

*Charlotte Amalie, St. Thomas, Virgin Islands*

*Heather L. Helland*

NORTH DAKOTA STATE UNIVERSITY



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# Humanizing Architecture for Healthcare:

Designing a Balance Between System Centered  
and Patient Centered Architecture

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**HUMANIZING ARCHITECTURE  
FOR HEALTHCARE:  
DESIGNING A BALANCE BETWEEN SYSTEM CENTERED  
AND PATIENT CENTERED ARCHITECTURE**

A Design Thesis Submitted to the  
Department of Architecture and Landscape Architecture  
of North Dakota State University

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In Partial Fulfillment of the Requirements  
For the Degree of  
Bachelor of Architecture

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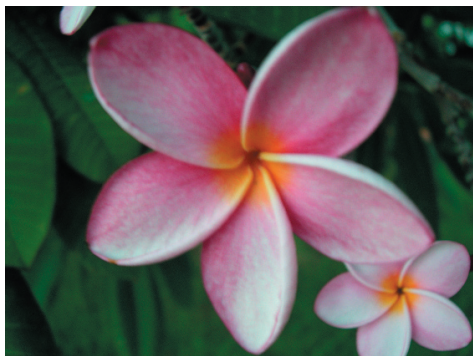
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May 2005  
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Far too often the meaning of architecture for health care has been focused on the notion of a provider (system)—center care instead of a patient—centered care. This paper will explain the notion of how crucial the relationship is between both. Those buildings that achieve a balance between the two have arrived at a state of equality and become symbols of civic pride.

More specifically, this study will take place on the island of St. Thomas. The hospital of the island has been scorned for its deplorable condition both inside and out. It was not uncommon for the newspapers to report about the dire hospital medication and supply shortages, antiquated medical equipment, a shortage of physician specialists, and a building quickly going to ruins, which lead to the threat of de-certification by Federal officials. Under the constant barrage of negative publicity, the public confidence in the hospital was shaken. I am taking the initiative of transforming a hospital that has been neglected far too long, and create a facility in which the islanders will feel comfortable in the hospital environment which has become a spiritual sanctuary in which to heal.



## General Description

This issue is especially prevalent with the current hospital in Charlotte Amalie. The theoretical basis idea behind this project is to create an environment in which the users, both staff and patient, feel welcomed meanwhile maintaining a hospital that is a providing ground for applying modern principles and promotes an era of technological medicine.

The current Roy Lester Schneider Hospital is in disrepair. The exterior is a sterile, stark façade surrounded by an undeveloped site. This project will address this issue.

The Roy Lester Schneider hospital is a 169-bed, acute facility located on the beautiful island of St. Thomas, Virgin Islands. This is the only hospital on the island. There are approximately 500 employees, and over 50 physicians on active staff with specialties including Neonatology, Cardiology, Oncology, and Orthopedic.

Through the past few years, the hospital has been publicly scorned for its deplorable condition both inside and out. It was not uncommon for the newspapers to report about the dire hospital medication and supply shortages, antiquated medical equipment, a shortage of physician specialists, and a building quickly going to ruins, which lead to the threat of de-certification by Federal officials. Under the constant barrage of negative publicity, the public confidence in the hospital was shaken.

The hospital has begun to restore confidence in the hospital by striving to make daily improvements such as: recruiting specialized physicians, new equipment, reducing wait times, and revamping quality improvement process in line with current industry methodologies.

While reading through my research, I came across an interesting quote from the hospital addressing the issue of their daily endeavors to create a more hospitable environment for their patients. Martin Luther King said, “We are not where we want to be, we are not where we are going to be, but thank God we are not where we were” (Schneider, 2004, p.2).

In order to achieve this goal, there must be an aggressive plan to modernize the facility by designing a building that promotes the high standards of healthcare the hospital would like to obtain. The current conditions, size, and location hospital’s are not conducive to the physical demands of this hospital.



The project has a strong emphasis in designing for the physical, emotional, and psychological needs of the human in collaboration with designing a hospital that promotes modernistic principles of technological medicine. The complexity is necessary to sustain my interest and to explore a new dimension of design. As soon as I laid eyes on the (existing) hospital I felt compelled to find a solution.

## *Building Type*

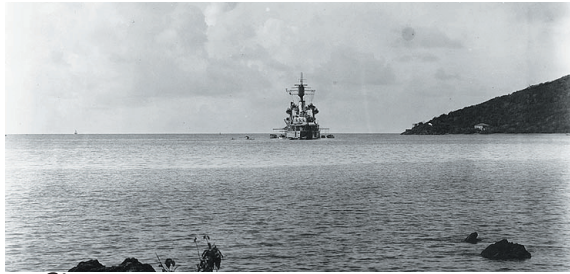


My thesis project is designing a hospital for Charlotte Amalie on the island of St. Thomas located in the U.S. Virgin Islands. This hospital will become a providing ground for the application of modernistic principles and promotes an era of technological medicine. The hospital will respond to the need for incorporating a balance between a system centered—and patient centered health care system.

## *Unifying Idea*



My theoretical premise is to create an environment in which to heal. Hospitals have catered to the needs of the “system” rather than the patients mental, physical, and spiritual well-being. All of which are crucial in the process of healing. An environment in which to heal—that caters to the omnipresent spirituality in every human being. No matter there background and religious beliefs we all contain a presence of spirituality.

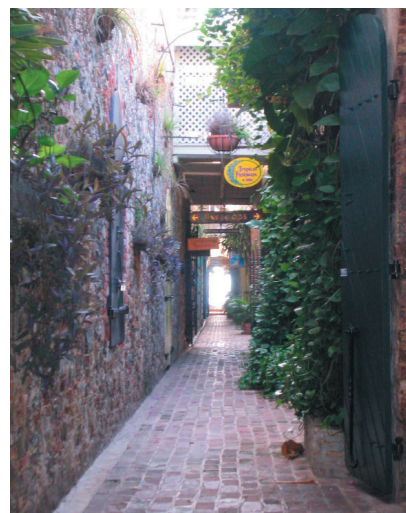


## History

The United States Virgin Islands are part of the semi-circular arc of islands which starts south-east of the Florida Keys and extends as far as Trinidad off the North East coast of South America, dividing the tropical waters of the Caribbean Sea from the Atlantic Ocean. They are situated approximately 40 miles east of Puerto Rico, and are the first link in the chain known as the Leeward Islands. St. Thomas islands (32 sq. miles, population 48, 166) are volcanic in origin which gives them the appearance of a partially submerged mountain range: steep hills and deeply indented bays surrounded by dozens of smaller islets and cays. The group of islands was discovered by Columbus during his second voyage in 1493. He claimed the land for Spain and named it "Las Once Mil Virgenes" (the 11,000 virgins). Columbus stopped first at St. Croix, naming it Santa Cruz, and sent his men ashore to look for fresh water; they were, however, soon driven off by the natives, fierce Carib Indians. For the next hundred years, the Spanish showed very little interest in the islands, apart from raiding them to carry off the natives to work

in the gold mines of San Domingo.

In fact, when European settlers arrived, after the defeat of the Spanish Armada, there were no native Indians left on the islands. The islands were, however, used by pirates and privateers to hide their ships and their booty and to lie and wait for the treasure-laden Spanish galleons. The seventeenth century was more stormy with the British, French, Spanish, Dutch and Danish battling to possess these islands which were on the trade route of sailing ships arrived when St. Thomas was possessed in the name of Denmark in 1666; St. John followed in 1684, though it was not colonized until 1716. St. Croix, after a violent early history being fought over by the Dutch, the English, the Spanish and the French, and a period under the Knights of Malta, was bought by the Danish West India and Guinea Company from France in 1733. The three islands became a Danish Crown Colony in 1755 and the King of Denmark made them free parts in 1764.





For a long time the island thrived: St. Thomas was a major port of trans-shipment and trade and there were sugar and cotton plantations on all the islands. Sugar, rum and the slave trade flourished until the banning of the slave trade at the end of the eighteenth century of Denmark, and the abolition of slavery in 1848 which created a difficult labor situation. This, along with other factors, sent the islands into a steady decline: land owners gave up and let their fields grow over, putting in herds of cattle; between 1850 and 1930 the population dwindled by half leaving mostly the descendants of slaves. In 1917, the United States, concerned about protecting its interests in the Panama Canal, and seeing the strategic importance of the islands, which are very near the major shipping lanes to the Canal, bought the islands for \$25 million as a naval base. The Danish West Indies became the United States. For the next fourteen years, the U.S. Navy was in charge of the islands and their economy sunk still lower; even the last rum distilleries were closed under National Prohibition.

When President Hoover visited the islands shortly after, he described them as an “effective poorhouse.” In 1931, the Department of The Interior replaced the U.S. Navy as the bureaucracy in charge of the territory and the area has a governor, elected every 2 years, and 15 senate members. The economy picked up after the 1950s with the ever growing influx of tourists. The islands enjoy a pleasant tropical climate with temperatures which vary only a few degrees during the year. Even the hottest summer days, however, are cooled by the trade winds. The surface temperate of the water is little different from that of the air. This climate, along with the crystal-clear waters full of marine life, coral reefs and sunken ships to explore, make the Virgin Islands a paradise for sunbathing, snorkeling, scuba-diving and, of course, sailing.







## *St. Thomas*

St. Thomas is the middle sized United States Virgin Island: 14 miles long and about 3, often mountainous, miles across (Crown Mountain on this island is 1,556 feet high; the highest in the U.S. Virgin Islands). It is the most accessible and the most densely populated island. Its natural, deep water harbor makes it a favored stopover for Caribbean cruise liners and it also has an international airport. Its chief town, Charlotte Amalie, is the capital of the U.S. Virgin Islands and the most lively in commercial terms: duty free shopping is one of its main attractions and it boasts an active and cosmopolitan night life with no lack of night clubs and good restaurants.

St. Thomas was not colonized until 1672, though it was used by pirates intent on plundering treasure-laden Spanish ships. The first settlers arrived on May 23rd 1672 on behalf of the Danish West Indian and Guinea Company with a charter from King Christian V, after whose wife Charlotte Amalie they named their harbor settlement. Being mountainous, and somewhat handicapped for agriculture, St. Thomas conveniently positioned with a large safe harbor soon began prospering as the main West Indian trading station.

As Denmark remained a neutral nation in the constant wars of Europe, it threw its chief West Indian part open to all, including privateers and pirates who brought trade to the island, furnishing commodities at east rates and buying the provisions produced by the planters. Commerce was further boosted in 1724 when St. Thomas was proclaimed a free port which it remains today. Soon after the colony was established, the first slave ships from Africa arrived in the harbor and St. Thomas became a point in the famous trade triangle: sugar, molasses, cotton and indigo were shipped to Britain's North American colonies. From there, goods such as textiles, iron, guns and alcohol were transported to North West Africa. These wares were traded for captives who were loaded in ships for the return voyage to the Caribbean and sold in the slave markets. Today, the warehouses, running from Dronningens Gade, the main street, to the sea front, still illustrate the importance of trade to this island: teeming with tourists, they now house shops full of tax-free luxury goods: camera, perfumes, cosmetics, jewelry, alcohol. However, this is by no means all the island has to offer; it has more than 40 beaches, among which is the famous beach of Magens Bay, rated among the 10 most beautiful beaches in the world.





