridors to permit stop-and-go conversations, providing small extrusions radiating from a central hallway that allows people to talk away


66 Christine Nickl-Weller and Hans Nickl, Healing Architecture, 294.
from the general public, or through the control of circulation routes. The ways in which design can promote social interaction is limitless and is further discussed in section 3.2.4 in specific reference to human neurology. One spatial element is highlighted in Design Details for Health where it is noted:

“Room size also determines Sociopetal space. The smaller the room, the greater the social interaction. Research has shown that there is less isolation and less passive behavior in small rooms.”

67

The design of the Lanserhof Tegernsee by Ingenhoven Architects provides an ample variation of social design framework through their variety of furniture, arrangements, flexibility of movement or customization of spaces, focal points, and atmosphere of each social area. A three-foot high grey cushion surrounds a square block layout of couches surrounding a central fireplace. The high surrounding cushion divides the seating arrangement from its surrounding area, offering an air of privacy, intimacy, and seclusion. This comfortable space can host intimate conversations as well as larger group/family celebrations. The space offers visual privacy through the placement of the central fireplace and deep surrounding cushion, without enclosing the entire seating area or creating any visual barriers for the adjacent spaces, thus opening up the entire interior gathering space. The adjacent seating areas equally offer successful design frameworks for different types of social interaction and are discussed in further detail in Section 3.2.4 Social.

In combination with providing areas for social interaction, space must also be design to provide areas of privacy where patients, visitors, and medical staff can converse comfortably and securely while in a public transient area (2.2.5.5). Spatial divisions can be designed to create a clear break in programmatic function, blind spot, or physical separation from a crowded area. The design of the waiting lounge in the Hilton Hawaiian Village (as noted in 2.2.5.1) uses the building’s column placement to visually separate the lounge from the main entry lobby. Addi-

67 Cynthia A. Leibrock, Design Details for Health, 208.
tionally, the focal point of the space is the southern view of the koi pond, palm trees, and beach, with the placement of the busy lobby to the north of the entrance. Thus people within the space who orient towards the main view have their back to the main lobby and thus visually are not distracted by all the movement. A series of moveable rocking chairs allows people to congregate together and relax, facing the ocean and trees. Additionally, the koi pond was designed with an infinity edge that leads to a smaller pool of water below, thus filling the space with the sound of a waterfall. The acoustical properties of the space allows the waterfall feature to drown out the noise of the lobby and thus create a private, relaxing transient space that is part of a much larger transient space design. A smaller scale integration of privacy can be referenced in the design of The Giant Pixel Corporation Office, in Sanfran-
scico, CA. A sound absorptive fabric was used to frame, enclose, and separate each booth from the surrounding transient environments. The design created private niches both acoustically, as well as visually to provide safe environments for users to comfortably work and socialize.

Architecture not only has the potential to directly impact a person’s health through physical or biological stimuli, but design can also be used to promote or motivate the future functions or activities of the spaces users. Flexible program space within the transient design of a space allows for future programming of health-related activities, of which have the potential to positively impact user health (2.2.6.6). For reasons relating to budget, inadequate research, or practicality, many health-promoting activities are often left out of healthcare design. However due to the inherently flexible programming and communal attributes of transient spaces in healthcare facilities, there is a large potential for including flexible space which can be easily transformed at a later time. Flexible space promotes the future expansion of the field of evidence based healthcare design by providing multifunctional space that can support future trends or advances in the field of healthcare. A flexible waiting area design could become transformed into a yoga studio or music therapy lounge to support additional holistic healing techniques that are not offered

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68 See 4.4.2 for additional information on motivational design.
through the traditional program design of a healthcare facility.

Urban city centers have not historically been the healthiest places to live when considering physical health and body functions. Certain aspects of a city’s design lead to negative health effects to the human body. Besides the obvious burdens that affect our health such as automobile related air pollution, construction air pollution, and a deteriorating hygiene level of the streetscape, there are many negative influences on city dwellers that are unseen to the human eye. P. Shahmohamadi et. al. researched the unseen health effects of the heat island effect of most urban areas with their study of Tehran, Iran. The study states that a general lack of vegetation, low albedo of surface materials, high amount of waterproofing, heat generated from cooling buildings (a/c units), air pollution, and the thermal properties of heavy concrete and asphalt have added a large amount of heat stressors on city residents. This added heat to a healthcare environment can place additional stress on human physiology, increase incidence of infectious disease, exacerbate air pollution, increase likelihood of heat related illness, dehydration, added mental stress, increase respiratory and cardiovascular disorders, and increase food-borne and vector borne diseases.

Therefore, there are already environmental burdens in urban healthcare facilities that are negatively affecting human health. Thus, successful transient spaces will seek to improve health conditions by mitigating and protecting from the existing burdens, as well as employ a smart design that does not add to the negative health effects of the existing urban infrastructure (2.2.6.7). Whether the healthcare facility is located in the heart of an urban city or in a rural town, the transient space must reflect the local site needs and conditions in order to produce a total healing environment and in a broader sense, a healthier town. The Khoo Teck Puat Hospital in Singapore is an excellent example of a healthcare facility enhancing its local surroundings by

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responding to the site’s adjacent functions and urban fabric. The Hospital design merged the surrounding park with the hospital to bring the park spaces and nature closer to the patients, while also changing the social attitude of hospitals by inviting the public to engage with facility. Typically, hospitals are seen as ‘germy’ environments that offer unpleasant environments for social gatherings. However the design of the Khoo Teck Puat Hospital serves as a turning point in the social paradigm of healthcare and societies notion of what a hospital is defined by. The design enriches the lives of the urban residents, while bringing tranquil green space in close proximity for healthcare facility patients, visitors, and medical staff.
2.3 Guidelines for Physiological Design

2.2.1 Acoustics

- 2.2.1.1 Mechanical Containment
  - By isolating the mechanical equipment either physically or through the use of insulating room panels, the excess acoustical disruption from the previous design examples can be further mitigated.

- 2.2.1.2 Absorptive Materials
  - Sound absorptive materials lesson the transmission of sound waves from one space to another while limiting interior reverberation.
  - Can be designed into the wall, ceiling, and floor assemblies, as well as through the furniture treatment in the space.

- 2.2.1.3 Background Sound
  - Uniform, controlled acoustical systems (whether digital or physical) mask unwanted noise by filling a space with a pleasant and consistent soundscape.

Figure 2.2.1.1: Rafael De La-Hoz, Rey Juan Carlos Hospital, 30 May 2012. ArchDaily, <http://www.archdaily.com/?p=238728>
© Alfonso Quiroga

Figure 2.2.1.2: ZGF Architects, Randall Children’s Hospital, 21 Mar 2013. ArchDaily, <http://www.archdaily.com/?p=347370>
© Nick Merrick / Hendrich Blessing

Figure 2.2.1.3: LEVS architecten, The Architect, 08 Nov 2014. ArchDaily, <http://www.archdaily.com/?p=560871>
© Marcel van der Burg
• 2.2.1.4 Sound Monitor
  • A series of monitors constantly measures the sound of its immediate environment and reflects a specific color of light to indicate the level of sound currently being transmitted within the space and its level of disturbance.

• 2.2.1.5 Barriers
  • Physical, insulated obstructions to sound waves aids in the containment of loud acoustical activities from transmission into adjacent spaces.

• 2.2.1.6 Complex Surfaces
  • Offer a variation in the walls and ceiling of the transient zone, which provide for excellent places to mitigate sound transmission by dispersing the sound waves, weakening their strength before they pass through to the patient rooms.
• **2.2.1.7 Flexible Program Space**
  - Provide for future acoustical installations or design parameters such as additional communal space, live musical performances, electronic sound installations, and containment of high levels of acoustical activity.

**2.2.2 Lighting**

• **2.2.2.1 Natural Daylight**
  - Natural daylight is always the preferred lighting design strategy for creating comfortable, clear, healing transient spaces because it fully reflects on the exterior natural environment and bring the benefits of sunlight into the healthcare facility.

• **2.2.2.2 Sun Cycle Simulation**
  - Replicate the same level of lighting in non-administrative areas of transient spaces to reflect on the natural rising and setting of the sun to orient users with the current time and outside environment.

*Figure 2.2.1.7: K+S Architects, Children’s Nursing Home “Tsukuba-Aiji-en,” 19 Jan 2015. ArchDaily, <http://www.archdaily.com/?p=588946> © Hiroshi Ueda, Yoshihiro Asada*

*Figure 2.2.2.1: BarberMcMurry architects, Hicks Orthodontics, 07 Nov 2014. ArchDaily, <http://www.archdaily.com/?p=564294> © Paul Ott*

*Figure 2.2.2.2: Philips, Light Therapy, Philips Electronics, <http://www.usa.philips.com/c-m-pe/light-therapy> © Philips*
• 2.2.2.3 Full Spectrum  
  o “Full-spectrum light provides prophylactic control of vital and staph infections and produces significant improvements in physical working capacity by decreasing heart and pulse rate, lowering systolic blood pressure, and increasing oxygen uptake.”\(^{70}\)

![Image 1](http://www.archdaily.com/p=170751)  
Figure 2.2.2.3: Christensen & Co. architects, Sunhouse, 23 Sep 2011. ArchDaily, <http://www.archdaily.com/p=170751>  
© Adam Moerk

• 2.2.2.4 Sunlight Supplement  
  o Phototherapy lighting options help in simulating the biological effects of natural lighting where sunlight is not yearly available and can be used as treatment of Seasonal Affective Disorder (SAD).

![Image 2](http://www.usa.philips.com/c-m-pe/light-therapy)  
Figure 2.2.2.4: Philips, Light Therapy, Philips Electronics, <http://www.usa.philips.com/c-m-pe/light-therapy>  
© Philips

• 2.2.2.5 Focal Highlights  
  o Focal lighting should be used to highlight high traffic areas, purpose spaces, or areas where danger is present to improve clarity of the major functions within the transient area.

![Image 3](http://www.archdaily.com/p=592912)  
Figure 2.2.2.5: Marjan Hessamfar & Joe Vérons, Welfare Centre for Children and Teenagers, 03 Feb 2015. ArchDaily, <http://www.archdaily.com/p=592912>  
© Vincent Fillon

• 2.2.2.6 Diffused Glow
  o “A less institutional appearance is achieved when only the light is seen, not the source of the light. Exposed lighting systems are often harsh and glaring and can visually take over a space. With concealed lighting systems, the emphasis is placed on the beauty of the room and its occupants rather than on the light fixtures.”71

• 2.2.2.7 Informative
  o Artificial lighting can be used to provide visual information about both the characteristics of the transient space itself, as well as the behavior/activity of the users within the space (See 2.2.1.5).

2.2.3 Aroma

• 2.2.3.1 Place Making
  o Different transient areas can utilize fragrance changes to create a sense of place or destination within a large facility complex. The scents associated with each new area helps alert users as to their placement within the complex, aiding in way finding.

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71 Cynthia A. Leibrock, Design Details for Health, 80.
• 2.2.3.2 Electronic Diffuser
  o Scent mapping can be designed through the physical placement or arrangement of an aroma source within a space, or through a digital aroma diffusing system that can be incorporated into the ceiling design of the space.
  o Electronic diffusing systems maintain a certain level of aroma stimulation throughout the day and offer specific control over the changing of scent or intensity level.

• 2.2.3.3 Fresh Fragrance
  o Fresh flowers and plants offer a multitude of benefits to ill patients. It has been widely noted that nature has a strong positive influence on patient’s mental health, ability to handle pain, and overall stimulation.

• 2.2.3.4 Cleaner Air
  o Philodendrons, golden pothos, spider plants, peach lilies, and English ivy are all prominent at absorbing indoor air toxins such as formaldehyde, benzene, and trichloroethylene (the three most common indoor air pollutants).\(^72\)
  o Through cleaning the air, live plants make a space healthier to be in by decreasing the indoor air pollution, thus enhancing the aroma of the space.

\(^72\) Millicent Gappell, “Psychoneuroimmunology,” 118.
• 2.2.3.5 Increase Ventilation
  o By increasing the rate of air changes in a room, unpleasant aromas accompanied by stale air can be quickly removed from the space and replaced with fresh air.

• 2.2.3.6 Organize Waste
  o The medical waste and treatment areas should be organized to contain their scents through the layout of the program spaces. For example, medical waste containment or a janitorial closet filled with chemical aromas should not be place adjacent to a communal waiting, eating, or congregation area.

• 2.2.3.7 Non-Absorptive Materials
  o Non-absorptive materials aid in the containment of the negative aroma sources to ensure their scent does not remain in the space after their removal.
2.2.4 Texture

- **2.2.4.1 Orienting Pattern**
  - Textures created in a broader sense from the collection of several design elements must be organized together to offer a sense of place or destination differential. The elements should be blended together to create a uniform design both texturally as well as in the color scheme.

- **2.2.4.2 Clear Organization**
  - Textures created in a broader sense from the collection of several design elements must be organized together to offer a sense of place or destination differential. The elements should be blended together to create a uniform design both texturally as well as in the color scheme.

- **2.2.4.3 Defining Contrast**
  - Contrasting textures should be used to differentiate between different programmatic functions as well to help orient people who may be navigating the transient space in a non-tradition way (such as on their back or in a wheel chair).

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73 Cynthia A. Leibrock, _Design Details for Health_, 253.
• 2.2.4.4 Comforting Warmth
  o Texture can also be designed to produce a sense of comfort and safety for the users of the space.
  o “For people with schizophrenia and other who suffer from distortion of perception, keep colors and textures as unambiguous and understated as possible. Limiting textures and colors in interior décor is helpful for the many people with mental illness who are susceptible to sensory overload. Low-intensity colors, especially for background surfaces, are most appropriate for this population.”74

• 2.2.4.5 Clean Impression
  o Healthcare facilities must create confidence in their patients that their treatment will be successful administered at that particular facility. Healthcare facilities can offer this impression through the use of texture in their transient spaces by using strong, clean, and clear construction materials that in turn give patients confidence that the facility will be effective.

• 2.2.4.6 Soft Touch
  o Texture design also must create comforting physical interaction within the space
  o “The tactility of the space may be enriched by interesting surface treatments, a variety of fabrics and finishes, and differing scale in furnishings to provide an environment that is both comfortable and comforting.”75

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74 Cynthia A. Leibrock, *Design Details for Health*, 214.
75 Millicent Gappell, “Psychoneuroimmunology,” 118.
2.2.4.7 Light Enabler
  o “Texture makes tones appear darker, absorbing important ambient light.”
  Therefore texture must be incorporated into the lighting design scheme to promote light diffusion and visual clarity of a space and not divert the lighting potential towards a confusing textural scheme.

2.2.5 Color
  2.2.5.1 Appropriate Contribution
  o By color palettes need to respond appropriately to their user base, function, spatial layouts, surrounding environment and local culture.
  o “Color choices should be guided by geographic location, each of which has different light qualities, natural color palettes, and regional preferences. What is appropriate in the Arizona desert is not appropriate in the Canadian north woods or in foggy San Francisco.”

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76 Millicent Gappell, “Psychoneuroimmunology,” 118.
77 Cynthia A. Leibrock, Design Details for Health, 214.
78 Millicent Gappell, “Psychoneuroimmunology,” 117.
• 2.2.5.2 Informative Contrasts
  o Contrast colors are a helpful tool in creating visual organization of a space by highlighting the changes in elements such as floor-door-wall or flat surface - stair – railing
  o Color can denote or clarify a change in transient area program, caution against an approaching danger, aid in way finding, and offer non-verbal clues as to activity of the space.

• 2.2.5.3 Enhance Spatial Layout
  o Colors can be used to enhance the visual perception of a space through expanding a small room or shrinking a large space to enhance comfort.
  o “Warm colors seem to advance and cool colors to recede. With the use of cool colors, time is underestimated, weights seem lighter, objects seem smaller, and rooms appear larger.”

• 2.2.5.4 Ambience/Comfort
  o Different color hues can create different ambiances within a space.
  o “People feel cooler in cool-toned rooms and warmer in warm-toned rooms, although the actual temperature may be the same.”

• 2.2.5.5 Universal Gray Scale
  o It is more important to differentiate through the gray scale, by at least two digits per change, to provide visual clarity and definition for a transient space.

Figure 2.2.5.5: Lyons + Conrad Gargett, New Lady Cilento Children’s Hospital, 09 Feb 2015. ArchDaily, <http://www.archdaily.com/?p=595827>
  Courtesy of Lyons, Conrad Gargett

2.2.6 Space

• 2.2.6.1 Human Scale
  o Transient spaces must be made relative to the human beings who will be using them. The size and proportion of the space must respond to the human body and avoid an overtly large, institutional feel.

Figure 2.2.6.1: EFFEKT, Livsram Cancer Counseling Center, 08 Jan 2014. ArchDaily, <http://www.archdaily.com/?p=464296>
  Courtesy of EFFEKT

• 2.2.6.2 Responsive Adjacencies
  o Areas that are adjacent to the transient area are what shape and define the transient design. These adjacencies offer a dialogue and source of users for the transient space, in which must be designed for. Therefore, the transient space must be responsive to the needs and function of its adjacent spaces/rooms.

Figure 2.2.6.2: Aldayjover Arquitectura y Paisaje, Residence and Day Center for the Mentally Handicapped, 12 Mar 2013. ArchDaily, <http://www.archdaily.com/?p=342719>
  Courtesy of Aldayjover Arquitectura y Paisaje
• 2.2.6.3 Nurse Proximity
  o Transient spaces should maintain a close proximity to nursing stations and other medical staff. Both patients and visitors gain comfort and confidence in having medical staff nearby.  

81 Millicent Gappell, “Psychoneuroimmunology,” 119.

• 2.2.6.4 Social Attention
  o Spatial arrangements and built social spaces must be inherently incorporated into every transient space design to promote social interaction amongst healthcare users.
  o “Constructed space is often the main precondition of social space.” 

82 Christine Nickl-Weller and Hans Nickl, Healing Architecture, 294.

• 2.2.6.5 Private Arrangement
  o Transient space must also be design to provide areas of privacy where patients, visitors, and medical staff can converse comfortably and securely while in a public transient area. Spatial divisions can be designed to create a clear break in programmatic function, blind spot, or physical separation from a crowded area.

81 Millicent Gappell, “Psychoneuroimmunology,” 119.

82 Christine Nickl-Weller and Hans Nickl, Healing Architecture, 294.
• **2.2.6.6 Flexible Program Space**
  o Flexible program space within the transient design of a space allows for future programming of health related activities, of which have the potential to positively impact user health.
  o Flexible space promotes the future expansion of the field of evidence based healthcare design by providing multifunctional space that can support future trends or advances in the field of healthcare.

![Figure 2.2.6.6: Ronald Lu & Partners, SK Yee Healthy Life Centre, 26 Jan 2015. ArchDaily, <http://www.archdaily.com/?p=590542>](image)

  Courtesy of Ronald Lu & Partners

• **2.2.6.7 Site Context**
  o Successful transient spaces will seek to improve health conditions by mitigating and protecting from the existing burdens, as well as employ a smart design that does not add to the negative health effects of the existing site infrastructure and context.

![Figure 2.2.6.7: Ruzica Bozovic-Stamenovic, “The Hospital as Social Capital: The Example of the Khoo Teck Puat Hospital Singapore,” in Healing Architecture, ed Christine Nickl-Weller and Hans Nickl (Braun Publishing AG, 2013), 168.](image)

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3. **Design Parameter #2: Human Psychology**

### 3.1 Defining Design Factors

At the Fifth Symposium on Healthcare Design, North Hawaii Community Hospital CEO Patrick Linton defines psychoneuroimmunology as, the study of the relationships between the mind and brain, nervous system, endocrine system, and the immune system. In reference to the emerging field of study Linton states, “The human being, even at a physical or psychological level, is a very holistic, interdynamic entity.” Design elements have the potential to influence human health through their psychological interpretation and experience. As humans interpret what a column means, their bodies will react to its presence. People inherently know that a square column is a hard multidimensional surface, one that cannot be moved by their presence. Therefore when walking in a space with a column present we will inherently move around the column and not walk into it. This example may seem irrelevant or too simplistic, but it will serve as a basis for further analysis of how we interpret a space and how that in turn affects our decisions, experience, and health.

Design elements have also been known to influence the emotional state of those who use it. Design elements such as views, materials, open space, vegetated space, and spatial layout have all been linked to influence the emotional and mental state of its users. Hospital CEO Linton further explains these implications for hospital design when he states,

“In the field of psychoneuroimmunology, it has been known for some time that negative emotions, particularly those that are chronically held and suppressed, can have negative physical impact. Emotions such as rage, depression, hate, fear, and frustration may actually manifest as a physical disease. In addition, we are beginning to appreciate that the opposite may also be true, that positive emotions openly and creatively expressed may actually have positive impacts on health.”

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The field of Environmental Psychology is one example of society’s attempt to quantify the relationship between the physical environment and our health. The studies presented in 3.2 do not represent the extent of modern society’s exploration into the new fields of health, but serve as examples into the kinds of research that has begun to reshape the way healthcare design is understood and how transient space design can be used to implement these new facets of health into a holistic healing process.

One facet of health that has only recently begun to be scientifically studied is the link between our mental and physical health. The most prevalent research in this field has come from pharmaceutical company’s research on the physical effects of their new drugs. Pharmaceutical drugs for both mental and physical ailments have been studied greatly over the last forty years and have developed some basic conclusions that are directly applicable to healthcare design. The most impactful study in the field focuses on the idea of the placebo effect. In the 1960s several studies were performed on the effects of antidepressant drugs to determine their actual impact on a person’s mental health. A study group was divided into two halves, with one half receiving the pharmaceutical drugs and the other half receiving a placebo (a sugar pill), without the groups knowledge that only half of them were actually on the drug. The results showed that both halves of the study group positively improved, with the half on the actual drug improving by a margin of only 15% more. Researchers thus concluded that the actual drug had a minimal impact on a person’s actual health. The placebo group showed improved conditions, not because the pill they took had any effect, but because they believed that the pill would improve their health. Just by acknowledging their illness and perceiving themselves as taking steps to medically correct their imbalance, their conditions improved.

The researchers conducted several additional studies to follow this placebo effect, including one study on side effects. The researchers believed that the actual drug in the previous mentioned study returned a slightly higher margin of improvement, not because of the drug itself, but because the drug came with side effects that reinforced the patient’s perception of being “healed.”

In the next study, researchers again gave half of a study group the antidepressant, while giving

the other half of the subjects an active placebo pill. This placebo pill contained no antidepres-
sant drug, but did cause side effects such as dry mouth, thus replicating similar side effects of
the actual pharmaceutical drug. In seven out of the eight studies conducted there was no differ-
eence between patients who were on the actual drug and patients who were on an active placebo.
Thus, the researchers concluded that, “there is practical value in viewing [psychotropics] as mere
amplifiers or inhibitors of the placebo effects.”87 This research showed that when patients truly
believed they were treating a condition and were shown small indicators or daily reminders that
they were effectively combating their perceived condition, their condition significantly improved.
This research is important to understanding the new needs in healthcare facility design due to
the apparent change in society’s perception of health. If design reinforces the mental notion that
patients are steadily being healed and patients believe and interpret their perception of the design
of the healthcare facility, they can activate the same effects as seen in the study above on the pla-
cebo effect. Design can amplify the natural healing potential of patients, staff, and visitors.

Another study on this relationship between how our overall health is influenced by percep-
tions of our environment and self can be seen in the research of Ekman and Friesen on facial
expressions. The two psychologists researched the correlations between a person’s facial expres-
sions, their emotions, and the information they were trying to perceive. One of the interesting
points of the research was when the group studied the reverse effect of facial expression, mean-
ing how a person’s facial expression effects their emotional health. As stated in Blink, by Mal-
colm Gladwell,

“They gathered a group of volunteers and hooked them up to monitors measuring their heart rate
and body temperature – the physiological signals of such emotions as anger, sadness, and fear.
Half of the volunteers were told to try to remember and relive a particularly stressful experi-
ence. The other half were simply shown how to create, on their faces, the expressions that cor-
responded to stressful emotions, such as anger, sadness and fear. The second group, the people
who were acting, showed the same physiological responses, the same heightened heart rate and
body temperature, as the first group.”88

87 Robert Whitaker, “Anatomy of an Epidemic: Psychiatric Drugs and The Astonishing Rise of Mental
This research illustrates the connection between a person’s perceived health and their actual health. Thus if someone manually forms a smile on their face without experiencing happiness first, their body internally responds similarly to if they had naturally formed a smile. This logic is applicable to transient design by creating a specific experience for patients that helps to morph their perception of their health. If a patient moves along a narrow, concrete hallway, lit by fluorescent lights with no architectural variation, they are left within their own minds to perceive their health as maintaining its same condition, if not negatively impacting their perception that their health is worsening. However if a series of transient spaces align a string of experiences that persuades the patient that they are in a safe environment that is healing them, then they can mentally allow their bodies to begin the healing process.

