MASTER

An experiment on boundaries
health care complex design

Lu, Y.

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<table>
<thead>
<tr>
<th>Catalogue</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Background</td>
<td></td>
</tr>
<tr>
<td>1.1.1 Dutch Ageing Society</td>
<td>3</td>
</tr>
<tr>
<td>1.1.2 Elderly Prisoners in Netherlands</td>
<td>4</td>
</tr>
<tr>
<td>1.1.3 Economic Situation in Netherlands</td>
<td>9</td>
</tr>
<tr>
<td>1.2 Combination of Different Social Resources</td>
<td></td>
</tr>
<tr>
<td>2.1 Research on Elderly Care</td>
<td></td>
</tr>
<tr>
<td>2.1.1 Study of History of Dutch Elderly Care</td>
<td>15</td>
</tr>
<tr>
<td>2.1.2 Case Study of Hogeweyk</td>
<td>19</td>
</tr>
<tr>
<td>2.2 Research on prisons</td>
<td></td>
</tr>
<tr>
<td>2.2.1 Study of History of Prisons</td>
<td>23</td>
</tr>
<tr>
<td>2.2.2 Case Study of Oostvaarderskliniek</td>
<td>31</td>
</tr>
<tr>
<td>2.2.3 Case Study of Bastoy Prison Island</td>
<td>35</td>
</tr>
<tr>
<td>3.1 Introduction</td>
<td>41</td>
</tr>
<tr>
<td>3.2 Project Site Analysis</td>
<td>43</td>
</tr>
<tr>
<td>3.3 Design Process</td>
<td></td>
</tr>
<tr>
<td>3.3.1 Concept</td>
<td>49</td>
</tr>
<tr>
<td>3.3.2 Development Process of Shape</td>
<td>51</td>
</tr>
<tr>
<td>3.3.3 Master Plan</td>
<td>53</td>
</tr>
<tr>
<td>3.4 Functions and Routings</td>
<td>61</td>
</tr>
<tr>
<td>3.5 An Experiment on Boundary</td>
<td>79</td>
</tr>
<tr>
<td>3.5.1 Boundary</td>
<td>79</td>
</tr>
<tr>
<td>3.5.2 Frameless Glass Pivot Doors</td>
<td>85</td>
</tr>
<tr>
<td>3.6 Equally Treated Space</td>
<td>111</td>
</tr>
<tr>
<td>3.7 Details</td>
<td></td>
</tr>
<tr>
<td>3.7.1 Considerations on Details</td>
<td>119</td>
</tr>
<tr>
<td>3.7.2 Joints of Partitions</td>
<td>127</td>
</tr>
<tr>
<td>3.8 Conclusion</td>
<td>141</td>
</tr>
<tr>
<td>Bibliography</td>
<td>142</td>
</tr>
</tbody>
</table>
Abstract

This is the report of Architecture master graduation project of Yijian Lu. The report consists of three parts, which are background, research and design.

This individual project is based on the research result of M3 (teamwork) of program Sense and Care. Therefore, this design is focused on sensory design and health care architecture. Specifically, the project is a complex consisted of a security elderly care center, a community clinic, a tea house combined with a health care forum and an apartment building connected with workshops. Sensory design tools are applied in this project, thus creating an integral atmosphere. Moreover, exterior space is also taken into consideration in this design.

Additionally, because of the specificity of the mixing of different target groups, varies of possibilities of boundaries are discussed in this design, as well as different connection between different spaces.
1.1 Background

1.11 Ageing Society in Netherlands

In 2009, the percentage of senior citizens aged over 65 in Netherlands is 15%, while in 2013, it grew to 17%, [1] which is 2.3 million. [2] However, after one year the number increased to 2.7 million. It means that in approximately five Dutch citizens, there is an elderly people who might need daily health care. Moreover, according to the CBS population forecast, in the next few decades the Dutch population will be greying rapidly. The number of people over 65 is expected to rise from the current 2.7 million to 4.7 million in 2040 and stay at about that level. [3] Meanwhile, it is worth noting that the population of senior citizen aged between sixty-five years old to seventy-nine years old will increase rapidly in the coming years. In addition, by 2040, the amount of 65+ elderly people will take up twenty-six percent of the total Dutch population, and one third of them are older than 80 years old.

The reason is the birth-rate-development in the later half of 20th century. The baby boom generation after the Second World War has started to exceed the age of 65 since 2011. Moreover, as a result of better quality health care the increasing longevity of people will remain, which is also an important cause of the increasing ageing population. [4]

There is no doubt that within the coming decades the ageing population will have a

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large influence on health care in the Netherlands, and also on every other aspects. It is necessary for architect to rethink of current designs and adjust them to face new challenges from ageing society in the future.

