Final Architectural Design Studio:

Neuro-Architecture for New Psychiatric Ward in Tampan Psychiatric Hospital Pekanbaru

ABDUL RAZZAK

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Karya ilmiah yang bersangkutan di atas telah melalui proses cek plagiasi menggunakan **Turnitin** dengan hasil kemiripan (*similarity*) sebesar **18 (Delapan Belas) %.**

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Neuro-Architecture for New Design of Psychiatric Ward in Tampan Psychiatric Hospital Pekanbaru

The aggressive nature of ODGJ (people with mental disorders) is one of the most detrimental traits and causes treatment that can worsen the condition of ODGJ itself, the nature of this aggression generally appears in people with severe mental disorders. In Riau the case was still not handled properly because the target of health service facilities for people with serious mental disorders was 9,533 people and those who received health services were 6,773 people (60.6%). The achievement is still low <50% for Rokan Hulu districts and Pekanbaru City. (Riau Provincial Health Office - Riau Provincial Health Profile, 2019). Mental health service institutions are widely held by the Tampan mental hospital (RSJ Tampan) as a regional public service agency, but inpatient services in these places are also still below standard Compared to the national standard inpatient customer satisfaction index ≥ 90% (Restra Rumah Sakit Mental Tampan 2014 - 2019), this is due to the insufficient number of inpatient facilities as well as patient treatment that is taking longer than expected. Based on the results of preliminary research conducted at Tampan Hospital in Riau Province from January 2018 to January 2019, the percentage of patients who were diagnosed at risk of violent behavior in the Psychiatric Ward was obtained: Upip Ward (17.18%), kuantan ward (18%) Indragiri ward (12.13%), Kamparward (17.28%), Siak ward (20.14%), Sebayang ward (9.5%), Rokan ward (20.76%). and Signs and symptoms in the form of not having the ability to control Aggressive behavior, the percentage is 10 out of 16 (Riska Amimi, et.a., 2020)

Implementing Beauty of Nature as Stress-reducing Design Features can reduce stress that will impact on aggression behavior, the beauty aspect on design are believed to be able to reduce aggression in patients. what are consider as beautiful are features that are very close and all rooted to nature, refer to Beauty on Neuroscience, the research also shows that humans unconsciously like nature and elements that are closely related to nature, this is indicated by an interest in certain patterns & Rhytmic which represents nature characteristics can have a physiological reaction and a sense of pleasure that can be caused by architecture with a certain pattern that the release of oxytocin, endorphins, and DHEA which choke back the sympathetic nervous system which is in a state of ordering a stressful position (Natalie Ricci, 2018). Hybrid Concept applied to integrate the environment between Building and Landscape, creating single entitiy to make sure the beauty of nature can be serve nicely with the building, It is hoped that by following this method of achievement the dream of to helps patients and nurses carry out the process of rehabilitation and outreach to the community can be carried out and the paradigm of mental hospital facilities as a shelter with family disgrace can be shifted

0.0 Design Premis

0.1 People with Mental disorder & Emotional Stability
0.2 Aggressive behavior in patients & Confinement
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1.0 New Hypothesis!

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1.1 The Psychological Impact of Architectural Design & Evolution of Mamalian Brain
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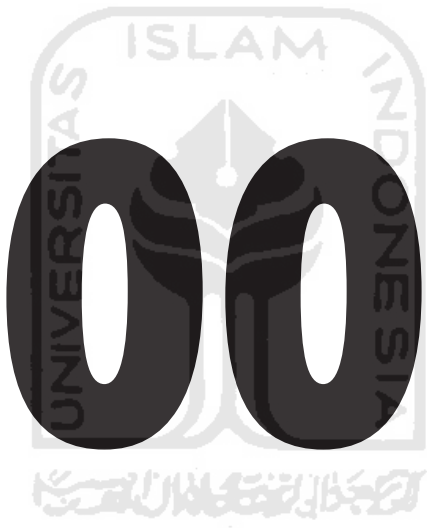
8.0 Final Design

Situation on of the Project
Patient & Visitor Experients on Perspective
Site Plan, site circulation, site engginering
Floor Plan
Building elevation
Site Section
Building Section
Bowl Detail, Shading Detail, Curve Envelope,
Structural Scheme
Utility Network Scheme: Clean Water & Grey water network, Environmental Control
Building Transportation
Evacuation Points

9.0 Jury Comments and Explanations

9.1 Explicit Explanation of what is Neuro-Architecture
9.2 How to Manage Constrain with Plantation

10. References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Design Premise

An Environment in a place can support and maintain Emotional Stability of the user!!

The design of a ‘’Neuro-Architecture for New Design of Psychiatric Ward in Tampan Psychiatric Hospital Pekanbaru’’ wants to be an example of developing an environment in a place that can control emotional aggressiveness in and out of a place. This idea originated from the desire to provide support for the rehabilitation process for ODGJ (people with mental disorders) who have a bad stigma due to unstable emotions and thoughts, often go rampage and are considered to be dangerous to the safety of the people they are close to and their environment.

- Liana Ners, *ODGJ* (People with mental disorders) Nurse who shares her journey through Youtube
Source: Liana Ners - Kamu Harus Sehat Kembali_Kami Semua Menyayangimu, Youtube: https://www.youtube.com/watch?v=gLhlShkad18&t=165s

the arrangement of the surrounding environment in the rehabilitation become really importan,how the internal environment it is hoped that there will be an environment that can nurture, accompany and assist them in undergoing a better life journey process.

What if inadequate environmental conditions result in BAD BEHAVIOUR from ODGJ (people with mental disorder) which is UNSTABLE?

Confinement on People with Mental Disorder
Image: andreastarreese.com/disorder

Pasung, confinement and handcuffs become an conventional option to keep them calm

this is considered inappropriate, we should providing support and appreciating their meaningful lives, it means that we have tried to create a better world, such as the ideals of the state in Article 34 of the 1945 Constitution (pasal 34 UUD 1945) paragraph (2) - (3)

“ The state develops a social network system for all people and empowers the weak and incapable in accordance with human dignity.”

“The state is responsible for providing adequate health care facilities and public service facilities.”

United Nation of Human Rights: Principles for the protection of persons with mental illness and the improvement of mental health care; Adopted by General Assembly resolution 46/119 of 17 December 1991

Principle 1 - Fundamental freedoms and basic rights:

1. All people have the right to the best mental health care, which should be part of the health and social health care system.

2. All people who suffer from mental illness or who are being treated as such should be treated humanely and respect the inherent dignity of human beings.

3. All persons suffering from mental illness, or those treated as such persons, have the right to be protected from economic, sexual and other forms of exploitation, physical or other abuse and degrading treatment.

4. Do not discriminate on the grounds of mental illness. “Discrimination” refers to any distinction, exclusion or preference that has the effect of canceling or damaging equal enjoyment of rights. Special measures taken solely to protect the rights of persons with mental illness or to ensure their progress should not be considered discriminatory. Discrimination does not include any distinction, exclusion or preference based on the provisions of these principles, and is necessary to protect the human rights of the mentally ill or other people.

01

New Hypothesis!

Neuro-Architecture

A new awareness of the complexities of cognitive and emotional processes involved in everyday experiences of the designed environment Through understanding how the brain responds to certain patterns, shapes and rhythms in architecture.

Neuroscience with Beauty

Beauty, which is the result of understanding physical and mental forms is believed to reduce stress triggers aggression in patients. What is considered beautiful is something whose characteristics are very close and rooted in nature. referring to Beauty on Neuroscience, the research also shows that humans unconsciously like nature and elements that are closely related to nature, this is indicated by interest and reactions to certain patterns & rhythms related to nature.

this happens because of the evolution of our ancestors who associate these natural patterns with safety, security, well-being, and survival. The thought evolved into a form of happiness that was identified through a part of the brain system to monitor the goodness in experiencing aesthetic qualities. This aesthetic judgment still functions even when other brain functions stop functioning. (Andrea R. Halpern, et.al, 2008)

so it is hoped that the creation of certain patterns and rhythms that represent these natural characteristics can create physiological reactions and feelings of pleasure that can release oxytocin, endorphins, and DHEA which strangles the sympathetic nervous system which commands the stress position (Natalie Ricci, 2018).

the relationship between design and psychology is not only consequential, but also two-way. On the one hand, successful designs have been shown to have clear psychological and physiological effects; on the other hand, psychology, human experience, and the functioning of our nervous system all play an important role in what we consider to be successful design (Natalie Ricci, 2018)

The Evolution: Mamalian Brain

Brain & Emotion??

how architecture design affect humans psychologically? it is first important to understand the psychological effects of certain stimuli on the human brain in preceiving the space. In the process of evolution, the human brain evolves in more complex ways, such as the human forebrain, which is the center of thinking, planning, and emotions.

craving for

Happiness

The more primitive parts of the brain and brainstem still function in a very similar way to other mammals; in particular, their design and operation still help us survive and pursue happiness. On the other hand, in most cases, happiness has the same meaning in the past 200,000 years or so. Happiness is a feeling of happiness, satisfaction and enjoyment. However, the way to achieve this feeling is subjective and changes with the development of our human interests and changes in available resources.

Living space for happiness

Evolutionarily speaking, the human brain has been coded to associate a sense of pleasure with objects and places that increase our chances of survival. even today, modern humans still associate a place to live with pleasure, but it is more subjective.

The POWER of Beauty

oxytocin, endorphins and DHEA

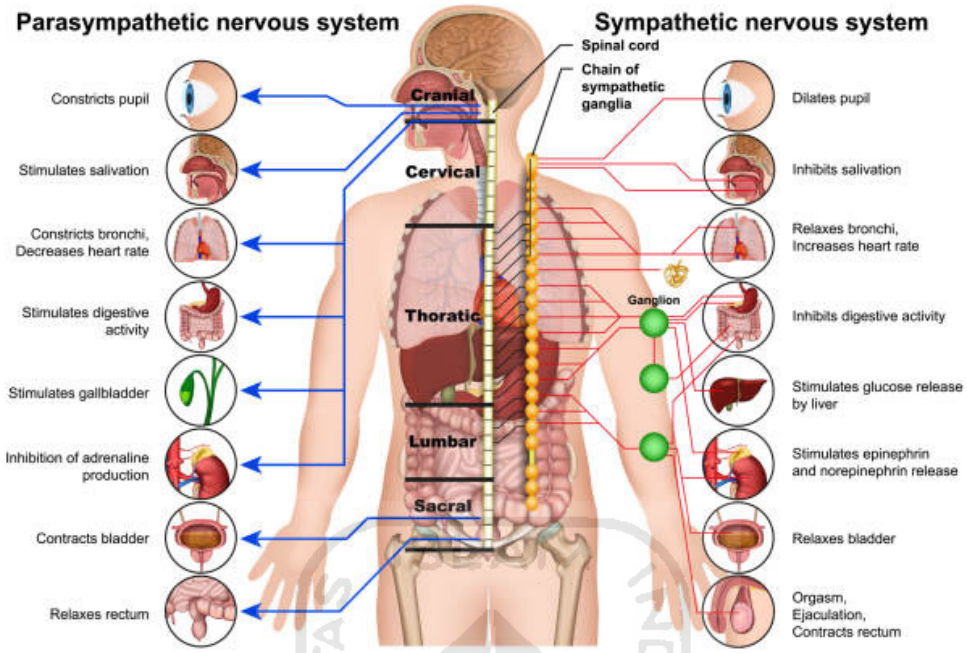
a prominent architect in Denver, Colorado believes that there are three components that make a building “beautiful”: form, utility, and beauty. Seeing something that we think is beautiful causes us to feel pleasure. Feelings of pleasure are a result of the release of oxytocin, endorphins and DHEA in our brains. (Estren, M. J., & Potter, B. A. (2013).

Pattern matching in Design by Brain

Buildings that give us pleasure are those that use architectural elements that our brains recognize as having characteristics similar to the place that in the past helped our human ancestors to survive day to day. There are several different ways in which our brains recognize patterns. The first, known as feature matching, is when the incoming pattern information is broken down by the brain into pieces which are then individually compared and contrasted with the parts of the previously stored pattern.

Prototype matching is similar to feature matching. The difference is that our brain matches the incoming pattern with the stored pattern. It tries to associate the incoming information with certain features of the known prototype. One of them is template matching, where only certain aspects of the incoming pattern match the template or prototype, rather than the entire pattern of the input.

Patterns represent consistency and organization; lack of chaos. The importance of patterns goes beyond being able to recognize something literal like a place to live or a house. Patterns in architecture are often referred to as rhythms; this is what **causes the eye to flow from one focal point to the next**



Stress

sympathetic and parasympathetic nerves

Rest

the role of the forebrain in cognition and experiencing emotions is of the utmost importance as it relates to design psychology. sympathetic and parasympathetic nervous system (Ruggles, D. (2017)). Both of those systems, and how they respond to stress was essential to the survival of our ancestors.

when under stress, the body will produce cortisol to slow down bodily functions. which are not necessary for survival (Ruggles, D. (2017)). It is a fight or flight response developed in mammals to increase the chances of survival in response to a threat.

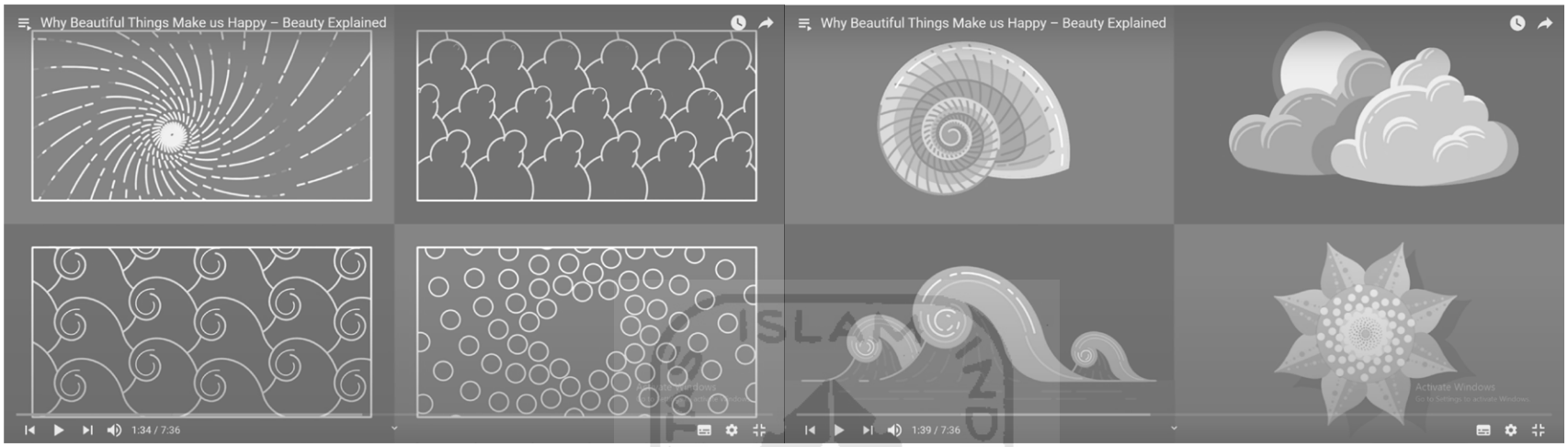
The parasympathetic system works to return the body to its resting state, restore digestion to its normal level, and reactivate various routine metabolic processes.

normal stress is used by ancestors to survive in extreme conditions, but generally stress conditions will soon subside when the moment of danger is gone. Unlike in the modern world our stress is problematic because many causes of stress never go away. Chronic or persistent stress can cause mental and physical health problems that are very detrimental, and even permanent.