The healing process is a process. People cannot go to a hospital, receive a shot and expect to instantly get better. Health is a complicated array of mental, spiritual, emotional, environmental, and physical characteristics. Accordingly, the design of healthcare facilities must reflect the same intricacies of health into the physical world. Offering a view of nature out of a window is one design example to allow patients to better improve their emotional and mental health conditions, thus in return benefitting their physical health conditions as well. Healthcare design must become focused around the different facets of health in order to better support the healing process. Transient areas are the optimal programmatic spaces for these design initiative to take place and have historically been the design drivers for the intangible health factors attributed to a healthcare facility’s design.

To help frame the next series of environmental design oriented research, it is beneficial to reference Immanuel Kant’s theory on perspective. In Transcendental Aesthetic, Immanuel Kant describes the brain’s construction of the world around us based on both the empirical sensation of objects as well as the mind’s own previous understanding of that object. He states,

“All our intuition is nothing but the representation of appearance; that the things which we intuit are not in themselves what we intuit them as being, nor their relations so constituted in themselves as they appear to us, and that if the subject, or even only the subjective constitution of the senses in general, be removed, the whole constitution and all the relations of objects in space and time, nay space and time themselves, would vanish. As appearances, they cannot exist in them-
selves, but only in us.”

Kant continues to describe the way in which human’s perceive an object based not only on its physical presence, but also on our intuition or sensibility. In regard to this sensibility he states,

“The representation of a body in intuition, on the other hand, contains nothing that can belong to an object in itself, but merely the appearance of something, and the mode in which we are affected by that something; and receptivity of our faculty of knowledge is termed sensibility. Even if that appearance could become completely transparent to us, such knowledge would remain toto coelo different from knowledge of the object in itself”

Kant is referring to our inherent interpretation and prediction behind the meaning of an object. If we visually see bright light flooding a space, we inherently know it is coming from a source. If the light is singular, pure white, and fills the room in abundance, we could predict that the light source is the sun and that the light is entering from a window. Even without visually seeing the window we know it is there because the appearance of the room matches our prerecorded knowledge of what a room with natural light is. The distinction between physically seeing an object/design element and sensing that it is there can be indistinguishable or go hand in hand. This train of thought can be implemented in architecture by alluding to a particular experience or design feature without actually having that feature physically in time and space. Kant’s depiction of intuition and perception offers a tool at enhancing people’s experiences in a space through referencing the room’s or object’s appearance, rather than its physical form. This topic of perception will be applied later through different studies performed on people’s perception of space and its translation for the design of healing spaces.

Kant clarifies this distinction in the sensible interpretation by offering the following example:

“The rainbow in a sunny shower may be called a mere appearance, and the rain the thing in itself. This is correct, if the latter concept be taken in a merely physical sense. Rain will then be viewed only as that which, in all experience and in all its various positions relative to the senses, is determined thus, and not otherwise, in our intuition. But if we take this empirical object in it


general character, and ask, without considering whether or not it is the same for all human sense, whether it represents and object in itself (and by that we cannot mean the drops of rain, for these are already, as appearances, empirical objects), the question as to the relation of the representa-
tion to the object at once becomes transcendental. We then realize that not only are the drops of rain mere appearances, but that even their round shape, nay even the space in which they fall, are nothing in themselves, but merely modifications or fundamental forms of our sensible intuition, and that the transcendental object remains unknown to us.” He continues by explaining that all objects of the senses are appearances and relate directly to our intuition. Through this lens we can re-imagine what healthcare design transcends to be and how design elements can begin to take on a different form, while offering the same perceptual interpretation to the person experi-
encing the space. Rooms that have previously held restrictions against the physical presence of an object can still offer the experience of the object through the designing of other appearances in the room, which may offer the same interpretation. In the example given above about experi-
encing the window without actually visual seeing it, the light could be designed to imitate the presence of a window, even if one is not afforded in the design.

3.2 Research of Design Factors

3.2.1 Comfort

Throughout the research on comfort-related design in healthcare facilities, one interesting discovery made is the number of people who reported traditional hospital aesthetics / typologies as uncomforting and stressful. One researcher found in an interview with a healthcare facility planner,

“Many designers, planners, and administrators describe a desire that the building belie its func-
tion; they intend for it to look unlike a hospital. One planner says, “many people when they walk in the ground floor they say they don’t feel like they’re in a hospital. The beauty of the architecture, there’s nothing ‘hospital’ about it. It’s a grand space, the lobbies. The circular open-
ings through the lower level, nothing says ‘hospital’ there.” He continues: “So I think that’s the

beginning of the healing environment” (interview, 5/5/09), as if a hospital-like environment would not be a place for healing… Another administrator agrees: “It’s kind of hotel-ish looking” (interview, 6/14/10). It conveys, another says, “that just overall warm feeling that you get when you’re not expecting to be in a hospital,” (interview, 4/27/09) or, as another echoes, “that kind of warm and fuzzy feeling” (interview, 6/26/09). One architect wants to call the space “inviting,” but decides that might not be an appropriate descriptor for a hospital. Yet what does a hospital look like? This is less often articulated, but one planner calls hospitals “sterile and unfriendly and cold” (interview, 5/5/09). Another describes herself as grateful that guests are not, “hit in the face with patients who look ill” (interview, 10/1/09), as they presumably would be in a hospital-like environment.”

Interestingly, many surveys, architects, and healthcare staff have noted the same discomfort associated with the traditional, sterile, machine typology of healthcare facilities. The separation can be seen through the history of transient space typology in healthcare facilities throughout time. The industrial era of 1880-1980 saw a mass production of “efficiency-based” healthcare facilities that focused primarily on nurse movement, dehumanizing patients as mere machines. This ideology was effective in treating tuberculosis, hepatitis, and the flu (most infectious diseases), however in today’s era of health, chronic illness are the number one cause of death in the developed world. Therefore, the same, institutional, efficiency first models of the past generation are no longer effective healthcare models. Thus, transient spaces have to embody the new aesthetic of healing and care by offering warm, intimate, and comforting spaces that relieve stress and dispel the institutional aesthetic of its past (3.2.1.1). One example of de-institutionalizing the hospital can be seen in the design of the Acadia Hospital in Bangor, Maine, 1990. As noted in Healthcare Architecture: In an era of Radical Transformation,

“At the Acadia Hospital, the obvious reference in its composition and appearance was to New England vernacular, and its outdoor terraces and connections with nature directly recalled both its traditional and Lutyen’s masterful attention to nature and the importance of transitional space – in this case, partially enclosed, trellised semi-outdoor patios commonly referred to as outdoor rooms.”


93 Stephen Verderber and David J. Fine, Healthcare Architecture: In an Era of Radical Transformation,
Another example of creating a deinstitutionalized appearance in healthcare facilities can be seen in Figure 3.2.1.1 of Ronald Lu & Partners design of the SK Yee Healthy Life Centre. Located in an urban context, the facility uses natural materials of wood, vegetation, and small stones to enliven the urban environment and begin the tranquil experience of the user. Approaching the facility, foliage from the room garden cascades down the front wall, offering a light filled entrance lobby under a wooden lattice. The experience of walking on a wooden platform in an urban context is unique and when paired with lush foliage, users forget they’re in a dense urban environment or a healthcare facility. These elements bring comfort to the user and allow them to begin their healing journey with an positive opinion towards the facility. The wooden floor continues inside of the facility, along with views of its pocket gardens and vegetated walls. As seen in Figure 3.2.1.2 the interior brings in daylight through its high interior ceilings and ceiling slopes. However, the design frames the lower window to divide the wall visually into human relatable proportions. The pocket gardens also offer a comforting, intimate scale for the users to relax within. The interior spaces all provide this comforting proportion to the human body and offer spaces relatable to daily life activities that you would be more likely to find in a residential home, rather than in a large healthcare facility.

Transient spaces in healthcare facilities need to be designed around relatable proportions that bring intimacy, warmth, and comfort within a larger medical facility (3.2.1.2). Long corridors lined with medical treatment rooms add to the sterile, institutional, and dehumanizing

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characteristics of healthcare design. Smaller, relatable transient spaces offer psychological comfort to its users. By knowing the boundaries of a space and visually understanding its parameters or context, human scaled spaces alleviate the pressure of the unknown in medical facilities. Countless rows of doors binding each end of a visually endless corridor do not offer the stimulation, experience, and motivation that a total healing environment offers. In the design of a new regional Children’s Hospital at Stanford, designers carefully created a human scaled entrance as to not intimidate or feel institutional:

“We extended the wings out in a welcoming way and presented a small-scale terraced entrance, a fragmented arrangement of canopies, playrooms, and gardens, intended to be like transparent toy blocks. The reduction in scale assists in diminishing the level of anxiety experienced as one approaches a large healthcare facility.

The child enters the building through a highly transparent membrane into a lobby that is very small; it’s low-ceilinged, almost residential in scale, and overlooks a magnificent garden. It clearly says, ‘Here somebody cares.’

“All the world is a stage” – stated the infamous Shakespeare. This statement is still true today and is ever present within healthcare facilities, especially within the mainly public transient spaces. This sense can also be viewed through the performance of medical staff and procedures. Should patients be constantly viewing the spectacle of medical drama? An on stage / off stage design strategy aims to conceal the technical medical drama/functions from the public transient areas to allow users to focus on their personal journey and experience through the healthcare facility (3.2.1.3). The passing of large machinery, noisy instruments, odors of surgical procedures, stressed staff members, or technical equipment all adds stress to the already sensitive patient and visitors. Elizabeth Bromley relates this design strategy to a Disneyland concept, stating,


97 Elizabeth Bromley, “Building patient-centeredness: Hospital design as an interpretive act,” 1064.
“The layouts of Disneyland theme parks are emulated for their ability to generate a seamless fantasy world. Disneyland parks use onstage/offstage space partitioning to hide from visitors the machinery, human action, and infrastructure that make the park function. These principles - centered on concealing from the visiting public the techniques that constitute the work that produces or defines the setting - are increasingly important in healthcare design.” She continues by applying the concept to the healthcare facility design, “By applying the Disneyland concept, hospital designers and planners aim to hide the work of the hospital from patients and visitors by sequestering staff, medical chores, and materials offstage. This paradigm structures numerous aspects of hospital design, from the layout of units to the positioning of the elevators, entrances and exits; and it structures policies about allowable activities and care processes.”

The on stage / off stage design strategy allows transient users to fully experience the healing qualities of the space, bringing them comfort by diverting their attention away from the stressful and negative stimuli of medical practices. The Rey Juan Carlos Hospital, as seen in Figure 3.2.1.3, by Rafael De La-Hoz concentrates the major transient gathering areas together in a large central courtyard within the facility. Patient/Medical rooms surround the courtyard, separated by a simple corridor and glass curtain wall. This design allows for users within the main transient spaces (the central courtyard) to be removed from the ‘medical action’ going on within the facility. The separation brings comfort to the patients and visitors in the courtyard, while creating a more efficient route for medical staff to practice undisturbed.

In addition to the humanizing of the healthcare environment and screening of possible negative medical stimuli, transient areas should focus on the journey of moving through the facility, thus emphasizing the patient, staff, and visitors’ experience through the space (3.2.1.4). Richard Foque suggests one design example of focusing user attention in transient spaces through, “‘Widenings and narrowings’ of the circulation areas in order to break-up the monotony

Figure 3.2.1.3: Rafael De La-Hoz, Rey Juan Carlos Hospital, 30 May 2012. ArchDaily, <http://www.archdaily.com/?p=238728> © Alfonso Quiroga

98 Elizabeth Bromley, “Building patient-centeredness: Hospital design as an interpretive act,” 1060.
of straight corridors and to focus attention on certain items which are both functional and aesthetic.”

Breaking down a large facility into smaller, intimate spaces allows users to fully grasp their environment and take in the design at their leisure, as opposed to the fast paced tempo induced in the typical sterile white transient corridor. Transient spaces that frame views, either of interior architectural elements or of exterior landscapes, focus the users attention towards their context, helping to ground them and create a sense of place. In relation to guideline 2.2.2.1, window placement in transient spaces allows patients to focus more on their journey and inner reflection and less on their orientation or negative stimuli within the facility. Window-lined corridors aid in orientation/way finding, as well as establishing a journey throughout the healthcare facility, thus bringing comfort to any user within the space. As seen in Figure 3.2.1.4, the design of the SK Yee Healthy Life Centre frames views of its pocket gardens along the hallways, offering a guiding rail/counter that transforms at moments into seating. This seating design allows users with mobility concerns to easily move through the space, without fear of a long, endless hallway, because they can visually see their destination (the seating area), thus helping to break up the transient space into smaller, individual journeys that users can visualize ahead of time.

Experiencing the full journey through the healthcare facility will give users a better understanding of their environment and condition, however it is equally important for users to experience these factors with the support of their friends and family. Accordingly, transient spaces must incorporate areas that promote visitor (family and friend) and patient interaction within the journey of the facility or treatment (3.2.1.5). Communal areas located within the patient wing can offer an open environment for patients to meet with their loved ones. Additionally, more intimate areas of interaction need to be available to provide privacy.

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to allow for sensitive communication and emotions to be exchanged. Social spaces in transient design are critical to the comfort and health of its users (as outlined further in Section 3.2.4). Flexible seating arrangements, the organization of intimacy levels throughout larger complexes or open space, visual connection to larger areas, and various privacy designs all aid in establishing and promoting a strong communal connection between the patient and visitors. One study found that by rearranging the seating of a public transient space in a healthcare facility day room doubled the rate of social interaction amongst the geriatric patients.\(^\text{100}\)

Similarly, allowing for a neutral area within transient spaces for healthcare staff to meet with patients and visitors (outside of the patient room or staff office) has been shown to increase comfort and decrease stress in healthcare facility users (3.2.1.6).\(^\text{101}\) Proximity to nurses is not a new concept and has been the center of healthcare design since the beginning of the industrial era in healthcare facility design beginning with the John Hopkins Hospital built in 1875. The hospital stressed the importance of having a clear line of sight between each patient and each nurse with the nurses located at the center of the large circular open ward. The logic behind the increase in comfort with the increase in proximity to nurses is simple: people gain confidence and are relieved of basic healing duties when a nurse is around. Visitors do not have to worry about personally handling a medical situation if their loved one begins to have a reaction or medical complication. Additionally, patients feel safer when nurses are closer because they offer them a peace of mind and feel cared for. If there happens to be a medical complication or they need medical assistance, seconds can mean the difference between life and death, thus having medical staff within close proximity gives confidence and peace of mind to the patients and visitors alike.

The growing field of environmental psychology has been developed to include architectural implementations to include human health through a closer connection with nature. Humans have a deep emotional connection to natural environments and receive a variety of benefits (physical, emotional, and spiritual) from a close relationship with them. The study of this connection can be implemented in this thesis research for the purpose of improving health and perception of transient spaces. One informative research conducted by Natalia Lopez-Mosquera


and Mercedes Sanchez studied nature’s direct and indirect effects of place attachment, loyalty, and willingness to pay. In their research on natural conservations in suburban areas, they concluded that the received benefits from parks were associated with place attachment and visitor loyalty. Therefore, nature can offer subconscious benefits that make people loyal to that area and associate that area with an identity (3.2.1.7). This factor will be important when creating public attachment and loyalty to a public space in an unfamiliar healthcare setting.

Additionally, incorporating nature into the interior and exterior design of a healthcare facility can comfort by aiding in orientation. If the transient space frames a large vista of a mountain range on one side of the building and the ocean on the opposite side of the building (Similar to Tripler Army Medical Center on Oahu) patients and visitors will always know which side of the facility they are in just by looking outside. The principle seems very simplistic and that’s because it is. People will subconsciously know their orientation within a building without having to think about it intentionally, thus reducing the often stressful experience of being lost or purposefully searching for your destination. In this example, the emphasis is on the journey and experience of the user as they navigate around the healthcare facility, enjoying the natural wonders all around them. Additionally, nature can be implemented in a smaller scale within the facility to create a node. In the Regional Children’s Hospital at Stanford, the primary circulation of the facility, on each level, was arranged around an asymmetrical central garden. The garden served as a reference point for users to orient themselves around the four surrounding building sections. By viewing the garden, users could reference a particular feature within the garden to orient themselves and indicate where in the facility they are in reference to their starting destination. Architect Felicia Cleper-Borkovi describes the design of the central garden as a design element that, "brings in daylight, movement, change, and a sense of detail. It also brings in the energizing smell of spring, conveying a sense of freedom in a protected way. It answers the human need to be active, breathe fresh air, be comfortable, and get oriented.”

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102 Natalia López-Mosquera, Mercedes Sánchez, Direct and indirect effects of received benefits and place attachment in willingness to pay and loyalty in suburban natural areas, *Journal of Environmental Psychology* 34 (June 2013), 31.


104 Felicia Cleper-Borkovi et al., “New Regional Children’s Hospital at Stanford,” 186.
Nature offers more than just a comforting visual sight, it offers a plethora of stimuli from its aroma, to its movement, to its change in shape and color, to its sound as it blows in the wind. This constantly changing, yet steady, stimuli is crucial in strengthening one’s mental and emotional health.

“British psychologist M.D. Vernon has written, ‘Thus we must conclude that normal consciousness, perception, and thought can be maintained only in a constantly changing environment. When there is no change, a state of sensory deprivation occurs; the capacity of adults deteriorates, attention fluctuates and lapses, and normal perception fades. In infants who have not developed a full understanding of their environment, the whole personality may be affected and readjustment to a normal environment may be difficult.’

Yet, the drab interiors that many healthcare facilities present to patients, families, and staff are monotonous, visually trying, and emotionally stressful, especially to people already under stress.”

A careful design of stimuli must be offered to fulfill our primal desire for the exploration of the new (3.2.1.8). Every human has certain primal desires that we seek for in any given space. From exploration, to privacy, to social encounters, to control, our primal desires fuel our mental and emotional health by altering how we perceive and experience a space. As seen in Figure 3.2.1.8, Catch the tree Spa by LAND Arquitectos creates stimulating interior corridors by fusing a bright skylight highlight, with the swaying leaves of the adjacent trees, and the bright naturally lit, clean interior with the rustic concrete ceiling. The skylight creates a bright highlight along the corridor floor that changes throughout the day with the movement of the sun. The adjacent garden area is also a source of constantly changing stimuli with its lush vegetation juxtaposed with the simple grey stone gravel base.

Eckart Rither and Angelika Gruber-Ruther note, “whether the brain is able to shape its inner world to such an advantage that seeking and fulfillment are in balance depends on the impulses that brain is offered.” They continue by pointing towards nature for inspiration in designing stimulating environments, “A lake at sunrise, a mountain chain in the reddish glow of the setting sun, herds of animals in the savannah – these are all triggers of primitive, well-balanced experiences of self that may even induce a dissolution of the boundaries imposed by egocentrism.”106

Similarly, Experiential Research in Critical Care Design suggests, “In an effort to create comfort, appeal to all of the senses. Eliminate clinical odors and introduce soothing scents, such as vanilla. Comfort visually with textural furnishings, sculpture, and artwork like quilts. Comfort acoustically with music, which establishes a mood while masking unwanted sounds.”107

While Design Details for Health recommends, “Redundant cueing that appeals to all five senses can improve orientation and reduce loss of memory. Patients rely on tactile cues, like objects and air currents, for orientation. Fragrances and visual shapes are also important orientation cues.”108

3.2.2 Safety

This section will explore the architectural design elements that influence people’s psychological perception of safety in transient spaces within healthcare facilities. It is important to note that this section will not elaborate on ADA guidelines or safety codes regarding materials, construction, etc, which must be fulfilled by every healthcare facility, but instead, explore the psychological impacts of what it means to feel safe within a healthcare facility.

Having a sense of security brings comfort and confidence to users of the space. Feeling safe while in a fragile state of illness or the illness of a loved one is crucial in improving ones’ mental and emotional health. Patients and visitors, while in sensitive circumstances, need to believe


107 Cynthia A. Leibrock, Design Details for Health, 260.

108 Cynthia A. Leibrock, Design Details for Health, 252.
that this healthcare facility will heal them. There is a level of confidence that the architect can bestow upon the transient space design. Bernd H. Muhlauer states in The “Added Value” of Good Hospital Architecture for Personnel- An Economic Perspective, “Attractive hospitals offer assurances that their range of services can be trusted… Medical Services present credence goods.” Meaning that a patient’s self evaluation of their experience in a healthcare facility is influenced by their perception of the building to be able to offer the healing services they need. Their measure of confidence in the built environment will directly impact their perceived health outcome. Muhlauer references medical services as “credence goods,” referring to undetermined assessment of the quality of treatment patient’s receive both during the procedure and after the procedure. Healing is a process that can take months of cycles and attention to return to a healthier state. Therefore, when people make these snap judgments when they enter a hospital, they can only base their opinion on their preconceived notions of their health, as well as their interpretation of the competency of a healthcare facility based on its built form. Muhlauer continues by asking, “So how can a hospital achieve economically relevant effects through a hospital architecture that engenders trust?” He believes, “With the help of architecture, values can become goods (products and services) through the implementation of objectives. This realization has long played a role in the field of church architecture, in which forceful and imposing design has served as an expression of religious hope and has conveyed a unique atmosphere. If the treatment of the sick is a service requiring the human ability to understand the signals and symptoms of people in the context of their illness, recovery and approaching death, then architecture must represent the aim of improving the human capacity for perceiving, communicating and interacting, so that such symptoms and signals are interpreted not only on a technical basis.”

Muhlauer continues by comparing architecture’s interpretation to a painting’s interpretation by the public. The art creates a dialogue with the public, allowing them to engage in its meaning and realization “that helps people to reassure themselves.” Healthcare facilities should engage in the same visual language to offer patients a dialogue with their health and future treatment

that places them in a secure, enlightened standing that reassures them they are in a proper place of healing (3.2.2.1). If patients are hesitant about their environment and untrusting of their treatment, their healing process could potentially be disrupted or they may choose to disengage with the facility altogether. The ability to be interactive in the built environment, medical services, and interpersonal relationships will allow patients a comforting, safe environment in which to seek their treatment. One example of providing a safe and confident healthcare environment can be found in Figure 3.2.2.1 of the Peter Rosegger Nursing Home by Dietger Wissounig Architekten. The warm wood texture of the facility is continued along the exterior corridor, providing a comforting handrail to embody confidence in the user that the space is safe to use. The handrail is joined with planters box to bring vegetation to the fingertips of the users and to frame the outdoor space with a new source of changing stimuli.

