Integrating a Contemporary Therapeutic Landscape into a Historic Campus: Design for the Dr. Martin Horvat Hospital, Rovinj, Croatia

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A thesis

submitted in partial fulfillment of the requirements for the degree of
Master of Landscape Architecture

University of Washington

2018

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Program Authorized to Offer Degree:

Department of Landscape Architecture

University of Washington

Abstract

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This thesis explores questions of the modern restorative healthcare environment and the value of cultural landscape preservation by developing a planning strategy and landscape design for the Dr. Martin Horvat Hospital in Rovinj, Croatia. This site, located along the east coast of Adriatic Sea, has been the location of a hospital for more than 100 years. The area is known for its pleasant climate as well as the quality of the sea water, and the hospital location has a superior value for health and healing. The area and this site have been greatly influenced by the domestic and international turbulence in the twentieth century, but since 1991 Rovinj (as well as Croatia), has moved forward in relative stability. The layers of history on this site, create a distinctive mosaic and partially conflicting cultural historic environment, which makes its preservation more challenging. In 2015, Croatia became a member of the European Union (EU). The economy has boomed, resulting in increasing domestic health care

needs as well as international health tourism.

By considering the latest theories of therapeutic healthcare environments, case studies of therapeutic gardens, interviews with experienced therapists, and interviews with employees of the Horvat Hospital, this thesis presents a responsive proposal in six parts: 1) a restorative health environment system; 2) an updated universal design; 3) therapeutic gardens; 4) a restorative environment for employee health; 5) public value; and 6) sustainability.

This thesis also explores principles of cultural landscape conservation based on international (UNESCO) standards and United States (NPS) guidelines, to propose flexibility in cultural landscape restoration practice based on ecological and sustainable values as well as the issue of authentic cultural historic experience.

Finally, this thesis integrates historic cultural landscape preservation and modern healing landscape design, through the design process based in part on evidence derived from an interdisciplinary perspective. There are memory studies in medical science that focus on learning mechanisms and temporal context development related to the quality of the physical environment; an authentic historic environment contains a series of concrete cues that can help people to reinforce or even recover their memories. Hence, this thesis proposes that an historic environment represents a place of the known and familiar that helps make feel people secure. Restoration of the historic environment is a good metaphor that represents how we treat the past--the old--so may be especially important to elderly patients. The proposal that a restored historic environment is a healing environment is still a hypothesis. This thesis concludes by advocating collaborative studies that include psychology, historic preservation, and therapeutic landscape professionals, to address the restorative values of historic and natural landscapes for human health and wellbeing.

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ACKOWLEDGEMENTS

This project was enriched by the contributions of so many people. First thanks are due to my advisor Professor Daniel Winterbottom and Jeffrey Ochsner. I am deeply appreciative of their constant enthusiasm, insight, critique, and creativity as I grappled with this interdisciplinary exploration for the first time. Besides my advisors, I would like to thank Luka Jelusic who walked me through this project with all the details and design-build professional suggestions, and the experienced therapists Amy Wagenfeld and Teresia Hazen who offered practical, as well as scholarly insight and suggestions, making this project more up to date and comprehensive from the perspective of therapeutic landscapes. I also thank the employees of Dr. Martin Horvat Hospital for their courtesy in sharing documents and their comments

My sincere thanks also go to Nancy Rottle, Ken Yocom, Julie Parret and JoAnne Edwards for their supportive and generous advice.

Last but not the least, I would like to thank my friends and my family for supporting me throughout my life.

1. INTRODUCTION

Fig 1.1 Dr. Martin Horvat Hospital, 1920s. Source: Dr. Martin Horvat Hospital

1. INTRODUCTION

This thesis focuses on planning and design for the renewal of the Dr. Martin Horvat Hospitaln in Rovinj, Croatia. The Horvat Hospital was built in 1880, on the initiative of Prof. Luigi (Aloisa) Montija (Fig 1.5) and Eduardo Alberta who were both from Vienna, when Croatia was part of the Austro-Hungarian Empire (Rovingo, 2013, P15). The hospital is located along the Adriatic Sea and originally was designed for children's physical therapy and rehabilitation. The pleasant climate along the east coast of the Adriatic Sea, and the rediscovery of the significance of environmental benefits for human health were the fundamental reasons the Austro-Hungarian Empire choose this location (Fig 1.2). There were several hospitals built along the coast, and some still serve as facilities for medical care. The Dr. Martin Horvat Hospital one of the original hospitals still operating today (Fig 1.3). The hospital location not only has a great value for healing, but also is a sensitive place that has been greatly influenced by the domestic and international turbulence

Fig 1. 2 Dr. Martin Horvat Hospital, 1920s. Source: Dr. Martin Horvat Hospital

Fig 1. 3 Dr. Martin Horvat Hospital, 2017. Source: Dr. Martin Horvat Hospital

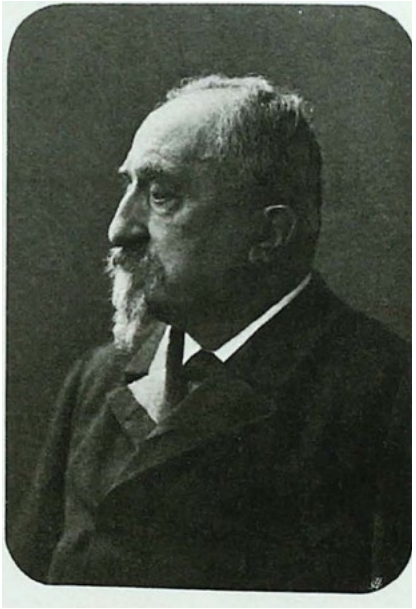


Fig 1. 4 Medical Care, 1920s.
Source: Dr. Martin Horvat Hospital

Fig 1. 5 Professor. Luigi (Aloisa) Montija Source: Dr. Martin Horvat Hospital

turbulence in the twentieth century, the demise of the Austro-Hungarian Empire, the occupation by Italy, the Yugoslav confederation, and the war for independence of Croatia. After 1991, Rovinj (as well as Croatia), has moved forward in an independent and relatively stable period. In 2015, Croatia became a member of the European Union (EU). The economy has boomed, resulting in increasing domestic health care needs as well as international health tourism. Therefore, the Dr. Martin Horvat Hospital currently faces pressure for updating and improvement.

The hospital occupies the whole of a small peninsula and has three major components: historic buildings, a historic therapeutic beach, and a forest park. The complexity of the site raises many questions and challenges for preservation and redevelopment. Three major issues are addressed in this thesis: 1) a cultural landscape preservation strategy; 2) the conflict between old and new; and 3) the potential for technological and sustainable therapy and recreation. Answering these three questions presents challenges, and decisions must be made based on the different place characters of the site and the resources that belong to the hospital.

This thesis explores the issues stated above for the hospital's development needs, and also addresses the relationship between the historic environment and present-day health benefits. As part of this exploration, the thesis addresses the following questions: How can historic environments and associated landscapes improve human health and increase well-being? What are major challenges to be addressed to make this place more relevant to contemporary needs while preserving the historic integrity of the site and offering users

nature-based restorative benefits?

The chapters of this thesis are organized according to the following plan. Chapter 2, Literature Review, discusses the history and contemporary healing landscape as well as healthcare environment, the international, and the United States, understanding of cultural landscape conservation, and the relationship between authentic historic environment and human health. These discussions provide a basis to develop a framework for creating a restorative modern hospital environment with historic cultural environment settings, as well as to determine, what should be added, what should be preserved, and what can be altered, to integrate all the works to form a healthy hospital environment. Chapter 3, Site Analysis, discusses the problems and challenges for the redevelopment of the hospital, and highlights the primary questions for this project. Chapter 4, Site Planning, offers an overall solution for the hospital redevelopment, including infrastructure design, mobility, functional layout, and so forth. Chapter 5, Historic Preservation Design, focuses on the historically significant landscape features, by applying the theories from the literature review to select the different

Fig 1.6 Outdoor Beds, 1920s. Source: Dr. Martin Horvat Hospital

places on the hospital campus. Chapter 6, Therapeutic Landscape Design, explores the health environment systems for the hospital and the detailed therapeutic garden programs. Chapter 7, Integrative Design, discusses how to integrate modern ADA design, universal design within historic environment, as well as the relationship between the historic and the modern hospital environment. Chapter 8, Conclusions, summarizes the thesis, and discusses how this design proposal addresses the questions and challenges that have been discussed in Chapter 3.

2. LITERATURE REVIEW

2. Literature Review

2.1 Introduction

This thesis draws on two distinct bodies of research and writing. First, this thesis uses research findings that explore the relationship between nature and healing or between engagement with nature and therapeutic processes. Second, this thesis draws on the literature of historic preservation to address issues of building and site restoration, rehabilitation, authenticity, integrity and related ideas. In this chapter, the literature of healing and nature is addressed first, followed by the literature of preservation.

2.2 Health and Nature

Traditional culturally based knowledge and modern scientific research support the concept that nature is a powerful physical and psychological healer. Different natural landscapes have supported the development of human societies and cultures, from merely surviving to thriving (Kahn, 2011, pp11-25). Nature, it seems, spontaneously, inclines us to form positive attachments to the landscapes we inhabit. Cultures have evolved different responses to differences in their environments.

Scientific research in several fields supports this hypothesis, from phenomenology through the empirical to the clinical. (Kahn, et al, 2009, pp.37-42) These findings have opened a new way of thinking about how hospitals can create better healthcare environments as well as improving medical efficiency and treatment effectiveness. These ideas date back to the Eighteenth Century. This approach has coalesced into a field named "evidence-based designs". Evidence-based design relies on evaluations of existing spaces, places and conditions to validate an intended outcome, such as reducing stress, increasing well-being, and so forth.

Legacy Health (Legacy) is a nonprofit system that has six hospitals in Portland, USA. Legacy is the national leader in therapeutic gardens, since 1997 (Fig 2.1). There are twelve therapeutic gardens among those hospitals, serves patients, clinical patients, clinical programs, visitors, families and employees. The therapeutic design based on clinical studies, collaborations with doctors, employees, patiences, and families (Hazen, 2014, pp.47-55). With the evidence from stress-relief study (Fig 2.2), the gardens also addressing the nature's healing power for 11,000 employee's health. Legacy founded Our Good Health team that

focuses of provides accessible to garden, creating and suggesting restorative walking path around different therapeutic gardens and green corridors(Fig 2.3, 2.4)[1]

Fig 2.1 Stenzel Healing Garden. Legacy Hospital, Portland USA

Fig 2.2 Employee relax at the Stenzel Healing Garden

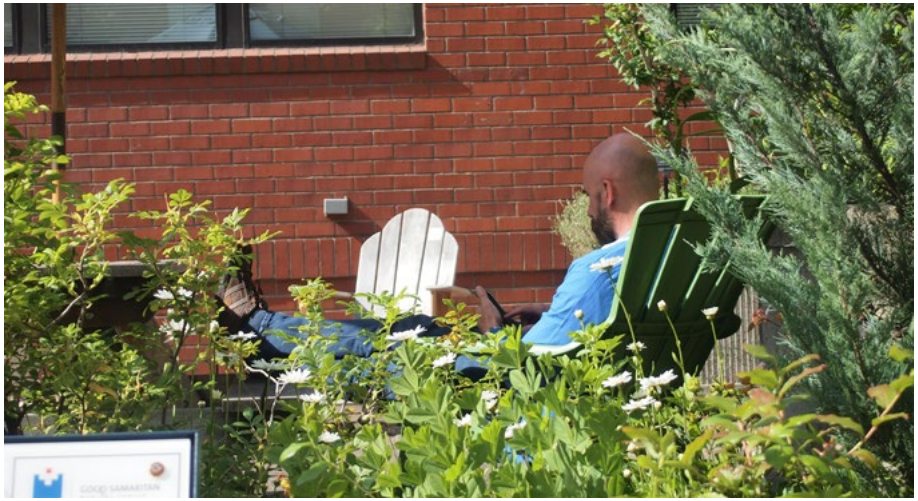


Fig 2.3 Walking Loop
Source: Legacy Hospital

Fig 2.4 Therapeutic Gardens in Legacy Hospital
Source: Legacy Hospital

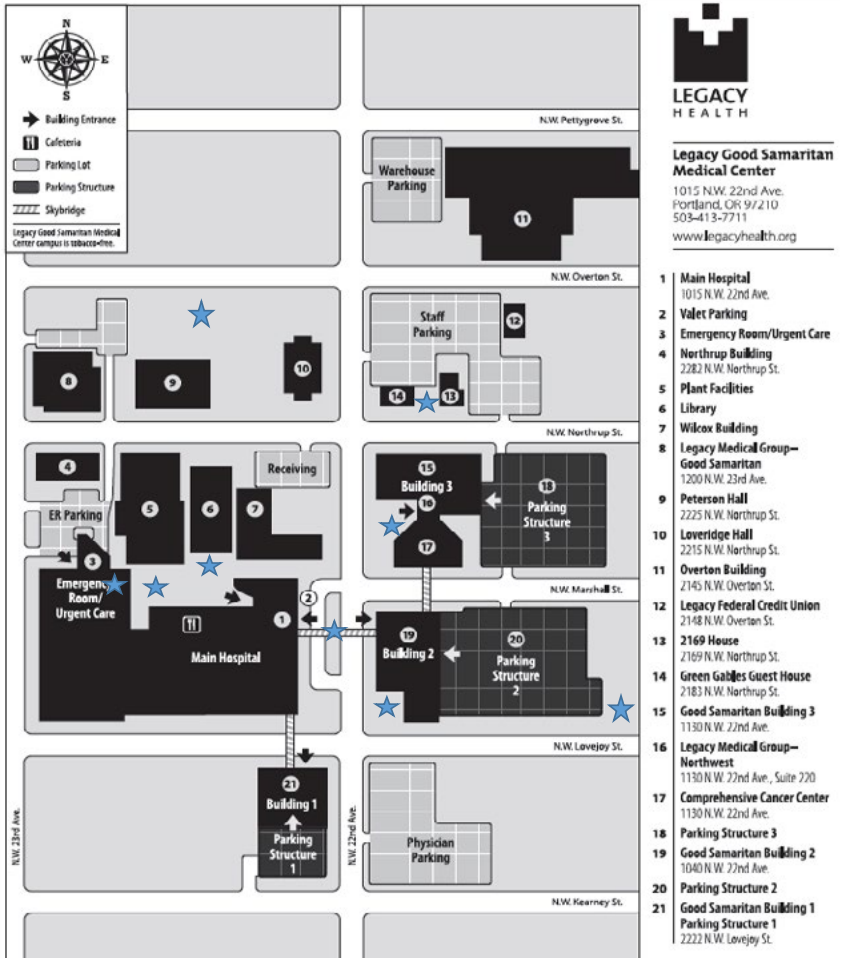


Fig 2.5 Temple of Aesculapius
Source: Getty Image

Fig 2.6 Medieval Therapeutic Garden
Source: MET Museum

2.2.1 Western history of healing landscape

In ancient Greece, temples as spiritual totemic architecture is often central to urban. However, one temple type was placed far from city center, where it had fresh air and water, and ideally a sea view--the Temple of Aesculapius (Fig 2.5), the Greek god of healing. These temples served patients, many of whom were soldiers brought directly from the battlefield. Patients were treated with healthy diets, clean water, music, sleep, rest, social interaction and prayers (Sternberg, 2009, pp. 37-45).

In Medieval times, beginning around the eighth century, priests using herbal medical treatments which were introduced from the Byzantine Empire. These medical treatments originated in East Asia. Arabic merchants brought them to the Europe (Dandle, 2008, pp.55-67). The idea of a therapeutic (medicine) garden became a important part of church architecture and church practices. These therapeutic church gardens (Fig. 2.6) were primarily for growing medicine herbs, but also served as prayer and meditation centers. These formal therapeutic gardens became the seeds for the growth of ideas that led to modern medicine ‘s therapeutic roots based in a landscape or nature-based setting (Dendle, 2008, pp.11-17).

2.2.2 The East and other regions approach presentations of healing landscapes

Landscape art is one of the oldest and most significant forms of art in East Asia. It includes landscape painting, bonsai, ikebana, and landscape gardening. These arts, at different scales, all try to convey a picture the beauty of nature, for meditation, decoration, and ritual ceremony.

In China, landscape gardening and painting, also played a significant role for the healing of social elites who had been expelled from the empire. In Yuan Dynasty (1300 A.D.), the Mongolian Empire dominated China and it was the first time that China was ruled by ethnicities other than the Han. Many scholars and traditional officers chose to hide and live in the rural area, and started landscape painting (Fig 2.7), through traveling and painting the landscape to find a way to escape from reality, to heal. (Du,2015, pp. 234-311.)

Malidoma Patrice Some (1956 - Present), an African who received Western education, provides examples of native

Fig 2.7 Chinese Landscape Painting, 1363, Dong Qichang
Source: Nanjing Museum

Fig 2.8 Chinese Traditional Garden
Source: Suzhou Museum

When he was 18 years old, he was a stranger with his own culture, he took an 30 hours ritual practice by meditation with a tree, as his ancestor did (Fig 2.9). The meditation requires the participant bounding with nature, in this case with the tree. Normally, it takes 15 hours or so to have connection with nature according to Some, but he is a cultural outsider and it took him 30 hours to build the connection with the nature. According to Some, during that 30 hours, his heart rate, blood pressure is normal and he was not dehydrated and he believes that the nature connection he forged through his traditional cultural way is real. According to this ritual practice standard, participants needs to build connections with the tree, and discover the spirit from the tree. After hours meditation, he recognize the tree's spirit as "green lady", and through this

Fig 2.9 Africa Ritual Practice
Source: https://www.biblio-tecapleyades.net/cienciareal/esp_chaman_24.htm

process, he feels anxiety relieved, peace and relax. In addition he strengthened his connection to his own culture. (Some, 1999. pp.37-78). Many other civilizations and cultures similarly use nature for healing, and for picturing an ideal living environment for well-being. This idea is a primary focus of this thesis: how the environment can better facilitate improvements in mental as well as physical health.

A brief review will articulate how people from different cultures and natural environments, developed different forms of interacting and representing landscapes for health restoration in the past. Using nature for healing is an important and extended heritage that continues as a evolving part of our global civilization.

2.2.3 Modern medicine and nature

“If we stray too far from our inherited dependence on the natural world, we do so at our own peril.” Stephen Kellert, Birthright: People and Nature in the Modern World, 2012, pp.112)

The role of therapeutic landscape design has been underestimated in modern medicine and can be better understood if we considered the prayers, meditation and physical activity, all positive experiences that emerge from the interaction between people and nature in a more humanistic way. In Great Britain, the use of therapeutic landscapes to improve the hospital environments, was embraced to increase the quality of the patent experience during hospital stays. Historian Clare Hickman narrated the evolution of therapeutic landscapes in the United Kingdom from the eighteenth century to the present. By rediscovering how therapeutic landscapes changed dynamically under the influence of science and economics. She shows how the restorative landscape facilitated better healing environments for well-being over the past 200 years (Hickman, 2013). By learning from the past, therapeutic landscape has a promising future;

however, to fully realize the potential benefits, professionals across different disciplines need to collaborate and contribute.

In "the predictable fantasies and responses of individuals from early childhood onward. It cascades into repetitive patterns of culture across most of the societies." (Wilson, 1984, pp. 140) Throughout the twentieth century, modern medicine addressed the role of science, but understanding the benefits derived from nature was limited for a long time by the boundary between scientific research and the professional designer. The best-known hypothesis relating health and nature was "biophilia", published by E.O. Wilson, in his book, Biophilia in 1984. He claims that humans have an innate affiliation towards life. Although his theoretical arguments were persuasive, biophilia remains a hypothesis not underpinned with solid evidence. It has yet to convince those in the modern medical establishment.