1.12 Elderly Prisoners

The number of people over 60 in Dutch prisons from 1994 has greatly increased. In 1994, there were only 60 prisoners which are over 60 years old. While in 2002, the number increased to 119, and by the end of 2006, there were 234 people over 60 serving a sentence in different prisons around the Netherlands.[5] Moreover, it is worth noting that the number keeps increasing. However, even there is an increasing amount of senior inmates, the total number of 60+ prisoners only takes up 1.6 % of the total number of detainees in Netherlands.

The reasons of this phenomenon can be concluded as two points: firstly, because of the ageing society, there is a growing number of elderly inmates had been sentenced for a long period in prison; moreover, every year, there are new elderly detainees because of different kinds of crimes. (in 2010, the number was 4000 [6]) Further more, more than 50% of those crimes are shopliftings, while drug smuggling and sexual offence take up most percentage of the rest.

5, 6. Bas van Alphen, and Karel Ooi, De toename van 60+-criminaliteit in Nederland: een verkenning. PROCES, 2008/3
However, apparently, prison is not an appropriate place for elderly people, especially for those who need daily care.

There are multiple reasons: firstly, elderly prisoners experience more health and mental problems than their counterparts outside. Because they often come from poor backgrounds, receive less education, have a greater likelihood of drug and alcohol abuse, and have had restricted access to health care, particularly when they were young. Moreover, when emergency happens, because of lack of professional medical facilities, elderly inmate may risk missing first aid. (the most effective time of on-the-spot first aid is only 4 minutes, which is called "4-minute prime time") Additionally, strict schedule and limited access to natural environment also prejudice elderly people’s health. The last but not the least, elderly inmates are more likely to be bullied by younger inmates in prison.

Offenders should be separated from society in prisons, meanwhile, they are restricted there to be punished and learn how to behave themselves and reintegrate into society. However, even those inmates had committed crimes, they should have equal access to health care comparing with normal citizens outside, especially elderly prisoners.

In a global view, with the growing number of elderly inmates and increasing attentions on humanistic care of different social groups, there has been a trend of the separation between the elderly and younger inmates in prisons. Moreover, in Japan, United Kingdom and Germany, there are already prisons for elderly people.

1.13 Economic Situation in Netherlands

Because of the economic crisis, a number of European countries suffered a decrease in economy, including the Netherlands. Even though the unemployment rate of the Netherlands is the lowest among the European countries, 14,000 people lost their jobs in July, making unemployment population reach the amount of 510,000. [8] What is worse is, in 2012, tax revenues dropped nearly 9%, GDP contracted, and the budget deficit deteriorated. [9] Under such situation, never before has it been so important to make efficient use of all kinds of social resources. Because in this way, more fiscal expenditure can be used on economic recovery.

1.2 Combination of Different Social Resources

Because of the growing number of elderly prisoners, every prison needs to be equipped with essential medical facilities and equipment. However, for most of other younger inmates, those facilities which cost a large amount of expenditure are dispensable. It would be wise to make efficient use of those facilities and equipment, so why not integrating different kinds of social resources, thus improving the efficiency of using them? For example, prisons for elderly people, community clinic and the medical treatment education institutions can be combined together into a community medical complex. In this way, these three institutions can share the architectural environment, the medical facilities, equipment and professionals in order to highly improve the efficiency of using all kinds of resources. Through this method, it contributes to the balance of payments of the state by decreasing the expenditure efficiently, which leads to bigger amount of resources input in other fields in terms of education and technology. Or in another way, under the same expenditure, it creates better quality of medical treatments and prisons.
2.1 Research on Elderly Care

2.11 Study of History of Dutch Elderly Care

The history of elderly care in the Netherlands can be traced back to the late 14th century. The prototype pattern is a kind of small scaled courtyard complex. Furthermore, the suburban location is for creating a tranquil environment for the elderly people.

The situation of elderly care changed slightly until the 17th century. During 17th century, care began to play an important role as a part of buildings for the elderly. Over that period, the number of poor elderly increased. To provide them with sufficient accommodation, more and more complexes appeared. People combined chapels with accommodation. Quality was rarely been concerned during that time, since people mainly focus on quantity.

Afterwards, in the early 1900s, resting houses came into existing. This typology is consisted of specifically designed accommodations and facility buildings. In this way, a family atmosphere was created by combining apartments with function structure equipped with essential facilities. Within this typology, religion was not involved any more.

