

**analysis of rehabilitation centers  
&  
concept of a meta- project for a center for the blind**

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# Abstract

This is an exciting time to be in the specialty of rehabilitation. Many new developments within the discipline make this a challenging and desirable field in which to work. Technological advances continue to push the limits and current knowledge. The area is booming, as rehabilitation includes many different types of patients, it is a process that can occupy from a couple of months till the whole life.

The philosophy of rehabilitation takes care of the patient's state of mind, it provides activities, educates people to be able for the daily living for themselves. It is a process of adaptation or recovery, it's program contains the regain of maximal function, restoration and independence. Rehabilitation "refers to services and programs designed to assist individuals who have experienced a trauma or illness that results in impairment that creates a loss function : physical, psychological, social or vocational" ( Remsburg & Carson, 2006, p.576)

The concept and principle of this field is to provide a way of categorizing or considering the major factors as adaptation, holistic care, chronicity, quality of life, coping and self-care.

The physical and emotional challenges that come with a disabling condition make a patient's experience Rehabilitation professionals understand that their role, no matter how great the contribution to the client's success, can only support and encourage strength and resourcefulness with the person.

The purpose of the research was to provide the reader with the current situation and give an overview of the development

of rehabilitation centers and structures for the blind. To understand blindness correctly and also to know how to educate or rehabilitate blind people effectively, one must first recognize the fact that blind people as a class are a minority in every negative sense of that term and that blindness is much more of a social problem than a physical one. The erroneous and negative public attitude about blindness rather than the physical condition is the real problem with which we must deal. From the time of infancy blind people have been taught that to be blind is to be helpless, incompetent, and inferior. Members of the general public have been taught the same thing, and in the evolution of things blindness professionals have also bought into this erroneous stereotype.

# I Introduction

*Happiness is nothing more than  
a good health and a bad memory.*

*Albert Schweitzer*

As an introduction to my research, I am going to present a brief story of types of recovery through the whole history. In my opinion, it gives a clear explanation of this field, which serious studies started less than a hundred years ago. Rehabilitation is a hard and very emotional process, doctors should be both attentive to a patient's mood and very strict and determined, I guess, it takes a great philosophic part, as it is rather a new sphere in the medicine but old and familiar around people.

The treatment of mental illness starts its history in 5000 B.C.E with trephination of skull. It was explained as a phenomena from "sorcery" so the method was to drill a whole to let the demons get out from the head.

This type of illness was known also among ancient Persians, however they were trying to hill it with personal hygiene and purity. The Egyptians also were searching for recovery through "recreational activities". Therefore, the Greeks stepped away from the superstitions and concentrated on studies of the body. Nevertheless, their methods were not much better than the skull drilling: phlebotomies, bloodletting, purging and diets;- this was a normal practice till Hippocrates proposed more humanistic treatments like changing the occupation and environment of the sick person.

For example, in China, the ill was staying out of the public eye. As describes Allison M. Foerschner, usually, families were hiding the sick person from the society, also they could simply abandon him on the street, or this person could easily finish in jail.

In the early 15th century appeared first constructions of madhouses and asylums for people with psychological disorders. There was a program ran by clergymen, it included church attendance and confessions. However, the asylums were famous for an incredibly inhuman treatment. Patients were abused to wear shackles and iron collars. A French asylum La Bicetre was known for its violence and unhygienic conditions. Only in the 18 th century, after protests like "Humanitarian Movement", the world of medicine started to rethink the treatment and made some reforms. Were created mental health centers, where patients "were protected from harm". Ought to say, that after the Enlightenment, the society all around the World became human. The treatment of people with "defects" became more generous. It was also reflected on philosophy, from Kant to Herder, who recognized "humanism" as the maximization on individual liberty, affirming the dignity of each human being.

There was introduced new question about blindness and it's nature. Nicholas Saunderson (1682-1739), a student of the University of Cambridge, despite being blind, he achieved high result and became the Lucasian Chair of Mathematics. Saunderson was also a follower of Sir Isaac Newton and truly understood his ideas.

In 1770's were opened two schools for deaf and blind in France. The inspiration came from a blind Austrian pianist Maria Theresa von Paradis. She had developed the tactile alphabet



and started to share the idea of reading with fingers with other visually impaired. Later were founded some schools in England, where the trade was the main subject. In Austria, in 1804 was based a school, where the blind students were integrated with other children. These three models were argued as people were trying to understand the role of the blind. However, in 1831 was opened the Perkins School in the United States that trained members to become independent and choose their own way in the world. In this period was a high practice of Bridgman language that was thought through spelling and raised type.

The revolution became with the method of Louis Braille, a student at the Royal Institute for the Blind in Paris, in 1820s. As a base was taken a system of Charles Barbier, a sighted French officer, for communication in the dark. The transformation allowed people to communicate without sighted intervention. Other ideas of rehabilitation, always met around the 18th century, were raised on the beverage. The human is a creature well-known for his weaknesses. From the first day of life, people are exposed to the environment and the society, which can lead to addiction to alcohol and drugs. The addiction of alcohol is the most famous addiction, that has been struggles against for centuries through different treatment and methods of healing. No one knows when this love affair with alcohol began. A Mediterranean model supposed to drink wine as an accompaniment for a meal, it was served even to children and

sometimes these dinners were reaching extremum point of a human behavior. Another type of drinking, based on grain, was the Germanic model that considered drinking away from the dining table. Till the Middle Ages monks brewed all beer of good quality and their selling was a key component of monastery's economy. Steadily it turned up into a local business supported by inns and taverns, so in the end the quality was lost. The wine was appearing too but usually on the table of nobility as a gift from France. The last drop was with the Dutch trade of Gin. It was a real epidemic for 30 years, women were sold it as a thing to "soothe the nerves"; what actually became a Mother's Ruin. Therefore, the Parliament was trying to reduce the beverage by putting high taxes; unfortunately, it did not help because of restless riots.

It goes as far back as 1750 when one of the first rehabilitation forms appeared. The 'sobriety circles' or sober houses were aimed at hunting away evil spirits from a body. There were also three other methods of rehabilitation such as imprisonment, mental asylum or religious interventions involving prayers. In the same period the idea of Benjamin Rush was spread, defining alcohol to be a chronic disease. By the way, his portrait is a part of a logo of the American Psychiatric Association.

Next outstanding way was found in 1879 by an Irish Dr. Leslie Keeley, - an injection with gold. This 'doubles chloride of gold' was a mixture of cocoa, morphine, arsenic and other substances. It could work if relatives of the patients did not

complain of the side effects. Other proposals were bloodletting and lobotomies; among them was a quite modern method of a one-month stay in a center with healthy food and fresh air. Keeley institutes existed until the middle of the 20th century. In 1880, Sigmund Freud recommends cocaine for the treatment of alcoholism and morphine addiction. He was studying cocaine effects on himself. A nervous young man wrote a paper named "Uber Coca", as David Bowie, he had his period, around two years, of using drugs. Then, however, he apparently stopped as his health was suffering a lot.

After the famous American prohibition of alcohol, in 1935-, a society of Alcoholic Anonymous was founded by Bill Wilson and Dr. Bob Smith. It consisted of 12 steps and worked on spirit, morality and emotions. Even it was criticized, the AA spawned such groups for drug addicted, gamblers, overeaters and sparked geographical dispersions. This practice brought scientists into the study of alcohol-related problems and in 1940 was published the first issue "Studies on Alcohol".

In the 50's Disulfiram dosage was largely used, causing fatal outcome. Nevertheless, it brought doctors to treat alcoholism as an illness, so hospitals started to take care of clients as they did with every normal patient.

The following half a century maintained experimental breath; doctors tried such methods for drug/ alcoholic addiction recovery as methadone (instead of heroin, used to treat pain, now included to a list of drugs) and LSD.

In the same period the Minnesota treatment model was developed, it was based on mental, social and emotional aspects. The idea was to create a "guest house", this type of treatment represented a social reform movement. So wards were transformed into some places where addicts could retain their dignity. It had many common things with the AA: alcoholism is a disease and alcoholics are being affected mentally, physically and spiritually. This model was developed by two young men, who didn't have enough experience and had never worked with patients, so this method was a target of severe criticism. This type always had many critics.

In the middle of the 20's century there were some trials of cardiac rehabilitation, even it already evolved different studies, multidisciplinary approach and physical activities, this field was still unknown. Usually, all the methods were incorrect and considered to stay without any movement in bed or working in woods, in 1940 was invented even a chair therapy.

This is a very new sphere. Through this period were tried all kinds of medicine and technologies that existed, doctor enlarged a lot this field with experiments and exams. Unfortunately, the heart disease remains the first pathology to battle with and the best way to prevent it is to respect a healthy way of living.

Anyway, turning back to the historical aspects, only in the middle of the 70's, in America, the first of a series of studies on credentialing of counselors, working in alcohol and drug treatment programs, marks the beginning of a sustained

process of certification and licensure of addiction counselors. The government started to develop anti-drug campaigns like “Just say no”, was focused attention not only on alcoholics but also on the special needs of addicted women. In 1984, as says an article “Significant Events in the History of Addiction Treatment and Recovery in America” the Drinking Age was not permitted for people under 21 years old. With the growth of the internet, we see the appearance of on-line recovery and different supports, which exist until now. Our century continues to see alcoholism as a disease and searches for a re-conceptualization and re-view of those aspects, the same could be said about the drugs addiction.

Nowadays we see many studies of a human behavior and body treatment. The main aspect is to change the way of thinking, bring the patient to a balance, and involve him to an active healthy life. The approach is based on a Latin phrase “Mens sana in corpore sano” that means “a healthy mind in a healthy body”.

## 1.1 History overview

*The challenge for all of us is to look back at history but envision the path ahead. There seems to be no question that our future depends on this vision.*

*Robin Guenther and Gail Vittori, 2008*

This chapter attempts to give an overview of the important milestones in hospital design from the viewpoint of an architect. It is devoted to the main changes in the world of medicine that to a certain extent influenced an architectural development of medical centers through the history and presents some characteristic facts that would facilitate to shape a clear picture of the subject matter of the project.

In the antique period, there was no such notion as hospital or clinic as a special medical institution located in a designated building. However, the Asclepieions (Greek temples) can be regarded as kind of medical centers or healing venues since people could stay there for 24 hours. The Asclepieions present us with a dilemma. After all, therapies were based on priests interpreting patients' dreams and turning them into a curative regimen.

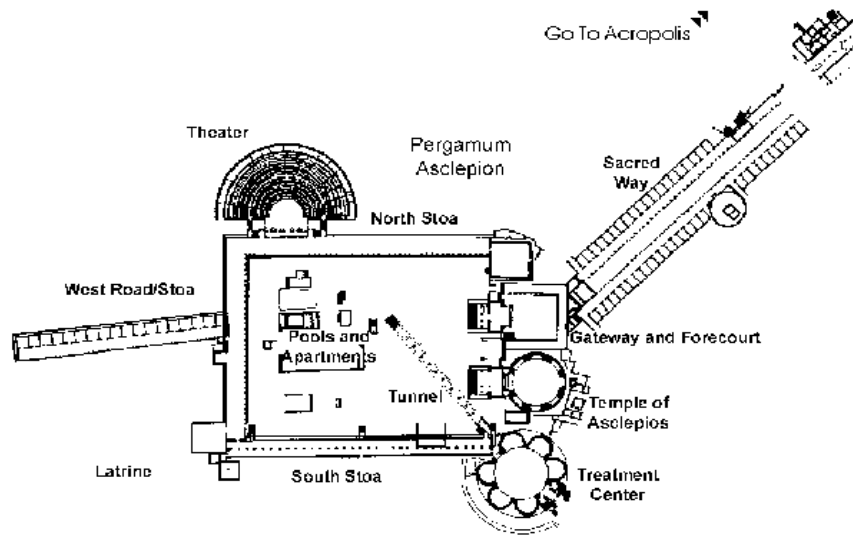
However, the Asclepieions nevertheless contained many features that could justify calling them hospitals. They were undeniably places for inpatient treatment and the inclusion of different types of therapeutic bathing facilities, as well as the emphasis on exercise, make them forerunners of modern rehabilitation hospitals. The halls for "dreamer-patients" can be seen to have influenced the layout of large medieval wards (Thompson and Golding, 1975). Also, the way these halls were completely closed on three sides and opened up only towards the south may have influenced the designers of the sanatoria of the 20th century.

The Asclepieions existed in ancient Greece for more than eight centuries. At their peak there were over 300 of these healing centers. They provided sequences of internal and external spaces in beautiful natural settings forming classical Greek urban configurations.

They made use of all medical knowledge and the tried and tested healing methods that were available at the time. Experimental

therapeutic methods were also used and psychosomatic influences were recognized. Water played a major part in the treatment and also as a soothing natural element contributing to the creation of ideal psychological conditions. Many of the physiotherapeutic methods that were used, such as water and mud baths, massage, the use of medical herbs and the application of ointments, are still applicable today (Akurgal, 1985). Healing was seen as a product of harmonious collaboration between nature and man. Facilities for cultural activities and sports usually formed part of the ensemble. The Asclepieions usually included sports stadia where athletics competitions were organized.

The Asclepieions had asymmetrical and fragmented plans, the individual buildings usually being shallow-framed and generic in character. Some of the buildings were used for medical assistance and for specific treatments. They could be seen as the equivalents of today's clinics. "Hospitality" or guest houses were provided for the use of itinerant pilgrims, a tradition



The Asclepieion at Pergamon

that was continued with the monastic houses and retreats in medieval times and is still maintained, particularly in Greece. Patients and visitors worshipped in the temples of Asclepius and in other surrounding sacred premises (Pevsner, 1976). There were installations of holy water which were used for ritual cleansing as well as for bathing.

Musical and theatrical performances, which were considered a particularly valuable part of the healing process, were held in honor of Asclepius and staged in the theatres that formed an important part of the urban composition. At the Asclepieion at Pergamon the theatre had a capacity of 3 500 spectators.

The Asclepieion at Pergamon, together with those at Epidauros and Kos, was one of the most important therapeutic centres in antiquity. Excavations have shown that it had existed since the fourth century B.C., but experienced its most glorious period in the second century A.D. while Pergamon was a Roman city. The Asclepieion, that lay about 800 m from the city, was approached along a monumental colonnaded street.

The central open space of the Asclepieion was 130 m long and 110 m wide (approximately the equivalent of two football pitches), with various buildings on the eastern sides and colonnaded stoas on the other three sides. Within the central space there were buildings and structures including mud-baths and various other pools as well as sleeping-rooms specially used for incubation and auto-suggestion which were the two most important forms of psychiatric treatment. The northern stoa

was connected to the entrance of the huge theatre and used, as the other stoas, for certain therapies and rites, meetings and gatherings. The buildings on the eastern side were concerned with religious worship and medical treatment and included the temple of Asclepios, the library and the actual treatment building, a two-storied cylindrical structure with six semi-circular apses. The area containing the other temples and the sleeping apartments was connected to the treatment building by an 80 m-long tunnel (Akurgal, 1985).

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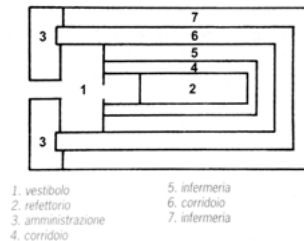
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Approximately the same constructions were found in Germany, Austria and Switzerland. Based in early 1st century A.C., the dimensions were much bigger: from 3000mq to 6500mq. Hospitals were built with a great rationalism. Their layouts remind of Roman plans: rectangular shape, large open corridor around and a court inside, two well-illuminated spaces, bathrooms, kitchen and pharmacy. Wards for the sick were 5,50x 4,50 , general service laboratories were located at a distance from the wards, a special space was allocated to patients where they could have a comfort rest. The heating was placed in the center, so usually people came to stay there.

Another interesting example is Novaseum, which was

found in Dusseldorf. It has a typical roman structure, where the idea was based on the creation of path, central distribution og common spaces; hall, kitchen, administration. (S. Capolongo, 2006)



Novaseum, , 1st century A.C.

The Roman culture was focused on care of body. We still can admire Le terme Caracalla. This is not only a beautiful building with new functions, it can also be regarded as a step forward in the medicine. Physical exercises, sport, and hygiene made inhabitants healthy. Unfortunately, when the Christianity settled down, thermals were closed due to mass drinking and association.

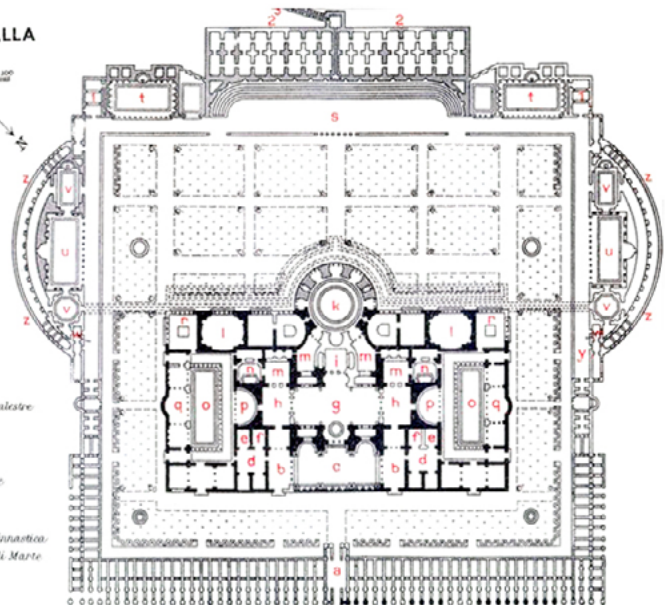
During the Middle Ages, when Europeans looked upon illness as a condition caused by supernatural forces and thus cured only by actions steeped in religion.

The first hospitals in Europe were guesthouses for pilgrims and places where the most disadvantaged could get shelter. Responsibilities for the care of the disadvantaged were often taken over by traditional religious orders and monasteries and

### TERME DI CARACALLA

Scala di 1:3870  
Meters

- a Ingresso principale
- b Ingressi al Frigidario
- c Frigidario
- d Guardaroba
- e Sale per gli oli
- f Sale per le sabbie
- g Tepidario
- h Vestibolo
- i Secondo spuario
- k Oidario
- l Sale scoperte per esercizi
- m Cortili di servizio
- n Piccoli sudatori
- o Palestre
- p Esedre
- q Salone per ginnasti
- r Sale con bagni per servizio delle palestre
- s Studio
- t Biblioteche greca e latina
- u Palestre secondario
- v Sale per accoglienza e conferenze
- w Depositi oli e profumi
- y Tempio di Mitra
- z Porticato detto dei maestri di ginnastica
- 1 Gradinata per salire al colle di Marte
- 2 Serbatoi per i bagni
- 3 Acquedotto



RDPR. DEL T.C.L. - RIPROD. VIET.

STAMPA A VALLARDI MILAN

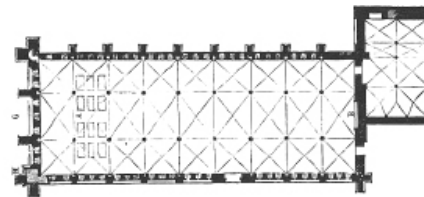
Terme di Caracalla , probably 537 B.C.



care was given in the premises that these orders inhabited. Health care services for those able to pay were meanwhile mostly provided in homes. The first hospitals thus served a social mission in society by sheltering the weak members of local communities. They did in fact perform a multitude of functions as names such as hospital, almshouse, asylum, orphanage, foundling home, guest-house and poorhouse, bear witness (Pevsner, 1976). There is however no doubt that hospitals during medieval times were mainly associated with death. They were also built to protect those outside rather than to benefit those housed within their confines ( James & Tatton-Brown, 1986).

A common plan form used during the late Middle Ages was the cruciform with the nuns' nursing station in the centre and an altar at one end, placed in such a way that all the sick could see it. Medical treatment was indeed inadequate and communication with God was seen as more urgent than that with the "professionals". The first cruciform plan was built at Santa Maria Nuova in Florence in 1334, but the new fashion only took off in earnest about one hundred years later when several new cruciform hospitals were built, particularly in Italy. In today's situation, with pressures to minimise numbers of staff on duty, the cruciform with its single nursing station in the middle, presents a pertinent precedent.

The best preserved medieval hospitals can be found in France, notably in Angers (late 12th century), Ourscamp (early 13th



*Ourscamp, France 1210*

century) and Tonnerre (late 13th century). Angers and Ourscamp represent the usual high rib-vaulted Gothic-hall type, while Tonnerre is covered by a wooden tunnel-vault (Pevsner, 1976). Of all the medieval hospitals that still survive in their original use, the Hôtel-Dieu in Beaune (mid 15th century) is probably the only one so intact that even the original bed covers can still be seen.

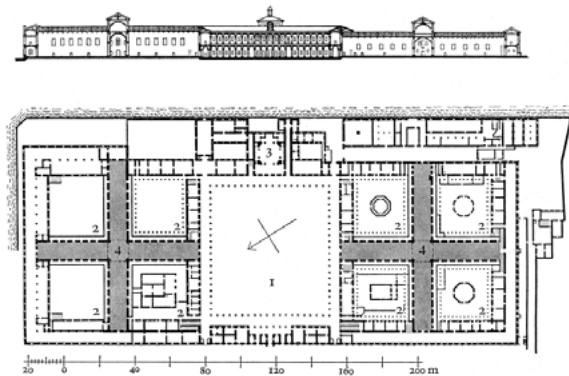


*Tonnerre, France, 13th century*

It can safely be said that the first hospital building which has become a lasting architectural masterpiece is Brunelleschi's Ospedale degli Innocenti (finished c. 1445) in Florence. It can still be argued that it was actually a mere orphanage but its name, also in English (Foundling Hospital), carries the key word and, the definition of a hospital was still, in the early Renaissance period, a fluid one. Brunelleschi's work is also considered the first architectural masterpiece in any category during this epoch. Its arcaded front forms one side of one of the finest squares of that era, Piazza Santissimo Annunziata.