## Users

The users, unlike the client, are those people who will be using the facilities on a day-to-day basis. It is also directed towards those who have specific needs within the building in order to achieve their tasks and duties.

Whether it is a tourist with an unexpected ailment, a local of the islands, or an employee of Roy Lester Schneider hospital, they are all users in which the design of the hospital must be accommodated. The following is a concise list of the variety of users:

- Administration
- Doctors
- Visiting Doctors
- Nurses
- Technicians
- CNAs, LPNs, Aides
- Inpatients
- Outpatients

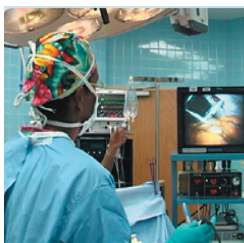
- Kitchen Personnel
- Groundskeepers and Maintenance
- Visitors

The patients for Roy L. Schenider Hospital are primarily from the island of St. Thomas, but considering the fact that this is the largest hospital facilities in the U.S. Virgin Islands, surrounding islanders are flown in from other surrounding islands. The largest portion of the population is between the ages of 15-65, and the predominant ethnicity is 80% is black. The median family income is under \$20,000. Housing is primarily single-family with children under the age of 18.

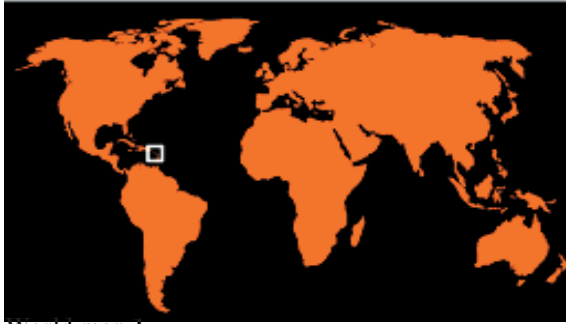


## Client

The St. Thomas Hospital Facilities Board of Trustees (the Board), was created under the Act. 5199 (Bill No. 16-0601) on September 30, 1986. This institution was a government agency until the 23rd Legislature of the Virgin Islands and the Governor of the United States, Virgin Islands, granted and approved Bill No. 23-0030 giving the hospital the status of semiautonomy. This law became effective August 14, 1999 (Schneider, 2004).



## Location: Virgin Islands



World map 1

*Official Name*=St. Thomas, US  
Virgin Islands, territory of the USA  
*Capital City*=Charlotte Amalie  
*Languages* English, English  
Creole, Spanish  
*Official Currency*=US Dollar  
*Religions*=Varied denominations  
*Population*=62,500  
*Land Area*=32 sq. miles



## ST. THOMAS



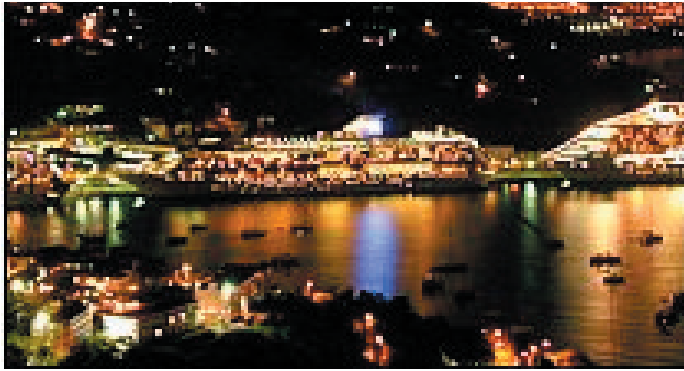
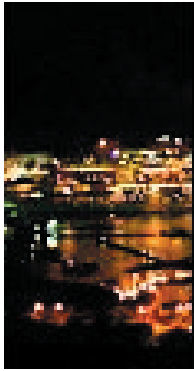
Caribbean map 2

The Virgin Islands are located between the Atlantic Ocean and the Caribbean Sea. They extend from west to east about 60 miles at the top of the arc of Caribbean islands. They are 40 to 50 miles east of Puerto Rico. The arc of Caribbean islands begins off the coast of Florida and extends all the way to South America and includes hundreds of islands and cays.

The Virgin Islands consist of two groups, the American and the British islands. The American Virgin Islands, or more com-

called the US Virgin Islands (USVI), consist of four larger islands and some 50 smaller islets and cays. The total area of the U.S.V.I. is 133 square miles.





## *Location: St. Thomas*

St. Thomas is known for having one long ridge of hills running east and west through the center of the island with smaller ridges branching off from the center. St. Thomas, thirteen miles long by four miles wide, encompasses a little over 31 square miles. The highest point is Crown Mountain at 1,556 feet. St. Thomas has a beautiful natural harbor and many protected bays. There are relatively no flat areas on St. Thomas. St. Thomas is about 4 miles away from St. John.

“Very fair and full of promise  
Lay the island of St. Thomas:  
Ocean o’er its reefs and bars  
Hid its elemental scars;  
Groves of coconut and guava  
Grew above its fields of lava.  
So the gem of the Antilles--  
“Isles of Eden,” where no ill is--  
Like a great green turtle slumbered  
On the sea that it encumbered.”

NATIONAL ST. THOMAS (A GEOGRAPHICAL SURVEY, 1868)

Poetical Work By Bret Harte



## *Design Methodology*

The methods of design are techniques used for advancing through various phases of the design process. It is a procedure that relies upon getting from one stage of design to another. Generally speaking, in order to find the best design method, it must coincide with the problem solver.

### *Literature Search*

*Purpose:* To find the most relevant information available in the most efficient manner on the subject.

*Procedure:*

1. Recognize the purpose to which published information is being sought.
2. Find the various types of publications that are likely to contain pertinent information that comes from a reliable source.
3. Minimize search time by evaluating the choice of sources and applicability of data collected.
4. Keep accurate and complete reference to documents that are useable.
5. Choose the most pertinent standard methods of delving into literary research such as:
  - Using the library catalogues and indexes
  - Using periodicals
  - Using abstracting journals
  - Using automated methods such as computer date-base or Internet searches

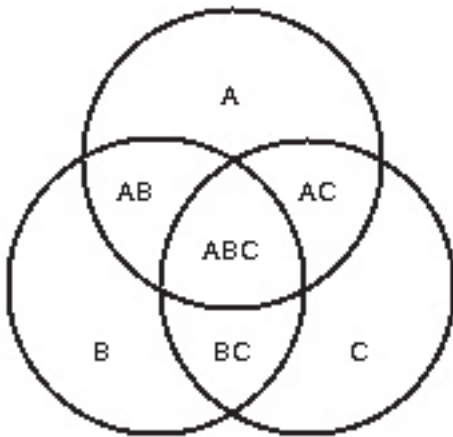
### *Interviewing Users*

*Purpose:* To obtain information that is known to the user of system in question.

*Procedure:*

1. Identify user situations that are relevant to design situations being explored.
2. Seek the cooperation of persons who will be users and affected by the presence of the design.
3. Encourage users to describe the variety of aspect of their activities.
4. Record critical information found during the interview.
5. Obtain user's comments drawn from conclusions.

## *Venn Diagram*



### *Case Study*

*Purpose:* To gain knowledge from examining the way other designers have approached a similar design situation.

### *Procedure:*

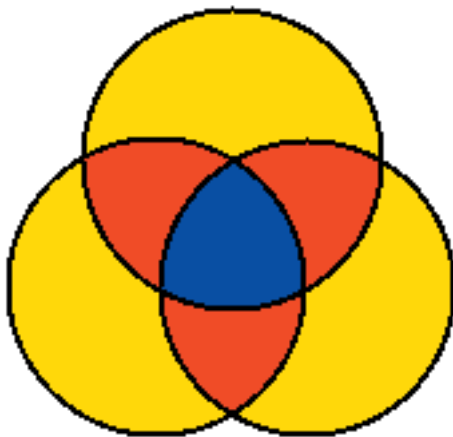
1. Identify examples of existing solutions that are similar to the problem to be solved.
2. Analyze the appropriate aspects of the existing solution.
3. Identify the critical issues of the problem type.

### *Venn Diagram*

*Purpose:* To display the pattern of relationships shared between elements within a design problem.

### *Procedure:*

1. Group elements of the problem in a logical (sets) order.
2. Use circles to represent sets and the relationship between them.
3. Diagram each set into their logical sub-sets.
4. Combine the major set of elements including sub-sets.
5. Repeat steps 2, 3, and 4 using a different set of relationships.
6. Combine the diagram from the two sets of relationships into a more complex diagram.



*“The adjectives used to describe hospitals include dehumanizing, depersonalizing, neutering, frightening, uncaring. I have never heard anyone describe a hospital as beautiful, peaceful, healing, warm, joyous.”*

-Roslyn Lindheim, 1979



## *Conceptual Description*

In order to realize where healthcare is heading, we must first consider the past, and how healthcare has evolved throughout history. There have been six periods in the history of healthcare architecture in which key developments have been carried through the centuries. The first five “waves” consist of historical periods, and we are currently emerging the sixth wave.

### *The Ancient*

— This is the first wave articulated in the healing practices of the early Eastern cultures. While death was considered inevitable, nature and the thought of afterlife played a huge role in the healing process. Wellness and spiritual treatment centers worked in conjunction with the earliest infirmaries. The Greeks developed wellness care around 1000 B.C. The second wave coincided with the fall of Greece and the rise of Rome. Valetudinaria, the archetypal Roman military hospitals, were built near the front lines, with emphasis on returning the soldiers to battle as soon as possible. The fall of Rome created a void in organized healthcare in the immense region previously dominated by the Roman Empire.

### *The Medieval*

The Catholic Church became the most powerful provider of healthcare during the Middle Ages. Vast monastic hospitals were built on the borders of cities throughout the centuries. Monastic hospitals were the foundation upon which towns grew. State-run insane asylums and state-operated urban hospitals initiated the steady shift toward the next period.

### *The Nightingale*

The first modernist hospital-planning principles coincided with the neoclassicism of the mid-nineteenth century. Florence Nightingale emphasized function above form, which was two decades before Louis Sullivan phrase “form follows function.” The exterior remained neoclassic, but Nightingale-influence injected only to the extent that it did not interfere with the architectural emphasis.

The fourth wave originated from Nightingale’s work on the British front lines during the Crimean War of the 1850s. Her guidelines influenced the hospital reform, and took into consideration aspects such as maximum width and length of a ward, window size and placement in relationship to



the bed, the overall ambiance, the mechanical systems, and the specific use of materials and colors.

Nightingale's principles were based on bathing the interior spaces in abundance of natural light, but once the electric light bulb was invented Nightingale's concepts were compromised.