Strategies such as meditation, medication, psychotherapy & etc. have all been used to deal with it. It is generally believed that it is possible to reduce stress at least to a certain extent. This is where architecture design and their positive psychological effects become particularly important. (Natalie Rich, 2018)

figure source: https://www.dosenpendidikan.co.id/saraf-simpatik/

YouTube Kurzgesagt – In a Nutshell

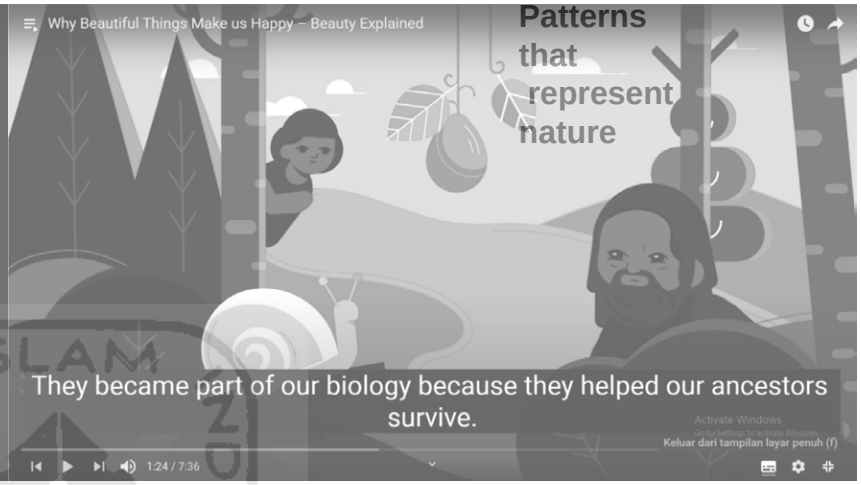


Beauty on Neuroscience

Beautiful Pattern??

We find buildings that incorporate patterns or rhythms. certain aesthetics are made more beautiful because our brains are conditioned by evolution to associate these patterns with safety, security, well-being, and survival. As noted previously, that perception results in the release of oxytocin, endorphins, and DHEA, and **chokes back the fight-or-flight sympathetic nervous system,** all resulting in a sense of pleasure. This in turn serves to restore the body, immune system, telomeres, etc., which are beneficial to our mental and physical health. (Natalie Ricci, 2018)

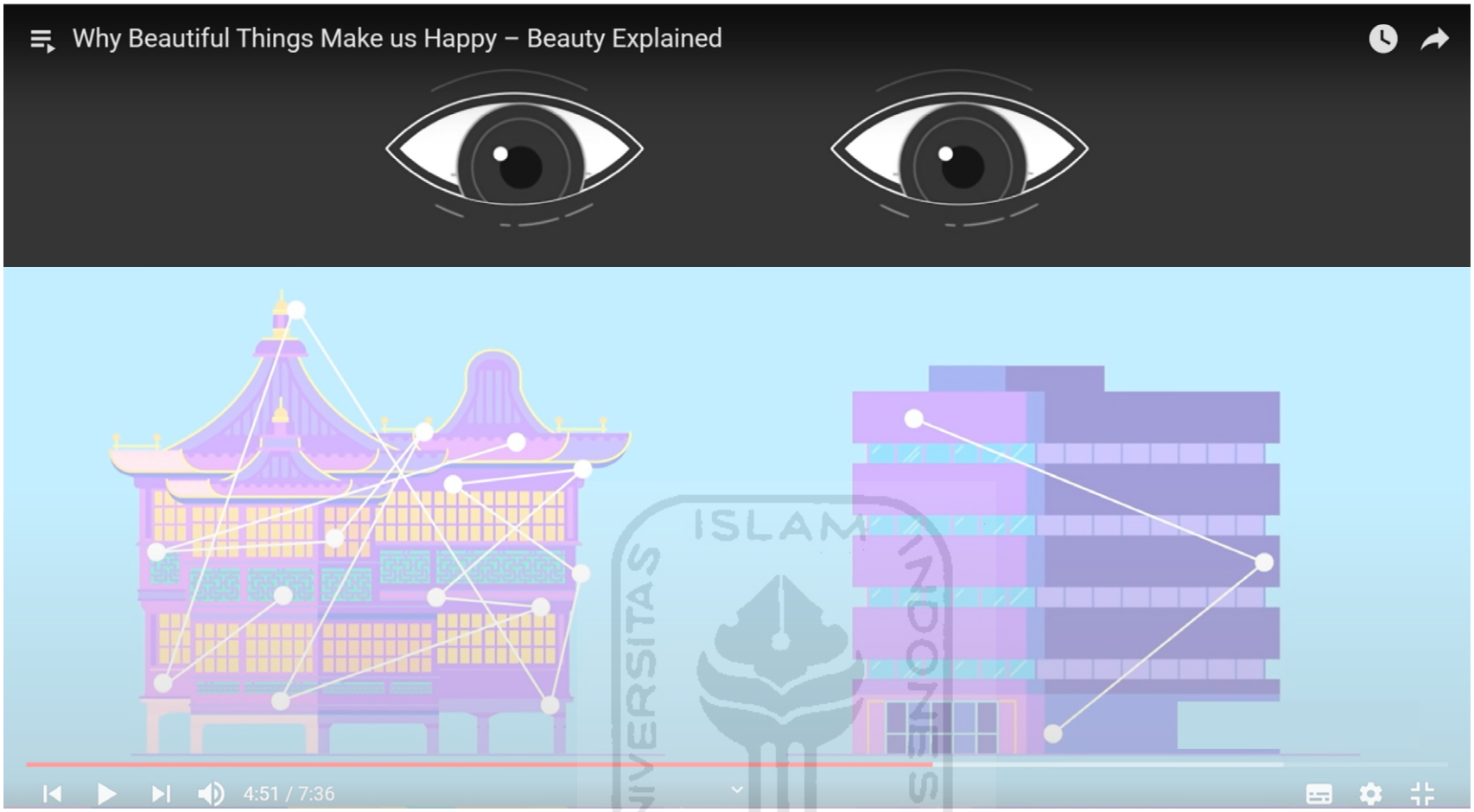
https://www.youtube.com/watch?v=-O5kNPlUV7w&list=PLi0r3PnmY0RswynrgUo4Q-ykyEAJ6Mtc9&index=10&t=148s



- Many of the most critically acclaimed buildings of all time are built in patterns that mimic the natural environment in which we came from.
- The contemporary building style, soft rounded curves and use of neutral colors like the earth are meant to show the rocks in their natural setting.
- coexist easily with the natural surroundings (Douglass, M. (2015).

patterns previously shown to be evolutionarily useful in nature. However, because this pattern recognition takes place at a subconscious level, most viewers are unaware of the neuropsychological and physiological basis behind their perception of this sense of beauty. Another similarity is the similarity to the structure of the human face. Face recognition is one of the most important survival adaptations of mankind. In fact, it is so important that 65% of the neural structure of the brain in newborns is devoted to facial recognition mechanisms.

Kurzgesagt – In a Nutshell say mentioning that sense of beauty can be evolved from pattern recognition, humans seem to have evolve an instinct for beauty that is deeply hardwired into us. it remain even after other processes in our brain stop working. Alzheimer's patients were asked to rank the beauty of several paintings, then the experiment was repeated two weeks later. The patients have long since forgotten the paintings, but still ranked the beauty of the paintings in the same order. (Andrea R. Halpern, et.al, 2008)



Negative Psychological Effects of Poorly Designed Architecture

Ugly??

the one that they lack the characteristics that activate our pleasure response

psychologically beautiful architecture is more commonly recognized today, there was a time when the elements of architecture that were traditionally taught (form, use, and beauty) were discarded and replaced with form, use, and craft. which is faster, more efficient, due to limited technology at that time. cause the development of ‘ugly’ small houses (because they lack the characteristics that activate our pleasure response)

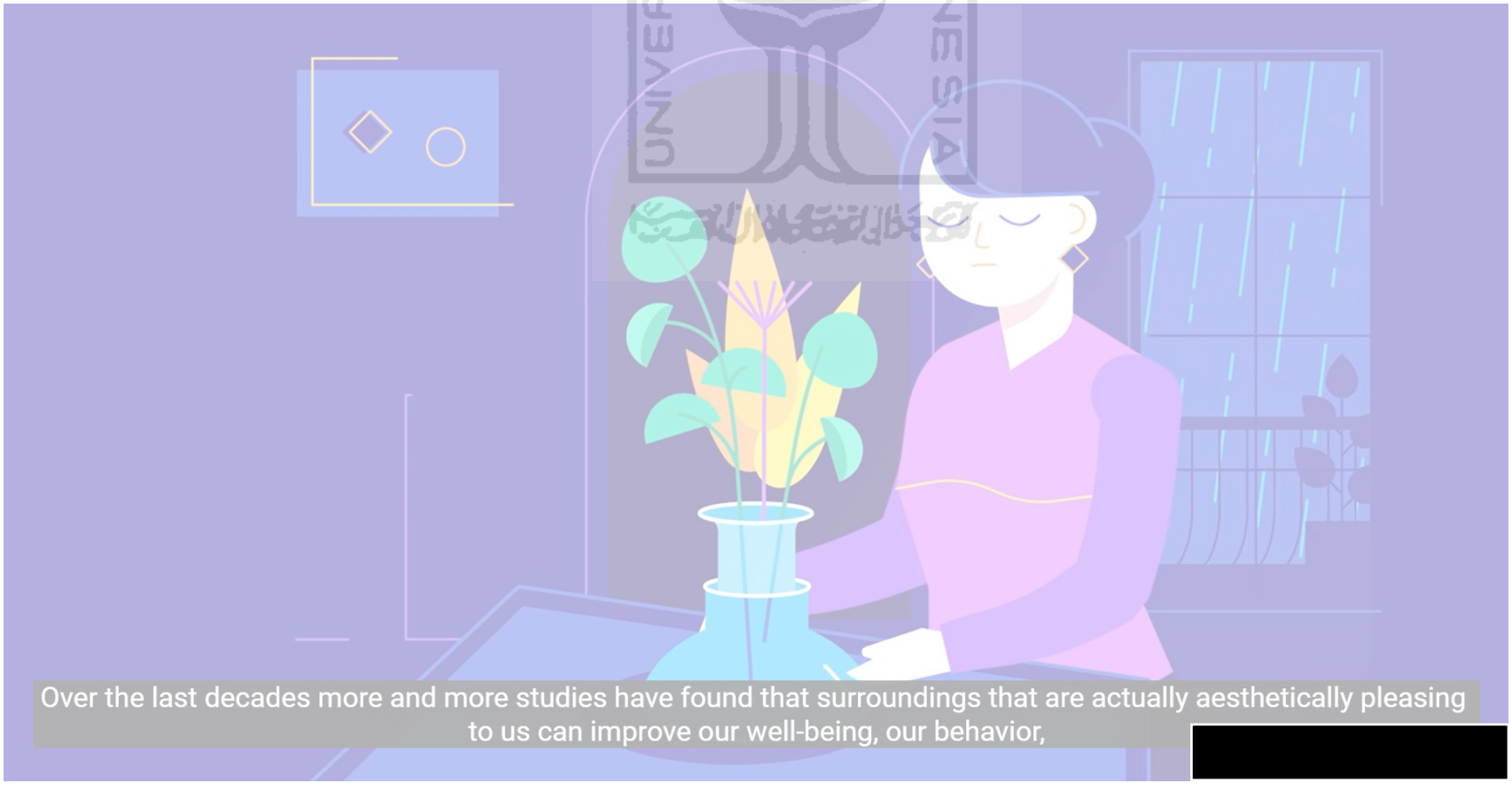
Block shape, monochromatic color, poorly placed windows, absence of architectural detail, and repetitive style produce unique forms of sensory deprivation. . This trend not only results in a lack of intellectual stimulation, but also effectively eliminates every aspect of human touch, creating a cold and inhospitable environment that lacks the ability to generate positive physiological responses or feelings of well-being. (Natalie Ricci, 2018)

The Importance of Human Interaction with the Environment

Another important element which, if not present, has the ability to completely derail the effectiveness of a good architectural design: nature and the environment.

Human responses to environmental stimuli have been shown to depend on several factors including: a) landscape and complexity, Freshness or Novelty & pattern. and b) individuals and their environmental experiences in the past, the amount of time they spent in the environment, their ability to determine the structure or shape of the landscape Environment, their personality traits, and their sensory associations with the environment. (Bell, P.A. (2011).

we have a genetic predisposition to that attraction. (Wilson, E. O. (1984) Residues of previous interest in all living organisms existence & interaction remain an option for humans because of the positive psychological responses that stem from their evolutionary existence around them.



Regardless of the closeness of humans to the natural environment, there are too many natures likely to elicit similar stress-type responses. Lanius (1984) identifies preferred balance, using positive physiological responses by using their model to break down possible emotional reactions to the environment into four categories:
1) arousing
2) and not arousing,
3) and pleasant
4) and unpleasant.

Regardless of individual variation, humans generally prefer pleasant (either evocative or non-evocative) environments to unpleasant ones. Because humans are naturally born processors of information, we prefer environments that provide us with a lot of information to process (Bell. (2011).