"Ecopsychology –a natural world interpreted as ensouled; an ecological, non-dualistic ontology and method; and a commitment to the praxis of building an ecological society." (Fisher, 2012, pp. 79-114) Fortunately, by the end of the twentieth century, psychological research had provided evidence of the benefits of human interaction with nature, and of healing from prayer. In one of the best-known studies that dates to the 1980s, researchers divided post-gallbladder surgery patients into two groups (Ulrich, 1984, P.420). One group was assigned a room with a view of a brick wall. The other group was assigned to rooms that looked out on a Savannah-like setting. Researchers collected and measured a massive amount of data including self-reports, nurse reports, the frequency and dosage of pain medication use, and, and recovery time. The result shows that the patients exposed to the natural setting had a faster recovery process. In 1991, Ulrich led another study in which subjects viewed a stressful movie which was followed by videotapes of either natural settings or urban settings. Various physiological measurements, such as heart rate, muscle tension, skin conductance, and pulse transit time showed that people exposed to the natural setting video recovered from stress more rapidly and more completely. Over 100 studies have shown that exposure to nature has direct, measurable, and efficient benefits for stress relief (Ulrich ,1991, pp.201-230).

This study raised another interesting question, as the technology

develops, can “virtual nature” assist in healing people? Do we really need a “natural” nature? Another well-known ecopsychologist, Peter Kahn used decades of research and experiments to prove that, as an human being, we receive, and perceive, “virtual” nature and “real” nature differently. Kahn and his team compared the effectiveness of “real” nature and “virtual” nature in terms of restorative benefits for human health and found, unsurprisingly, that “real” nature has much better outcomes (Kahn, 2011).

In one study, the team studied office workers performance based on different working environment. The research group collected 90 office workers and divided them into three groups. They assigned the first to work in an office room with a view of nature which included water, grass, trees, and the sky. The second group was working in a 50 LED Screen, with a real-time, high-resolution television image of nature scene which was identical to what group one had viewed. The third group people was working in a room with no view. The experiment data, based on the physiological measure data, showed only the first group, those with a view of authentic nature, received significant psychological recovery. However, interviews of all the groups showed that people enjoyed TV-screened nature, and benefited from the virtual nature for cognitive functioning through this connection to the nature. Four weeks after the screen was removed, its re-installation was requested. This experiment did show that people can connect with nature setting through an electronic screen, but not as effectively as to actual nature. The studies document that there are significant differences between the restorative effects from authentic nature and technological limitations of nature.

Today, the practices described in biophilia have spread, For example, the International Living Future Institute initiated a “biophilic” award in 2017. This award is named after Stephen R. Kellert, to remember his legacy as a passionate pioneer in articulating and transit biophilia into biophilic design practice for built environment. (International Living Future Institute, 2017, available from: https://living-future.org/stephen-kellert-biophilic-design-award, last accessed: June, 2018)

A number of hypotheses, theories, and scientific findings support the value of constructing a natural and ecologically-friendly environment for health care. The application of this idea to a

specific hospital environment to create a healing landscape is the focus of this thesis project.

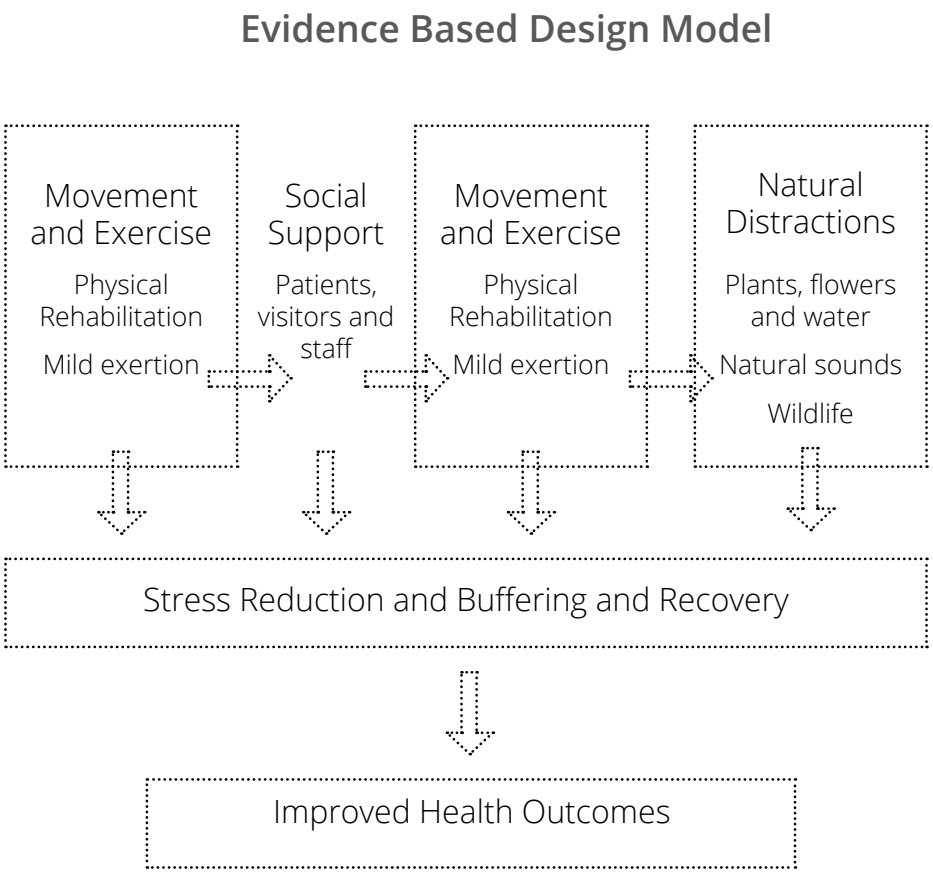


Fig 2.10 Evidence Based Design Model
Source: Ulrich, 2001

2.3 Collaboration and Evidence-based Design

Expanding scientific findings explain how the use of living materials, the landscape and a wilderness experience for human restoration, is not simply an antiquated superstition from the past. They are not simply empirical phenomenon but are now validated by science. Our modern medical care environments should be modeled on and include those components mentioned above to strengthen and improve the health treatments and medical outcomes. Ulrich not only addressed the importance of nature and healing by testing theories, but also proposed the Evidence-Based Design Model (Fig. 2.10). This model is a framework that guides professionals to find and use medical study as evidence to develop the healthy environment. Therefore, professionals from different backgrounds have started to advocate for cooperation from clinicians, therapists and designers and to develop collaborative design processes a to construct better therapeutic health environments (Fig. 2.11).

Psychologists Rachel Kaplan and Stephen Kaplan studied Attention Restoration Theory that also supports the restorative power of nature (Kaplan & Kaplan, 1989). They proposed

that a well-designed nature setting can rest people's mind and focus on being in an different place, arouse people's attention, and provides a place that people have the power and freedom to do what the intend to do. (Kaplan, 2001, pp.507-542)

Landscape scholar Clare Cooper Marcus analyzed and evaluated the quality and effect of hospital environments. Her initial research took place in 1995 using physiological and health-outcome measures (Marcus, et al, 1995). Marcus focused on both the patients and staff's health improvements using indicators such as length of treatment, rate of complication, stress, and treatment-related errors. Marcus summarized the fundamental components for facilitating a environmental healthy hospital and credited those elements with advantages and disadvantages. This theory is one of the main resources for the Dr. Horvat Martin Horvat Hospital renewal design in this thesis. (The detailed theory will be explained in the Design Charter Four and Six.)

Today there is no doubt that engaging with nature is restorative. Design should focus on establishing a more intimate, interactive nature-human relationship to deliver

Fig 2.11 Collabrative Design at Stenzel Hospital
Source: Legacy Health

medical care, and for human well-being and recovery. This thesis will address and explore the role of contemporary therapeutic gardens. The term contemporary therapeutic garden in this thesis means a specific kind of garden to aid people for therapy treatment. Experienced therapist Amy Wagenfeld and landscape architect, scholar, Daniel Winterbottom through their intensive cooperation work, published book Therapeutic Gardens (Winterbottom & Wagenfeld, 2015). This book provides the fundamental knowledge of what is therapeutic garden, what are the different types of the gardens in terms of different therapy programs and benefits, and how to design them. This book integrates expertise together.

The book provides guidance in understanding and designing therapeutic garden, but it also demonstrates interdisciplinary collaboration.

2.4 Cultural Landscape and Preservation

“ By recognizing ‘cultural landscapes’, we have, almost for the first time, given ourselves the opportunity to recognize places that may well look ordinary but that can fill out in our appreciation to become extraordinary; and an ability of some places to do that creates monuments to the faceless ones, the people who lived and died unrecorded except unconsciously and collectively by the landscape modified by their labors. A cultural landscape is a memorial to the unknown laborer (Fowler, 2000, p.201-212). ”

Compared to the architectural and other physical historic monuments, landscape has a unique materiality of organic and living materials which leads to its distinguished character, shows not just about the power human, but the power of nature, the relationship between human and nature. All those aspects endow the landscape with a reflection of the flow of time, the appreciation of diversity of life and lifelike.

2.4.1 Universal value

This thesis project is located in Rovinj, Croatia, Europe. Although the EU countries have their own regulations for preservation, UNESCO preservation standards are the fundamental reference for EU countries. Therefore, this thesis primarily references UNESCO definitions as well as strategies on the issue of cultural landscapes. In contrast, United States has a long development history in landscape conservation and has developed a unique system managed by National Park Service. This thesis also considers the knowledge and application methods through US standards, as a supplemental reference.

2.4.2 Cultural landscape

In 1992 the World Heritage Convention became the first legal organization to recognize and protect the cultural landscapes. The committee defined cultural landscape as follows: “cultural landscapes represent the ‘combined works of nature and of man designated in Article 1 of the convention. They are illustrative’” (Fowler, 2003). In 2009, UNESCO

published World Heritage Cultural Landscape, a Handbook for Convention and Management (UNESCO, 2009).

In this book, the committee explained the term cultural landscape as follows: " Cultural landscape" embraces a diversity of manifestations of the interaction between humankind and its natural environment: "Cultural landscape often reflect specific techniques of sustainable land-use, considering the characteristics and limits of the natural environment they are established in, and specific relation to nature. Protection of cultural landscapes can contribute to modern techniques of sustainable land-use and can maintain or enhance natural values in the landscapes." (UNESCO, 2009)

The National Park Service in United States first recognized cultural landscape as a specific type of resource in 1981 (Howett, 2000). Three years later, NPS published a report, Cultural Landscapes: Rural Historic Districts in the National Park Service System. In this publication, cultural landscape was identified and defined. Their current definition of cultural landscape was published in 1998: "Cultural landscapes are historically significant places that show evidence of human interaction with the physical environment." (NPS, 1998)

Despite the differences between the UNESCO and the US definition, both highlight of human-nature relationship in landscape form, the contrast of human intervention natural environment and wild nature. The UNESCO standard opens to modification towards contemporary ecological and sustainable value, whereas the US standard addresses the issue of historical integrity and authenticity. The contemporary value of ecology and sustainability has been widely recognized, and it requires biodiversity other survey-based collaborative preservation strategies. Therefore, this thesis will leave this issue open and suggest survey and collaboration with ecology expertise for future reference. Considering that historic significance is related to evidence based on integrity as well as authenticity, UNESCO has also highlighted the issue of historic heritage authenticity and integrity for decades, as in the Venice Charter (1964), and the Nara Document on Authenticity (1994). However, those documents are building-centered documents; in contrast, landscape has a variety of contents of organic materials, and a dynamic changing character. It is impossible to apply directly

the contents from those charters to the authenticity and integrity of cultural landscape. Therefore, this thesis explores the literature that relates to cultural landscape integrity and authenticity.

2.4.3 Authenticity and integrity

Integrity and authenticity are very important information for historic restoration. Integrity and authenticity have similarities in verbal context. In 1998, the National Park Service defined what is cultural landscape, and showed the relationship of integrity and authenticity: “Their (cultural landscape) authenticity is measured by historical integrity or the presence and condition of physical characteristics that remain from the historic period.” (NPS, 1998)

In general, integrity is more physical and material based; authenticity has a broader meaning that extends from tangible to intangible, based on the unique materiality as well as the nature – human connection of cultural landscape. The discussion below focuses on the definition and application on integrity and authenticity of cultural landscape.

2.4.3.1 Integrity

In 2007, UNESCO gave a guideline on the issue of cultural landscape; this is the most recent standard applied in the field of cultural landscape preservation. The UNESCO document noted integrity as: “integrity relates to both the wholeness/ intactness and sustainability and management of properties considered the concept of limits of acceptable change for World Heritage cultural landscapes in relation to authenticity and integrity. Limits of acceptable change should be established through clarification of the outstanding universal value, the integrity of a property as well as its authenticity, qualifiers, and attributes. Management of change in cultural landscapes is an issue to be further addressed.

a) Includes all elements necessary to express its outstanding universal value, this means specifically for cultural landscapes and for other living properties that relationship and dynamic functions present in cultural landscapes should be maintained.

b) Is of adequate size to ensure the complete representation of the features and process which convey the property’s significance;

c) Suffers from adverse effects of development and/or

neglect. This should be presented in a statement of integrity." (UNESCO, 2007)

In America, the National Park Service defines integrity as: "The integrity of a cultural landscape is determined by the degree to which the landscape characteristics that define its historical significance are still present. Because some landscape characteristics (such as vegetation and use) are dynamic, integrity also depends on the extent to which the general character of the historic period is evident, and the degree to which incompatible elements are reversible." (NPS, 1998)

Both of the standards show the flexibility of change in terms of cultural landscape that always has dynamic characteristics. For the limits of change, UNESCO addressed on the issue of wholeness balanced with sustainability, with the clarification of what is new and what is old. The American standard addressed the historical significance relationship with presence of historical material, but it extends its discussion into degrees of the integrity at different times, to determine which time of the historical period should be addressed.

Based on the documents, we can see that change is one of the major issues that affects the understanding and practice of cultural landscape integrity. The dynamic change of the site as well as the dynamic change of time, layered on the built environment reflects the dynamic change of the human-nature relationship.

2.4.3.2 Authenticity

UNESCO Evaluation

The 1964 Venice Charter was a milestone in terms of historic preservation in many respects including authenticity and integrity: "It is our duty to hand them on in the full richness of their authenticity." (UNESCO, 1964) The Venice Charter is very restrictive in relative to changes from today's perspective: "for culturally significant monuments reconstruction is not permissible and that only analysis can be permitted." Furthermore, the Venice Charter noted that only absolutely necessary new interventions are allowed and these must be distinguished from the past. In 1994, the Nara Document on Authenticity took into account dynamic change as a feature of culture, and addressed how different cultural and materiality shapes history. "All judgments about values attributed to

cultural heritage as well as the credibility of related information sources may differ from culture to culture, and even within the same culture. It is thus not possible to base judgments of values and authenticity within fixed criteria. On the contrary, the respect due to all cultures requires that cultural heritage properties must be considered and judged within the cultural contexts to which it belongs. Furthermore, the Nara Document specifically noted the cultural heritage with natural characteristics: "Depending on the nature of the cultural heritage, and its cultural context, authenticity judgments may be linked to the worth of a great variety of sources of information." This extends the meaning of authenticity into the field of intangible context: "Aspects of the sources may include form and design, materials and substance, use and function, traditions, techniques and management systems, location and setting, language, and other forms of intangible heritage, spirit and feeling, and other internal and external factors." (UNESCO, 1994)

In 1996, the Declaration of San Antonio addressed the specific meaning of dynamic change: " Dynamic cultural sites, such as historic cities and cultural landscapes, may be considered to be the product of many authors over a long period of time whose process of creation often continues today. This constant adaptation to human need can actively contribute to maintaining the continuum among the past, present and future life of our communities. Through them, our traditions are maintained as they evolve to respond to the needs of society. This evolution is normal and forms an intrinsic part of our heritage. Some physical changes associated with maintaining the traditional patterns of communal use of the heritage site do not necessarily diminish the site's significance and may actually enhance it. Therefore, such material changes may be welcome as part of on-going evolution." (ICOMOS, 1996)

In 2007, addressing cultural landscape as a category that has a specific identity of dynamic change and sustainability, UNESCO elaborated the authenticity of cultural landscapes as: "Authenticity is a qualitative term to address the essence and spirit of the property, attributes and dynamic processes especially at the time of inscription." (UNESCO 2007)

Through this quick review of international value of cultural

landscape authenticity, it is clear that authenticity values culture as a primary factor, which opens sites to change, and to flexibility for future adaptation. This human-oriented perspective, recognized by the change of understanding of how time and culture changes the environment and ultimately affects the individual experiences.

2.4.3.3 Layers of history and authenticity

The Nara Document addressed layers of culture that have values of authenticity. In contemporary historical environmental contexts, the complexity of the diverse historical layers on a site can be received as conflicts in decisions about restoration. What time period should be present, and what is the historic identity of the place? How does one show the narrative of change? Who has the power to determine the narrative?

In the United States, a series of questions on the issue of layers of history has been broadly discussed. Robert Garland Thomson suggested to evaluate the authenticity in three ways: authenticity of connection, authenticity of renewal, and authenticity of experiences. His framework gives a way to evaluate the new interventions. As Thomson noted: "Indeed, the field should recognize community action in response to historic event as a product of its time that carries its own hue of authenticity." (Thomson, 2010)

2.5 Historic Experience and Health

In this section, this thesis tries to address the relationship between historic environment, human experiences and linked them to human health, particularly interested in the question of why historic environment important to us, what is historic environment represent, why do we need to address the authenticity of historic environment, and what is the possible mechanism between environment temporal context recognition and human health.

2.5.1 Historic environment and human experiences

Kelvin Lynch addressed the idea that the historic environment creates a feeling of known, familiar, and thus individuals gain a feeling of being secure, "Relying on history to maintain coherence and common purpose in moments of stress and disunity is a familiar human tendency." (Lynch,1972) Lynch elaborated his idea on historic environment with human

mental needs based on his observations and time recognition theory. In his 1972 book What Time is This Place, he first stated the importance of cultural events and significance of the physical environment for a person to have a memory, and to identify place and time. In this way he showed the significance of historical identity based on physical environment. Then, Lynch explained the time recognition model from each individual's internal and external ability to sense time leading to the emergence of group time, which became abstract time, and shared community (a family, a work team, a class of a school, etc.) memories based on events that happened in a specific time and a place, a "spatial emblem of time." (Lynch 1972) Finally, more loosely, cultural time is constructed by a wide diversity of group time structures. From Lynch's theory of historic environment, and the temporal context generation from the individual to the group to the culture, we can tell that hes believe that humans have the ability to understand time through the physical environment. This opens the question: Do humans have the ability recognize time by "reading" the physical environment, can a fake historic environment be destructive for a person who has temporal sensitivity? This question also relates to the significance of historical authenticity: Is an authentic historic environment restorative (and a fake historic environment destructive) for human health?

2.5.2 Temporal context

In order to answer this question, this thesis looked into the field of learning and memory mode study. Recent study used temporal context study model and experiments from the perspective of memory tradition (Howard and Kahana 2002). Howard and Kahana developed the temporal context model (TCM). The TCM shows that how temporal context be created and represented. Stimuli associated with temporal context that represents graduate changing. Thus this context associated with the stimuli, then the participants can retrieve the temporal context when the presentation of the stimulus presented. This retrieve reaction not only activate the temporal context memory, but also enabled the participants retrieve a series stimuli that were linked to this process. The TCM study shows that temporal context is not an abstract concept, but a flexible and evolving presentation that related to other things. According to TCM study, we can know that both internal and external temporal context been recorded

through a series of cues. To retrieve the temporal context in the past, we need to set up a series of cues that related to that time. The physical environment is a container that stores the past, a historic site records the time for personal, group and cultural time. An authentic historical site's temporal context contains a series coherent cues that helps people to retrieve the memory, have a general feeling about past, which makes people feel secure. Hence, according to therapist Amy Wagenfeld's working experiences, she gives a case study that supports this idea[2]. A patient with temporal disorder, she confused with the tropical flower that shows in Michigan, because based on her personal memory, it is not a coherent cues from the past. The TCM study and Amy Wagenfeld's case shows that people have the ability to recognize the nature and built environment's authenticity. Cultural landscape contains both nature and built environment cues, that might affect people's recognition and feelings. Thus cultural landscape's authenticity and its relationship with human health needs to be highlighted. Considering the authenticity understanding might be different based on the priority of human habitation or natural habitat. This thesis will weigh the priority on specific places of the site, to restore an environment that better facilitate the human health.