After thirty years, during the 1930s, adequate light and air in the building was first written

Figure 6: Common dinner hall of homes for the poor elderly, Amsterdam (1782)
into regulations and emphasized than ever before. However, because of economic rea-
sons, designs were tended to keep elderly people in one structure as many as possible.

After the Second World War, the issue of ageing population was discussed among the
states again. From the discussion, a new classification was conceived. Basically elderly
people are split into two groups: vital elderly (take up 90% of ageing population) or elder-
ly that rarely need care (take up 10% ageing population). From the new classification,
It was announced that accommodation for elderly people should be part of the social
housing system in the Netherlands. In this way, new typologies arouse to fulfil the new
regulation. The new typologies give elderly people more freedom to live by themselves.

During the 1980s, nursing homes became more similar to “home”, while hospital atmos-
phere was no longer the key. Later on, in the 1990s, the key word of elderly care was
small scale project. Institutions underwent a transition of small scale structure and infor-
mal atmosphere. In this way, elderly care institutions integrated more into society, and
clients have more connections with other different social groups at the same time. Af-
terwards, the key word became separation. A separation of living and caring arose. The
elderly will live in specially designed houses (still part of social housing), and specific
health care will be provided when necessary. In this way, more freedom and connections
with society were given to elderly people.
2.12 Case Study of Hogeweyk

Hogeweyk locates in the Weesp, southeast of Amsterdam. This complex works as an institution providing accommodation, service and health care for senior people with dementia. This structure was designed by Molenaar & Bol & Van Dillen Architecten and constructed in 2009. Within the complex, living units, shops, canteen, café, theatre and other facilities are connected with each other by outdoor public space. In this way, a neighbourhood atmosphere is created. Hogeweyk is not a building, it is a self-contained village [10]. Inside the structure, those 150 clients are forbidden to go outside and there is only one entrance connecting with the outside world. However, every client can move freely within the complex. In Hogeweyk, living and caring are separated. Health care is provided only when necessary. Furthermore, 150 clients live in thirty-two residential units which are specifically designed with different themes. Clients are divided into different groups based on their experience, background and interests. Through this method, seniors having common features will live and be taken care of in a more comfortable way.

The complex replaced the previous nursing home on the same site. Several plants locate on the west side of Hogeweyk, while a number of sports fields are on the east of it. As a whole, the complex has an enclosed pattern in terms of layout. From outside, the façade was divided into smaller units which are harmonious with surroundings in terms of scale.

In this design, a main street connects different blocks with different themes and functions. After entering the only entrance on the east side of the complex, users first head to the main streets with shops and cafeterias, then get into the courtyard connecting the residential unit they live in, and finally enter their own living room through a common space shared by six to eight people. It is worth noting that almost every function (like living, health caring and entertainment) is connected with outdoor space. Usually, the connection is a grey space because of the overhang of first floor. In this way, more outdoor activities are stimulated, which benefit to the health of senior residents. Meanwhile, users can reach different parts of the complex through the bridges on first floor. And users can choose either staircases or elevators in passages to get on the first floor and bridges outside.

Because of the separation of living and caring, the complex looks more like a neighbourhood instead of a health care institution for elderly people with dementia. In this way, the neighbourhood atmosphere will remind senior clients of the life they used to live, thus making them more comfortable to live inside the complex which is actually confined from outside world.
2.2 Research on Prisons

2.21 Study of History of Prisons

From the Oxford Dictionary, a prison is a building to which people are legally committed as a punishment for a crime or while awaiting trial. [11] Prisons have a long history in the world. Early prisons arose with the rise of the state as a form of social organization. In the beginning, prison functioned as an institution to imprison offenders before they face penalties. Imprisonment itself is not a form of penalty, instead, people were punished as a form of vengeance, often by the victims themselves. Meanwhile, prisons also functioned as a place confining debtors who could not afford to pay their fines. Eventually, since impoverished Athenians could not pay their fines, leading to indefinite periods of imprisonment, time limits were set instead. [12] The prison in Ancient Athens was known as the desmoterion (place of chains). [13] However, at the same time, a number of philosophers, such as Plato, advocated using imprisonment to reform offenders instead of simply using it as penalty.

Afterwards, during the Middle Ages in Europe, the forms of prisons were quite manifold: many kinds of structures such as castles and basements of public buildings were used as prisons. The possession of the right and the capability to imprison citizens, however,
granted an air of legitimacy to officials at all levels of government, from kings to regional courts to city councils; and the ability to have someone imprisoned or killed served as a signifier of whom in society possessed power or authority over others. [14] During this time, sentencing people to galley slavery was another common punishment.