Kaplan and Kaplan (1987) take this environmental preference theory a step further for the combination of native (biophilic) and constructivist elements. an active process in which we analyze incoming information and compare it to the stored experience. (Bell, 2011). The categories defined in the model (coherence, legibility, complexity and mystery) are believed by Kaplan to increase individual preferences for certain environments. To define Kaplan,

coherence is the degree to which the environment is regulated as a whole; legibility is the level of specificity the viewer can use to categorize the content of the scene; complexity is the variety and number of elements in a scene; and last, mystery is the amount of hidden information contained in a scene. (Kaplan, S. (1987). Aesthetics, Affect, and Cognition)

coherence is the degree to which the environment is organized as a whole; readability is the degree of specificity that viewers can use to categorize scene content; complexity is the variety and number of elements in a scene; and lastly, mystery is the amount of hidden information contained in a scene. (Kaplan, S. (1987).

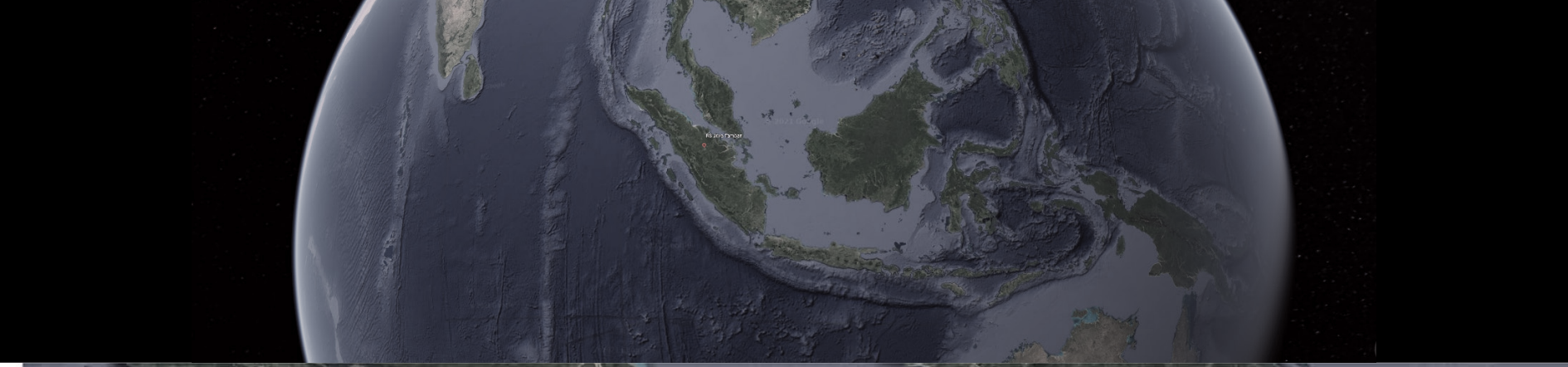
the more each component the environment has
the higher the individual preference for it.

Nature as Restorative Environment

Participants who watched nature videos increased their positive emotions, and their blood pressure, muscle tension, and skin conductance levels decreased; urban landscapes could not produce any of these positive physiological effects. (Ulrich, RS, Simons, RF, Losito, BD, Fiorito, E., Miles, MA, & Zelson, M. (1991) Place attachment is defined as the feeling of “rooted” in a particular location. (Appleton, J. (1996). Unfortunately, if the goal is to create a low-stress, mentally healthy environment, then from an architecture and design perspective, most urban environments fail completely . (Natalie Rich, 2018)

02

Site Study for New Hypothesis




MALACCA
NORTH SUMATRA
Dumai
JOHOR
Singapore
Sibolga
Batam
Tanjung Pinang
Gunungsitoli
Nias
RS Jiwa Tampan
RIAU
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WEST SUMATRA
Taman Nasional Bukit Tigapuluh
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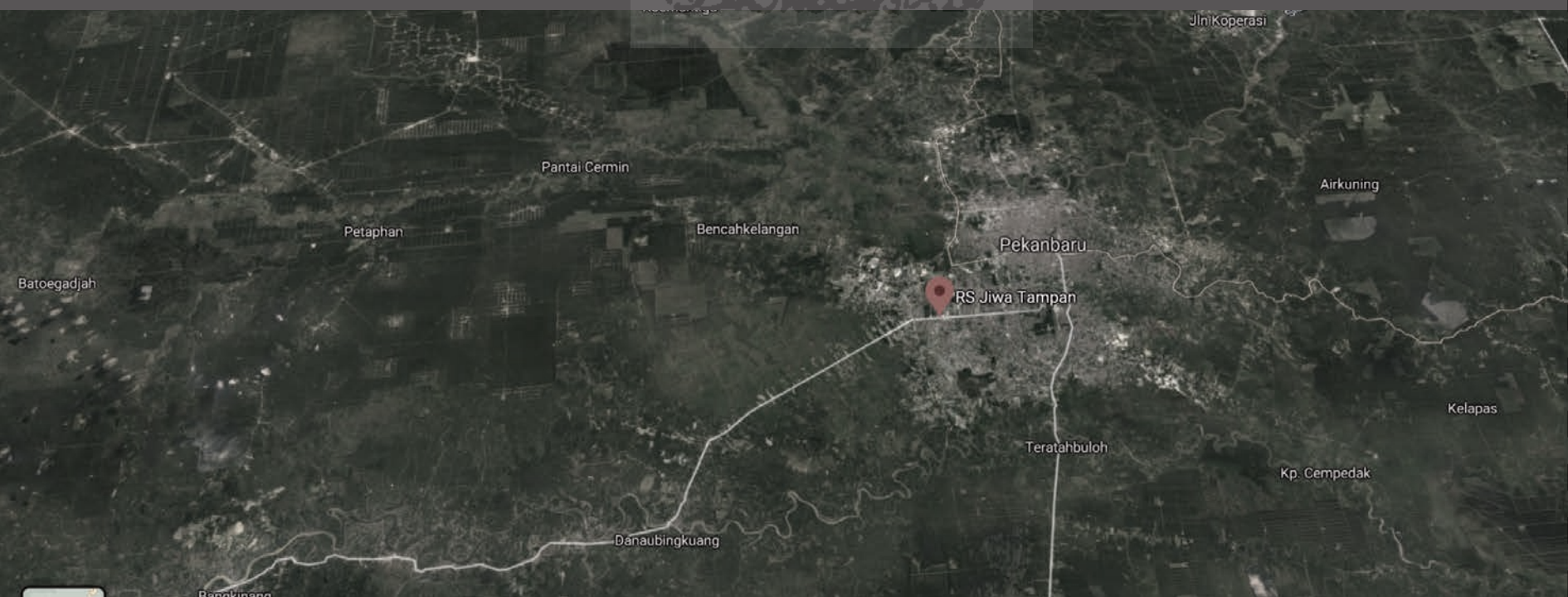
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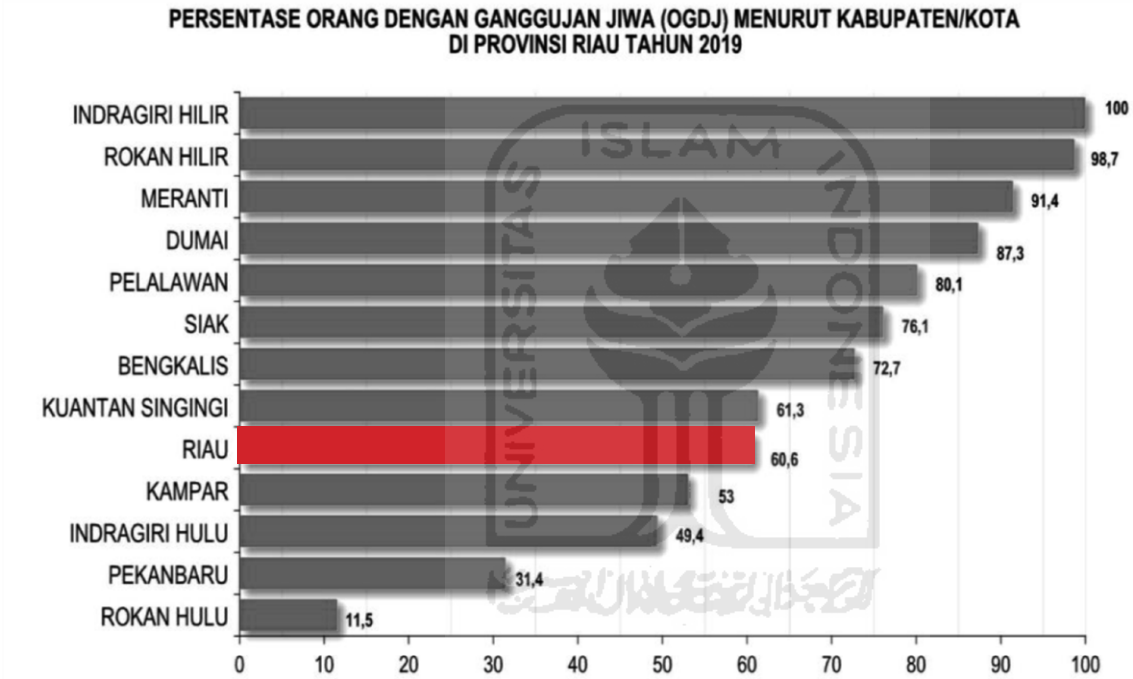
RS Jiwa Tampan
Kelapas
Teratahbuloh
Kp. Cempedak
Danaubingkuang

Psychiatric Services in Riau

at a location around the equator, in an area called Riau. still lack of targets in fulfilling mental health services

''Percentage of People with Mental Disorders (ODGJ) according to districts / cities in Riau Province in 2019''



''the target of people with severe mental disorders is 9,533 people and those who receive health services are 6,773 people (60.6%). Achievements that are still low <50% are Rokan Hulu Regency and Pekanbaru City. (Riau Provincial Health Office - Riau Province Health Profile, 2019)''.

with the unequal distribution of health in Pekanbaru and Rokan Hulu still not achieved, it is hoped that the surrounding mental health agencies need to disseminate and improve health services and information.

Rumah Sakit Jiwa Tampan is the only Psychiatric/mental hospital facility near the city and is the first referral as a Psychiatric hospital. located in Jl. HR. Soebrantas Panam No.KM 12.5, Simpang Baru, Kec. Tampan, Kota Pekanbaru, Riau

Institution Building Influence

is hoped that the existence of mental health facilities in the community can be a good example to consider this space to always be close to the community.


Residential Area
Green Area
Wastewater Treatment Plant (IPAL)
Residential Area
Sports field
Drugs Buildings
Science Park
Riau State University
Temporary storage place for hazardous waste (TPS B2)
Generator Room
Sebayang Ward
Canteen
Gazebo-like building (Pendopo)
Warehouse
Nutrition Installation Facility
Laundry Facility
Saleh Hasim Building
Official Residence
Mortuary
Rokan Ward
Hospital Facilities & Infrastructure Maintenance Installation (SPFBS)
Installation of Hospital Management Information System (SIMRS)
Rehabilitation Park (Horticulture)
Kampar Ward
kuantan Ward
Siak Ward
Indragiri Ward
Upip (Psychiatric Intensive Care Unit) Building
Central Supply Sterile Department (CSSD)
Registration Hall & Polyclinic
Official Residence
Mushalla
Office
Market
Fish pond
Emergency Department (IGD)
Fish pond
Parking Lot
Fish pond
Security post
Security Post
Shop Houses
50 m

mental health service providers

Rumah Sakit Jiwa Tampan (Tampan Psychiatric Hospital)

the regional public service agency for the *Tampan* mental hospital, hereinafter abbreviated as *BLUD RSJ Tampan*, is the regional public service agency for the mental hospital in the province of Riau. (Corneola, C, 2016), which is also a class A mental hospital, namely a mental hospital that has broad specifications in the field of mental health, and is used for intramular and extramular mental health education.

Internal Environmental Analysis

Customer Perspective

One of the service performance is how to get a picture of customer behavior. There are indicators that can show customer behavior, namely the number of visits and the number of customer satisfaction. From the customer satisfaction index data used the inpatient service customer satisfaction index data which is a reflection of services that require a long time. From the existing data, the customer satisfaction index was only conducted in 2012 with a result of 83%. Compared with the national standard inpatient customer satisfaction index ≥ 90%, it can be concluded that customer satisfaction with inpatient services is still below standard.

Inpatient Facilities

Inpatient services are services to patients for observation, diagnosis, treatment, medical rehabilitation in mental health, drug and general services for patients who come to RSJ Tampan, by staying overnight.

Inpatient services are understood as services for patients who stay overnight and are observed as well as undergoing medical treatment and rehabilitation for those who come to a mental hospital.

No	Perspektif/Analisa	Kekuatan			Kelemahan		
		1	2	3	-1	-2	-3
2.	Kepuasan pasien	1					
B.	Proses Bisnis						
1.	Kualitas fisik						
	Bed Occupancy Rate (BOR) %				-1		
2.	Kualitas layanan						
a.	Neth Death Rate (NDR) $^{o}/_{oo}$		2				
b.	Gross Death Rate (GDR) $^{o}/_{oo}$		2				
c.	Lama perawatan pasien gangguan jiwa (Hari)					-2	
d.	Persentase tidak ada kejadian kematian pasien karena bunuh diri	1					
e.	Persentase tidak adanya pasien lari					-2	
f.	Re admission				-1		
g.	Persentase penerapan standar asuhan keperawatan				-1		

No	Perspektif/Analisa	Kekuatan			Kelemahan		
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d.	Persentase tidak ada kejadian kematian pasien karena bunuh diri	1					
e.	Persentase tidak adanya pasien lari					-2	
f.	Re admission				-1		
g.	Persentase penerapan standar asuhan keperawatan				-1		
h.	Tidak adanya kejadian pasien jatuh yang berakibat kecacatan/kematian	1					
i.	Persentase angka kejadian infeksi nosokomial	1					
j.	Kematian karena efek samping obat		2				
k.	Persentase tidak adanya pasien difiksasi ≥ 24 jam	1					
l.	Persentase ketersediaan obat	1					
m.	Rata-rata pasien yang kembali ke perawatan intensive < dari 72 jam	1					
n.	Pasian jiwa yang dapat ditenangkan dalam waktu < 48 jam						
o.	Waktu tunggu di rawat jalan					-2	
p.	Kematian pasien ≥ 48 jam pertama	1					
q.	Kejadian pulang paksa	1					

Service performance can also be measured from the technical aspects expected from the goals (goals) of medical services, which include physical quality / place (quality of place) and quality of service (quality of services).From the analysis of the internal business process perspective, it can be concluded that from the physical quality represented by the BOR number, it can be seen that the BOR figure for the last 5 years shows an increase in the occupancy rate of beds every year. This illustrates the increase in the number of patients not matched by the number of beds.