Healthcare facility users also must feel secure about their usage of the facility itself. Not only does the treatment that takes place within the facility matter, but patient’s experience outside of the doctor’s office is also critical in assuring their security and further treatment. One key design feature to ensure a sense of security in transient spaces is spotlighting. Spotlighting refers to the lighting design of a space, which specifically highlights certain elements of the design that are important to its function (3.2.2.2). Highlighting a staircase to both indicate a change in elevation as well as to fully illuminate the succession of stairs alerts users of their presence. Spotlighting a particular pathway outside is particularly important in orienting users around the landscape, especially at night, while also influencing the ambiance of the journey. It is important not to flood the entire outdoor space, but instead carefully indicate the walking path without distracting from the outdoor experience. Public spaces will not be used if they are perceived to be unsafe. Antal Haans and Yvonne A.W. de Kort studied the designing of safety in public spaces through light distribution. Through their research they found that one’s perceived safety in a space is contingent on three cues: prospect, escape, and concealment. These variables directly correlate to the physical design and layout of the public space and thus correlate to the thesis in

Figure 3.2.2.1: Dietger Wissounig Architekten, Peter Rosegger Nursing Home, 21 Nov 2014, ArchDaily, <http://www.archdaily.com/?p=565058> © Paul Ott
regard to human comfort. After experimenting on different lighting designs, they concluded that people feel safest when their immediate surroundings are illuminated, even if lighting is dimmer on the road ahead. Their research can help in designing of safe and successful public transient spaces, which can improve health during any hour of the day.\(^\text{112}\)

Additionally, Antal Haans and Yvonne A.W. de Kort, stated that people’s perception of safety was based on prospect, escape, and concealment.\(^\text{113}\) For this reason, transient spaces should clear all visual barriers to allow for the entire scene of the space to be seen as well as to indicate where the exit routes are positioned (3.2.2.3). By clearing the visual barriers, such as blind corners or room partitions, the space leaves no place for concealment. Concealment in terms of healthcare facilities can refer to many security problems. For example a nurse rushing a patient on a stretcher down the corridor to the ICU may be concealed around the bend in a transient space, with the people on the other end of the bend unaware of the coming stretcher. This situation could be potentially harmful in the case of a collision between the two unsuspecting parties. Concealment could also refer to a more sinister scenario where a burglar may be hidden in landscaped garden outside, concealed by the heavy brush. Consequently, no one within the elderly care facility uses the garden and its healing potential because they are afraid the area is not secure. In this example, the burglar in question is fictional and doesn’t even exist, however to the patients and visitors of the healthcare facility, they could picture concealments as an indication of a lack of security and safety of an area. Therefore through clearing all visual barriers of a transient space, people feel safer. Additionally maintaining an open visual environment can also aid in transient space use and clarity. Research has shown,

“Strong visual connections between interior and exterior spaces throughout the building aid in the building’s way finding amenity for its occupants.”\(^\text{114}\)

The Rey Juan Carlos Hospital by Rafael De La-Hoz created large open transient environments


\(^{114}\) Stephen Verderber, *Compassion in Architecture: Evidence-Based Design for Health in Louisiana.* (Lafayette: Center for Louisiana Studies, 2005), 100.
in which different program/function space has been injected within the open floor plan, without
the use of physical barriers. As seen in Figure 3.2.2.3 a communal seating area is placed in the
center of a large transient corridor, creating a small niche for social gathering and comfortable
seating, without creating a visual obstruction of the surrounding transient space.

Similarly to clearing the visual barriers
within the room/space the architecture should also
frame the space to fully distinguish its boundaries,
events, and function, while allowing for a comfor-
table space for handicapped or ill users (3.2.2.4).
Through framing the healthcare transient space,
patients can identify clearly their future move-
ments, destinations, obstacles, and aides that they
will use to traverse the space. As seen in Figure
3.2.2.4, the Pediatric Emergency Department at
Providence Sacred Heart Medical Center delini-
tates the use, direction, and entrance of transient
space through framing of roofing heights and cor-
ridor openings. For example, a drop ceiling with a
wood panel texture leads users down one corridor,
while the adjacent space raises the ceiling level
before entering into a new division of the hospital.
The change in ceiling height subconsciously alerts
users that they are entering into a new unit/area,
while helping to distinguish between the main
corridor and the new spaces it encounters. The
adjacent unit also presents a new wood texture
and glass curtain façade before entering, thus
enclosing the main corridor and strengthen the
visual differentiation between the two spaces.

In order to feel secure in a space, one
must be able to move comfortably through it

Figure 3.2.2.3: Rafael De La-Hoz, Rey-Juan Carlos
com/?p=238728>
© Alfonso Quiroga

Figure 3.2.2.4: Mahlum, Pediatric Emergency Department
At Providence Sacred Heart Medical Center, 23 Oct 2014.
© Ben Benschneider
without the fear of falling, colliding, or not having enough room to fit. Wheelchairs, stretchers, and other movement guidance aides add extra space criteria for healthcare facilities to accommodate for the influx in larger personal space usage per patient/visitor. After conducting research on the needs of older people with disabilities, Edward Seinfield has suggested an increase in various spaces within the transient areas of healthcare facilities (or spaces intended for elderly use in general):

- Larger turning radius for wheelchairs of 60in wide X 72in depth
- Resting places every 100ft
- Optimal slope of 1:20 (even on ramps)
- Corridor widths of 48in with doors winging outward
- Corridor widths of 60in with doors swinging inwards
- In swinging doors should have 24in of clearance\(^{115}\)

In addition to allowing more room for users to feel secure about their movement in a transient space, additional guidance should be implemented to give users a backup in case of a fall (3.2.2.5). Guidance elements in transient spaces mainly appear in the form of handrails. Formal handrails, with flat tops as opposed to rounded, should line every corridor to guide users to their destination with an added sense of security, knowing that they have something sturdy to brace in case they lose their balance or get tired. Guiderails should be comfortable to grab and stand out from their surroundings. Guiderails with no visual contrast from the wall will be hard for visually impaired users to find, especially in case of an emergency. As recommended by Design Details for Health, guiderails should:

- Have a diameter of 1¼ in. to allow for the strongest grip
- Should not extend into the pedestrian pathway by more than 4in
- Should clear the adjacent wall by 1½ in.

\(^{115}\) Cynthia A. Leibrock, Design Details for Health, 89.
• Should be continuous on the inner rail at switchbacks and doglegs, and the gripping surface must be uninterrupted.

• Be positioned at a height of 34-38 in. on stairs and ramps

• Installed on both sides of a stair or ramp with at least 3ft clearance between them

• Should include notched or grooves to identify a particular location

• Should be flush with the wall or have rounded ends to prevent clothing or material from getting snagged\textsuperscript{116}

Guiderails can also be designed to take on multifunctional forms, such as countertops, as long as their primary function of being a sturdy, unobstructed guide is not inhibited. One common, impromptu guiderail in transient spaces is the room’s furniture. Furniture is often leaned upon and used as a guiderail for navigating the area\textsuperscript{117}. Correspondingly, furniture should be designed/specified to be both stationary and heavy. With the added force, furniture can slip and cause a fall; thus with a heavier construction and bolted legs, furniture can offer a sturdy surface to guide people throughout the transient area. Richard Foque recommends glass walls to both add a secure handrail, as well as to add a humanizing comfort in hospital design:

“Creating an ‘integral wheel-chair traffic system’: walking corridors fitted with ramps and glass walls as a therapeutical item inside the building and as a means of bridging height differences without using elevators.”\textsuperscript{118}

Guiderails are critical in providing the extra support in case of a fall, however some falls are unavoidable and even the thought of falling can deter a patient or visitor away from using a space. Cold, hard tile floors, sharp wood detailing, and hard counter surfaces all give off the impression of a dangerous, unsecure space to a person fearful of falling. Elderly, handicap, and injured users all may be discouraged from promoting their physical or social activity within a

\textsuperscript{116} Cynthia A. Leibrock, \textit{Design Details for Health}, 254.

\textsuperscript{117} Cynthia A. Leibrock, \textit{Design Details for Health}, 91.

transient space because they feel the space in not safe in case of a fall. Accordingly, transient spaces need to be designed to both prevent falls from happening, as well as offer a protective surface to fall onto (3.2.2.6). Similar to the form of safety mentioned in 3.2.2.2 the perception of security around falling is perceived even if the incident never occurs. It can act as a deterrent and add to the stress and negative influences of healthcare facilities. Carpeting is recommended to protect patients from falls by both increasing the grip/texture on the floor as well as padding to decrease the impact of a fall.\(^\text{119}\) Therefore carpet works as both a preventative and active falling design element. Padded flooring can also aid in the case of an impact, however the hard surface can still appear visually as slippery to a weary user, influencing their mental perception of their security within the transient space. It is recommended that carpets have a pile height of \(\frac{1}{4} - \frac{1}{2}\) in. and be of a high density to aid in bracing an accidental fall. Carpeting should also not exceed \(\frac{1}{2}\) in. in pile height or be too soft because it will cause gurneys, wheelchairs, carts, and canes to sink in easily and offer too much resistance to rolling traffic.\(^\text{120}\) While carpeting aids in deinstitutionalizing, sound absorption, and protection from falling, it can also create difficult to transverse transitional points if installed carelessly. The transition from an area of carpet to an area of tile surface must happen seamlessly, without any protruding border, which would create a tripping hazard for all users (3.2.2.7). In terms of smooth room or surface transitions, Cynthia Leibrock recommends,

“Single steps, thresholds, carpet track strips (especially across corridors), and the edges of area rugs all cause tripping. Use a bevel when changing from one floor surface to another if the change is between \(\frac{1}{4}\) and \(\frac{1}{2}\) in. Use a small ramp if the change exceeds \(\frac{1}{2}\) in. Metal carpet strips between rooms may pose a tripping hazard. Sew carpets together at doorways or use graduated transition strips.”\(^\text{121}\)

### 3.2.3 Restorative

People within healthcare facilities often undergo very impactful, emotional experiences,

\(^{119}\) Cynthia A. Leibrock, *Design Details for Health*, 208.

\(^{120}\) Cynthia A. Leibrock, *Design Details for Health*, 24.

\(^{121}\) Cynthia A. Leibrock, *Design Details for Health*, 24.
from caring for a loved one, undergoing surgery or painful treatment, and even for the staff members who witness the constant morning and loss that happened within every facility. No matter who the user is, their experience will have an impact on their life and often require breaking through mounds of stress. Healthcare facilities also facilitate life-altering treatments and offer hope of healing one another. For this reason, healthcare facilities must offer restorative elements that help to calm, and de-stress its users.Transient spaces need to be designed to offer these restorative experiences that allow people to maintain their stress and promote both their mental, emotional, and spiritual health.

“In an experimental group of elderly patients with cancer diagnosis, those who engaged in relaxation training three times a week had much increased natural killer and T-cell activity in their immune systems compared with the control group. Another study of cancer patients found that those in the experimental group who were using not only relaxation, but also positive and guided imagery techniques experienced increased stimulation of lymphocytes, antibody production, interleukin two cell activity, natural killer cell activity, etc., in their immune systems.”

Restorative spaces aim to take people away from their current standings, invigorate their senses, recharge their inhibition, create a sense of wonder and exploration, and provide a clear change away from the often chaotic ambiance associated with healthcare facilities.

When considering how the physical, built environment impacts people and their perception of space, Paul Lindal and Terry Hartig’s research in “Architectural variation, building height, and the restorative quality of urban residential streetscapes” provides an excellent baseline study in urban realms. The purpose of their study was to find out which quality of the built environment influenced the restorative quality of the space it surrounded. What elements played a factor into offering the experience of being away and fascination while in a public urban setting? This information sheds light onto what offers the opportunity for people to be happy, relaxed, and open while in a public setting, such as a hospital. They concluded, “higher levels of architectural variation in the urban residential environment apparently meant more opportunity for the engagement of effortless attention, as with exploration and discovery.” Two additional factors that increased preference and restorative quality in the environment were increasing the details

of the facades and lowering the building height. Therefore, transient spaces should offer a variation of positive stimuli through the design of its architectural elements to enhance the interest of the space, increasing the amount of exploration, imagination, and other mental relievers that can offer a relief from the tense surrounding atmosphere (3.2.3.1). Similar research has concluded that, “an environment with greater complexity was correlated with greater cognitive functioning and beneficial physical activity in the elderly.” As seen in Figure 3.2.3.1, the Residence and Day Center for the Mentally Handicapped by Aldayjover Arquitectura y Paisaje uses changing views of an interior bamboo vegetated courtyard from its surrounding transient spaces to offer a stimulating interior environment for its users.

Architectural variation has also been shown to reduce depression, social withdrawal, misidentification, and hallucinations in patients with Alzheimer’s disease. In addition to architectural variations, sensory variation (such as those discussed in Section 2.2: light, temperature, etc.) between different areas has also been shown to improve user experience, enhance the restorative abilities of the space, and are preferred by building occupants (3.2.3.2). By using a series of sensorial changes, users can fully embrace life and take their bodies on a deeper journey. A practical outcome of empirical changes in transient spaces is an increase in place making, thus way finding techniques. If a reading area is lit by a warm, soft yellow glow, with a slightly warmer temperature, an aroma of cinnamon and coffee, and filled with cloth covered furniture, users will experience a warm, intimate sensorial environment. While an adjacent transient area may have a brighter lighting scheme, with fresh lavender flowers, leather chairs, and cold granite countertops and offer a completely different sensorial environment, thus designating the new place as a


clear deviation from their past experience. The change does not need to be as dramatic; people will subconsciously detect a slight change in temperature or lighting and designate that change in experience with their memory of that area. One researcher found that patients could rest better in a healthcare facility when supplied with “varied patterns of auditory input” as opposed to a purely quiet environment. These sensorial changes stimulate users’ perception and offer another level in the designs stimuli variation. In the design of the Balnea Pavilion des arbres by Blouin Tardif Architecture-Environment, as seen in Figure 3.2.3.2, facility spaces are disbursed throughout a forest landscape, connected by elegant wood lined corridors that allow users to experience a change in sensorial environments by moving from an enclosed interior space – to an outdoor forest environment – to another enclosed facility space. When weather or climate permits, this change in sensorial environments improves user experience and enhances the restorative ability of the surrounding landscape.

Perception of space containment is another important factor in designing a therapeutic, restorative transient environment. Being forced to stay indoors and in bed for multiple days deprives patients of stimuli variation and can cause depression. Healthcare facility users often feel too confined within the sterile architecture and need an escape or a release. Accordingly, transient spaces should provide an experience to take people out of their current frame of mind or environment, to a more peaceful, distant location (3.2.3.3). The concept of ‘take me away’ can be expressed architecturally through many variations in viewpoint, complexity of stimuli, and frequency of changes in atmosphere. Schweitzer notes the importance of mental escape from within a healthcare facility by stating,

“there is some evidence that a variety of spaces (visually accessible versus visually enclosed) and ‘multiple sensory retreat’ in a building are important for emotional and cognitive functioning and

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may affect immune-system function.”

The National Aeronautics and Space Administration have also extensively researched the perceptual architecture of reducing containment and creating ‘perceptual distance’. NASA discovered, “that a sense of perceptual distance and expansiveness, either with distant views, internal view corridors with interesting focal points, or even the design of vertical surfaces, promote ‘cognitive tranquility,’ which aids mental functioning.”

In addition to the subtle design elements that relieve the internal pressures related to confinement, transient spaces can go even further to allow users to fully engage in an explorative journey combining multiple retreat spaces to create a personal story for users to traverse and experience (3.2.3.4). Explorative transient spaces are places with no clear intention, direction, or path and are intended to stimulate the creativity of the user to take them on an explorative journey. In design these spaces take the form of meandering gardens, natural labyrinths, engaging connecting corridors, or a storyboard of views throughout the building. These spaces are immersive, engaging, and completely flexible for that each user can experience the same space with a different meaning. In the design of the Sunhouse by Christensen & Co. Architects, as seen in Figure 3.2.3.4, a meandering exterior pathway separates a variety of green lawn/vegetated/hill spaces, providing an explorative atmosphere for the children to play and engage with. The children are empowered to explore and create their own dialogue or use for the exterior landscape, allowing their imaginations to take over and create new experiences each time throughout the landscape. Experiencing natural environments has been shown to reduce stress, anxiety, muscle tension, pain, and provide a restorative effect. Engaging natural, explorative environments have


also been shown to improve function in children with ADD. Additionally, engage-able natural environment has also been shown to reduce occurrences of aggression and violence in inner-city urban public housing residents. The explorative benefit of natural stimuli also positively impacts the staff’s performance and health. A recent study on work environments has shown they “increase work efficiency and attentiveness as well as decreasing perceived stress, lowering blood pressure, and reducing physical discomfort.”

British psychologist M.D. Vernon has denoted, “Thus we must conclude that normal consciousness, perception, and thought can be maintained only in a constantly changing environment. When there is no change, a state of sensory deprivation occurs; the capacity of adults deteriorates, attention fluctuates and lapses, and normal perception fades. In infants who have not developed a full understanding of their environment, the whole personality may be affected and readjustment to a normal environment may be difficult.”

In referencing M.D. Vernon’s statement above, Millicent Gappell adds in his publication on Psychoneuroimmunology, “Yet, the drab interiors that many healthcare facilities present to patients, families, and staff are monotonous, visually trying, and emotionally stressful, especially to people already under stress.”

While the previous guidelines have focused on the stimuli offered within the transient spaces, the physical arrangement of the transient space itself can also create a changing environment. While efficient circulation routes must be provided to meet emergency surgical, fire escape, or outbreak needs, these do not need to be the primary circulation route for the healthcare facility. Transient spaces should provide multiple pathways for users to get from point A to point B (3.2.3.5). Similar results have found that city residents who take different pathways to the same destination each day find themselves more engaged in their environment and satisfied with their transit. The changing stimulation of meeting new people along a pathway or simply breaking a tired routine circulation can help stimulate healthcare facility users and provide a restorative effect, promoting their overall health.


131 Millicent Gappell, “Psychoneuroimmunology,” 115.

“Healthy space is not simply locally constituted but involves relationships and materials stretched over space,” states Isabel Dyck and Parin Dossa in Place, Health and Home. These relationships and materials mentioned string together a series of stimuli that people interpret or identify with a sense of place, experience, and perceived outcome. Creating a sense of place in transient spaces employs a therapeutic landscape, which comforts and restores users to a more balanced state (3.2.3.6). Conradson summarizes the healing potential of therapeutic landscapes in Landscape, care and the relational self by stating,

“In terms of physical environment, some of the landscapes considered have centered around forests and mountains, whilst other have incorporated natural bodies of water, such as lakes or rivers. The opportunity to achieve a measure of change in one’s everyday sociality has also often been significant.”

He continues by offering an urban example in where, “Many urban dwellers, for example, experience the relative solitude of rural setting as a favorable contrast to the rhythm of their everyday lives. These emotional gains are not necessarily about being alone, however, for in certain circumstances the presence of other individuals may enhance the therapeutic potential of a particular landscape.” He defines this relationship as, “A positive physiological and psychological outcome deriving from a person’s imbrications within a particular socio-natural-material setting.”

Therapeutic landscapes are ‘places’ that create a positive interpersonal interaction between the user and the surrounding elements within the environment to create a sense of connectedness. In terms of transient space design, therapeutic landscapes can take the form of symbolic natural landscapes or wilderness, in which the essence of those vast natural landscapes are captured within the particular design of a space in a multi-dimensional conception of place. Japanese gardens are the first designed transient spaces that come to mind when thinking about capturing the essence of vast landscape. Japanese gardens strive to symbolize the world in every small garden, each with intricate rock, low lying vegetation, brush, trees, and water features to capture


134 David Conradson, “Landscape, care and the relational self,” 337.

a timeless scene. Japanese gardens can serve as the premier example of a therapeutic landscape in healthcare facilities because they capture the essence of what makes a therapeutic landscape, but designs those characteristics in a an arrangement that physically takes up a small amount of space. Physical design elements such as the columns used in Junya Ishigami’s design of K.A.I.T. offer the sense of being within a forest without actually replicating tree forms or bringing actual trees to fill the room.\(^{136}\)

Restorative architectural design has been practiced for centuries through the design of community baths, commonly referred to today as spas. Spas originally took the form of natural mineral springs and thermal mud, which were used to heal through their soothing/relaxing effects. Spas are places where people go to get away from the world and relax. They are the premier commercial typology of restorative space design. Thus, spas serve as a good model for restorative space design and function (3.2.3.8). In 2001 Americans made 156,000,000 trips to the spa, creating an annual revenue of $11 billion. The spa industry in 2004 had a total built square footage of 100,000,000.\(^{137}\) These facts demonstrate the grand scale that the spa industry inhabits as well as the alignment of contemporary society’s notion of health/healing. People believe that spas are comforting, relaxing, and can help to ‘heal’ (mentally, physically, emotionally, and spiritually), appropriately the spa typology has become a part of society’s perception of what a healing environment looks like. This perception can directly contribute to people’s confidence and belief in the quality of treatment they receive in healthcare facilities. Transient spaces in healthcare facilities can increase their restorative value by emulating the architectural design of the spa typology (3.2.3.7). As cited by Gary J. Frost’s research on spa development, the Canyon Ranch built in 1979 encompassed the model for spa development over the past fifty years. When citing the architectural features of the spa’s design he states,

“They were designed to be functional and visually appealing. The Ranch leadership knew intuitively in 1978 that the physical facility (environment) would play a role in promoting optimal healing. Elaborately detailed landscaping plans were implemented with a vision of a future campus that would provide a stress-free environment and assist people in the healing process. The buildings on the Ranch were set to create small pockets of

\(^{136}\) It is important to note that the design was intended to replicate stars, not trees and that the perception of the columns as a forest is my own interpretation of the space and not the architect’s design concept.

privacy, one building from the other. All buildings were designed to be one story, and to max-
imize views of the surrounding mountains. Roads throughout the Ranch were closed to vehicular
traffic, no streetlights were erected, and night lighting was at ground level.”

The simple design strategy of the spa focused primarily on what would make an optimal healing
environment that could treat stress and illness. Their solution to creating a restorative environ-
ment: landscaping, privacy, intimacy, human scale, acoustical control, and appropriate light-
ing. Another example of spa design attributes that can be applied to healthcare facilities can be
found in the design of the Sala Phuket Resort & Spa. The entrance of the resort, seen in Figure
3.2.3.7, uses a water lined wood platform, a hazy mist, and soft candlelight to create a relaxing
atmosphere to take users out of their current frame of mind and orient them to the tranquil envi-
ronment of the spa. The textured concrete walls lining the entrance frame the space to create
an intimate environment that allows users to take in the stimulating sensorial designs lining the
entrance transient area.

Roger Ulrich states, “A difficult but important challenge for designers is to be sensitive to
such group differences in orientations, and try to assess the gains or losses for one group vis-à-
vis the other in attempting to achieve the goal of psychologically supportive design.”

Additionally, Frost notes, “Evidence has been published showing that these models are more
cost efficient and gain a substantial business advantage.”

Spirituality is often seen an inner health
trait that directly correlate to one’s identity and
sense of ‘self,’ however, spirituality also can serve
as a stress relief and offer an escape into another
world, mentally. The relief, ability to ‘take you
away,’ and positive distraction/stimuli are all
restorative benefits that have been associated with

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an increase in spiritual practice. These benefits associated with prayer and spiritual practices have been shown to have many health benefits. Spiritual observance has been proven to provide people with moments of repose and a way of coping with worries. Healthcare facilities must provide a transient area for patients, visitors, and staff to practice their diverse religious/spiritual beliefs (3.2.3.8). Prayer is strongly integrated into many people’s daily lives and thus needs to continue while they are present in healthcare facilities. Flexible room arrangements and minimal designations within the design are key to embodying a universal area for spirituality. Schweitzer notes that nature is the most universal image of spirituality. Let the awe-inspiring landscapes and intricacies of nature embody the spiritual design to uplift spirits and bring people a restorative calming. Schweitzer notes, “A number of hospitals are adding outdoor labyrinths in gardens as a focus for spirituality. Nature may also be useful in providing images of lifecycles such as birth, death, and the renewal of life.”

3.2.4 Social

Stefanie Burkle defines the realm of social design in On Space and the City in Cultural Studies as, “Space is a subject of discussion in numerous different academic disciplines and areas of science, and this dialogue extends beyond the purely geometric definition of space. New terms to describe space are increasingly a topic of interest in the field of cultural studies. Social science generally uses the term ‘space’ to refer to socially interwoven relationships and relationships with societies. At the same time, it is becoming more and more evident within the field of social science that social space is largely defined by the constructed environment. Because constructed space is often the main precondition of social space; one cannot discuss social space without speaking of its actual spatial conditions and qualities.”


Similarly, in concluding her research in Optimal Healing Environments in Nursing, Swanson states, “When providers use such interpretations and manage symptoms through pharmacologic and cognitive restructuring or behavioral modification therapies, yet fail to deal with the messiness of clients’ economic, social, or familial realities, chances are care will prove, at best, temporary. In effect, treating symptoms, patient by patient, and not addressing the oppressive social realities of poverty, abuse, and stigmatization of the mentally ill keeps alive a discourse in a framework that reduces depression to a treatable illness versus a preventable fallout of a society that refuses to acknowledge humans as physical, emotional, social, and spiritual beings. Unfortunately, prevalent discourses on health fail to recognize that social realities, the physical environment, and interpersonal relationships all influence what it means to experience the self as healthy.”