In Middle Ages Europe, prisons were rarely used as retributions individually; instead, it functioned as an institution to confine offenders awaiting trials or punishment. And punishment was mainly consisted of two forms: physical punishment (like death penalty and whipping) and non-physical punishment (like public shaming).

During this time, Bridewell House of Corrections acted as a milestone in terms of imprisonment. It was a complex consisted a number of houses and located at Bridewell Palace in London. Prisoners confined inside were mostly tramps and petty offenders. They were trained with skills and offered jobs there. By the end of the 17th century, houses of correction were absorbed into local prison systems under the control of the local justice of the peace. [15]

During 18th century, an increasing number of oppositions arose to against execution for petty crimes like thefting. Many jurors were refusing to convict defendants of petty crimes when they knew they would be sentenced to death. [16] Meanwhile, prison reform movement arose. The innovation during this movement refers to prisons are seen as places for rehabilitation and separation, instead of punishment. These later reformers

believed that prisons could be constructed as humane institutions of moral instruction, and that prisoners’ behavior could be “corrected” so that when they were released, they would be model members of society. [17]

Afterwards, during the 19th century, death penalty was abolished for most offences and replaced by imprisonment with time limits. Because of the promotions of Religious groups, the idea of rehabilitation became more convinced. It is worth noting that, in 1842 the first prison using panopticon design was realized in London. In this design, the idea of the separation system was applied. Furthermore, this project was set as a model for latter prison projects.

In the beginning of 20th century, a separation between young prisoners and other prisoners arose. Afterwards, in 1933, the first open prison was constructed in England. In this prison, inmates have better physical environment and more freedom. This prison acts as a milestone in the development of prison. As Sir Alex Paterson said “You cannot train a man for freedom under conditions of captivity”. [18]

In general, the idea of prisons is developing from a form of confining convicts awaiting trail to punishment, and now to an institution of socialization and rehabilitation.

In the Netherlands, now there are twenty-two prisons situated in thirteen cities. Moreover, the total amount of inmates in the Netherlands is 21,013, while more than 80% of

those inmates are having sentences less than six months (98% of prison population are convicted sentences for four years or less). In addition, the Dutch system is organized around the central tenets of socialization and rehabilitation. Notably, the focus on rehabilitation is clearly stated in law. [19]

2.22 Case Study of Oostvaarderskliniek

Oostvaarderskliniek is a correction institution for around 140 prisoners with psychoses. This complex is designed by Studio M10 and built in the year of 2008. Oostvaarderskliniek is situated in southeast of Almere, which is the newest city in the Netherlands.

This institution is different from conventional prisons or correction centers. Because the inmates here have been suffering different kinds of psychoses, they are considered not to be held full responsibility for their offences. In this way, those inmates are treated like patients getting treatment, caring, education and rehabilitation in this institution. In Oostvaarderskliniek, there are kitchens for inmates to cook their own meals, workshops for them to work, classrooms to get education, fields for physical exercise, etc. Furthermore, all those functions are organized and administrated by 300 employees.

Oostvaarderskliniek is an introverted complex surrounded by four-meter bounding walls. However, inside the complex, space is quite open, and all the departments are organized in-between green space. Through this method, an informal and relaxing atmosphere is generated. Moreover, inmates inside the complex are allowed to move freely during day time.

The complex is consisted of three parts: a main building and two accommodation buildings. The main building functions as a center providing workshops, classrooms, treatment rooms and offices. In addition, the only entrance is also in the main structure. The accommodation buildings are behind the main structure, and separated by green space.
in between them. Visitors are allowed to take a tour inside the complex (reservations in advance are required). The entrance for visitors and employees is the same, which is on the ground floor of the main building. Visitors will first enter a security area. After security check, visitors will be taken into a hallway which connects different function rooms on both sides. Since the wide hallway is double-floor height and there is direct sunlight through roof window, the atmosphere is quite breezy and relaxing, unlike conventional prisons.

In the main building, all the function rooms for common use are organized along the hallway on the ground floor, while all the offices for employee use are on the first floor. After getting out of the main building, users can enter the accommodation building by passing through the courtyard. In both accommodation structure, cells are divided into living groups, and each group is consisted of eleven living cells. In each group, living cells are situated on one side of the corridor, while function rooms locate on the other side. In addition, there is a common room and a security check room in the end of each corridor. More specifically, every time inmates go outside or inside of a living unit, they will be checked in the security check room.