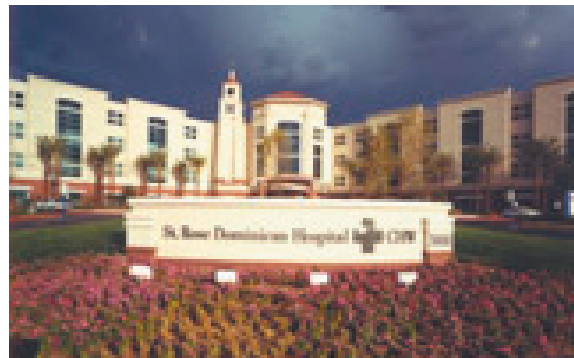
*The Minimalist Megahospital*

In the years following the end of World War II, the years of the International Style megahospital came into play. As hospitals became more specialized and encouraged expansion in size and spatial complexity—was abandoned. Nightingale's theories. During the 1980s, megahospitals had reached its apotheosis. These self-contained medical centers symbolized to critics everything wrong with healthcare systems in an advanced industrialized nation.

We are now emerging into the sixth waves of health architecture. Steven Verderber, author of *Healthcare Architecture in an Era of Radical Transformation*, referred to this wave as the virtual healthscape, which began to emerge in the 1990s. In counteraction against megahospital, the idea has been to move toward residentialist imagery. If the megahospital functioned as a magnet, drawing to it all its services from the viewpoint of a provider-focused system, then the postmodern hospital of the 1990s has become the centerpiece, spinning off to relocate in the surrounding community, which is found in the age of patient-centered care.

*“The old idea of one hospital to satisfy all needs is a thing of the past. We need a serious of institutions. We’ll always need some healthcare factories of efficient, short-term, intensive-care stays, but we’ll need others where humanity won’t have to overcome the technical apparatus.”*

-John Thompson, 1976



*Reinventing the Hospital*

The aftermath of the megahospital brought about a change in hospital design. Many hospitals began advocating for architectural reinvention with a medical-based-center. Postmodern describes to contingents found on opposite sides of the spectrum. The first idea advocated patient-centered care and patient-centered facilities. The second scheme consisted of providers concerned with the business aspect of health care. Both are considered postmodern, noting the shift away from the traditions of architecture for health care and directing toward a compromise which dominated the period from the 1980s to the end of the century.



As a result, there was a shift away from the highly centralized medical centers toward a network of providers of an integrated delivery systems. This left the medical center remaining as the hub but the focus of ambulatory care was increased significantly in off-site locations. But now, the hospital, which had been constituted for the past five decades, was picked apart, and the pieces that once were centralized, were now redistributed. Now the building typology of a hospital began a period of intense assessment and scrutiny, perhaps better known as “functional deconstruction,” which left a system-wide redistribution of services to community-based site and the “mothership,” or hospital, in a state of reconstitution. During the “functional deconstruction” three overlapping trends began to take place. The first trend was fueled by consumers, which led to competition in the marketplace, and heightened expectations in the marketplace of health care. Secondly, the ever prominent forces of containing cost which created new revenue-production services and finally, a consideration of postmodern architecture, which called for pluralism between premodern and modern periods of architecture.

My premise in the design of a new hospital for the island of St. Thomas is to create a hospital which becomes an intergral part of the living environment which surrounds it. Organic Architecture should hum a harmonious melody between the natural living environment and the built living environment--they balance in a state of required simplicity.

## *General Spatial Elements*



- Site
- Administrative and Public Interface
- Nursing Unit
- Emergency Unit
- Surgical Unit
- Maternity Unit
- Inpatient/Outpatient Support Services
- Pediatrics
- Critical Care Unit
- Dialysis
- Therapy
- Atrium
- Staff Amenities

Medquest Communications LLC.

## *Emphasis*



While reading through a book by Fine et al. 2000, I came across eight crucial elements of humanizing health care. Considering this, J. Howard's definition of humanization in health care envelops the quintessential elements for the study of architecture in health care.

1. *Inherent worth.* Human beings are objects of value, to themselves if not to others...If persons are forced to prove their worth,...the burden of proof is dehumanizing.

2. *Irreplaceability.* We are unique and irreplaceable. When people are stereotyped and treated in terms of commonalities rather than differences, dehumanization can logically follow.

3. *Holistic selves.* At any given moment the sum total of a person's experience influences that person's feelings, attitudes, and actions...The patient's whole may be so

and treated in terms of commonalities rather than differences, dehumanization can logically follow.

3. *Holistic selves.* At any given moment the sum total of a person's experience influences that person's feelings, attitudes, and actions...The patient's whole may be so fragmented that his or her problems become exclusive concerns of multiple practitioners who are not able to communicate with one another.

4. *Freedom of action.* Humanized relationships are predicated on freedom of choice. Where the interaction is forced on participants or one or the other is bound

6. *Shared decision making and responsibility.* This concept reflects the emerging ideology that all patients, regardless of education, have a right and perhaps a duty to participate as much as possible in decisions and their care.

7. *Empathy.* Humans have the ability to sympathize and identify with others. The more they compare themselves to others, the more easily they put themselves in others' shoes...If practitioners contain their sympathy and avoid seeing the world from the vantage point of their patients, they cannot as readily understand the needs of those patients and appropriately respond to them as unique human beings.

8. *Positive effects.* Human beings are reservoirs and conveyors of emotion. Person—to—person interactions are most likely to involve emotional commitments because reciprocity and empathy can occur.



The argument for humanizing health care and its institutions date back to the 1950s. By the 1960s Abraham Maslow's hierarchy of needs, in which the basic physical needs are met, focus on a higher-level systems needs, those related with a higher perception of self-actualization. Maslow's work has been applied to critical assessment of the requirements and aspirations of patients, who are able to achieve a high level of self-actualization regardless of physical and sensory limitations. The problem for too often can be traced back to the bureaucratization of a hospital experience, in which the provider dictates countless layers of regulations. The effects of these policies have been overwhelming for the hospital architecturally and in human terms, given that architecture cannot aspire to anything more than our collective human aspirations will allow.



## Concept Sketches

A SENSE OF LANDSCAPE, TO GUIDE THE SENSATION IN THE VISUALS BEING TO THE SENSATION IN THE LANDSCAPE...  
- LARSEN CONCEPT

ERIK AMUNDSEN  
V. SPARKLINKEN  
HEATHER ARCHITECTURE  
MOUNT, SWEEPEN  
SEVEN TRIANGULAR

- 1) UNITY OF FORMS & PLACEMENT  
"FUNCTIONAL FUNCTIONALISM"  
ARCHITECTURE SPEAKS TO THE VISUAL QUALITIES IN FUNCTIONAL COMBINATIONS OF CULTURAL, SPATIAL...
- 2) TRANSCENDENCE  
TRANSCENDENCE ARE NOT MUTUALLY OPPOSITIONS, BUT CONTRAST. THERE ARE DIFFERENCES AND DISTINCTIONS THAT MAKE THEM IN THE SAME POINT OF A LANDSCAPE, WHILE CONTRAST COMES OUT TO BEHOLDERS. FORMS + FORMS (HORIZONTAL) FORMS + FORMS (VERTICAL) CONTRASTS ORGANIC, NATURAL, METAPHORS
- 3) INTERDEPENDENCE  
TRANSCENDENCE IS NOT AN INTRINSIC QUALITY OF EXPANSION & CONTRACTION, NOR IS IT A NECESSARY TRANSITION ITSELF. RESULTS IN AN INTRINSIC QUALITY. BECAUSE THERE ARE ALL THE PRESS INTO AN INTRINSIC QUALITY.
- 4) DIMENSIONALITY OF SPACE  
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Symmetrical, Organic Complex

Low Volume Private

High Volume Public

TRANSPARENT

ORGANIC RESONANCE

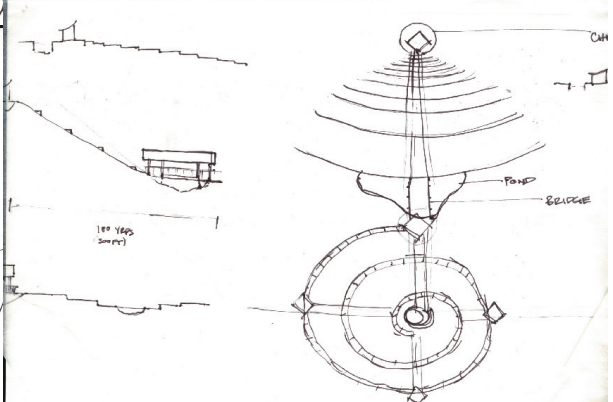
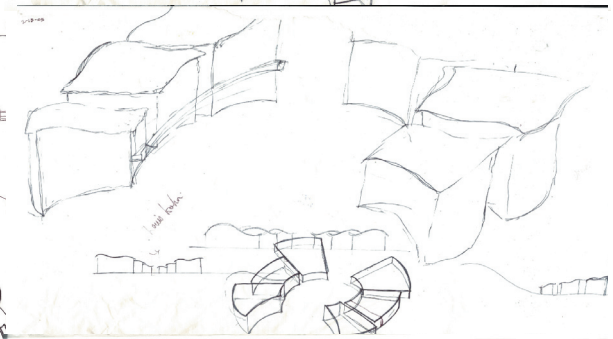
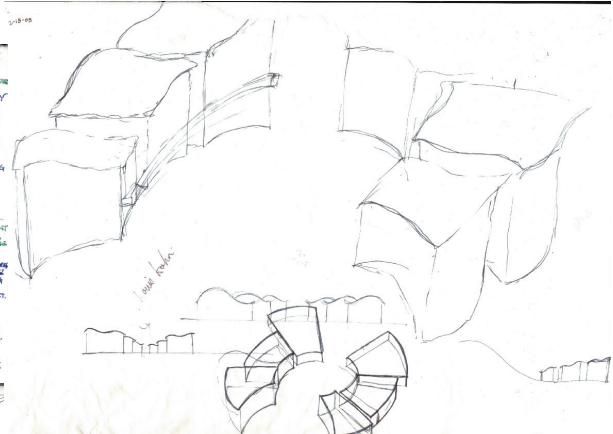
Mountain