	1.	Kualitas fisik						
		Bed Occupancy Rate (BOR) %				-1		

Riau Still needs a place to treat people for mental disorders, including patients who must receive inpatient treatment at the main referral hospital in Riau which also does not have facilities will aggravate the condition and provoke aggression in patients

the lack of BOR can influence of the Wellness of the Patients, also on Triggering Aggressiveness

Roger S Ulrich (2018) mentioned this in the research results of Baum & Paulus, 1987; Baum & Valins, 1977; Cox, Paul, & McCain, 1984. There is a lot of evidence that the stress of crowding and related aggressive behaviors are related to deficiencies in the physical environment, which limit people's ability to seek Personal Space, manage relationships with others & avoid stress such as noise and quarrels

violence to the nurses

agitation

length of stay

Drug use

containment

	c.	Lama perawatan pasien gangguan jiwa (Hari)					-2	

Day care is still a weakness of the handsome mental hospital, they said that this often happened due to inadequate environmental factors as well as family and community knowledge in dealing with patients after returning home.

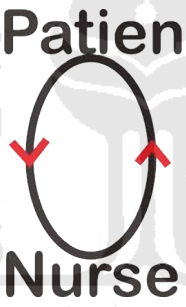
	e.	Persentase tidak adanya pasien lari					-2	
	f.	Re admission				-1		
	g.	Persentase penerapan standar asuhan keperawatan				-1		

understanding or image that makes psychiatric hospitals as an area of isolation for those with mental disorders, causing an uncomfortable feeling for patients being in a psychiatric hospital. which resulted in rebellion or agression.

What is Actually, Aggressive Behavior?

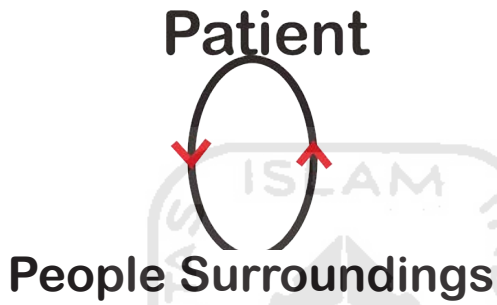
(Syafrika and Tommy, 2004). pointed out that aggressive behavior is intentional physical or verbal behavior designed to harm or harm others. Social psychologists define aggression as any form of behavior that is intended to harm other individuals who do not want to be harmed (Baron & Richardson, 1994).

International data shows that 37% of violent or aggressive incidents result in physical injury to staff (Bowers et al., 2011). This is an alarming figure that emphasizes the seriousness of aggression as a staff member and the safety hazards of patients.



aggressiveness will complicate the process of dealing with patients with mental disorders due to their destructive actions

There is a significant relationship between the aggressive behavior of mental disorders patients with the level of work stress of nurses, the work stress experienced by nurses is due to aggressive behavior by the patient towards the nurse. (Arief Widodo, et.al, 2018)



aggressiveness will also have an impact on the surrounding environment that feels afraid and it is difficult to overcome and accept the behavior of people with unstable mental disorders

violence may be a response to angry or aggressive feelings for something, in some cases but the person cannot direct their frustration to the source of frustration, so that people will aim at other targets (Worchel & Cooper, 1986);

therefore people are afraid and do not dare to communicate or socialize with people with mental disorders, as a result the surrounding environment does not support a good environment for people with mental disorders

Research data History on Aggressiveness of patients in Tampan mental hospitals

Based on the results of preliminary research conducted at Tampan Hospital in Riau Province about Agressive behaviour by *Riska Amimi, et.al.* from January 2018 to January 2019, the percentage of patients who were diagnosed at risk of violent behavior in the Pscyatric Ward was obtained: Upip Ward (17.18%), kuantan (18%) Indragiri (12.13%), Kampar (17.28%), Siak (20.14%), Sebayang (9.5%), Rokan (20.76%). Researchers assume that the signs and symptoms in the form of not having the ability to control violent behavior, the percentage of 10 out of 16 respondents who show signs and symptoms are less than the others. This indicates that they do not have the ability to control violent behavior and are unable to control their emotions, which has entered the stage of violent behavior. (Riska Amimi, et.a.,2020)


Residential Area
Residential Area
Green Area
Wastewater Treatment Plant (IPAL)
Sports field
Drugs Buildings
Science Park
Riau State University
Temporary storage place for hazardous waste (TPS B3)
Generator Room
Canteen
Sebayang R.
(9.5%)
Gazebo-like building (Pendopo)
Warehouse
Nutrition Installation Facility
Laundry Facility
Saleh Hasim Building
(20.76%)
Official Residence
Rokan R.
Mortuary
Hospital Facilities & Infrastructure Maintenance Installation (HFIEE)
Installation of Hospital Management Information System (SIMRS)
Rehabilitation Park (Horticulture)
(17.28%)
(20.14%)
Upip Building
Kampar R.
Kuantan R.
Siak R.
Indragiri
(17.18%)
(18%)
(12.13%)
Central Supply Sterile Department (CSSD)
Registration Hall & Polyclinic
Official Residence
Musholla
Office
Emergency Department (IGD)
Fish pond
Fish pond
Fish pond
Market
Parking Lot
Security post
Security Post
Shop Houses
50 m


Residential Area
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E
C
Gazebo-like building (Pendopo)
Warehouse
Nutrition Installation Facility
Laundry Facility
Salen Riasin Building
Official Residence
F
Mortuary
Rokan R.
Hospital Facilities & Infrastructure Maintenance Installation (IPSRS)
Installation of Hospital Management Information System (SIMRS)
Rehabilitation Park (Horticulture)
Upip Building
B
Kampar R.
Kuantan R.
Siak R.
Indragiri
G
Central Supply Sterile Department (CSSD)
Registration Hall & Polyclinic
A2
Mushalla
Office
Official Residence
Emergency Department (IGD)
A1
Parking Lot
Fish pond
Fish pond
Fish pond
Market
Security post
Security Post
A
Shop Houses
50 m

A1

A2

A

The patient's experience in seeing and entering this mental hospital still seems very rigid with the lack of landscape arrangement from the outside and rigid building models.

B

C

the entrance to the patient's room does not show a positive distraction experience that is able to calm the patient on his way. the patient's room is also still in the model combined with other patients, minimizing the value of privacy which is sometimes very necessary for patients with mental disorders which is **can triggering aggression**

E

F

G

The good value of the current hospital setting is the availability of clean and maze-like pathways that provide spaces for patients to find their favorite places outside. as well as the existence of an empty pavilion that can be a relaxed place for patients to gather and if there are certain events and programs


Residential Area
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H
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50 m

A

H

from an outside perspective, which is commonly seen by society. the **scenery tends to be distant and there is no activity that exudes enthusiasm and good mental health.** This supports a bad image of the mental health institution who's handling people with mental disorders

I

J

The bad image of the institution can exacerbated by bagaimana tatanan lingkungan institusi pelayanan jiwa berkomunikasi dengan masyarakat. **Such remote arrangement can make the image of this place as a place of isolation, which can trigger aggressiveness of the patient**

K

L

IF WE CAN reduce aggression on Patient

Aggressive behavior is often a cause of hospitalization for mental illness. It often leads to longer hospital stays, suffering for patients and their victims, and increased stigma. In addition, it has an impact on health care use and costs, including longer hospital stays, more hospital readmission rates, and higher drug use rates. (Ruby-Valera M, 2015)

we can Reduce:

violence to the nurses

agitation

length of stay

Drug use

containment

we can Improve:

Mental recovery & Happines of the Patient

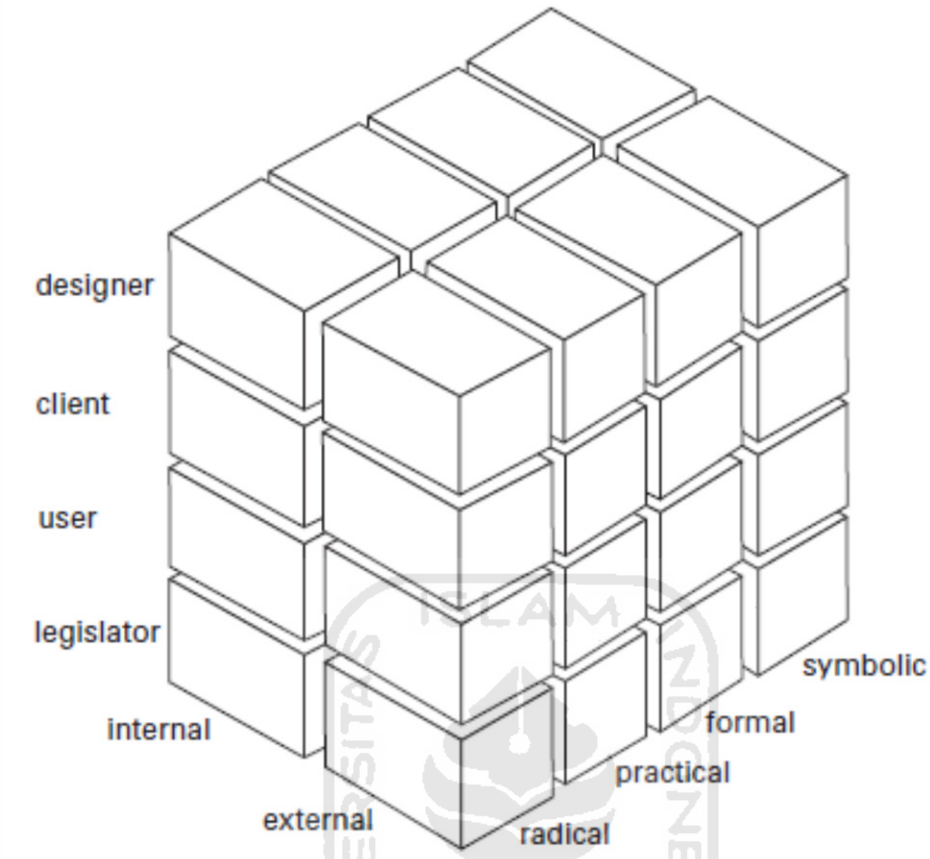
more available capacity

Social behaviour of the patient with the community

UNIVERSITAS ISLAM INDONESIA

03

Problem Statement



Lawson, 2005.

Lawson, B. (2005). How Designer Think, Fourth Edition. Design Studies

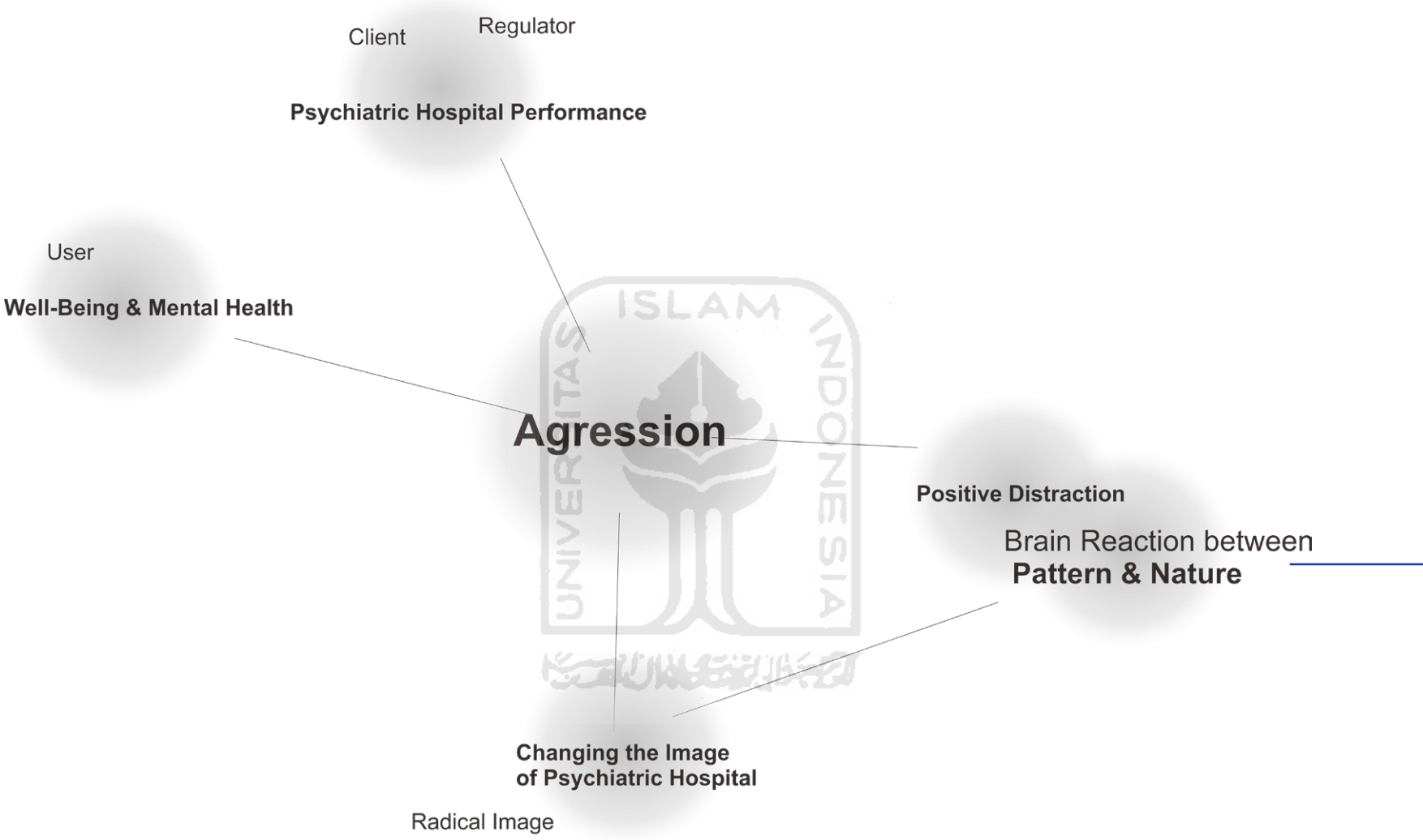
Lawson (2005) described the traditional design thinking process, image design and the combination of design and science. The thinking method that combines design and science makes the design process more comprehensive and can be evaluated in a scientific way.