Every cell is equipped with a washing room, and furniture including a bed, a desk, a chest, and two soft chairs. It is worth noting that in every living cell, there is a big French window ensuring enough direct sunlight and comfortable connections with outdoor landscape.
2.23 Case Study of Bastoy Prison Island

The Bastoy prison island locates in the Oslo fjord. The island is 46 miles on the southeast of Oslo. There are 115 prisoners on this island. It is worth noting that there are no isolated cells and high bounding walls on the island. Inmates live in log cabins holding up to six people. Every person has an individual bedroom and the inmates living in one cabin share the common space like living room, dining room and kitchen. In this way, they will re-integrate into society easier after they are released. Moreover, those log cabins are equipped with televisions, computers, integral showers and sanitation. Some prisoners were segregated for various reasons, but as the majority served their time – anything up to the 21-year maximum sentence (Norway has no death penalty or life sentence) – they were offered education, training and skill-building programs. [20]

Living on this island is like living in a Scandinavian village. The only difference is every inmate needs to work on the island, but after the work they can spend their spare time freely, for instance, fishing, swimming and sunbathing. From an interview, an inmate named Petter said "We know we are prisoners but here we feel like people." [21]

Apart from 115 prisoners, there is a group of 70 employees working on this prison island. Besides, half of those employees are guards. Jobs include counting the amount of prisoners several times a day, cooking, skill training, and etc.

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20, 21. Erwin James, The Norwegian prison where inmates are treated like people, http://www.theguardian.com/, retrieved July 6
The population of Norway is 5,109,059 (2004), and there are less than 4,000 prisoners. In Norway, prison system is unlike other conventional prison systems. The government believes that it is more effective for a person to want to stay away from crime than for systems to try to scare them away from it. [22] The only thing which is limited is prisoners’ movements. Other rights of inmates are the same with their counterparts outside. It is worth noting that Norway has one of the lowest recidivism rates in the world, at 20 percent. [23] Because of different kinds of skill training and multiple connections with society during confinement, inmates will meet less problems after being released, thus decreasing the recidivism rates. Therefore, this open and humanized principle of prison system in Norway is actually working efficiently and effectively.

3.1 Introduction

To make a more efficient use of different kinds of social resource, also provide more appropriate health care for senior people (even they are incarcerated), I designed this community health care complex. This complex is consisted of a security health care center for elderly prisoners, a community clinic, a tea house, a medical forum, an apartment for emancipists and a small workshop for them. Within the structure, each function is situated in different part, however, connected by different means.

From the research of elderly care and prison in the second part, it is believed that elderly care institutions should be integrated into society. However, in terms of security, a prison for elderly people should be safe and invulnerable enough (conventionally, physically isolated) to ensure nobody will escape from it. Moreover, normal neighbors might keep space with prisons. In this way, the point of this project came to how to strike a balance between connection and isolation. In other word, the design will focus on connections between different spaces.

When talking about connection, boundary cannot be avoided being mentioned. Because boundary is an essential element of space and connections between different spaces. From the Oxford Dictionary, boundary is A line which marks the limits of an area; a dividing line. [24] When the boundary between two spaces changes, the relationship between both sides changes too, thus shifting the connections between the objects and viewers on both sides. In this way, this project would be an experiment on boundaries.

3.2 Project Site Analysis

The project site locates in the north of Eindhoven, which is the fifth largest city in the Netherlands. Currently, it is a piece of land left unused, except a parking lot with 30 carports. Moreover, because most of the site is covered with grass, there are always students playing football in the afternoon and during weekends.

There are four schools on the west and east sides of it. Specifically, a college locates on the west side of it, while another college, a high school and a free foundation school for youth are situated on the east side of it. It is worth noting that both of the colleges have nursing programs.

On both north and south sides located two huge communities which were mostly built during 1960s to 1970s. Furthermore, there are two small house doctor clinics which are refurbished from row houses. The biggest hospital in Eindhoven, Catharina hospital, is 1.8 km away from the project site on the west.
Figure 22: project site analysis

Figure 23: project site (from west to east)
3.3 Design Process

3.31 Concept

“Here are sitting in this barn, there are these rows of beams and they in turn, are covered etc etc. That kind of thing has a sensual on me. And that is what Idiot would call the first and the greatest secret of architecture, that collects different things in the world, different materials, and combines them to create a space like this.” [25] These words are from the book Atmospheres by Peter Zumthor. For me, another magic of architecture is “collecting” different people. People from different regions, different cultures, with different characters, clothes are attracted in one building and meet with each other. If so, why shouldn’t me, as an architecture designer, make this encounter comfortable and poetic.