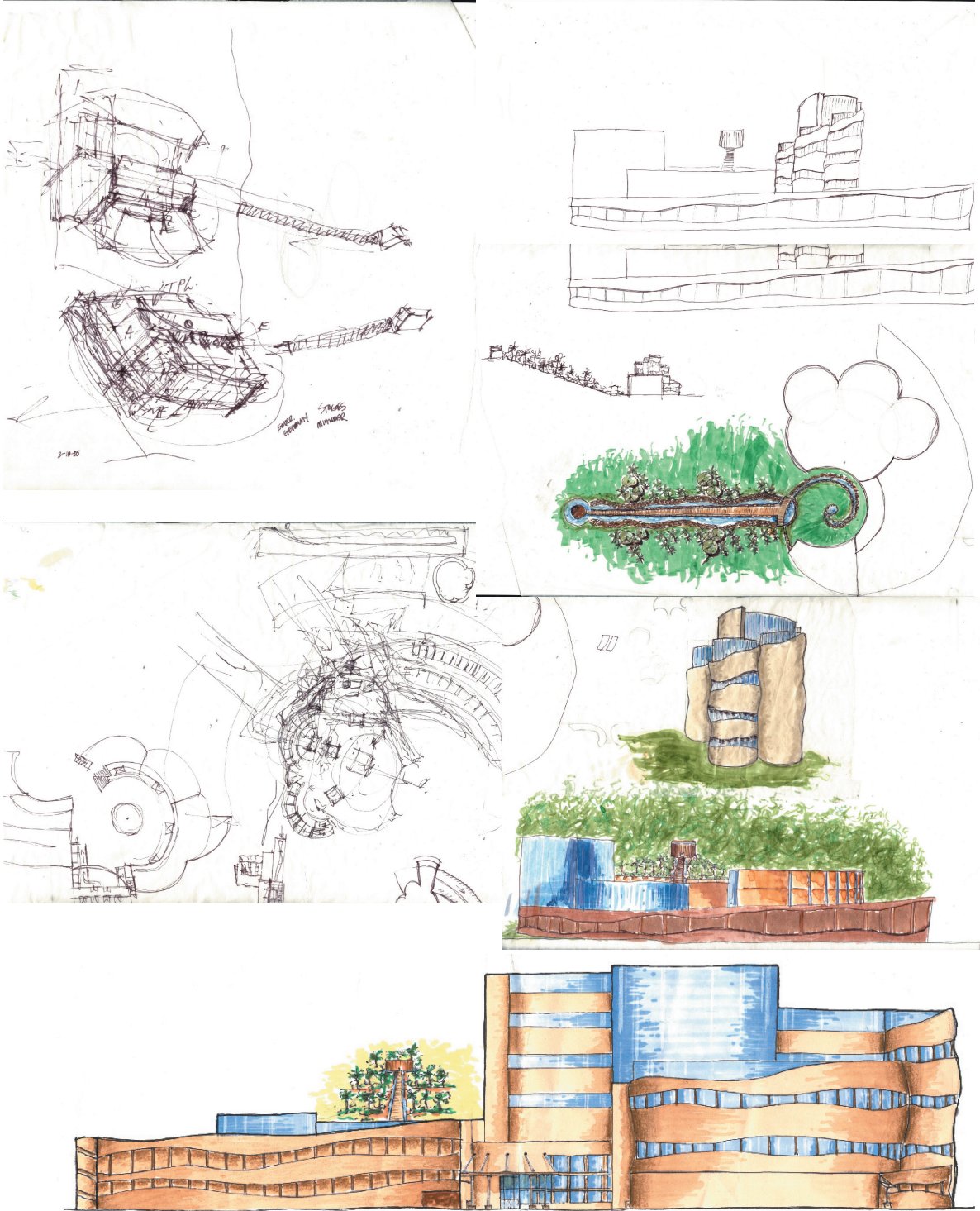
Normal

Normal

Normal

Normal





## *Words of Advice (before undertaking the design process)*

As I began the design I approached it much like that of any other studio program. It became a check-list of program requirements and eventually these spaces took form and hence the design of the building began to evolve. Trying to accomplish this in regards to a hospital became a daunting task which appeared unending, and a true lack of design premise. At one point my design began to take a stylist approach, and a Spanish Revival style was incorporated. It was at that point I realized this was not what a thesis should be, nor was it something I was proud of.

I stopped designing dead in my tracks and began research. I was search for more out of my design-a therorical premise upon which I could refer back to at any time throughout the design process. Something that would inspire a more humanistic approach to design. After much research I stumbled upon the term “Anthroposphy” and with that I took it and ran. That single term lead me to Rudolf Steiner, a self taught architect, who based his ideas of anthroposphy and organic forms in architecture. Steiners architecture then lead me to Erik Asmussen, a Swedish architect, who design a community based of Rudolf Steiners theories and more importantly design a hospital from seven principles he found necessary to create *healing architecture*.

It was at that point I realized how powerful and influential my design could be. More importantly I discovered how we as designers play a crucial role in the world in which we live. There are far too many designers who simply forget about the theory/premise part of design. We as designers owe society more than a rhetorical, stylistic, mindless approach to design.





## *Anthroposophy*

*“Science of the Spirit”*

### *Principles of Healing Architecture*

#### *Unity of Form & Function*

In order to create the same quality of holistic integration of form and function that is evident in nature one should conceive the idea of “living into” the building’s functions. Shape the building so that it will express the inner spirit of the life they contain while supporting in a practical way all of the activities that occur within them. That is where I derived the notion of the nautilus or seashell. Due to the site’s location and surrounding environment the hospital’s exterior along with the plan resulted from characteristics of the nautilus shell. The shell gives way to create an organic form that is nurturing and protective of its inhabitants, much like that of the shell.

#### *Polarities*

Polarities or non-dual and non-separate parts of a larger whole, contrasting color, form, and materials occur at all scales, creating a vision of richly textured and densely layered fabric of linked opposites. The invasive presence of polarized forms, spaces, colors and materials in architecture should create a tension of opposites that energize and enliven the building. Nature lives in the polarized space between darkness and light, contraction and expansion. Any truly healing architecture must strive to make substantially rhythmic dance of life. The juxtaposition within contrast of the delicateness of a glass structure and the firm, solid rigidity of concrete create a presence of polarized forms which generate tension of opposites that generates life within the hospital.

### *Metamorphosis*

Through a rhythmical series of expansions and contraction, nature continually transforms itself. Metamorphosis in architecture results in an invisible (spiritual) process that link parts of an organic whole. The exterior of my hospital appear at first glance to be vary different, but, when seen imaginatively, it can be recognized as a metamorphosis of the archetypal pattern, such as that of the parts of a shell are the metamorphosis of the similar pattern of relationships we describe by the word shell.

### *Harmony with Nature & Site*

The building should engage specific dialogue with the site, it is visibly shaped by and in conversation with naturally occurring features. There are two primary ways in which buildings are related to nature and site. The first being the position of each building and how it is placed and shaped so it creates and positive and usable outdoor space in relationship with the naturally occurring environment, the design of my hospital is an example such. The hospital bends and conforms itself into the natural landscape. The second way the hospital responds to the site and nature is that it formally reflects the specific qualities of the environment in which it is placed. The hospital is tucked into the landscape and comprised of the natural form of a concrete shell which characterizes the perception of a seashell being wash up on shore.

### *Living Wall*

Organic living membranes reveal play between polarities of the up and down, inside and outside. The buildings envelope feels like a living creature that nurture and protects the life that it contains. In plan the hospital appears to be engaging in a dialogue between expansions and contractions.

In the instance that a person is weakened and confined to bed a sense of security and freedom plays an important role. The patient rooms contain windows with deep sills, and have been shaped and positioned to allow both earth and sky views from patient beds.

### *The Dynamic Equilibrium of Spacial Experience*

There are two kinds of spaces—movement and rest. In movement spaces there is a place of rest. In spaces of rest there is a sense of movement. Halls constancy and change symmetry and asymmetry, sheltered intimacy and expansive openness are held in a delicate and shifting balance through alternating experiences of movement and rest. As Asmussen said once, “If there is only symmetry there is no freedom. And, if there is only symmetry there is no freedom.” Symmetry creates order and expectation, where as asymmetry give way to direction, movement and surprise. In order to create a sense of freedom within a building there must be a balance between symmetry and asymmetry, certainty and surprise, order and mystery, all held in an ever changing balance created by the progress and perception of humans.

Hallways should provide enough space to comfortably pass and interact with other workers/patients, while still allowing the everyday activities of a hospital to not interfere.

The floor plan should be arranged in a way to separate the multiple functions that are underway in a hospital setting, while maintaining a clear and concise path of circulation.

#### *Recommendations*

- Provide separate lobbies for the different functions to allow different user groups not to have to interact if not wanted.

- Create a secure link between different functions of the building to make it more user friendly and interact with other users and functions of the facility.

- Provide open spaces that allow an easy flow of traffic while maintaining good visibility to the surrounding environment.

#### *Image*

*The Roy L. Schneider Hospital's vision is to become a hi-tech, interactive facility, providing an image of a modern medical facility.*

This image should be evident in the exterior and interior design. A positive image promotes a more conducive healing environment which may reduce the everyday stresses associated with the reputation of hospitals.

As with any architectural program there are a number of issues with which a design has to consider. The project has no exception. There are a number of issues the project has to deal with which are deemed to be the most important issues to address to make this a successful project:

- Interaction
- Image
- Flexibility

The following sections of this document will discuss each of these issues in more detail and how each is relevant to this project. It will outline specific goals and recommendations for meeting those goals. The suggestions are meant to guide the project along as a means to develop a more successful project that will achieve its mission.

## *Interaction*

*This facility should inspire a more desirable relationship between the patients and the systems that facilitate the appropriate function of a hospital.*

To guide the design, with regards to interaction, the following is a list of performance requirements that have been developed. The intention is to present the issues with regard to the decision making aspect considering to interaction.

### *Performance Requirements*

Private spaces located off the public spaces should be arranged in a way that encourages the uses to inhabit the space. There should be varying levels of privacy,

### *Performance Requirements*

The phrase “a picture is worth a thousand words” comes to mind when promoting a healthy image. People are naturally drawn toward objects that are pleasing to the eye, whether it be an exterior finish of brick or stucco, or how much natural light is inhabiting a space. There are so many elements to consider at both a macro and micro scale when creating the idea of image.

### *Recommendations*

- Incorporate exterior materials that emphasize both hi-tech and interaction aspects of design.
- Continue the image to the interior, bringing the design full-circle creating an atmosphere of comfort, color, ambiance, flexibility, and ease of circulation.

## *Flexibility*

*This facility should be capable of supporting all aspects of a functioning hospital from the users to the uses of this building type.*

In order to ensure that this is carried out, the following list of performance requirements provides a set of goals in which to aim toward in the design of this facility.

### *Performance Requirements*

- Interior construction should be designed in a manner that allows the users and occupants to carry out the various functions

and activities that take place in a hospital setting.

- Large and public spaces should be capable of being divided into smaller spaces so that different meetings and activities can occur without interfering with each other.

- The layout of the facility should allow for future growth and expansion.

#### *Recommendations*

- Use of construction types that can be easily removed or changed if a space were to change uses in the future.

- Plan for possible expansion by thinking about where future additions could be made and plan circulation accordingly.