2.6 CONCLUSION

This chapter first reviewed the history and development of healing landscape, discussed how therapeutic garden facilitate the health care and well-being in contemporary context. Then author looked into the definition and understanding of cultural landscape by primarily applying UNESCO standard as an international and fundamental standard that has been widely practiced, this thesis also resourced the evaluation standard from the National Park Service system of the United States as an supplement material, since the United States has an longer and independent management system and theory on the issue of cultural landscape. According to the review of cultural landscape, we can see that the regulation of preserving cultural landscape become more and more flexible, considering the dynamic change and ecological value. However, authenticity and integrity is the primary issue that evaluate and balance the degree of alternation and restoration. Finally, this chapter reviewed the theory and experiments on temporal context generation and recognition model to address the significance for historic environment

value for well being, and to link the human health and authentic historic environment together. Thus, to guide and support the design and preservation process for this particular project, to be aware that historic environment is sensitive, that the preservation and adaptive use alternation can be constructive or destructive for human health. This design tries to integrate the theory and practice of contemporary therapeutic garden as well as cultural landscape preservation to create a coherent healing environment for Dr.Martin Horvat Hospital.

NOTE

1. Information from interview with Teresia Hazen, detailed information can be find on: http://www.legacyhealth.org/health-services-and-information/health-services/for-adults-a-z/horticultural-therapy.aspx

2. Information from author's interview with Amy Wagenfeld.

3. SITE ANALYSIS

3.1 General Information

3.2 Regional Context

- 3.2.1 Istria
- 3.2.2 Rovinj

3.3 Site Context

- 3.3.1 Urbanism context
- 3.3.2 Historic context
- 3.3.3 Spatial context

3.4 Medical Use

- 3.4.3 Historic use
- 3.4.2 Current use

3.5 Challenges

- 3.5.1 External factors
- 3.5.2 Circulation
- 3.5.3 Historic site
- 3.5.4 Future development
- 3.5.5 Environment ecological issue

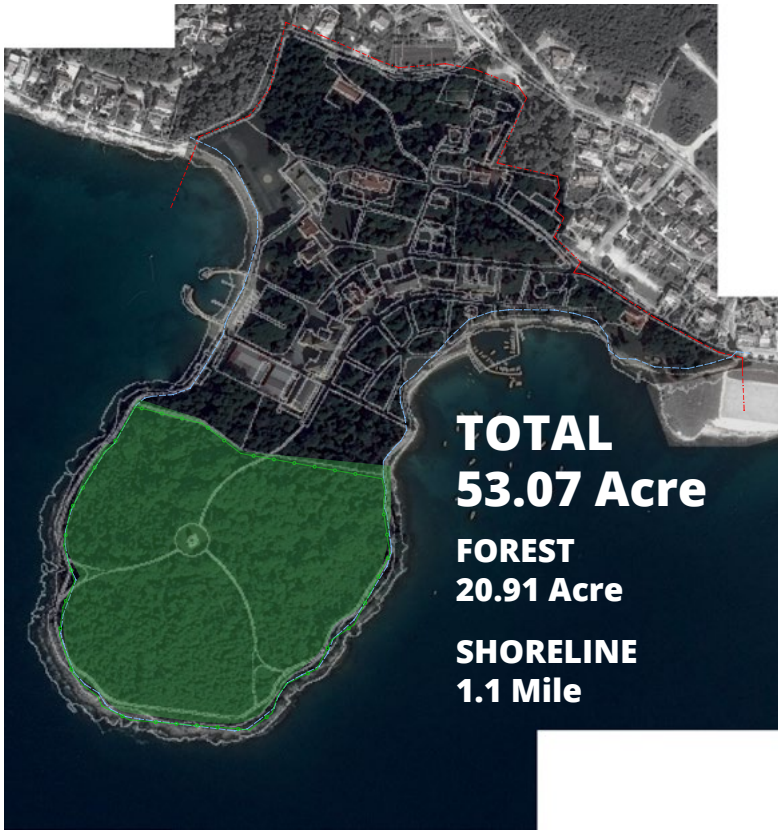


Fig. 3.1 Site Information

3. Site Analysis

3.1 General Information

The Dr. Martin Horvat Hospital located on the Saint Pelag peninsula which is north of the old town of Rovinj, adjacent to the Adriatic Sea. Hospital for Orthopedics and Rehabilitation “Prim.dr.Martin Horvat” is an institution with a rich history founded back 1888 years (Rovingo,2013).

This selection guarantees a mild climate during most of the year, sheltered from the main winds that are common in the northern Adriatic. Inside the Hospital there is a 24 hectare forest park and therapeutic beach that is fully adapted for people with high levels of disability and in which balneotherapy, hydrokinesis therapy, and heliotherapy are administered during the summer months with the physical therapists.

The total area of the hospital is 53.01 Acre, forest park is 20.92 Acre, shoreline is 1.1miles (Fig 3.1).

3.2 Regional Context

3.2.1 Istria

Istria is the largest peninsula in the Adriatic Sea. The peninsula is located at the northern head of the Adriatic between the Gulf of Trieste and the Kvarner Gulf. It is shared by three countries: Croatia, Slovenia, and Italy. Due to its location and geographic features, this peninsula has been ruled by different cultures over its history. The major influence was Roman, Venetian, Hungarian-Austrian and most recently by Yugoslavia before Croatia finally became an independent country in 1991. The diversity layers of culture gives Istria, and the site a rich cultural context. The renewal project of this hospital must be sensitive to the layers of culture, how those layers have shaped the hospital, what remains of the culture, and what conflicts will arise as its modernizes for the 21st century.

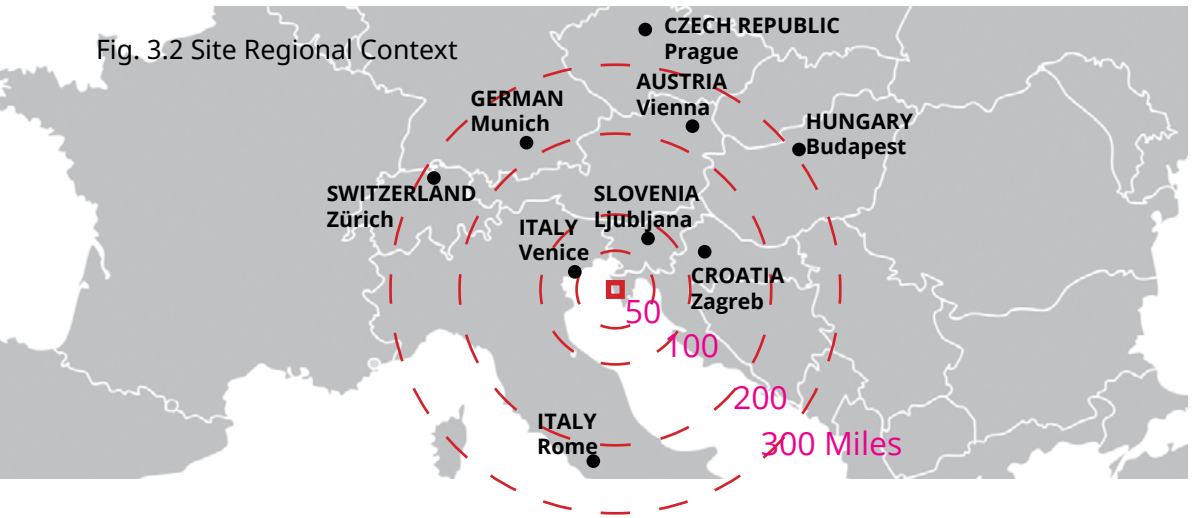


Fig. 3.2 Site Regional Context

Fig. 3.3 Istria Chronology

BC. 500 Roman

Part of the Roman Provinces of Pannonia and Dalmatia;
Occupied by Croats.

1267 Venetian Republic

The coastal areas and cities of Istria came under Venetian Influence in the 9th century.

1814-1918 Austria-Hungary

The Austrian Empire regained Istria, which became part of the constituent Kingdom of Illyria. At that time the borders of Istria included part of what is now Italian Venezia-Giulia and parts of modern-day Slovenia and Croatia.

1919 - 1945 Italy

After World War I and the dissolution of Austria-Hungary, there was a strong local movement toward Istrian independence, but in the end Istria was partitioned to Italy in the Treaty of Rapallo (1920).

1945 - 1991 SFR Yugoslavia

After the end of World War II, Istria was ceded to Yugoslavia The events of that period are visible in Pula. The city had an Italian majority, and is located on the southernmost tip of the Istrian peninsula. Between December 1946 and September 1947, a large proportion of the city's inhabitants were forced to emigrate to Italy.

1991 - Present Croatia

The division of Istria between Croatia and Slovenia runs on the former republic borders, which were not precisely defined in the former Yugoslavia. Various points of contention remain unresolved between the two countries regarding the precise line of the border.

2005 European Union

Resulted the economic booming and the increased the health tourism

Fig. 3.4 Adriatic Sea Coast Historic Hospital

The peninsula, well known for its pleasant micro-climate has attracted many historic hospitals along the shoreline of Istria, dating from the late 1800s to early the 1900s. These early hospitals represent the first time that modern medicine understood the significant relationship between health and environment(Fig 3.4). This project, Dr. Martin Horvat Hospital was one of those hospitals, and a similar hospital, the Orthopedic Hospital Vadoltra was also founded in the same period by Austria-Hungary, now Slovenia, and still serves patients today. From the photo you can see, Dr.Martin Horvat hospital has a better location as it occupies a small peninsula, which has a longer shoreline as well as a nice micro-climate.

Dr, Martin Horvat Hosptial, Rovinj, Croatia

Orthopedic Hospital, Vadoltra, Slovenia

Fig. 3.5 Patience, Dr. Martin Horvat Hospital,

3.2.2 Rovinj urban context

Rovinj is an historic Croatian city located on the western coast of the Istrian peninsula, with a population of 14,294 (2011). Old town Rovinj was founded by Venetian or Illyrian tribes before being occupied by the Romans. The city was originally an Island, close to the coast, and was connected to the mainland by filling the channel in 1763. This city has been dominated by Roman, Byzantine Empire, Republic of Venice, Austria-Hungary, Italy, Yogoslovenia, and finally Croatia 1991. Therefore, this city has a distinct marina culture and has been strongly influenced by the Italian culture. Today, Italian is the second populated ethnic group (16%). Hence, this city is officially bilingual, Italian and Croatian, hence both town names are official and equal.

3.3 Site Context

3.3.1 Urbanism context

The hospital contains some of the oldest buildings on the north side of Rovinj. The site is 5 miles away from old town Rovinj by road and 0.7miles away by ship (Fig 3.6). Following the economic redevelopment after Croatia's independence in 1991, Rovinj, with abundant historical and landscape resources, the tourism industry developed very fast in the past few years. New housing and hotels development has increased in the north part of the city, close to the hospital. Restaurant, supermarket, hotels, bars are close to the site.

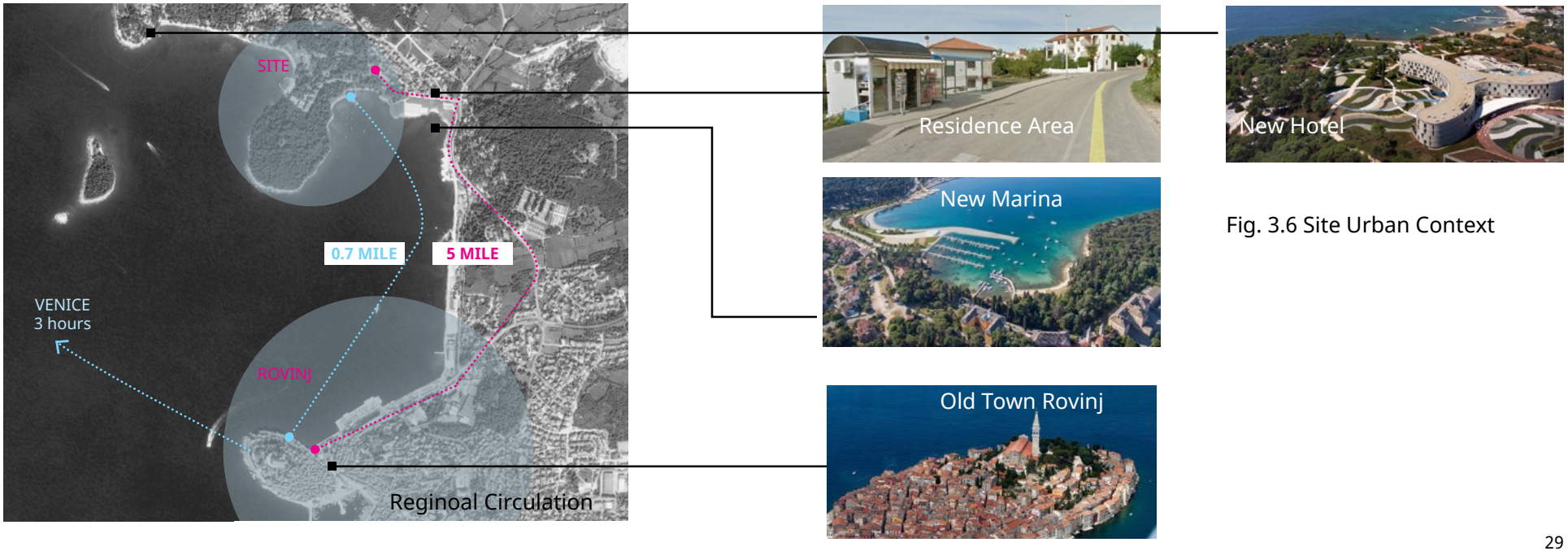
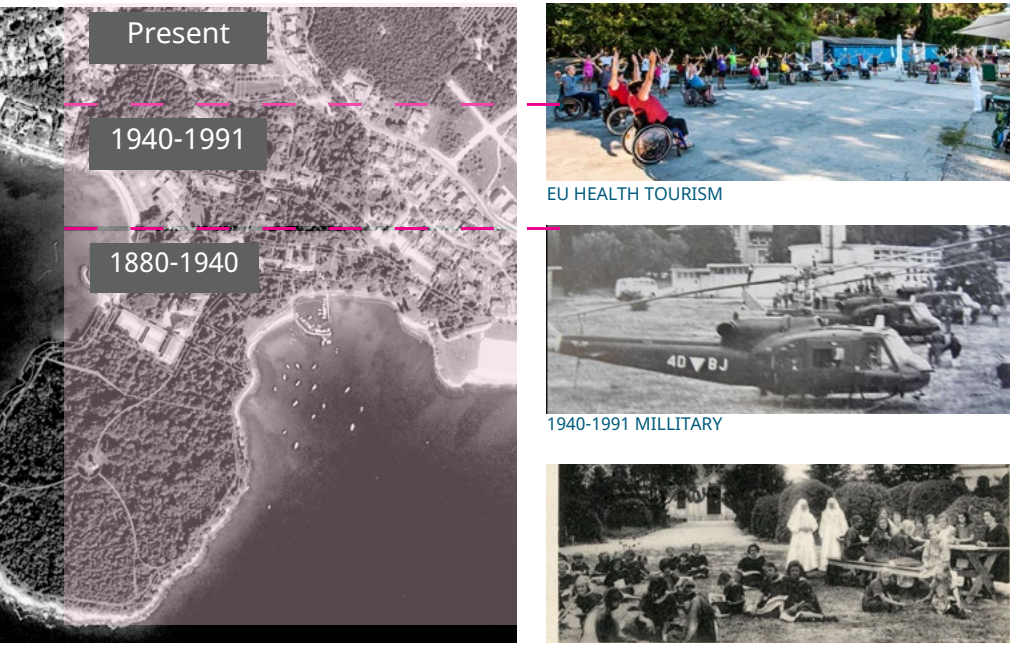


Fig. 3.6 Site Urban Context

Fig. 3.7 Site Development



EU HEALTH TOURISM

1940-1991 MILLITARY

1888-1940 Children

3.3.2 Historic context

As this thesis noted above, this hospital was originally built as Vienna Children's house, where children were the primarily patients. The hospital was built by Austrian's in 1888 as a children's treatment center. Children from across Austro-Hungary, Germany, Russia and other countries came here for treatment and rehabilitation.

In addition to the exceptional micro-climate Rovinj had been spared from the malaria epidemic that devastated Pula and Brijuni Island in the second half of the 19th century. After the First world war the hospital was converted into a clinic for orthopedics, and today it's one of the oldest clinics in Croatia and currently focuses on adult physical rehabilitation (Fig. 3.7).

3.3.3 Spatial context

The site was planned and built in response to the local landscape and its proximity to old town Rovinj.

Historical images document the spatial composition of the original campus. First, there is a dominant curved axis that parallels the shoreline and faces the old town Rovinj. It originates from the east side, passes by the Vienna Children's house 1888, the first building of the site, followed the shoreline and conceptually terminates in the town. Along this curved axis, there is a series buildings for medical treatment and patient housing. It ends on the west, with an observatory tower located in the center of the forest park, the peninsula.

On the center of this axis, is the historic Church, that faces to the southeast, the landmark church on the highest point of the old town Rovinj. The church and its spatial connection with the old town create the second axis. Church itself crosses the curved axis and extends to the north and is extended with

a series of formal classical landscape feature, church plaza, open spaces, green walkway, and terminates in the bay. Extending south from its rear face was four classical gardens, two on each side. This extended through a paved plaza, green walkway, ending with an old facility buildings built in 1930s.

3.4 Medical Care Service

The hospital is currently focused on orthopedic and rehabilitative care. Although the hospital serves patients the majority of which are over 50 years old and the majority of inpatients are from Austria. Croatian, Austrian and Italian make up the majority inpatient demographic.

After 2015, Croatia officially entered the country and EU members can use their health insurance to receive care in Croatia. Based on the natural resources: pleasant micro-climate, and the high quality of the natural salination water, as well as the therapeutic facilities: therapeutic beach for disabilities, forest park, heated water pool, summer is the busiest season.