Swanson’s concluding statements offer a strong stance for the integration of social design strategies that use the built environment to promote interpersonal relationships between staff-patients-visiters and addresses the societal issues of the area to offer an optimal healing environment for every user of the transient space regardless of race, gender, economic standing, employment, age, identity, etc.

Social encounters in healthcare transient spaces can be encouraged through the circulation design and layout of public spaces. Many variables come into play when designing an environment that people can feel comfortable enough to open up and express themselves in a social interaction. Many of these variables will be discussed in this section, however the first framework that needs to be discussed is variety. Everyone has unique qualities that make up their personal identities and how they choose to express themselves, therefore people have different criteria for what makes a comfortable sociable environment. For this reason, multiple areas need to be designed to encourage social interaction and offer users variety of options so they can choose the most appropriate environment for their social needs (3.2.4.1). Some people may require a higher level of privacy in order to open up than others, while some may create higher levels of ambient noise and thus require a more absorptive acoustical arrangement. Social situations are sensitive encounters that must be promoted in the already sensitive healthcare environment. At the Randall Children’s Hospital example used in Figure 3.2.4.1, six social environments are cre-

ated within one general transient waiting area. A counter provides a physical barrier and support for standing conversations, while the also doubling as a work/activity space with addition of moveable bar stools on the opposite side. Movable blue sofa chairs provide a flexible arrangement for three individuals, while a formal couch provides a comfortable lounge space that replicates a home interior environment. The double story windows provide a focal point for additional conversation space between the couch and sofa chair arrangements, while the large overhead white beam and ending column provide a frame of separation for social activities to happen before entrance into the formal waiting area. Overall, the one transient area designed by ZGF Architects provides for a variety of open social arrangements for patients to choose which options fits their needs best.

An interesting study on the implementation of smoking social spaces in hospitals highlights the sometime controversial variation of social requirements of building occupants. While smoking has been well known for many decades to decrease physical health and cause cancer, researchers in Spaces for smoking in a psychiatric hospital note its potential social capital in creating a therapeutic landscape to empower and encourage social interaction.145 Their research highlights the variation in environmental qualities that are needed for various users. If smoking encourages social interaction, happiness, and patient outlook does it outweigh its harmful effects on their physical health? It depends on your outlook on living a fulfilled life and thus differs for each user. Variation and changing environments is key to promoting social encounters and improving the overall quality of interactions.

Roger S. Ulrich states, “Providing day rooms and other shared spaces with moveable seating, for example, gives patients the ability to control their personal space and interactions

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with others.” When control is limited, stress and aggression may grow in crowded transient areas. Ulrich continues by stating, “If you have the misfortune of needing to visit the E.R., expect to feel even more stress if you find yourself in a crowded waiting room with fixed rows of seats and a blaring television whose channel cannot be changes. Environments like these increase the chance that one patient or family member may accost another person in the waiting room, or speak or gesture angrily to a nurse or doctor.”

Therefore, flexible arrangements in heavily used transient spaces offer users the most control over their experience, personal space, and social relations, thus alleviating pressure of confinement, ambient stress, and anxiety (3.2.4.2). Simplicity in the arrangements is also key to their intuitive usage and engagement. Providing an area with nine individual, moveable chairs is more beneficial than providing three, three-person sofas. With the individual chairs, people can rearrange them to increase intimacy, privacy, and build a more personal environment for their conversation.

Research indicates Americans prefer maintaining a personal space of at least 8ft.147 William Whyte’s infamous research on urban public spaces also provides insights into the empowerment of providing movable seating. Moveable seating creates stimuli by providing ever-changing room arrangements and thus variations in social atmosphere. “At eye level you don’t see regularity you see sort of an amiable miscellanea, people are placed this way and that.” Some people in his study preferred to sit alone and thus moveable chairs allowed them to position themselves away from the crowd. The environment and arrangement is always changing and thus opening up new seating options and possibilities. He notes that even in small dense areas where the physical distance between groups of people are close, the social distances are still comfortable because of the way they position their bodies in respect to whom they are conversing with. Moveable chairs give users the choice of where they want to sit in room and empower them to make the adjustment necessary to increase their comfort and social interaction. Whyte notes, “Even when there is no apparent functional reason of any kind, people move chairs.”

“Power imbalances (such as that between standing provider in white coat and patient


147 Cynthia A. Leibrock, Design Details for Health, 133.

in recumbent position retain incredible potential for creating life-enhancing or life-destroying circumstances. The centrality of respectful relationships to positive outcomes is congruent with ideals expressed by the American Association of Colleges of Nursing, many nursing theorists, and the standards of holistic nursing.149

Accordingly, transient spaces need to offer an environment for intimate, private meetings between the patient – staff and visitor – staff to allow for an equal social psychological encounter (3.2.4.3). Professional meetings placed within neutral ground, such as transient spaces (corridors, public areas, seating areas), allow for the medical staff to address both the patient and their loved ones with personalized care from a non-dominating or demeaning viewpoint. When patients lying in bed meet their doctors hovering above them, looking down on them, the interaction is often dominated by the one in the dominant position. Similarly when Doctors meet with patients and visitors in their office they place themselves behind a barrier (their desk) and talk directly at the person on the other side. This formal social arrangement often places the patient or visitor in a demeaning and quieting social position, while empowering the Doctor to give dictation. Studies have shown that health outcomes of patients and visitors are greater when they have stronger relationships with their medical staff.150 Therefore, professional meeting spaces should be placed within public transient areas to offer transparency in location as well as in a private arrangement to maintain confidentiality. Meeting rooms that take place off of a corridor in-between the patient room and Doctors office, with at least one side of the space left open/transparent, and adequate acoustical diffusion to speak freely, will offer the biggest potential to benefit all party’s’ social health and overall health outcome. One example of professional meeting space can be seen in the open floor plan example of the Lanserhof Tegernsee, as seen in Figure 3.2.4.3. Three groupings of facing couches create intimate meeting areas for semi private, intimate conversation.


Standing lamps and grey carpeting add subtle hints of comfort to the environment. Adjacent to the three couch arrangements is a wooden conference table, lined with moveable seating. For a more professional setting, this conference table could be used to show charts or documents to patients and address their questions or concerns about their health. While this particular example doesn’t provide for audio privacy, the separation from surrounding functions and layout of furniture provided offers the atmosphere to host professional meetings between medical professionals and healthcare facility users.

Just as equality in social position is important for establishing healthful social relationships in formal meeting areas, it is also important to establish similar opportunities to occur in less formal meeting areas. Informal meeting areas should be designed for patients-staff-visitors to meet with each other for more frequent social encounters (3.2.4.4). Small cubicles pressed into a heavy use corridor allows for informal/impromptu encounters to occur and take place in a more comfortable atmosphere, as opposed to conversing within the busy corridor itself. Muhlbauer states,

“Rooms in which conversations can be held in confidence as well as meeting rooms and therapy areas for relatives and patients are an essential part of a hospital with a health-promoting agenda. Particular attention should also be given to staff recreational areas, which are currently hardly ever comfortable or employee-oriented places to linger.”

Transient space design can provide these small niches, cubicles, booths, benches, and other impromptu social gathering areas to allow for more frequent informal social interactions between everyone within the healthcare facility. These informal meeting spaces also aid in staff-staff relationships and can promote more frequent, positive interactions, thus promoting greater job satisfaction, improving the overall health of the

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staff team.\textsuperscript{152} In Figure 3.2.4.4, impromptu, borderless social gatherings appear in the main transient corridor of the Rey Juan Carlos Hospital. These informal seating arrangements provide ample space for users to pause and have a conversation off of the main corridor, thus enhancing the social promotion of the transient environment.

Bernd Muhlbauer stresses the importance of social interaction and maintaining a self-reliant normalcy throughout the healing process. He states, “As Healing Architecture, it is oriented towards human employees, whose working conditions, willingness to work and ability to work must be structured by sensible action in interaction with patients and relatives. In this context sensible action means, for example, only providing services that are necessary, in order not to deprive patients and their relatives of their autonomy. Medicine and the provision of care should only compensate for patients’ self-care deficits. The capacity of patients and their relatives to provide self-care should be maintained and promoted.”\textsuperscript{153}

Therefore, it is important that the architecture and personal services both offer autonomy and privacy to the patients and relatives to enhance their comfort levels within the healthcare facility (3.2.4.5). These measures also help to enhance patient’s sense of safety since they are given more control over their daily decisions and treatment. Muhlbauer continues to outline the importance of privacy for all users in healthcare facilities while also making a call for more communal private areas. These areas for people to gather in both public and private settings yet still maintain some level of privacy is crucial in maintaining social interaction in the transitional areas of a hospital. For patients to feel comfortable leaving their private room, they must have knowledge of a safe destination in which to head to. Communal spaces that offer a variation of privacy realms will best suite a healing environment and encourage both physical activity as well as social interaction. Private social transient areas are mainly concerned with visual and auditory design. Seating arrangements, jig-saw room walls, curtains, room partitions, furniture height, and structural elements (columns, mullions, etc.) can all provide a level of visual privacy in which users can converse without the worry of people being able to see their emotion, reaction, or body gestures. One study in a transient healthcare space found “that the presence of

\textsuperscript{152} Marc Schweitzer, Laura Gilpin, Susan Frampton, “Healing Spaces: Elements of Environmental Design That Make an Impact on Health,” S-73.

any barrier, high or low, was enough to keep the residents focused significantly longer on their activity.”154 Thus barriers of all variations offer enough inherent separation between smaller spaces or activities within a larger communal area. A certain degree of blind corners (through wall and furniture placement) can aid in the visual privacy of an open transient space such as a waiting room. Similarly, acoustical designs which incorporate soft furniture, carpet, or physical barriers to contain conversation noise, aids in providing a sense of auditory privacy. Some materials in particular have been noted to increase social interaction due to their inherent properties and people’s association with them. “Research has indicated that family and friends made longer visits to rehabilitation patients in carpeted patient rooms, as opposed to patient rooms with hard surface flooring.”155 The small, intimate niches of the Livsrum Cancer Counseling Center by EFFEKT, as seen in Figure 3.2.4.5, offer private seating arrangements for a pair of individuals to share in a personal moment or conversation. The scale, positioning, and view from the window allow users of the space to feel secluded enough from the adjacent area to carry out a conversation without fear of sound or visual privacy (despite the open right-hand façade).

While having formal, informal, and intimate meeting areas provides for a broad variation in social interactions, proximity to these amenities is crucial to their successful usage. Having to circumvent the entire healthcare facility to find an appropriate meeting space is one sure way to inhibit social interaction and neglect the social health of all of the facility’s users. Therefore, having frequent, quick access to a variety of different social arrangements or environments is critical in promoting the social health of facility users (3.2.4.6). Social health is one of the more sensitive attributes of neurological health because people must feel completely comfortable within the space in order to fully open up and express themselves. By providing a combination of the previous guidelines in close proximity to each healthcare group throughout the facility, users can

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have the comfort of deciding for themselves, which of the environments best suits their needs.

Another way to promote social interaction in design is to combine it with other daily functions, such as eating. Dining areas are transient places full of social encounters and possibilities to converse with family, friends, and strangers (3.2.4.7). Healing Spaces notes, “cafeterias designed as restaurants encourage community use.”156 Dining halls with restaurant designs create a variety of seating arrangements to provide for intimate, formal, and informal dining experiences. Also a variety of lighting options can help establish a social mood, promote intimacy, and relax the users. Designing for patients notes design details for eating areas in healthcare facilities as,

“Cafeteria - restaurant: flexibility of area, dividable, serving counter, soft- and warm drink machines, telephone, small shopping area, easily cleaned materials, loose furniture, centrally located with easy access for staff and guests.”157

Dining areas already encompass a high volume of users and acts a communal gather area, however they can be improved to increase social encounters and approachability. Seating arrangements, material choice, variation in privacy, and ambiance all play important design roles in creating a comforting public social space. Additionally, public cooking areas enhance patient autonomy and choice, thus improving their comfort (3.2.4.8). Public cooking areas encourage family and community life by providing an activity for many people to engage in. Cooking stimulates all five senses, from the aroma of baking, the visual change in food material/process, the sounds of sizzling or boiling cooking actions, the taste of their favorite meal, and the touch of different edible textures. Communal cooking areas not only provide a stimulating environment for the individual, but they also provide a neutral area to meet with family and friends. It is important that the patient feel empowered in their social relationships, thus providing a variety of social areas offers patients the choice in which they want to be viewed, as opposed to the standard sympathetic and often demeaning view downwards onto a patient’s bed. The communal cooking and dining area within the Livsrum Cancer Counseling Center by EFFEKT, as seen in Figure 3.2.4.8, is one great example of how a healthcare facility can provide an open communal


transient area oriented around food and gathering. The dining area and kitchen island countertop can double as a general social gathering area even without the integration of cooking. Successful transient environments provide the comfort of daily activities (such as cooking), without limiting the use of the space to that particular activity. This example provides a clear visualization of a flexible transient environment that offers the comforts associated with communal cooking, without creating stagnation in the functional use of the space.

As stated in Design Details for Health, “The rituals of dining are small pleasures that add immeasurable quality to hospice life.”\textsuperscript{158} Some consideration for communal kitchen use as outlined in Design Details for Health are:

- 27in clearance under counters for wheelchair use
- Counter height of 42in to prevent back pain in taller users
- Provide consistent counter height in preparation areas to allow items to be slid along the smooth surface as opposed to having to lift, often heavy, cooking instruments/ingredients.
- Limit amount of corners in counter and cabinet space, as they are difficult to reach from a wheelchair.
- Organize cabinet storage in groups according to a specific purpose (For example: keep the coffee, coffee pot, and filters all near each other to increase efficiency and ease of use).\textsuperscript{159,160}

Another important aspect of neighborhood satisfaction and health pertains to the sense

\textsuperscript{158} Cynthia A. Leibrock, Design Details for Health, 69.

\textsuperscript{159} Cynthia A. Leibrock, Design Details for Health, 94-95.

\textsuperscript{160} For additional communal kitchen guidelines, see Design Details for Health: Making the Most of Interior Design’s Healing Potential, pg 94-97.
of community. Jacinta Francis et. al. states in Creating sense of community: The role of public space, “A strong sense of community has been associated with improved wellbeing, increased feelings of safety and security, participation in community affairs and civic responsibility.” By feeling like one belongs to a greater cause along with having support, offers a plethora of mental health benefits. Through their study, they were able to find the key attributes that improve the strength of community for a particular neighborhood. This information can then be used to determine how to design better quality public spaces and what factors will help them foster a stronger community. Two of the factors found to be associated with a stronger sense of community were the subjective distance to the closest park and school and the overall quality of the public space offered. Thus if a community needs a quality public space and a park, these characteristics can be implemented to improve the health and satisfaction of the patients (3.2.4.9). Many studies have shown the correlation between having a stronger social community and patient recovery time and wellbeing. This is an important factor when designing the public circulation spaces that is often ignored or underdeveloped in healthcare facilities. Communal areas for performance, gathering, and flexible activities are crucial to harboring a safe and social community. Communal areas for performative healing practices such as yoga, tai chi, stretching, and dancing should be provided for to allow for alternative practices of healing to be available for all healthcare facility users to engage in.

Roger Ulrich describes the concept of positive distractions as, “environmental-social conditions marked by a capacity to improve mood and effectively promote restoration from stress.” He notes views of nature, comedy or laughter, caring or smiling human faces, music, and companion animals as other positive distractions. One, often overlooked, element in people’s social interaction in healthcare facilities, is the significance of animal/pet relations. People create strong, motherly/fatherly bonds with their pets and often refer to them as their ‘children.’ Strong relationships can be developed between pets and people of all ages (children, teens, adults, elderly) and have been universally recognized to improve mood, outlook, and health. However current healthcare facilities are not designed to incorporate this important member of one’s family into the visiting process. Just as family visits are crucial for patient health and recovery,


so too are the visits and interactions with their companion animals. It is especially important for those who have developed more bonds with their pets and less with their loved ones. For patients with no remaining close ties to family or loved ones, pets are often used to fill that social void. Therefore, if their pets are excluded from the healing process, their social health will detrimentally decrease their overall wellbeing. Accordingly, transient spaces in healthcare facilities need to provide an environment that supports interpersonal relations between patients and their companion animals (3.2.4.10). Examples of animal integration in healthcare facility design can be seen is current veterinarian or animal treatment centers. The key design techniques for successful animal integration are seclusion and control of the animals and possible stimulants. Figure 3.2.4.10 highlights the design of the Palm Springs Animal Care Facility by Swatt – Miers Architects, in which animals are grouped in controlled environments and are open to explore specific zones of the facility. For example, the cats are given their own enclosed environment to play and interact with one another in. Users can enter the space and interact with their animal, without disrupting the adjacent activities of the facility. Additionally, pocket gardens or intimate enclosed outdoor environments allow patients to interact with their animals on a less controlled and more natural setting.

Legitimate medical concerns must be addressed and handled with care to ensure that the introduction of animals into the healing environment will not cause any adverse reactions to the overall community. Some concerns with the introduction of animals may be: allergies, noise, increase in tripping/falling, hygiene of the animals, ‘travelers’ with the animals (fleas, ticks, harmful bacteria, etc.), fear, and loss of control. One way to handle all of these concerns would be to isolate the animals to one section of the healthcare facility, thus containing any allergies,

noise, and concerns to that one area. Patients may receive additional health benefits by interacting with their companion animals in a natural or expansive setting. Nature paths surrounding/intersecting the healthcare facility are prime transient areas to allow for a more natural interaction with one’s beloved pet. For example, walking ones’ dog through a winding outdoor path that intersects with the facility or playing catch with their dog within a lawn-type feature (a grass filled exterior lawn or an indoor court) both will enhance the quality of interaction and the associated benefits to their health/wellbeing. Outdoor transient spaces or controlled interior areas provide the perfect balance of integrating social animal interaction while also mediating the concerns of the community.164

Social media and virtual reality have become embedded into today’s society, supplanting themselves into the main forms of social interaction. Whether or not a designer believes that social media, such as Facebook, is a healthy for of social interaction is irrelevant. The fact is that millions of people now use the internet to connect with people from around the world and rely on this new technology as a main source of their interpersonal relationships. Thus, healthcare architecture, especially transient space, needs to provide the necessary requirements to allow patients, staff, and visitors to maintain their relationships through digital communication (3.2.4.11).

There are three main components to necessary to using social media: 1. Power 2.Internet Access 3.Interface (laptop, cell phone, tablet, electronic device, etc). In terms of design, power outlets should be supplied in convenient locations that double as sitting/activity locations. An example of outlet layouts designed to enhance social media interfaces, Starbucks cafes do a great job. For example, the Starbucks cafe at the Shanghai Hongqiao Railway Station in Shanghai, China incorporates two outlets for every seat located along a built in wall bench. Outlets are also built into the long table seating arrangements, as well as floor outlets that appear under every freestanding, moveable table/chair configuration. Therefore, for every visitor that sits in the Starbucks cafe a comfortable outlet is provided so they can charge their electronic device. Users can rest in a comfortable seating arrangement, while engaging with both their physically present friends, as well as their online social network. Designs should avoid placing outlets in the middle of corridors or at information counters because these areas experience a high volume of traffic and do not provide a comforting arrangement (no chairs, back support, or privacy) to interact socially. Marc Schweitzer notes in Healing Spaces, “A free standing power column permits a

flexible room design, giving patients (and nurses) control over room design." Internet access is a design detail that would only appear in the details of the construction documents by providing electronic wiring and network connection to multiple routers in each main transient space. Transient spaces should also provide community access to internet connected interfaces, such as public computer stations, to provide the connectivity for those who do not have their personal electronic device with them (such as in the case of an emergency visit). Overall, power supply is the biggest factor in promoting and providing for user’s connection to their digital social networks.

3.3 Guidelines for Psychological Design

3.2.1 Comfort

- 3.2.1.1 De-Institutionalize
  - Transient spaces have to embody the new aesthetic of healing and care by offering warm, intimate, and comforting spaces that relieve stress and dispel the institutional aesthetic of its past.
  - Avoid the discomfort associated with the traditional, sterile, machine typography of healthcare facilities.

- 3.2.1.2 Relatable Proportions
  - Transient spaces in healthcare facilities need to be designed around human proportions that bring intimacy, warmth, and comfort within a larger medical facility.
  - Long corridors lined with medical treatment rooms add to the sterile, institutional, and dehumanizing characteristics of healthcare design. Smaller, relatable transient spaces offer psychological comfort to its users.  
  - Human scaled spaces alleviate the pressure of the unknown in medical facilities.

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• 3.2.1.3 On Stage / Off Stage
  o An on stage / off stage design strategy aims to conceal the technical medical drama/functions from the public transient areas to allow users to focus on their personal journey and experience through the healthcare facility.\textsuperscript{168}
  o The passing of large machinery, noisy instruments, odors of surgical procedures, stressed staff members, or technical equipment all adds stress to the already sensitive patient and visitors.

• 3.2.1.4 Focus on the Journey
  o Focus on the journey of moving through the facility, thus emphasizing the patient, staff, and visitors’ experience through the space.
  o Transient spaces that frame views, either of interior architectural elements or of exterior landscapes, focus the users attention towards their context, helping to ground them and create a sense of place.
  o Window placement in transient spaces allows patients to focus more on their journey and inner reflection and less on their orientation or negative stimuli within the facility.

• 3.2.1.5 Family Connections
  o Incorporate areas that promote visitor (family and friend) and patient interaction within the journey of the facility or treatment.
  o Communal areas located within the patient wing can offer an open environment for patients to meet with their loved ones.
  o Additionally, more intimate areas of interaction need to be available to provide privacy to allow for sensitive communication and emotions to be exchanged.

\textsuperscript{168} Elizabeth Bromley, “Building patient-centeredness: Hospital design as an interpretive act,” 1064.
• 3.2.1.6 Proximity to Medical Staff
  - Allowing for a neutral area within transient spaces for healthcare staff to meet with patients and visitors (outside of the patient room or staff office) has been shown to increase comfort and decrease stress in healthcare facility users.

• 3.2.1.7 Natural Place Making
  - Nature can offer subconscious benefits that make people loyal to that area and associate that area with an identity.
  - Studies have shown received benefits from parks were associated with place attachment and visitor loyalty.\(^\text{169}\)

• 3.2.1.8 Evolving Stimuli
  - A careful design of stimuli must be offered to fulfill our primal desire for the exploration of the new.
  - Create comfort by appealing to all of the senses.
  - “Patients rely on tactile cues, like objects and air currents, for orientation. Fragrances and visual shapes are also important orientation cues.”\(^\text{170}\)

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\(^{169}\) Natalia López-Mosquera, Mercedes Sánchez, “Direct and indirect effects of received benefits and place attachment in willingness to pay and loyalty in suburban natural areas,” Pages 27–35.

\(^{170}\) Cynthia A. Leibrock, Design Details for Health, 252.
3.2.2 Safety

- 3.2.2.1 Embody Confidence
  - Engage in the same visual language to offer patients a dialogue with their health and future treatment that places them in a secure, enlightened standing that reassures them they are in a proper place of healing.
  - “Attractive hospitals offer assurances that their range of services can be trusted... Medical Services present credence goods.”

- 3.2.2.2 Spotlighting
  - Spotlighting refers to the lighting design of a space, which specifically highlights certain elements of the design that are important to its function.
  - People feel safest when their immediate surroundings are illuminated, even if lighting is dimmer on the road ahead.

- 3.2.2.3 Clear Visual Barriers
  - People’s perception of safety is based on prospect, escape, and concealment. Therefore, transient spaces should clear all visual barriers to allow for the entire scene of the space to be seen as well as to indicate where the exit routes are positioned.
  - By clearing the visual barriers, such as blind corners or room partitions, the space leaves no place for concealment.