## *Children's Hospital of Pittsburgh*

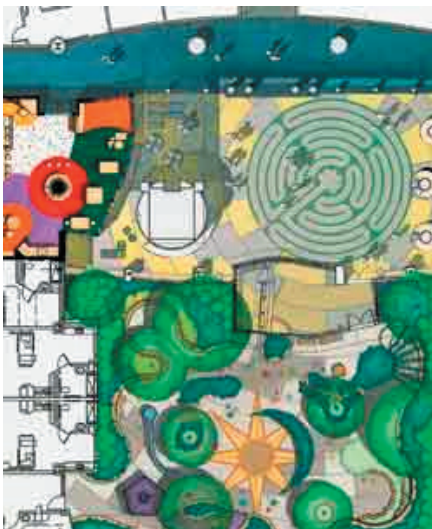
Pittsburgh, Pennsylvania

Firm: *Astornio*

Date of Completion: 2007



The new Children's Hospital of Pittsburgh was designed for a firm from Pittsburgh, Astorino. They decided to try something new which they called "Deep Design Process." A Harvard Business School professor developed a research tool in which the process "probes the psyche to detect design elements that would enhance the healing experience for the hospital's patients, parents, and staff." The architecture firm states that this technique elicits unconscious and conscious thoughts and feelings about a topic through visual metaphors.



The idea of "Deep Design" uses visual metaphors that people use to convey personal needs. In a hospital environment healing is about transformation. The firm chair, Louis Astorino, FAIA, explains, "We found that this transformation, from sickness to healing, consists of three key domains: connection, control, and energy. The interpretation of these powerful themes will be seen and felt in the materials, shape, space, and colors that will become the Children's Hospital of Pittsburgh.



## *Children's Hospital of Pittsburgh*

Pittsburgh, Pennsylvania

Firm: *Astornio*

Date of Completion: 2007

“The implications of the Deep Design Process on the future role that architecture plays in shaping human experiences are dramatic and far-reaching. Never before have we tapped the unconscious and conscious essence of the end-user experience to design spaces that can contribute so profoundly to our client’s core objectives,” notes Astorino. He presented the research protocols at the National Association of Children’s Hospitals and Related Institutions (NACHRI) Facility Design Conference in July.

The design firm is using Zaltman Metaphor Elicitation Technique (ZMET). The ZMET is based on three basic premises:

- Most thought, emotion, and learning occurs without awareness.
- Human thought is visual; the mind thinks in images, not words.
- Metaphoric thinking is the basic mental process and is central to understanding of meaning.

The new \$420 million, 263-bed hospital will encompass 1.45 million square feet on a 10-acre site. Specifically, the plans call for a 762,000-square-foot, 14-story hospital; 230,000-square-foot research facility; 137,000-square-foot faculty offices; and 93,000-square-foot administrative offices. The hospital will also contain 14 operating rooms; 41 emergency-department exam rooms; three garages; and two helipads. The facility is slated for completion in January 2007.

### *Sources:*

Solomon, Nancy B. “Environmentally-Friendly Building Strategies Slowly Make Their Way Into Medical Facilities” *Architectural Record* v.220 n.8 Aug. 2004:P179-188.



## *Bronson Methodist Hospital*

Kalamazoo, Michigan

Firm: *Shepley, Bulfinch, Richardson, & Abbott*



The Bronson Methodist Hospital is a new full-service, 750,000 square-foot, medical campus that combines medical offices, ambulatory care, an inpatient hospital, and parking into a cohesive planning concept which allows the patient to experience the convenience of a “medical mall” concept.

There are multiple medical specialties within this hospital in order to create easy transportation from arrival to medical office, ambulatory, or inpatient care. The layout is designed horizontally within a series of linked buildings. Each level has been devoted to a particular function and specialty. The garden level is a base for service functions which includes a healing garden which serves as the “heart” of the facility, and a focal point with a multi-story atria that links various specialties and services. Level one houses diagnostic imaging and emergency, orthopedic beds, and a trauma/burn ICU unit; level two is surgical services; level three is women’s and children’s services; and level four contains cardiology and oncology services.

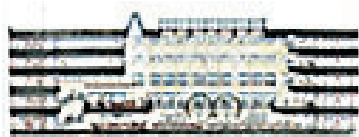
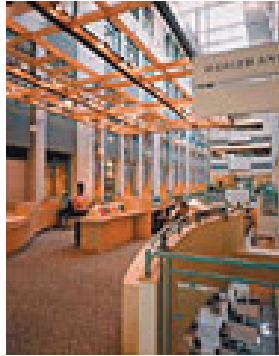
The hospital is located at the edge of a downtown commercial district and a residential neighborhood. Due to its location, the hospital had to consider the sensitivity to scale in respect to the surrounding environment. The facility takes a holistic approach to healing, featuring indoor gardens, a



## *Bronson Methodist Hospital*

Kalamazoo, Michigan

Firm: *Shepley, Bulfinch, Richardson, & Abbott*



natural color palette, art, intuitive wayfinding, considerable natural light, and patient access to medical information. There is a continuous ribbon of bedrooms that ranges from acute at one end to intensive care at the other, with a string of rooms in the middle that are changeable in use depending on patient population, makes this a very *flexible* facility. The project has acted as a catalyst for further redevelopment in the community, spurring the City of Kalamazoo to regenerate its downtown core with housing and retail.

This facility's design has had a positive impact and response to the challenging aspects of not only its location but also the demanding responsibilities of a hospital design. This particular case study has similar challenging aspects as does my case, such as location and use of flexibility. The final design has responded well to the existing environment, creating a high level of design from which to follow in the alteration of the surrounding environment.

### *Sources:*

Solomon, Nancy B. "Fixing an Oxymoron." *Architectural Record* v.222 n.10, Oct. 2004:P153-174.

"Bronson Methodist Hospital" *Architectural Record*. 19 Nov. 2004. <<http://archrecord.construction.com/projects/bts/archives/healthcare/BronsonMethodist/overview.asp>>



## *Dakota-Clinic Innovis Health*

Fargo, North Dakota

Opened in November 2000

Innovis Health, Fargo, North Dakota's premier medical facility is a new addition to the Fargo skyline. The hospital offers a wide range of medical services--from family practice to sports medicine and oncology.

### *Philosophy:*

The founding philosophy of Innovis Health is to provide comprehensive care to families of all ages and in all stages of life. Their name is formed from the words 'innovation' and 'vision,' their mission is to "provide innovative care with insight into the need of tomorrow."

### *Unique Features:*

- Two-way direct communication between patient and caregiver
- Room service
- Individual patient-designed visitation schedules
- Total care beds offer a range of positions, an alarm system, centralized monitoring at each nurse's station, built-in scales, and entertainment controls
- Medical records stored in an electronic patient record

### *Sources:*

"Innovis Health: New on Fargo Skyline." Focus on Fargo 2002. Midweek: Fargo, ND, November, 2002.

## *Cost Estimate*



Below consists of a cost estimate for a 6 story 200,000sq.ft. hospital:

- Substructure 1.6%
- Shell 24%
- Interior 30%
- Services 40%
- Furniture/Equipment 4%
- Construction 25%
- Architect Fee 9%

*Total Building Cost:*  
*\$131.15 sq.ft.*



*Source:*

Balbene, Barbara. "RSMeans Square Foot Cost." Reed Construction Data, 2003.





## Location Uniqueness

*Location:* Caribbean, islands between the Caribbean Sea and the North Atlantic Ocean, east of Puerto Rico

*Geographic coordinates:* 18 20 N, 64 50 W

*Area - comparative:* Twice the size of Washington, DC

*Coastline:* 188 km

*Climate:* Subtropical, tempered by easterly trade winds, relatively low humidity, little seasonal temperature variation; rainy season May to November

*Terrain:* Mostly hilly to rugged and mountainous with little level land

*Elevation extremes:*

lowest point: Caribbean Sea 0

highest point: Crown Mountain 1,556 feet

*Land use:*

arable land: 15%

permanent crops: 6%

permanent pastures: 26%

forests and woodland: 6%

other: 47% (1993 est.)

*Natural hazards:* Several hurricanes in recent years; frequent and severe droughts and floods; occasional earthquakes

*Environment - current issues:* Lack of natural freshwater resources

*Geography - note:* Important location along the Anegada Passage - a key shipping lane for the Panama Canal; Saint Thomas has one of the best natural, deepwater harbors in the Caribbean



The capital of the U.S. Virgin Islands, Charlotte Amalie, has always been the hub of St. Thomas life with most of the island's population concentrated in this region. Much of the town's historic centre is Danish, and it emits the character of an eighteenth century Caribbean port with winding lanes and narrow streets, some so steep that they turn into flights of steps. Solid old colonial warehouses are now transformed inside into elegant shops.



Charlotte Amalie was one of the most important trading and trans-shipment ports of the West Indies for more than 200 years and thus the deepwater harbor has always been the heart of the city. The harbor shoreline itself can tell much about the history of Charlotte Amalie. The historical center of Charlotte Amalie lies between Frenchtown and Frederiksberg Point. In the center stands the red building of Fort Christian. The old docks were west of Fort Christian and until the new dual-lane highway was built along the waterfront. The original rail-way tracks which carried merchandise in trolleys along the grid pattern of alleyways. Ending the harbor's shoreline is the 2,334 foot pier of the West India Company dock, which docks up to four cruise ships at a time.



*West India Company Dock*



## *Surrounding Environment*

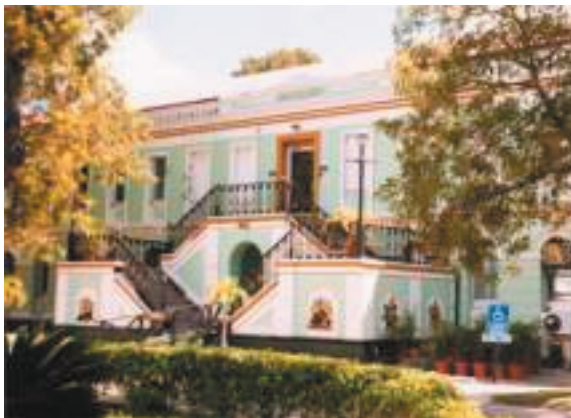
The primary source of economy is the inflow of tourists who arrive daily on cruise ships at a flow of three to four cruise ships a day, bringing in thousands of tourists at time. The cruise ships dock at the *West India Company dock*, which is located only minutes from the hospital.