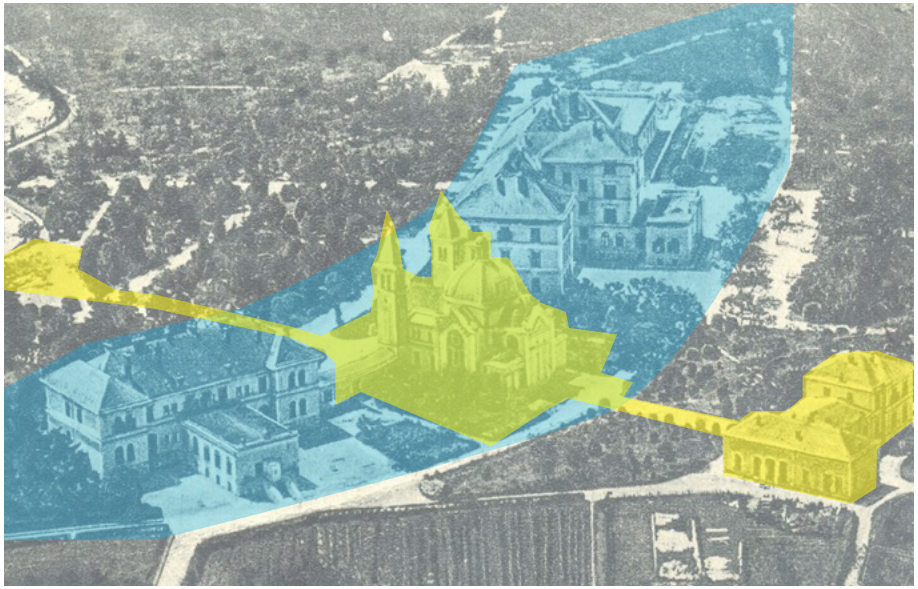
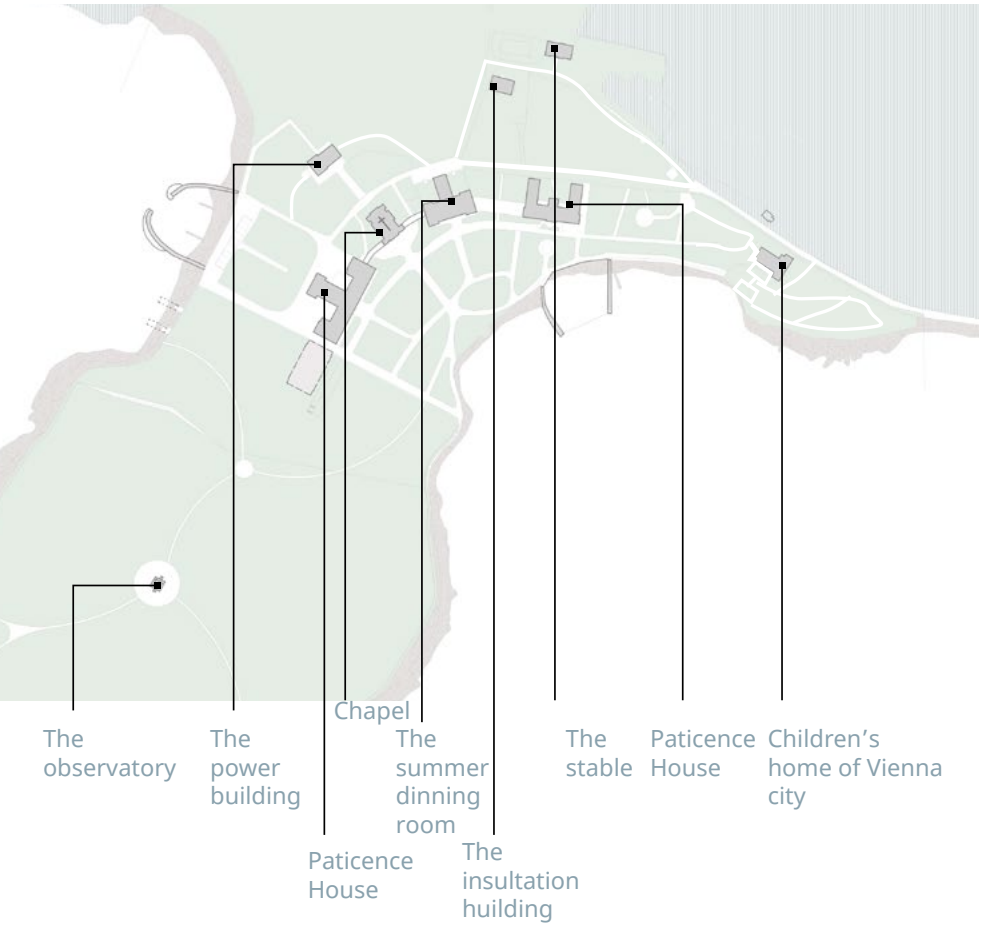


Fig. 3.7 Original Spatial Figure

Fig. 3.8 Original Spatial Analysis

PROGRAMS IN 1920



PROGRAMS IN 2017

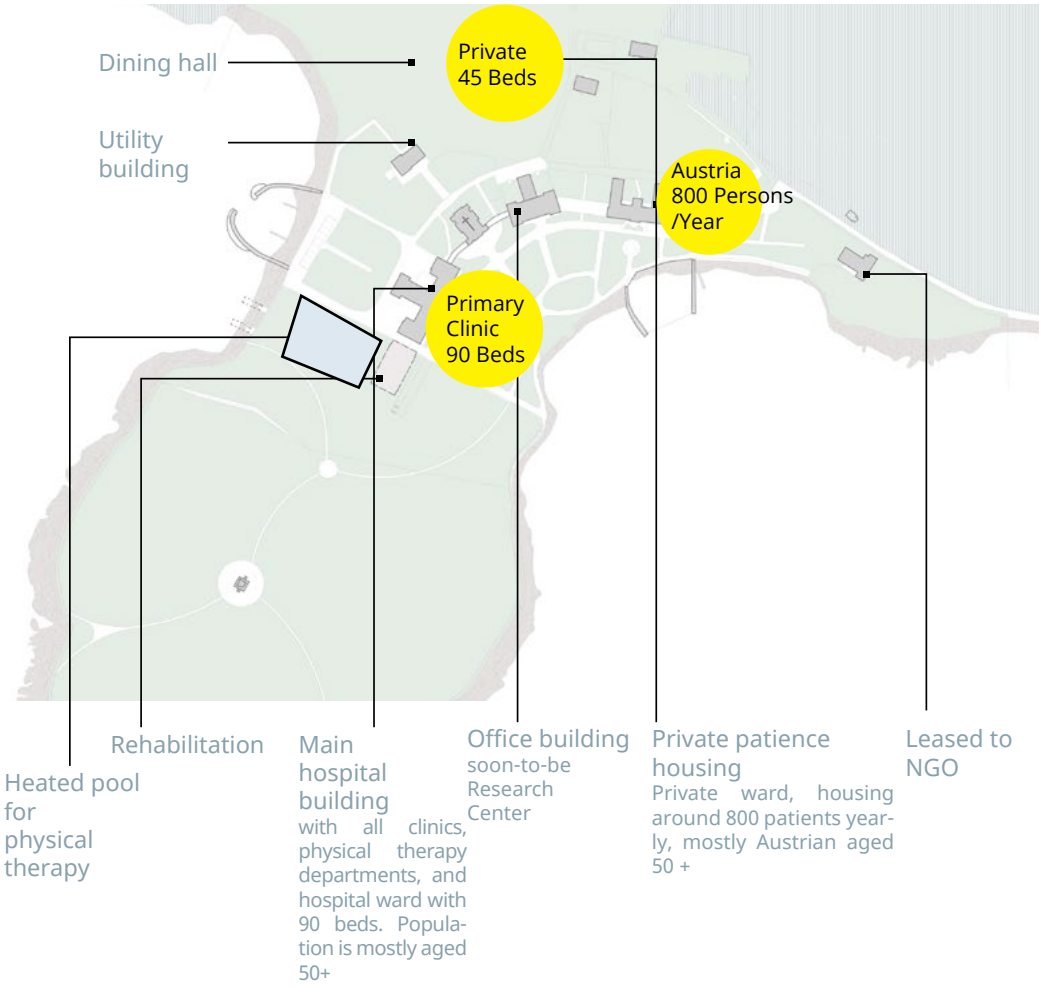


Fig. 3.9 Hospital Programs Analysis

According to the hospital's vision plan, based on Croatian and EU health development statistics, the hospital suggested the medical development expand in three directions: 1. diversifying the range of activities; 2. increasing research 3. and promoting medical tourism.

3.5 Challenges

With the intended expansion there are also existing and potential conflicts that challenge for the redevelopment from interdisciplinary fields.

3.5.1 External urban growth factors

Rovinj city has been expanding northwards for many years. The scale and routes of municipal roads has evolved and land use around the site has been changed potentially impacting the hospital.

Public Vs. Private

According to the municipal restrictions, all shorelines must be publicly accessible. Although the current public footprint impact is small, there are more tourism hotels built and planned to be built around the hospital. The increasing

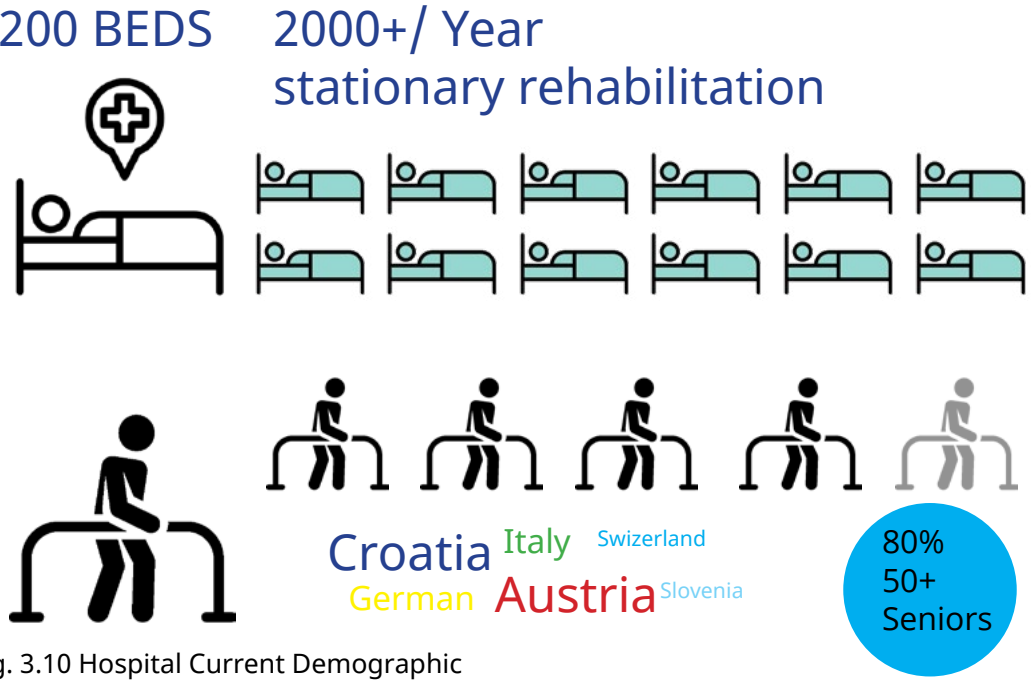


Fig. 3.10 Hospital Current Demographic

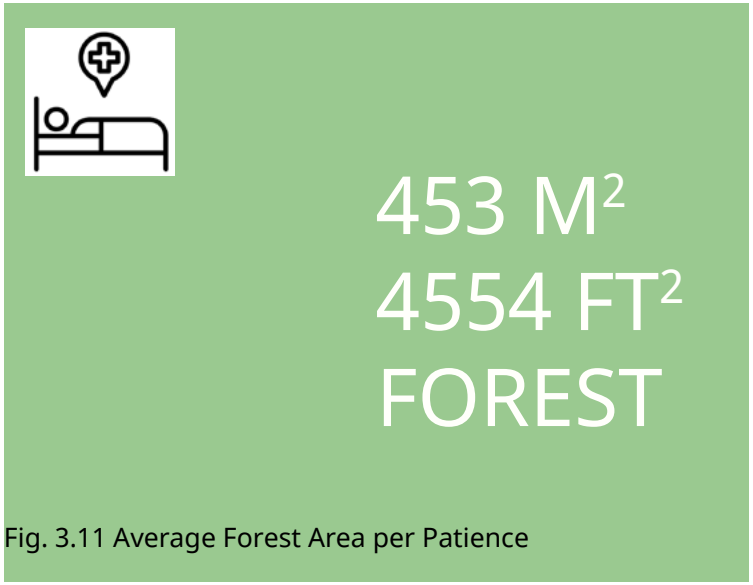
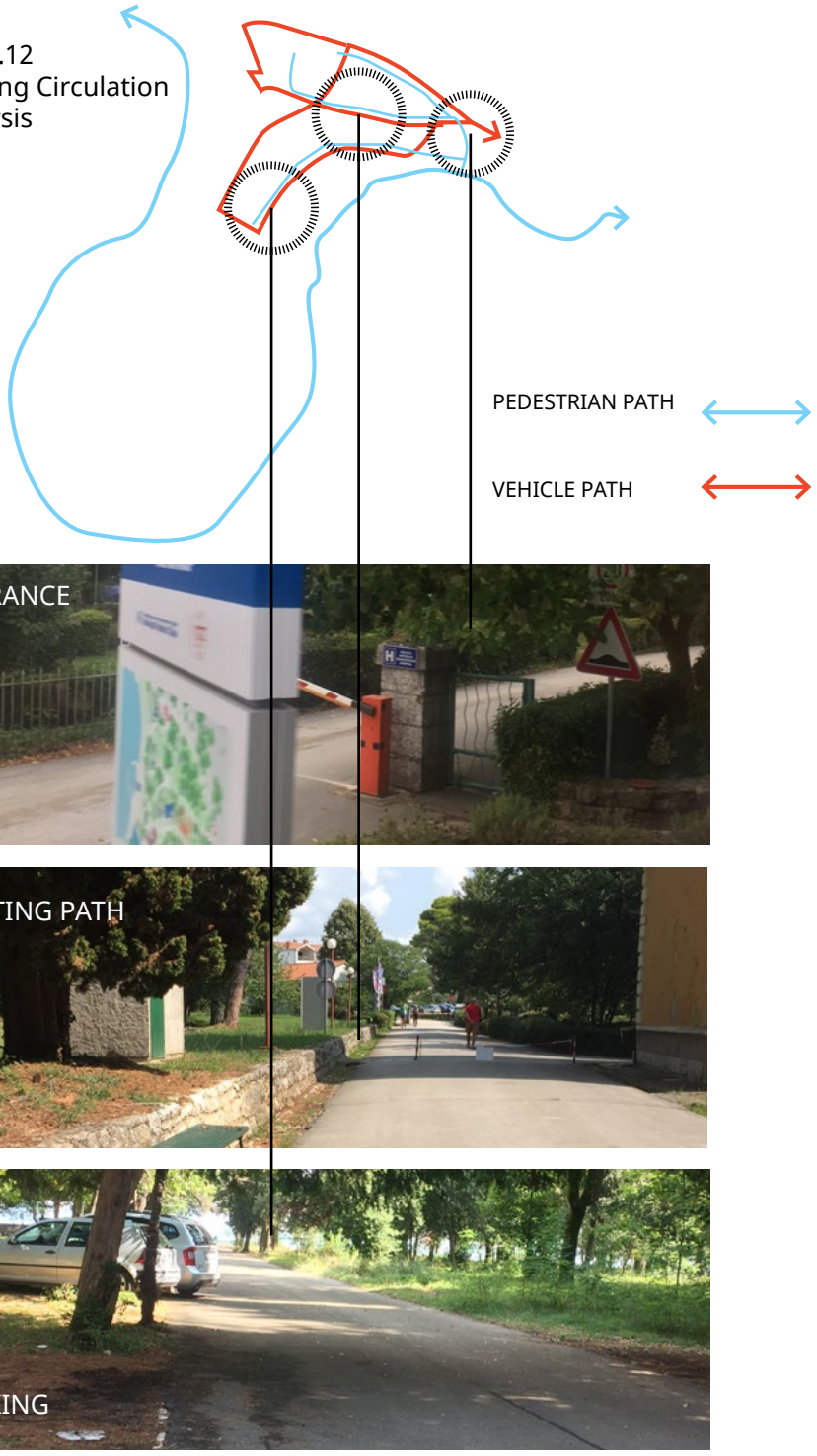


Fig. 3.11 Average Forest Area per Patience

Fig. 3.12
Existing Circulation
Analysis



Public Vs. Private

According to the municipal restriction, all the shoreline has to be publicly accessible. Although currently, the public footprint impact is small, but there are more and more tourism hotels built and going to be built around the hospital. The public at least will interfere the physical therapy treatment along the therapeutic beach. public use of the shoreline could potentially interfere with the physical therapy treatment located along the therapeutic beach.

Public Vs. Campus Circulation

In the past decades, before the urbanization around Rovinj, the public road was primarily for the transportation between the campus and the old town. Today, the campus is surrounded by residence districts and small retail shops and the relationship between the public road to the campus has become problematic. For instance: a) Loss of open space and views of the city. b) Pedestrian sidewalk is disconnected. c) Two campus road abruptly connect with the public road, creating a safety issue and unpleasant experiences for pedestrians and drivers to entering the hospital.

3.5.2 Circulation

The site's current footprint is primarily based on the original planning that provides evidence for the preservation and historic restoration to maintain integrity. However, the original planning done between 1880-1930, has some physical features that doesn't meet today's uses and needs. The defects are as follows: a) Incompetent infrastructure. The current road doesn't provide boundaries for vehicle and pedestrian, integrate parking spaces or loading zones. 2) Universal design. The current hospital campus design, doesn't follow universal design principles, including railings, edges, proper paving, signs and other universal elements. 3) New development planning. Improve circulation to balance the public and private and re-connect the campus with the new town development (Fig 3.12).

3.5.3 Historic site

In general, the integrity of the historic site is high. However, the issue of authenticity, specifically on this site is complicated. A) Authentic experience vs. Physical authentic environment. Based on the existing plantings, the integrity of the site is high. Most of the vegetation were part of the original hospital plantings. However, some of the trees have grown wild and very large and have transformed the original site design. For instance, the observatory tower originally had a view corridor to Rovinj. That view is now is blocked by the pine forest. B) Change. As noted before, the circulation problem requires change to the historic footprint. How can one balance change and preservation? What's a meaningful relationship between the old and new? C) Lost information. Although this site has high integrity in general, there are some historically significant places that have been altered and lack of document to direct a proper restoration. This includes the main entrance space and the church garden. Based on its historic significance, the campus has a solid foundation for restoration. But what should we propose and restore since the information are limited (Fig 3.13).

3.5.4 Future development

In responding to the hospital's development report, as well as the growing domestic healthcare service needs, the boom in international health tourism, a master plan is critically needed. From the perspective of therapeutic landscape, what programs and needs should be added? How should these

Fig. 3.13 Layers of History

programs consider and relate to the historic site context? These are some of the most challenging questions to be discussed.