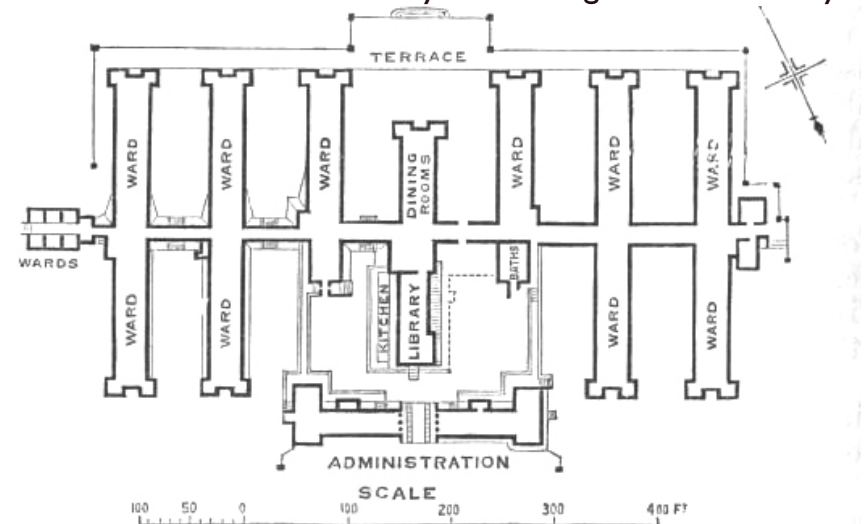


Another Italian Renaissance leading architect, Filarete, undertook, in 1456, the design of a new, very large hospital in Milan. The typology of the rectangular plan is strongly reminiscent of some of the iconic hospitals designed over 500 years later, in the 1970s. Filarete also included elements that were far ahead of their time, including an early water closet system. Between the beds all along the wards were lavatories with water cisterns above and trapdoors below, flushing into the river. Each bed was provided with a small cupboard, a chest and a flap- table. The original plan for Ospedale Maggiore took



Ospedale Maggiore, Milano, 1456  
arch. Filarete

centuries to complete and little is left of Filarete’s original design, which is nevertheless a fine building and today used for medical teaching and hospital administration (Pevsner, 1976). According to the book “Hospitals in Changing Europe” hospitals already had a “recognisable medical character” by the 16th century. In spite of this, the same book mentions two quotes from the 1986 edition of the Oxford Dictionary of Quotations concerning hospitals in the 17th century. In 1643 T. Brown said that hospitals were “a place, not to live, but to die in” and in 1682 T. Southerne said that they were refuges for the elderly



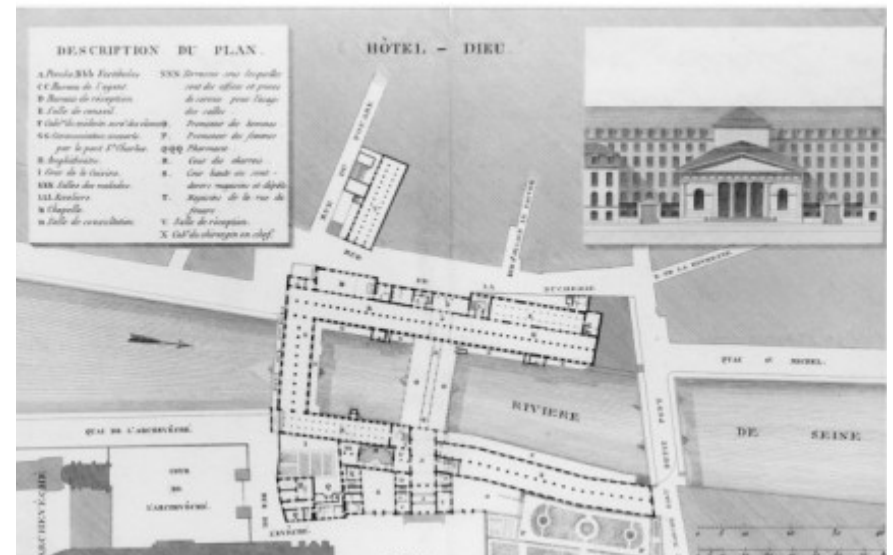
Royal Herbert Hospital, 1856, Woolwich  
block plan

poor “to rust in peace, or rot in hospitals” (McKee & Healy). One might argue that the latter is still, nearly four centuries later, frighteningly true in many places.

In approximately the same period, in 1772, L’hotel Dieu in Paris was constructed near Notre dame de Paris, that could contain 5000 patients. It seemed to be out of any humanity; hygienic conditions were a disaster and the operations were done on the view of everybody. A century later on its place L’hôpital Lariboisier was built, that took many guidelines from a British example of an architect named Tenon. The proposal included three floors, separation between women and men, general services as kitchen, pharmacy, administration office near the entrance. The construction of Lariboisier seemed a modern hospital of a pavilion type that was lately promoted by Nightingale as a standard. Florence Nightingale was a founder of a new view on the healing and developed nursing during the Crimean war in 1854. The British army suffered from dysentery and cholera; nevertheless, she brought down the death rate from 42% to 2% and became a national hero. The previous hospitals would show the variety of cells and galleries, large infirmary wards, in parallel ranges arranged back to back bed-cabins. (Christine Stevenson) She had an influence on St Thomas hospital’s design in London as well.

The beginning of the 20’s century is significant for a great pass in the medicine, the revolution in the technologies brought x-rays, anesthesia and antiseptics. Before, a hospital was a place

of surgeries and amputations without any anesthesia, a last sojourn for infected and a locus for childbirth. Starting from this point, the middle class, people who could permit calling a doctor, started to turn to hospital services. Such opportunity as an elevator changed the shape of Nightingale pavilions and made the structure vertical. It was put in a center and allowed nurses an easy access. The distribution was changed sharply, rooms for diagnostics and equipment appeared, that already in



Hotel- Dieu, Paris, 1772

the 50's grew up horizontally.

An important guideline "to suit a client" appeared in a design of American hospitals, it provided nurses to take care attentively. Unfortunately, medical treatment and remedy were lacking some knowledge, so patients were looked after but could not get the right prescription.

With the space invading, American medical centers gained electronic devices worked out by NASA. It actually had an influence on the architecture also; were enlarged ground floors for technic rooms.

By the 90's the base block and nursing floors were already separated, which changed a patient's travel logistics. It is explained by declining demand of a hospital, increase of medical and ambulatory care. ▸

For a quick overview of groundbreaking changes in the end of 20's century, I would show studies from the American Hospital Association's "Hospital Statistics".<sup>3</sup>

It says:"in 1970, there were 5859 hospitals, providing 848,000 beds. Occupancy was 80.3 percent with 181 million outpatient visits. The first free-standing surgical center was opened in Phoenix, Arizona. Actually the first outpatient surgery department within a hospital were at George Washington University and at UCLA, Los Angeles in the late 1960's.

By 1989, there were 5455 hospitals with 933,000 beds. Occupancy decreased substantially to 69.6 percent, with outpatient visit increasing to 285,712 million. Surgical centers now numbers 1227. Also, since 1987, the number of outpatient surgeries had increased by more than 35 percent to almost 2 million."

## I.2 Architecture for health

“Whether people are healthy or not, is determined by their circumstances and environment. To a large extent, factors such as where we live, the state of our environment, genetics, our income and education level, and our relationships with friends and family all have considerable impacts on health ...”

World Health Organization: The determinants of health

The term “Health architecture” can be presented in many aspects and scales. Starting with such topic as “Pollution”, we can demonstrate its straight attitude to the architecture, we build factories and we build hospitals, we create kilometers of trash and we design plants for garbage incineration. Nowadays urban-planners started to work on a specific guideline to provide care of cities and citizens, of health and mental hygiene. The construction industry is a major source of pollution, however the world knows such zero energy houses, healthy building environment can be an essential part of the healing process and environmental stewardship equates to compassionate care for all: for the society and for one person.

Another aspect is a building with a function of healing. With the development of technologies, medicine, psychology and hospital architecture as an institution, last century gave to the World such new structures as clinics, hospice, rehabilitation center, wellness center etc. This field was enlarged, so appeared such meaning as “Health architecture” that included all different types of buildings with services to make people feel better and healthier.

## I.3 Goal and Focus

The goal of this work was to see what the Health architecture is. I decided to take a more specific part and study rehabilitation centers, to learn the possibilities and to open this hidden part of architecture. It is a new field that is being developed quite fast nowadays and it seems strange that they appeared less than 100 years ago.

After analysis of rehabilitation centers, I was very interested in even more rare subject in the world of architecture, which is Blindness and after making a research of this part, I developed a concept project of the center for the blind and visually impaired. As a short introduction, I would like to share some thoughts about Saludem. Exist two similar words as “health” and “well-being”. “Health” is recognized not only as the state of being free from illness but as a person’s mental or physical condition too. “Well-being” means the state of being comfortable, happy and healthy. Therefore, in this part I will talk about the “well-being” and how it incorporates main principles as for clients, as for the building itself.

As a base can be taken three forms of Vitruvius:

*health, as a physical aspect*

*comfort and happiness, as relationship with the environment*

*sensations and emotions*

The building should be readable, should function, be flexible and make people feel good. In the following work, my aim was to present analysis of the diverse rehabilitation centers and to project a center for blind, considering the research’s data as a base. Show the development of a place with healthcare services, educational platform and community, reach the highest possible level of function and possibilities.

## 2 Rehabilitation centers

The rehabilitation aims to restore someone's health or bring that person back to normal healthy life through training and therapy after illness, addiction or imprisonment.

Rehabilitation hospitals work with patients with various neurological, muscular-skeletal, orthopedic and other medical conditions, trying to stabilize the health. The industry is made up by private hospitals that operate these facilities within acute care hospitals. There are also inpatient rehabilitation hospitals that offer this service in a hospital-like setting, but separate from acute care facilities.

Now, the rehabilitation can be considered not only as a place, integrated into a hospital system. The main aspect is to make a person feel comfortable, relaxed, surround him by the right environment and bring him the happiness. There is an interesting approach of a medical sociologist Aaron Antonovsky, that that is called "Salutogenesis". It means that people should focus on factors that support human health and well-being, rather than on factors that cause disease. These thoughts bring an idea to create an emotional architecture, which changes the life, gives you well-being of physical, psychological and social state of mind, gives you the healthy living.

The first rehabilitation centers were following quite strict principles. Usually, the maximum stay were 100 days. It could only be accessed as an inpatient in a general hospital, which had lasted for a certain number of days. The general hospital evaluated the patient and determined if the patient would

benefit from rehabilitation services. There was a system of evaluation and determination, the treatment included daily therapies, consultations with doctors and physicians.

Rehabilitation was seen as an interdisciplinary healthcare specialty, which takes its roots from the wars of the 20th century, as there was a huge number of disabled soldiers. This fact made military hospitals to establish rehabilitation units and take focus on returning these young men to society. Soon, rehabilitation units and hospitals sprang up around the countries and the interdisciplinary specialty of rehabilitation gained importance.

As describes Philipp Meuser in the “Construction and design manual ,hospitals and health centres”, exist different types and structures of rehabilitation centers. Here are general in-patient or out-patient facilities for medical rehabilitation provide forms of therapy and methods of treatment for various groups:

*orthopedic patients*

*children and young people with craniocerebral traumas*

*cardiac patients*

*asthma and bronchial conditions*

*stroke patients*

*rheumatism*

*cancer*

*re-integration of the psychologically ill and disabled*

*chronic renal disease and kidney transplant*

*allergic respiratory conditions*

*additions*

There are special facilities for the re-integration of the disabled. They require therapeutic and educational programs specifically target the individual's form of disability to enable the planned support of the person concerned:

*blind*

*deaf*

*spastic disabilities*

*workshops for disabled*

However, we live in the epoch where rehabilitation is seen in different scale and it is not only about the physical state, it considers also stress and weariness. Quite often, we hear jokes about rehabilitation from anyone who is emotionally tired and need to relax or change an ambient. Most of us live unhealthy, we are in a rush, with the city rhythm people do not have time almost for nothing. Stay at work till midnight, wrong schedule, bad habits have a very bad influence on our health and mentality. This is why the field of rehabilitation activity was enlarged. Now, there are services for senior citizens, social rehabilitation, that take care of medical and occupational rehabilitation; health and spa facilities, which help you relax and are fundamental for some types of recovery, hydra activities that help to keep mussels tuned.

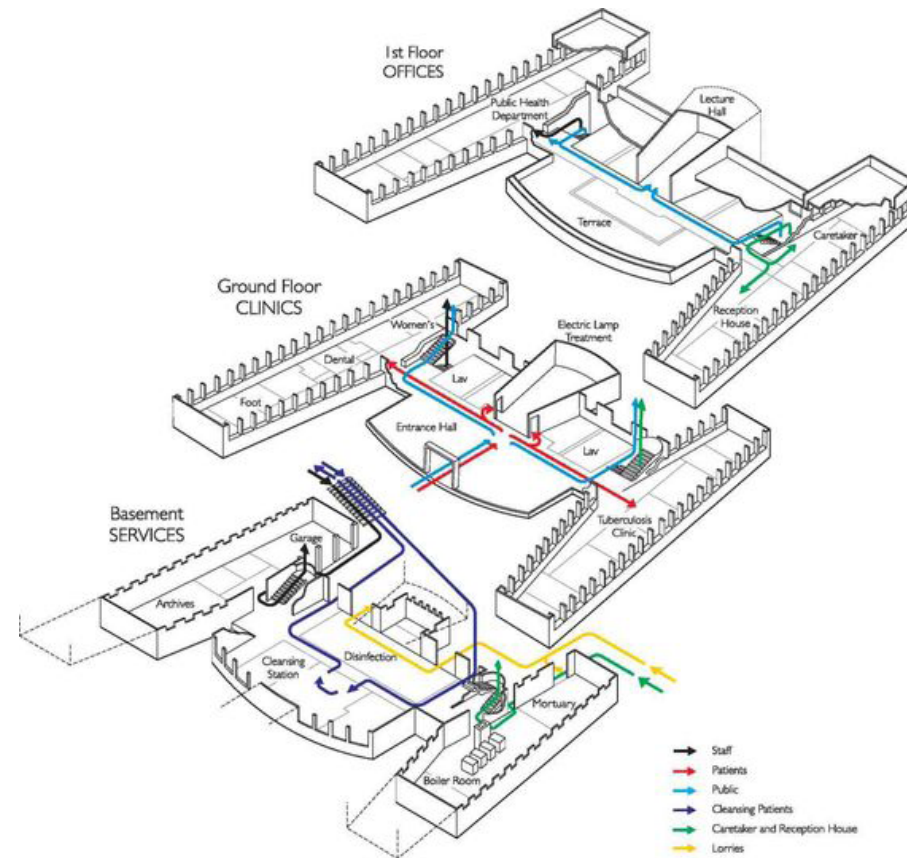


## 2.1 20 century

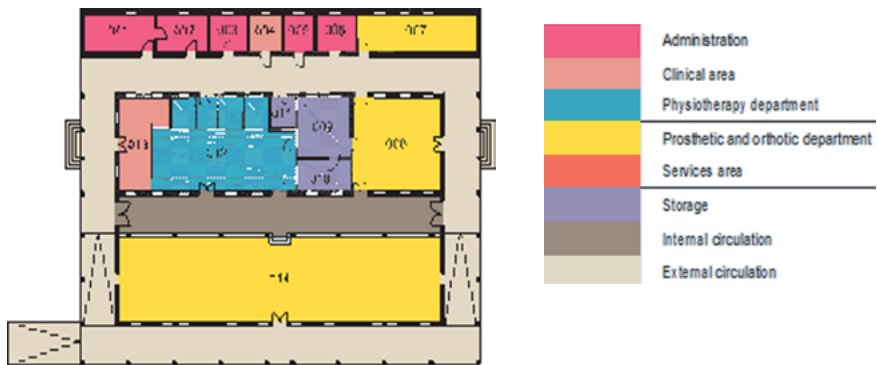
In 20th century we see a big necessary change in the world of hospitals, it becomes more personal, accessible and natural, there was born an idea of a hospice, which guidelines were to create a comfort environment for a patient. Mostly, they were funded by charity, patients had many benefits as reduced prices, medical services close to home, relations between doctor and client became more confident.

The first mention of a community-based health care unit was in the United Kingdom. In 1930, a Russian architect Berthold Lubetkin builds one of the first health center in Finsbury. (John Allan). Another pioneer was Sir Owen Williams, who realized his project 5 years later. The aim was to show the effect of physical and social environment. The program contained workshops, different exercises and simple relaxation. The Peckham Health Center was established by Scott Williamson and Innes Pearse and was concentrated on health and population studies.

Lubetkin's center is a rare example, designed in a very flexible way, as the architect knew that the progress in technology rises rapidly. In the beginning were planned also library, public baths and nurseries. Berthold wanted this place to be similar to a club, with a look on social life: there were such activities as dancing and shows. It was created with light and bright colors that played a big contrast in a smoggy city. The program was developed with a holistic view of health, diet, social and psychological factors, embodied progression in medicine by that time and philosophy.



Health Center  
B. Lubyatkin, 1930  
London



Plan of Battambang PRC. on the right; facade



Unfortunately, in 1950 Finsbury Health Center was closed, as there was a lack of financial support. Nevertheless, Peckham and Finsbury centers were the milestones in healing architecture and were used as a model throughout the World. After the Second World War, the Swedish Red Cross in cooperation with the ICRC( International Committee of the Red Cross)organized orthopedic and physical workshops. They financed them in Vietnam, in Jordan, in Algeria, in Nigeria, where a physiotherapy department was established too and in the end of the 70s these workshops arrived to Lebanon. According to Samuel Bonnet, the beginning of the ICRC's major commitment in this field came with the setting up of



General view from south-east, 1987 by Thierry Gassmann/ICRC



P&O department workshop, 1987 by Thierry Gassmann/ICRC

the Physical Rehabilitation Programme (PRP) in 1979 and the Special Fund for the Disabled (SFD) in 1983.

This wave of care spread around the poor countries and some of these centers are operate even today, like in Mozambique and Pakistan. In the end of the 20's century the ICRC started as well a physical rehabilitation project around in Cambodia( 1991), Afghanistan (1995), Myanmar (2002), South Sudan (2008). The main functions were administration, clinic area, guesthouse, physiotherapy/ prosthetic/ orthotic departments, service user accommodation, storage. There were produced some schemes of plans, which are still in service.

The one of the notable centres is in Beira, Mozambique. It



*P&O department – workshop, 2014  
Alessandro Giusti/ICRC  
Thierry Gassmann/ICRC*

was refurbished by the ICRC and opened in 1985. The ICRC handed its activities over to the Ministry of Health in 1995.

The purpose of all these centers ( like in Beira, or Battambang, in Cambodia, or Hpa-an in Myanmar) is not to establish a model design that can be replicated worldwide but to constitute a database of examples so as to provide some keys to the understanding that is necessary for the development of architectural programmes.

Another example could be a PR in Cambodia, built in 1991. Between 1969 and 1999 the people of suffered almost continuous war, political clashes and deadly violence: the spillover of the Viet Nam war into their country, the



*PT department – advanced training court, 1993  
François Rueff/ICRC  
Thierry Gassmann/ICRC*



<span style="display:inline-block; width:15px; height:15px; background-color: #e91e63;"></span>	Administration
<span style="display:inline-block; width:15px; height:15px; background-color: #f48fb1;"></span>	Clinical area
<span style="display:inline-block; width:15px; height:15px; background-color: #ff9800;"></span>	Guest house
<span style="display:inline-block; width:15px; height:15px; background-color: #2196f3;"></span>	Physiotherapy department
<span style="display:inline-block; width:15px; height:15px; background-color: #ffc107;"></span>	Prosthetic and orthotic department*
<span style="display:inline-block; width:15px; height:15px; background-color: #8bc34a;"></span>	Service user accommodation
<span style="display:inline-block; width:15px; height:15px; background-color: #f44336;"></span>	Services area
<span style="display:inline-block; width:15px; height:15px; background-color: #9c27b0;"></span>	Storage
<span style="display:inline-block; width:15px; height:15px; background-color: #795548;"></span>	Internal circulation
<span style="display:inline-block; width:15px; height:15px; background-color: #d7ccc8;"></span>	External circulation

Plot ratio 0.3  
 Clinical area 118 m<sup>2</sup>  
 PT department 634 m<sup>2</sup>  
 P&O department 322 m<sup>2</sup>  
 SU accommodation 656 m<sup>2</sup>  
 Administration 110 m<sup>2</sup>  
 Storage 209 m<sup>2</sup>  
 Services area 144 m<sup>2</sup>  
 Circulation/NFA 20%

Plan of Beira

establishment of the Khmer Rouge's Democratic Kampuchea in 1975, the collapse of the Khmer Rouge regime as a result of the Vietnamese invasion in 1979, and the slow transition of the country to the 1991 Paris Peace Accords with the People's Republic of Kampuchea that ultimately led to the restoration of the Kingdom of Cambodia in 1993. The violent events left the country littered with mines and other explosives remnants. This unexploded ordnance (UXO) caused many injuries leading to amputations in a country that had no physical rehabilitation service before the 1980s.

The centre of Battambang consists of several buildings spread over a large plot of land planted with palm trees. The built area occupies only one-third of the plot. The large remaining space offers an outdoor environment for different activities.

All buildings are one storey high. The steeply sloping roofs of the buildings reflect the local architectural style. They give the whole centre an architectural character which is highly appreciated by users. The steep roofs and high ceilings enable passive cooling and are very appropriate for humid and warm

climates. All services are accessible from outside. This avoids the need for internal corridors, which easily accumulate stagnant and humid air in tropical climates.

The site is divided into three main areas. The clinical area, the PT department and the P&O department are located in the



first area, to the south. The main building at the entrance to the site contains the reception and the workshop with its stores. The PT building, the assessment rooms and a covered advanced training court are accessible from the rear of the main building. Outdoor sports courts are located behind the PT building. Palm trees surround the sports areas and keep them cool.

A great path is assigned in the last 30 years of the 20th century with the creation of wellness center in Houston, Texas and new type of diet discovered by Nathan Pritikin. (Richard L. Miller). In this period were built 350 centers and by 2000 this sum was doubled, that raised the demand of consumers. The process is similar to nowadays access: primary care doctor was sending clients to specialists that provided various therapies. More than a half wanted to receive natural medicine services. On this platform was accredited first institution of natural medicine in Washington. The demand and the progress in technologies started to develop idea of health in new ways. Started to appear Health and Sport centers, in 1986 were taken into the program training courses firstly presented in Moscow. Healthy life style was growing among people all over the world: in Canada among therapies were included gyms, multiple basketball/volleyball courts, in Japan was popular fitness, started to appear mixed-usage hospitals with rehabilitation center, like a Hospital Number 31, in Moscow.

In 1996 came out a 'Red Book' with following list of services : entrance with waiting areas, administration, clinic with sub-waiting, examination, treatment and consultation rooms, service , like heating, storage, maintenance rooms.

A bit later was touched such important theme as 'Quality'. Health is a positive thing, so people should aspire for a better living. As tells Geoffrey Purves in his book "Healthy leaving centres", the Key factors were:

quality of life

basic knowledge of medicine and the main role of education

ecology

social factors

holistic aspects of life

These aspects are followed till now and are being respected in the environment, occupancy, safety, security, movement, lightning, ventilation, visual privacy, water supply, sanitation and disposal.

## 2.2 Current scenario

For a description of the current stage in the world of healing, I would like to share some statistics from World Health Organization, “Disability and health”:

### *Key facts*

- Over a billion people, about 15% of the world’s population, have some form of disability.
- Between 110 million and 190 million adults have significant difficulties in functioning.
- Rates of disability are increasing due to population ageing and increases in chronic health conditions, among other causes.
- People with disabilities have less access to health care services and therefore experience unmet health care needs.

Unfortunately, disabled people are vulnerable and have many barriers. Disability is very diverse, however the general needs are the same and everyone demands care. There is a lack of education, health promotion and activities. The ageing process sometimes begins too early, they have higher rates of risky behaviors like poor diet, physical inactivity or smoking, some of them have a lower life expectancy.

One of the main barriers are prohibitive costs, as people just cannot afford a health care, especially in low-income countries. Another fact is limited availability of services. Moreover, most of the buildings are inaccessible too, the signage is very poor; there are bad medical equipment and inadequate bathroom facilities. Could be taken more care about providing information, trainings and support.

However, there are already some great impacts as studying the new strategies of help, the right’s protection and the dignity. Centers for Disease Control and Prevention, described in an article “ Moderate to Severe Traumatic Brain Injury is a Lifelong Condition

Nowadays the issue of rehabilitation of the blind or low vision people is of great importance as there are 39 million blind people in the world, but 80 per cent of blindness can be cured or prevented. That’s 31.2 million people who are blind when they needn’t be. Worldwide about 314 million adults are visually impaired. The prevalence of visual impairment increases

significantly with age. Indeed according to the available statistics 82% of those suffering from low vision problems are aged 50 years and older 2 and it is expected that this number will double in the next 25 years 3.