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• **3.2.2.4 Framing Space**
  - Architectural elements need to frame the area to fully distinguish its boundaries, exits, and function, while allowing for a comfortable space for handicapped or ill users.
  - Through framing the healthcare transient space, patients can identify clearly their future movements, destinations, obstacles, and aides that they will use to traverse the space.

• **3.2.2.5 Guidance**
  - In addition to allowing more room for users to feel secure about their movement in a transient space, additional guidance should be implemented to give users a backup in case of a fall.
  - Guidance elements in transient spaces mainly appear in the form of handrails, but can also be multifunctional elements such as counters or heavy furniture.

• **3.2.2.6 Comforting Impacts**
  - Transient spaces need to be designed to both prevent falls from happening, as well as offer a protective surface to fall onto.
  - Cold, hard tile floors, sharp wood detailing, and hard counter surfaces all give off the impression of a dangerous, unsecure space to a person fearful of falling.
  - Carpeting is recommended to protect patients from falls by both increasing the grip/texture on the floor as well as padding to decrease the impact of a fall.\(^{173}\)

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\(^{173}\) Cynthia A. Leibrock, *Design Details for Health*, 208.
• 3.2.3 Restorative
  
  • 3.2.3.1 Positive Stimulation
    o Offer a variation of positive stimuli through the design of its architectural elements to enhance the interest of the space, increasing the amount of exploration, imagination, and other mental relievers that can offer a relief from the tense surrounding atmosphere.

• 3.2.3.2 Test The Senses
  
  o Sensory variation (such as those discussed in Section 2.2: light, temperature, etc.) between different areas has also been shown to improve user experience, enhance the restorative abilities of the space, and are preferred by building occupants.
  
  o A practical outcome of empirical changes in transient spaces is an increase in place making, thus way finding techniques.

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• 3.2.3.3 Take Me Away
  o Provide an experience to take people out of their current frame of mind or environment, to a more peaceful, distant location.
  o The concept of ‘take me away’ can be expressed architecturally through many variations in viewpoint, complexity of stimuli, and frequency of changes in atmosphere.
  o NASA discovered, “that a sense of perceptual distance and expansiveness, either with distant views, internal view corridors with interesting focal points, or even the design of vertical surfaces, promote ‘cognitive tranquility,’ which aids mental functioning.”

• 3.2.3.4 Explorative Spaces
  o Explorative transient spaces are places with no clear intention, direction, or path and are intended to stimulate the creativity of the user to take them on an explorative journey.
  o In design these spaces take the form of meandering gardens, natural labyrinths, engaging connecting corridors, or a storyboard of views throughout the building.
  o These spaces are immersive, engaging, and completely flexible for that each user can experience the same space with a different meaning.

• 3.2.3.5 Change in Routine
  o Transient spaces should provide multiple pathways for users to get from point A to point B.
  o The changing stimulation of meeting new people along a pathway or simply breaking a tired routine circulation can help stimulate healthcare facility users and provide a restorative effect, promoting their overall health.

175 Marc Schweitzer, Laura Gilpin, Susan Frampton, “Healing Spaces,” S-76.
• 3.2.3.6 Therapeutic Landscapes
  o Creating a sense of place in transient spaces employs a therapeutic landscape, which comforts and restores users to a more balanced state.

• 3.2.3.7 Spa Model
  o Transient spaces in healthcare facilities can increase their restorative value by emulating the architectural design of the spa typology.
  o Their solution to creating a restorative environment: landscaping, privacy, intimacy, human scale, acoustical control, and appropriate lighting.

• 3.2.3.8 Spiritual Relief
  o Provide a transient area for patients, visitors, and staff to practice their diverse religious/spiritual beliefs.
  o Flexible room arrangements and minimal designations within the design are key to embodying a universal area for spirituality.
  o Schweitzer notes that nature is the most universal image of spirituality. “A number of hospitals are adding outdoor labyrinths in gardens as a focus for spirituality. Nature may also be useful in providing images of lifecycles such as birth, death, and the renewal of life.”176

3.2.4 Social

- 3.2.4.1 Open Options
  - Multiple areas need to be designed to encourage social interaction and offer users variety of options so they can choose the most appropriate environment for their social needs.

- 3.2.4.2 Flexible Arrangements
  - Flexible seating arrangements in heavily used transient spaces offer users the most control over their experience, personal space, and social relations, thus alleviating pressure of confinement, ambient stress, and anxiety.
  - Research indicates American prefer maintaining a personal space of at least 8ft.\(^{177}\)

- 3.2.4.3 Professional Meeting Space
  - Transient spaces need to offer an environment for intimate, private meetings between the patient – staff and visitor – staff to allow for an equal social psychological encounter.
  - Professional meetings placed within neutral ground, such as transient spaces (corridors, public areas, seating areas), allow for the medical staff to address both the patient and their loved ones with personalized care from a non-dominating or demeaning viewpoint.

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\(^{177}\) Cynthia A. Leibrock, *Design Details for Health*, 133.
• 3.2.4.4 Informal Meeting Space
  o Informal meeting areas should be designed for patients-staff-visitors to meet with each other for more frequent social encounters.
  o Transient space design can provide these small niches, cubicles, booths, benches, and other impromptu social gathering areas to allow for more frequent informal social interactions.

Figure 3.2.4.4: Rafael De La-Hoz, Rey Juan Carlos Hospital, 30 May 2012. ArchDaily, <http://www.archdaily.com/?p=238728>
© Alfonso Quiroga

• 3.2.4.5 Intimate Meeting Space
  o It is important that the architecture and personal services both offer autonomy and privacy to the patients and relatives, to enhance their comfort levels within the healthcare facility.
  o Private social transient areas are mainly concerned with visual and auditory design.

Figure 3.2.4.5: EFFEKT, Livsrum Cancer Counseling Center, 08 Jan 2014. ArchDaily, <http://www.archdaily.com/?p=464296>
© Thomas Ibsen

• 3.2.4.6 Quick Access
  o Having frequent, quick access to a variety of different social arrangements or environments is critical in promoting the social health of facility users.
  o By providing a combination of the previous guidelines in close proximity to each healthcare group throughout the facility, users can have the comfort of deciding for themselves, which of the environments best suits their needs.

Figure 3.2.4.6: Rafael De La-Hoz, Rey Juan Carlos Hospital, 30 May 2012. ArchDaily, <http://www.archdaily.com/?p=238728>
© Alfonso Quiroga
• 3.2.4.7 Food Matters
  o Dining areas are transient places full of social encounters and possibilities to converse with family, friends, and strangers.
  o *Healing Spaces* notes, “cafeterias designed as restaurants encourage community use.”\(^{178}\)

\[\text{Figure 3.2.4.7: ZGF Architects, Randall Children’s Hospital, 21 Mar 2013. ArchDaily, <http://www.archdaily.com/?p=347370>}
© Nick Merrick / Hendrich Blessing\]

• 3.2.4.8 Communal Cooking
  o Public cooking areas enhance patient autonomy and choice, thus improving their comfort.
  o Public kitchens need to provide cooking stations, seating areas, and table variations which encourage social interaction.
  o Design for a variety of handicaps and levels of skill by providing open arrangements which are accessible from wheel chair and diminish the need for movement; have items efficiently positioned to limit energy expenditure.\(^{179}\)

\[\text{Figure 3.2.4.8: EFFEKT, Livsrum Cancer Counseling Center, 08 Jan 2014. ArchDaily, <http://www.archdaily.com/?p=464296>}
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• 3.2.4.9 Community Performance
  o Communal areas for performance, gathering, and flexible activities are crucial to harboring a safe and social community.
  o Communal areas for performative healing practices such as yoga, tai chi, stretching, and dancing should be provided for to allow for alternative practices of healing to be available for all healthcare facility users to engage in.

\[\text{Figure 3.2.4.9: EFFEKT, Livsrum Cancer Counseling Center, 08 Jan 2014. ArchDaily, <http://www.archdaily.com/?p=464296>}
© Thomas Ibsen\]

\(^{178}\) Marc Schweitzer, Laura Gilpin, Susan Frampton, “Healing Spaces,” S-72.

\(^{179}\) Cynthia A. Leibrock, *Design Details for Health*, 59.
• 3.2.4.10 Animal Encounters
  o Transient spaces in healthcare facilities need to provide an environment that supports interpersonal relations between patients and their companion animals.
  o Outdoor transient spaces or controlled interior areas provide the perfect balance of integrating social animal interaction while also mediating the concerns of the community.\textsuperscript{180}

• 3.2.4.11 Virtual Connection
  o Healthcare architecture, especially transient space, needs to provide the necessary requirements to allow patients, staff, and visitors to maintain their relationships through digital communication.
  o There are three main components to necessary to using social media: 1. Power 2. Internet Access 3. Interface (laptop, cell phone, tablet, electronic device, etc).
  o In terms of design, power outlets should be supplied in convenient locations that double as sitting/activity locations.

\textsuperscript{180} Marc Schweitzer, Laura Gilpin, Susan Frampton, “Healing Spaces,” S-73.
4. Design Parameter #3: Self

4.1 Defining Design Factors

In concluding her research in Optimal Healing Environments in Nursing, Swanson states, “When we look at people through biomedical lenses, we interpret health as a variety of symptoms indicative of potential diseases that need to be treated. Such a perspective fails to fully acknowledge the realities that make up what it means to be human, live well, and experience a life with meaning.” She continues, “Caring and healing are rooted in a deep valuing of what it means to be a person and a commitment to honor the wholeness of self and others.”

The final design parameter of this research focuses on the healing potential of one’s own identity and outlook on our personal life journey. Through acceptance of our health condition and positive outlook on life, people have the ability to take back control over their lives. Design has the power to motivate people to personally improve their health through physical therapy, physical goals, break down mental blocks, dispel fear, and improve relationships in all aspects of life. Design can also motivate people to change their lifestyle behaviors to both support and embrace their health condition. Whether they are recovering from an injury, overcoming the diagnosis of a loved one, or living with a chronic health problem, design has the potential to motivate, improve their outlook, and bring them to acceptance with their lives, personal journey, and recognition of their true identity.

Eckart Rither and Angelika Gruber-Ruther support the reference of self in healing environments in their summary for healing space design by noting: “The philosophical interpretation of the psychobiology, teleology, and salutogenesis of space captures with astonishing clarity the long-neglected human need for a meaningfully structured relationship between space and self. Space is significant as a condition of possibility for being human. The health-promoting strength of human beings can be mobilized through a close connection with a space. In all situations, especially those determined by the needs of illness, being able to draw and reflect on one’s own internal strength is an essential element of recuperation. Space has its greatest possible significance in this regard, and the designers of spaces that patients experience should take this into consideration.”

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account. The design of space is ultimately an indisputable necessity for the health of body and soul. The healing power of space, which has been far too neglected until now, is based on the evolutionary determined and psychobiologically anchored relationship between being human and being in a space. This is where people formulate their future, which is based on the history of conscious and sub-conscious memory.”

Healthcare facilities today place too much emphasis on functionality and economics, while ignoring the original intent of the building: to heal human beings. Christine Nickl-Weller and Hans Nickl note in Healing Architecture, “Why is it such a joyless place? Is this a place that is about sickness? – or is it instead a place that is about recuperation, about health and recovery – about positive things?” Healthcare facilities need to be designed to accommodate a human healing experience. Why are the sterile attributes the highlight of the design? Health is directly affected by a person’s perception of their surroundings and self, accordingly healthcare facilities need to support this connection by offering space that allows for self-reflection by supporting a safe personal journey through their individual healing process. Christine Nickl-Weller and Hans Nickl note, “The space that patients perceive around them should therefore provide a structure that fosters feelings of dependability, security and optimism.”

4.2 Research of Design Factors

4.2.1 Solitude

A key element in the designing of public spaces in healthcare facilities, such as transient spaces, with consideration for human identity, is privacy (4.2.1.1). In Patricia Brierley Newell’s “Perspectives on Privacy,” Westin (1967) underlines four key elements to privacy in relation to a person and their environment as reserve, solitude, intimacy, and anonymity. People need space for reflection, need to have a sense of control, an opportunity for close personal relationships,

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and to be able “to move around in public without being recognized or the subject of attention.” Archea (1977) theorized, “the arrangement of physical elements regulated the distribution of information.” Thus, the built environment and the design elements within the space influence privacy in an open public space and can be used to “provide protection from the physiological imbalance due to actual or perceived overload or distress.” As privacy is a major factor when considering healthcare treatment, her research in Perspectives on Privacy can be used to create a guideline for ensuring the necessary qualities of privacy in transient spaces. Additionally, personal space needs to be integrated into the public areas within transient spaces, allowing at least 8ft of personal space for each user. Sound absorptive materials within the private area also aid in privacy and confidentiality. Physical barriers can also increase visual privacy and allow users to be present in a public transient space, without being “on-stage.” Small niches, corners, and room partitions can be designed to create intimate, personal environments for individual patient use. Spaces scaled to fit a maximum of one user offer an environment for people to be alone in a room of strangers and don’t overly force users to interact with one another if they choose not to. Design Details for Health notes that perimeter of a room is easier to establish personal space in, rather than the less protected center of the room. Their research recommends furniture arrangements, area rugs, lighting, and low partition design elements to define the “behavior markers” of the space. These design guidelines for privacy through solitude can be seen in the Livsrum Cancer Counseling Center by EFFEKT, as seen in Figure 4.2.1.1, where small niches were embedded into the perimeter of the transient area. The niches are small scaled and can fit a maximum of two people,  

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186 Cynthia A. Leibrock, *Design Details for Health*, 133.
188 Cynthia A. Leibrock, *Design Details for Health*, 208.
thus providing a comfortable environment for people to be alone. The niche frames an open window with a view into the inner courtyard of the facility. This view allows people to visually take themselves away from their interior environment and into the exterior courtyard, without having to be in the socially extroverted open courtyard. The window provides comfort through seclusion, while offering a visual expanse of the small cubicle seating area, creating a safe space for a moment of solitude.

Often times, solitude is references as an individual journey with ones’ own self, however often times during these moments of solitude we begin an inner conversation with someone who isn’t even there. Moments of private solitude are necessary for healthcare settings, but there is also practical value in addressing communal solitude. Similar to personal solitude, community solitude allows users to engage in a supportive environment in which everyone is seeking solitude (4.2.1.2). Parker J. Palmer notes, “In a circle of trust, we practice the paradox of ‘being alone together,’ of being present to one another as a ‘community of solitudes.’” He continues, “To understand true self – which knows who we are in our inwardness and whose we are in the larger world – we need both the interior intimacy that comes with solitude and the otherness that comes with community.”

Community in this sense does not always reference an in-person interaction/conversation, but rather references the connections all users have to each other. Architecturally the room should provide intimacy, flexibility in seating and general arrangement, diffused, soft light, quiet acoustical properties, and views outward to diminish the intensity of attention focused on any one person. Design Details for Health notes, “Room size also determines sociopetal space. The smaller the room, the greater the social interaction. Research has shown that there is less isolation and less passive behavior in small rooms.” Small intimate transient spaces can both offer individual privacy and safety, while also promoting a mutual beneficial community of solitude. Eckart Ruther and Angelika Gruber-Ruther summarize the connection of social solitude and presence and architectural design by stating:

“The self’s many modules, represented by a clearly immediate sense of self, experience social space as a framework for the self and existence as being-in-space. Architectural space becomes the embodiment of social space, with the overlappings and correspondences between the two.

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190 Cynthia A. Leibrock, *Design Details for Health*, 208.
converging within the self.”  

In the design of the Livsrum Cancer Counseling Center by EFfekt, as seen in Figure 4.2.1.2, a community of solitude was created through the creation of a variety of small scaled, intimate social transient spaces, surrounding two central courtyards. Changes in ceiling height offer intuitive notions of changes of program or function of adjacent areas. The facility connects a series of intimate environments, each with their own levels of privacy and social interaction, through the use of open, flexible transient spaces that are not denoted through corridor placement, but rather subtle changes in ceiling and program use. Overall, the facility creates a supportive environment for users to gather and socialize, without being placed on a stage or in vastly open environments. The comfort and support of meeting with other patients, family, and staff is enhanced by the smooth program connections and intimate arrangement of the interior spaces.

One ambience that is required for any transient space for solitude is safety. As mentioned in 3.2.2, people’s perception of safety is critical to their use of a space and thus how often they receive the corresponding health benefits. However safety in terms of solitude takes on a slightly deeper meaning. This notion of safety deals with users’ identity, soul, and openness. In order for a space to truly provide for solitude users must feel safe to open up to themselves, their emotions, their life journey, condition, goals, and relationships (4.2.1.3). Parker Palmer describes this sense of safe space that both safeguards and encourages the inner journey as a space where we,

“are freed to hear our own truth, touch what brings us joy, become self critical about our faults, and take risky steps toward change – knowing that we will be accepted no matter what the outcome.”


Privacy is key in creating this inner dialogue and is often overlooked in healthcare design. Sharing strong emotions in public is often looked down upon and suppressed in American culture, however healthcare facilities are places of immense grief and life-altering moments. Therefore, when designing a ‘safe space’ imagine a place comfortable enough to be able to cry in public. Transient designs that integrate natural elements offer safe dialogue between users and the inanimate nature, while also providing a changing variety of stimuli. Natural settings are known for being restorative, spiritual, and engaging sensorial experiences. Safe spaces offer a private place for pensive thought, uninterrupted by outside influences. Places with alarms, telephones, or other loud abrupt noises should be contained away from any designated safe places of solitude. Steady, constant ambient noise (such as the wind blowing through leaves or the flow water down a stream) offers the safety and embrace of certainty when in a highly sensitive state of solitude. Additionally, the movement and changes in stimuli offered by natural elements, as found in many Japanese gardens, offers the comfort of positive distraction, not from ones’ self, but from others’ gaze upon them. People need to be removed from the stage in order to embark in the trail of inner peace. The inner courtyard of the Randal Children’s Hospital by ZGF, as seen in Figure 4.2.1.3, provides a supportive and private layout through the use of concrete planter boxes and bamboo groves. The concrete planter boxes offer an area for people to sit, while also denoting gathering space and private niches. The bamboo groves within the concrete planters boxes acts as a visual and audio privacy screen to allow people to feel protected from within the open courtyard. Dividing large open courtyards into a variety of social arrangements, from large gatherings to small personal journeys, offers a variety of different spaces for people to choose which space they feel safest within.

Parker J. Palmer asks, “What sort of space gives us the best chance to hear soul truth and follow it? A space defined by principles and practices that honor the soul’s nature and needs.” He proclaims, “the soul is like a wild animal… the soul is tough, resilient, resourceful, and self sufficient… Yet despite its toughness, the soul is also shy. Just like a wild animal, it seeks safety

Figure 4.2.1.3: ZGF Architects, Randall Children’s Hospital, 21 Mar 2013. ArchDaily, <http://www.archdaily.com/?p=347370> © Nick Merrick / Hendrich Blessing
in the dense underbrush, especially when other people are around.”  

Just as a wild animal seeks comfort in the underbrush, people also seek refugees of security to reflect on their soul. Safe spaces allow the cover and privacy our souls seek, but transient spaces also need to incorporate a relief zone into the area of solitude to take users mentally away from the outside world and deep into their inner being (4.2.1.4). Area of relief in terms of solitude relieves the pressure of the real world and allows users to fully embrace their inner identity and soul. Places of relief are often found in landscaped garden with lush foliage and a dense variety of vegetation. Japanese gardens, as mentioned in 3.2.3, are one architectural example of a design, which creates its own small universe amongst the strict, built environment. Relief comes with complexity, from the mysteries of the unknown, and the exploration of our true self. Transient spaces that create an air of mystery and exploration allow users to reflect on their health conditions from a new perspective, an intuitive perspective that isn’t hindered by any disturbance in the environment (such as people glaring, talking, or loud medical machinery). An inner garden, with a path only wide enough for one person to traverse, with no clear destination, with no clear intention, offers the relief of societal pressure associated with daily life (being on time, conforming to society, always having a clear path to follow, etc.). Figure 4.2.1.4 illustrates a relief zone in Jensen & Skodvin Architect’s design of the River Sauna. The dark interior space places a strong emphasis on the view of the lush foliage outside of the grand window. The foliage becomes apart of the interior room, allowing visitors to escape their inner realm to explore the complexity, mystery, and unknown of the dense outdoor landscape. Parker J. Palmer notes,

“If we want to see a wild animal, we know that the last thing we should do is go crashing through the woods yelling for it to come out. But if we will walk quietly into the woods, sit patiently at the base of a tree, breathe with the earth, and fade into our surroundings, the wild creature we seek might put in an appearance. We may see it only briefly and only out of the corner of an eye – but the sight is a gift we will always treasure as an end

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in itself.”

The mystery of the unknown is a power design tool to create interest in an exterior element while protecting the essence of ones’ own identity. How does the brain experience the dimensions of self? Eckart Ruther and Angelika Gruber-Ruther state in The Healing Power of Space, the brain experiences self through explorative behavior:

“The curious search for the new, exploration of space in time and constant wanderings in the real bodily and virtual mental realms are basic prerequisites of brain activity, which does not cease even during sleep… Explorative behavior, including the discovery of novelties, is a basic prerequisite of mental life.”

Embodying mystery and engagement in architectural form can and should appear in a variety of arrangements. Explorative pathways with no clear intention, endpoint, or direction are the most basic element in explorative, transient design. Transient spaces that evoke an explorative nature through mystery, wonder, abundance of choices, and protective yet ever changing stimuli offer an environment for users to engage in a personal journey as they wander through the unknown landscape, contemplating the unknown within themselves (health condition, future diagnosis, diagnosis of a loved one, treatment, life goals, life journey, et.) (4.2.1.5). Eckart adds:

“The outer world as designed by human beings should reflect the inner equilibrium of the individual… A lake at sunrise, herds of animals in the savannah – these are all triggers of primitive, well-balanced experiences of self that may even induce a dissolution of boundaries imposed by egocentrism.”

As cited previously several times, natural elements inherently contain an explorative, ever changing variety of stimuli that enhances the spiritual and experiential quality of the space. Figure 4.2.1.5 demonstrates a healthcare facility pathway that can harbor a personal, explorative journey. The small pathway winds through the landscape passing different floral/vegetated arrange-


ments, different tree densities, and framed views of the landscaped lawns and healthcare facility. The end of the pathway is not visible from the beginning, adding a sense of mystery and exploration to the journey. Additionally, the pathway offers significant buffer from the healthcare facility by offering distance as well as through its vegetation placement, offering an err of privacy and seclusion for pathway users.

Everyone’s personal journey is unique to who they are and how they interpret the built environment, however universal qualities of mystery, awe, and wonder can be architecturally designed within the transient space of healthcare facilities to enhance the connection of each user to their inner soul. Not everyone will be evoked by the same pond, garden, or religion, thus it is important to provide many different pathways along the journey to create a palette of different stimuli to allow users to choose which pathway best reflects their inner needs (4.2.1.6). Multiple routes filled with changing stimuli offer users a new experience every time they enter the transient route. These open invitations to explore a new experience every time they need to get somewhere within the facility or are searching for solitude, offer a break in the otherwise routine and strictly planned schedule, thus offering a release from the world of constraints and a clear mind to explore their true selves, alone or with the community. Parker states, in A Hidden Wholeness, “We grow toward true self in a space where our growth is not driven by external demands but drawn forward, by love, into our own best possibilities.”