3.5.5 Environment Ecological Issue

The current vegetation was planted from 1880 to 1930. The species are not local but instead, there are Austrian culturally based species, such as pine and cypress, used to create an experience of classical romance, order, and beauty to correspond to the classical architectural language The pine trees are close to completing their life cycle and will need to be removed and/or replaced. Therefore, a planting and land restoration plan is needed. (Fig 3.14)

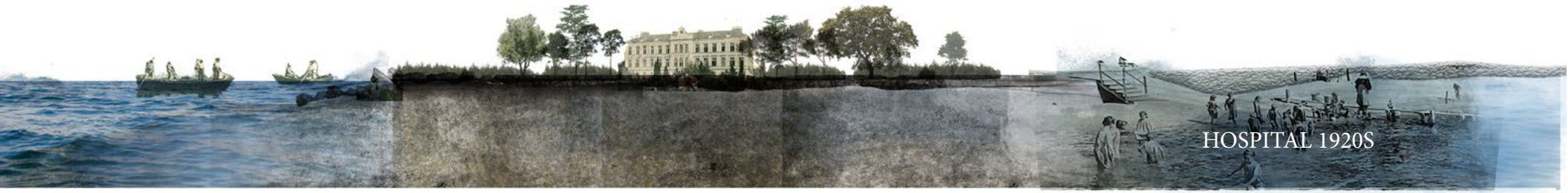


Fig. 3.14 Historic Landscape Anaylsis

4. PLANNING STRATEGY

4.1 Overall Planning Strategy

4.2 Spatial Planning

4.3 Hospital Environment Planning

4.4 Circulation system

- 4.4.1 General
- 4.4.2 Infrastructure & universal design

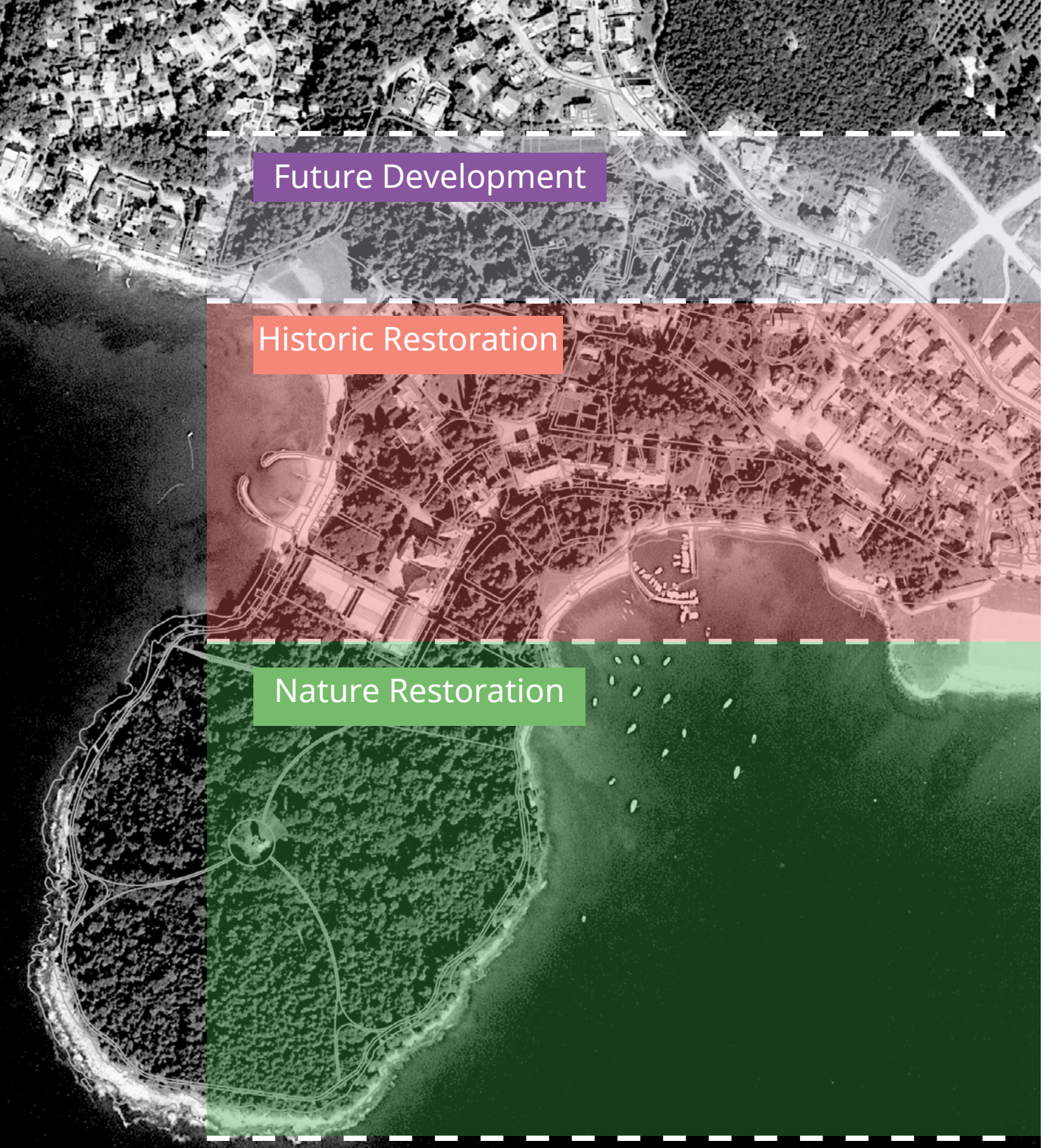
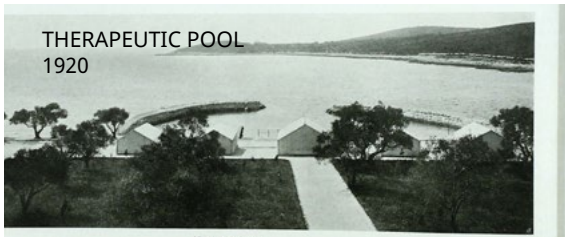


Fig. 4.1 Overall Development



4. PLANNING DESIGN

Based on the historical and site analysis and therapeutic research and the challenges presented within the project there are several primary questions that will be explored in this thesis. The thesis is developed around a planning strategy, at the master plan scale to develop an overall spatial pattern and corresponding development plan for this project.

4.1 Overall Planning Strategy

The spatial organization has three major zones (Fig. 4.1), a) Ecology Restoration, at the south end of the peninsula were the non-native forest needs restoration to sustain a native, ecological forest habitat. As revealed in the literature review, cultural landscape restoration should incorporate degrees of the change and embrace evolving ecological changes. b) The central campus which contains the majority of the buildings. The main focus in this area will be on historic preservation/restoration and some modification to meet universal design standards and create more therapeutic garden spaces. The details will be discussed in the chapter 5 focusing on historic preservation design and chapter 6 with a discussion on therapeutic landscape design. c) The north section where the new development will occur has the most topographic variation and extends upwards from the sea to the recently developed urban residential area. Currently, the north edge is dominated by trees. In order to respect the historical context as well as the natural landscape, the new development area should be separated from the historic zone and reflect a different architectural language. The footprint of new construction should be minimized to preserve the existing landscape. This thesis will propose that tree house forms be used for future residential development in this areas. In comparison to the original historic buildings, the tree house forms will be less dominant and non-classical in style and form, creating a distinct style and spatial experience differing from the former campus. The tree houses fit naturally into the changes of elevation, maximize the sea views and are removed from the shoreline preserving the historic and natural shoreline for use by the public. The tree house is based on biophilic design, and would provide residents with a 24/7 nature immersion experience, in this way, living itself is focused on a natural, green therapeutic environment.

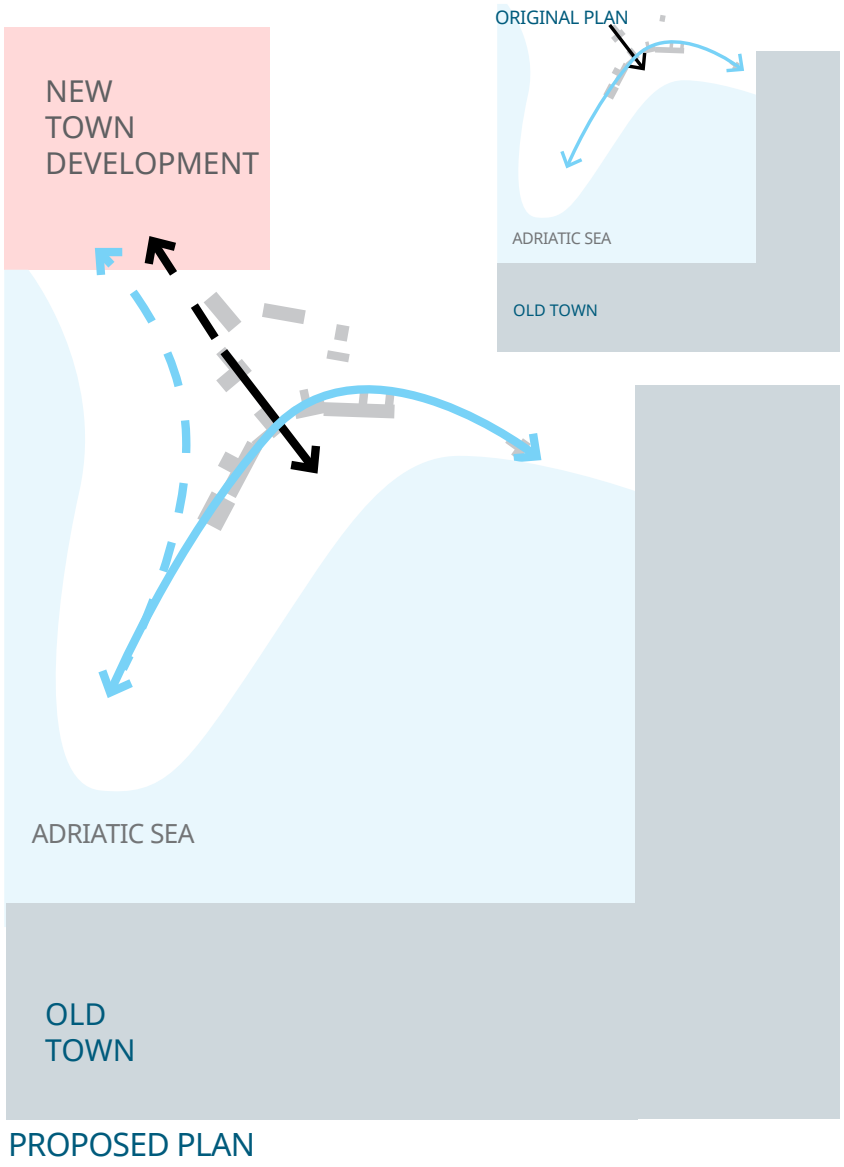


Fig. 4.2 Proposed Plan Spatial - Urban Context

Landscape as background setting

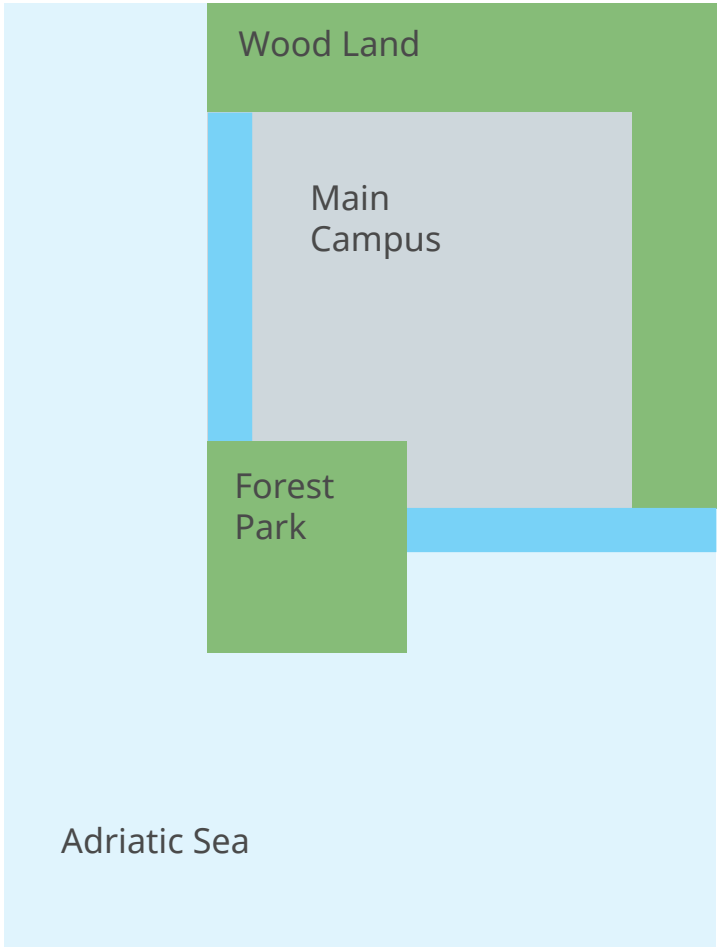


Fig. 4.3 Proposed Plan Inner Context

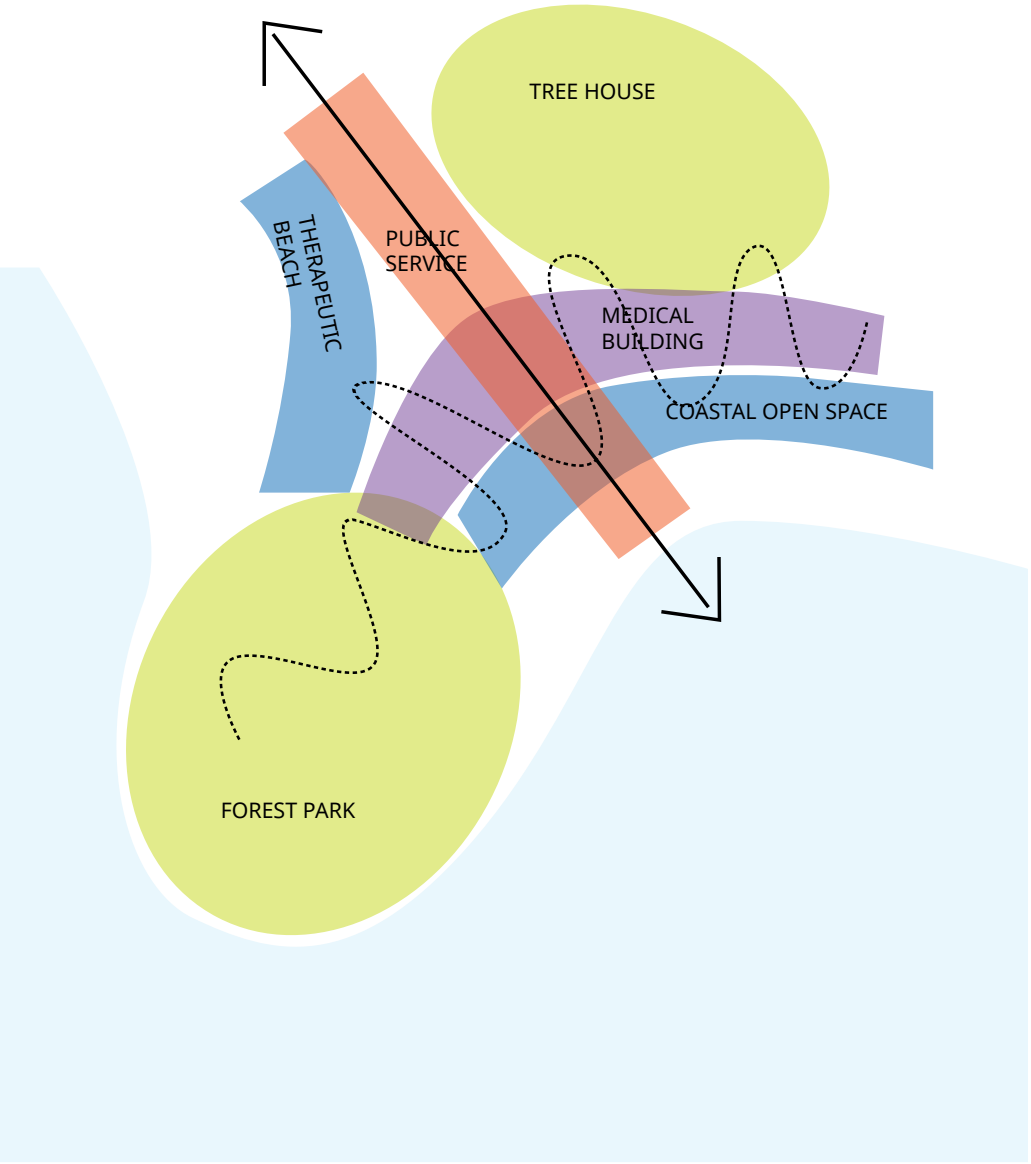


Fig. 4.4 Proposed Plan Program Connection

4.2 Spatial Planning

To integrate the three major components of the site and better connect the site with the city, spatial arrangement is important. The spatial planning strategy is based on two factors: 1) Clarifying the historic/cultural spatial structure, 2) Emphasizing the presence of the landscape. The original campus buildings were designed in the curved shape that follows the axis and land form of the shoreline facing the old town Rovinj. The second axis, the spiritual axis that is perpendicular to and centered within the first axis, pointed towards the old town.

In the new planning design, the spiritual axis is extended to the north, connecting the campus with the newly developed residential district., Only one new building added along this axis, to fulfill the increased food and retail needs. This landscape is designed in a more formal way to reinforce the axis and create a spiritual experience of nature integrated within the buildings. A second purpose is to emphasize the presence of the west shoreline and expand the hydrotherapeutic landscape, with complex therapy features, such as a physical therapy swimming area, tide pool, leisure and wandering pathways.

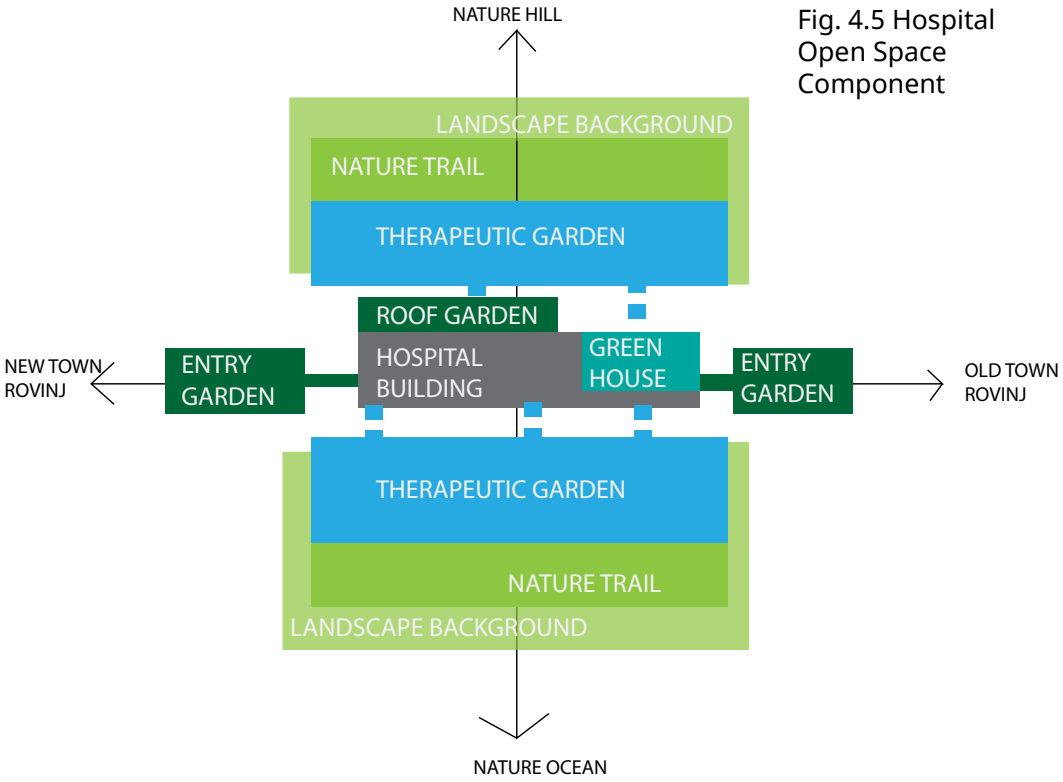


Fig. 4.5 Hospital Open Space Component

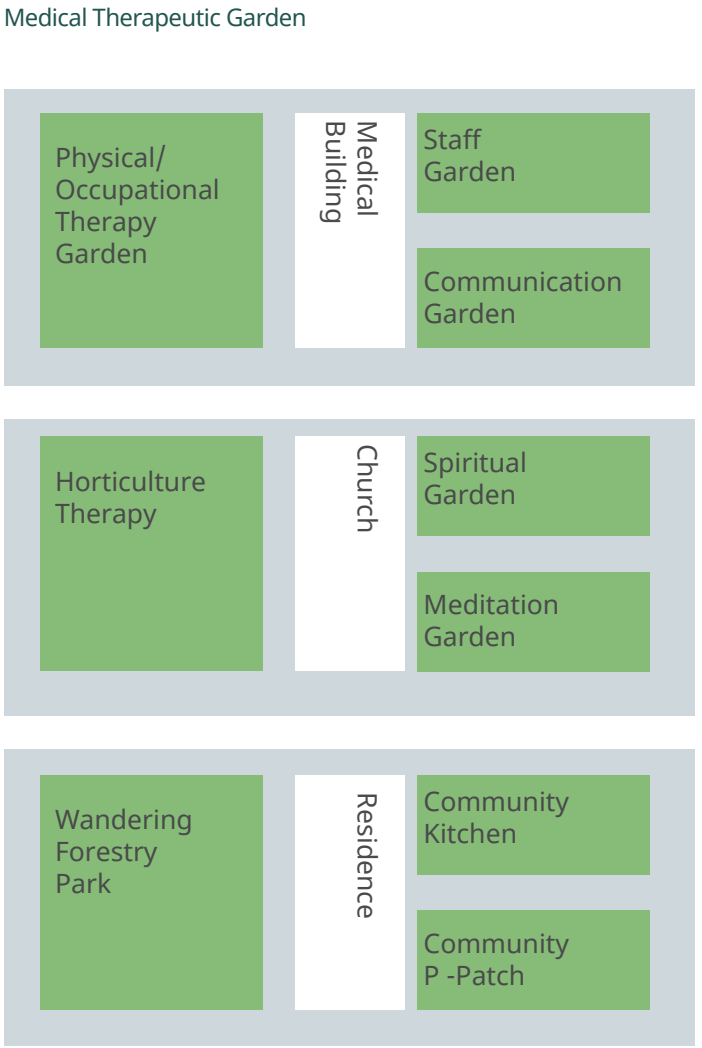


Fig. 4.6 Hospital Accessible Healing Garden Program

4.3 Hospital Environment Planning

By clarifying the spatial structure, the design focuses on exploring how to plan and create a healthy, therapeutic hospital environment. The therapeutic design principles used have been referenced from Clare Cooper Marcus's research and the book Healing Gardens (Marcus and Barnes, 1999). As the literature review stated, Marcus summarized the fundamental elements needed to improve the hospital users therapeutic experience. This design approach integrates Marcus's findings on hospital environmental design into the Martin Horvat Hospital's physical environment and builds upon their resources, to transform the environment into a contemporary healthy hospital environment.