*Bluebeard's Castle*



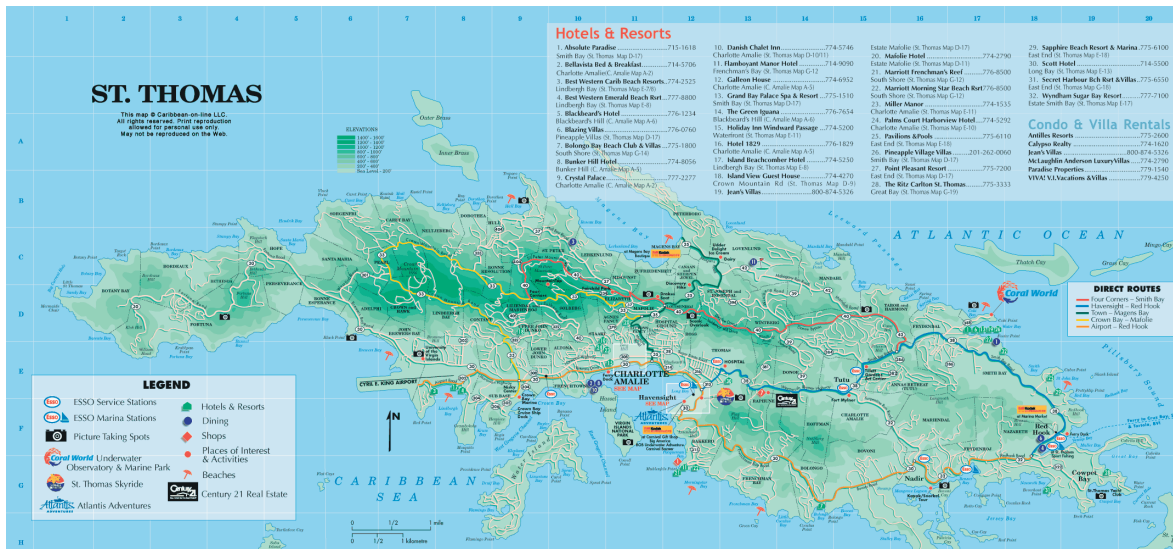
*Bluebeard's Castle* is a round stone tower of brick and rubble masonry standing at the top of Frederiksberg, an imposing hill overlooking the old centre of Charlotte Amalie and St. Thomas harbor from the east. According to legend, the tower was the seat of Bluebeard the Pirate who committed horrible crimes there. Today, Bluebeard's Castle is surrounded by a luxury resort of the same name.

*The Legislature Building*



This lime-sherbet hued building is typical of the graceful island architecture of a century ago; note the coat-of-arms painted on the exterior walls. Originally erected as a barracks for Danish troops the building later served as housing for U.S., Marines and as a public school. One of the high points in the old building's history was its use in 1917 as the site of ceremonies transferring ownership of the Danish Virgin Islands to the United States.

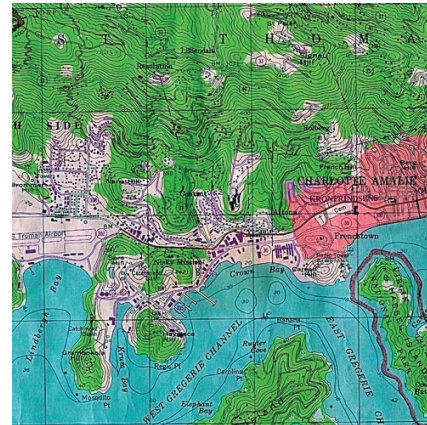




The hospital's site location is crucial for many reasons. One reason is the limitation of transportation for the islanders. The majority of islanders live at a level of poverty and are dependant upon the "safari" bus route. The "safaris" only run during the daylight hours and have limited route transportation. There are two different "districts" on the island; either you live in the town or country. The idea of "country" is different than what mainland America would assume to be "country." In this case country consists of everything outside the downtown and tourist district. If you are wealthy enough to have a vehicle you are able to travel around the island fairly effortlessly, but the majority of residents transportation is extremely limited. In order to be most conducive for all the users, islanders, tourist, and staff, the site for the hospital is found on the border of the "city" and "town" and off one of the few major roads of transportation in which the bus system runs.

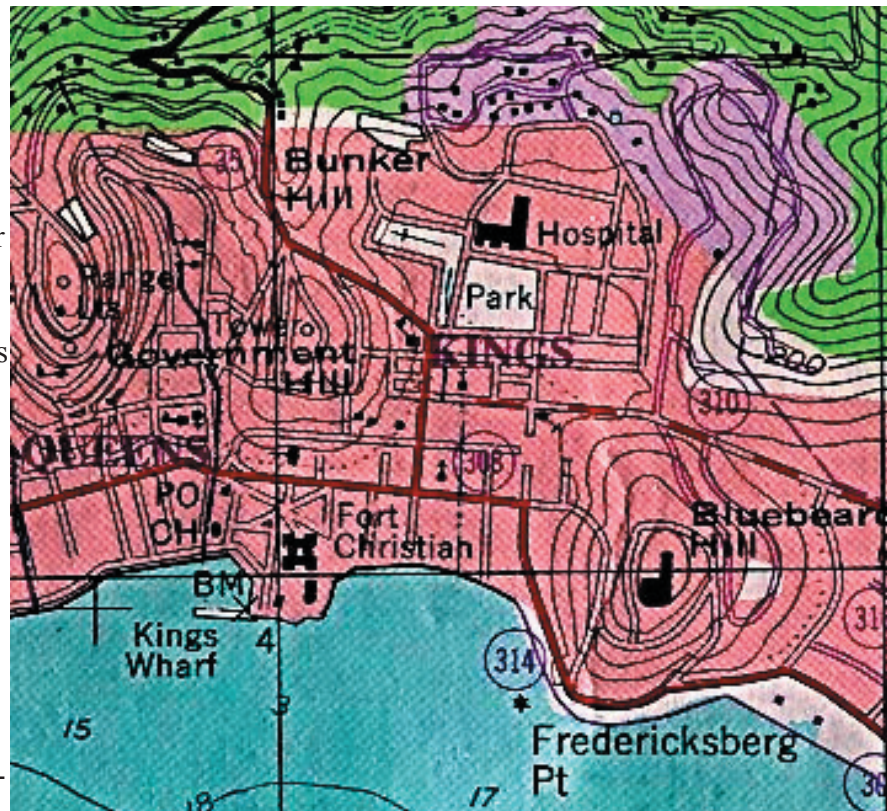


*Topography*



*St. Thomas*

St. Thomas is known for having one long ridge of hills running east and west through the center of the island with smaller ridges branching off from the center. St. Thomas, thirteen miles long by four miles wide, encompasses a little over 31 square miles. The highest point is Crown Mountain at 1,556 feet. St. Thomas has a beautiful natural harbor and many protected bays. There is relatively no flat areas on St. Thomas.



*Urban Land-Ustorthents-Glynn*

Shallow to very deep; well drained; nearly level to steep; disturbed, manmade, or impervious surface areas of land.

*Setting*

This map unit consists of urban and industrial areas.

*Composition*

Percent of the survey area: 4.8 percent

Urban land—48.1 percent

Ustorthents—22.5 percent

Glynn soils—7.5 percent

Minor inclusions—21.9 percent

Characteristics of Map Unit Components

*Urban land*

This component consists of areas that are covered by more than 70 percent impervious surfaces. The slopes are mainly 0 to 20 percent, but they range from 0 to 60 percent. Included in this map unit are small areas of lawns, parks, vacant lots, and playgrounds that contain unaltered soils.

*Ustorthents*

This component consists of areas that have been altered from their natural state by man. They are generally associated with cutting and filling activities of urban development. Included in this component are disposal areas for quarry, refinery, and landfill operations.

*Glynn soils*

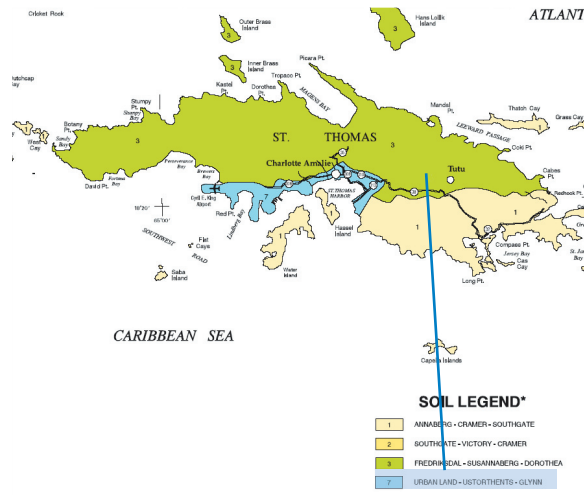
Surface layer:

0 to 4 inches, dark brown gravelly loam

Subsurface layer:

4 to 10 inches, dark brown gravelly clay loam

*Soils*



*Subsoil:*

10 to 17 inches, dark yellowish brown gravelly clay

17 to 27 inches, yellowish brown very gravelly clay loam

*Substratum:*

27 to 32 inches, yellowish brown very gravelly sandy clay loam

32 to 41 inches, light olive brown very gravelly clay

41 to 60 inches, light olive brown very gravelly sandy clay loam

*Use and Management*

Major uses: Urban and industrial development

Management concerns: Flooding, hazard of erosion, water quality, waste management

## *Climate Data*

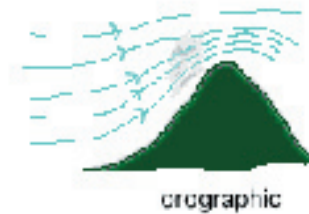
St. Thomas is an island which contains areas of hot and dry while other areas are cooler and receive considerably more rainfall. This section discusses a small scale weather features and how the location of the hospital can effect the living environment.

### *Winds*

The result of air movement in the Caribbean is much different than that of the Midwest. For example, when the sun is out, the rock and dirt that comprises St. Thomas absorbs and re-radiates heat at a much greater rate than the surrounding sea. As a consequence, on a calm day, the air directly above the island will be hotter than that above the sea. Usually, this effect is not so noticeable due to the strong easterly breezes that are normally present in this region, unlike the strong effect that the winds coming off the barren plains have upon the Midwest.

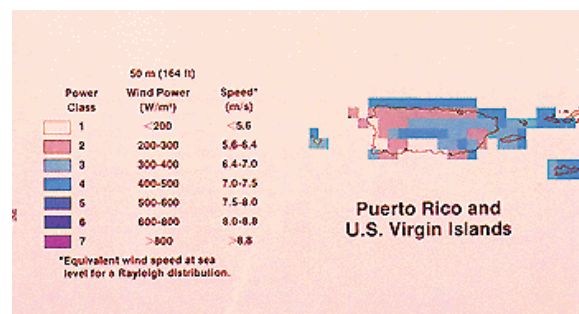
### *Rainfall*

Because of St. Thomas's formation clouds can be formed by orographic condensation, which occurs when air masses collide with rising land formations, such as mountains. The air is forced upwards and condensation typically forms on the windward side of the mountain. This effect is commonly seen in mountain ranges where the windward side of the range is quite wet while the leeward side is dry. It is also quite noticeable in St. Thomas. The greatest



yearly rainfall on St. Thomas is on the upper north side. The tradewinds, blowing from the east (and slightly from the south), strike the north side which consequently gets more rain than the upper south side. And the flatter east end is the driest area of the island. (The directions above may be a bit confusing. Most of the northside of St. Thomas faces north east while the south side faces southwest. The angle is such that the prevailing winds strike the north side more often than the south.)

### *Wind Speeds*





*Site Pictures*



## *Statement of Intent*

Many of us have experienced the intimidation of a modern hospital in which that experience left a lasting impression in our minds. Too often the patient initially encounters a world of dimly lit corridors, with networks of wires and exposed fixtures. People are hustled through the halls with stretchers being jostled about as if they were transporting boxes--not humans. This seems normal to the staff and administration; however, the apprehensive child or patient are unconvincing.