Visual impairment results in functional limitations and these consequently have a continuous negative effect on both older adults' quality of life and their performance of everyday activities. In visually-impaired people particularly the level of mobility decreases, which hampers the ability to travel independently and to conduct activities in daily life outside the home. Rehabilitation involves combined and coordinated use of medical, social, educational, and vocational measures for training or retraining the individual to the highest possible level of functional ability. Rehabilitation centers for the blind are designed, in addition to treatment of the disease, to help the the blind and low vision people to develop skills of orientation and mobility, communication skills, provide computer access training, social and recreational activities and activities of daily living.

### 3 Methodology

The studies present 12 types of rehabilitation centers realized in the 21<sup>st</sup> century. These examples were chosen after a long comparison with other rehabilitation centers because they can explicate the variety of forms, typologies, constructions and approaches in the Health architecture. The centers have location all over the world: Canada, Mexico, Netherlands, France, Germany, Switzerland, Denmark, Spain, Israel and Japan. Even with this climate change, the main aspect was to create a special sort of welcoming atmosphere that would make patients feel comfortable and relaxed.

In the next paragraph, you can see three tables with the illustration of the work. The analysis were based on the following criteria, devised on it's own factors : general data (type, year, country, designer), location(in/outside of the city, landscape, surroundings, relation with nature, identity), distribution(horizontal flow, courtyards), structure, zones and access, There is also representation of quantity data, like gross area, number of beds and clients. The last third table has a function description with extra and basic services of the center.



## 3.1 Criteria

The idea was to give a generic information and then to zoom in on each project and describe it from macro to micro scale. Some of parameters was impossible to reach, as most of the centers require private contact. However, after giving a look at this research, you will have an image of possibilities and functions of the centers from exterior and interior spaces.

The analysis start with the General data that evolves such basic parts as type of rehabilitation center, the year of construction's finishing, the country and the designers. By the "designers" were meant not only the architects but in some occasions the engineers too.

Next step was a focus on the location, if the object is in a city or out, what is the relation with the landscape, nature and greenery, if the project has it's own identity, looks as a hospital or "invisible" to the eye.

In the Distribution were included types of the flows, all of them are horizontal as usually the structure of a center is more simple then the structure of a hospital. The second part that makes influence on the distribution consists of the courtyards. The selected examples do not have a special type of greenery planning, they have gardens inside, greenery outside, sometimes both. There are centers surrounded by woods or fields with no any courtyard and there are those that have it. The idea of this parameter was to introduce the variety of combinations. It shows how it

is important to take into account the contest of the place and how to merge necessary functions into it.

At the same time there is a graph with more detailed description of the greenery, it consists of such elements as therapy garden, green roof, park, trees, labyrinth and field.

The first description of Structure are the constructions that are devised on column greed and on bearing walls. The centers with more than two levels have columns as it helps to play with openings and permit to displace some walls. On the other hand, those structures that have more horizontal linear shape, use bearing walls.

With the schemes of the windows were explained shape of the openings, in some projects you can see huge windows from floor to ceiling and some has normal "typical" opening.

The next part gives a view on the Zones. On the table were presented studies on the entrances and division between administrations, patient and public zones. More detailed research is seen right down below, it has a percentage description of how much space occupies each service according to the whole building. For this comparison were chosen zones of activity/recreation that mean living rooms, sports, auditoriums, workshops- a place where a patient and sometimes a visitor can spend time and relax.

By the administration were meant different kind of offices and staff rooms, places that provides information and serve the clients. Medic zones intend a place of treatment, by the flow is recognized a space of movement, like corridors, by the residence were meant rooms for patients who leave or stay in a center for more than a day.

In the part of materials were collected patterns that are used in and outside of the buildings. To make the image more clear were written names of the materials.

As a conclusion was put a graphic of functions that present in the projects, with this comparison you can see what kind of services are used often and some examples that can present only in one cente

## 3.2 Description

Today's rehabilitation spaces are designed to be motivating, welcoming, safe, and accessible. Everything from the layout and equipment to a mix of open and private areas are created with an eye on contributing to and promoting accomplishment and inspiration.

In this paragraph, you can see examples of different rehabilitation centers. The idea was to show various types of structures, materials, visions. There were added some examples for a comparison as well.

The last part tells about Maggie's Cancer Centers, centers for children and Therapy centers to accomplish the image of design's variety.

A table with the synthesis of this description you can see in the next part called 3.3 Matrix. Unfortunately, it could not include all the following examples for a lack of information.

## Groot Klimmendaal center

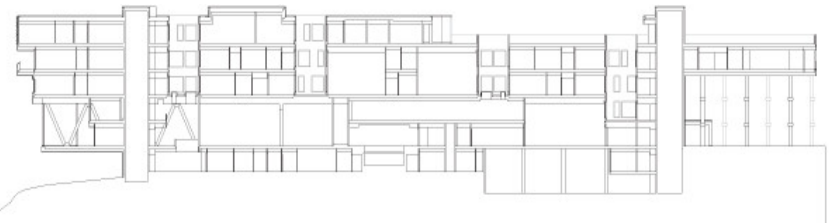
### Mental problems

#### Description:

The center is designed by Koen van Velsen, in a forest outside Arnhem, the Netherlands. It is surrounded by woods, where you can spot dears sometimes. The aim was to put an accent on welcoming atmosphere and to merge the building into surrounding nature. The building lays on a little slope, so there are two levels of entrances. The structure seems invisible due to windows that look like a large glassed surface, the rest of the façade is covered by brown-golden aluminum sheets, the gross area is 14 000 sqm. The last floor is based on high columns, that recognize the entrance and reminds a trunk. The interior shows us a collaboration of the architect and the patients, as there is great attention for physical, practical and social details. A shallow timber staircase creates a direct route and unites the facilities. Bright colors inside of the building and double height of some levels create friendly feeling, a combination of light allows to illuminate even the heart of the 30 meters wide



*Groot Klimmendaal  
Koen van Velsen,  
Arnhem, 2011  
facade*



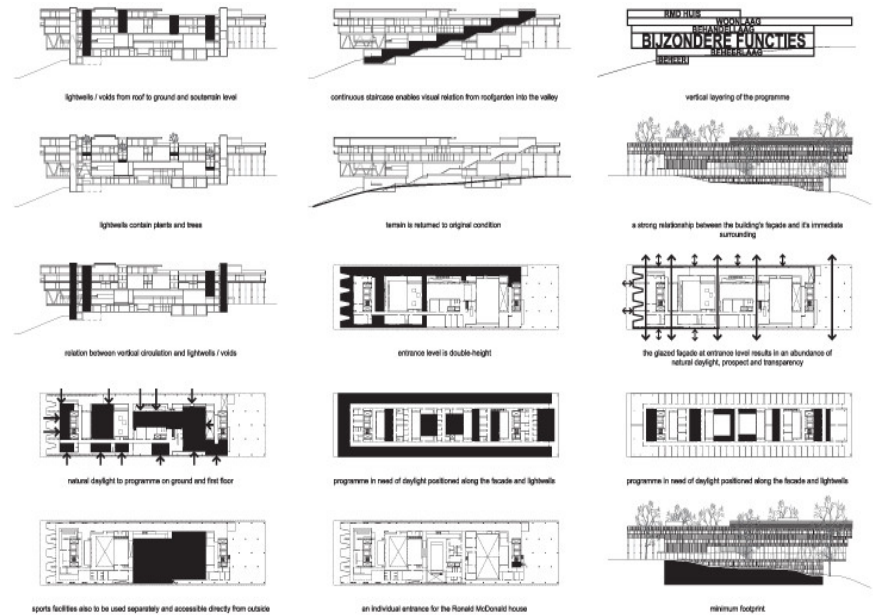
*Groot Klimmendaal  
section*

building.

The center is supposed to take care of people with brain problems. However, having patients of different generation, it has program that can unite everybody: sport activities, theatre, swimming pool, patio and living room. It merges clinic, restaurant and offices, so there is not only one private zone but public and administration zones too. Due to the inclined form of the building, the architect tried to separate offices from other services and put it to the minus level.

The Groot Klimmendaal has a compact design with reduced use of energy, there is a thermal storage that contributes to the reduction of energy consumption. The materials require little maintenance too. The whole construction can be used and transformed in different ways even it was designed respecting needs of the clients.

Rehabilitation Centre Groot Klimmendaal was awarded Building



Groot Klimmendaal schemes



Groot Klimmendaal plan, level 1

of the Year 2010 by the Dutch Association of Architects, winner of the first Hedy d'Ancona Award 2010 for excellent healthcare architecture, winner of the Arnhem Heuvelink Award 2010 and winner of the Dutch Design Award 2010 public award and category commercial interior.

*Groot Klimmendaal  
passage*





The idea to abstract patients from the illness was also brought by another Dutch project in Amsterdam “Kinderstad”, controlled by Sponge Architects , Rupali Gupta, IOU Architecture, realized four years before the Groot center, in 2008. As a fact, both centers have quite similar guidelines, however the building in Amsterdam has a smaller scale and was designed for kids between 4-18 years old. The aim was to create an extra space in a children’s hospital, so the sick kids could find a better and friendlier atmosphere, where they can stay with their family. The architects attached 2 levels of a structure made of glass and titanium to the 9th floor. The façade material creates an outstanding effect: the tiles and glass reflect the constantly changing sky. It was even nominated for the architectural facade competition «Architectuurprijs GevelTotaal 2008».

The interior design has little different spaces, there is a big mixture of the materials and patterns, the floor, ceiling and some walls are covered with wood. The structure has an open glassed façade, so there is extensive day light and a special effect of “flying”. It is a great place for kids and their families, where they can spend time together and forget about illness.



*Kinderstad  
Sponge Architects,  
Amsterdam 2008  
view of the hall*

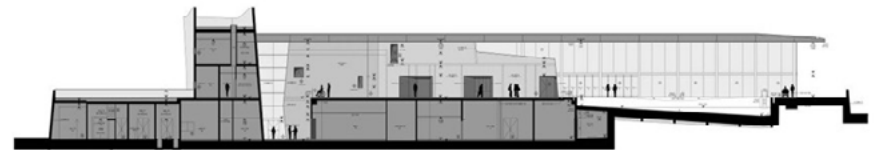
## Beit-Halochem

IDF veterans

Developed by Kimmel-Eshkolot Architects near Beer Sheva city in Israel. The works took three years, so the inauguration was in April 2011. The design of the center is taken from a landscape, it is situated on the border of city outskirts and desert, so the shape reminds rocks. Big concrete blocks look like huge stones. The architects used quite the same materials in and outside, they are: plaster, wood and concrete.

Opened and free space of the structure is lined by double height that brings a lot of natural light. Plane long roof creates shadow around the structure and covers terraces.

Due to a little inclination of the ground, the center has two “platforms” with entrances. The gross area of 6000 sqm fits a light combination of public, patient and administration zone, however the main space occupy activity and rehabilitation facilities.

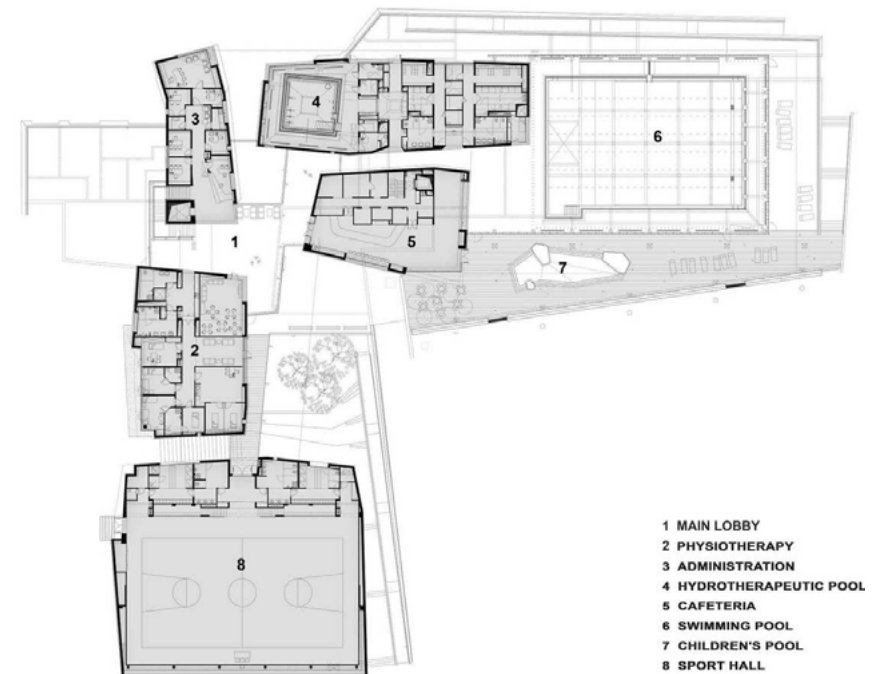


*Beit-Halochem  
Kimmel Eshkolot Architects,  
Beer Sheva 2011  
facade and section*



Beit Halochem is a family of centers located all over in Israel. The program of this example represents spaces for different kind of competitive sports, swimming and hydrotherapeutic pools, auditorium, lounge, terraces, art studios, multipurpose classes and café. It is planned as a one-day stay center without a possibility to be a resident and to live there.

Beit Halochem Centers aim at providing solutions to the needs of its members based on their individual, respective disability. Veterans with every kind of disability take part in sports and other activities, which form an essential part of their rehabilitation.



Beit-Halochem  
plan

# Bridgepoint

complex chronic disease

Designed by Stantec Architecture , KPMB Architects, HDR Architecture , Diamond Schmitt Architects.

The medical center is located in Canada, Toronto, in a residential neighborhood with easy transport access. On this plot, 50 years ago, was an old Bridgepoint hospital that was much lower and didn't have such magnificent views as the new version.

The focus of the center lays on complex chronic disease and rehabilitation. The proposal was to have a civic building with functions of healthcare and community; the architects made an ambient that facilities wellness and recovery. The average stay is 3 months, so patients have to feel friendly and warm atmosphere that facilitates wellness. Regarding this long periods Even being a great structure, the center has a relationship with the surroundings; there are huge terraces with the view of a city skyline, in patients room there are also big windows that brings in the natural light.

Being a structure of 10 floors, Bridge point has a strict definition



*Bridgepoint  
Stantec Architecture,  
Toronto 2002  
terrace*

of floors. There are welcoming services on the ground level , then in the middle of the cross section and on the last floor you can see semi private zones, where the patients can stay with their families. Other floors are kept for the treatment and patients' rooms. It has a circular distribution, recognized by nurse stations and type of bright, wide corridors.

The program consists of physiotherapy, spiritual care, auditorium, common cafeteria and lounge; there is an additional lounge per floor, patient dining. Hair care, internet café, retail café and pharmacy.

The façade looks particular due to the windows that allows to have more space and to keep the rooms illuminated by a day light. The main material applied outside is glass, which was combined with metal panels and wood, inside are used the same colors of wood but the general facing is made with white plaster.

Bridgepoint center has environmentally responsible and

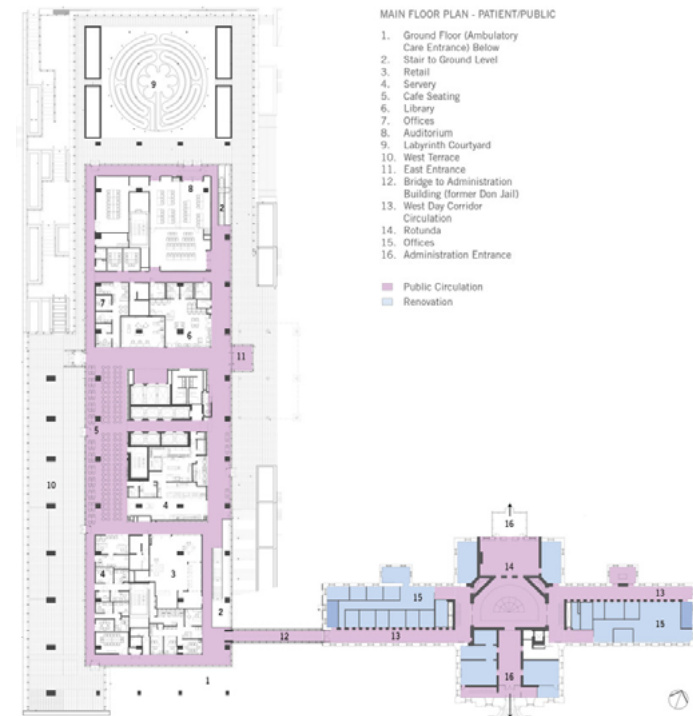


*Bridgepoint  
patient room*

sustainable features, it was registered under the LEED Green Building Rating System.

Another interesting part, is that Bridge point has a heritage building -ex Don Jail of 1864, in it's complex. It makes a nice contrast between 2 structures, and has an important feature; all the administration zones are managed in the historic part. This building was reconstructed and linked with the new one by a bridge.

A similar idea is met in Mental Health care department at Friedrich Schiller University. The main part of this hospital is a historic listed building, constructed by the architectural practice Gropius& Schmieden in 1879.



Bridgepoint  
ground floor



*Bridgepoint  
entrance*



## Residence and Day Center for the Mentally Handicapped

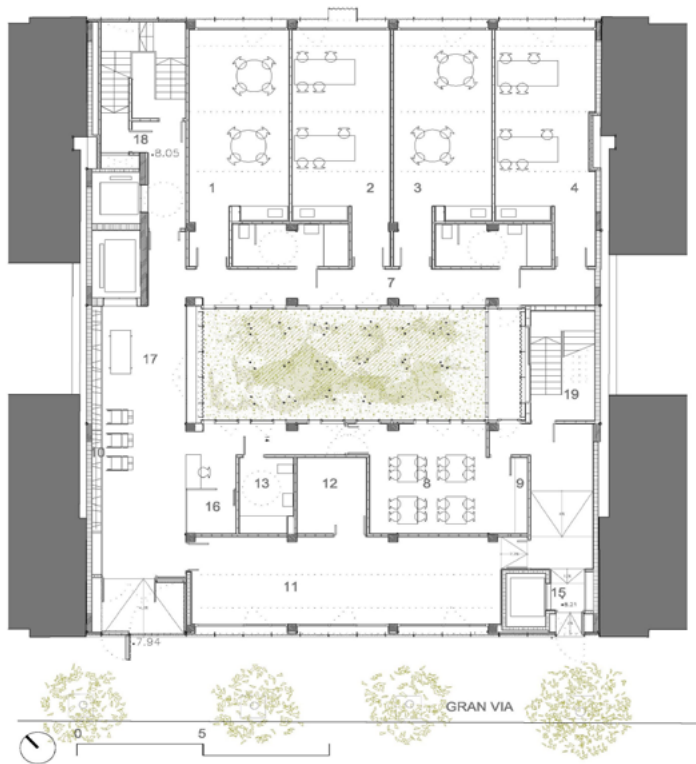
Designed by Aldayjover Arquitectura y Paisaje in 2010, situated in center of Barcelona, Spain.

During the project, architects had to respect strict urban rules like certain height, as the plot is situated between 2 existing twin buildings. As a basic detail, it contains natural light that spreads into from the inner yard and maintained by double height. The structure is devised on the two parts, on the base floor is placed a day center and other levels are planned for residents. The whole atmosphere reminds garden or forest, as on the terraces there plants and the inner facing has green colors.

Each floor is being recognized for its functions. The basement level has parking, building services, kitchen and personnel area. On the ground floor there is dining room, gym and workshop that increase their height towards the façade, involving natural light. In the attic, that faces the inner yard is placed administration. The next level has patient rooms and the third, the last floor, has building services.



*Residence & Day Center for  
the mentally Handicapped  
Aldayjover Arquitectura  
y Paisaje  
Barcelona, 2010  
facade*



Residence & Day Center for  
the mentally Handicapped  
plan, 2nd level



Residence & Day Center for  
the mentally Handicapped  
section



It has two types of programs: a day center and a residence. The main activity is provided by workshops. It is a very quiet place, that has administration and users' zones.

The circulation is created around the courtyard. From the master plan we can see a garden that is being repeated with terraces on the upper floors and green roof in the end. The façade mirrors this greenery effect with its glass panels. Inside, however, the center stays very calm and has white plaster as a surface.



*Residence & Day Center for  
the mentally Handicapped  
view on the courtyard*



There is a similar project- Sarthe-et-Loir Health Center, developed by Jean Philippe Pargade in 2007, in France . It can be compared with Rue Coquelicot in the organization of the courtyards and materials, used inside of this inner space.As the example, located in Barcelona, it has green terraces, trees on the ground floor and glass facing. The French complex is much larger than the Spanish one, its gross area is 34 000 sqm. It is built in the middle of farmland, there are no surrounding buildings, so it allowed to have a long horizontal shape.The center is one of the first constructions of its type to be organized as a network system.The inner open spaces have a façade, an art work of silk-screen-printed glass, designed by Gary Glaser. The color treatment of the interior spaces plays a major role in this project. The landscape of the area is used as a benefit also: the quantity of levels of the construction vary from one to four floors, according to the changing of the ground. It has a calm grey-blue façade with a nice rhythm of windows.

*Sarthe- et- Loire Health Center  
Le Bailleule  
arch. Jean Philippe Pargade  
2007*

## Rehab

Center of spinal cord & brain injuries

Designed by Herzog & de Meuron

It is placed in a field, around the area of Basel, in Switzerland. The competition was organized in 1998 and after the winning, the project was under the construction for almost 4 years. The rehab was completed in 2002. It has nothing in common with a hospital or any other “medical” construction.

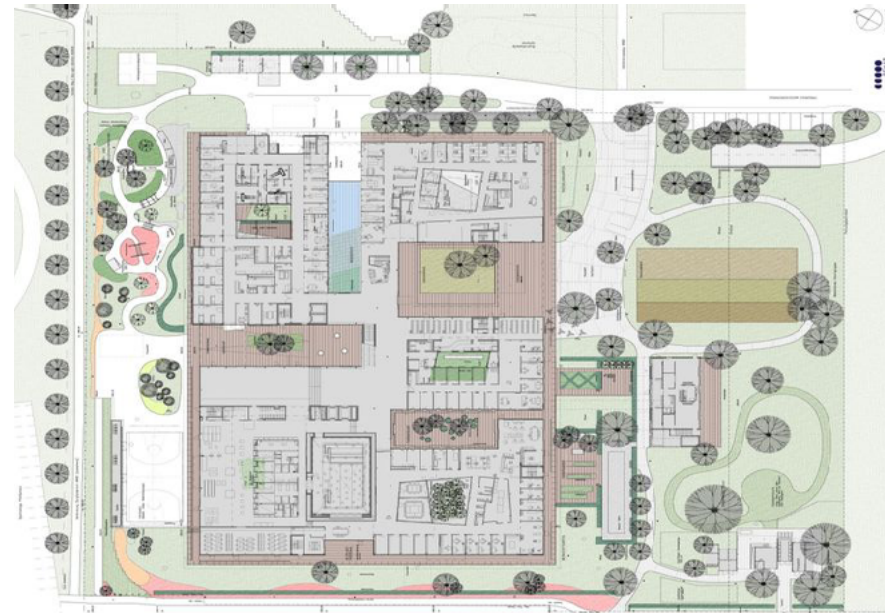
The building has strong connection of indoor and outdoor space. The site area is 24 000 sqm and building footprint is 9 500 sqm. Inside there are different courtyards (with wood, water, bathhouse), that allow the penetration of day light into the structure. It is a breathing building, where patients can rest in silence or stay together, an interesting point, that there are special zones with no précised definition.