Diagram shown in figureX illustrates how the hospital is composited from outside to inside, large scale to small scale.

The arrangement incorporates the following landscape elements: Borrowed Landscape – Nature Preserves & Trails - Landscaped Background – Entry Garden – Plaza – Landscaped Grounds– Healing Garden – Meditation Garden – Viewing Garden – Atrium Garden– Roof Garden/Terrace.

4.4 Circulation System

For this planning stage, with spatial structure and hospital composition clarified, the planning design moves to a more practical focus, the circulation solution. In this section, this thesis explores the circulation system as a transportation system, including accessibility from outside the campus and inside the campus. The detailed design responds to the needs of the hospital users, and the improvements suggested by the interview with therapist and scholar Amy Wagenfeld.

4.4.1 General

First of all, this project transportation system with the city is problematic, as it analyzed in chapter three. Sharp and multiple joint with municipal road, lack of enlarged entry place, lack of organized pedestrian and vehicle pathways.

The overall transportation planning strategy is to 1) simplify

Fig. 4.7 Main Campus Model

the original east entrance circulation, the connection between campus and city road. 2) Add new entrances and roads on north and northeast side, connect the campus with the newly developed city roads. 3) Add entrance garden, that create comfortable and safe pedestrian walking experience. 4) Reclaim a clear, efficient vehicle transportation system that provides daily use, emergency use, parking and loading. 5) Recreate an friendly walking system, that brings people safe and comfortable for walking, and connect with multiple open space, to reinforce the outdoor spatial structure.

Fig. 4.8 Proposed Circulation Analysis

PEDESTRIAN

Public

Temporarily close for physical therapy

Semi - public

Private

VEHICLE

Public

Private

Public Parking

Private Parking

SHIP

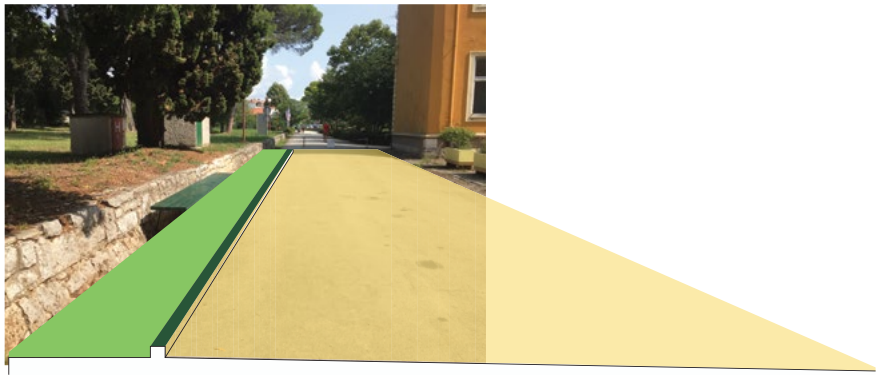
Public

Private

4.4.2 Infrastructure & universal design

Considering this is an hospital campus, universal design, ADA accessibility needs to be addressed. Although there are many publications and manuals for practical design, but there are some improvement can be made, based on current modern hospital environment development. According to the interview with Amy Wagenfeld, the improvements are as follows:

1) Pathways needs to be wider than 66 inches, that allows 2 wheelchairs to pass at the same time. 2) Pathway needs to add edges, that helps blind people to define space, increase safety for wheelchair user. 3) Add rest pocket areas, that allows people to have some rest easily. 4) Increase pavement design, helps people stay on track, and reduce people fatigue from walking. 5) Add distance signs, that helps people have an general idea about the distance to different places.



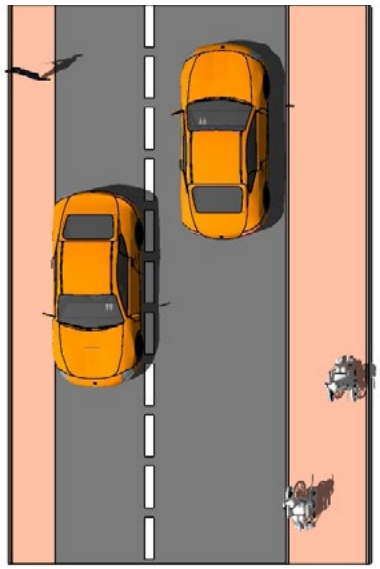


Fig. 4.9 Revised Historic Road

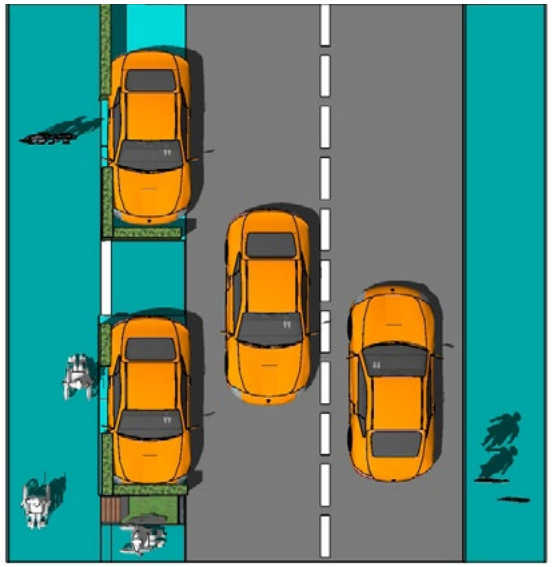


Fig. 4.10
Proposed Road

Fig. 4.11 Master Plan Design

5. HISTORIC PRESERVATION DESIGN

5.1 Site Survey

5.2 Preservation Zoning

5.3 Preservation Interventions

5.3.1 Restore

5.3.2 Rebuild

5.3.3 Added

5.3.4 Alter

5. HISTORIC PRESERVATION DESIGN

This chapter explores the boundaries between the historic, the present and the future, based on the evidence of the hospital site survey. The value of historic significance in each part of the site, and the evidence supporting the degree of intervention, as well as a critical stance for restoration, provides the basis for design decisions. We need to consider not only the site but also ideas and concepts that guide design, when we answer questions such as: 1) when we preserve the complex physical historical environment, what are we preserving for; 2) what is our narrative in a contemporary context; and 3) what message, and in what form, do we want to pass the site on to the future?

5.1 Site Survey

Before any physical environment intervention decision-making, considering the sensitivity and vulnerability of historic environment, it is necessary to conduct a thorough site survey that specifically focuses on issues of integrity and authenticity. The analysis chapter (Chapter 3) showed that this site is complex and has historic preservation issues at different scales, from the historic site, to the environment, to the architecture. In general, the site has not been altered in use or divided into parts, and the volume of new added construction is small; therefore, the site has a high level of integrity. However, because the materiality and evaluation standards for architecture and for cultural landscapes are very different, each requires a different method of evaluation. This thesis is focused on the landscape environment; therefore, the survey focuses on evaluating the historic landscape environment (Fig 5.1).

5.1.1 Historic integrity

As the literature review discussed, determining cultural landscape integrity requires focusing on the physical environment using an evidence-based evaluation. For the historic cultural environment study, for this site, this thesis evaluates the degrees of integrity as follows:

High: Has retained the entire footprint, including most of the original material such as paving, furniture, facilities, and vegetation; have supportive documentation.

Medium: Has retained most of the original footprint, many of the original materials, and have sufficient documentation for restoration.

Low: Has retained only some of the original footprint and material, but has lost some of the original landmarks, cultural landscape features; have some of the documents for study of the past physical environment.

5.1.2 Historic Authenticity

This thesis evaluates the site's cultural landscape authenticity by addressing the changes between original user experiences and current user experiences. The planting is one of the main components of the landscape and it has a dynamic character that changes over time. This thesis evaluates the original experiences, based on the historical documents, to understand what was the original landscape design approach, what was its significant place character, and does the current vegetation give an age value to the place, or does the current vegetation lack maintenance and sustainability that undermine the historic original experience? Therefore, the cultural landscape authenticity can be similar to, or different from, the site integrity.

High: The landscape structure is preserved in good condition, the experience of the place is close to the original, and the aged built environment and the growth of planting gives a value that reinforces the experiences of the place.

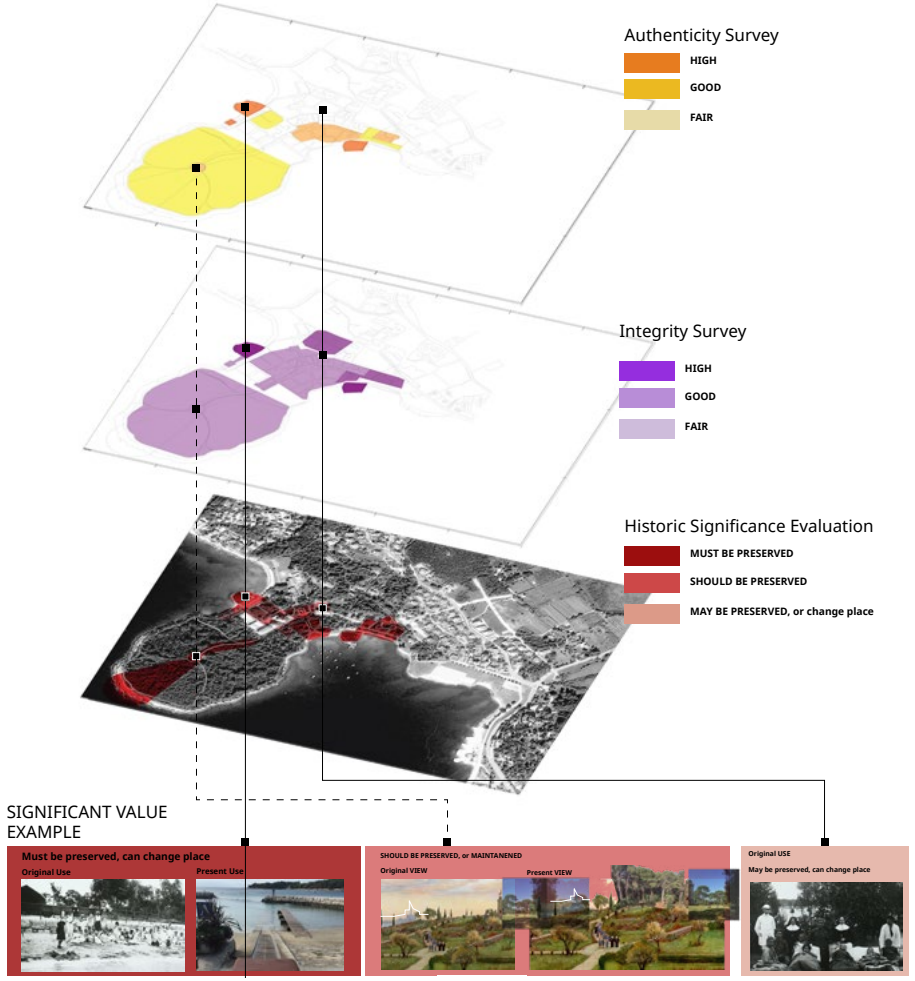
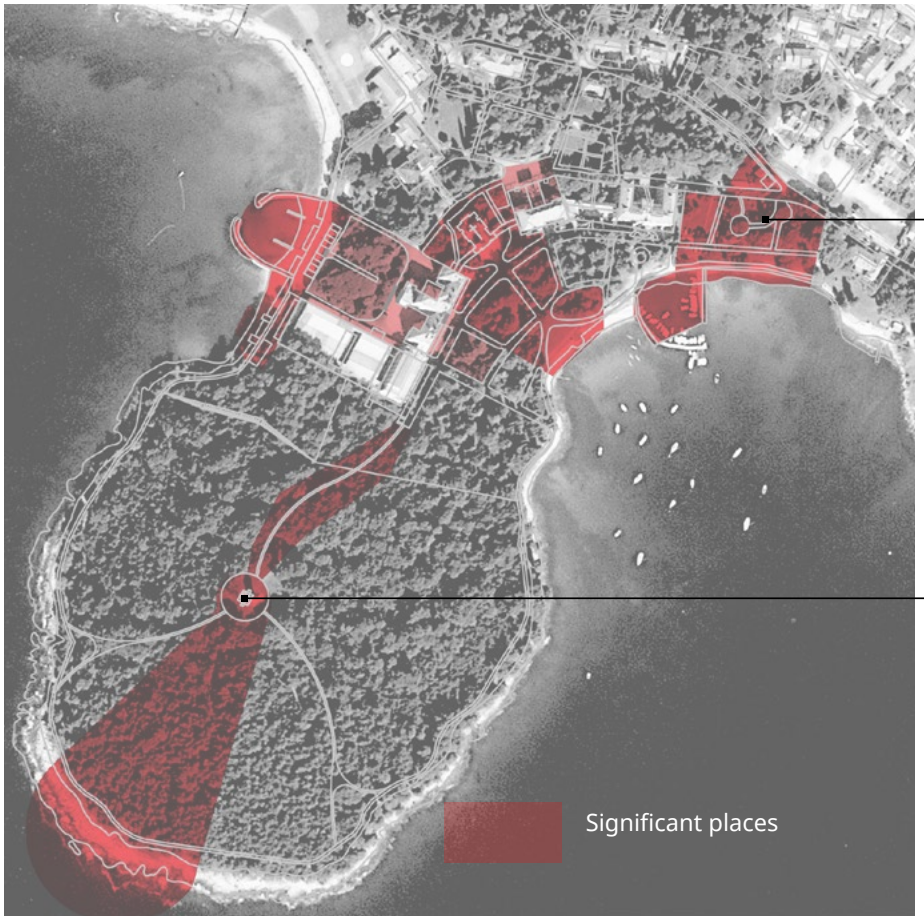


Fig. 5.1 Site Survey

Medium: The landscape structure preserved in good condition, the experiences of the place might be changed, but they share the experiences of the past; the vegetation and built environment might be changed, but have the documentation and possibility for restoration.

Low: Place identity lost, landscape features changed; no documentation to restore or recreate past landscape.

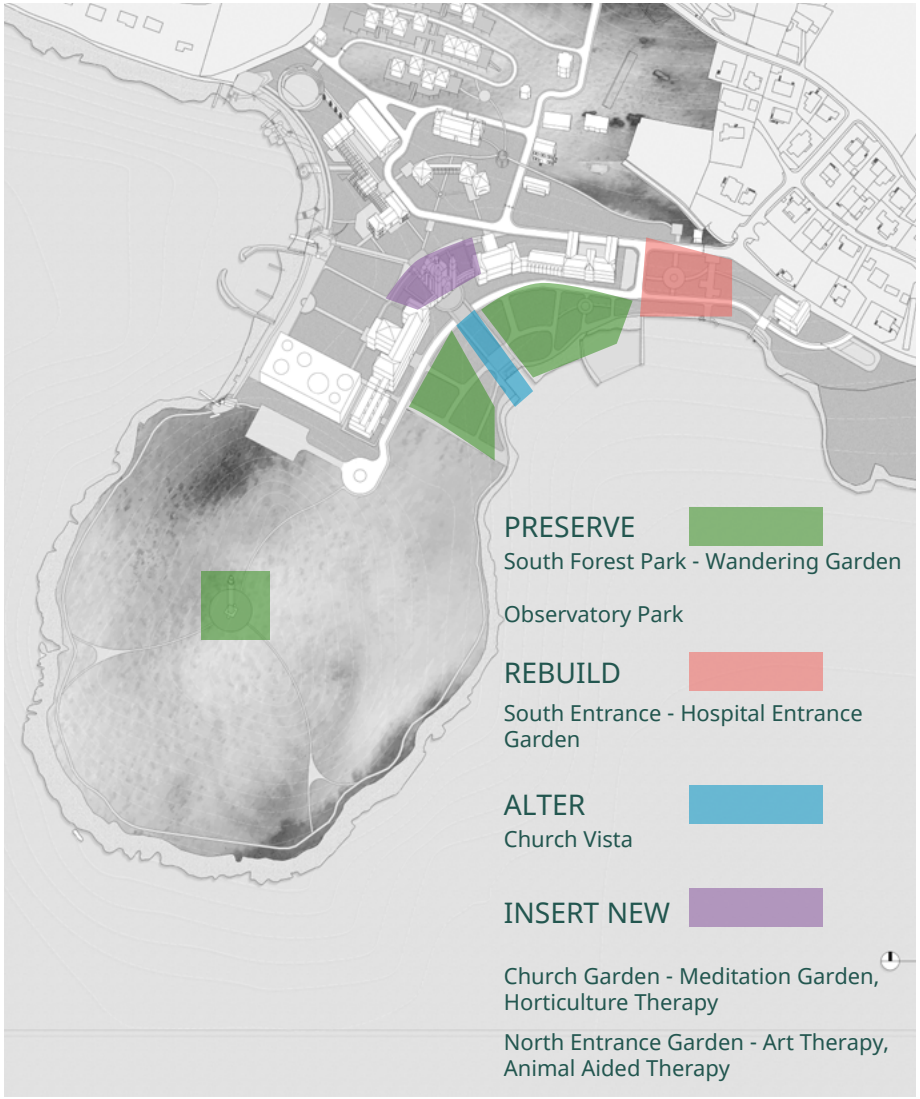
Fig. 5.2 Historic Significance Analysis



Lost Place

Experience Changed

Fig. 5.3 Historic Preservation Plan



5.2 Preservation Zones

Based on the survey, a historic cultural landscape boundary can be drawn into two locations: a general area, and a highlighted core area. The two boundaries divide the hospital campus into three zones, emphasizes the temporal context of the physical environment, and clarifies the experiences of past and present. Places that are part of the site, but outside the boundary, can be designed in a new and different vocabulary that contrasts with the historic environment. The paving materials, the facilities such as rails and outdoor furnitures, the vegetation planting design can all be different from the historic area.

5.3 Preservation Interventions

In this section, the thesis explores the methodology and degrees of intervention to reclaim the authentic cultural landscape experiences in the historically significant core zone.

5.3.1 Restore

-South Forest Park

According to the landscape survey, the south forest park has high integrity, medium authenticity, and medium historic significance value. The vegetation and planting have been almost preserved, but the current vegetation lacks maintenance, so the sublayer has grown wildly, making it hard for people to walk and engage with the forest. The original purpose, as well as modern medical science study, indicates that people gain stress relief, emotional restoration, physical rehabilitation benefits just by walking in the woods for as little as five minutes. Therefore, based on the evidence about historic value as well as health value, the forest walkway needs to be restored. The sublayer of the woodland needs to be maintained, and paving and sitting and other related rehabilitative facilities need to be added, making this location better for staff, patients, and public to enjoy.