Therefore, to create comfortable and poetic encounters, and also in order to make a more efficient use of different kinds of social resource and provide more appropriate health care for senior people, I designed this community health care complex. In this complex, each part is connected with each other in a way. Moreover, there is no main space or secondary space, every space is treated equally. Through this approach, users of different parts of the complex can be aware of what is happening in other parts, thus forming connection between different spaces and users.

The design start with the conventional pattern of prison, which is simply a concrete fortress surrounded by high bounding walls. In order to decentralize focus and create connections between the security health care centre and outside world, I reversed the courtyard with building. Afterwards, four main department were inserted into the volume divided into four parts. Then the courtyard was divided again into four pieces to form a series of courtyards with different themes. Moreover, entrances are added on every side of the complex, to ensure equal access of each part.
The design is mainly consisted of two parts: a health care complex and the green space around it. In order to continue the context of this place, huge pines and elms are kept, as well as the existing grass plot where students always play football after school. Some white concrete pathway and ramps are added on the grass plot, to imply locations of entrance and offer convenience to handicapped people. It is worth noting that the courtyard inside is also open to public. People can enter the peaceful courtyard from multiple entrances on almost every side of the structure.

There are two parking lots: one is on the north east corner of the site, while the other is on the south corner of it. They are designed next to the security health care centre and the community clinic respectively. Because most of the cars come from these two department.

The gross area of the site is 7897 m², while the building area is 1721 m² and gross floor area of the complex is 2121 m².
Figure 27: ground floor plan
3.4 Functions and Routings

The complex mainly consists of four parts: an apartment combined with a workshop, a security health care centre, a community clinic, and a teahouse combined with a medical forum. Those four parts locate on four corners of the structure respectively. Moreover, every part is connected with each other by varies of means. For instance, the clinic is connected with the tea house by the sharing leisure space. In this way, people in one building can meet with each other and discover interesting events, instead of just staying in an isolated space and being “isolated”. Another example is, the apartment for emancipists is connected with the forum by the terrace on first floor. Residents can be aware of what is happening in the forum through huge windows in common space and they can choose to join through the terrace in between their apartment and the forum.

Due to security issues of prison, there are two entrance of security health care centre. Notably, both entrance are double gated, and one is for employees, inmates and visitors (everyone will be checked before enter), the other is for logistics. For the rest of the functions, there are multiple entrances and staff routing and customer routing are separated. It is worth noting that, because every part (except security health care centre) is connected with each other, customers can choose their preferable routing. Moreover, administrators and customers also can make new routings by rotating pivot doors, thus making this structure alterable with different function requirements.

Figure 30: function analysis
Figure 31: Routing and area of security health care center

Legend:
- High security elderly care center
- Community clinic
- Tea house & medical forum
- Apartment for emancipists
- Outdoor space

Note: The diagram shows the layout and routing within the security health care center, with different areas highlighted for specific functions.
Figure 33: routing and area of tea house and medical forum
Figure 34: routing and area of apartment and workshop for emancipists
Figure 35: routings of different groups
3.5 An Experiment on Boundary

3.51 Boundary

From the Oxford Dictionary, boundary is “a line which marks the limits of an area, a dividing line; or a limit of something abstract, especially a subject or sphere of activity.” [23]

Architecture itself is a boundary. It limits a certain area from nature to provide human a shelter. The four elements: hearth, roof, enclosure and mound from Semper’s book The Four Elements of Architecture, are actually all function as a kind of boundary. Start with hearth, “around the hearth the first groups assembled; around it the first alliances formed; around it the first rude religious concepts were put into the customs of a cult.” [23] Human set the area around a hearth as a shelter with an invisible boundary (which is made from warmth, light and the belief of the power of fire). Afterwards, the roof limits the shelter from raindrops, snows and hailstones; the enclosure protects human from wild beasts and wind; and the mound separates the humidity and water. In this way, when we talk about architecture, actually we are talking about how to construct and place all kinds of boundaries in a way.

Following Semper’s point of view, we might describe architecture as two parts: boundaries and the structure holding those boundaries. Sometimes, the load-bearing element

and enclosure element are combined into one to ensure the stability of the building, and also to generate a sense of invulnerable and safety. However, in this way, the form of enclosure element is strongly limited. When the enclosure system is emancipated from supporting function, it will have diversiform possibilities to generate different kinds of boundaries.

As mentioned before, a boundary limits a space. Meanwhile, it also builds the connection between one side and the other. When talking about connection, boundary cannot be avoided being mentioned. Because boundary is the essential element of forming a space and connections between different spaces. When the boundary between two spaces changes, the relationship between space from both sides changes too, thus shifting the connections between the objects and viewers on both sides. Furthermore, different forms of connections will have various effects on viewers’ sensations, moods and behaviors.