The new REHAB centre is a horizontal building on two floors, in which wheelchair users and pedestrians can easily move from one place to another: therapy and medical facilities are



*Rehab  
Herzog & de Meuron  
Basel, 2002  
view on the courtyard*

on the ground floor; the patients' rooms on the second floor. The project regards people on wheel chairs, so it was designed wide enough for the passage. It is possible even to take out lying patients on the veranda in good weather. The building suits all the need of clients. People can live there for 18 months, in this center; they meet doctors and therapists, they have different activities, they can stay alone and stay at a public place. There are not only private or service zones, rehab is also designed to accommodate families and relatives of patients. The diversified design offers patients and their relatives a building that does justice to the complexity of their needs. There are places where one can retreat and be alone and others in which to enjoy company. And there are also non-territorial places that are not assigned to a specific function, small places for the times in between treatments, for conversation with relatives, or for staff members during their breaks. The REHAB is an open, permeable, breathing building.



*Rehab  
ground floor*

The care of surroundings took a landscape architect August Kunzel, who integrated the building into the nature; there are even some playing fields for wheelchair users.

Regarding the use of natural materials, can be presented Pictou Landing Health Center in First Nation fishing community in coastal Nova Scotia, Canada, where the leading part took Richard Kroeker and Brian Lilley. It is a great example of how the building suits the territory. A spruce tree is a historic material used for long house's construction, it was shaped by the community while it was green. There is a local municipal water system to provide geothermal energy. This strategy, together with heat recovery ventilation, high levels of insulation, earth berm and mass heat storage have made the building operate at 43% higher energy efficiency than a conventional building of comparable size. The center has such functions as clinics with consultation rooms and a community meeting space.



*Pictou Landing Health Center  
Nova Scotia  
Richard Kroeker Design  
2008*



# Sister Margaret Smith Addictions Treatment Centre

## Addiction

Designed by Kuch Stephenson Gibson Malo Architects and Engineer + Montgomery Sisam Architects in 2009. This treatment center is another Canadian example, situated in Thunder Bay not far from the city center.

The approach sustains from an idea that a healthy building environment is an important part of healing. As in all mentioned centers before, this construction talks with the natural light, it has a sequence of different spaces (one of it is spiritual) that are related to the landscape of 2 courts (for residents and for one day clients), that also work as a platform for activities.

The program fits sport activities, swimming pool, auditorium, spiritual space, shared dining, multi studios. There is possibility to stay and at the same time the building works as a day center. The distribution is circular, formed by courtyards. The building fits two types of zones: administration that include different services and offices, and patient's zone that have recreation and residential parts. It has a clear sequence of spaces with a



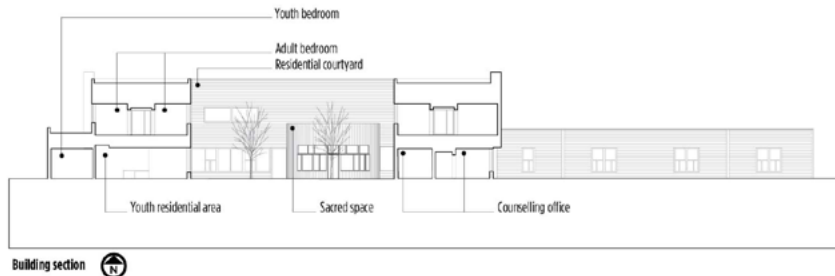
*Sister Margaret Smith Addictions Treatment Centre*

*Kuch Stephenson Gibson Malo Architects  
Thunderbay, 2009  
facade*

variety of relationships to the surroundings. There are gardens opened and totally closed from public view.

From the street you see a normal building, that may catch your eye with bordeaux part of the facing. Other materials that are used outside is wood, colored in white in some parts and colored plaster inside.

A healthy building environment should make an influence on the healing process, that's why the center embraces the principles of sustainable design and provide holistic care.



Sister Margaret Smith Addictions Treatment Centre section



- |   |                      |   |                          |
|---|----------------------|---|--------------------------|
| A | Main entrance        | G | Washroom                 |
| B | Residential entrance | H | School                   |
| C | Administration       | I | Youth residential living |
| D | Hall of recovery     | J | Residential courtyard    |
| E | Spiritual room       | K | Therapy courtyard        |
| F | Gymnasium            | L | Activity courtyard       |

Sister Margaret Smith Addictions Treatment Centre plan



## Rue Coquelicot care home

Disabled

The AZC was building this medical reception center for disabled during three years, from 2008 till 2011 in Limay, France.

In this project, you can see a game of full an empty paces as there are a lot of small gardens inside. A long simple but beautiful concrete structure speaks to the surroundings that consist of fields and some trees. It's facing is wood and inside it still repeats the façade with timber materials but the main material is plaster. Architects created a breathing space, where interior and exterior are combined. Each unit have an inner garden, the building devised on different recreation zones. This project is notable for it's colors choice and a play of light in the passageway. The space is pervaded by nature and relaxed atmosphere.



Rue Coquelicot care home

AZC

Limay, 2011

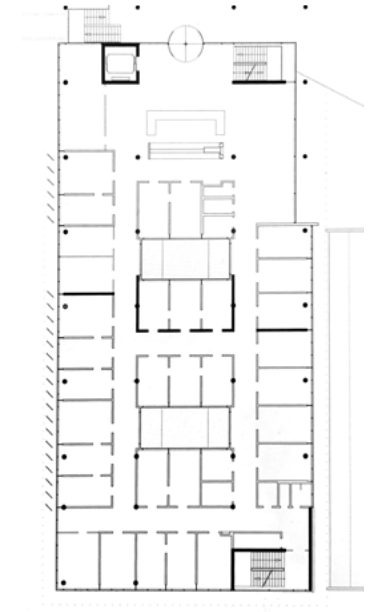
top: fragment of a facade

left: plan

## Cardiovascular center

It is a classic example of German architecture of recent years developed by Haid+ Partner Architekten, who work a lot in the field of Hospital architecture.(Nickl-Weller C.) It is very technic, very functional, of a high quality and has very clear structure. It has light atriums with waiting area around, the colors are pale and muted, that are supposed to create very calm atmosphere.

This center is a part of a complex of hospital in Nuremberg, Germany, so it doesn't attract people as a particular structure. In this concrete structure with a column net exist inner yards that serve to bring the light, usually to the corridors and the attendance area. The horizontal distribution is circular and it has wide passages for the patients. The whole building is very modest, outside are used alucoboard panels and inside there is plaster colored of yellow-green and beige, the floor is made of stone.



*Cardiovascular center  
Haid+ Partner Architekten  
Nuremberg, 2008  
view on the courtyard  
right; plan*

## Center for the Blind and Visually Impaired

Designed by Taller de Arquitectura-Mauricio Rocha in Mexico city, 2001. The building has a linear system and devised on 3 parts; entrance with administration, then library with workshops, and the third consists of classrooms with gardens. Each group has a structural relationship, that helps to distinguish spaces, a water channel running through brings people to the plaza, 6 types of flowers help users to orient in the garden.

The distribution is linear in this project, even there is a possibility to walk through and around the building and it reminds a circle flow. As the architects told in their interview, the budget could not allow to use really expensive materials, so the center is made from a concrete with a cladding of a local material, tepetate bricks. It is used in and outside and have very nice texture. It is a one level structure, mostly with windows in the upper part.



*Center for the Blind and Visually Impaired  
Taller de Arquitectura-Mauricio Rocha  
Mexico, 2001  
top; view on the courtyard  
left; plan*

## Children's center fo psychiatric rehabilitation

Designed by Sou Fujimoto

This is a home for mentally disturbed children, designed by Sou Fujimoto in Hokkaido, Japan, 2006. The environment is very quite, the building is surrounded by peaceful green fields. In origin, it was requested to create a house that could embrace little structures and to save the intimacy of each person.

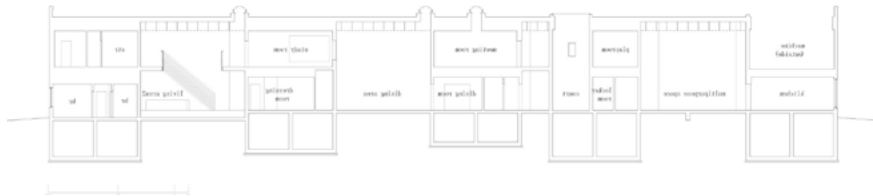
It is difficult to determine a center in this building, because all spaces are important. The flow is arranged by two areas that unit other rooms, so it looks as a curve. The program includes library, auditorium, living room, interactive play area, shared dining and treatment room. It is considered as a place for a long stay, so the center has bedrooms. There is a mix of patient and service zones, children can play where they like and they will always be under control as there are staff stations.

The building is made of concrete, covered with white plaster and bright colors of timber. The building consist of two levels,



*Children's center fo psychiatric rehabilitation  
Sou Fujimoto  
Herzog & de Meuron  
Hokkaido 2006  
facade*

the common space is double high. The openings play an important part too, they recognize public and private areas, so, for example, in bedrooms or any other one-floor room there is a small square window and in the big common spaces there are windows from floor to ceiling which look like a void but at the same time, they unite all the structures.



Children's center for psychiatric rehabilitation  
section  
right: plan of the ground floor



## Centre for Cancer and Health

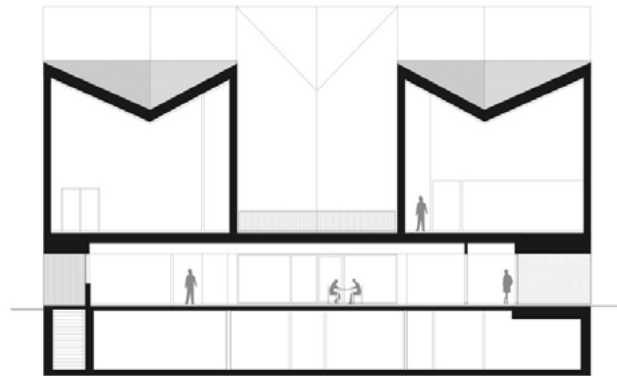
In 2011, The Nord Architects created a Centre for Cancer and Health in Copenhagen, Denmark, which is conceived as an iconic building, it has awareness of cancer without stigmatizing the patients. As in the example of Sou Fujimoto, here are some small houses combined into one, the modern design provides health facilities and gives privacy. Raised roof reminds a Japanese origami, it unites smaller structures and gives a unique form, based on the familiar forms of a classic roof.

It is located in city, not far from a hospital, so the patients have easy access. The focus is based on a spirit, so there are many public activities, it is a day center where people can relax, talk with others or stay on a peaceful quiet terrace. There are no huge receptions as the architects wanted to create a warm and welcoming atmosphere. The program has meditation, different trainings and even climbing



*Centre for Cancer and Health  
Nord Architects  
Herzog & de Meuron  
Copenhagen 2011  
facade*

Inside there is a garden with some greenery that replies a timber façade. Here you can see the different façade as outside the street where the architects used metal panels. It is a nice play of in and out space, which reminds a shelf.



A 1112195V T

Centre for Cancer and Health  
section  
right: plan of the ground floor



100ft 1e. 1



## Reina Sofia foundation Alzheimer centre

The design, made by Estudio Lamela Arquitectos in Madrid, Spain, took four years and was completed in 2006.

The gross area of the complex is 14 000 sqm, it consists of residences planned around gardens. The structure has such super features as high thermal mass façade, green roof, shading devices, natural ventilation, solar thermal and photovoltaic panels. It is made of simple, low energy and regional materials, as a base were used prefabricated, modular components. It is a combination of clinical and therapeutic care. The center includes a research center for disease, training center, there are modules of 16 rooms each, as it works as not only a day center ( 40 patients for a day center and 162 are residents). The modules are connected by a wide corridor of faded neutral colors. The whole interior is made of high quality materials and provides comfort, there are wood, different types of stone and plaster. Windows take a big importance in the design of the center, as usually sick people and the elderly spend most of their time indoors. So, the trick was to develop façade openings and outdoor spaces to open up a building without diminishing the sense of protection and safety. This, along with the logistical organization and the client's desire for flexibility and an energy-efficient building, were the determining factors in Lamela architects' design of an Alzheimer Day Care Centre in Madrid. The complex, which was



*Reina Sofia foundation Alzheimer centre  
Estudio Lamela Arquitectos  
Madrid, 2006  
view on the courtyard*

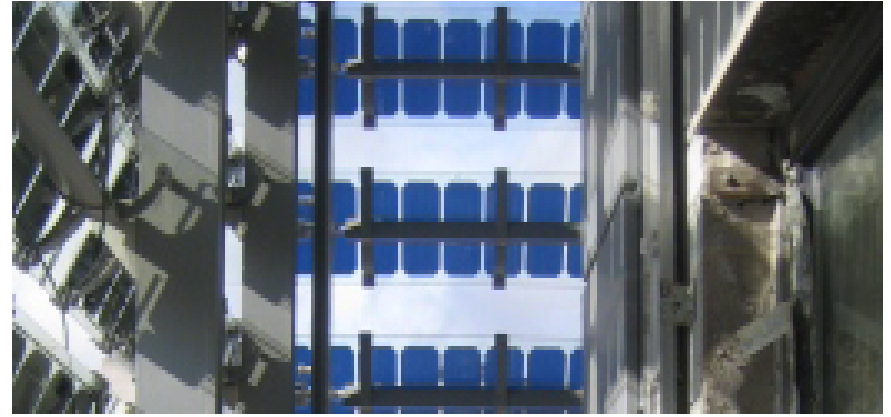
built in phases, comprises nine low horizontal residential blocks that fit in with the green suburban surroundings. Each block encloses a sunny courtyard that acts as an extension of the interior thanks to the horizontal fenestration. The blocks are all equipped with solar panels which, together with the highly insulated façades, windows and natural ventilation system, deliver the desired energy efficiency. In the highest building (research building), and therefore with a highly representative value, a PV façade made of 400 PV lamellas has been integrated as a second skin for sun and thermal protection to the building. 3 different types of lamellas have been custom-designed, in order to be optimally integrated into the building envelope. 400 PV



*Children's center for psychiatric rehabilitation  
3d model  
on the right: PV facade*

lamellas of 3 different types (glass-glass type) have been integrated in 25 rows in the south-east and south-west façades (also the north-west façade includes non-active lamellas, for aesthetical reasons). The supporting structure is made of aluminum and is separated from the main building façades 80 cm., thus forming a second protective skin.

Tilt angle of the PV lamellas is  $60^\circ$ , and vertical distance between the lamella rows is 45 cm., in order to minimise shading losses. To that aim, also the electrical configuration of the PV lamellas has been especially designed, with two independent strings of solar cells connected in parallel.



## Maggie's centers

Maggie's centers became a great leap in the design of any rehabilitation centers. Nevertheless, the aspect is focused on cancer; a perception of all rehabilitation centers was changed a lot. The story of the creation is touching and dramatic.

Margaret Keswick Jencks, a wife of an architect Charles Jencks, had cancer, and she was the person, who made this significant impact on the idea of rehabilitation center development. She brought some principles and guidelines that could be obvious nowadays. In the end of 90's, the world of rehabilitation was lacking the proper treatment environment.

Margaret and her husband believed that people should not "lose the joy of living in the fear of dying". The concept was based on the next principals:

People need more information

Stress-reducing strategies

Psychosocial support

Meeting people in similar circumstances

Domestic atmosphere



*Maggie's center  
Snohetta  
Aberdeen, 2013  
facade*



The object is to encourage people who feel frightened and anxious about coping with cancer to feel better by developing their sense of confidence and resourcefulness. (Maggie Keswick Jencks, p 33) With the new type of the environment, people should feel themselves at home and surrounded by care. Now, the space is predictable and flexible, it is very informal and has nothing in common with a standard hospital.

The first center was formed at the Western General Hospital in Edinburgh, in 1996, near the oncology department. Then, the initiative to create new centers started to come from doctors, as they have seen the importance of care and support. Moreover, the projects always provided those needs through the great architecture. Now there are 17 centers all over the world, designed by such famous architects as Foster+Partners, Frank Gehry, Zaha Hadid, Richard Rogers, Rem Koolhaas and many others. Each center is a particular free standing pavilion, surrounded by greenery, it works as a place of connection, where people can talk, cook together or do some activities. Every structure has an outstanding look that makes patients curious to explore it.



*Maggie's center  
Foster and Partners  
Manchester 2016  
facade*

Another center in Barcelona is being under construction right now. The project is made by Miralles Tagliabue EMBT. The design is of a garden pavilion in which the boundaries between interior and exterior space are blurred. Kálida will be on a site positioned between Hospital Sant Pau and the modernista Heritage site. The 400m<sup>2</sup> building is arranged on two levels with an extensive garden area. The lower floor will be an open and flexible space, conceived as a sequence of gardens and patios. The kitchen area is the welcoming heart of the building, in addition there is a library and a large multipurpose room. From the Oncology Department of the Hospital, there will be a paved area leading to the main entrance of Kálida



*Maggie's center  
Miralles Tagliabue EMBT  
under construction  
mode*

## Spaces for kids

Design for kids is an important question in the Health architecture. Children are very emotional and their space perception differs from the grownups. It is difficult to accept an illness being an adult, so how is it possible to accept when you are at the beginning of your life? I would like to talk about some examples of centers for the young patients, as I see this theme is quite acute.

Diabetic center in Dubai has been designed with a particular attention to separating flows, using gentle and curved shapes, vivid and smooth colors to provide a playful space with different areas for playgrounds, shelves with toys, tv sets and games consoles. Instead of giving the basic names to the treatment rooms, architects proposed to use colors for names. Child's psychology was taken into account, so the building was developed in a proper way to make kids feel comfortable and relaxed.

Another example is the new Children's Treatment Centre,





in Ontario Canada, which serves children and youth with communication, developmental and physical needs. It includes occupational therapy, physiotherapy, speech language pathology, social work, therapeutic recreation and specialized medical clinics.

To provide freedom of movement for all children, regardless of physical challenges, the center is designed as a single store structure. The spaces are organized about an intimate courtyard, which provides an outdoor space, sheltered from sights and sounds of traffic, for therapy, respite and occasionally celebration. All major circulation spaces of the building are visually connected to the outdoors and most notably the courtyard, providing accessibility, natural light and orientation. Providing views to outdoors to aid in way-finding was an important driver in the design of the circulation systems.

In Greece ,for a Big Smile Project, SchemaArchitecture & Engineering tried to create a private place for each child. There are 18 beds in a one big space and all the kids of various ages and difficulties have their own environment. There are different partitions that hide and at the same time keep visible a patient, the public space is organized as a playing area but still recognizes different functions. The whole center looks friendly and has a nice fresh atmosphere.

*Kid's place  
Ontario*





## Therapeutic centers

Beside typical healthcare centers, exist similar structures that play role of rehabilitation/ wellness center. Usually it reminds a gym or a spa, basically it works as a typical active center with treatment and therapy rooms, the program is concentrated on client's needs, so the required activities are taken into focus.

In Shanghai, 2015, was opened a rehabilitation center called "Clinic". It brings patients far away from thoughts about illness, it has modern design with nice mixture of materials such as concrete, rustic wood, textured glass and industrial lightning. High-level quality of finishing gives a relaxed beautiful atmosphere.

In the same year was developed a therapeutic pool for children with physical disabilities between 5-15 years old of La Esperanza School. The location of this outstanding building is in San Juan, Puerto Rico. The protagonists of the space are the light and the sky. One of the most important intentions of the project was to create a unique





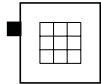













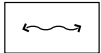








*Clinic  
Shanghai, 2015*

space where natural light constantly transforms the atmosphere inside; creating a direct connection between the user and nature and facilitating the healing process.



*La Esperanza  
San Juan*

# 3.3 Matrix

LOCATION	in/outside of the city			far from city		city outskirts		close to city center
landscape				incline		plane		
surroundings								
identity				unique building		street		
relation with nature				prominent		hospital appearance		invisible
				forest		plants outside the building		plants inside the building
DISTRIBUTION	horizontal flow			circular		linear		curved
courtyards				outside greenery		outside park		inside greenery
								mixed
STRUCTURE	type			column grid		shear walls		
windows				panoramic		standart		
ZONES & ENTRANCES								
FACING MATERIALS								
FUNCTIONS								

**GROOT KLIMMENDAAL**

**BEIT HALOCHEM**

**BRIDGE POINT ACTIVE HEALTH CENTER**

**RESIDENCE & DAY CENTER FOR MENTALLY HANDICAPPED**

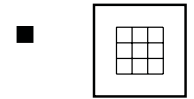
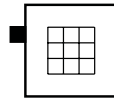
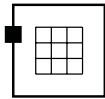
**165 REHAB**

**GENERAL DATA**

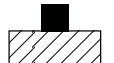
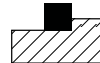
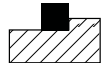
type	mental health problems	Defence Forces Veterans	complex chronic disease	mental handicapped	spinal cord, brain injuries
year	2011	2011	2002	2010	2002
country	Netherlands, Arnhem	Israel, Beersheba	Canada, Toronto	Spain, Barcelona	Basel, Switzerland
designers	Koen van Velsen	Kimmel-Eshkolot Architects	Stantec Architecture , KPMB Architects, HDR Architecture , Diamond Schmitt Architects	Aldajover Arquitectura y Paisaje	Herzog & de Meuron

**LOCATION**

in/outside of the city



landscape



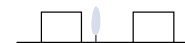
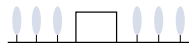
surroundings



identity



relation with nature



**SISTER MARGARET  
SMITH ADDICTIONS  
TREATMENT CENTRE**

**RUE COQUELICOT  
CARE HOME**

**CARDIOVASCULAR  
CENTER**

**CENTER FOR THE  
BLIND & VISUALLY  
IMPAIRED**

**CHILDREN'S CENTER  
FOR PSYCHIATRIC**

**CENTRE FOR  
CANCER & HEALTH**

**REINA SOFIA  
FOUNDATION  
ALZHEIMER CENTRE**

drugs & alcohol

disabled

cardio

blind

children with autism

cancer

alzheimer

2009

2012

2008

2001

2006

2011

2007

Canada, Thunder Bay

France, Limay

Germany, Nuremberg

Mexico, Mexico city

Japan, Hokkaido Prefecture

Denmark, Copenhagen

Spain, Madrid

Kuch Stephenson  
Gibson Malo Architects &  
Engineer + Montgomery  
Sisam Architects

Atelier Zündel

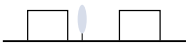
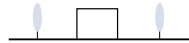
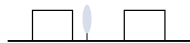
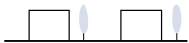
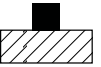
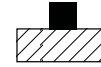
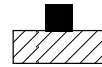
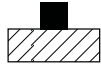
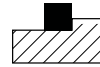
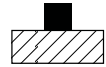
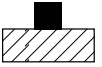
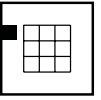
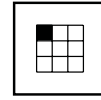
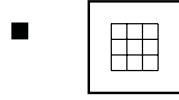
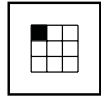
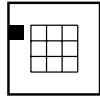
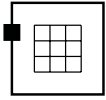
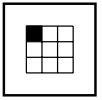
Haid+ Partner

Taller de Arquitectura-  
Mauricio Rocha

Sou Fujimoto

Nord Architects

Estudio Lamela Arquite





**GROOT  
KLIMMENDAAL**

**BEIT  
HALOCHEM**

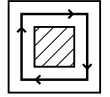
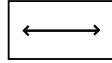
**BRIDGE POINT  
ACTIVE HEALTH  
CENTER**