Healthcare facilities that are perceived as expansive, open, and cold can inhibit people from experiencing their true emotions and dilemmas. Grieving is an important step towards acceptance of a condition that effects either a loved one or yourself. Therefore, a grieving space needs to be designed to allow patients, visitors, and staff a comforting area to release their emotions and explore their personal reaction to any situation (4.2.1.7). Grieving spaces are a type of safe space, as mention before, but focus on the specific function of experiencing ones’ own

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198 Cynthia A. Leibrock, *Design Details for Health,* 67.
emotions. Receiving news about a loved one’s condition or their own diagnosis can be life altering. Thus a sensitive space needs to be provided to allow for a free release of their inner thoughts. When exposed in large public spaces, people may feel embarrassed or uncomfortable letting all of their emotions out. Thus, a grieving transient area should have an intimate scale with flexible space requirements for one-three people. While grieving is a personal journey, it is beneficial to allow these spaces to double as grief counseling spaces. Figure 4.2.1.7 illustrates the qualities needed in a grieving environment, although unintentional in the original design concept. The transient environment designed in Hassell’s Palm Island Resort was designed as an innovative and mysterious hotel environment, however attributes of this specific example could be used in a healthcare facility to offer a proper grieving environment. The depressed walkway leads users through a maze of blind corners, thus with each new turn people become invisible to anyone else within the walkway. A series of compression and release points in the walkway guide people on an emotional journey of reflection and solitude. The final open seating area is visually blocked from the main corridor and is solely connected on one visible end. The sole connection offers control and alertness to the user of the space, allowing them to see when someone new enters the space. Additionally, the sunken walkway is lined with dark coated reflecting pools, creating a sense of abyss, mystery, loss, and wonder in the users. The atmosphere and design evokes similar memories of the Korean War Memorial in Washington D.C. and the 9/11 fountain memorial in New York City. The design attributes of privacy, mystery, abyss, solitude, calmness, and security make this design a feasible grieving environment to be integrated into the healing process within a healthcare facility.

4.2.2 Motivation

While certain design elements in a space have a direct correlation or impact on a person’s health, they can also have an indirect impact through a psychological persuasion or after-effect. In 2011 the New York City Department of Design + Construction released an active design
guideline, Active Design Guidelines: Promoting Physical Activity and Health in Design, in which it noted several design elements, plans, and theories that would indirectly promote a more active lifestyle in the building’s users. When asked about the obesity epidemic in the United States and how healthy hospitals could model better eating, exercise, etc in their communities, Robin Guenther, architect and co-author of Sustainable Healthcare Architecture, stated,

“There is no question that the built environment plays a significant role in the US obesity epidemic. Sedentary behavior and car dependence, coupled with an industrialized food system, are major issues… The New York City Department of Health recently received a LEED Innovation Point on an urban clinic project for a very innovative Physical Activity Credit, where the project team placed stairs more prominently than elevators, finished the stairs to the quality level of the corridors, and made additional measures to model a higher level of physical activity within the facility and engage in community education on healthy eating and weight management.”

Design elements in transient spaces can help motivate users to increase their level of physical activity, social engagement, and positive outlook. One of the major concerns with bedridden patients or those healing from any ailment is their recuperation and return to their regular routine. The first step in this process is getting the patients out of bed and walking around. People with mobility handicaps or ailment, as well as those who have been resting for an extended period, may be weary and lack confidence in traveling for long distances. For this reason, transient spaces must offer an active assistance in guiding users throughout the corridors with a sense of comfort, control, and positive motivation/reinforcement. One design element that can aid in motivating users to become more active can be found in Edward Seinfeld’s research on the needs of people with disabilities where he suggests placing a resting place every 100ft. When users can visibly see their next resting place, they will be more inclined to venture throughout the transient areas. For people who have difficulty walking, special mobility needs, or who are recovering from physical injuries, access to safe resting areas are critical to their comfort in traveling throughout healthcare facilities. For example, when presented with a long narrow corridor, users will feel safer navigating from rest area to rest area, as opposed to exploring a space without being able to locate or see their next rest area. The spacing of rest areas can provide an active


200 Cynthia A. Leibrock, Design Details for Health, 88-89.
assistance to users with mobility handicaps, while also offering small goal incentives to make it to each station (4.2.2.1). Visually identifying the next rest area can motivate users to adventure through the transient areas using a checkpoint type strategy. Active assistance is also created by providing easy to use guide rails (as outlined in section 3.2.2.5) as well as through experiential clues that indicate programmatic changes or goal checkpoints (as outlined in section 2.2.4.1).

Getting users out of bed and active is the first step towards their integration into society with their new health condition. The next step is aiding users to regain confidence in their daily functions through various staged simulations that mimic conditions they will experience outside of the healthcare facility (4.2.2.2). Simulation of daily activities is an essential step of the rehabilitation of all users in healthcare facilities. Rehabilitation does not only refer to those whom have undergone an intensive surgical or physical ailment, but also for those who have endured mental, emotional, and spiritual strains as well (including family members, loved ones, and staff members). Cynthia A. Leibrock outlines the purpose of rehabilitation design by stating,

“Rehabilitation focuses on physical impairments as well as psychological dysfunctions life stroke, head injury, cognition, and perception. But it goes beyond mere restoration of physical and mental function to the application of this function to the activities of daily living.”

Rehabilitation comes from restoring patients’ confidence in everyday activities and environments. Encountering a food cart, grocery store, side walk, hilly terrain, or even encountering a simulated weather scenario (as seen in the simulated rain at the Emperor Qianmen Hotel in Figure 4.2.2.2), allows patients to regain familiarity with everyday tasks/challenges that they will face once they leave the healthcare facility. The intention of these simulations is to bestow

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201 Cynthia A. Leibrock, Design Details for Health, 90.
confidence in users to dispel their fear of returning to their work and home. Acceptance of their new limitation is another hurdle these design elements help to promote. Independence Square is a unique rehabilitation module that offers simulations ranging from grocery store activities (counting money, basic math, budgeting), ring door bells, operate doors, traverse different surfaces (including brick, turf, stone, and broken concrete), operating everyday machines, getting in and out of a car, and walking through timed crosswalks. As illustrated in the list of simulations above, rehabilitation constitutes more than just physical therapy to include “occupational therapy, speech therapy, therapeutic recreation, psychiatry, neuropsychiatry, and social work.”

Subtle simulation placed throughout the transient spaces in healthcare facilities can offer constant support, practice, and motivation for daily activities. A simple coffee/food/grocery cart or stand can mimic many of the activities within the average store. Side paths which offer a change in grade, texture, material, roughness, and consistency paired with a comforting guide rail can offer a place for patients to practice their everyday mobility skills. Implementing small societal factors such as traffic lights, turn signals, social groupings, and an urban framework can provide a familiar environment for patients to conquer their fears and motivate them to get better. Margaret A. Williams outlines the design of rehabilitant, motivational spaces in healthcare facilities in stating, “In sum, the two major characteristics of design for therapeutic outcomes are: 1) that it take into account the functional requirements of patients as these are influenced by illness or disability, and 2) that it support processes of care and treatment aimed at specific desired outcomes.”

While subtle staged simulations can allow users to become more familiar with daily activities with their new health conditions/parameters transient environments should also provide more challenging activities to inspire adventure, confidence, and thirst for life.

“The key to design for rehabilitation is patient motivation; the facility must provide the incentive for a patient to get out of bed every day, sometimes for month at a stretch, and endure painful and possibly embarrassing therapy.”

Spontaneous challenges integrated into the design of transient spaces offer subtle and easily

202 Cynthia A. Leibrock, Design Details for Health, 91.


204 Cynthia A. Leibrock, Design Details for Health, 90.
accessible forms of physical, emotional, and mental therapy (4.2.2.3). Challenges can take the form of simple choices, such as the juxtaposition of a ramp next to a small flight of stairs next to an electronic lift. Offering a variety of mobility choices through the transient space allows users to decide which level of activity they are willing to participate in today, as well as to establish future goals (Example: I will take the ramp today and hope to use the stairs by the end of the week). Additionally, transient design should incorporate training courses integrated into the main public design. For example, in a long corridor, space can be allocated to provide a terrain simulation with a variety of floor forms/obstacles. A similar example can be seen in the design of the Nova Southeastern University Medicinal & Healing Garden, as seen in Figure 4.2.2.3, in which a simulated terrain encourages patients to test their reflexes, balance, and control over a safe, guided pathway. By placing therapy routes in transient spaces, they become easily accessible and become integrated into user’s normal schedule. Physical challenges also need to address the change in perception of the space from the viewpoint of the user. Leibrock recommends that indirect lighting and ceiling detail is important for physical therapy designs, considering that most activities take place on a mat with patients on their back.  

A variation in challenges to promote improvement for different medical conditions must be integrated into transient design and can take the form of both permanent design forms as well as temporary, flexible arrangements. Challenges help combat peoples mental limitations and barriers to allow for a more fulfilling, free life. Challenges differ from simulation design objectives in that simulation deals with making users familiar with simple daily activities, while challenges offer an additional layer of motivation, incorporating environments that are not necessary or present in daily life. A rock climbing wall, hiking route, or moveable walkway are all challenges that can appear in transient environments that do not simulate every day activities, but instead focus on the concept of achievement. People who make it across a difficult terrain, climb a flight

205 Cynthia A. Leibrock, Design Details for Health, 92.
of stairs for the first time after admittance, or complete a challenge they previously thought to be incapable of, they experience a sensation of achievement and triumph over their fears. Designed challenges in transient spaces have the potential to encourage achievement and exploration outside the healthcare environment to reach a higher level of life fulfillment, as well as address their new health condition in a progressive, life enhancing manor.

Another motivational design tool that can be implemented into transient spaces in healthcare facilities is goal/checkpoint layouts (4.2.2.4). Goal viewing motivates users to achieve a certain goal specific to their recovery/acceptance/condition by visually seeing their goal taking place in another person. For example, if a child is recovering from a cold in bed and doesn’t want to move they will not move. However if the child views out of their window their friends playing a fun game of soccer (assuming the child enjoys soccer), they will be more motivated to get out of their bed and join their friends outside. Similarly, in a healthcare setting, views from transient spaces can encourage physical, social, and mental activity through visualizing a particular goal being achieved. One built example can be seen in the design of the St. Mary’s Hospital in Newport, England. As noted by one architectural journal,

“The trees set off a new lake formed to the south of the site. It will be planted to resemble Monet’s garden, and will be the termination of a spatial sequence intended to reflect progression in recuperation. Seriously sick patients will of course be confined to their beds…but as their health improves, and they become more mobile, patients will be able to visit the conservatories that terminate the tips of the templates and, on fine days, they can go further to the balconies outside. From there the natural progression will be to the grounds.”

St. Mary’s Hospital incorporated a progression of separated spaces to motivate users to journey from each goal/checkpoint to the next until they could finally reach the grounds/endpoint goal. At first patients might not be used to their mobility after a long duration of being confined to their beds, so they may not venture very far from their room. Therefore, by providing visual goals/checkpoints embedded in the architectural language of the transient space allows patients to visualize their next destination and strategize how they will achieve their goal. By visualizing their next destination/goal users become more motivated to reach a further destination or

achievement, while feeling secure and comforted by their environment. Goal viewing or progression design takes into account that healing is a process that takes place over time and thus the transient design should also reveal itself overtime, constantly reinforcing, motivating, stimulating, and comforting each user towards their end goal.

Motivating healthcare facility occupants to improve their physical motor abilities and participate in general exercise is a major hurdle. One of the primary fears and misconceptions about physical recovery is that it is accompanied by pain. The fear of pain alone can be crippling, but when paired with an actual physical impairment/ailment it can lead patients to become paralyzed (only through their own perception). However pain is not always a bad thing. Robert M. Sapolsky notes, “Pain is useful to the extent that it motivates us to modify our behaviors in order to reduce whatever insult is causing pain, because invariably that insult is damaging our tissues.” The pain caused from overexertion of an injured or sensitive area is informative information about which areas of the body still need time to heal. However, ceasing all physical activity out of fear of hurting one specified area/part leads to negative health impacts for the rest of the body. Is mitigating the pain from one area more important than over health and well-being? Sapolsky explains, “inflammatory cells release chemicals that make pain receptors more sensitive.” However, he also notes, Chronic, throbbing pain can be inhibited by certain types of sharp, brief sensory stimulation.” Stressed-induced analgesia is one area of pain research that is important to reference when accounting for pain in therapeutic settings. Stressed-induced analgesia is a biological phenomenon in which the mindset of the user, typically when placed under a large amount of stress, can mitigate the feeling the pain to enhance performance, even when severely injured. Numerous examples can be sighted from soldiers shot on the battlefield, to athletes injured during a game, to an animal running away from a predator after being attacked. Henry Beecher was one of the first medical personnel to document this occurrence when examining injured soldiers on the battlefield during World War II. He discovered that, “for injuries of similar severity, approximately 80 percent of civilians requested morphine, while only a third of the soldiers did.” Similarly we have all heard accounts of soldiers or athletes whom were injured during a match/battle who continued to play/fight without feeling any pain from

the injury and performed well. I am not suggesting that patients with broken legs run through the halls as if they are being chased by a lion or on a battlefield, but the reference is to highlight the strong mental aspect of pain. Pain will not occur during all physical actions that patients embark on, however their perception and fear of pain often holds them back. Therefore transient design must battle this perceptual fear of pain to motivate patients to venture out of their private rooms and through the engaging, comforting healing environment created throughout the transient spaces of the healthcare facility (4.2.2.5). As noted by Sapolsky in Why Zebra’s Don’t Get Ulcers, Neurochemists uncovered the phenomenon similar to analgesia in the 1970s, by studying the effects of various opiate drugs (morphine, heroin, opium). They found that each of these opiate drugs bind to specific receptors in the brain which were known to process pain perception. Thus, as we know and use in healthcare facilities today, morphine is a drug that blocks pain perception. However, the flip side to this experiment is that if receptors that block pain are naturally available in the brain, then they must have a corresponding natural compound synthesized in the body that also uses them to block pain. Researchers found three classes of naturally occurring compounds that block pain in the body: enkephalins, dynorphins, and endorphins. So how can we, on the outside, influence our bodies, on the inside, to produce these natural painkillers? The specifics are unclear, but several activities have been shown to produce these endogenous opioids. Acupuncture is one procedure that is used in eastern medicine to produce endogenous opioids to block pain during surgery in place of pharmaceutical drugs. Similar studies of endogenous opioids were conducted to help explain how the placebo effect improves a person health.210 Endorphins are the most well known form of endogenous opioids and one way they can be released in the body is from physical activity. Physical activity releases endorphins in your body to reduce your perception of pain and offer a positive feeling/emotional trigger. Sapolsky notes in Why Zebra’s Don’t Get Ulcers,

“During exercise, beta-endorphin pours out of the pituitary gland, finally building up to levels in the bloodstream around the 30-minute mark that will cause analgesia. The other opiates, especially the enkephalins, are mobilized as well, mostly within the brain and spine…Moreover, they also work at the pain receptors in the skin and organs, blunting their sensitivity. All sorts of other stressors produce similar effects.”211


Many activities that produce endorphins can be integrated into and promoted through the design of transient spaces in healthcare facilities to help motivate users by reducing their perception of pain. Figure 4.2.2.5 of the Welfare Centre for Children and Teenagers by Marjan Hessamfar & Joe Verons, illustrates a good example of promoting both the guideline for goal viewing (4.2.2.4) as well as for encouraging physical activity (4.2.2.5). The facility frames a central athletics courtyard offering a basketball court and soccer net for users to engage with. From the adjacent programmed space, users are offered a view of people playing and having fun within the sports oriented courtyard, thus motivating and encouraging them to join in on the action. This motivational view helps to bring users out of the safe confines of their room to become more active in the community, both physically and socially. Once engaged in the sporting activity (if their health permits) the pain of their trouble or health condition melts away as the get swept away by the competitive action of the game. The social connections and physical activity help to speed the healing an ailment, while also providing a higher quality of life from within the healthcare facility. No pain, no gain is one example of a healthcare facility guideline that does not solely address physical ailments of patients, but addresses healthcare facilities as a broader public space that should increase the quality of life and satisfaction of its users, thus promoting a greater public health initiative.

Overall, motivational design should be implemented subliminally throughout all transient spaces to offer challenging, motivating encounters within the normal framework of the healthcare facility (4.2.2.6). One example of subliminal motivation can be found in stair, ramp, and elevator placement. By separating the placement of stairs and elevators, architects can subliminally motivate users to use the stairs and increase their physical exercise. Imagine if a staircase is placed in prominent location within a transient space and is in close proximity to all users. If the elevators were placed out of sight, around the backside of the space, and required a longer walking distance to reach than the stairs, users would be subliminally more motivated to use the stairs instead of searching for the far flung elevators. One research supporting this logic can be
found in Howie Frumkins research on stair placement and elevator arrangements. In his lecture “Creating Healthy Communities” Howie Frumkin introduced a study on skip-stop elevators. In the study an elevator system was installed which only stops on every third floor, on one side of the office building, while the other half of the office building had a traditional stair and elevator option. The staircases on the side of the skip-stop elevator were given a prominent location in the office and were designed to the quality of a high traffic corridor. Over a six-month period 117,619 uses of skip-stop stairs were reported in comparison to only 3,570 uses of the traditional stairs.\textsuperscript{212} Therefore, by placing stairs prominently and designing them as an integral part of the design instead of as a fire escape, the experience becomes more inviting, encouraging people to actively use the stairs. Additionally, architects can design stairs to offer a higher quality experience than alternative options by providing quality finishes and sensorial experiences along the journey up or down the staircase. Figure 4.2.2.6 illustrates a subliminal design incentive for using the stairs at the Balnea Pavillion des arbres. In this example, the stairs are finished to the same quality of the interior transient spaces, offering an attractive and smooth connection point between two separate facility units. Additionally, the stairs offer a ‘walk amongst the treetops,’ by opening the staircase to the outdoor forest environment, thus creating a more stimulating and compelling environment to experience, in comparison to the tight confines of a metal lined elevator.

4.2.3 Outlook

“In various studies that have been repeated multiple times, researchers found that the psychological state of happiness was actually a better predictor of future coronary problems than any other clinical variable. Cholesterol, smoking, diet, etc., were not as accurate predictors as the psychological state of happiness.” Cites Patrick E. Linton in Creating a Total Healing Environment.213

A person’s own perception of their health and future outlook on life has a notable impact on not only their mental and emotional health, but also a corresponding relation to their physical health as well. Thus, transient spaces in healthcare facilities must create a positive healing environment that uplifts the moods of its users and aids in creating a brighter outlook on their life/health.

“Every day, one, two, or three people…show up at my bedside to make up the difference between what my insurance company will pay for and the care I truly need…Bone deep, I hunger for life, for love…worldwide, faith-wide, race-wide, planet-wide, universe wide. Love. And peace. And Justice. And compassion…I am grateful for eve manifestation of human compassion. It is a sin to draw lines so that unequal portions are doled out based on dogma or doctrine, gender or politics, ethnicity, or any other artificial division we humans cling to century after century” stated Delle Chatman, a young mother of a seven year old and a victim of cancer speaking from her hospital bed.214

People matter. Those that touch our lives during a major change in health make a significant difference in our outlook. The importance on these relationships is compassion and caring, whether it is from a complete stranger, or someone they have known all their life. When gauging healthcare environments for a prime area with the potential for community caring, transient spaces offer the largest variety and opportunity for social encounters. As mentioned previously in Section 3.2.4, social connections in healthcare facilities have been linked to great improvements in overall health stemming from support, positive stimulation, increased motor skills, control, and improvement in outlook on one’s health condition. Transient spaces are places for

214 Stephen Verderber, Compassion in Architecture: Evidence-Based Design for Health in Louisiana. (Lafayette: Center for Louisiana Studies, 2005), 183.
community interaction and connection, which can be specifically oriented towards fostering a caring environment that improves the outlook of its users (4.2.3.1). The Livsrum Cancer Counseling Center, as seen in Figure 4.2.3.1, offers a host of social communal areas joined together by innovatively programmed transient spaces around two central courtyards. The center offers a series of communal gathering configurations throughout the open floor plan, without the use of a single corridor. Each transient space programmatically flows into the adjacent transient environment to create an open dialogue for people within different activities or stages of health to engage with one another and bond over their mutual health related conditions. Figure 4.2.3.2 highlights the family and activity space within the interior courtyards, which offer communal areas to celebrate the small and large moments in life. The program chart shown, illustrates the multitude of communal activities planned throughout the facility. Overall, the design strengthens the community of patients, providing supportive environments for patients to experience and grow through their healing journey together.

Offering transient environments that allow users to engage with the facility through a communal activity, such as gardening or volunteering, is an effective way of improving user outlook. In Creating a Total Healing Environment, Patrick E Linton discovered,
“People who help others tend to feel healthier, and in one study of 2,700 male volunteers over a 10-year period, the volunteers had death rates two-and-a-half times lower than expected.”

Engagement takes the approach to social design a step further towards creating a conclusive social experience. Opportunities for users to engage by helping out or constructing something allow them to make the environment part of their identity. Allowing users to alter their environments brings them comfort through the personalization of that space. This form of transient engagement can take on many forms in design from gardening, landscaping, framed artwork or photographs, art boards or walls within the corridors, moveable seating and furniture, communal pets (in architectural terms: fish tank or dog house design), etc.

“At the end of life, social rituals and celebrations of life have great value.”

Social rituals are a crucial part of a person’s identity that are often sacrificed in healthcare facilities due to the constricting and dehumanizing elements imbedded in their design. Transient spaces offer the opportunity and flexibility to help users maintain their social rituals, thus enhancing their perception on life (4.2.3.2). Whether is it celebrating a birthday (of a patient or loved one), performing a spiritual ritual (prayer, song, or dance), or maintaining a social tradition (Sunday brunch with a sister, a walk through a park with their partner, or an evening poker match), these forms of social interaction restore a regularity/familiarity to an otherwise dehumanizing experience. Social rituals and celebrations can have a variety of different design requirements for the diverse set of users, however one thing always stays true: the presence of another. Creating flexible spaces within communal social environment geared towards the social culture of the area in which the facility is built is key to restoring the small celebrations of life that make a huge compounding influence on users outlook and health. There is no one design solution to this problem, but rather this guideline is an element to add on top of the other social guidelines listed in Section 3.2.4. Flexible elements in consideration to acoustical and privacy concerns will aid in allowing for social gatherings, without negatively impacting the other guests of the facility. Some design considerations to consider are:

- Are the seating arrangements offered conducive to a large communal activity?


216 Cynthia A. Leibrock, Design Details for Health, 69.
• Can a group partake in a loud gathering/experience without impacting another user looking for quiet comfort?

• Is the flexible social space conducive to intense physical movement (such as dancing)?

• Does the dining area offer flexible seating to accommodate larger groups when present?

• Are the interior views stimulating enough to relieve the pressure of being within a healthcare facility?

• Is there enough privacy or containment offered for groups to fully relax and let go without the fear of interrupting another, being judged, or being controlled by the facility’s staff?

• Do the flexible social areas offer a feeling of acceptance and openness, instead of isolation or separation?

• Does the environment offered belittle a social belief or practice? If yes, how can that space become better integrated within the facility?

“A study done at the University of California in San Francisco found cancer patients whose attitudes were active instead of passive exhibited much better immune function and slower tumor growth in their cancers. Another study of cancer patients done at John Hopkins in Baltimore showed that there might be a link between the progression of the disease and emotional suppression of chronically held emotion.” Additionally, “A major series of studies done at the University of Southern California, Los Angeles (UCLA) separated patients into four different disease categories: ulcer disease, hypertension, diabetes, and breast cancer. Within each of these four diagnostic categories there was a control group that really was going through standard treatment and protocols, as well as an experimental group. With the experimental group, researchers gave subjects a brief 20-min education and information session on how to be a more involved patient. They explained how to become more active and involved in the healing experience, how to talk to physicians or nurses and ask them questions. Researchers found that in each of these categories, in each of the experimental groups, those who were more active in participation with their doctors had improved health status. That tells me something about what we should be
doing in hospitals in terms of teaching and coaching patients how to become more involved in what is happening with their treatment.”

Therefore, patients who are actively engaged in their own recovery process have greater improvement in their health. Transient spaces can be programmed and detailed to offer users more engagement with their health to stimulate more patient participation in their recovery process (4.2.3.3). Medical libraries or library type areas should be provided to offer users additional information about their medical condition or recovery process. Additionally, these library areas should support educational and emotional counseling areas for all facility users (patients, visitors, and staff). The counseling areas should support one-on-one as well as group sessions. As found in the research of Patrick E. Linton, it is important for people to openly express and analyze their emotions towards the health condition (of a loved one or of their own). Smaller design features to support the interaction include: progress boards, community support boards, and community gathering areas to discuss common experiences. The main element addressed in all of these examples is to promote engagement of users in the healing process and bestow control or power over their personal journey.