	Formal Problem	Practical Problem	Symbolic Problem	Radical Problem
Designer	**Integrated & Centralized Ward Typologies** a typology that accommodates users of patients with serious mental disorders, such as major depressive disorder, schizophrenia, and bipolar disorder. using a building typology that presents the best situation for people in and around it	**Stress-reducing Design Features** restoring mental health using design features based on previous research evidence.	**Building as Friends/Companion & Paradigm shift** The building helps in providing the best service and accompanying patients in the rehabilitation process. Also, changing the paradigm of mental hospital design as something that is and is shunned by the community (as a place that brings disgrace)	**Beauty on Neuroscience** The influence of aesthetics on the design is an important factor in making inpatient buildings and their surroundings a stimulating environment for neural networks that can release the oxytocin, endorphins, and DHEA for
User Inpatient Patients & Visitors	**Restorative Place** The Place is expected to be able to provide a restoration effect to users who are in that place	**Comforting Place** As a place that makes users who are in rehabilitation feel safe and comfortable in that place	**Rehabilitation Place** Support processes to help psychiatric patients who need medical treatment to achieve the best condition of their psychological and social abilities.	**Reducing Aggression** designing inpatient facilities and their surroundings using certain design elements that reduce the nature of aggression.
Client The Government of Riau Province for: *Badan Layanan Umum Daerah (BLUD) - Rumah Sakit Jiwa Tampan Provinsi Riau*	**Inpatient Hospitality Service** increasing the capacity and quality of space to provide services that will maximize the treatment process for inpatients and visiting patients	**Psychiatric Ward Design** An arrangement that can help and facilitate the rehabilitation process for patients who come to a *tampan* mental hospital	**Inpatient Service Performance** Give the best performance to the patient to reach the best psychological stage according to the evaluation of service performance	**Emotional Stability of Patients** provide emotional stability for patients who come to the mental hospital so as to maximize the treatment process
Regulator Customer Satisfaction Index, Article 34 of the 1945 Constitution, paragraphs 2 & 3, United Nation of Human RightS	**Improvement of Capacity** increasing capacity in inpatient rooms is insufficient capacity. that is, the number of patients attending is not proportional to the existing inpatient capacity	**Eligibility of Facility** In line with the increase in room capacity, services to patients still need to be improved with the National standard of inpatient customer satisfaction index ≥ 90% (using inpatient service customer satisfaction index data which is a reflection of services that require a long time (number of patients/time)	**Article 34 of the 1945 Constitution, paragraphs 2 & 3** *(2) Negara mengembangkan sistem jaringan sosial bagi seluruh rakyat dan memberdayakan masyarakat yang lemah dan tidak mampu sesuai dengan martabat kemanusiaan.* *(3) Negara bertanggung jawab atas penyediaan fasilitas pelayanan kesehatan dan fasilitas pelayanan umum yang layak.*	**United Nation for Human Rights: General Assembly resolution 46/119 of 17 December 1991** (1) All persons have the right to the best available mental health care, which shall be part of the health and social care system. (2) All persons with a mental illness, shall be treated with humanity and respect for the inherent dignity of the human person. (3) All persons with a mental illness, treated as such persons, have the right to protection (4) There shall be no discrimination on the grounds of mental illness.

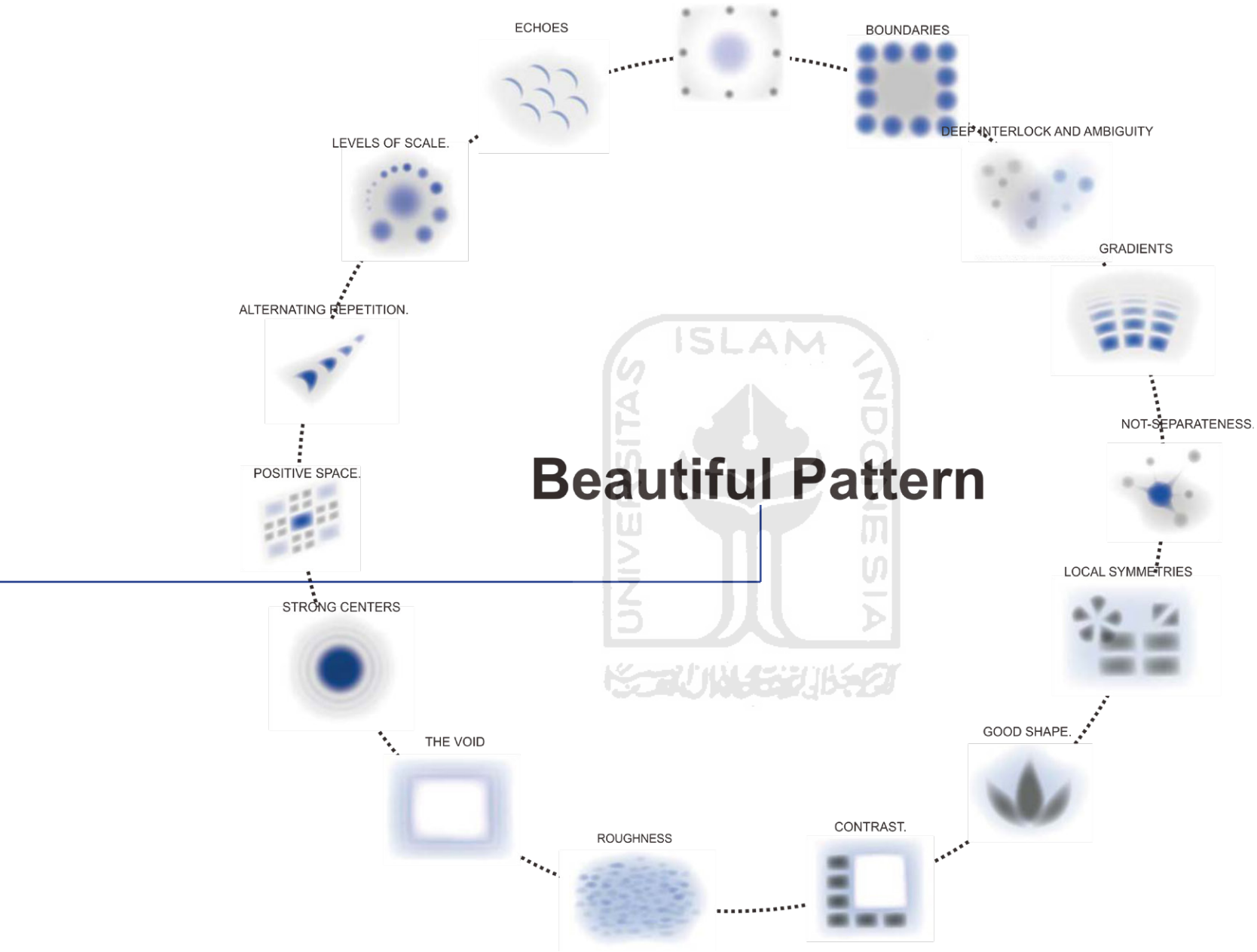
If the radical problem of aggression can be resolved, then the positive results obtained will chain with other problems, such as increasing client performance to fulfilling human rights. and the potential for applying this new idea to more specific problem solving can be more manageable.

04

Design Hypothesis Study



The resolution of the aggression is done by translating the beauty in the form of positive distraction which will then have an impact on the patient's welfare and improve the performance of the relevant agencies. This beauty is also expected to change the image of a rigid mental hospital, making it more beautiful with the spirit and colors that come from nature



to create a beautiful positive distraction, drawn from the principles of the natural order to get its beauty. these principles become the way of designing

Beauty of Nature

The Nature of Order

Fifteen Fundamental Properties

by Christopher Alexander

‘‘ the quality in Pattern, which is the criterion of the root of life and spirit in people, cities, buildings, or the Nature. ‘‘

SIMPLICITY AND INNER CALM

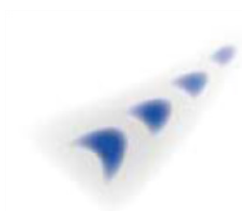
a life comes from a variety of diversity, there are times to be strong there are times to be simple. calming simplicity considering where everything unnecessary is removed

ECHOES

A whole life contains a deep fundamental similarity in it. The similarity of these elements binds them into a cohesive whole

LEVELS OF SCALE.

Centers intensify each other when they differ in size. If there is a well-ordered range of sizes, a field effect is formed, and then, the whole is created by tying the centers together.



ALTERNATING REPETITION

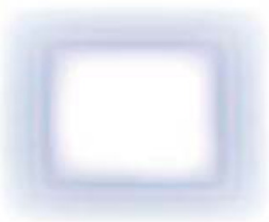
intensified when they repeated with subtle variations. applied recursively to all entities, the space between entities, and the process of repetition, it creates a beautiful harmony.

POSITIVE SPACE.

For something to be whole, both the elements themselves and the space around them must engage with one another, each reinforcing the other.

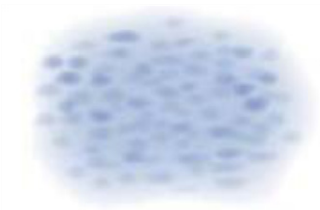
STRONG CENTERS

each strong center consists of several smaller strong centers. The strong Center has a field effect generated by nesting it.



THE VOID

intensified by the presence of an empty center. This void needs to be on the pitch to maintain a balance between calm and emptiness.



ROUGHNESS

The whole of life has some local irregularities in it. The disorder is caused by adapting to irregularities in the environment and responding to demands and constraints from other nearby centers

CONTRAST

sharp differences between one and the other. The differences between opposite sites not only separate things but also bring them together.

GOOD SHAPE.

Good form is an attribute of the whole, but the whole must be made of intense centers which in itself are whole. (a complete whole)

LOCAL SYMMETRIES

interlocking and overlapping symmetrical segments. serves as an adhesive that forms a whole

NOT-SEPARATENESS

a living whole, each center being deeply connected and fused into their surroundings, not separate from them.

GRADIENTS

varies gradually, not suddenly, across space in a living whole. This gradient is caused by a response to the natural variation of circumstances.

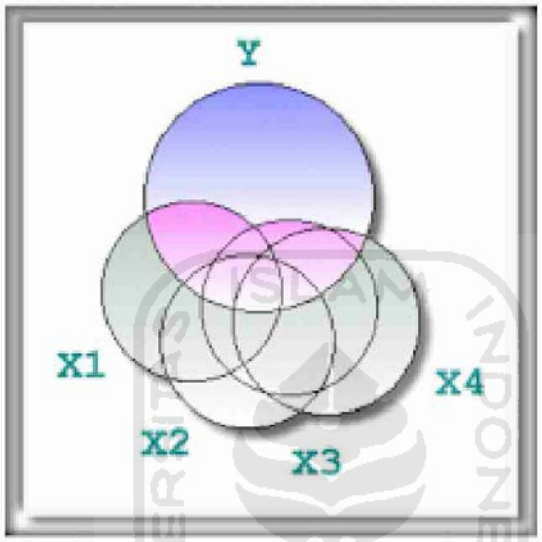
DEEP INTERLOCK AND AMBIGUITY

A living whole has several forms that connect the centers with their environment.

BOUNDARIES

create a field-like effect that intensifies the constrained center.

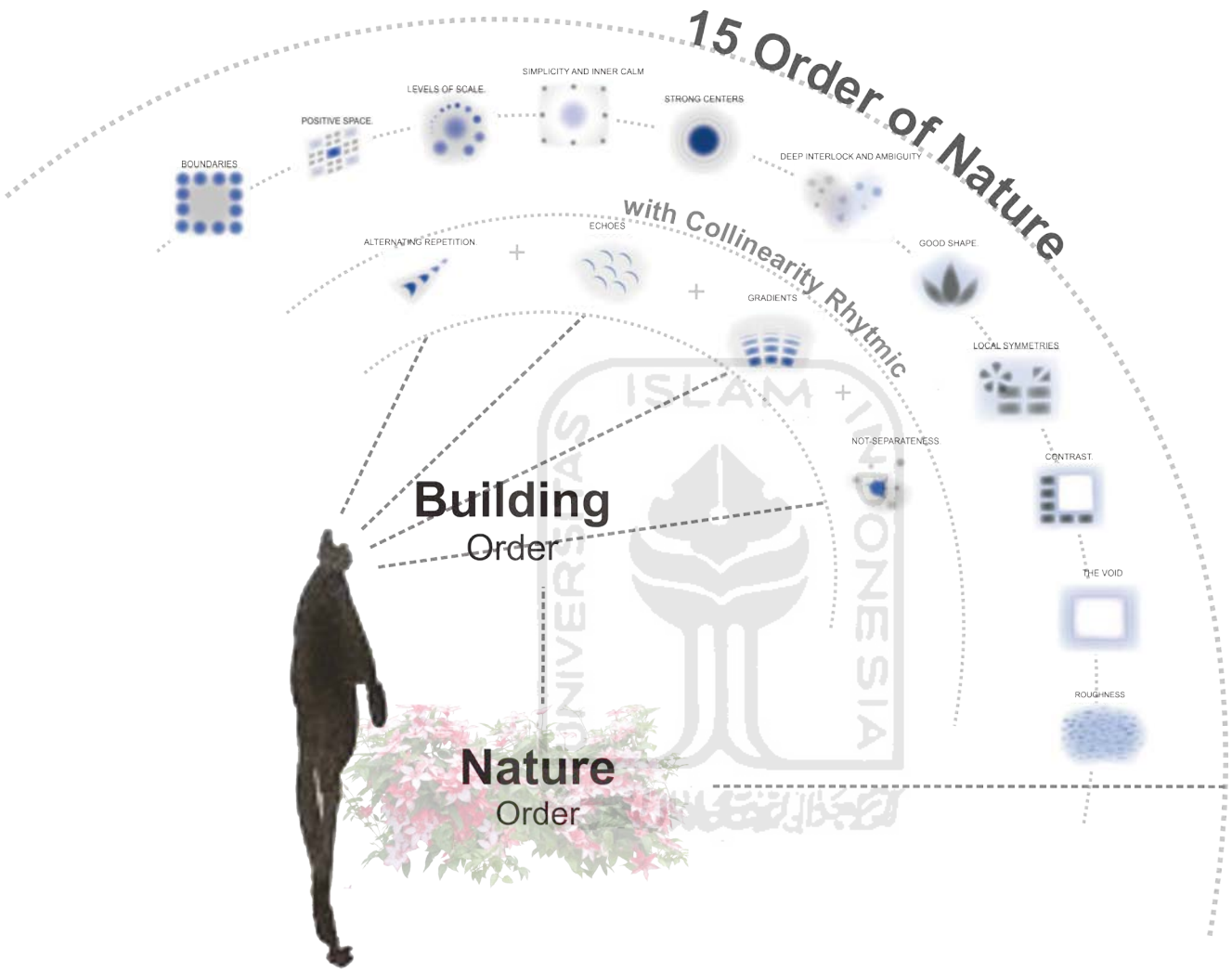
One of the principles of the brain's way of receiving information



Substantial collinearity

Thomas Albright
the Academy of Neuroscience for Architecture

He is interested in what he calls collinearity, that is, one sequence is arranged in the same linear order as another sequence. Albright pointed out that people respond so well to collinear patterns because these patterns resonate with the way our visual system works and adjusts information. For example, when we listen to music, the neurons in our brain are actually working in exactly the same pattern that we hear when we hear them. Albright's assumption is that something similar happens when we experience collinear design.