Too often the meaning of architecture for healthcare has been focused on the notion of a provider (system)--centered care instead of a patient--centered care. The relationship between both is crucial. Those buildings that achieve a balance between the two have arrived at a state of equality and become symbols of civic pride.

In order to achieve successful architectural design in healthcare, the human needs must be understood and incorporated into the design. This design will reveal a marriage between a patient (humanistic)--centered care and a system--centered care. Meanwhile, the hospital will become a providing ground for the application of modern design principles that promote an era of technological medicine.

In March of 2002, I traveled to St. Thomas and during that time I had the opportunity to drive by the hospital of Charlotte Amalie. I noted the disrepair of the sterile, stark

exterior and undeveloped site. As I considered my thesis project I could not escape the deplorable conditions of the hospital and the fact the islanders deserve better. After further considerations, I decided to embark on this project as my thesis. While on the island, I noted their modern architecture is strictly based on functions, not considering the physical and emotional response of human in relationship to architecture. As a result, I want the islanders to experience a facility that addresses not only their medical needs but also their humanistic needs.

Later this semester I will be traveling to St. Thomas to acquire the appropriate information to locate the most beneficial site and also the technical documentation to continue my site planning and analysis.

The underlying premise of this design is that the psychological and social needs of people must inform healthcare design.

## *Proposal*

### A. Title

Humanizing Architecture for Health Care:  
Designing a Balance Between System—Centered and  
Patient—Centered Architecture  
Charlotte Amalie, St. Thomas, Virgin Islands

### B. Building Typology

My thesis project is designing a hospital for Charlotte Amalie on the island of St. Thomas located in the U.S. Virgin Islands. This hospital will become a providing ground for the application of modernistic principles and promotes an era of technological medicine. The hospital will respond to the need for incorporating a balance between a system centered—and patient centered health care system.

### C. User/Client Description

*Client.* The St. Thomas Hospital Facilities Board of Trustees (the Board), was created under the Act. 5199 (Bill No. 16-0601) on September 30, 1986. This institution was a government agency until the 23rd Legislature of the Virgin Islands and the Governor of the United States, Virgin Islands, granted and approved Bill No. 23-0030 giving the hospital the status of semiautonomy. This law became effective August 14, 1999 (Schneider, 2004).

*User.* Whether it is a tourist with an unexpected ailment, a local of the islands, or an employee of Roy Lester Schneider hospital they are all users in which the design of the hospital must be accommodated for. The following is a concise list of the variety of users.

- Administration
- Doctors
- Visiting Doctors
- Nurses
- Technicians
- CNA's, LPN's, Aides
- Inpatients
- Outpatients

- Custodians and Laundry Personnel
- Kitchen Personnel
- Groundskeepers and Maintenance Workers
- Visitors
- Delivery Services

#### D. Theoretical Basis or Unifying Idea

For far too long hospitals have been perceived as a cold network of confusing corridors and a lack of humanistic elements and features, this issue is especially prevalent with the current hospital in Charlotte Amalie. The theoretical basis idea behind this project is to create an environment in which the users, both staff and patient, feel welcomed mean while maintaining a hospital that is a providing ground for applying modern principles and promotes an era of technological medicine.

#### E. Project Justification

The current of the Roy Lester Schneider hospital is in disrepair. The exterior is a sterile, stark façade surrounded by an undeveloped site. This project will address this issue.

The Roy Lester Schneider hospital is a 169-bed, acute facility located on the beautiful island of St. Thomas, Virgin Islands. This is the only hospital on the island. There are approximately 500 employees, and over 50 physicians on active staff with specialties including Neonatology, Cardiology, Oncology And Orthopedic.

Through the past few years the hospital has been publicly scorned for its deplorable condition both inside and out. It was not uncommon for the newspapers to report about the dire hospital medication and supply shortages, antiquated medical equipment, a shortage of physician specialists, and a building quickly going to ruins, which lead to the threat of de-certification by Federal officials. Under the constant barrage of negative publicity, the public confidence in the hospital was shaken.

The hospital has begun to restore confidence in the hospital by striving to make daily improvements such as: recruiting specialized physicians, new equipment, reduce wait times, and revamped quality improvement process in line with current industry methodologies.



While reading through my research I came across an interesting quote from the hospital addressing the issue of their daily in devours to create a more hospitable environment for their patients. “Martin Luther King said, “We are not where we want to be, we are not where we are going to be, but thank God we are not where we were,”” (Schneider, 2004, p.2).

In order to achieve this goal there must be an aggressive plan to modernize the facility by designing a building that promotes the high standards of healthcare the hospital would like to obtain. The current conditions, size and location of the hospital are not conducive to the physical demands of this hospital.

The project has a strong emphasis in designing for the physical, emotional, and psychological needs of the human in collaboration with designing a hospital that promotes modernistic principles of technological medicine. The complexity is necessary to sustain my interest and to explore a new dimension of design. As soon as I laid eyes on the (existing) hospital I felt compelled to find a solution. I am excited to explore the many dynamics of such a demanding project.

#### F. Site

##### *Economic Base:*

The primary industries are tourism, petroleum refining, watch assemble, rum distilling, construction, pharmaceutical, textiles, and electronics. This breaks the labor force of the island down to 1% agriculture, 20% industry, and 79% are in services, while the unemployment rate remains about 5%. Major import commodities include, crude oil, foodstuffs, consumer goods, and building materials. The US and Puerto Rico are two major export and import partners of the Virgin Islands.

##### *Demographics:*

The island of St. Thomas has a population of 120,917 residence. 27.8% of the population is between the ages of 0-14 years, 63.72% are between the ages of 15-64 years, and 8.48% are 65 years of age and over. The islands population growth rate is 1.07% while the life expectancy at birth is 78.11 years. The male and female expectancy at birth differ dramatically at 74.2 years of age for males and 82.25 years of age for the females.

*Ethnic Groups:*

The major ethnic group is black at 80%, followed by white at 15%, and other is 5%. Note: West Indian (45% born in the Virgin Islands and 29% born elsewhere in the West Indies) 74%, US mainland 13%, Puerto Rican. The nationality is known as Virgin Islander(s).

*Religions:*

Most of the islanders are Baptist (42%), followed by Roman Catholic (34%), Episcopalian at 17%, and other at 7%.

Languages: English (Official), Spanish, Creole

*History:*

During the 18th century, Europeans divided the archipelago islands into two territorial units, one being English and the other Danish. Sugarcane, produced by slave labor, drove the islands' economy during the 18th and early 19th centuries.

During the submarine warfare phases of the First World War, the USA feared that these islands might be seized by Germany as a submarine base. Accordingly, the USA approached Denmark to sell the islands to the USA. On January 17, 1917, the United States bought the Danish West Indies for \$25 million and took possession of the islands on March 31. The Danish Crown may have felt pressure to accept the sale, thinking that the USA would seize the islands, if Denmark was invaded by Germany. US citizenship was later granted to the inhabitants of the islands in 1927. This part of the islands had been in economic decline since the abolition of slavery in 1848.

G. Major project elements

The Roy Lester Schneider hospital is a 169-bed, acute facility located and is the only hospital on the island. There are approximately 500 employees, and over 50 physicians on active staff with specialties including Neonatology, Cardiology, Oncology And Orthopedic. The following is a list of spaces that will be required in the hospital design.

- Chapel
- Operating Room and Support Spaces
- Administration offices
- Nurses' Rooms
- Birthing Center/Suites
- Nursery
- Labs
- X-Ray
- Emergency Room and Support Spaces
- Physical Therapy—Occupational Therapy—Speech Therapy
- Neonatology
- Cardiology
- Oncology
- Orthopedic
- Cafeteria with Kitchen and Support Spaces
- Waiting Room(s)
- Pharmacy
- Outpatient Areas
- Daycare
- Parking
- Receiving
- Outdoor Garden(s)
- Mechanical Spaces
- Maintenance
- Bathrooms
- Storage

#### H. Emphasis

The argument for humanizing health care and its institutions date back to the 1950s. By the 1960s Abraham Maslow's needs of hierarchy, in which the basic physical needs are met, focus on a higher-level systems needs, those related with a higher perception of self-actualization. Maslow's work has been applied to critical assessment of the requirements and aspirations of patients, who are able to achieve a high level of self-actualization regardless of physical and sensory limitations. The problem for too often can be traced back to the bureaucratization of a hospital experience, in which the provider dictates countless layers of regulations. The effects of these policies has been overwhelming for the hospital architect-

architecturally and in human terms, given that architecture cannot aspire to anything more than our collective human aspirations will allow ( Fine et al., 2000).

While reading through a book by Fine et al. 2000, I came across eight crucial elements of humanizing health care. Considering this, J. Howard's defining humanization in health care envelops the quintessential elements for the study of architecture in health care.

1. *Inherent worth.* Human beings are objects of value, to themselves if not to others... If persons are forced to prove their worth,...the burden of proof is dehumanizing.
2. *Irreplaceability.* We are unique and irreplaceable. When people are stereotyped and treated in terms of commonalities rather than differences, dehumanization can logically follow.
3. *Holistic selves.* At any given moment the sum total of a person's experience influences that person's feelings, attitudes, and actions...The patient's whole may be so fragmented that his or her problems become exclusive concerns of multiple practitioners who do not even communicate with one another.
4. *Freedom of action.* Humanized relationships are predicated on freedom of choice. Where the interaction is forced on participants or one or the other is bound against his will, the experience cannot be humanizing.
5. *Status quality.* Humanized relations involve equals on some level. If either sees his or her total self as superior or inferior to the other, the interaction cannot be fully humanizing.
6. *Shared decision making and responsibility.* This concept reflects the emerging ideology that all patients, regardless of education, have a right and perhaps a duty to participate as much as possible in decisions and their care.
7. *Empathy.* Humans have the ability to sympathize and identify with others. The more they compare themselves to others, the more easily they put themselves in others' shoes... If practitioners contain their sympathy and avoid seeing the world from the vantage point of their patients, they cannot as readily understand the needs of those patients and appropriately respond to them as unique human beings.
8. *Positive effects.* Human beings are reservoirs and conveyors of emotion. Person-to-person interactions are most likely to involve emotional commitments because reciprocity and empathy can occur.

### I. Design Methods/Research

Later this month I will be spending time at the site and am in direct interaction with some of the local people. I will use this personal experience and physical documentation as a starting point for the project. I will further advance my knowledge through literary research to gain an understanding of the political, economic and historic aspects of the Virgin Islands and more specifically St. Thomas. A site and climate analysis will also be completed through research and assistance from contacts from St. Thomas. Furthermore, I will use case studies to clarify many aspects of the design including: tropical climate design, alternative materials and how architecture impacts humanizing healthcare. The dynamics of the hospital may be the most difficult portion of the project to understand but through my personal experience with the site and people I will be able to piece the puzzle together. Finally, this information will be synthesized through the forming of relationship diagrams in order to produce a functional and adaptable building for both hospital employees and patients.