Fig. 5.4 Forest Park Urban View Corridor Restoration

Fig. 5.5 Forest Park Overview

5.3.2 Rebuild

-South Entrance

The historical documents show that there was a entrance on the southeast part of the site. However, only a limited footprint remains. The integrity value is medium, and the authenticity is low, but the historical significance value is high, because the entrance gives people their first impression of the historic hospital. This entrance does not just connect the campus with the city, but also connects the campus with sea. According to Clare Cooper Marcus's theory, at the entry, the view of nature is valuable for the hospital environment. The south entrance garden needs to be rebuilt to represent the authentic historic

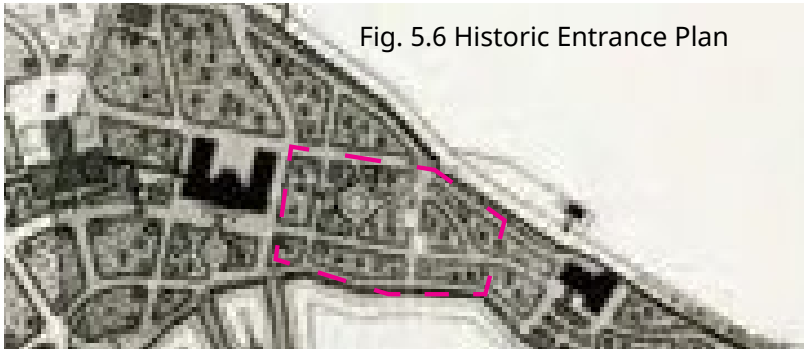


Fig. 5.6 Historic Entrance Plan

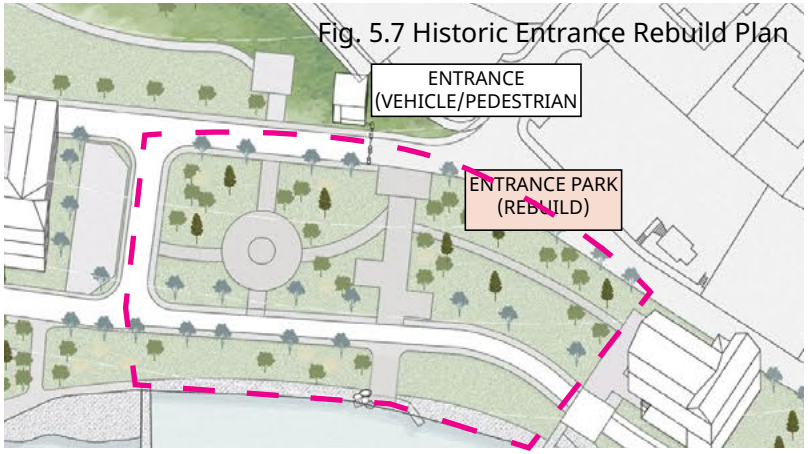


Fig. 5.7 Historic Entrance Rebuild Plan

Fig. 5.8 Historic Entrance Rendering

5.3.3 Added

-Church Garden

Currently, around the church there is a garden, but only with some trees, wild shrubs, and plain ground. The open space for the church is historically very important. However, today's church is partly hidden in the shade of the trees, and its façade is aging and immersed with other historical classical buildings nearby. The original design was based on a small church that was adjacent to the east side of the hospital, on the highest point of the hill and facing the site; this is the oldest building in this area. In the 1920s, in order to improve patient and staff spiritual experience, the new church was built. Although the authenticity and integrity is low, the historical significance of the church garden means that it should be rehabilitated to strengthen the integrity experiences of this location.

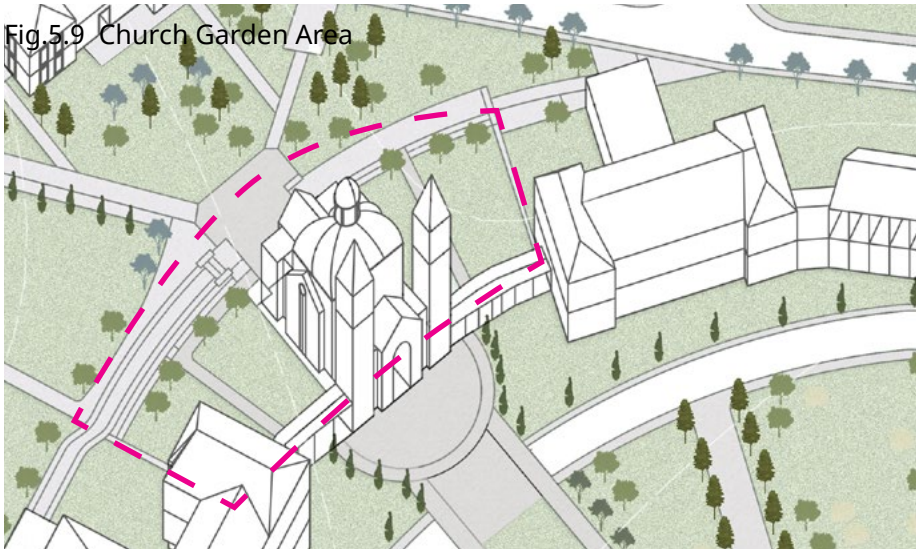


Fig.5.9 Church Garden Area

Fig. 5.10 Modern Therapeutic Garden, Stenzel Hospital, Portland, USA. Source:Daniel Winterbottom

Fig. 5.11 Medieval Therapeutic Garden , Giardino della Minerva, Italy, 1300 A.D. Source: http://www.cielomareterra.org

Based on the limited evidence available, this thesis proposes rebuilding the form of the church garden. But the historical planting is unknown. Considering the history of therapeutic gardens, that is, their origins as herb medicine church gardens, rebuilding a therapeutic church garden that creates an authentic experience of a historic herb garden is a reasonable design choice. To make this garden accessible for various people to experience, a minimum modern ADA accessible design and with the horticulture therapy service facilities must be included as modern healthy environment modification.

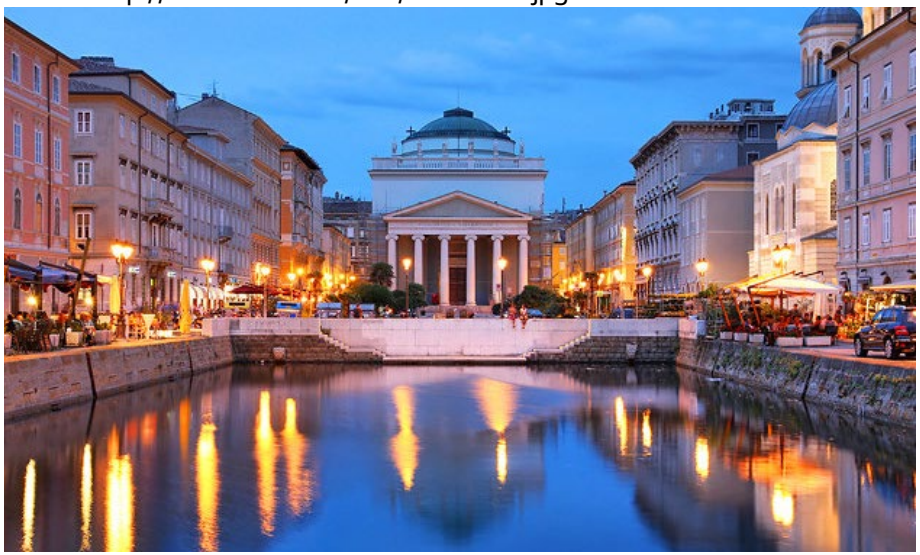
5.3.4 Alter

-Church Vista

The church was designed as the central components that ties the two axis together, and pointed to the Old Town Rovinj, corresponding with city context. Today's church's fore ground has been block by the trees, it is hardly to tell there is a church and a pathway that directly connect the church with the waterfront and Rovinj. Therefore, in order to reinforce the spiritual open spaces and integrate the ocean, the city view and the church together, to better understand the spiritual context, this thesis suggests alternation to reconstruct the

Fig. 5.12 Classic Waterfront in Istria, Piazza dell'Unità d'Italia, Trieste, Italy
Source: www.1843magazine.com

Fig. 5.13 Looking towards Chiesa Parrocchiale di Sant'Antonio Taumaturgo, Trieste
Source: http://bane.wikia.com/wiki/File:Trieste.jpg



sacred feeling of the church's open space, the original design intention from church to the waterfront to the Old Town Rovinj. Considering the authentic feeling of cultural landscape, this thesis looked into church-open space- waterfront classic forms around Istria area.

The design used the classic waterfront form to make a continuity spatial experiences from the church extended to the waterfront. The classic form includes a walking path, a plaza with a vista of the Old Town Rovinj, and a U shaped waterfront, introduce the sea to the site.

Fig. 5.14 Church Open Space Plan

Fig. 5.15 Church Open Space Model

6. THERAPEUTIC LANDSCAPE DESIGN

6. THERAPEUTIC LANDSCAPE DESIGN

The power of natures curative powers and health restoration are addressed in the literature review. This thesis demonstrates that the integration of a healing landscape theory, with the existing landscape resources of the site, and applicable patient needs t suggest that the future development of the hospital site should include additional opportunities for healing gardens. A system of therapeutic gardens would supplement other therapeutic strategies that support the hospital's goals, quality of care and vision. Therefore, this chapter describes the design strategy and the degrees of the spatial scale, from a more functional and human activity scale – the therapeutic gardens, to the more abstract, landscape dominant scale the shore and the forest.

Fig 6.1 Therapeutic Garden, Portland, Oregon

6.1 Therapeutic Garden

In this section, therapeutic garden means a garden designed to facilitate therapeutic practices, and restorative activities. Usually, a therapeutic garden overlaps with different therapy applications, including physical therapy, occupational therapy and psychological restoration. Depending on the focus of

6.1.1 Therapy garden

The therapy garden is focused on facilitating professional therapists with their daily work, primarily focusing on physical therapy and occupational therapy. According to the methodology of physical therapy and occupational therapy, most differences are based on the way of treatment, but the physical environments are similar. Therefore, in this thesis I define the therapy garden as one that primarily serves

Fig 6.2 Outdoor Therapy,
Source: Daniel Winterbottom

occupational and physical therapy daily treatments. The therapy garden is located on the west side of the church, on grounds surrounded by indoor therapy swimming pools, a physical rehabilitation building and medical care building.

According to the literature review references, case studies and the suggestions from interviews with local therapists at the hospital and American occupational therapist, Amy Wagenfeld, the therapy garden should address the therapies in the following ways: 1) Movement practice pathways. A movement pathways needs changes of elevation accessed by slopes and/or stairs with rails to address those with mobility, balance and coordination challenges. A well designed movement practice pathway should include various patterns and materials of pavement that can help with visual awareness and challenges of differing textures. Resting areas are required along the practice pathways. 2) Working table. The therapist needs working tables at differing heights. Different sizes of the working areas needs to be included to respond to the differing therapist needs such as working tables for groups use to individual tables. Trees should be included to provide shade, decrease noise, and help people to focus. 3) Planting aided facilities. Using vertical and horizontal planting structures can help people engage in occupational therapy and stimulate patients' motive for specific arm and upper torso movements. The designed structure must serve those in wheelchairs and the planting species should be considered for their attraction features and sustainability.

Fig 6.3 Horticulture Therapy,
Source: Daniel Winterbottom

Fig 6.4 Horticulture Therapy,
Source: Daniel Winterbottom

Fig 6.5 Wandering Garden
Source: Daniel Winterbottom

Fig 6.6 Community Garden Plan

Fig 6.7 Community Garden, Chicago, USA
Source: http://landscapevoice.com/gary-comer-youth-center-green-roof/

6.1.2 Community garden

Community gardens serve in-patient daily and festival use and are located on the north side of the main building axis, and south side of the tree house areas. 1) Urban farming garden is designed for the residents, to grow their own food. Planting beds are designed for use by those in wheelchairs, with varying heights for different people work and also for occupational therapy. 2) Community Kitchen, contains a pavilion that provides shelter for all season use, and outdoor picnicking, dining, kitchen, with tables at varying heights and storage that is accessible for all people; 3) Community open space. These are big open spaces, for large community activities, festivals, and small open spaces for more intimate human communication. The community garden stimulates spontaneous community activities, through the design of corridors, shelters, and pavilions for all-season use. Farming is a form of horticulture therapy and occupational therapy,. Hence, the seasonal vegetation, community activities, and festival activities helps people strengthen their individual temporal sense as well as a sense of group and cultural temporal context connection (Lynch, 1972).

6.1.3 Wandering/Viewing garden

The wandering garden is used for walking, relaxing in, and for viewing nature. For this project, there are several locations on the site, that utilizes the original woodland resources. For wandering garden design, several design strategies need to be addressed:1) comfortable walking pavement, 2) resting areas sited regularly along the path, 3) seating area,s that stimulate different people to communicate: wheelchair, walker and others. 4) Redesign the under-story vegetation that needs to be renewed, to increase the biodiversity and assist people to engage with a complex natural context, and increase this areas identifiability. 5) Create focus point in the rest area. 6) add some physical practice facilities, to reinforce daily physical therapy activities, that patients can use on their own.

6.1.4 Meditation garden

According to the literature, simply walking in, or exposure to nature is very efficient for mental restoration and stress relief. It has been demonstrated that patients with the view of nature had shorter surgery recovery times, and staff spending time in nature, had significant reduction of stress and ultimately reduced work place errors (Marcus, 1998). Gardens designed for reflection, remembering, psychology restoration and to comfort one experiencing loss and/or stress, I have for this thesis categorized as meditation gardens. Although the features for meditation gardens are similar, in this project and based on the user types, I have provided two types of meditation gardens. 1) One type is for staff only. Medical professionals have a high degree of work related stress and a high depression rate. Therefore, I have designed small meditation gardens serving the hospital staff. These gardens are small, close to the buildings, and only for use by the staff

Fig 6.6 Staff Relax at Therapeutic Garden

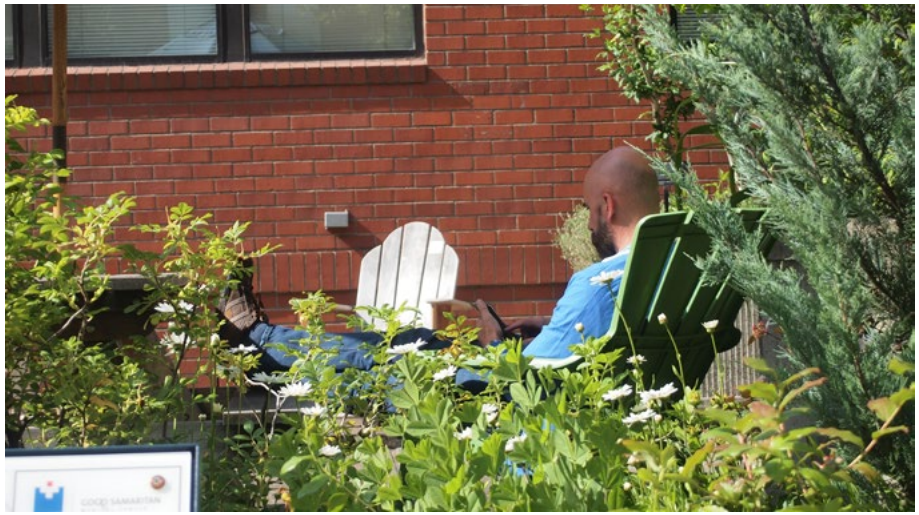
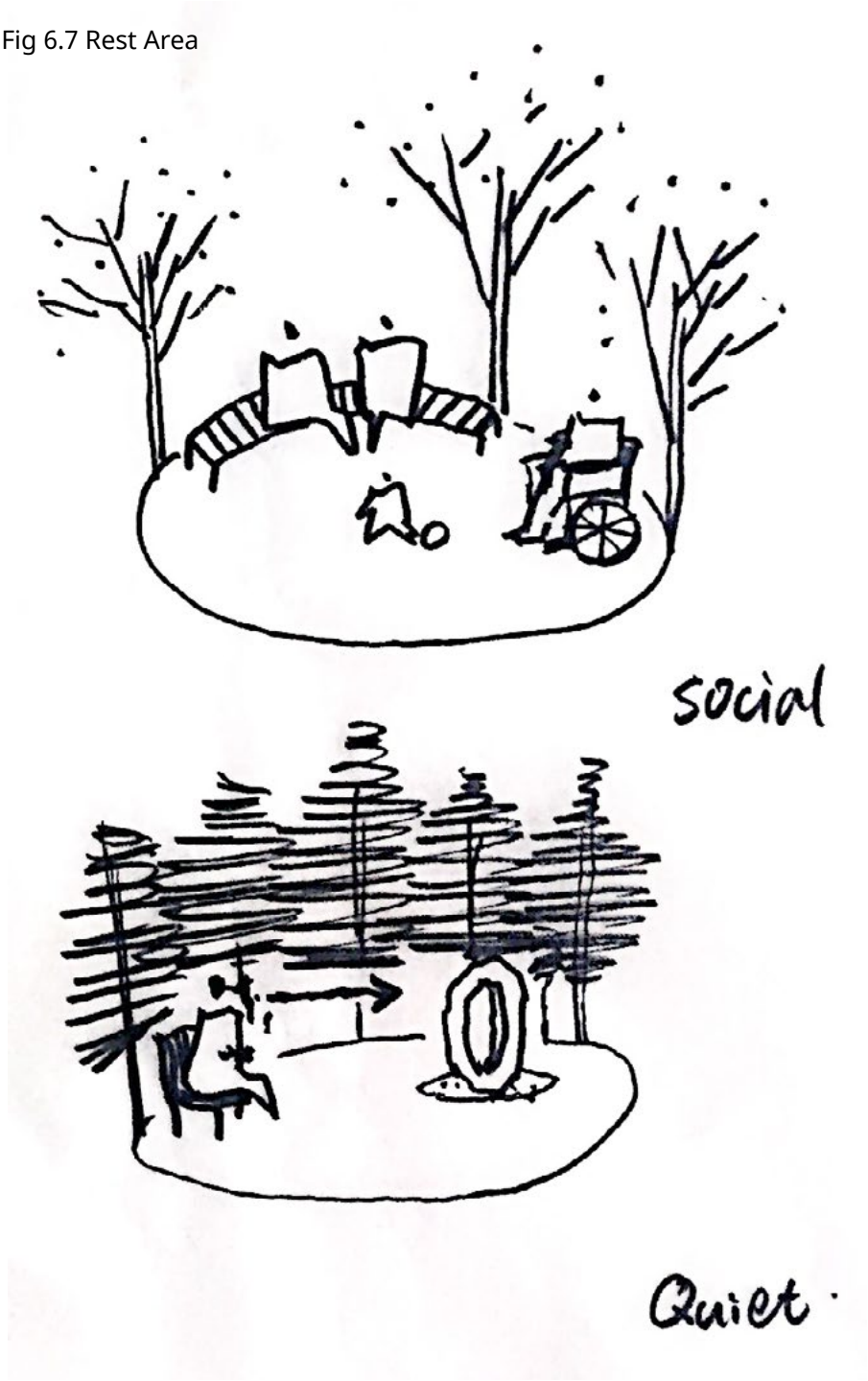


Fig 6.7 Rest Area



2) Public meditation garden. This type of garden serves everyone on site, and uses existing natural landscape resources. For instance, on the south shore area, there is a meditation garden extending from the church, that borrows the spiritual context created by the church, and is integrated with the nature –the shade of trees and the sound and views of the sea. All these elements together create a solace that supports healing. There are other meditation gardens, with less artificial elements, especially when compares to some of the other gardens that contain many specific therapy facilities, the meditation gardens are simple, quiet, that comfort people's in times of distress.

6.1.5 Sensory garden

The sensory garden uses different living materials to stimulate user's sensations. There are many different types of sensory gardens designed for specific users, including the blind, deaf, seniors, children, an so on. One aspect of this hospital is to provide rehabilitative therapy for senior patients. Therefore some basic features can be addressed: 1) reflexology path. After consulting with a hospital therapist, a special textured, paved path is desired for reflexology therapy. 2) Fragment

planting. Plants with aromas can arouse people's positive sensors. The planter should be designed for ADA so people can easily interact with plants. 3) Sound attraction. Sound can be applied in sensory garden. The design should consider different sounds related to nature, for instance, white noise created by the windy pine forest, the rain, and the art installation.

6.1.6 Art Garden

Art-aided therapy can be integrated with outdoor environment. This project recommends the reuse the abandoned historic building for art and crafts building, locate on the northeast side of the site, close to the old north entrance. The art garden can be used for art therapy, wandering/viewing, and occupational therapy. Several elements need to be addressed: 1) Art installation. Art installation can be a cooperative arrangement with local artists and craftsman, that will enhance the beauty and interest within the garden, stimulate people's emotional responses and the interactive movements with specially designed artworks. 2) variety of working table heights that allow people with different disabilities to engage in outdoor art workshop activities.