Integrated with colliarity rhythm where patterns and shapes are arranged according to the patterns and shapes of plants around the patient and nurse locations. which will be positioned from the time the patient leaves the room to the location of the patient's activities such as the horticulture location to the sport hall. because the integration between the arrangement of plants and buildings has an attachment to produce a pleasant environment. the plant will store the memory of the beauty deeply, so that the healing process with positive distraction can continue until the patient returns to the outpatient process.

05

Design Strategies

Centralize Typology

In Practical Reason:

the first is a mental hospital that has been researched previously and has been shown to reduce levels of aggression and these facilities use a centralized typology in their design. by creating this typology the management of Patient in term of visibility and direct access proved to be efficient

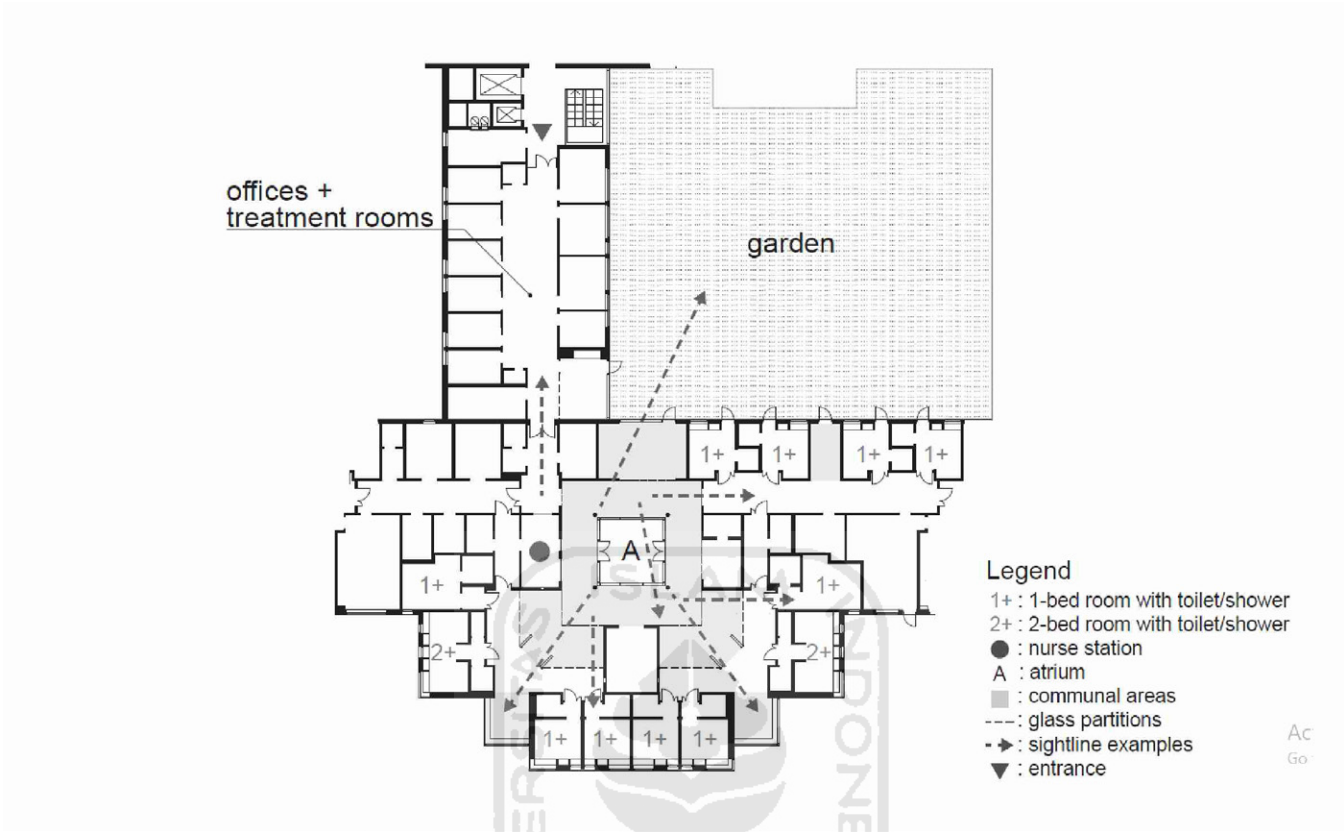
In Compositional Reason:

POSITIVE SPACE.

For something to be whole, both the elements themselves and the space around them must engage with one another, each reinforcing the other.

THE VOID

intensified by the presence of an empty center. This void needs to be on the pitch to maintain a balance between calm and emptiness.

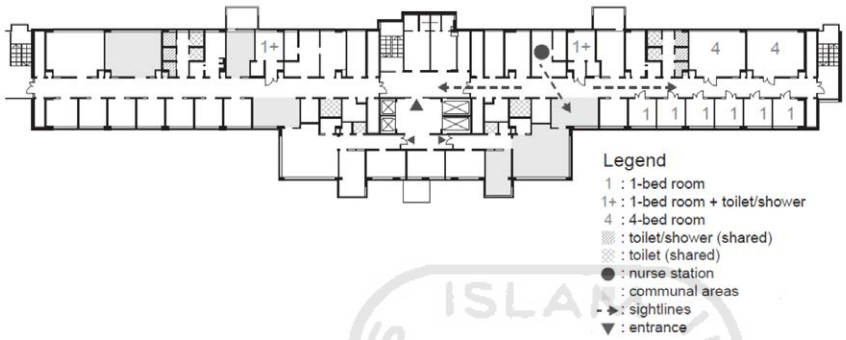


This building seems to have 2 central points, the courtyard and skylight yard which are accessible to the patient. By using a centralized typology, the visibility is maximized and minimizes the use of empty and unattractive corridors

Each unit is integrated into one and visible to the nurse, it is recommended to have an inpatient facility with 1 person = 1 room with a private bathroom, this is considered to reduce stress levels in patients by increasing patient privacy and maintaining distance between patients

Centralize typology with Garden already tested succesfully to reduce Agression Cases in Pschyatric ward

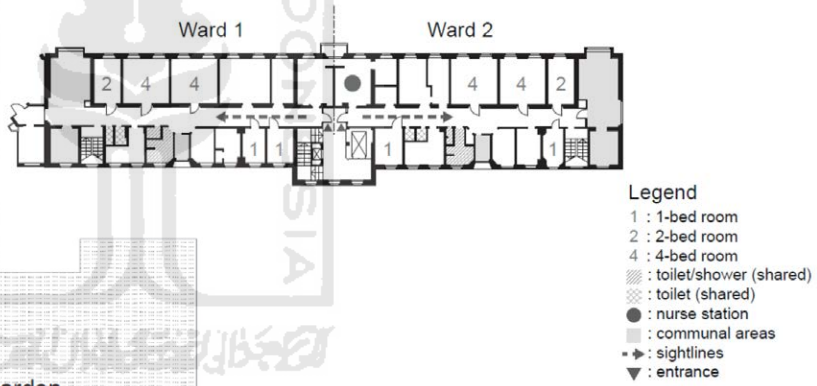
Old Hospital A



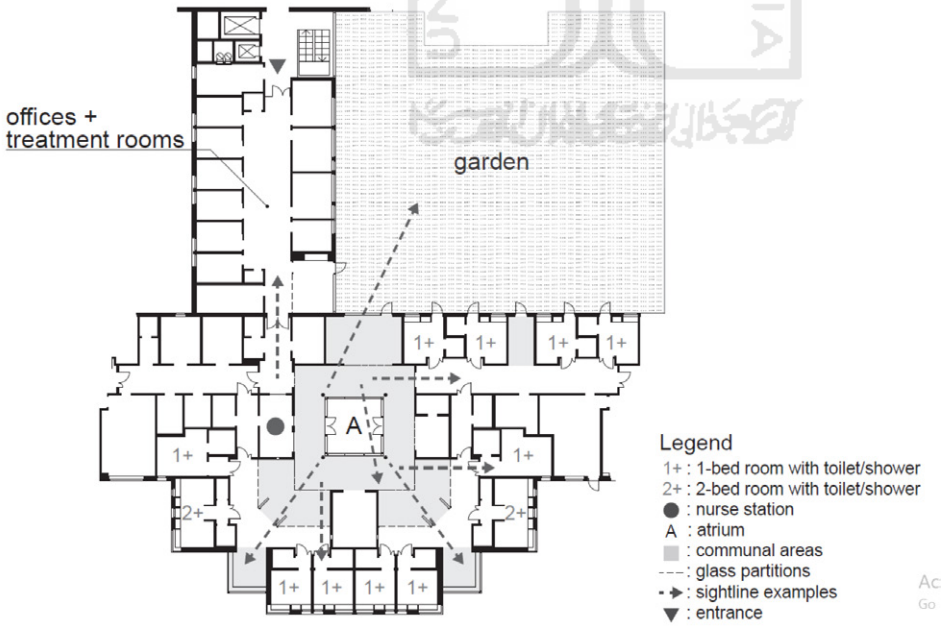
Empirical research to Compare the Hypothesis with Real Evidence on site

as Comparation when there is no Development on the Facilities

Hospital B



New Hospital A



the result of this study proved that the reduction of the facilities that include beauty like view to garden landscape, natural lighting can reduce several amount of aggressive cases in the facilities

Psychiatric Ward Design That Can Reduce Aggressive Behavior

Roger S. Ulricha, Lennart Bogren, Stuart K. Gardinerd, Stefan Lundine

Table 2
Comparison of spatial density (ward space per patient) in Old, New, and Control hospitals.

Ward space per patient	Old hospital	New hospital	Control hospital
Patient group size	16	14	12
Total ward space per patient at 100% occupancy (excluding staff work areas)	37.7 m^2 (405.8 ft^2)	36.9 m^2 (397.2 ft^2)	20.3 m^2 (218.5 ft^2)
Space per patient in bedrooms and bathrooms	15.5 m^2 (166.8 ft^2)	16.5 m^2 (177.6 ft^2)	10.7 m^2 (115.2 ft^2)
bedrooms only	11.4 m^2 (122.7 ft^2)	13.5 m^2 (145.3 ft^2)	9.2 m^2 (99.0 ft^2)
bathrooms only	4.1 m^2 (44.1 ft^2)	3.0 m^2 (32.3 ft^2)	1.5 m^2 (16.1 ft^2)
Space per patient in shared areas (excluding staff work areas)	22.2 m^2 (239.0 ft^2)	20.5 m^2 (220.7 ft^2)	9.6 m^2 (103.3. ft^2)
corridors	10.1 m^2 (108.7 ft^2)	6.9 m^2 (74.3 ft^2)	4.7 m^2 (50.6 ft^2)
communal seating and activity areas	12.1 m^2 (130.2 ft^2)	13.6 m^2 (146.4 ft^2)	4.9 m^2 (52.7 ft^2)

prioritize areas for patients to socialize and do activities in communal areas with gardens that provide distance for patients to manage their social distances.

Table 3
Data for compulsory injections and physical restraints in Old, New, and Control hospitals.

Data for injections and physical restraints	Old hospital	New hospital	Control hospital	
Year	2005	2007	2005	2007
Estimated total number compulsory care patients	490 ± 15	470 ± 15	345 ± 15	300 ± 15
Number patients receiving injections	99 (20.2%)	63 (13.4%)	67 (19.4%)	73 (24.3%)
Number injections	189 (1.91/patient[a])	115 (1.83/patient)	134 (2.00/patient)	174 (2.38/patient)
Number patients receiving physical restraints	56 (11.4%)	60 (12.7%)	70 (20.3%)	66 (22.0%)
Number physical restraints	250 (4.46/patient[b])	135 (2.25/patient)	n/a	n/a

[a] Average number of injections per patient among those who received at least one.
[b] Average number of physical restraints per patient among those who received at least one.

This arrangement has succeeded in proving a decrease in the level of sedative injection and physical restraint in patients. This proves that the arrangement of buildings that have a presence and landscape arrangement in their environment with a courtyard model is able to reduce aggression in patients

the centralize typology can help to organize:

3. Stress reducing positive distractions

3.1. Garden accessible to patients

Patients, guests, and staff of general emergency clinics that utilization gardens report that they lessen pressure and improve passionate wellbeing (Marcus and Barnes, 1995; Sherman, Varni, Ulrich, and Malcarne, 2005; Whitehouse et al., 2001). Truly entering the nursery appears to advance pressure recuperation all the more viably (Largo-Wight, Chen, Dodd, and Weiler, 2011; Lottrup, Grahn, and Stigsdotter, 2013). Hence, it is proposed here that giving opened nurseries open to mental patients can lessen pressure by giving landscape, providing more relaxation space, and giving wonderful spots to look for mingling (Ulrich, 1999).