Promoting patients to take personal control over their healing process leads to a positive and engaging outlook, however for some health conditions the outcome one is looking for is not always just better health. Terminally ill patients who know of their condition and whom have endured various medical procedures are not necessarily looking to be as healthy as they were when they were twenty. In some health conditions, such as the terminally ill, outlook cannot be solved through engagement and must be met with an element equally as mystifying as their life, conditions, and journey: a spiritual connection (4.2.3.4). For many, spirituality is a major part of their everyday life and therefore needs to be continued during their stay in a healthcare facility. Spirituality is equally as important for those whom have come to seek spiritual guidance or meaning in their time of despair or final moments. Having a strong spiritual connection can improve the outlook of users through reassuring themselves of the unknown, the mysterious, and the uncalculated. Prayer and other spiritual practices have been shown to have many health benefits. Spiritual observance has been proven to provide people with moments of repose


and a way of coping with worries. Nature is one universal image of spirituality that can be incorporated into transient space design in healthcare facilities. Schweitzer notes, “Nature may also be useful in providing images of lifecycles such as birth, death, and the renewal of life.” Minimally designed prayer/spiritual space (as described in Section 3.2.3.8) can provide a private area for one to reflect in solitude with their spiritual practice. Placement of this area must be integrated into the communal transient area or in a therapeutic position, but must avoid being isolated completely, for users may feel segregated and contained for their religious beliefs. Long winding pathways through the landscape, lush gardens, open views of natural wonders, and soft, diffused lighting strategies are additional examples of design elements that can support a spiritual connection for facility users. Spirituality can also refer to a euphoric experience or meditative state and does not have to reference religion specifically. Figure 4.2.3.4 demonstrates a spiritual environment within the design of the Hainan Blue Bay Westin Resort Hotel by GAD – Zhejiang Greenton Architectural Design. Spirituality comes from the flexible layout of the room, material choice, lighting, and views. Clean building lines, reflective flooring, and soothing ambient lighting sets the mood of this tranquil environment to allow users to relax and open up to their inner self. While originally designed as a serene resort environment, these same principles can also be applied to the creation of a spiritually enriching healthcare facility environment.

Healthcare facilities harbor historically long negative connotations. Healthcare facilities are often perceived and categorized as “places of death.” Consequently, healthcare design today has to battle these misconceptions about medical practice as well we dispel the common fear of death. Transient spaces offer one of the most engaging typologies within healthcare facilities, which are experienced throughout a users journey (from the entrance of the facility - daily transfers for treatment or activity – daily escapes from solitary confinement – to their ultimate depart-


ture from the facility. Therefore, transient spaces offer an engaging environment for design to tackle the common misconceptions and fear of healthcare facilities (4.2.3.5). Fear emanates not only from the preconceived notions of healthcare facilities, but also from users personal fear over their health condition. Fear over users’ health conditions is formally addressed through acceptance of their condition. \(^{221}\) Fear comes from many sources, but one universal source is that of the unknown. Not knowing or understanding ones’ health condition is a frightening experience. Not knowing the outcome of a procedure of a loved one, from a visitors perspective, is equally as frightening. How can healthcare design harbor a feeling of security to dispel fear? It cannot. Fear is often seen as a negative attribute that hampers health and while it does add stress, fear is a primal emotion that cannot simply be ‘fixed.’ Design can, however, provide areas for added comfort during fearful experiences. There are three main design attributes that will be discussed in terms of fear design: control, confidence, and support. Watching a loved one go through cancer treatment continually unsuccessfully easily harbors feelings of losing control and sorrow. Some health conditions can be unpredictable and what healed one patient may not heal the next. Lack of control in healthcare facilities is one of the leading design oriented cause of fear. People are told where to wait, when they can visit, where to visit, how to behave, which activities are open to them, how cold or hot the room is, etc. Sapolsky references this stress trigger in a primate study where he notes,

“Kaplan and Carol Shively have studied female monkeys in dominance hierarchies and observe that animals chronically stuck in subordinate positions have twice the atherosclerosis as dominant females, even when on a low-fat diet. Finding with a similar theme of social subordination emerge among humans.”\(^{222}\)

Transient space control elements include:

- Operable windows – to control air flow and room temperature
- Moveable screens or partitions – to control visual privacy
- Lighting options – to control the lighting of a particular area of the room
- Open and stimulating walking paths – to allow for control over environment,

\(^{221}\) Additional attributes of acceptance are outlined further in Section 4.2.4

encounters, and level of physical exertion to limit stress

- Moveable seating – to provide control over social situations
- Open outdoor space – to provide a release from controlled enclosure
- Screened windows between transient space and purpose space (surgical rooms, patient rooms) – to provide control over visual stimuli and privacy
- Options, Options, Options – to provide many pathways for people to wonder and explore new environment with new control options to make a diverse user base feel in control in a time when their needs or desires may change frequently.

Not everyone can be a doctor, thus society must entrust in the medical community to provide the best service to heal each patient. How can design dispel fear in medical practice? By bestowing confidence in the facility. Confidence in healthcare facilities, to perform to the best of society’s medical ability, depends on both the reputation of the facility as well as its design. Bernd H. Muhlbauer states in The “Added Value” of Good Hospital Architecture for Personnel: An Economic Perspective, “Attractive hospitals offer assurances that their range of services can be trusted… Medical Services present credence goods.”223 Meaning that a patient’s self evaluation of their experience in a healthcare facility is influenced by their perception of the building to be able to offer the healing services they need. Their measure of confidence in the built environment will directly impact their perceived health outcome.224 The rooftop gardens of New Lady Cilento Children’s Hospital, as seen in Figure 4.2.3.5, offer a comforting environment, open to

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224 Designing to reinforce confidence is outlined further in Section 3.2.2.1.
the creative uses of its patients and staff. The well cared for vegetated rooftop gardens also offer assurance that users are in good hands. The comfort brought by the open lawns and vine filled trellis help to ease the fear of patients and remind them of their natural surroundings. Lastly, fear can be dispelled through the support of both the medical staff as well as the facility itself. Support can be in the form of engaging educational spaces where visitors can become empowered through earning about the health condition and process a loved one is going through. Educational and counseling sessions (as described earlier in 4.2.3.3) offer support in dispelling fear associated with the unknown allows users to gain control over the healing process.

“Compassion is fundamental to human existence…Architecture is capable of uplifting the human spirit and nurturing the psyche. At its worst, it can exert a deadening effect on human well being, thoroughly denigrating the human condition.”

Improving healthcare facility occupant’s outlook creates a snowball effect of positive influences on their overall health and well-being. Healthcare facilities are places of major life events, both life and death, as well as transitional places for one to traverse one health condition or lifestyle to a new health condition or lifestyle. Where major events take place, stress ensues. If patients, visitors, or staff members spend a majority of their time activating their stress-response to situations that they cannot control then they will be continually deteriorating their health. Constant stress, coupled with a decrease in exercise causes people to tire quicker, become fatigue, loose muscle mass or ability, and increase their risk of cardiovascular disease. Robert M. Sapolsky notes,

“Stress, including psychological stress, can wreak havoc with metabolic control in a juvenile diabetic…Thus, frequent stress and/or big stress-responses might increase the odds of getting juvenile diabetes, accelerate the development of diabetes, and, once it is established, cause major complications in this life-shortening disease.”

Overall, healthcare facility users must be continuously supported and encouraged throughout their healing journey (4.2.3.6). Transient spaces can foster a supportive atmosphere through the

225 Stephen Verderber, Compassion in Architecture: Evidence-Based Design for Health in Louisiana. (Lafayette: Center for Louisiana Studies, 2005), 183.


deliverance of encouraging results. Little encouragements and reminders of hope along their journey will decrease their chronic stress response, which in turn will improve their health and speed their recovery. Figure 4.2.3.6 illustrates the encouraging reminder throughout the corridor of the 100 Office of the Shimizu Corporation, where footstep prints inform users of how far along the corridor they have walked, thus positively reinforcing their efforts for mobility or physical activity. How can design encourage users? Through celebrating life. Transient spaces are where the healing story takes place. Users should embark on great journeys throughout the facility that remind them of the wonders of the world and celebrate the small moments in life. A walk through a garden, view of a newborn baby, or an encouraging view out to the landscape with the motivation building to journey out farther, reminds users of the beauty the world has to offer. The healing for some illnesses are ‘uphill battles,’ which require motivation and constant encouragement to strengthen the soul/will of each user. Designs that inspire, create awe, and highlight the beauty of the life encourage patients and visitors to keep strong during their time of despair.

Similarly to highlighting life’s wonders through the design of the healthcare facility site and building, the surrounding context also has an influence on human health of the facility’s users. A health related study conducted in the city of Berlin, Germany called, “Multiple environmental burdens and neighborhood-related health of city residents,” researched how different environmental burdens affected the perceived health and satisfaction of the city residents. The study found that people who lived in an area with higher amounts of environmental burdens, such as air pollution, behavior related noise, and odors, reported poorer health behavior and were less satisfied with their neighborhoods. They quantified the major factors effecting neighborhood satisfaction as “perceived provision with public green space, behavior related noise, air quality, cleanliness, and vegetation.” However the study did report that residents in high burdened areas did not actually have poorer general physical health or psychological symptoms, but they were
significantly less satisfied with their neighborhood and did behave significantly less healthy.\textsuperscript{228} Therefore there are several correlations between environmental burdens and people’s perceived health and satisfaction. Transient areas surrounding the site, throughout the landscape of the site, and the egress to the site all play major roles in mitigating the existing environmental burdens of the site (4.2.3.7). When people perceive the surrounding context to be pleasant they will perceive themselves as healthier. Not all healthcare facilities can be located in remote mountain landscapes like the ancient Greek Asclepians. Instead healthcare facilities should serve to enhance the existing fabric of the site, whether urban, suburban, or rural, to further enhance the health of the surrounding area. Healthcare facilities in urban environments can invite the public to use the hospital as public space, such as the Khoo Teck Puat Hospital in Singapore, thus breaking down the social stigma of healthcare facilities being uncomfortable or sickly environments. Additionally, the transient design of a healthcare facility could be used to promote healthier, active lifestyles of the surrounding context through motivational design.

\subsection*{4.2.4 Acceptance}

“Disease is a deviation within life… So the idea of a disease attacking life must be replaced by the much denser notion of pathological life.” Foucault continues, calling for a change in lifestyle behavior and perception of health by stating, “Morbid phenomena are to be understood on the basis of the same text of life, and not as a nosological essence: Diseases have been regarded as a disorder; one has failed to see in them a series of phenomena all dependent upon one another, usually tending to a particular end: pathological life has been completely neglected.”\textsuperscript{229}

The final section of this research focuses on people’s acceptance of their health conditions and how to foster an environment that supports, comforts, and enhances their life. Disease, death, and dying are all foundational terms that are reanalyzed or reinterpreted through contemporary

\textsuperscript{228} Jasmin Honold, Reinhard Beyer, Tobia Lakes, Elke van der Meer, “Multiple environmental burdens and neighborhood-related health of city residents,” \textit{Journal of Environmental Psychology} 32.4 (December 2012): 313.

architectural design. The focus of this section is not necessarily on improving the physiological or neurological health of healthcare facility users, although in many cases it will coincide with, but instead focuses on the importance of self and enhancing life’ journey no matter the health state users may be labeled with. The concept of acceptance views an illness or health condition as a current state of living, not a deviation from the ‘norm,’ and thus focuses on architectural solutions in transient space design that address this outlook.

“Life is not the form of the organism, but the organism is the visible form of life in its resistance to that which does not live and which opposes it,” states Foucault. He continues, highlighting the importance of the morbid, “The morbid authorizes a subtle perception of the way in which life finds death its most differentiated figure. The morbid is the rearified form of life, exhausted, working itself into the void of death; but also in another sense, that in death it takes on its peculiar volume, irreducible to conformities and customs, to received necessities; a singular volume defined by its absolute rarity.”

Health is an ever-changing state that has no defined barriers or concepts of what it should be. Whether a person’s visual perception is weakened, their form of mobility changes, or their physical strength diminishes, it is all a part of their life journey and not a negative deviation. Society as a whole must accept that all of us will one day meet a change in our state of health and that architecture must respond accordingly, providing a supportive, accessible environment.

Death is a mysterious journey that everyone will experience at some point in their life. Death can be confusing, remorseful, and elicit feelings of regret or understanding. Therefore, the first step towards acceptance of a situation in a healthcare facility is to bridge the gap between health and treatment. Death often signifies the ultimate loss of control over one’s own life and the life of those around them. Transient spaces can help to bridge this gap through educational, yet therapeutic and life enhancing design strategies (4.2.4.1). One example of bridging the mysterious divide between patient health and what the treatment can offer can be found in the research of healing gardens by Jacob Lieberman, James Burnett, and Cynthia Leibrock. Exposure to sunlight and the sounds of flowing water have been linked an increase in relaxation and overall wellbeing. However these gardens can go a step further by introducing users to the source of


231 Michel Foucault, *The Birth of the Clinic: An Archaeology of Medical Perception*, 171.
their treatment: the plants from which their medication is derived. Having accessible gardens in transient spaces that grow the plants linked to the medication/treatment patients are taking can help strengthen their confidence in the medication and allow users to associate their medication with the nature responsible for producing it, the plants own life cycle, and a grandeur perspective on the intangible relations effecting their health.\textsuperscript{232} Leibrock states some examples of plants from which many medications are derived as:

- **Madagascar Periwinkle**
  - Medication: Vinblastine – Treats: Hodgkin’s Disease
  - Medication: Vincristine Sulfate – Treats: Leukemia

- **Yew**
  - Medication: Taxol – Treats: Ovarian and Breast Cancer

- **Mayapple**
  - Medication: Etoposid – Treats: Testicular Cancer

- **Garlic and Lavender**
  - Traditional homeopathic remedies

- **Herbs**
  - Used for Aromatherapy

Offering a visual, tangible connection between the patient and the natural source of their medication helps to bridge the gap between their conditions and where their mysterious white pills are derived from. Through the labeling of each plant, users can learn the name of the plant, its origin, the effects the plant offers in medicine, and which medications are derived from it (As seen in Figure 4.2.4.1). The added benefits of sunlight, aroma, connection with nature, and

\textsuperscript{232} Cynthia A. Leibrock, *Design Details for Health*, 234-235.
therapeutic sounds (Leaves blowing in the wind, flowing water, etc.) aid in comforting the relationship, thus allowing users to move closer towards accepting their conditions and what they are doing to aid the healing process.

Modern medicine has progressed substantially over the last millennia with technology today allowing doctors to examine the finite measurements of the cellular structure and their communication throughout the body. However, technology has its limits and illness is still a major concern for the general population. While a major shift has been made towards the rise of chronic illness and the fall of infectious diseases, death itself still remains unavoidable, incalculable, and mysterious. Therefore, everyone will experience the journey towards their own death, as this is an integral part of the human life cycle. So why is death always viewed as a negative experience? Why is it often ignored in design? If it is an experience that we all must have, why not celebrate it for all its value. Acceptance is about acknowledging ones’ health condition and its impact on their life, identity, and loved ones. Death is morbid, but it is not inherently bad. Death should be explored, honored, and accepted. Transient spaces offer an open environment in which the acceptance of death can be consoled and strengthened. One of the defining characteristics of death is its mysterious nature. No one has ever recorded, blogged, or reported on what happens after and very few works have recorded the process leading up to it. Transient spaces can aid in acceptance by allowing users to explore the mysterious and unknown (4.2.4.2). This primal sense of exploration has been noted as the main mechanism for experiencing ones’ true self. Ecart Ruther and Angelika Gruber-Ruther note,

“The curious search for the new, exploration of space in time and constant wanderings in the real bodily and virtual mental realms are basic prerequisites of brain activity, which does not cease even during sleep.” They continue describing the modules of how self is experienced in space, stating that each module “is independently possessed of the need to search, to be curious, to make enquiries and to seek answers.”

Spaces with unknown purposes or paths with unknown destinations and winding options offer places of mystery to be explored. Figure 4.2.4.2 offers one example of a mysterious, explorative transient design by Hassell at the Palm Island Resort (As mentioned previously in 4.2.1.7). Multiple pathways cut through a soft black reflecting pond that spans between the different hotel units. As the pathways move through the reflecting pond, they gradually change in elevation and direction, leading users on a mysterious, blind adventure. The experience of descending through a black reflecting pond, coupled with the reveal of hidden inter-level plazas/openings creates an err of adventure and wonder for its users. This labyrinth-type pathway controls the vantage point of each user to lead them through the resort, while also providing the opportunity for an explorative deviation. Labyrinth type gardens or intertwining paths through nature are two bases for creating a mysterious journey. These environments should offer unclear final destinations, various side paths/destinations along the way, and frame each view to create an awe of wonder or curiosity about what will come next. Many Chinese garden designs in Suzhou, China use these same techniques to navigate users through the gardens, slowly encountering intricate scenes and planned vistas along the way, while encouraging each person to explore deeper into the garden plan, unaware of where they will end up next. These gardens mimic natural landscapes on a small scale incorporating: changes in elevations, rock mounds, caves, rivers, ponds, lush vegetation at every scale, hills, gateways, and various pavilions. One concept of interest is the zigzag walkways that can be found in many of the gardens, such as The Humble Administrators Garden. The zigzag form helps to slow down each user, causing them to turn and look at the surrounding environment instead of rushing towards the next pavilion. At each bend in the pathway the user faces a framed view out to the landscape and surrounding pavilions, offering small clues as to what lies beyond their vantage point, enticing each user to explore deeper. This concept of movement control and slowing down a user's pace can be easily implemented in transient spaces in healthcare facilities. Offering intriguing spaces that ignite a sense of exploration or mystery aids users in accepting the unknown and valuing its experience.

In a similar viewpoint, changing health conditions, including death, should be honored in healthcare facilities. Too often death is seen as a failure of modern medicine and comes suddenly, leaving loved ones alone and afraid. If the journey towards death or any change in health was acknowledged as a valuable experience in life and was honored, acceptance of self would be a natural progression throughout life, as opposed to the constant struggle faced today by
many healthcare facilities users in their battle against the uncontrollable forces of nature. Parker J. Palmer notes, “When we sit with a dying person, we understand that what is before us is not a ‘problem to be solved’ but a mystery to be honored.” The journey towards death or any change in a person’s state of health should be honored as a milestone or major event in their life. Transient spaces offer the open, engaging environments ripe for promoting this celebration and journey of life. Transient environments in healthcare facilities need to instill honor in the journey each of its users will travel (4.2.4.3). Palmer states,

“When we sit with a dying person, we realize that we must overcome the fear that often distorts our relationships – the fear that causes us to turn away when the other reveals something too vexing, painful, or ugly to bear.” He continues, “We learn to ‘practice presence’ when we sit with a dying person – to treat the space between us as sacred, to honor the soul and its destiny.”

Transient design can offer space that encourages presence, by designing a comfortable, intimate condolence space within the larger public context. Transient design can honor ones’ journey by offering them control over their environment, choices on their company and comfort, and humanizing environments that offer similar comforts as home. Allow environments for patients to walk, talk, and relax with their loved ones, enhancing their final moments or change in life paths together. There is no one space or design example to be offered for honoring ones’ journey, but rather a compilation of small details and foresight that make the vantage point more accepting. Figure 4.2.4.3, of Hotel MINHO by Virgula I, shows the possibility of injecting small impromptu gathering areas, reflection gardens, and the power of changing ambience that encourages people to stay, instilling presence to the area. The high quality finishes and wood texture applied to the transient space offers the impression of being within a purposeful room, instead of a sterile hallway. The small details in lighting, texture,

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and change of routine create an environment for people to reflect and feel comfortable reminiscing in their journey. Honoring users’ lives takes place with the physical presence of the patients, as well as without. After a loved one passes on, healthcare facilities need to offer a place for condolence that comforts users and aids in their acceptance of the event. Honor is also important to staff members who might grow close to patients and experience loss at a higher volume than most.

Honoring ones’ life is not complete without the inclusion of others. It is the people that enter our lives that help shape who we are, stimulate our minds, and guide our journey in life. Ecart Ruther and Angelika Gruber-Ruther state in The Healing Power of Space,

“In terms of the object, the ego is formed through the experience of the other(s). Without a relationship and an ongoing process of confrontation with the other(s), the environment and external influences, the brain is not capable of inducing a mature sense of self. In this context it becomes highly evident to what great extend spatial perception is involved in the development of the psyche.”

For this reason, transient spaces need to celebrate the interpersonal relationships and connections that allow us to experience and engage with our true sense of self (4.2.4.4). Social spaces have been discussed throughout this research (reference Section 3.2.4) and continue to take on new forms and requirements for each guideline. In terms of acceptance and celebrating the personal connections with others that have aided in a users life journey, transient spaces need to incorporate an air of intimacy, reflection, and seclusion. For example, if a terminally ill parent is undergoing treatment at a healthcare facility an environment needs to be created which allows them to engage in family activities, intimate conversations, and aids in closure. Celebrating someone’s birthday, a successful venture, a role at a sporting event or academic society, graduating to a new academic level, overcoming a fear, trying something new, etc., are all small events in life that need to be celebrated no matter which environment the people involved are located, including healthcare facilities. These celebrations of life events add comfort and regularity to the journey of someone in a healthcare facility. Communal dining areas, inviting lawns, available sporting activities, private celebration rooms, and communal living rooms offer environments to celebrate the small events that add immense pleasure and gratitude in life.

These small celebrations with people not only support our interpersonal relationships, but they also help to remind users of past moments in life that have brought them joy. Transient spaces can help to trigger positive memories from users past that can help improve their current mood, while moving them closer toward acceptance (4.2.4.5). Memories are a powerful tool in improving outlook, strengthen ones identity, enhancing people’s mood, and bringing comfort.

“It involves more than relief from pain; comfort comes from pleasant memories, hours spent in the garden, the sound of crackling fire, soothing music, appealing fragrance, and a loving touch…Norman Cousins states that memory is where the proof of life is stored,” states Leibrock in Design Details for Health.237

Just by thinking of an event and reliving it in our minds, our physical bodies can react to the imagery as if they were actually in the virtual event. This relationship has been documented numerous times.238 A similar study also proved that this relationship works in reverse as well. If our bodies react to a scenario that isn’t really happening, it can still trigger similar emotional triggers within our minds that would be experienced if the event were physically happening. One study on this relationship between how our overall health is influenced by perceptions of our environment, memories, and self can be seen in the research of Ekman and Friesen on facial expressions. The two psychologists researched the correlations between a person’s facial expressions, their emotions, and the information they were trying to perceive. One of the interesting points of the research was when the group studied the reverse effect of facial expression, meaning how a person’s facial expression affects their emotional health. As stated in Blink by Malcolm Gladwell,

“They gathered a group of volunteers and hooked them up to monitors measuring their heart rate and body temperature – the physiological signals of such emotions as anger, sadness, and fear. Half of the volunteers were told to try to remember and relive a particularly stressful experience. The other half were simply shown how to create, on their faces, the expressions that corresponded to stressful emotions, such as anger, sadness and fear. The second group, the people who were acting, showed the same physiological responses, the same heightened heart rate and

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237 Cynthia A. Leibrock, Design Details for Health, 64-65.

body temperature, as the first group.”

This research illustrates the connection between a person’s perceived health and their actual health. Thus if someone manually forms a smile on their face without experiencing happiness first, their body internally responds similarly to if they had naturally formed a smile. This logic is applicable to transient design by creating a specific experience to spark the memory for patients to morph their perception of their health. If a patient moves along a narrow, concrete hallway, lit by fluorescent lights with no architectural variation, they are left within their own minds to perceive their health as maintaining its same condition, if not negatively impacting their perception that their health is worsening. However if a series of transient spaces align a string of experiences that persuades the patient that they are in a safe environment that is healing them, then they can mentally allow their bodies to begin the healing process. Additionally, if the transient spaces evoke joyful memories from their past, their bodies will experience a similar physiological response, further benefiting their health. Leibrock notes in Design Details for Health,

“A crackling fire in the fireplace, the fragrance of bread in the oven, a hot cup of coffee in the morning, a warm room filled with daylight, the touch of a loved one – these are the memories of home. A home that appeals to the five senses can improve orientation and reduce loss of memory.”