6.1.7 Animal – Aided garden

Animal-aided therapy is very helpful for some diseases. For instance, therapists using horses to help children with emotional and movement disorder problems in an effort to improve their focus and body control abilities. Including the in-patients and therapists with the management of the animals, the animal-aided therapeutic garden is located on the northeast woodland, close to the proposed new north entrance and current warehouse. The detail design of this garden requires collaboration work with an occupational therapist.

Fig 6.8 Animal Aided Therapy
Source: Rush University Medical Center

6.2 All Season Use

This hospital is heavily used and at full capacity during the summer. However, since the winter weather is rainy, windy and cold, it is less attractive compared to the summer. Many people chose rehabilitative hospital in adjacent regions, Austria, Switzerland, and Slovenia in the winter. All of these countries have a very good reputations and long histories of health tourism. Therefore, this hospital needs a competitive program to attract people for all-season use. Winter is the most challenging season.

6.2.1 Fire pavilion

The fire pavilion is located on the joint point of spiritual axis and the residence public spaces (Fig. 6.10). Located next to the powerhouse and loading area it has easy access for residents and staff. The fire pavilion uses the idea of Japanese traditional architecture, removable exterior walls for all season use (Fig. 6.9). In winter it is used as an closed indoor fire room, where people can enjoy the feeling of warmth and the view of the sea. In other seasons, it can be partially or fully opened and serve as a fire pavilion for events, or as a shelter that provides shade for people's daily use.

Fig 6.9 Fire Pavilion Rendering

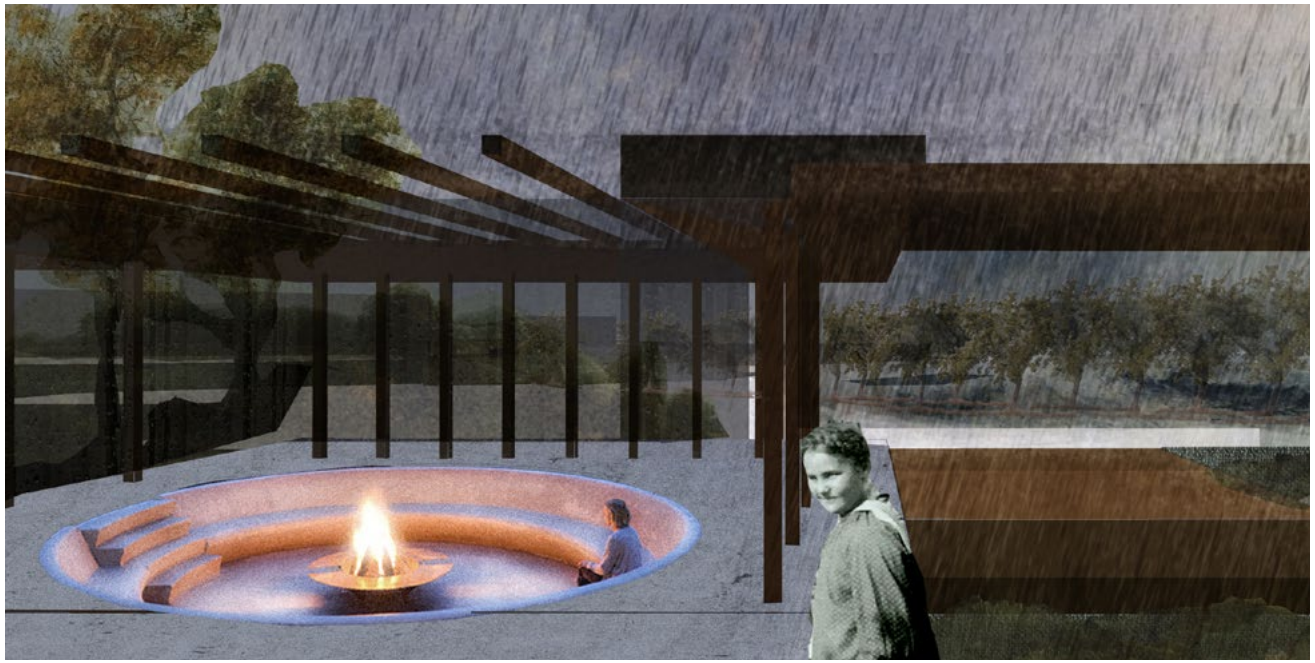


Fig 6.10 Fire Pavilion Plan

6.2.2 Tree house

Tree-house is new in-patient housing located on the northeast hilly woodland (Fig 6.11). Tree-house, preserves the landscape and builds on the idea of immersion with the nature. The residences provide a 24/7 nature experience. Trees serves as the surrounding background and clearings within the forest provide views of the sea is its front view. Moreover, hot tubs offer therapeutic bathing and skylight windows let in natural light. Individuals can enjoy differing degrees of therapeutic landscape, from waking up in the woods, to viewing the sea to bathing in the spa.

6.3 Therapeutic Beach

The therapeutic beach is the signature therapy resource for the hospital. The current sea therapy swimming pool was built in 1920s, and restored in 2015. An electric bed, sea water monitor and screen, rail, and several other facilities has been added to better serve the patients with aqua physical therapy. With the booming of health tourism, more therapy pools and other facilities needs to be addressed. In general, the shore needs to upgraded into a fully designed and functional therapeutic beach. Fundamental elements are as follows.

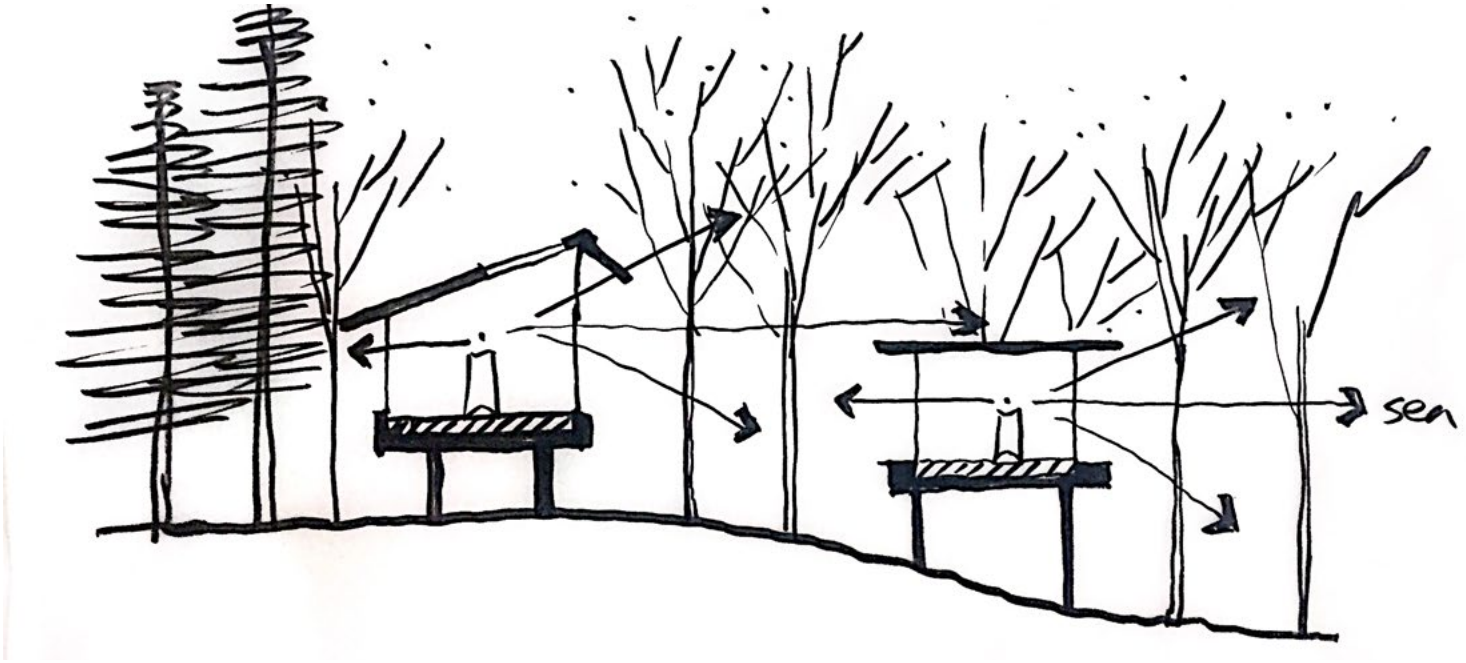


Fig 6.11 Tree House Concept

Fig 6.12 Shoreline walkway rendering

Fig 6.13 Shoreline walkway Plan

6.3.1 Therapeutic pool

More therapeutic marine swimming pools need to be added, and ideally serve different communities and offer new therapy treatments. Therefore the detailed features of the swimming pool also requires collaborative design with physical therapist and occupational therapist. Because it is close to the historic swimming pool, the relationship between old and new must be addressed. Functionally this thesis proposed several different types of swimming pools: 1) tide-pool. Tide-pool collects tidal seawater for bathing and to feel the tides. Tide-pool not only offers a different marine experience as the tide cycle repeats, it has a temporal context that benefits people's recognition of time. 2) children swimming pool. Although the majority of the hospital's patients are seniors, there are children receiving medical care. The original hospital purpose was for children's rehabilitation and a children therapy pool needs to be brought into the campus that demonstrates how modern health and design support children's marine therapy. 3) Public therapeutic beach with ADA accessibility. Responding to the public shoreline regulation, and emphasizing the site's characters, beach with seating, ramps, and rails to help all people swim or interact with salt water is recommended.

6.3.2 Shoreline walkway

The shoreline walkway emphasizes the presence of the shore landscape, and integrates nature with buildings. Meanwhile, it provides a pleasant walking experiences, that connect the therapeutic shore with different site destinations. It provides a comfort zone for people walking, wandering, and relaxing.

Fig 6.14 Interview people using forest park

Fig 6.15 Add Rest Areas

6.4 Natural Landscape Trail

Natural landscape trail shares some similarity with wandering garden, but it has a larger spatial scale. Therefore, all the design strategy for wandering garden are applicable to the trail design. Consider the length of trail, there are some element needs to be added: 1) Signs for walking distance and difficulties. Consider the variation of topography as well as walking pavements, it is necessary to set a series of signs that shows the difficulties, the length and facilities for the public. 2) viewing corridor. The south forest park has many potential view corridors, that connect the park with the site, islands, and the downtown Rovinj. Therefore rest areas sited for vistas needs to be added. 3) Sunbath gap. The forest park has a heavy vegetation, that creates a shady and closed feeling. In terms trees health, as well as for human needs, sunbath gaps inside the forest park should be designed. The location and area needs to be considered with trail routes, view resources, and the trees health situation. Ideally the design should include a team member with aboriginal ecological expertise.

7. INTEGRATED CAMPUS

7.1 Within the Historic Area

7.2 Boundaries between Historic and New

7.3 Overall Design

7. INTEGRATED CAMPUS

The therapeutic landscape of the Horvat Hospital has been planned and designed that covers the entire site. From the perspective of specific therapeutic use to general public health, and from small gardens to forest park, the proposed landscape relies on contemporary health-environment theory, and draws on ideas of collaborative design. Therefore, its contemporary character may conflict with the historical cultural landscape. This chapter explores the integration of the campus: how to plan and balance the overall campus landscape between old and new?

7.1 Within the Historic Area

In the historic core, the landscape is very sensitive. The primary issue for preserving the historic site, as this thesis discussed in Chapter Five, is to preserve the historical authentic experience of the place. Therefore, in terms of keep the integrity of the historic experience, modern facilities need to be added carefully. The new facilities should be limited to increasing the accessibility and therapeutic use for all kinds of people. The form and materials of the new insertions need to be simple, but also need to be differentiated from the authentic past. Thus, it keeps the modern as simple objective, intervention that not fake the old time, and minimizes its distraction for users' contemporary experiences of the context.

Places proposed for rebuilding based on with insufficient documents, needs to reference a similar cultural landscape to the past. For example, the church garden should be based on case studies that focused on Mediterranean historic therapeutic gardens, to create an authentic experienced historic church therapeutic garden. The garden can have historic features, modified with rails, wheelchair interactive green walls, limited slope, and horticulture therapy working tables. In this way, the historic garden welcomes all, to experience the cultural landscape. Hence, the historical context can be used for occupational therapist as an special temporal context settings, that better facilitate their professional works.

7.2 Boundaries between Historic and New

The boundary between the past and the present is very sensitive. It is the space between the historic past and the

new environment. The historic side of the boundary should be follow the restoration rules and its original layout should be preserved. Moving towards the modern side, this thesis suggests to use plants to define the place identity. Considering that the hospital requires a restorative environment, the design uses nature and living material to provide the benefits for well-being for patients and visitors. This design suggests instead of following the classic methodology, of using modern and simple forms to contrast with the historic monuments, to make the past present instead, by using planting as an soft transition, that contrasts with the formal, classic, dominant historic site order. Therefore, the contrast is mild, biophilic, but also makes the new distinct from the past. Planting and landscape become the media that connect the past to the present and point towards the future.

7.3 Overall Deisgn

The overall design integrates new and old. The core area is the area where preservation is the dominant approach. In the out side area the design can be relatively new. The intermediate area, using planting, series therapeutic open spaces as an soft transition spaces that facilitate the therapists professional practice, as well as a restorative place for people to communicate, and to relax.

8. CONCLUSION

Fig 8.2 Dr. Martin Horvat Hospital Master Plan Model

8. Conclusion

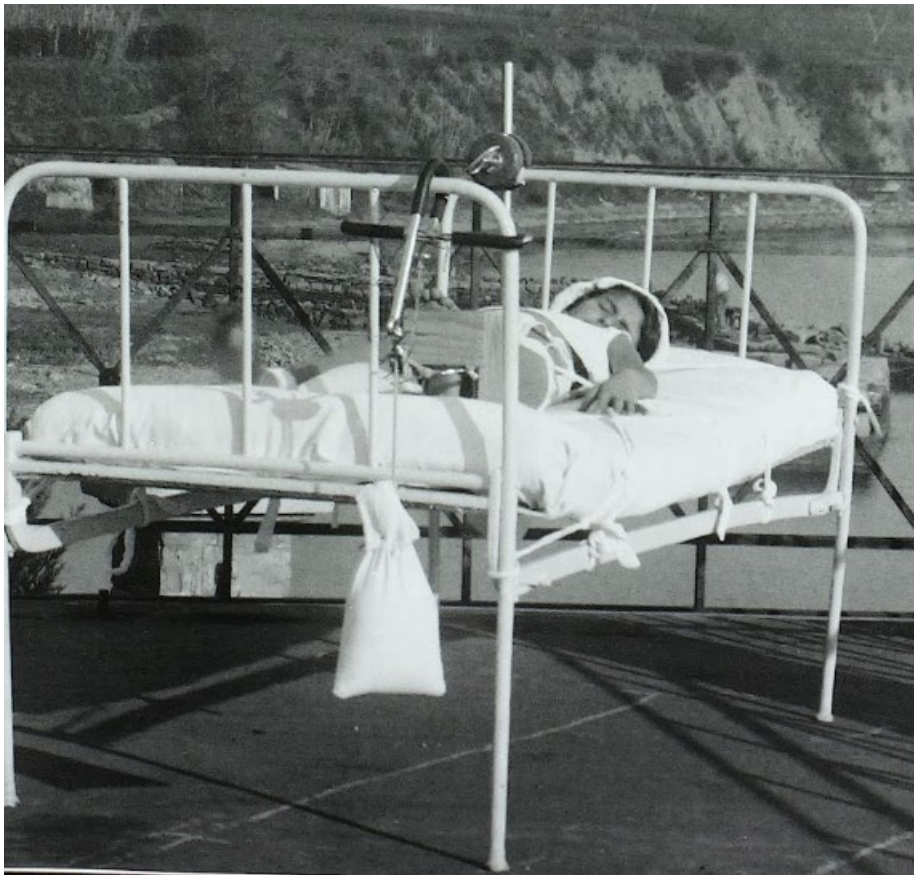


Fig 8.2 Nature Exposure, 1920, Dr. Martin Horvat Hospital
Source: Dr. Martin Horvat Hospital

In this thesis I have explored the meaning of a modern restorative healthcare environment and it can integrate the values of cultural landscape preservation by developing planning strategy and spatial design for the Dr. Martin Horvat Hospital, Rovinj, Croatia, a site that has been a hospital for more than 100 years.

By studying the latest theories of therapeutic healthcare environments, case studies of therapeutic gardens, interviews with an experienced therapist and employee from the Dr. Martin Horvat Hospital, I was able to create a responsive proposal. The design also considers the historic and current domestic and international healthcare contexts for the development of this hospital. In this thesis I have developed the overall planning strategy guided by the following ideas: 1) A complete restorative health environment system including the following elements: a natural landscape background setting, borrowed views; entry garden; plaza; courtyard; terrace; greenhouse; therapeutic gardens; and community gardens. Among the natural landscape resources, the Horvat

Hospital has two distinctive elements: therapeutic beach and forest park. 2) An updated universal design by applying universal and ADA standards from the guidance manual. Several detailed features based on the interviews with experienced therapist were also developed. The improvement suggestions include: curbed sidewalks for the safety of those in wheelchairs and with compromised sight; accessible rest areas along the walking pathways; signage system that marks the length of the destination, and pathways of differing difficulties; 3) Therapeutic gardens. Based on the surrounding land uses, the design proposes different gardens with varying intentions, the gardens close to the rehabilitation buildings focus on occupational and physical therapy; gardens around the in-patient housing focus on community activities such as vegetable garden, outdoor kitchen and also for occupational therapy; art therapy gardens close to the entrance, meditation garden located around the spiritual spatial axis providing a spiritual and solitude, spiritual place; 4) A Restorative environment for employee health. The working conditions for medical staff are stressful and accessible gardens close to their places of work are important for stress relief, a window with natural scenes, a walking paths and resting areas situated in natural environments are restorative for employees and can reduce work related errors. 5) Public value. Public accessibilities have positive and negative values. A therapeutic landscape should welcome and celebrate the nature and life of all people. Integrating the public can also bring potential management problems. Visitors can dominate the therapeutic beaches and other facilities resulting in interference with the therapeutic practices. In this design I have used planting strategies to create a soft boundary that balances public and private access. 6) Sustainability: According to interviews with different hospital employees, sustainability is one of their primary concerns. This thesis addresses the problems of ecology sustainability and management sustainability. Ecology wise, this thesis suggests collaborating with an ecologist to restore the south forest park. Management wise, this thesis suggests balancing the budget between development and maintenance. The maintenance budget should be at least 3-5% of the total budget. An overly designed space will raise the cost, and too many details and elements might make people feel overwhelmed and increase anxiety.

This thesis also explored international and the United States

This thesis also explored international and the United States principles on cultural landscape conservation. International principles derive from the UNESCO documents, which are the primary instructions to be applied in European countries. However, the United States has a longer documented history of cultural landscape preservation. Contrasting the UNESCO documents with the US system gives a more solid ground for this site's restoration and renewal. Both the international and the US principles support cultural landscape restoration that is more open to alternatives in terms of ecological sustainability; thus, the approach to the South Forest Park of the Horvat Hospital's campus is restoration that creates a sustainable habitat. For places that have a strong cultural identity, historical authenticity is the primary issue. Restoration should be using various information (historical site remains, documents, and oral histories) to reestablish a concrete authentic experiential historic environment.

Finally, this thesis integrates historic cultural landscape preservation and modern healing landscape, by using natural aesthetics to create a soft interface, between the two core areas are primarily restored, while outlying non-historic areas can be designed with a contemporary vocabulary. This thesis integrates historic restoration practice with restorative health theory. An authentic historic environment contains a series concrete cues that can help people to reconnect to their memories. It can help with people with temporal disorders. Hence, an historic environment represents a place of the known and familiar to make feel people secure. Restoration of historic environment is a good metaphor that represents how we treat the past, the old, and so may be important to elderly patients especially. Although the link between the historic as a healing environment is still a hypothesis, there are memory studies in medical science that focus on learning mechanisms and temporal context development related to the quality of the physical environment. Therefore, this thesis advocates for collaborative teams that includes psychology, historic preservation, and therapeutic landscape professionals, to address the restorative values of historic and natural landscape for human health and wellbeing.

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