3.2. Nature window views

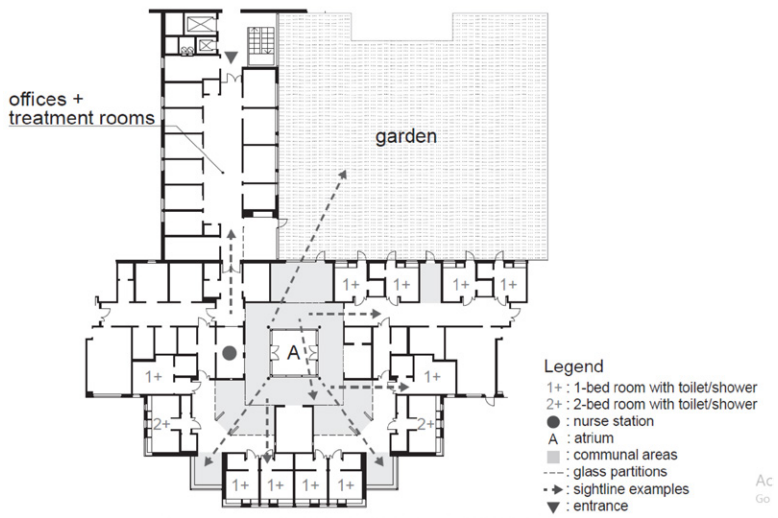
Researcher have found Observing nature can reduce psychological and physical stress and reduce the anger of people exposed to irritating stressors Compared with employees with built-in environmental views or windowless views, natural window views in their work areas report lower work pressure and higher satisfaction

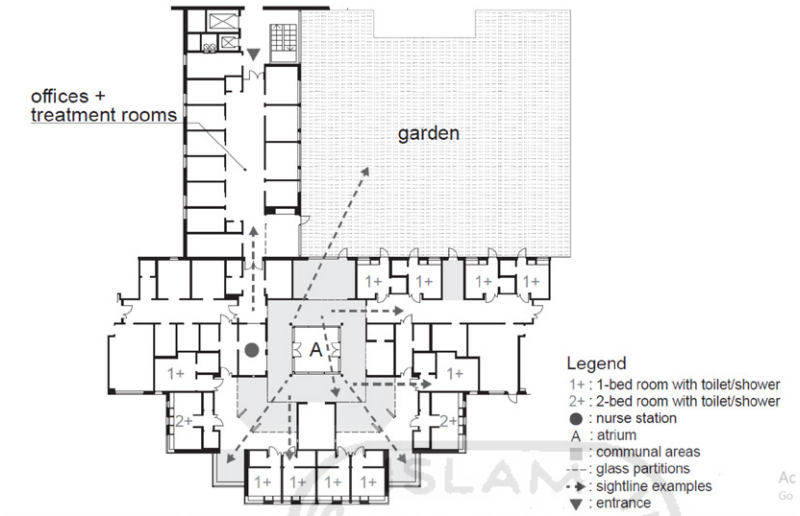
3.3. Nature art

Research in neuroscience and visual perception provides additional support for the suggestion that natural art should be designated for psychiatric facilities, while avoiding many abstract artworks and scenes that lack nature. (Roger S. Ulrich, et al, 2018)

3.4. Daylight exposure

Researcher have found that Compared with assigning severely depressed mental patients to rooms with higher daylight, placing similar patients in rooms with less daylight or always darkened may shorten the length of hospital stay. Regarding staff, compared with nurses who work in a space away from windows, more nurses receive sunlight in the work area, they report less work stress, better health, and higher satisfaction





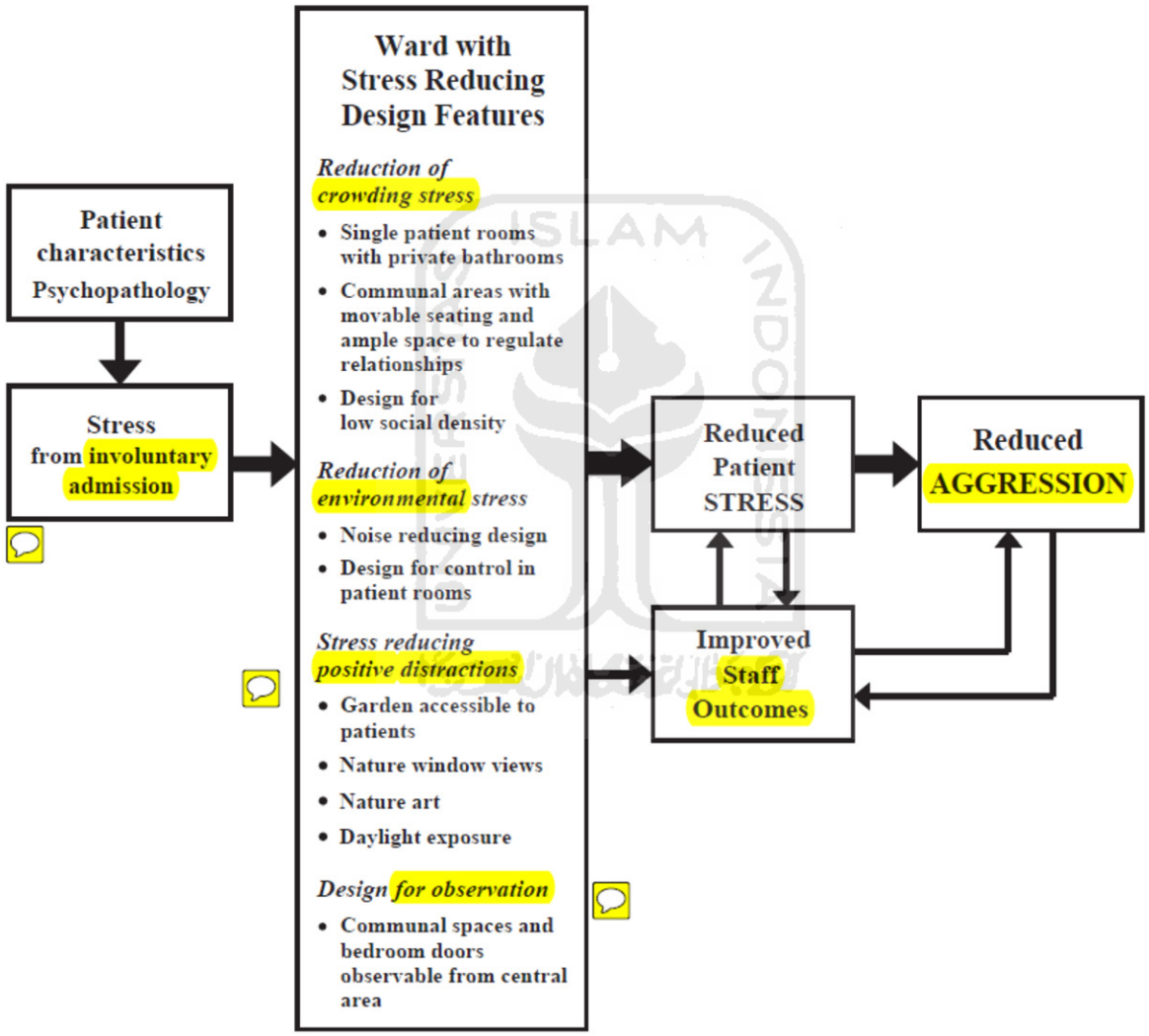
4. Design for observation

4.1. Good visibility from central area of communal areas and bedroom doors

An easy-to-observe design can improve employees' ability to anticipate and prevent aggressive behavior. Visibility measured by "all areas of the ward visible at the bottom of the ward" and "clear line of sight". (van der Schaaf, 2013)

In addition, compared with the corridor-based ward design, it was found that the floor layout of the ward around the central area for observation can increase satisfaction with the physical environment (Sheehan et al., 2013). The supervision model used by Swedish psychiatric hospitals (and other Nordic countries) instructs staff to monitor patients outside the office or workstation and interact with them "directly" (rather than through glass) to "reasonably spend as much time as possible"

Other features that will help beauty in the process of reducing aggressiveness are Reduction of Crowding Stress and Reduction of Environmental Stress.



The box labeled “Stress Relief Design Features” in Figure lists ten environmental feature. Most of them are obtained from decades of research on environmental psychology and the evidence-based design of general or physical hospitals. (Roger S. Ulrich, et.al 2018)

1. Reduction of crowding stress

1.1. Single patient rooms with private bathrooms

Extensive studies of apartments and correctional facilities have shown that the number of people sharing a bedroom is indeed associated with higher squeezing force, decreased privacy, more aggressive behavior, complaints of illness and social withdrawal. Although some researchers and architects in the United States believe that the presence of roommates in psychiatric hospitals will enhance the supervision of patients at risk of suicide. In this way, single rooms should design in a way that can prevent self-harm and reduce congestion.

1.2. Communal areas with movable seating and ample space to regulate relationships

The applied model recommends that public regions with mobile seats, seat choice and adequate room are additionally critical to empower patients to change their own space and cooperate with others. The attack of individual space can cause battling or get away from practices of mental patients (Felipe and Sommer, 1966), and may trigger forceful practices (Fagan-Pryor et al., 2003). This implies the significance of giving sufficient room to every understanding in the common seating region and movement space to help a more noteworthy individual space distance than numerous patients may require.

1.3. Design for low social density

It is accepted that social thickness is an expansive marker of the degree to which the mental ward structure moves between various rooms, controls the relationship and the size of the room bunch, gets to security and maintains a strategic distance from pressure, and is a wide pointer of the degree to which the patient's capacity is advanced or obstructed. The social thickness of a ward is characterized here as the quantity of patients (accepting a 100% inhabitance rate) partitioned by the complete number of rooms that patients can enter, that is, the quantity of patients in each room. . Passageways are viewed as development ways with tight measurements, which will exasperate the interruption of individual space and trigger forceful conduct. There is proof that hallways are the area of numerous forceful occasions in mental wards and juvenile treatment offices (Chou et al., 2002; Deitch, Madore, Vickery, and Welch, 2013; Lanza et al., 1993; Vivian, Grimes, and Vasquez, 2007) Fire alert codes typically forestall the arrangement of seats and other furniture in the passages of bolted institutional offices.

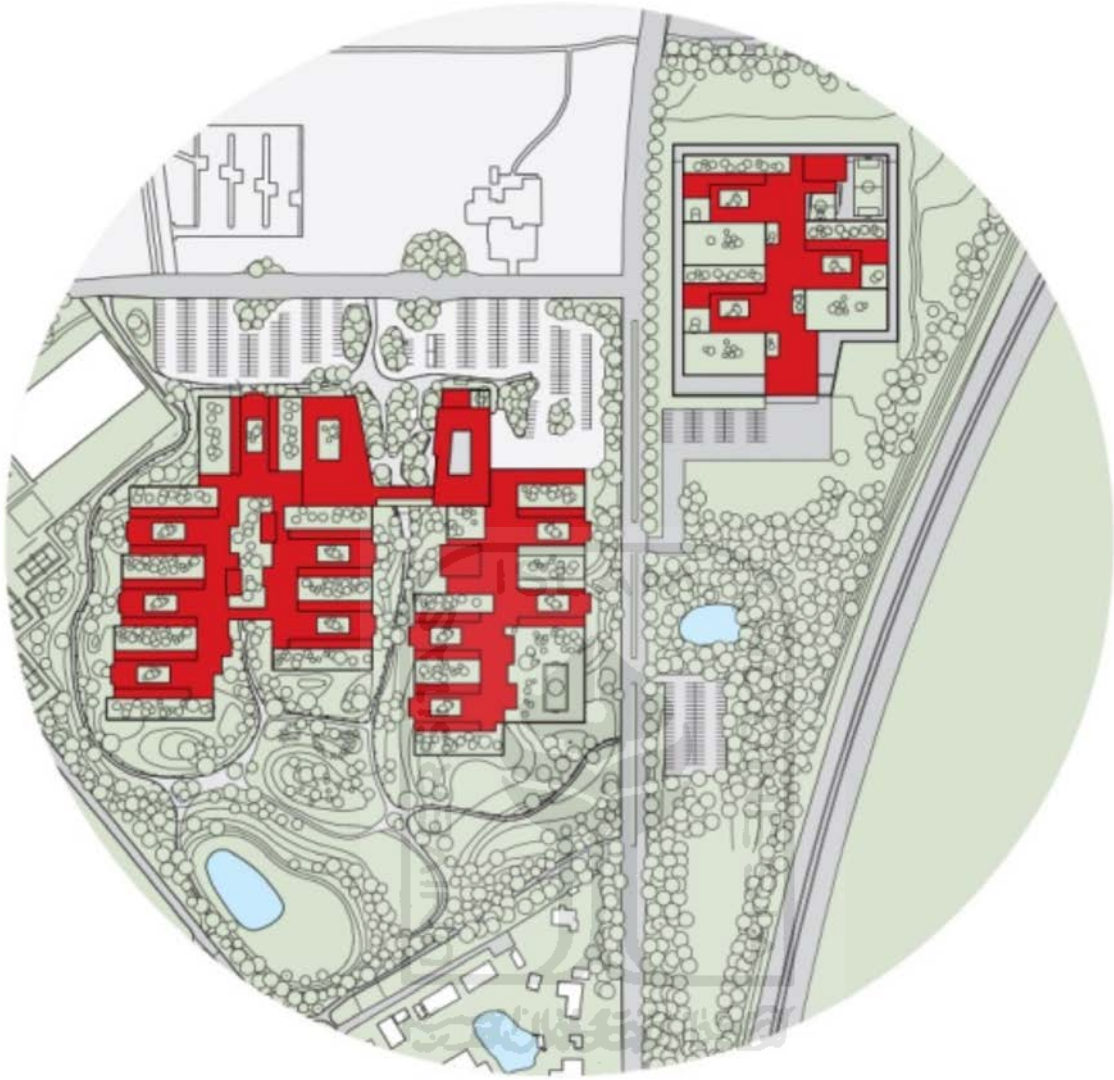
2. Reduction of environmental stress

.2.1. Noise reducing design

In non-psychiatric hospitals, effective design measures to reduce noise and enhance acoustic privacy include: providing the wall and door of a single patient room with a function of blocking noise, and reducing the echo and propagation of noise on the sound-absorbing environment surface (MacLeod, Dunn, Busch) -Vishniac, & West, 2007; Ulrich et al., 2008).

2.2. Design to foster control in patient rooms

Evidence-based theories in health care design believe that an important way for design to reduce patient stress is to enhance the sense of control over the surrounding environment (Andrade & Devlin, 2015; Ulrich, 1991). The conceptual model suggests that design features that empower patients to control or customize their rooms will uphold pressure reaction and help lessen forceful conduct.