Inducing familiar routines to daily life brings back memories and can comfort users. Gathering for dinner, cooking in a kitchen, sitting by a fireplace, gardening, mowing the lawn, and even cleaning can trigger fond memories that help users appreciate and accept their/a loved one’s health condition. These daily activities also form a sense of community, pride, and control for users over the healthcare facility. Transient spaces provide the open programming to allow and encourage these activities to happen. In the design of the Lanzerhof

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240 Cynthia A. Leibrock, *Design Details for Health*, 35.
Tegernsee, by Ingenhoven Architects, fireside lounges were placed within the rejuvenating health oriented transient area to promote comfort and relaxation (as seen in Figure 4.2.4.5). The fireplaces offer a source of remembrance, to spark memories of relaxing times at home with family and friends. The fireplaces aid in creating a homely atmosphere where users can feel relaxed and immersed in remembrance. Fireplaces symbolize the historic heart of the home offering warmth and comfort to families. Thus, fireplaces in healthcare facilities can serve as a familiar reminder of love for those climates and cultures that have that connotation/connection to their presence.

Offering explorative adventures, honoring one’s journey, celebrating personal relations, and remembering fond memories are all design strategies to aid in the acceptance of a changing health condition. These strategies all help to guide users through their journey, bringing them comfort along the way. The previous guidelines help to frame an overarching viewpoint of enhancing the lives of users, with a clear deviation from the traditional notion of curing, in which health conditions are accepted as they are and do not denote a tragic end all to life. Healthcare facility design can learn from the philosophy of contemporary hospice facilities. While hospice facilities are a specialty within the realm of healthcare facilities, they offer valuable design concepts that should be carried throughout all healthcare design. Leibrock states in Design Details for Health, “The philosophy of hospice maintains that we should enhance the life that remains. Hospice emphasizes palliative care, controlling pain and other symptoms but not necessarily prolonging life.” Transient Spaces in healthcare facilities can offer guidance in enriching the lives of its users (4.2.4.6). Spaces that enhance life events by offering comforting gathering areas for users to meet, aid in the health (mental, emotional, and spiritual) of all users. Spaces can enrich lives by offering new activities/hobbies for users to try together. Whether is it an indoor botchy ball course, a yoga studio, a painting/craft area, or a cinema, innovative, flexible spaces can present a multitude of new experiences to enrich the lives of healthcare facility users. Present them with something new, with opportunities for growth and learning, or an experience outside their comfort zone. Healthcare facilities can reference the design strategies of resorts, wellness centers, campgrounds, and community centers, which all have begun to provide fresh experiences for their users to enjoy. The Atlantis resort in the Bahamas incorporated its own water park for its guests. Many campgrounds offer BBQ and wilderness lessons to expand the knowledge of its guests. Additionally, some community centers have begun to offer a variety of foreign dance lessons, such as hula, samba, folk, as well as contemporary Korean pop. These amenities provide

241 Cynthia A. Leibrock, Design Details for Health, 61.
far more than entertainment, they create memories, bonding, and challenges, to enrich the lives of each guest. Leibrock summarizes these benefits when stating,

“At the end of life, time must be measured by quality instead of quantity. Each moment takes on greater importance, each sensory experience a special meaning. A window is not just an opening for light and air; it frames a vista of the last sunrise. A door is more than a functional entrance; it brings in friends and family members.”242

When living with an ailment that chronically weakens our overall health and wellbeing, we must adapt to constantly changing levels of energy, spirit, and stamina. Foucault introduces the concept of degeneration to help explain this course of pathological life. As described by Foucault, degeneration designates,

“that weakening of natural robust humanity that life in society, civilization, laws, and language condemn little by little to a life of artificiality and disease; to degenerate was to describe a decline from original status, figuring by natural right at the summit of the hierarchy of perfections and times.”243

Part of accepting a new change in health is understanding the new values it will bring to their life. Degenerating health may limit the quantity of hours left in a life, but it does not have to limit the quality of life experienced during that state of health. Being reminded of the beneficial changes in life and nature can help users connect with their change in health. Changes in flora, fauna, and weather demonstrate the beauty of change our world has to offer. ASAP’s design of the Emperor Qianmen Hotel, as seen in Figure 4.2.4.7, embodies this concept of change through the movement of water. A series of connected water canals, pools, and waterfalls create a river of life throughout the facility. Connections of water elements occur at different rates or appearances including a simulated rain area, where water from the roof gently cascades into a courtyard transient area, with the soft texture, sound, and ambiance of natural rain. The simulation brings the smell, sound, touch, and visual delight of rainy weather to a controlled indoor environment to provide the experience or interaction with changing weather at the will of the facility and its users.

242 Cynthia A. Leibrock, Design Details for Health, 61.
243 Michel Foucault, The Birth of the Clinic: An Archaeology of Medical Perception, 156.
The metaphor of the caterpillar’s journey becomes an increasingly important reminder of how life can be viewed. Transient spaces need to highlight the eternal rhythm of the universe to bring awareness to the natural changes in the world (4.2.4.7). Change is hard, but can also be life enhancing and beautiful. Major life changes that occur in healthcare facilities are tough and this guideline by no means tries to mitigate that experience. Tough times have their own inherent value in life, one that should be met with open arms, as a challenge or lesson on how to be greater. Some environmental changes that can be highlighted through design to remind users of the value of rhythm, harmony, and change are: the sun cycle (sun rise – sun set), seasonal changes in foliage, seasonal change in weather, replacement of garden plants, the blooming of flowers, the growth of vegetation (both in personal possession and in nature), the attraction and use of the grounds by animals, the changing of the nurses/staff, and the seasonal foods brought into the dining facilities. All of these changes signify a deviation from the normal path, yet do not signify a negative connotation. Change is embraced in each of these examples. Leibrock notes the integration of gardens and garden views to highlight the changes in stimuli when stating,

“The garden is a place where patients and family can be distracted from their pain and anxiety. Windows to the garden reveal patterns of sunlight filtering through plants of various colors, a sensory environment that contrasts sharply with the sterility of the hospital. Terminally ill patients have a spiritual need for a meditative garden.”

Gardens also help to orient users towards the cycles of the day, offering a clearer depiction of time for those whom have spent an extended period of time within the facility. Framing views of changing scenery, landscapes, and activities can help show users the beauty of change. Nature is the best design solution to illustrate the eternal rhythm of change and rejuvenation in life.

244 Cynthia A. Leibrock, Design Details for Health, 235.
When speaking of death throughout the ages, Foucault states, “Now...it is constitutive of singularity; it is in that perception of death that the individual finds himself, escaping from a monotonous, average life; in the slow, half-subterranean, but already visible approach of death, the dull, common life becomes an individuality at last; a black border isolates it and gives it the style of its own truth.”245

In death or illness we reflect on our inner truth, our identities, and our journey. While this solitude ultimately can bring us comfort, accepting it by dispelling the fear of the health condition brings us closer to our true selves and closer to peace. Through accepting ones condition and ultimate death one can come to appreciate how unique and rare their life journey has been. Life is precious. Life is rare. Even when presented with a degenerating health condition, reflections onto one’s life journey can bring inner peace and acceptance of their path in life (4.2.4.8). It is important to provide space for patients, loved ones, and staff to reflect onto the rarity of life and those who have crossed into it who we hold dear. Reflective transient spaces offer environment that support solitude, calmness, symbols of life, memory triggers, privacy, intimate spacing, a sense of support, and create an air of wonder. Reflective spaces may take the form of spiritual or prayer areas, which allow for a deep inner dialogue. Paths through nature that offer the private cover of vegetation as well as the changing stimuli also aid in reflective thought. Transient environments that offer an alternative route or private inner spaces within a large open area can allow users to feel supported by the facility to open up and explore their sense of self. Reflective spaces allow or a singular journey through a non-challenging environment with subtle stimuli that allows each user to solely focus on their inner thought, without concern for their movement/navigation. Areas for rest should be periodically included to allow users to break from their walk, when navigation becomes too taxing or distracting from their inner dialogue. Dominik Reding states in The Heavy and The Light,

“A hospital is a place of hope, salvation, and healing. But also one of bitter sorrow, pain, and death. The architect cannot undo this. But if the architecture of a hospital is able to dispel fear, aid in the recovery process, and instill in patients a sense of comfort and security, then it has served its purpose.”246

245 Michel Foucault, The Birth of the Clinic: An Archaeology of Medical Perception, 171.

4.3 Guidelines for Identity Design

4.2.1 Solitude

- 4.2.1.1 Personal Privacy
  - People need space for reflection, need to have a sense of control, an opportunity for close personal relationships, and to be able “to move around in public without being recognized or the subject of attention.”
  - Personal space needs to be integrated into the public areas within transient spaces, allowing at least 8ft of personal space for each user.
  - Sound absorptive materials within the private area also aid in privacy and confidentiality.
  - Physical barriers can also increase visual privacy and allow users to be present in a public transient space, without being “on-stage.” Small niches, corners, and room partitions can be designed to create intimate, personal environments for individual patient use.

- 4.2.1.2 Community of Solitude
  - Similar to personal solitude, community solitude allows users to engage in a supportive environment in which everyone is seeking solitude.
  - “The smaller the room, the greater the social interaction. Research has shown that there is less isolation and less passive behavior in small rooms.”
  - Flexible seating is critical for comfort and participation.

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247 Patricia Brierley Newell, Perspectives on privacy, 87-104.
248 Cynthia A. Leibrock, Design Details for Health, 133.
249 Cynthia A. Leibrock, Design Details for Health, 208.
250 Cynthia A. Leibrock, Design Details for Health, 208.
• **4.2.1.3 Safe Space**
  o Safe spaces offer a private place for pensive thought, uninterrupted by outside influences.
  o Places with alarms, telephones, or other loud abrupt noises should be contained away from any designated safe places of solitude. Steady, constant ambient noise (such as the wind blowing through leaves or the flow water down a stream) offers the safety and embrace of certainty when in a highly sensitive state of solitude.

• **4.2.1.4 Relief Zone**
  o Incorporate a relief zone into the area of solitude to take users mentally away from the outside world and deep into their inner being.
  o Relief comes with complexity, from the mysteries of the unknown, and the exploration of our true self.
  o Places of relief are often found in landscaped garden with lush foliage and a dense variety of vegetation.
  o A path only wide enough for one person to traverse, with no clear destination, with no clear intention, offers the relief of societal pressure associated with daily life (being on time, conforming to society, always having a clear path to follow, etc.).
4.2.1.5 Personal Exploration
- Transient spaces that evoke an explorative nature through mystery, wonder, abundance of choices, and protective yet ever changing stimuli offer a environment for users to engage in a personal journey as they wander through the unknown landscape, contemplating the unknown within themselves (health condition, future diagnosis, diagnosis of a loved one, treatment, life goals, life journey, et.).
- Transient spaces that create an air of mystery and exploration allow users to reflect on their health conditions from a new perspective, an intuitive perspective that isn’t hindered by any disturbance in the environment (such as people glaring, talking, or loud medical machinery).

4.2.1.6 Varied Stimuli
- Not everyone will be evoked by the same pond, garden, or religion, thus it is important to provide many different pathways along the journey to create a palette of different stimuli to allow users to choose which pathway best reflects their inner needs.
- Multiple routes filled with changing stimuli offers users a new experience every time they enter the transient route. These open invitations to explore a new experience every time they need to get somewhere within the facility or are searching for solitude, offer a break in the otherwise routine and strictly planned schedule, thus offering a release from the world of constraints and a clear mind to explore their true selves, alone or with the community.


Figure 4.2.1.6: Piers Taylor + Mitchell Taylor Workshop, Stillpoint Clinic and Dojo, 28 May 2012. ArchDaily, <http://www.archdaily.com/?p=238077> © Peter Cook
4.2.1.7 Grieving

- A grieving space needs to be designed to allow patients, visitors, and staff a comforting area to release their emotions and explore their personal reaction to any situation.
- A grieving transient area should have an intimate scale with flexible space requirements for one-three people. While grieving is a personal journey, it is beneficial to allow these spaces to double as grief counseling spaces.

4.2.2 Motivation

4.2.2.1 Active Assistance

- Transient spaces must offer an active assistance in guiding users throughout the corridors with a sense of comfort, control, and positive motivation/reinforcement, while also providing small goal incentives to make it to each station.
- Placing a resting place at least every 100ft. When users can visibly see their next resting place, they will be more inclined to venture throughout the transient areas.
- Active assistance is also created by providing easy to use guide rails as well as through experiential clues that indicate programmatic changes or goal checkpoints.

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• 4.2.2.2 Staged Simulation
  o Aid users to regain confidence in their daily functions through various staged simulations that mimic conditions they will experience outside of the healthcare facility. Simulation of daily activities is an essential step of the rehabilitation of all users in healthcare facilities.
  o A simple coffee/food/grocery cart or stand can mimic many of the activities within the average store. Side paths which offer a change in grade, texture, material, roughness, and consistency paired with a comforting guide rail can offer a place for patients to practice their everyday mobility skills. While, implementing small societal factors such as traffic lights, turn signals, social groupings, and an urban framework can provide a familiar environment for patients to conquer their fears.

• 4.2.2.3 Spontaneous Challenges
  o Spontaneous challenges integrated into the design of transient spaces offer subtle and easily accessible forms of physical, emotional, and mental therapy.
  o Challenges can take the form of simple choices, such as the juxtaposition of a ramp next to a small flight of stairs next to an electronic lift. Offering a variety of mobility choices through the transient space allows users to decide which level of activity they are willing to participate in today, as well as to establish future goals. Additionally, transient design should incorporate training courses integrated into the main public design. For example, in a long corridor, space can be allocated to provide a terrain simulation with a variety of floor forms/obstacles.

Figure 4.2.2.2: asap, Emperor Qianmen Hotel, 28 Aug 2014. ArchDaily, <http://www.archdaily.com/?p=540163>
© Jonathan Leijonhufvud

Figure 4.2.2.3: COP, Nova Southeastern University Medicinal & Healing Garden, 26 Apr 2010. Nova Southeastern University, <http://nsunews.nova.edu/medicinal-garden-opens/>
Courtesy of Nova Southeastern University
• 4.2.2.4 Goal Viewing  
  o Visualizing goals motivates users to achieve a certain goal specific to their recovery/acceptance/condition by visually seeing their goal taking place in another person.  
  o Views from transient spaces can encourage physical, social, and mental activity through visualizing a particular goal being achieved.  
  o Incorporate a progression of separated spaces that slowly reveal themselves over time to motivate users to journey from each goal/checkpoint to the next until they could finally reach the grounds/endpoint goal.

 Figure 4.2.2.4: K+S Architects, Children’s Nursing Home “Tsukuba-Aji-en,” 19 Jan 2015. ArchDaily, <http://www.archdaily.com/?p=588946> © Hiroshi Ueda, Yoshihiro Asada

• 4.2.2.5 No Pain No Gain  
  o Transient design must battle the perceptual fear of pain to motivate patients to venture out of their private rooms and through the engaging, comforting healing environment created throughout the transient spaces of the healthcare facility.  
  o Physical activity releases endorphins in your body to reduce your perception of pain and offer a positive feeling/emotional trigger.  
  o Many activities that produce endorphins can be integrated into and promoted through the design of transient spaces in to help motivate users by reducing their perception of pain.

 Figure 4.2.2.5: Marjan Hessamfar & Joe Vérons, Welfare Centre for Children and Teenagers, 03 Feb 2015. ArchDaily, <http://www.archdaily.com/?p=592912> © Vincent Fillon
4.2.2.6 Subliminal Encounters

- Motivational design should be implemented subliminally throughout all transient spaces to offer challenging, motivating encounters within the normal framework of the healthcare facility.
- One example of subliminal motivation can be found in stair, ramp, and elevator placement. By separating the placement of stairs and elevators, architects can subliminally motivate users to use the stairs.
- Staircases placed in prominent locations, as integral elements of the layout, and designed to the quality of a high traffic corridor encourage use, increasing the physical activity of users.  

4.2.3 Outlook

4.2.3.1 Community Interaction

- Transient spaces are places for community interaction and connection, which can be specifically oriented towards fostering a caring environment that improves the outlook of its users.
- Offering transient environments that allow users to engage with the facility through a communal activity, such as gardening or volunteering, is an effective way of improving user outlook.
- This form of transient engagement can take on many forms in design from gardening, landscaping, framed artwork or photographs, art boards or walls within the corridors, moveable seating and furniture, communal pets (in architectural terms: fish tank or dog house design), etc.

© Steve Montpetit

Figure 4.2.3.1: EFFEKT, *Livsrum Cancer Counseling Center*, 08 Jan 2014. ArchDaily. <http://www.archdaily.com/?p=464296>
© Thomas Ibsen

• 4.2.3.2 Family Space/Activity
  o Transient spaces offer the opportunity and flexibility to help users maintain their social rituals, thus enhancing their perception on life.
  o Creating flexible spaces, within communal social environments, geared towards the social culture of the area in which the facility is built is key to restoring the small celebrations of life that make a huge compounding influence on users outlook and health.
  o Flexible elements in consideration to acoustical and privacy concerns will aid in allowing for social gatherings, without negatively impacting the other guests of the facility.

• 4.2.3.3 Active Participation
  o Transient spaces can be programmed and detailed to offer users more engagement with their health to stimulate more patient participation in their recovery process, which has been shown to increase patient health.
  o Medical libraries or library type areas should be provided to offer users additional information about their medical condition or recovery process.
  o Additionally, these library areas should support educational and emotional counseling areas for all facility users (patients, visitors, and staff).
• 4.2.3.4 Spiritual Connection
  o Prayer and other spiritual practices have been shown to have many health benefits. Spiritual observance has been proven to provide people with moments of repose and a way of coping with worries. Nature is one universal image of spirituality that can be incorporated into transient space design in healthcare facilities.
  o Minimally designed prayer/spiritual space (as described in Section 3.2.3.8) can provide a private area for one to reflect in solitude with their spiritual practice.

• 4.2.3.5 Dispelling Fear
  o Design areas for added comfort during fearful experiences. There are three main design attributes that will be discussed in terms of fear design: control, confidence, and support.
  o Some design elements that instill control are: operable windows, moveable screen partitions, lighting options, open and stimulating pathways, moveable seating, open outdoor space, and screened windows.
  o “Attractive hospitals offer assurances that their range of services can be trusted… Medical Services present credence goods.”
  o Educational and counseling sessions (as described earlier in 4.2.3.3) offer support in dispelling fear associated with the unknown allows users to gain control over the healing process.

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• 4.2.3.6 Encouraging Reminders
  o Transient spaces can foster a supportive atmosphere through the deliverance of encouraging results. Little encouragements and reminders of hope along their journey will decrease user’s chronic stress response, which in turn will improve their health and speed their recovery.
  o Designs that inspire, create awe, and highlight the beauty of the life encourage patients and visitors to keep strong during their time of despair. A walk through a garden, view of a newborn baby, or an encouraging view out to the landscape with the motivation building to journey out farther, reminds users of the beauty the world has to offer.

Figure 4.2.3.6: Shimizu Corporation, 100 Office, 04 Dec 2014. ArchDaily, <http://www.archdaily.com/?p=574232> Courtesy of 100 Office

• 4.2.3.7 Beautiful Surroundings
  o Transient areas surrounding the site, throughout the landscape of the site, and the egress to the site all play major roles in mitigating the existing environmental burdens of the site.
  o The major factors effecting neighborhood satisfaction are noted as “perceived provision with public green space, behavior related noise, air quality, cleanliness, and vegetation.”
  o Additionally, the transient design of a healthcare facility could be used to promote healthier, active lifestyles of the surrounding context through motivational design.

Figure 4.2.3.7: Jensen & Skodvin Architects, River Sauna, 11 Sep 2012. ArchDaily, <http://www.archdaily.com/?p=270889> Courtesy of Jensen & Skodvin Architects
4.2.4 Acceptance

• 4.2.4.1 Bridging the Divide
  o The first step towards acceptance of a situation in a healthcare facility is to bridge the gap between health and treatment. Transient spaces can help to bridge this gap through educational, yet therapeutic and life enhancing design strategies.
  o One example of bridging the mysterious divide between patient health and what the treatment can offer can be found in the research of healing gardens, which introduce users to the source of their medication/treatment.

• 4.2.4.2 Exploring the Mysterious
  o Aid in acceptance by allowing users to explore the mysterious and unknown
  o Spaces with unknown purposes or paths with unknown destinations and winding options offer places of mystery to be explored. Labyrinth type gardens or intertwining paths through nature are two bases for creating a mysterious journey. These environments should offer unclear final destinations, various side paths/destinations along the way, and frame each view to create an awe of wonder or curiosity about what will come next.
4.2.4.3 Honor the Journey

- Transient environments need to instill honor in the journey each of its users will travel.
- Offer space that encourages presence, by designing a comfortable, intimate condolence space within the larger public context. Transient design can honor ones’ journey by offering them control over their environment, choices on their company and comfort, and humanizing environments that offer similar comforts as home. Allow environments for patients to walk, talk, and relax with their loved ones, enhancing their final moments or change in life paths together.

4.2.4.4 Celebrate Connections

- Transient spaces need to celebrate the interpersonal relationships and connections that allow us to experience and engage with our true sense of self.
- Incorporate an air of intimacy, reflection, and seclusion.
- Communal dining areas, inviting lawns, available sporting activities, private celebration rooms, and communal living rooms offer environments to celebrate the small events that add immense pleasure and gratitude in life.
• 4.2.4.5 Spark Memories
  o Transient spaces can help to trigger positive memories from users past that can help improve their current mood, while moving them closer toward acceptance.
  o Inducing familiar routines to daily life brings back memories and can comfort users. Gathering for dinner, cooking in a kitchen, sitting by a fireplace, gardening, mowing the lawn, and even cleaning can trigger fond memories that help users appreciate and accept their/a loved one’s health condition.

• 4.2.4.6 Life Enrichment
  o Offer guidance in enriching the lives of healthcare facility users. Spaces that enhance life events by offering comforting gathering areas for users to meet, aid in the health (mental, emotional, and spiritual) of all users.
  o Spaces can enrich lives by offering new activities/hobbies for users to try together. Whether is it an indoor botchy ball course, a yoga studio, a painting/craft area, or a cinema, innovative, flexible spaces can present a multitude of new experiences to enrich the lives of healthcare facility users.
  o Present them with something new, with opportunities for growth and learning, or an experience outside their comfort zone.
• 4.2.4.7 Eternal Rhythm
  o Highlight the eternal rhythm of the universe to bring awareness to the natural changes in the world. Being reminded of the beneficial changes in life and nature can help users connect with their change in health.
  o Some environmental changes that can be highlighted through design to remind users of the value of rhythm, harmony, and change are: the sun cycle (sun rise – sun set), seasonal changes in foliage, seasonal change in weather, replacement of garden plants, the blooming of flowers, the growth of vegetation (both in personal possession and in nature), the attraction and use of the grounds by animals, the changing of the nurses/staff, and the seasonal foods brought into the dining facilities.

Figure 4.2.4.7: asap, Emperor Qianmen Hotel, 28 Aug 2014. ArchDaily, <http://www.archdaily.com/?p=540163> © Jonathan Leijonhufvud

• 4.2.4.8 Reflection
  o Reflective transient spaces offer environment that support solitude, calmness, symbols of life, memory triggers, privacy, intimate spacing, a sense of support, and create an air of wonder.
  o Reflective spaces may take the form of spiritual or prayer areas, which allow for a deep inner dialogue. Paths through nature that offer the private cover of vegetation as well as the changing stimuli also aid in reflective thought. Transient environments that offer an alternative route or private inner spaces within a large open area can allow users to feel supported by the facility to open up and explore their sense of self.
  o Reflective spaces allow or a singular journey through a non-challenging environment with subtle stimuli that allows each user to solely focus on their inner thought, without concern for their movement/navigation.

Figure 4.2.4.8A: Elsa Urquijo Arquitectos, Padre Rubinos, 22 Sep 2014. ArchDaily, <http://www.archdaily.com/?p=548911> Courtesy of Elsa Urquijo Arquitectos

Figure 4.2.4.8B: HGA, Lakewood Garden Mausoleum, 01 Feb 2013. ArchDaily, <http://www.archdaily.com/?p=326697> © Paul Crosby
5. Bibliography

5.1 Bibliography


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