In this health care complex project, I tried to make connections between different spaces by applying series of different boundaries (visible and invisible). In this way, boundaries are not only physical partitions separating one side from the other, but also a media linking both side worlds in a comfortable and poetic way.

Partitions in this building are mainly consisted of two types: glass pivot doors and partition walls. A glass pivot door unit consists of four panels. And each panel is attached with
striped foil with three patterns. These three patterns are translucent stripes with 80% opacity, 50 opacity and reflective stripes. Through this approach, when viewers stand on either side of the boundary, they will see a mixed image of reflections of their own and shadows from the other side. Therefore, viewers will have a connection with the world behind the boundary without feeling embraced or making others uncomfortable.

Boundaries can be physical objects like partitions; however, they can also be intangible space, such as courtyard. From the activity room on first floor of the security health care centre, inmates can have a nice view of outside world through branches of poplars, and people on ground may also notice shadows behind brunched and glass. However, nobody will feel embarrassed or uncomfortable, because of those soft boundaries which are tree branches and courtyards. Such approach is also applied on some joints between different functions. For instance, the common room of the apartment is connected with the reading room of the forum through a patio.

A boundary can be more abstract, such as the shade of a huge tree. During a sunny afternoon, the shadow of a large linden in the court yard will limit a perfect place for reading a book and having a cup of tea.

Moreover, a boundary can be undesigned. When there is a shower, the raindrops from overhung roof will form a curtain, becoming second skin of the building. In this way, architecture is integrated with nature.
3.52 Frameless Glass Pivot Doors

Generally, the façade of this complex is constituted by pivot door units and each unit consists of four frameless glass pivot doors. The frameless glass pivot door is two opposite sides supported (bottom and top aluminium tracks). The glass part is consisted of two pieces of laminated safety glass with PVB foil. Moreover, on both sides of the inner glass panel, customized glass film is attached.

Specifically, the customized glass film will reflect 85% of the heat, thus ensuring a pleasant room climate. [23] Through attaching glass film on both sides of glass, the thermal insulation performance of the project is upgraded. The film consists of three different patterns, which are translucent with 80% opacity, translucent with 40% opacity and reflective with 90% opacity. Additionally, the width of each pattern is 10 cm.

Figure 42: detail of pivot door

- laminated safety glass (with PV8 foil), 8mm
- customized translucent glass film with vertical strips, 1mm
- laminated safety glass (with PV8 foil), 8mm
- customized translucent glass film with vertical strips, 1mm
- frameless pivot door bottom aluminium frame, 60mmx67mm
3.6 Equally Treated Space

Equality is one of the key words in this project. Comparing with normal customers, those imprisoned senior inmates are absolutely more limited. From A Theory of Justice by John Rawls, “Social and economic inequalities are to be arranged so that they are to be of the greatest benefit to the least-advantaged members of society.” [26] Within the complex, those senior inmates act as “least-advantaged members”. Moreover, normal customers may have uncomfortable feelings and keep space with the security health care centre because of stereotypes on prisons. To solve these problems, equally treated space is introduced.

Firstly, within the project, every space is equally treated, in terms of accessibility, material, colour and routing. There is no main space or secondary space. For instance, the tea house has a nice view to the courtyard and rock gardens, while washrooms are also connected with patios with landscape (which is the same size as the washrooms). In this way, a washroom is equal with a tea house because using toilet matters as same as drinking a cup of tea. Sometimes a space like the medical forum is much bigger than a living cell, I tried to divide it with columns and furniture to make it “smaller”. Because of the universal scale (3.3m x 3.3m), viewers will get an implication of equally treated spaces and the idea of equality behind them. Furthermore, in terms of façade, every part is based on the same module, through this approach, people will not recognize functions of each part by their façades, instead, they will take this complex as an ensemble.

Furthermore, to ensure the greatest benefit to the least-advantaged members (in this complex, which is the group of elderly inmates), two inaccessible rock gardens and an activity room on first floor are introduced. Because of those two rock gardens, both groups (elderly inmates and normal customers) are equal by same limitations. Neither of them can get inside the gardens, but they share the same beautiful and peaceful landscape of the rock gardens. Additionally, by using reflective and translucent glass façade, people on both sides will see a mixed image of reflections of their own and shadows from the other side. Therefore, viewers will have a connection with the world behind the boundary without feeling embraced or making others uncomfortable.