**RESIDENCE & DAY  
CENTER FOR  
MENTALLY  
HANDICAPPED**

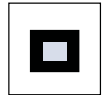
**165 REHAB**

**DISTRIBUTION**

horizontal flow

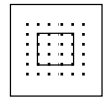


courtyards



**STRUCTURE**

type



steel column structure  
with bearing walls

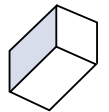
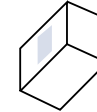
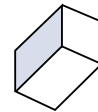
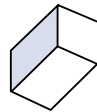
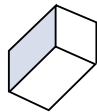
concrete bearing walls

reinforced column greed

column greed, u-glass

column structure

windows



SISTER MARGARET  
SMITH ADDICTIONS  
TREATMENT CENTRE

RUE COQUELICOT  
CARE HOME

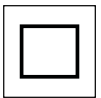
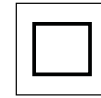
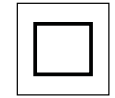
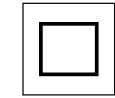
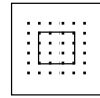
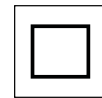
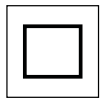
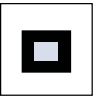
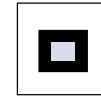
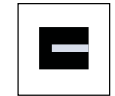
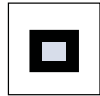
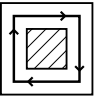
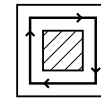
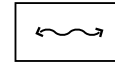
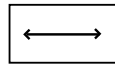
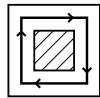
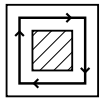
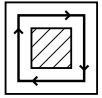
CARDIOVASCULAR  
CENTER

CENTER FOR THE  
BLIND & VISUALLY  
IMPAIRED

CHILDREN'S CENTER  
FOR PSYCHIATRIC

CENTRE FOR  
CANCER & HEALTH

REINA SOFIA  
FOUNDATION  
ALZHEIMER CENTRE



bearing concrete walls

reinforced concrete

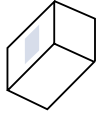
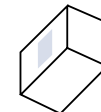
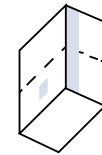
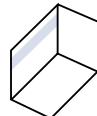
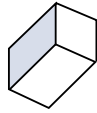
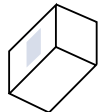
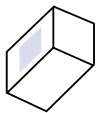
reinforced concrete  
column greed, post& railtype

reinforced concrete

reinforced concrete

reinforced concrete  
structure

reinforced concrete  
structure



**GROOT KLIMMENDAAL**

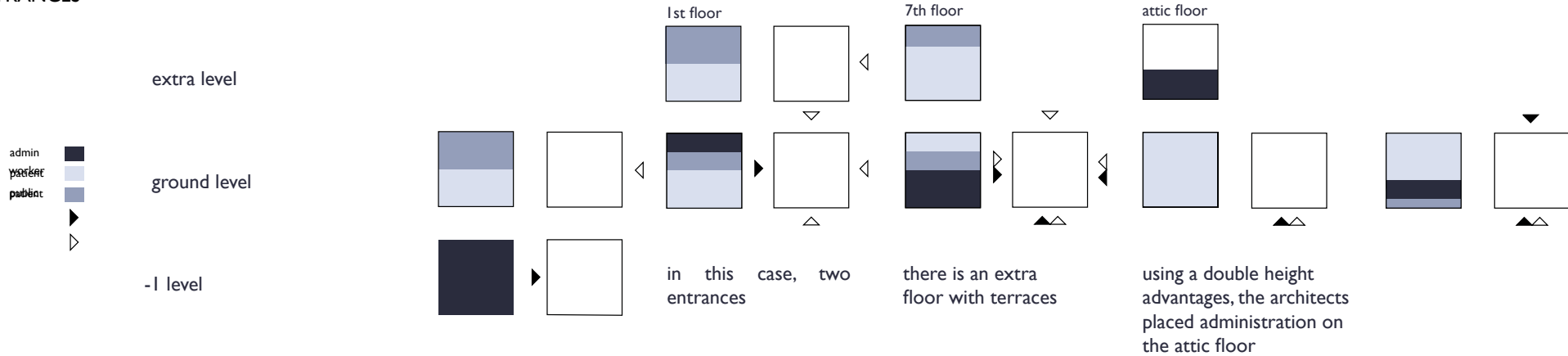
**BEIT HALOCHEM**

**BRIDGE POINT ACTIVE HEALTH CENTER**

**RESIDENCE & DAY CENTER FOR MENTALLY HANDICAPPED**

**165 REHAB**

**ZONES & ENTRANCES**



**ZONES**

number of clients	60	1000	5 500	100	92
gross area	14 000 sqm	6 000 sqm	207 264 sqm	2 098 sqm	9 500 sqm
levels	6	2	11	4	3
double height	2nd floor	1st floor	2nd floor	1st floor	2nd floor
recreation	45%	45%	15%	25%	5 %
administration	20%	8 %	10%	20%	5 %
medic services	—	7 %	25%	15%	35%
flow	20%	40%	25%	25%	25%
residence	15%	—	25%	15%	30%
m <sup>2</sup> per patient	230 m <sup>2</sup>	6 m <sup>2</sup>	37 m <sup>2</sup>	20 m <sup>2</sup>	103 m <sup>2</sup>

**SISTER MARGARET SMITH ADDICTIONS TREATMENT CENTRE**

**RUE COQUELICOT CARE HOME**

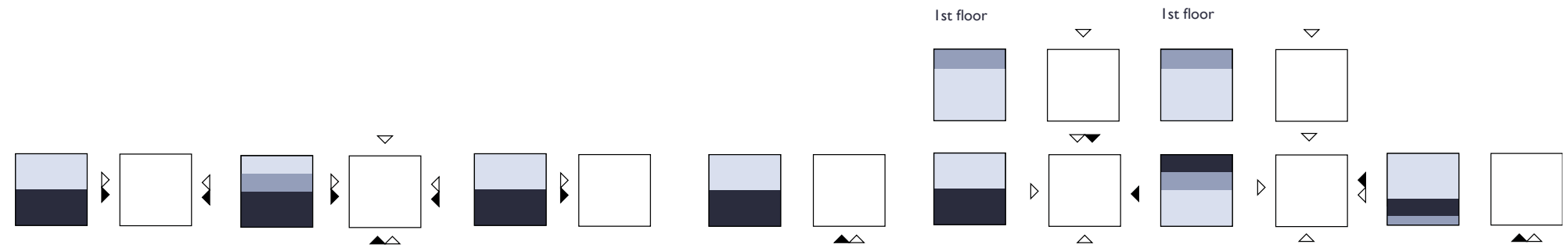
**CARDIOVASCULAR CENTER**

**CENTER FOR THE BLIND & VISUALLY IMPAIRED**

**CHILDREN'S CENTER FOR PSYCHIATRIC**

**CENTRE FOR CANCER & HEALTH**

**REINA SOFIA FOUNDATION ALZHEIMER CENTRE**



there is a special entrance for patients directly to the first floor

there is a special entrance for patients directly to the first floor

—	55	60	100	45	200	138
15 850 sqm	2 555 sqm	3 800 sqm	8 500 sqm	14 590 sqm	2 250 sqm	12 910 sqm
2	1	4	1	2	3	2
1st floor	1st floor	—	1st floor	1st floor	3d floor	—
30%	15%	—	50%	35%	40%	10%
10 %	10%	10%	10%	15%	10%	20%
15%	26%	30%	—	10%	25%	25%
20%	25%	25%	40%	20%	25%	20%
25%	30%	35%	—	20%	—	25%
—	46 m <sup>2</sup>	63 m <sup>2</sup>	85 m <sup>2</sup>	320 m <sup>2</sup>	11 m <sup>2</sup>	93 m <sup>2</sup>

**GROOT  
KLIMMENDAAL**

**BEIT  
HALOCHEM**

**BRIDGE POINT  
ACTIVE HEALTH  
CENTER**

**RESIDENCE & DAY  
CENTER FOR  
MENTALLY  
HANDICAPPED**

**165 REHAB**

**FACING  
MATERIALS**

outside

anodized-  
aluminium facade  
inside: colored plaster,

concrete  
no facing works  
inside: plaster, wood

glass,  
metal pannels  
wood

u-glass

different  
kind of wood



inside

colored plaster  
marble pavement

plaster  
wood  
concrete

plaster  
wood

white plaster  
green glass

different kind of  
wood





**SISTER MARGARET  
SMITH ADDICTIONS  
TREATMENT CENTRE**

**RUE COQUELICOT  
CARE HOME**

**CARDIOVASCULAR  
CENTER**

**CENTER FOR THE  
BLIND & VISUALLY  
IMPAIRED**

**CHILDREN'S CENTER  
FOR PSYCHIATRIC**

**CENTRE FOR  
CANCER & HEALTH**

**REINA SOFIA  
FOUNDATION  
ALZHEIMER CENTRE**

plaster  
wood



wood



alucoboard facade



tepetate bricks  
steel



plaster



metall facing,  
wood



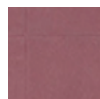
aluminum



eco materials  
FSC-certified wood  
low-VOC products  
glazed partitions



plaster  
wood



colored plaster  
stone



tepetate bricks,  
concrete  
wood



white plaster  
wood



white plaster  
wood



white plaster  
wood  
stone



**GROOT  
KLIMMENDAAL**

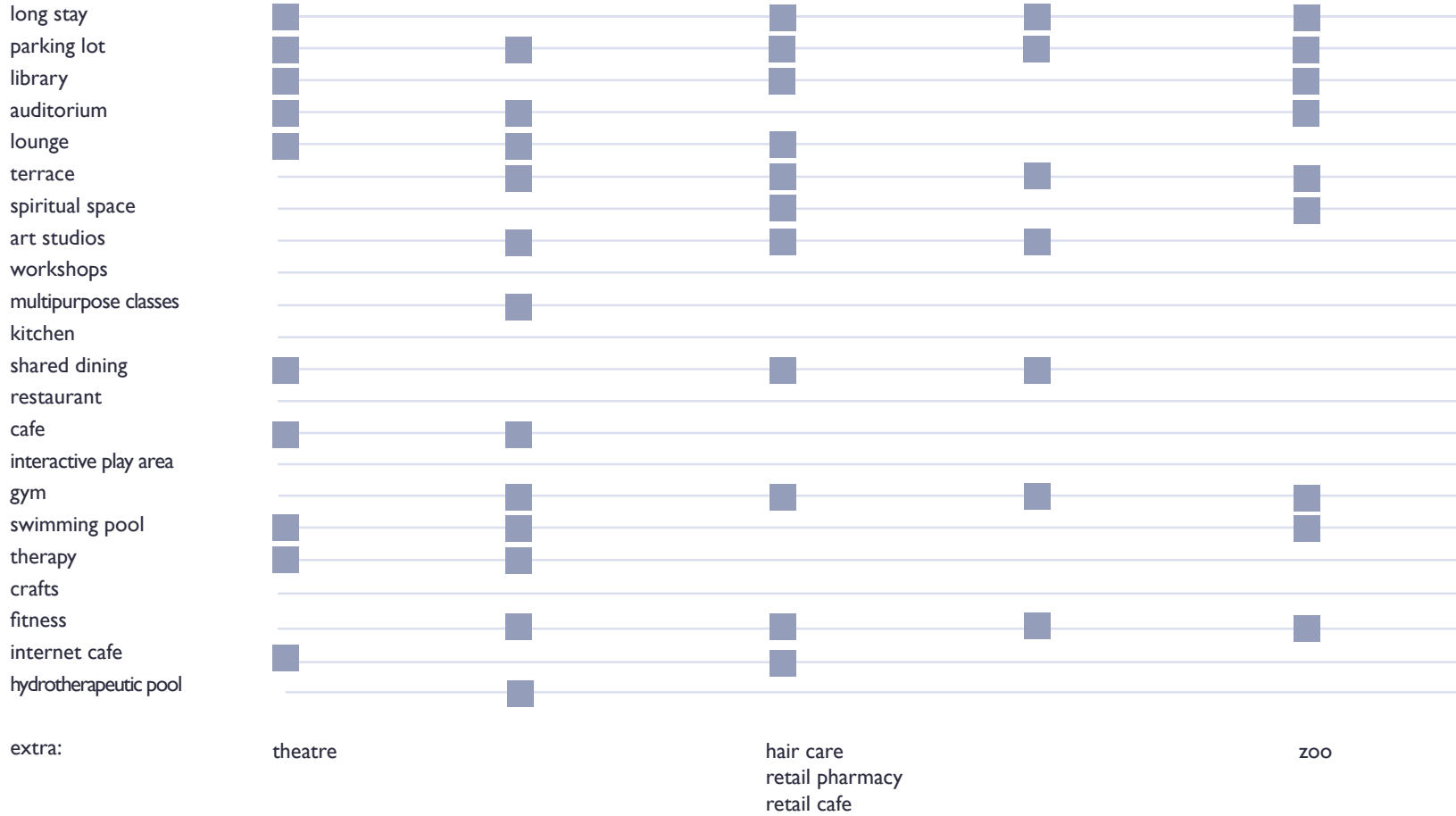
**BEIT  
HALOCHEM**

**BRIDGE POINT  
ACTIVE HEALTH  
CENTER**

**RESIDENCE & DAY  
CENTER FOR  
MENTALLY  
HANDICAPPED**

**165 REHAB**

**FUNCTIONS**



SISTER MARGARET  
SMITH ADDICTIONS  
TREATMENT CENTRE

RUE COQUELICOT  
CARE HOME

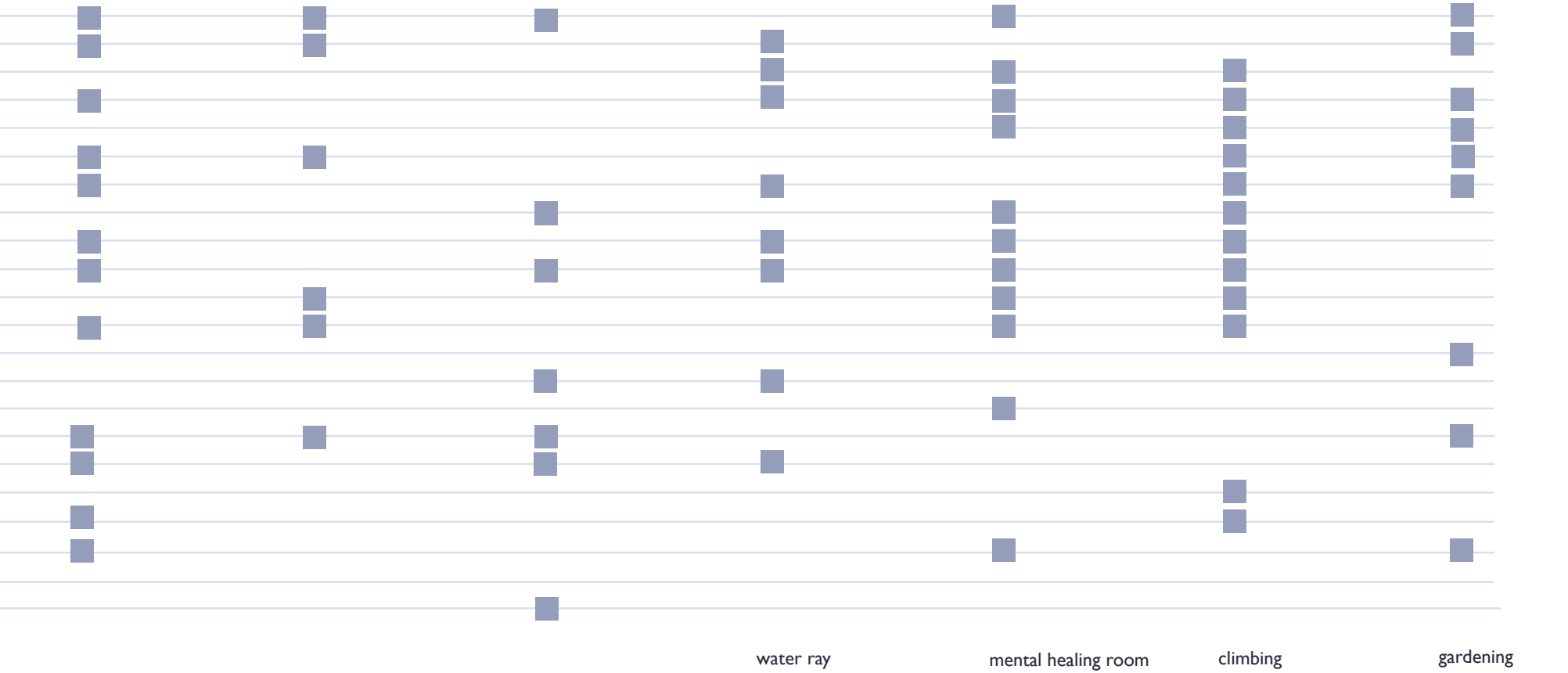
CARDIOVASCULAR  
CENTER

CENTER FOR THE  
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FOR PSYCHIATRIC

CENTRE FOR  
CANCER & HEALTH

REINA SOFIA  
FOUNDATION  
ALZHEIMER CENTRE



## 4 Discussion

As we can see, from the 21st century, the world of rehabilitation centers was enlarged significantly. The architecture of health is developing rapidly, the quality raises and the new types of structure appear.

From the research, can be made a conclusion, that the location of the building is very flexible, it can be placed in the city center, in suburbs, or in forest, the construction can be independent or be a part of a hospital complex. The change of a landscape is used as a benefit. Usually, the architects define the lower part for services and administration offices, it also helps to separate the entrance and not to mix the flow of workers and clients. Being one element or being a part of the city composition, centers regard to fit in with the environment. They can be barely noticeable, like residence and day center for mentally handicapped in Barcelona, invisible, like center for blind in Mexico City, or outstanding, as a cancer center in Copenhagen, but they have always a dialogue with surroundings.

Without doubt, greenery plays an important part in the project. Social researches showed that patients, who saw trees from the window, consumed medicine less, than those, who saw a brick wall. So, each example has at least two courtyards, except Groot center and Children's psychiatric center that are integrated in forest and field already. The courtyards have many advantages, they

define the flow and make the movement circular, they bring natural light, which is essential for the atmosphere, they make waiting areas more relaxed and hospitable.

Talking about distribution in rehabilitation centers, should be said, that mostly it is arranged by inner gardens. However, a particular case is seen in the Groot's construction. The flow is still circular as there is a quintuple body organization, which means to have services in the core of the building. Ought to notice that this center is quite wide and even without inner courtyards it has natural light, as there is double height and panoramic windows.

The structure principles are very logic, for buildings with more than two levels is used a column grid and centers with one or two floors have bearing concrete walls. As an exemption could seem the Cancer center in Copenhagen. It has an underground floor for services and the first floor has a double height but in this project, structure was defined by the changing shape of the roof. Another important factor in rehabilitation center's structure are the openings, as they bring the natural light. Each project talks about atmosphere and state of patients' mind. Therefore, the windows enlarge the space perception and give people a feeling of freedom. In many examples there are panoramic glass surfaces which make a strong relationship with nature and unite

the inner ambient of the building with its surroundings. Mostly, the entrances for employees and patients are designed separately. If the landscape is inclined, the architects always use this benefit and devise the flows by different levels. From the chart you can see the examples where a slope affected: the Groot Klimmendaal and Beit Halochem. In the Children's Psychiatric center and in the Center for Cancer & Health there are special stairs for patients that lead directly to the first floor.

The same admittance have Blind, Cardio and Alzheimer centers. On the other hand, there are such structures as center for disabled, for addiction treatment, for complex chronic disease, where all the sides have entrances for everyone.

In the presentation of the gross area, you can see, that the smallest center is the residence for mentally handicapped in Barcelona (2 098 sqm) and the largest is the Bridge Point in Toronto (207 264 sqm). They both have treatment zones, residence and recreation for patients. However, the first one is more rigid, according to its type of rehabilitation. Here comes a conclusion that the gross area can differ but basic functions will remain.

In the percentage list are shown the following zones: recreation, administration, medical services, flow and residence. Some examples like Beit Halochem, Center

for Blind and Visually Impaired, or Center for Cancer and Health require only a day program, as their main purpose is a meeting function, so they miss the residential part.

The recreation area in this research defines different activities. It plays a big role in the center's program, usually it takes from 30 to 50 percent. As a contrast, we can see recreation level at minimum for such specific rehabilitations as brain, spinal cord and cardio centers.

Very often, an administration zone occupies around 15% of the total area. It is a bit smaller, than medical treatment, which can be 25 % as a maximum.

The average percentage of the flow take around 25 % but it varies a bit. For example, in the Center for Blind and Visually Impaired it is 40%, what is quite logic.

The residence area have different percentage from 15 to 35, so as a conclusion we can say that it takes one third of the project.

A summing up graph shows square meters per person. There is no precise valuation as the area for a client depends a lot on the program of a center. However, we see huge difference between patients with mental problems and patients of residence for mentally handicapped.

Therefore, centers, which have an idea of a commune, require less space for a person, as the purpose is to make people stay together.

In facing of the buildings, are used a lot aluminium panels,



they make a nice light effect and usually applied to a high structure. There are some types of profiles that add a nice texture to the surface, also it looks good with big window openings. Aluminium composite panel (ACP), or aluminium composite material (ACM), is a type of flat panel that consists of two thin aluminium sheets bonded to a non-aluminium core.

Another dominant material is wood, which gives a nice natural effect. It can be colored, used as a detail or cover the whole façade, it is always a nice choice for an interior design too, as it looks “warm” and comfortable. Plaster is used as often as wood, inside and outside the building. It is an easy good looking material that can be any color you need, it’s texture is variable. For example, there is even a plaster of Paris that non-flammable and non-combustible and has low chemical reactivity.

Stone is used very often too, as it is a naturally available material, which allows having different sizes, texture, shines. These features are important for rehabilitation centers as they give calm environment and recall nature. Such material as glass is applied quite everywhere. There are a lot of types of it: float, tinted, laminated, shatterproof. In these examples of rehabilitation centers, there is a u-glass, which is used for facing, or a mat glass for interior partitions.

As the discussion shows, the rules of the project

development are quite strict and are based on a definitive program with certain functions.

The project of a rehabilitation center should consist of administration, recreation, medical services and residence zones. These zones are flexible and can have different services. For example, the recreation area can include library, auditorium, theatre and restaurant, it can be used only by patients or be a public zone too. The medical services have always a specific number of rooms, like a room for exam, treatment and therapy, sometimes it has an operational room (depends on the type of center). It should include space for employees too: an office, doctor’s cabinet, nurse station, restroom, in bigger structures there is residence for doctors and their families also.

Usually, a project devotes the administration part one fifth of the whole area. It is based on the idea to have a relaxed atmosphere and to create a friendly, comfortable environment. Such details as info points, receptions or registrations have an official character and can cause stress. Nowadays architects design waiting areas with playgrounds for kids, libraries, full of greenery and light, the whole space became more artistic and free because of an idea to reduce tension of attendance.

Most of rehabilitation centers require a long stay, in this case appear inpatient and outpatient areas. Usually, the

services for different types of clients are separated and the residents have their own block with day room, family room, dining, gym, activities, laundry, and nurse office. In each project of a big structure, there are such compulsory places as nurse stations, offices, storages, staff suite, conference room, team room, linen, clean/soiled utilities. They have an important role too because it is a part of services not only for clients but for workers too, so it should not be forgotten and should be designed in the right place.