### J. Documentation of the Design Process:

All information that pertains to the project such as interviews, case studies, research and schematic thoughts will be recorded, noted, and organized weekly into a thesis binder.

### K. Schedule

#### Fall Semester 2004

Week # 1 (Oct. 3-9)

7 October

Research  
 Thesis Proposal Due

Week #2 (Oct. 10-16)

14 October

Research  
 Students and Faculty Preference slips due

Week #3 (Oct. 17-23)

21 October

Research  
 Primary and Secondary Critics announced

Week #4 (Oct.24-30)

Visit St. Thomas(site analysis)  
 Define Program  
 Research

28 October	Last Day of AR/LA 561 class
Week #5 (Oct.31-Nov.6)	Further work on Program Research
Week #6 (Nov.7-13)	Work on Draft of Program Organize Site Information
11 November	Veteran's Day Holiday
Week #7 (Nov.14-20)	Work on Draft of Program Research
16 November	571 studio project presentations
15-19 November	Final week of AR/LA 571 Design Studio
Week #8 (Nov.21-27)	Site Analysis
24 November	Draft Thesis Program due to Primary Critic
25-26 November	Thanksgiving Holiday
Week #9 (Nov.28-Dec.4)	Organize Site Material
Week #10 (Dec.5-11)	Review with Primary for areas of refinement Work on Final Program Draft
9 December	Final Thesis Program due to Primary Critic
10 December	Last Day of classes
Week #11 (Dec.12-18)	Final Exams
13-17 December	Research
Week #12 (Dec.19-25)	Research
Week #13 (Dec.26-Jan.1)	Research
Week #14 (Jan.2-8)	Research
Spring Semester 2005	
Week #15 (Jan.9-15)	Conceptual and Schematic Design Work
11 January	Classes begin

Week #16 (Jan.16-22)	Conceptual and Schematic Design Work Meet with primary/secondary Martin Luther King Jr. Holiday
17 January Week #17 (Jan.23-29)	Conceptual and Schematic Design Work Meet with primary
Week #18 (Jan.30-Feb.5)	Conceptual and Schematic Design Work Meet with primary/secondary
Week #19 (Feb.6-12)	Conceptual and Schematic Design Work Meet with primary
Week #20 (Feb.13-19)	Design Development Meet with primary/secondary
Week #21 (Feb.20-26)	Design Development Meet with primary President's Day Holiday
21 February Week #22 (Feb.27-Mar.5)	Design Development Meet with primary/secondary
Week #23 (Mar.6-12)	Design Development Mid-Semester thesis reviews
7-11 March Week #24 (Mar.13-19)	Spring break
14-18 March Week #25 (Mar.20-26)	Presentation Drawings Meet with primary Easter Holiday
25-28 March Week #26 (Mar.27-Apr.2)	Presentation Drawings
Week #27 (Apr.3-9)	Presentation Drawings

Week #28 (Apr.10-16)

Work on Final Presentation Material

Week #29 (Apr.17-23)

25 April

Thesis projects due at 4:30pm in Memorial Union Ballroom

Week #30 (Apr.24-30)

26-27 April

Annual thesis exhibit in Memorial Union Ballroom

28 April-

5May

Final thesis review

29 April

Draft of thesis document due to primary critics

Week #31 (May1-7)

6 May

Last Day of classes

Week #32 (May 8-14)

9-13 May

Final exams

12 May

Final thesis document due at 4:30pm in department office.

13 May

Commencement

L. Previous Design Studio Experience

2nd Year

Fall: Vince Hatlen

Space Studies

Nativity Library

Nativity School library  
Relocation

Spring: Milt Yergens

Lofty Intentions

Hidderdahl Church

New Hidderdahl Church

Multi-Use Residential Design  
ADA Compliance Addition  
New Church Design

3rd Year

Fall: Mohamed Elnahas

NDSU Arboretum

Aging in Place

Learning and Research  
Facility

Universal Residential Design



Spring: Carol Praefcke  
Children's Center for the Arts      Children's Museum  
Southern Baptist Church      Masonry Church Design

4th Year

Fall: Cindy Urness/Mark Barnhouse/Josh Walter  
Urban Design      Downtown Fargo, ND

Spring: Don Faulkner  
Mixed-Use Facility      Downtown Fargo, ND  
High-Rise      San Francisco

5th Year

Fall: Steve Martens  
Historic Preservations Guide      Valley City, ND

N. Reference List/Resources:

1. Books:

Fine, David J., & Verderber, Steven (2000). *Healthcare Architecture: In an Era of Radical Transformation*. New Haven & London: Yale University Press.

Yee, Roger (2002). *Healthcare Spaces No.1*. New York: Visual Reference Publications Inc.

2. Individuals:

Jeremy Braxton-Brown: Wrote his doctoral dissertation on the Geography and people of the Virgin Islands and currently resides in St. Thomas.

Greg Braxton-Brown: Lived in St. Thomas where he was a professor at the University of Virgin Islands.

3. Organizations:

AHRQ: Agency for Healthcare Research and Quality

CMS: The Medicare, Medicaid, and SCHIP Agency

CLIA: Clinical Laboratory Improvement Amendments

Trans-Atlantic Renal Council  
FDA: Food and Drug Administration  
DEA: Drug Enforcement Agency  
AHCA: American Healthcare Association

4. Government Documents:

I will be gathering government documents and site information when I visit my site.

5. Interviews:

I will also be interviewing local islanders, hospital employees, and government officials while in St. Thomas.

6. Websites:

Farlex, Inc. (2004). The Free Dictionary.  
<http://encyclopedia.thefreedictionary.com> Retrieved October 5, 2004.

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<http://www.virginislandsdailynews.com> Retrieved October 6, 2004.

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- 2). Coates, Gary J. (1997). Erik Asmussen, Architect. Stockholm, Sweden: Byggforlaget.
- 3). Cox, Anthony & Groves, Philp (1990). Design & Development Guides: Hospitals & Health-Care Facilities. Essex, Great Britain: Butterworth & Co.
- 4). Fine, David J., & Verderber, Steven (2000). Healthcare Architecture: In an Era of Radical Transformation. New Haven & London: Yale University Press.
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- 7). Malkin, Jain (1992). Hospital Interior Architecture. New York: Van Nostrand Reinhold.
- 8). Parenti, Kate.(2004). U.S. Virgin Islands. Florence-Italy: Casa Editrice Bonechi.
- 9). Redstone, Louis G. (1978). Hospital & Healthcare Facilities. 2nd Edition New York: McGraw-Hill.
- 10). Yee, Roger (2002). Healthcare Spaces No.1. New York: Visual Reference Publications Inc.

### *Periodicals:*

- 1). Goodman, Mark. Architectural Showcase: Community Hospital. Healthcare Design. v.3, n.3, Sept. 2003:P147-148.

- 2). Oppenheimer Dean, Andrea. Altoona Hospital. Architecture Record Review no. 3, Mar. 2003:P34-37.
- 3). Solomon, Nancy B. Environmentally-Friendly Building Strategies Slowly Make Their Way Into Medical Facilities. Architectural Record. v.220, n.8, Aug. 2004:P179-188.
- 4). Solomon, Nancy B. Fixing an Oxymoron. Architectural Record. v.222, n.10, Oct. 2004:P153-174.

*Websites:*

- 1). "Bronson Methodist Hospital" Architectural Record.  
<http://archrecord.construction.com/projects/bts/archives/healthcare/BronsonMethodist/overview.com> 19 Nov. 2004.
- 2). Caribbean Site Directory (2004). Government and Politics  
<http://www.caribbeansitedirectory.com/links/stthomasgovernmentandpolitics.com> Retrieved September 21, 2004.
- 3). Farlex, Inc. (2004). The Free Dictionary.  
<http://encyclopedia.thefreedictionary.com> Retrieved October 5, 2004.
- 4). Roy Lester Schneider Hospital (2004). <http://www.rlshospital.org>  
Retrieved September 15, 2004.
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Retrieved November 23, 2004.
- 6). The Virgin Islands Daily News (2004). Health Care & Healing Guide.  
<http://www.virginislandsdailynews.com> Retrieved October 6, 2004.
- 7). "Virgin Islands Geography & Facts"  
<http://www.luptravel.com/geography.com> Retrieved November 16, 2004.

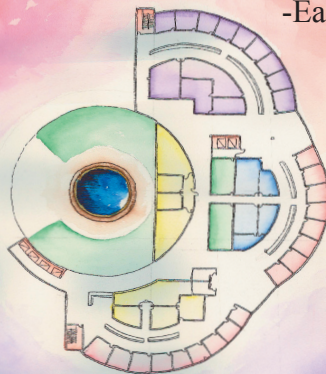
*First Board:*

- Site Plan
- First Floor Plan

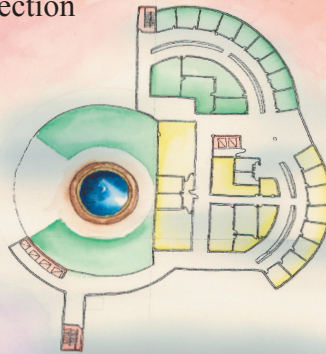


*Second Board:*

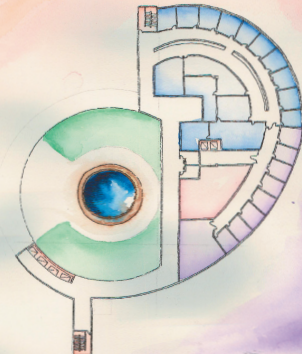
- Second Floor Plan
- Third Floor Plan
- Fourth Floor Plan
- West Elevation
- West Section
- East Elevation
- East Section



*Second Floor Plan 1/32"=1'0"*



*Third Floor Plan 1/32"=1'0"*



*Fourth Floor Plan 1/32"=1'0"*



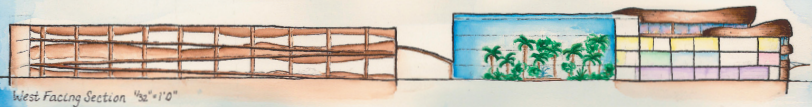
*North Elevation 1/32"=1'0"*



*South Facing Section 1/32"=1'0"*



*East Elevation 1/32"=1'0"*



*West Facing Section 1/32"=1'0"*



*Third Board:*

- Interior Perspective of Courtyard
- Perspective from Chapel
- Front Perspective





*Final Display*







## *Words of Thanks*

*To my family, Dad, Mom, Melissa, and Gregg. You have been my foundation upon which I have grown as an individual and designer. Thank you for your unconditional love, support, and constant words of encouragement.*

*To Stephen Wischer, who had tremendous influence of my approach to design. You have been a wonderful addition to the architecture program. I hope that the students to come realize the gift you have bestowed upon them.*

*To Frank Kratky, for taking me on as an advisee. I appreciate your professional expertise and influence through the design process.*

*Lastly, to all my studio peeps(D\$)!! You know who you are. It was wonderful learning experience struggling through the trials and tribulations of the studio life. I wish you all the best.*