Besides, from the activity room on first floor of the security health care centre, inmates can have a nice view of the courtyard through brunches of poplars, and people in courtyard may not notice them in the room. In this way, even though inmates’ movements are limited, they have a better and broader view than others.
3.7 Details

3.71 Considerations on Details

The general concept of this design is to make connections between different spaces and make the structure look as lightweight as possible. To achieve this goal, the ground floor was elevated to +0.3 m, and overhung by 900 mm. In this way, a suspending appearance is generated. Besides, a beam and column construction is used in this design. The unified span of this project is 3.3 m, supported by steel columns with diameter of 100 mm. Those thin columns will give an implication of lightweight to viewers from both inside and outside. Additionally, all the partitions are consisted of three types of components: frameless glass pivot doors, glass window and partition walls. All these three types of partitions are designer to be thin but strong. Moreover, through the joints of walls and pivot doors, viewers can be aware of the thickness of the walls, thus having an impression of the lightweight feature of this building.

Besides, I want to create a peaceful but not cold atmosphere in this complex. Therefore, light-coloured materials such as bleached oak panels and white concrete are applied in this structure. Additionally, most furniture are in white colour too, to help create a homogeneous and peaceful atmosphere. It is worth noting that wood will give viewers a soft and warm sensation, and when touched, this feeling is even stronger. Consequently, using a great number of oak panels will help create a warm atmosphere. Another notable
detail is the overhanging roof and floor slab. When it is raining, users can open the pivot doors, and hear the rain drops falling from roof and hitting on the floor slab. In this way, the architecture is combined with nature, thus creating a poetic environment for users.

Last but not least, I want to express the construction of this building to viewers. For instance, gaps of 15mm are left on both top and bottom of partition walls, to imply that they are non-load bearing elements.
Figure 47: section of a living cell in security health care center

Figure 48: facade of a living cell in security health care center
3.72 Joints of Partitions

This drawing shows the joints of different partitions, such as frameless glass pivot doors, timber batten partition walls, concrete walls and etc. There are differences between the windows and walls of security health care center and those of other departments. For instance, the partitions walls of secured department are made of reinforced concrete, while those of community clinic are made of timber battens, plywood and bleached oak panels. Furthermore, the windows of secured department are consisted of double laminated safety glass and steel frame, while those of other departments are frameless pivot windows with light aluminium tracks. However, all those different types of windows are designed to look the same from outside, to ensure that every part is in a unified form and belongs the ensemble.
Figure 51: Detail drawing A-01

Figure 52: Detail drawing A-02
Figure 57: Detail drawing B-01

Figure 58: Detail drawing B-02
Figure 59: Detail drawing B-03

- Bleached oak panel, with thickness of 35mm
- Waterproof layer
- Soundproofings, filled in between timber battens
- Timber battens, 50mmx35mm
- Customized translucent glass film with vertical strips, 1mm
- Laminated safety glass (with PVB foil), 8mm
- Laminated safety glass (with PVB foil), 8mm
- Frameless pivot door bottom aluminium frame, 60mmx87mm

Figure 60: Detail drawing B-04
Figure 61: Detail drawing C-01

- Aluminium window frame, 80mm x 87mm
- Customized translucent glass film with vertical strips, 1mm
- Laminated safety glass (with PVB foil), 8mm
- Laminated safety glass (with PVB foil), 8mm

Figure 62: Detail drawing C-02
3.8 Conclusion

The main purpose of designing this community health care complex is making efficient use of various social resources and simultaneously providing appropriate health care for senior people, even if they are incarcerated. Besides, the complex provides apartment and workshop for emancipists to help them reintegrate into society. Moreover, a community clinic is equipped in the complex, to provide health care for local residents and internships and job opportunities for nursing students from the two colleges nearby. Furthermore, there is a medical forum where residents can get educated with health care knowledge, and a tea house combined with the forum and community clinic. Notably, when the clinic, health care center, tea house, forum and apartment work together, they will benefit with each other. For instance, the patients can have a cup of tea in the tea house while awaiting consultation, thus getting calmed and relaxed.

Apart from these functions, the courtyard inside the complex and the green space around it, together provide a civic space for neighbors and students to meet, hang out and do sports. Moreover, all the huge pines and elms existing with the project site will be kept, together with the grassplot, to continue the context of this place.

Meanwhile, this project is also an experiment on discussing boundaries and the variability of architecture. Through the innovation of this project, more possibilities of prison forms are added to existing ones. And people may have a different idea on prisons and people inside them.
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Figure 15: ground floor plan of Oostvaarderskliniek, Image from M3 of Sense and Care Programme
Figure 16: Bastoy prison island, google earth
Figure 17: an inmate on Bastoy prison island, Photograph: Marco Di Lauro