## 4.1 Research

Working on the analysis, I realized that we do not have much information about centers for blind. This theme caused my interest, as I find it as important as any other rehabilitation.

I believe that blindness or visual impairment are not as grave as cancer, for example. Nevertheless, it does not make this field of medicine less important than oncology, or heart and brain diseases, and visual impairment or blindness require their own treatment program.

Unfortunately, this world is nearly un-known for most us, because of the lack of information. However, during my research, I found out that blind people are not as disabled as we usually see them and they can do almost everything: play instruments, do sports, read, listen, move in a city, communicate, etc. From five senses, they miss only the one, very important but not that much to stop enjoying the life. Of course, they still need help and cannot live alone.

Nowadays, there are a lot of features that allow orienting, like special glasses and sticks. In recent years, with the 3D printing, it became possible to make absolutely blind people see the light. However, the main guideline will always be voice and sounds.

Center for the blind and visually impaired is a very thin cluster between a typical public center and a rehabilitation one. Here come two questions:

Why do they need it?

What is the difference between classic rehabilitation center and center for blind?

1 Associations for blind and visually impaired exist in each country. These centers have different programs for people of all ages, they have different programs for the visitors, like learning Braille, living skills, treatment and many others. Usually, there are no special structures for this kind of organizations and blind people have to adapt to the building.

2 The difference between centers consists of specific design and program for blind. The idea is the same but it should consider needs of people, who do not see well, so the space and flows should be clear and easy.

I came to this conclusion after analyzing some projects. Unfortunately, the publications of projects are very few and it is quite hard to get any information about these types of buildings.

In the following table, you can see data of structures for blind, built in past ten years. There are schools, kindergarten, hospitals and centers.

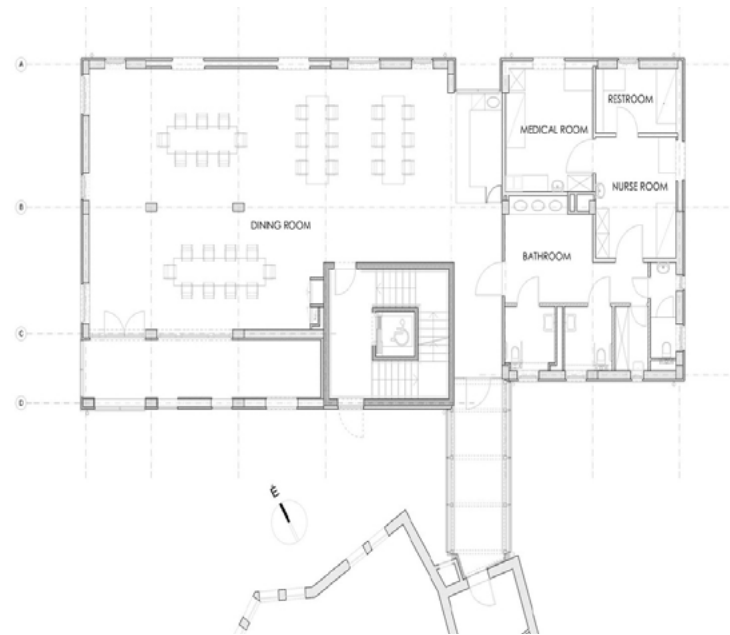
# Batthyány László Institute for the Blind

A4 studio  
Budapest, Hungary  
2015

The institute was founded in 1898, Budapest. Most of the children who are living here have multiple disadvantages. There are blinds, disableds, mentally retarders, and most of them are orphans. The state supports them until the age of 18. After this age they have no place to go to.

The A4 Studio designed the home of the 18+ children. The new building is connected to the existing one, with a bridge. In the first two floors of the 5 storey building, there are common spaces, activity rooms and the dining room. In the 3 upper floors, there are the bedrooms.

The aim was to make a safe and user friendly building, which serves the life of the children. Most of the corridors get natural light, which helps the orientation of the blinds. The strong light transmission is

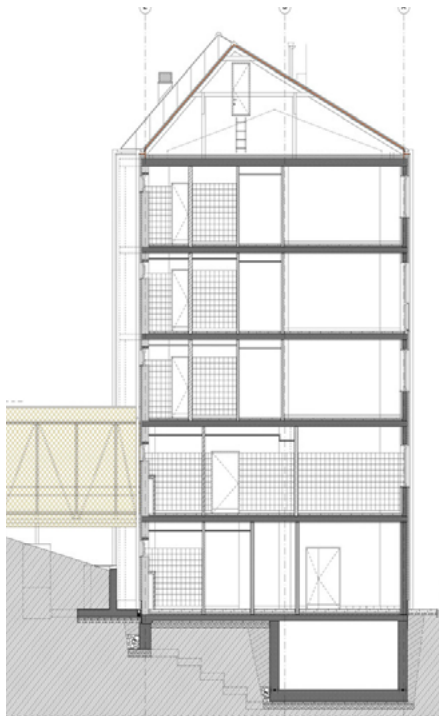


*Batthyány László Institute for the Blind  
A4  
Budapest, 2015  
plan, 1st level*

reduced by the perforated metal sheets. These sheets are placed in front of the large glass surfaces. The perforation is formed from braille subtitles, with the following words: trust, home, shelter and love. Size and location of the windows are different in every bedroom, which can also help the orientation.

The other perforation form was designed by the abstraction of the Rubik's cube (hungarian motive) and the flames (azerbaijani motive). This refers to the funding, which came from Azerbaijan and Hungary also.

*Batthyány László  
Institute for the Blind  
section  
on the right:  
facade's fragment*





*Batthyány László  
Institute for the Blind  
facade*



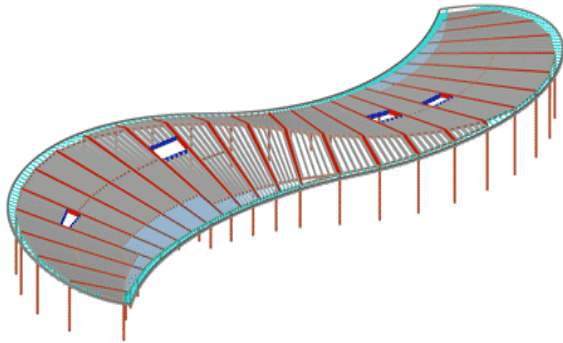


# Centre for Scottish War Blinded by Page\Park

Page\Park  
Wilkieston, Scotland  
2011

It is a center for blinded sailors, soldiers and aviators. The single-storey Centre for Scottish War Blinded curls around the site and has an undulating zinc roof, inspired by a sculpture of a dragon found in the charity's existing facilities.

Located on an adjacent site, the new day care and rehabilitation center replaces the old buildings and includes



- Key:
1. Entrance
  2. Cafe / Lounge
  3. Art Room
  4. Workshop
  5. Living Skills
  6. IT
  7. Gym
  8. Therapy
  9. Administration
  10. Terrace
  11. Sensory Garden
  12. Greenhouse

Centre for Scottish War Blinded  
Page\Park  
Wilkieston, 2011  
structure  
on the right: plan, 1st level

a workshop, art space, training areas, a gym, therapy spaces and administration as well as a remembrance room and sensory garden.

Scottish War Blinded was founded in Edinburgh in 1915 with the object of caring for Scotland's sailors, soldiers and airmen and women who were blinded in the service of their country. With the organization now taking in a higher number of veterans of more recent conflicts, the Scottish War Blinded recognized that a new facility was required so that the scope and quality of the services they offer could be improve

*Centre for Scottish War Blinded  
workshops and common space ( on the right, below)*



*Centre for Scottish War Blinded  
facade*



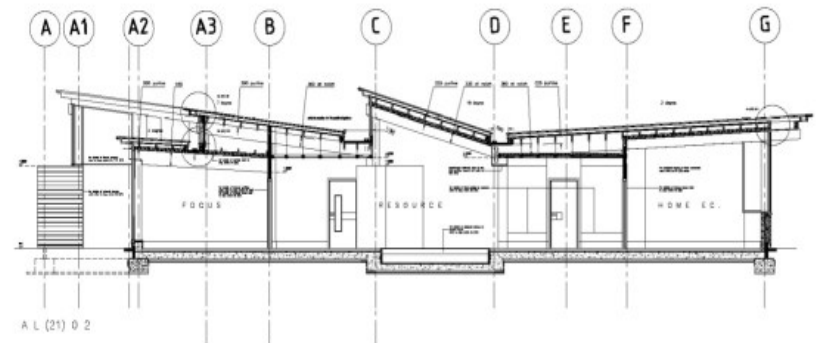
# Hazelwood School

Alan Dunlop Architect Limited  
Glasgow, UK  
2004

Hazelwood is a school for children and young people, aged 2 to 18, who are blind and deaf – “dual sensory impaired”. Architecturally, it is a new type of project. Many of the school’s children are physically handicapped and all have a degree of cognitive impairment. Together they represent the most acutely disabled children on the City of Glasgow’s education role. They will need lifetime support. It was determined to create a school which would support the needs of the children and the aspirations

of their parents, a place of safety and ambition that would free the teacher and inspire the child. Hazelwood School has been a real success. The children and young people respond well to their new environment and appear to be thriving. They are supported by committed teachers in a bespoke school that their parents love and take ownership for. The building has received multiple national and international awards.

The sinuous plan not only creates strong internal circulation, it also creates outdoor rooms. Given the mobility concerns of such an



Hazelwood School  
Alan Dunlop Architect Limited  
Glasgow, 2004  
on the left : top view  
on the right: section



architectural program, the prospect of crossing streets or a parking lot to reach an outdoor play area is highly impractical. By cradling outdoor spaces via the plan's bends the adjacency of the two realms is immediate. Additionally the external environment is always perceived indoors, be it through the windows and clerestories in the classrooms or the natural ventilation of the single-loaded corridor. The main circulation along the length of the plan illustrates the design considerations supplied by the architects. These include

*Hazelwood School  
passages. indoor and outside*



the small-scale gesture of the zig-zagging wood walls, the waist-level contours in these walls, and the textures of the floors, including the placement of the HVAC grilles for additional aid in movement. Of course, one need not think that these sorts of considerations are limited to those with special needs. It is important for architects to constantly think about the all the senses and ways people interact with their architecture; ideally architects make such an experience richer.



## Anchor Center for Blind Children

Davis Partnership Architects  
Denver, CO, USA  
2007

The Anchor Center for Blind Children's 15,000-square-foot teaching facility is a functional yet graceful facility that serves as an active teaching tool for blind and visually-impaired infants, toddlers and preschoolers.

Situated on a 2.2-acre site, this serene facility has been meticulously designed to elevate learning and engage children in a deeper understanding of their world. Subtle, strategically

placed sensory elements and child-sized detailing throughout this "touch-friendly" building and site serve as intuitive guides and integrated teaching tools. By embracing the senses of sight, sound, touch, smell and taste in innovative ways, Davis Partnership's seamless marriage of interior and exterior spaces provide the ideal container for Anchor Center's specialized multi-sensory curriculum.

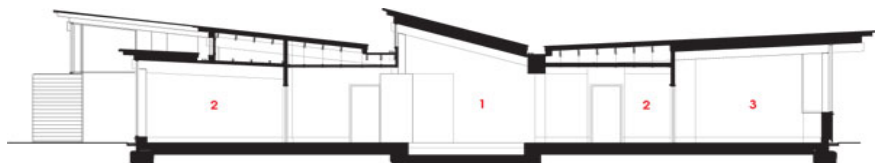
Designed as an integral part of its neighborhood, this one-story structure aligns with the street edge, respectfully mirroring the adjacent residential scale. Classroom "pods",



Anchor Center for Blind Children  
Davis Partnership Architects  
Denver, 2007  
on the left: hall  
on the right: playing zone

clad in a subtle Braille-inspired-pattern of blond masonry that plays light against shadow, reach skyward, while revealing the building's interior spatial organization. The elongated series of pods, connected by a central circulation spine, are flooded in diffused northern light through a series of filtered clerestory windows just below the angled roofline. Variations in scale, materials and lighting assist children with orientation.

The building's interior architecture is intentionally clean, simple and free of obstructions. Internally, three colors — blue, yellow and rose — serve as way-finding elements while visually separating the three “mind, spirit and body” pods of the building. Chosen based on a careful study of color theory and the actual passive or active nature of each pod, this triad of hues is integrated throughout the building in the form of skylights, door lights and wall scones.



SECTION A-A



*Anchor Center for Blind Children  
on the left : section  
on the right: corridor*



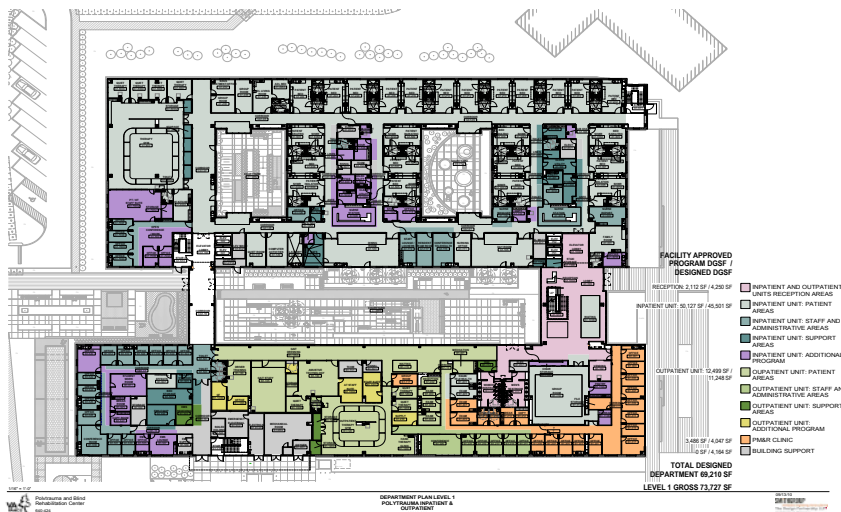
# Polytrama rehab center

SmithGroupJJR The Design Partnership  
Palo Alto, CA, USA  
2015

SmithGroupJJR, with associate architect The Design Partnership, is designing the VA's first and only Polytrauma Rehabilitation Center to be combined with a Blind Rehabilitation Center. At 174,000 square feet, the new facility will be the largest consolidated rehabilitation center in the Veteran's Affairs system,

housing 24 polytrauma beds, 32 blind rehabilitation beds, and 12 polytrauma transitional rehabilitation beds. The center will also have an outpatient physical therapy/occupational therapy clinic, an outpatient physical medicine and rehabilitation clinic, and clinical programs for veterans returning from Iraq and Afghanistan.

The center replaces, consolidates and expands the inpatient polytrauma programs and essential services for physical



Polytrama rehab center  
Palo Alto, 2015, SmithGroupJJR, on the left: plan on the right: passage

medicine and rehabilitation. Family spaces are interspersed throughout for an integrated care approach. Additional inpatient and outpatient services include physical and occupational therapy, speech therapy, gait training, driver's training, telemedicine and cognitive therapies. With the inclusion of blind rehabilitation facilities, SmithGroupJJR hired blind architect Chris Downey, who helped the team develop multisensory design strategies that would support blind or visually impaired veterans navigating the building.



*Polytrama rehab center  
facade*

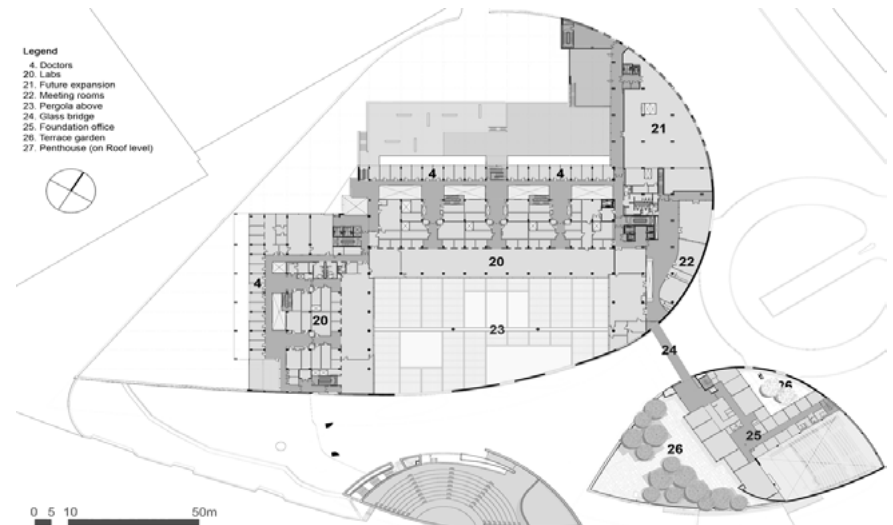
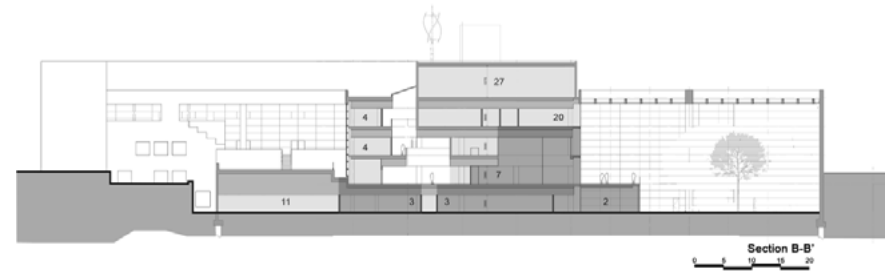
# Champalimaud Centre for the Unknown

Charles Correa Associates  
Lisbon, Portugal  
2010

Charles Correa Associates designed this research and diagnostic center located in Lisbon. It is a state-of-the-art facility guided by some of the best scientist in the world. Correa says, "What makes me most proud about this project is that it is NOT a Museum of Modern Art. On the contrary, it uses



Champalimaud Centre for the Unknown, Correa Associates, Lisbon, 2010, entrance



Champalimaud Centre for the Unknown, plan and section



the highest levels of contemporary science and medicine to help people grappling with real problems; cancer, brain damage and going blind. And to house these cutting-edge activities, we tried to create a piece of architecture. Architecture as Sculpture. Architecture as Beauty. Beauty as therapy.”

The 3 units that constitute the project (the largest for the doctors and scientist, the second for the theatre, the exhibition hall, the Foundation offices, etc, and the third is an open-air amphitheater for the city) have been arranged to create a 125m long pathway leading diagonally across the site, towards the



Champalimaud Centre for the Unknown, passages

open seas. This pathway is ramped up (at a gentle slope of 1:20) – so as you ascend, you see only sky ahead of you. At the end of the ramp are two stone monoliths, straight from the quarry. When you reach the highest point, you begin to see a large body of water, which seemingly connects (i.e., without any visual break) to the ocean beyond. In the center of this water body, just below the surface of the water, is an oval shaped object—made of stainless steel and slightly convex, so that it reflects the blue sky and passing clouds above.



## 4.2 Matrix

**BATTHYÁNY  
LÁSZLÓ**

**CENTRE FOR  
SCOTTISH  
WAR BLINDED**

**HAZELWOOD  
SCHOOL**

**ANCHOR**

**PALO ALTO  
POLYTRAUMA/BLIND  
REHABILITATION  
CENTER**

**CHAMPALIMAUD  
CENTRE FOR THE  
UNKNOWN  
CENTER**

**GENERAL  
DATA**

type	institute	center for veterans	school	center for blind children	rehabilitation center hospital	cancer, brain damage and going blind
year	2015	2011	2004	2007	2015	2010
country	Hungary, Budapest	UK, Wilkieston	UK, Glasgow	USA, CO, Denver	USA, CA, Palo Alto	Portugal, Lisbon
designers	A4 studio, Grabarics Kft.	Page Park Architects	Alan Dunlop Architect Limited	Davis partnership architects	SmithGroupJJR The Design Partnership	Charles Correa Associates

**LOCATION**

in/outside of the city						
landscape						
surroundings						
identity						
relation with nature						



**BATTHYÁNY  
LÁSZLÓ**

**CENTRE FOR  
SCOTTISH  
WAR BLINDED**

**HAZELWOOD  
SCHOOL**

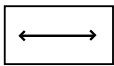
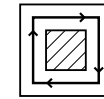
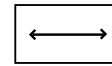
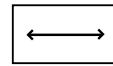
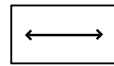
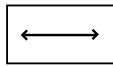
**ANCHOR**

**PALO ALTO  
POLYTRAUMA/BLIND  
REHABILITATION  
CENTER**

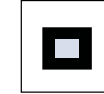
**CHAMPALIMAUD  
CENTRE FOR THE  
UNKNOWN  
CENTER**

**DISTRIBUTION**

horizontal flow

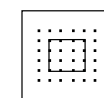


courtyards



**STRUCTURE**

type



reinforced concrete  
structure

reinforced concrete  
structure

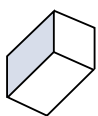
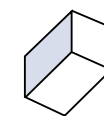
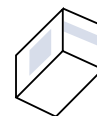
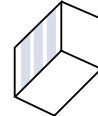
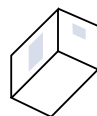
reinforced concrete  
structure

reinforced concrete  
structure

reinforced  
column greed

reinforced  
column greed

windows



BATTHYÁNY  
LÁSZLÓ

CENTRE FOR  
SCOTTISH  
WAR BLINDED

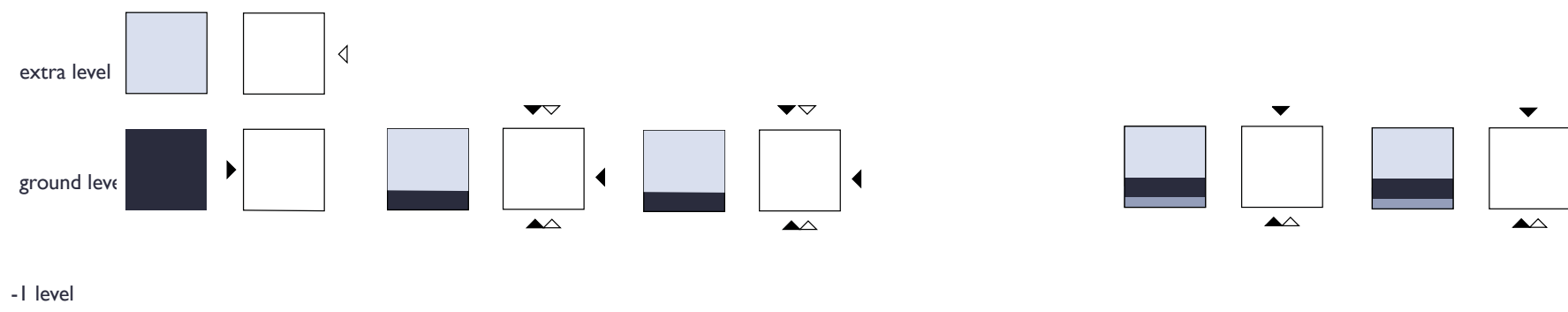
HAZELWOOD  
SCHOOL

ANCHOR

PALO ALTO  
POLYTRAUMA/BLIND  
REHABILITATION  
CENTER

CHAMPALIMAUD  
CENTRE FOR THE  
UNKNOWN

ZONES &  
ENTRANCES



ZONES

number of clients	30	25	34 full-time, 8 part-time (20 teachers)	100	68 (inpatients)	70
gross area	1 500 sqm	750 sqm	2 663 sqm	4 570 sqm	53 035 sqm	50 000 sqm
levels	5 (+2 technical)	1	1	1	3	4
double heig	—	—	in the corridor	in the corridor	—	public spaces
recreation	35%	70%	25% (35% study rooms)	—	10%	40%
administrat	10%	5 %	5 %	—	12 %	10 %
medic servi	5 %	5 %	10%	—	38%	30%
flow	10%	20%	20%	—	22%	20%
residence	40%	—	5 %	—	18%	—
m <sup>2</sup> per pati	—	—	—	—	—	—

**BATTHYÁNY  
LÁSZLÓ**

**CENTRE FOR  
SCOTTISH  
WAR BLINDED**

**HAZELWOOD  
SCHOOL**

**ANCHOR**

**PALO ALTO  
POLYTRAUMA/BLIND  
REHABILITATION  
CENTER**

**CHAMPALIMAUD  
CENTRE FOR THE  
UNKNOWN**

**FACING  
MATERIALS**

outside

aluminium facade  
plaster  
pavement



wood  
colored in white



wood  
stone



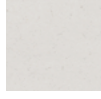
wood



wood



plaster



inside

plaster



plaster  
wood



plaster  
wood



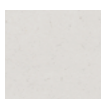
plaster



plaster  
wood



white plaster  
in some parts  
yellow plaster



**BATTHYÁNY  
LÁSZLÓ**

**CENTRE FOR  
SCOTTISH  
WAR BLINDED**

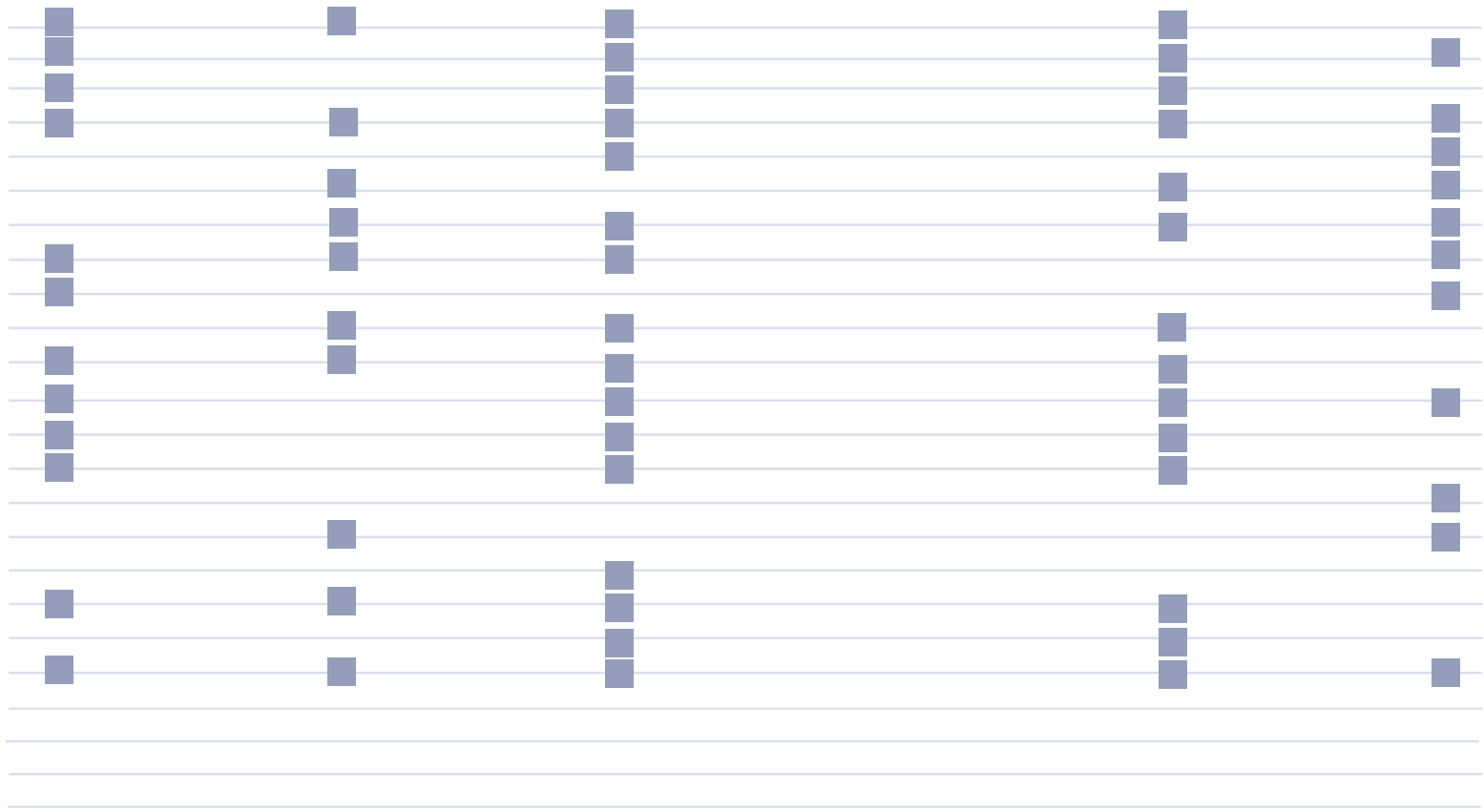
**HAZELWOOD  
SCHOOL**

**ANCHOR**

**PALO ALTO  
POLYTRAUMA/BLIND  
REHABILITATION  
CENTER**

**CHAMPALIMAUD  
CENTRE FOR THE  
UNKNOWN**

- living skills
- med
- long stay
- parking lot
- library
- auditorium
- lounge
- terrace
- spiritual space
- art studios
- workshops
- multipurpose classes
- kitchen
- shared dining
- restaurant
- cafe
- interactive play area
- gym
- swimming pool
- therapy
- crafts
- fitness
- internet cafe
- hydrotherapeutic poc



extra:

crafts

classrooms  
computer hub room

psychology  
optometry  
visual skills  
recreation therapy  
computer access training

labs  
vivarium  
exhibition area  
amphitheatre

## 4.3 Result

### Location

Seems like a paradox, but most of the structures are situated nearly in the suburbs. However, it is just the common impression towards the blind people that they cannot orient. As it was shown before, they can see something, moreover they can hear, so usually it is enough to show the way once, so the next time they can move by themselves.

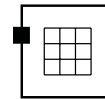
It also depends on the type of the building. In studied examples, a school in Scotland is located quite far from the city center. In this case, the students can be brought there by bus.

Another similar situation is seen for the kindergarten: parents take the kids with a car or any other transport; anyway, the child will be accompanied and do not have to think about the road.

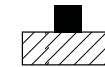
The hospital's location is clear too. Usually, the patient is brought by his family members or an ambulance, so, as in example of the school and kindergarten, the users do not have to take care of the ride.

On the other hand, there is a center for blind veterans, which is placed in a hinterland. It seems not very comfortable, as in this case, the access is reduced and not all kind of people, not only the visually impaired, can achieve it easily. This contrast location does not seem very logic.

It is easy to imagine, that plain surfaces are much more



*location: far from center*



*landscape: plane*



*surroundings: mixed*



*identity: particular*



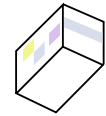
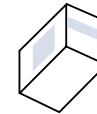
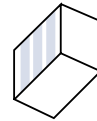
*greenery: garden  
with trees*

comfortable for walking, rather than steps and various inclinations. From the matrix it is seen, how it is important to respect this rule. This method is used everywhere and the landscape is not changing. Also, most of the structures have only one floor.

The facades of the buildings are quite untypical for the areas, where they are settled and each building looks particular. Even, the facing materials are quite simple (mostly it is wood and plaster), the shape of the building is never standard.

All the projects have green areas. Some of them have just grass zones, some of them have different types of gardens but the nature element is always important in the project.

There are always various windows, that help to distinguish zones too.

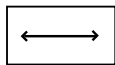




## Distribution

According to the plans, we see that the most common flow should be linear (horizontal), as it provides an easy wayfinding. An important role play handles, which are placed along the corridors. Such system usually have a corridor with services on one of it's side .This type of navigation allows to make the paths curvy as well.

The garden always present in the project. It can be planned as a surrounding area with a strict division between public zone and parking lot. It makes a nice atmosphere, which gives privacy to the building. In the examples of hospitals there are inner gardens, the Portuguese has even a glass structure with different types of gardens: therapeutic, vivarium and sunken.



*horizontal linear flow*



*green surroundings or inner garden*

## Zones

In this part, the data can be different, as it depends on the functions of the structure. In the buildings, that are supposed to be used for a day, there is only one floor usually. In these projects, there is a big percentage of a recreation space, around 30 %. In projects, dedicated to treatment, this part takes only 10 %.

As a result, the recreation zone takes 35-40%, the administration takes less than 10%, medic services occupy one third of the space, for the flow are dedicated around 20% and for the residence (if it present) rest 20%. Ought to mention, that tis part varies a lot. In the institute, the bedrooms take 40 %, in the school- 5 % of the whole area, in Paolo Alto patient rooms have 18% and in Champalimaud, as a residence part can be recognized only a penthouse.



reinforced concrete structure



*area usage: 75% for clients 25% for services*

## Functions

In a comparison with the previous table of rehabilitation centers, should be said that complexes for blind have almost the same options, as other rehabilitation centers. Project contains public areas, in the institute, school and health center there are libraries. Almost everywhere you can see auditoriums and workshops, there are such details as lounge and terrace which unite people. Of course, the functions can vary according to the building but the most usual are: library, studios, kitchen, dining room, lounge, gym and swimming pool. A big difference from a typical rehabilitation services make such new functions as

medicine supply  
living skills

However, crafts, fitness, internet café and hydrotherapeutic pool do not present in the following centers. Only the center for veterans has crafts as the main program option and in Palo Alto there are such trainings as

*computer access.*  
*optometry*  
*psychology*

A particular number of spaces has also the Portuguese center:

*labs*  
*vivarium*  
*exhibition area*  
*amphitheatre*

It gives a new view on the rehabilitation and creates an atmosphere of an Art center. It has a deep psychologic meaning, as such spaces do not indicate on the state of the patient and gives him more energy and positive emotions.

## Materials

Each architect was choosing a natural material. The constructions are different but the facing consists very often of plaster, stone or wood. These are good solutions, because of an aesthetic and health point of view.

Among the natural materials that are both aesthetically pleasing and benign could be included:

lime or mud plasters

adobe or rammed earth

bricks

tiles

untreated wood (simple oil finishes can be used)

cork

reeds

bamboo

canes and grasses

The usage depends on the climate but those materials are recommended for the green housing, which means to have quality and healthy air. Those materials have a great influence on the atmosphere with its' tactile effect and colors.

Inside of the structures plaster and wood are used as well. However, in this case plaster is not pale, as it is usually seen outside, but has strong bright colors like yellow and red. It is used to distinguish the spaces and functions.

ut the facing consists very often of plaster, stone or wood.

## 5 Design concept for meta project

The shape of the project comes out from a classical hospital rectangular system with inner gardens. It wasn't applied directly as the complex requires different functions, they are:

Treatment (ophthalmology clinic, pharmacy)

Education (workshops, music hall, library)

The idea of the project is to keep the functions devised but with an easy wayfinding. The structure will look as one unit, because it is based on a multi-functional program for people with vision problems.

There are three main zones that are supposed to accommodate different types of users. The medical part will have patients and employees, the part of workshops will host visually impaired visitors with their families, and the library with the music hall will be for a mixed public. These platforms will be arranged in a locked square and will face the garden, placed inside.

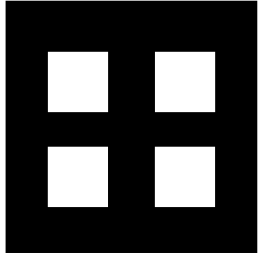
The orientation in a new space is an important detail of each projects, especially it is hard for visually impaired. So my idea was to create a kind of x; y; z axes navigation. It is applied to a part for visitors of the center. There is one entrance with two directions: to the library and to the music classes, there you can see also an elevator, which brings people to the workshops and to the concert hall. The entrance is placed in the angle and it is easy to reach

from every quarter.

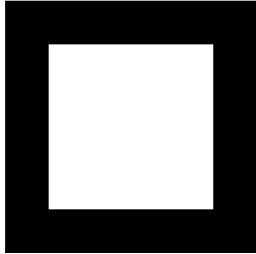
On the other side, there is a medical platform with the clinic and the pharmacy. To make an entrance more welcoming, the front wall was moved from the street line towards the garden. At the same time, the part of the pharmacy will remain, as it should be visible from different directions, and it will be a closing element of the entrance's composition. The form of the clinic will be turned as it plays a new function, so it's volume should be recognizable.

The ring of the complex will be locked by a part for the clinic's workers with an entrance, separated from the patients'.

historic form



new form



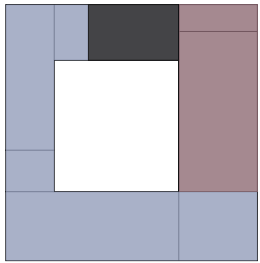
2 platforms



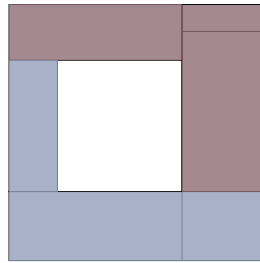
organization



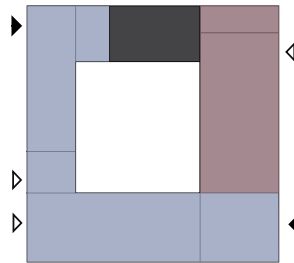
functions. ground fl



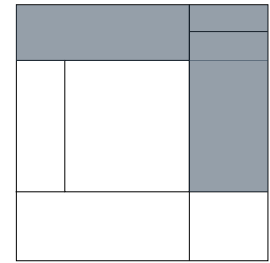
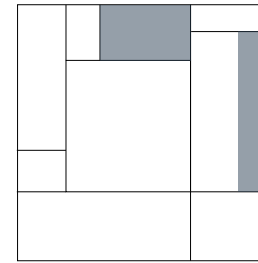
functions. first fl



entrances



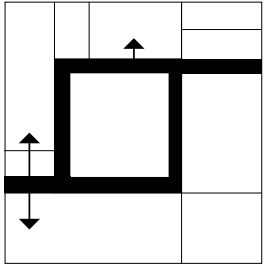
financial areas



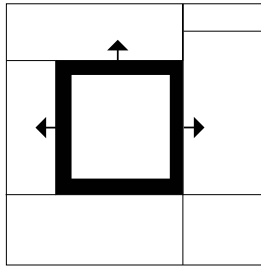
- mixed usage platform: library, music hall, restaurant
- treatment platform: eye clinic, water therapy, workshops
- filter platform: offices

- ground floor: offices, co-working
- first floor: music hall, restaurant

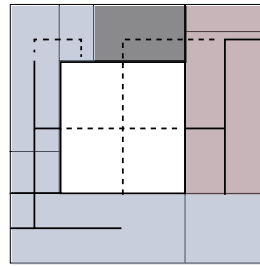
union. ground fl



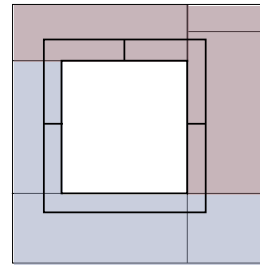
union. first fl



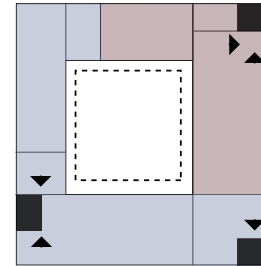
main pathes for blind. ground fl



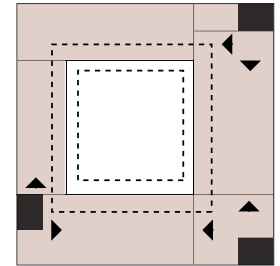
main pathes for blind. first fl



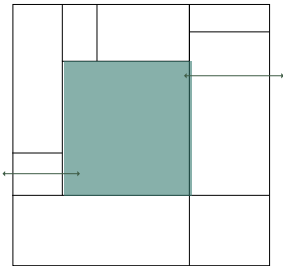
flows ground fl



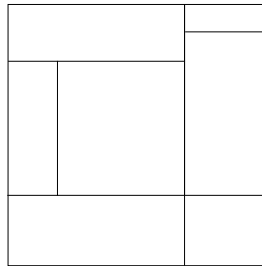
flows first fl



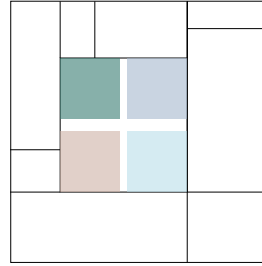
greenery opening ground fl



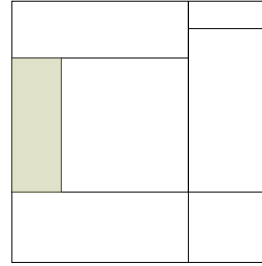
no openings first fl



gardens ground fl



gardens first fl





## 5.1 Design strategies

*The space of blindness is a private space  
and it is deterrent to a movement and  
understanding of the public space of sightedness.  
The tactile aids are used as optical prostheses.*

### **The facts**

Only 10% of blind people have no residual vision

Some have peripheral vision

Others have central vision

It is essential that designers take into account the differing needs of many types of visual impairment

**Peripheral vision - works in low light and detects movement**

**Central vision - provides acuity and colour vision**

Design must consider: – the best lighting to maximise use of residual vision – the use of strong colour/tonal contrast to identify objects

### **Cataracts**

Colours are less clear

Extra light may help / may cause 'white out'

Small features difficult to see

### **Macular degeneration**

Poor depth / distance perception

Poor fine colour discrimination

Some colour loss

### **Glaucoma**

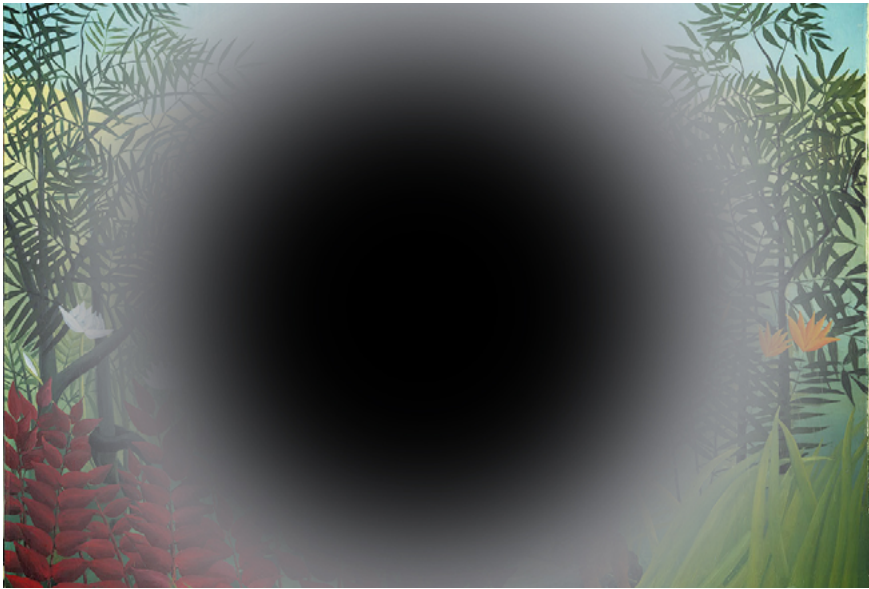
Bright light is painful and reduces vision

Colour vision may be 'normal'

Obstacles need to be defined

### **Diabetic retinopathy**

Features of MD and glaucoma



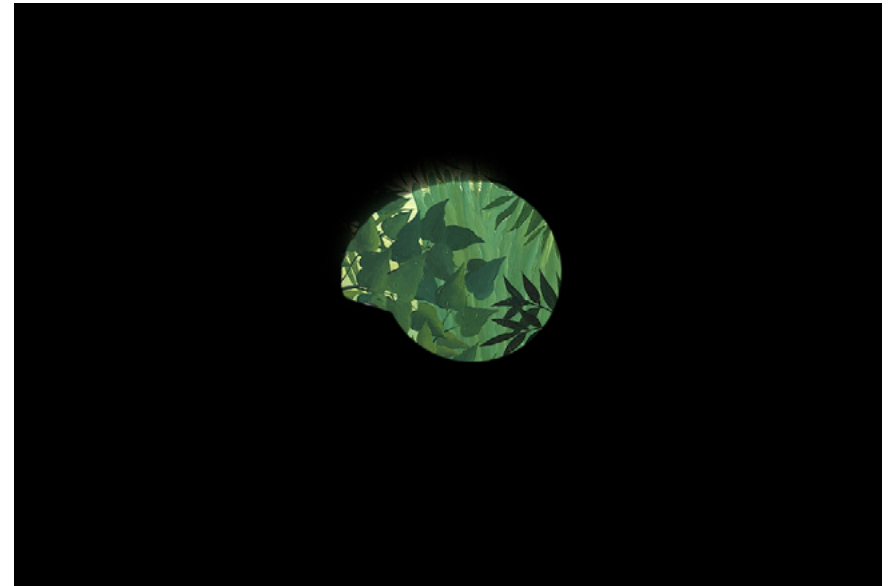
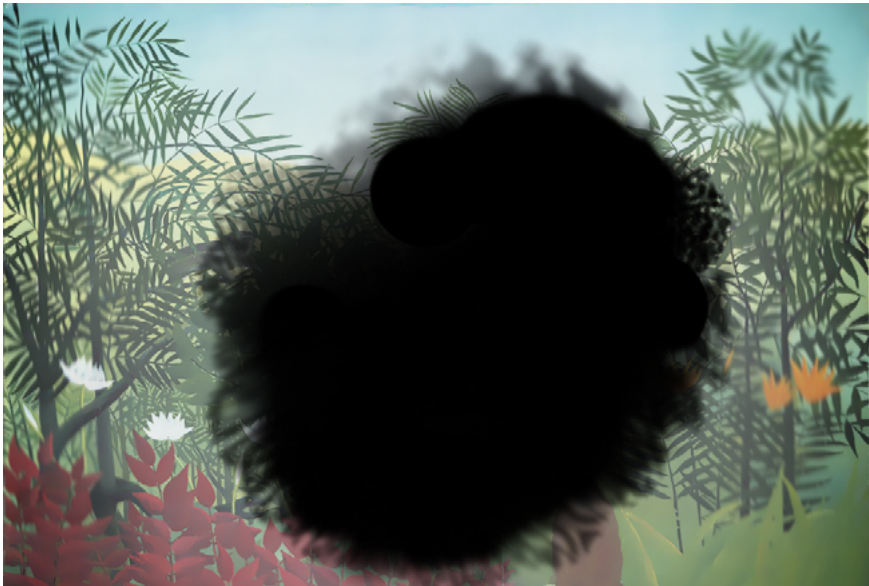
*Cataract*

*Glaucoma*



*Macular degeneration*

*Diabetic retinopathy*



## Design requirements

Pedestrian route

Logical layout

Defined, unobstructed routes

Signage

Street furniture

Contrast and lighting

Kerns

Tactile paving

Cues and clues

Types of tactile surfaces

Most common ones are:

Blister surface, corduroy surface segregated shared cycle track/  
footway surface, guidance path

Others include platform edge (off-street) surface, platform  
edge (on-street) surface – information surface

## Lighting

Adequate lighting is the single most important aid to vision. The lighting needs of persons who are blind or visually impaired vary according to particular eye conditions. One level of light might work well for a person with glaucoma and be too low for someone with macular degeneration. In addition, glare can be a significant issue for those with many types of eye conditions such as glaucoma, cataract and macular degeneration. Issues such as the direction of light and its reflection on shiny surface need to be taken into consideration. The use of variable lighting controls, indirect lighting and window shades can mitigate issues caused by glare.

## **Colour**

Colour contrast is another key component in designing spaces for persons who are partially sighted; its importance cannot be overemphasized enough. A building can be logically laid out, include proper use of signage, provide good lighting but the building can cause disorientation if there is very little use of colour contrast within the building. Colour can be used effectively for many purposes such as:

*To draw attention to signage.*

*To define a route of travel.*

*To define areas.*

Colour contrasting items, is also a very effective means in defining spaces. A colour contrast of 70% is generally accepted in many countries as the preferred amount to define items such as:

A dark door frames, against a light door and a light wall.

A light floor colour with a dark perimeter against a light coloured wall. Hand rails that colour contrast with the surrounding wall colour. Stair identification is best for partially sighted individuals when a colour-contrasted edge is provided.

Consistent stair height

It is also important in assisting blind and partially sighted individuals in navigating stairways.

Furniture that is colour contrasted with the floor and walls assists in locating furniture.

## **Acoustics**

Sounds can assist in providing orientation clues about a space. A person can use reflected sound to determine a room size, the presence of corridors and proximity of walls or other structural barriers.

Inappropriate use of sound can create problems such as high levels of ambient sound or high levels of reflective sound. Some things to consider when planning space are:

Well-defined, acoustically alive spaces are easier for people who are blind to negotiate safely. Position items such as escalators, fountains, and elevators to create useful sounds.

Carpets, acoustic tiles and furniture reduce sound reflectance. Consideration should be given to providing some reverberation so that people can obtain a feel of the space. Noise sources may mask sounds intended to provide directional cues, such as ventilation ducts or air-conditioning units. These sounds may be useful, however they should not obscure the sound of an elevator. Sound reflections are frequently a good source of auditory cues.

## Signage

### *Tactile signs*

Information on signs should be available for persons who are blind and partially sighted. It is commonly considered adequate for tactile signs to consist of raised characters only. However, Braille can be read so much faster and easier than raised print for those who read it. A best practice in some countries is to include raised print and Braille in signage that identifies rooms or spaces such as auditoriums, cafeterias, washrooms and floor numbers, both inside as well as outside elevators.

Signage should be consistently located at a height and distance from the door to which it defines. The raised tactile lettering should be colour contrasted with the background. The sign should be colour contrasted with the surrounding wall surface and sign lettering, in addition to being tactile, should also be high contrast.

### *Protruding Objects*

Objects that protrude into paths of travel can be hazardous to persons who are visually impaired as they may not be detectable by white canes. In many cases protruding objects consist of:

Signs

Canopies

Underside of stairs

Drinking fountains

Items protruding from walls

Over hanging branches

Telephone booths

Consideration should be given to eliminating these hazards such as:

Placing a railing or planters below the underside of stairs.

Ensuring all overhangs are removed within a certain height range.

Telephone booths and drinking fountains are cane detectable.

This

can be achieved by placing an object at floor level.

#### *Detectable Warning Surfaces*

Detectable warning surfaces have a texture that can be felt under foot or detected by a person using a long cane. The texture is usually built in or applied. The texture alerts a person who is partially sighted to a hazard.

Detectable warning surfaces should be used on unprotected platforms, around reflecting pools, top of stairs, and curb ramps.

Detectable warnings should be consistently used to identify features in the built environment.

#### *Audible Pedestrian Signals (APS)*

Accessible Pedestrian Signals are common in many countries and can assist people in knowing when it is legal to cross an intersection.

APS's should meet the following standards:

APS should be standard throughout a country or region.

APS should provide both audible and verbal tactile information so that they are usable by person's who are deaf-blind.

All light controlled intersections should have APS's, so that travellers who are partially sighted will always know they are available.

APS's should not require a user to have special equipment to use them.

APS's could be pedestrian activated or automated.

APS' s should emit a sound during the wait phase to help people to locate the button to actuate the sound.



### Shared surfaces:

issues for blind and partially sighted people  
guide dog owners, long cane users and those with no mobility  
aid rely on the kerb for orientation

### The problems:

Eye contact

Equal priority

No kerbed footways

Limited or inappropriate tactile paving

Lack of controlled crossings

### *TNS Research*

*Survey of 500 blind and partially sighted people*

*Only 2 liked shared surface streets*

*9 out of 10 concerned about shared surface streets*

*6 out of 10 said avoid them or very reluctant to use them*

### *Challenging shared surfaces*

Shared surfaces discriminate against blind and partially sighted and other disabled people, effectively excluding them from the street environment. Clearly defined pedestrian-only paths – a ‘safe space’ – must be provided for safer, independent travel. Footways with kerbs, along with associated dropped kerbs and tactile paving, must be retained – unless an alternative delineator is demonstrated effective.

Priority for pedestrians

Appropriate traffic speed

Logical layout and reference points

clearly defined, obstacle free, pedestrian routes

Pedestrian crossings

Visual contrast and good quality lighting

Maintenance and management

## 5.2 Introduction to a project

We stay on the edge of necessary and natural changes, so I would keep “flexibility” as a guideline. Another important detail is “Art”, that is wildly mentioned in “Maggie’s centers”, as it has a great influence on the consciousness. In the center for blind people, I am going to propose different types of workshops but the main subject will be art. Inspiration gives us wings, I think, that art is not exactly what you do but what you feel, expression of your mind and soul. People who do not see can feel, and this is an important factor. How often do we talk about an atmosphere? The ambient, the surroundings do not have to be visible, it consist of people’s relationships, of materials and sounds, of temperature and smells.

All over the World, these centers have different programs for people of all ages, they help to integrate into the new world, teach braille and living skills. Usually, there are no special structures for this kind of organizations and blind people have to adopt to the building. So, my idea was to create an opposite project, where the building would be adopted to the blind users.

The real architectural examples are very few. Meanwhile, the world builds different complexes, there aren’t so many projects for visually impaired people.

Principals, according to the analysis of the structures for blind. After a long research, I’ve arrived to a conclusion, that there are organizations for blind and visually impaired people but there are no specific buildings for them. I decided to make a

proposal of a center, where the dominant would be people with the visual impairment, so there would be a clear wayfinding, an easy access and services with the maximum comfort.

It has different programs, people can visit it whenever they want, they can take long courses or just use a library for some hours. The structure doesn’t have a residence zone, as it is not necessary. Once you show the visitors how to arrive, they will remember it

## Eye Clinic

doctors' zone  
entrance for workers  
kitchen/ living room  
changing room

### laboratories

delivery  
sterilisation  
sluice room

### services

dirty/clean clothes  
space for compressor

### ward

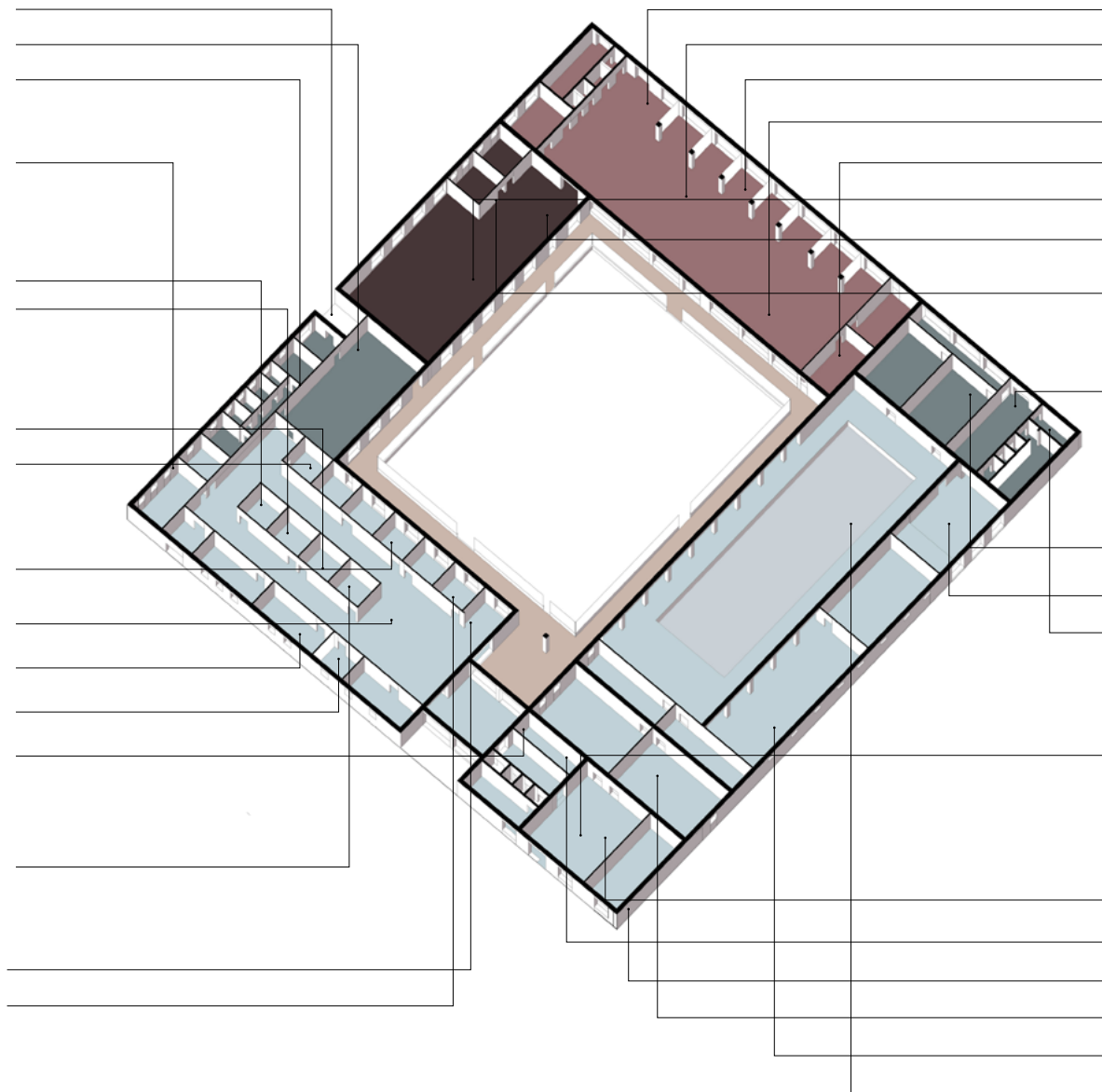
nurse station  
patient area  
treatment room  
exam room  
ward store

### stores

medical store

### administration

reception  
duty room



## Entrance A (for users)

lobby A  
library  
co-working  
reading area  
wc  
offices  
relax zone  
wc  
+leads to the music hall

## Entrance B (for workers)

sport area  
changing room,  
office  
storage  
+leads to the resaturant

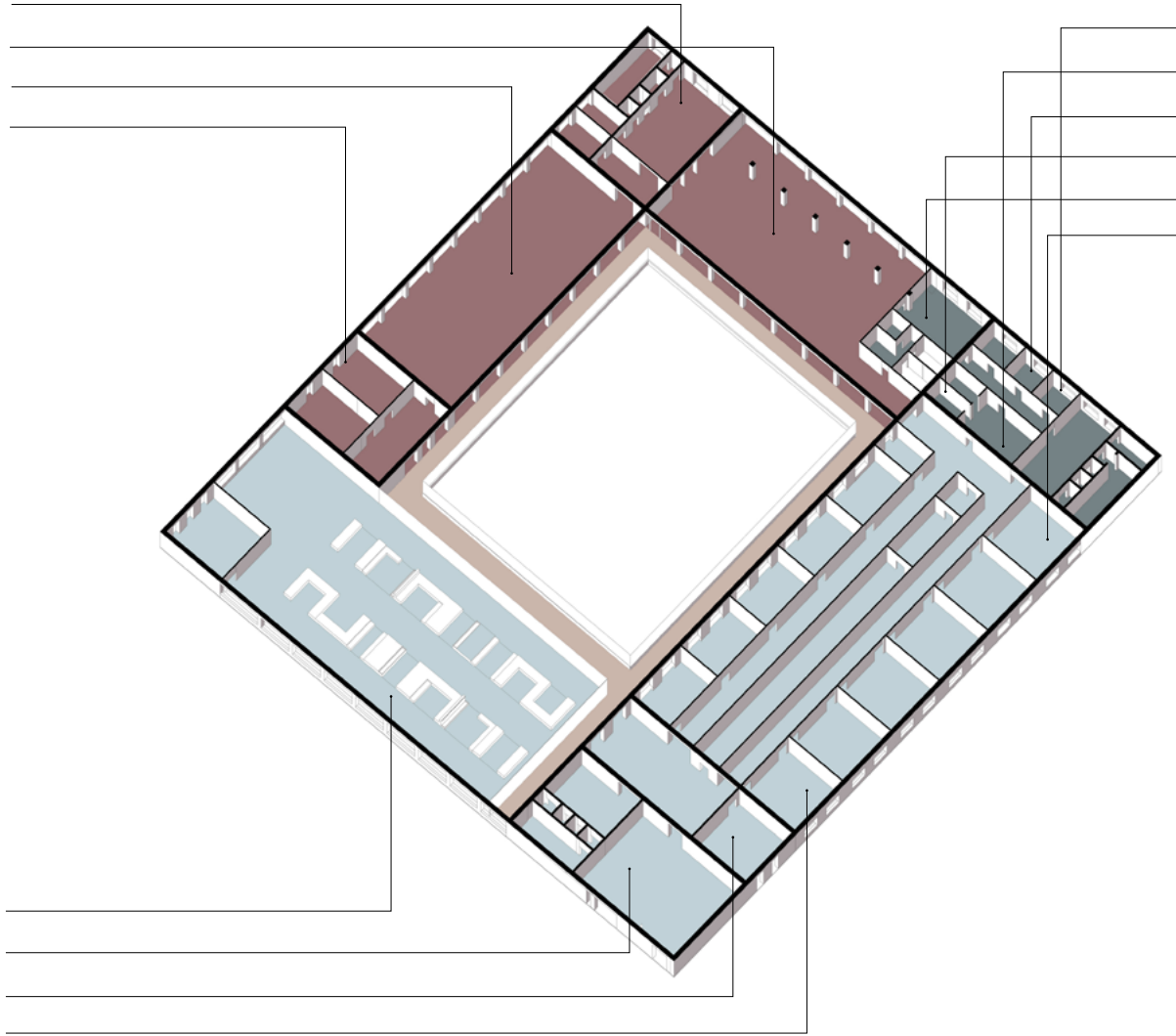
## Entrance C (for users)

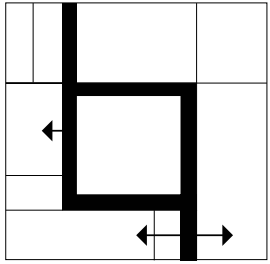
lobby C  
waiting area  
office  
multipurpose room  
changing room  
water therapy  
swimming pool  
+ leads to the workshps

*lobby A-1*  
waiting area  
restaurant  
music hall  
wc

*lobby B-1*  
office  
storage  
changing room  
wc  
kitchen  
office

*lobby C-1*  
tactile garden  
hall  
wc  
workshops





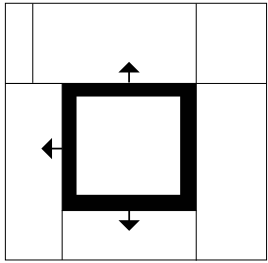
collegamento  
ground floor

entrance

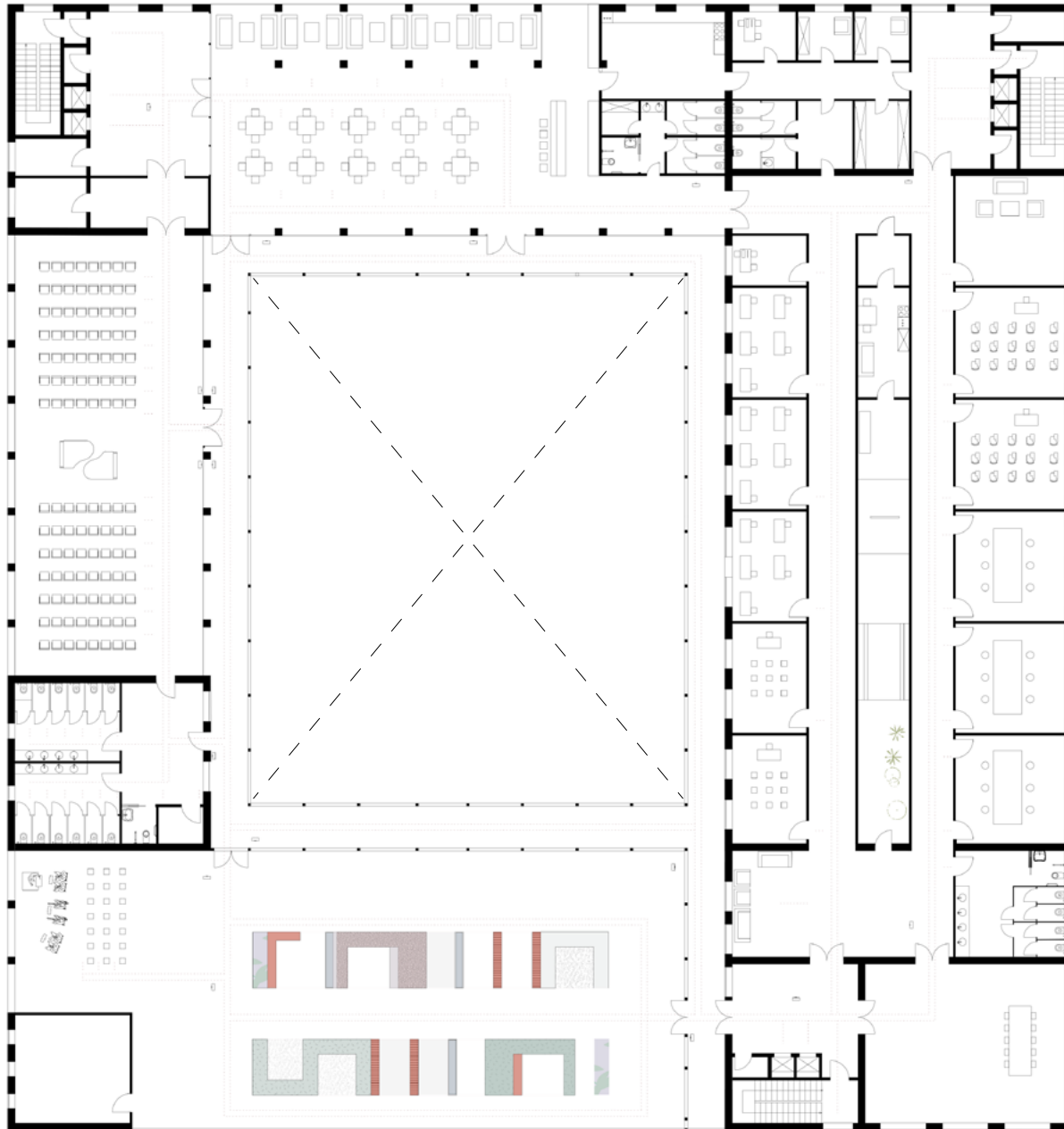
workers  
users



ground floor



collegamento  
first floor



first floor



## Program

**Orientation & Mobility:** Trains participants on how to travel safely within their community. Includes sighted guide training and introduction to white cane use.

**Personal Management:** Teaches home organization, tactile and audio labeling and financial management (including currency identification). Provides training on safe household appliance operation and dining and meal preparation.

**Communication Skills:** Provides iPhone, iPad and computer training and instruction on adaptive equipment such as “Talking Typing” software or any software the student chooses.

**Community Information & Referrals:** Provides information on social programs, services, benefits and additional community agency referrals.

**Low Vision Training:** Presents information on eye health, treatment and conditions. Instructs on use of lighting, magnification and scan and read devices.

**Recreation & Leisure:** Provides information on area sports such as blind golf, goal ball, beep ball, rowing and more.

**Self Advocacy:** Provides training on how to have needs met in an appropriate, effective manner as one adjusts to vision loss. Includes role playing and instruction on practical social skills  
For adults

### Assistive Products

The non-profit VisAbility Store offers visual aids, devices, toys and games that are useful and appropriate for children and adults with vision loss. Purchases may be made on-line and in the store. Volunteers are available to help demonstrate products.

### Braille and Reading Instruction

The Center’s certified braille instructor teaches clients to read and write braille with a variety of devices. Instruction in musical notation and mathematical notation is also available.

### Community Outreach Programs

Maintains a comprehensive listing of activities and opportunities for individuals who are visually impaired and their family members. Staff attend community health fairs, facilitate educational programs for social service providers, offer workshops for family members on vision loss, etc.

### Computer Training/Assistive Technology

Provides individualized assistive technology instruction for all ages. Technology classes offer up-to-date instruction in the latest standard and adaptive software and equipment.

### Counseling

Offers individual, group, and family counseling, consultation, referral.

### Daily Living Skills/Independent Living Skills Training

Provides personalized instruction to clients to develop skills

that lead to independence. Classes include communication, activities of daily living, orientation and mobility, computer use. Services are offered both at the Center and in the community.

#### Employment/Job Training

Provides vocational counseling and evaluation, work adjustment training, job exploration, internship opportunities, job development and placement.

#### Information and Referral

Callers to CVI are provided information about a wide variety of resources available in the greater Atlanta area. When requested, referrals are made to partner agencies and programs.

#### Low Vision Services

Maintains the Florence Maxwell Low Vision Clinic, which provides low vision evaluation and follow-up with vision rehabilitation and offers training in the proper use of low vision devices.

#### Support Groups

The Center's clients and their families have access to individual, group and family counseling, which can be a crucial part of the process of adjusting to vision loss. Many group sessions are open to the public.

#### Travel/Orientation and Mobility

Provides orientation and mobility training.

#### Services for Children

##### Assessment

Provides assessments of vision and development.

##### Braille and Reading Instruction

Offers braille classes.

##### Computer Training/Assistive Technology

The non-profit VisAbility Store offers aids, devices, toys and games that are useful and appropriate for children and adults with vision loss. Purchases may be made on-line and in the store. Volunteers are available to help demonstrate products. CVI offers computer literacy classes for school-aged youth.

##### Daily Living Skills/Independent Living Skills Training

Offers daily living skills training in its various programs.

##### Early Intervention/Infant Services

Offers the a program, which combines individual intervention training, class sessions, preschool transition classes, and family information and support to help the children reach their full potential. It offers a variety of special summer activities for registered families.

## 6 Conclusion

The development of architecture for health is very significant. The key factors in designing a healing environment are to think of the patient, medical staff, and visitors of the hospital first. When designing a hospital that heals, the architects must think of the user. Patients must have privacy, dignity, and the ability to have company. Sharing a room with a stranger in a time of sickness is not comfortable for the end user. Being able to ensure social interactions with family by accommodating overnight stays is very important for the well being of the patients. This gives the patient the possibility to control how and when they share spaces (acoustically as well as visually).

The indoor environment has to provide both comfort and control (temperature, lighting, ventilation, sound etc.) In a time of sickness, people lose control of themselves. Bringing them to a hospital should not make them lose control of their environment as well. These principles in room design foster a connection between the patient and the room. In addition to the room design, patients must have outdoor access to garden areas. These areas act as an escape from the medical treatments. In addition, the grounds of the hospital and the inside plan should be spatially legible and easy to navigate in. Although this healing environment does not require the building to be green, sustainable architecture is a framework that would meet all these objectives.

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