The Idea of Cluster

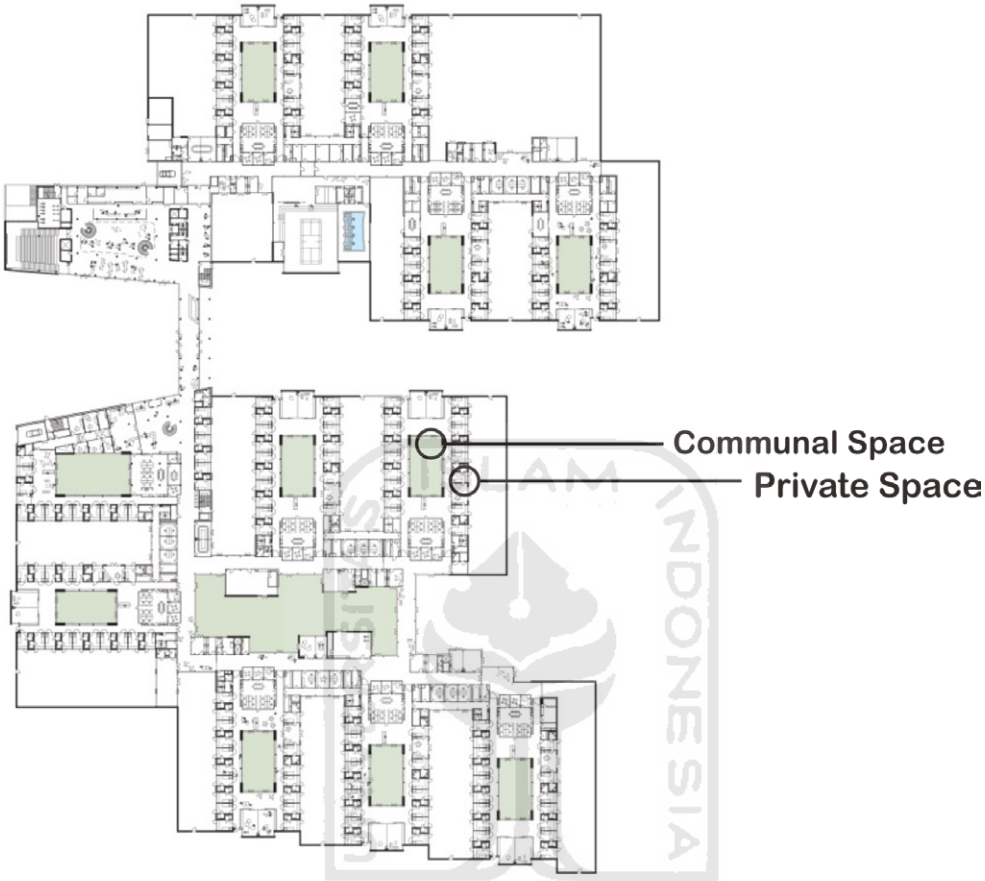
an idea how to increase capacity without increasing the density of space which can exacerbate the aggression.
this idea of Cluster based also on:

ALTERNATING REPETITION

intensified when they repeated with subtle variations. applied recursively to all entities, the space between entities, and the process of repetition, it creates a beautiful harmony.

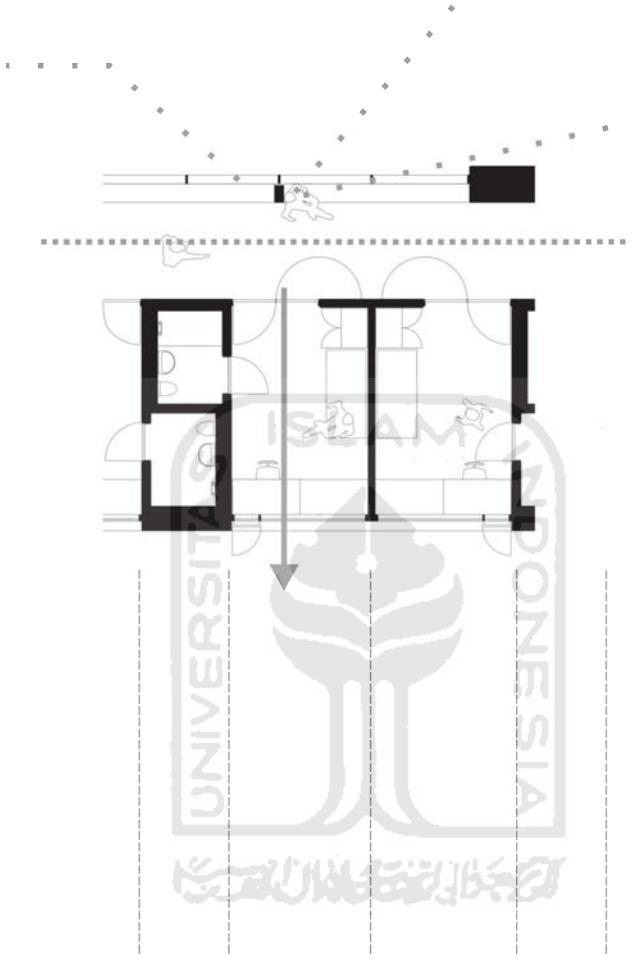
ECHOES

A whole life contains a deep fundamental similarity in it. The similarity of these elements binds them into a cohesive whole



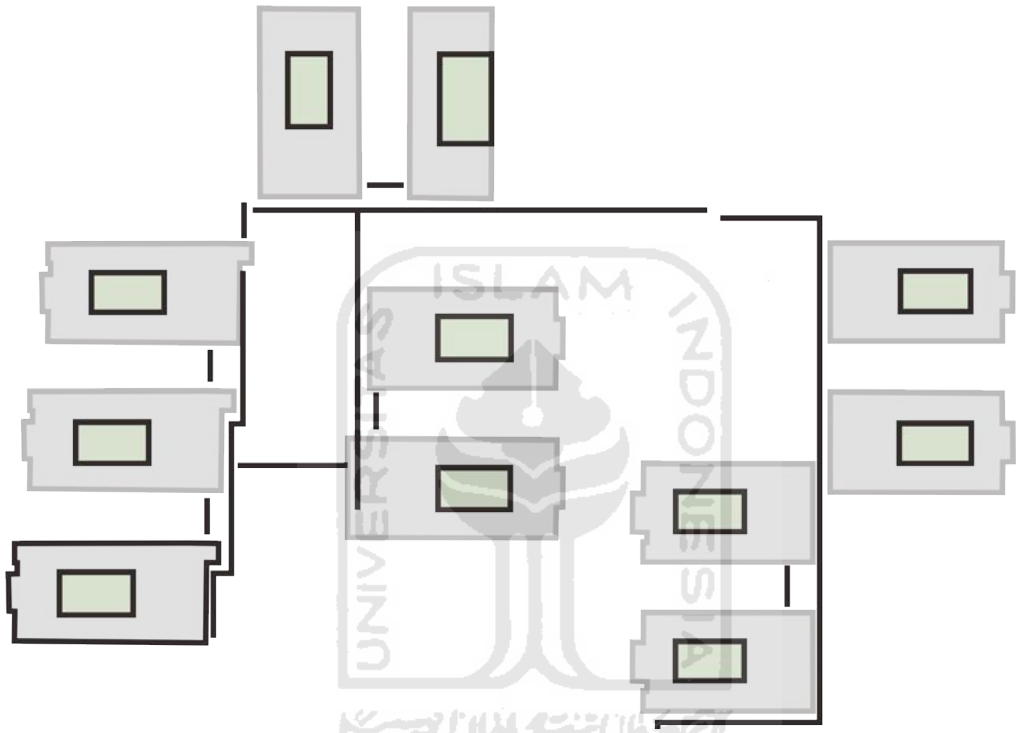
each cluster is made up of small parts of each individual unit which also has a single patient unit. each of these units gather to form a courtyard in the middle of them which then creates a cluster. then this cluster can be reproduced by being repeated many times with different scenery directions from the site. supported by other supporting facilities around the cluster

glass can also be provided as a transparent barrier that maintains patient safety in buildings more than 1 floor without blocking the view



on the side of the corridor can be given a seat that provides comfort for the patient to be able to move apart from his room

Each unit has good visibility due to the grid system in the building that separates the private toilet and the room, so that the view becomes straight and unobstructed with new angles.



Each individual building that is centralized to the courtyard can then be reintegrated with sufficient corridors to connect each individual building.

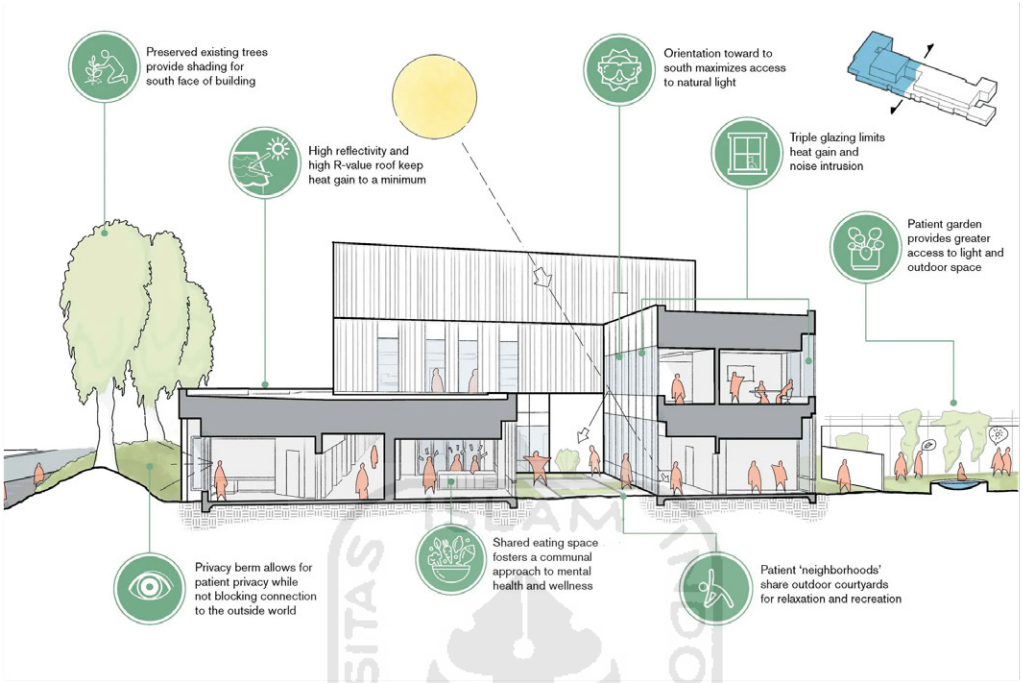
Openness & Transitions

A contemporary idea to change the image of mental health institutions is to provide openness, bringing closer what is inside an institution by allowing it to be exposed to society.

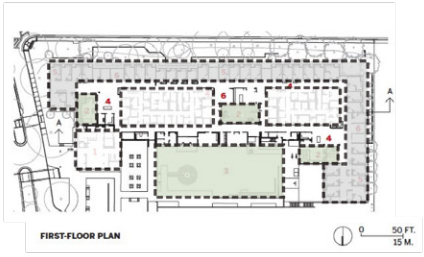
The transition in this building also gives the idea of being able to provide a transitional space between one room and another, this can be done by providing a special transparent boundary for mental hospitals and the presence of garden pockets.

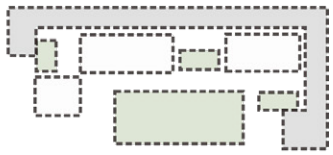
GRADIENTS

varies gradually, not suddenly, across space in a living whole. This gradient is caused by a response to the natural variation of circumstances.



When viewed from the typology, this building is quite different from previous precedents that use central typology. This building uses zonning-zonning that is fragmented with open space between them in one building, creating space for socialize and collaboration.





this building is surrounded by gardens around it which are then integrated by any openings around the building

the zoning arrangement in this building provides openness in every transition in each of its space zones by providing accessible green open space

more than just the principle of space in presenting Shelter, the building is expected to be able to create exciting environment and make users feel prosperous

The Psychological Impact of Architectural Design

by Natalie Ricci, 2018

the relationship between design and psychology is not only consequential, but also two-way. On the one hand, successful designs have been shown to have clear psychological and physiological effects; on the other hand, psychology, human experience, and the functioning of **our nervous system all play an important role in what we consider to be successful design**.(Natalie Ricci, 2018)

The Evolution of the Mammalian Brain

Brain & Emotion??

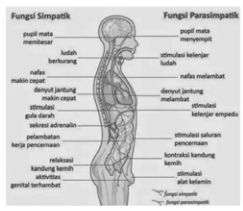
In order to understand how architectural and interior design affects humans psychologically, it is first important to understand, at least on a basic level, the psychological effects of certain stimuli on the human brain. During evolution, the human brain has evolved in more sophisticated ways, the human forebrain, for example, which is the center of executive thinking, planning and emotions.

craving for **Happiness**

the more primitive parts of the brain and brainstem still function in very similar ways to other mammals; in particular, they are still designed and functioning in a way that helps us survive and pursue pleasures. Pleasure on the other hand, for the most part, has meant the same for the last 200,000 years or so. Pleasure is a feeling of happiness, contentment, and enjoyment. However, the way in which this feeling can be achieved is subjective and has changed as our interests as humans have developed and the resources available have changed.

Living space for happiness

Evolutionarily speaking, the human brain has been coded to associate a sense of pleasure with objects and places that increase our chances of survival. even today, modern humans still associate a place to live with pleasure, but it is more subjective.



Simpatik	Parasimpatik
• memperbesar pupil mata • menghambat keluarnya air liudah (saliva) • meningkatkan eksitersi keringat dan sekresi getah pancreas • menghambat sekresi enzim pada kelenjar pencernaan • menghambat kontraksi kandung kemih (vesica urinaria) • mempercepat denyut jantung • menambah volume darah • memperbesar pembuluh darah koroner • mempersempit pembuluh darah arteri paru-paru dan arteri pada organ kelamin • melebarkan cabang tenggorok (bronkhia) • mengkerutkan kura (limpa) • menyebabkan kontraksi (memmas) rahim pada saat kehamilan dan relaksasi rahim pada saat tidak ada kehamilan	• mengecilkan pupil mata • membantu (stimulasi) keluarnya air ludah (saliva) • menurunkan eksitersi keringat dan sekresi getah pancreas • menstimulasi sekresi enzim pada kelenjar pencernaan • mengerutkan kantung kemih (vesica urinaria) • memperlambat denyut jantung • mengurangi volume darah • memperempit pembuluh darah koroner • memperbesar pembuluh darah arteri paru-paru dan arteri pada organ kelamin • memperempit cabang tenggorok (bronkhia) • melebarkan kura (limpa) • tidak berpengaruh pada kontraksi dan relaksasi rahim

figure source: https://www.dosenpendidikan.co.id/saraf-simpatik/

RESUME

Stress

sympathetic and **parasympathetic** nerves

the role of the forebrain in cognition and experiencing emotions is of the utmost importance as it relates to design psychology. sympathetic and parasympathetic nervous system (Ruggles, D. (2017)). Both of those systems, and how they respond to stress was essential to the survival of our ancestors.

when under stress, the body will produce cortisol to slow down bodily functions. which are not necessary for survival (Ruggles, D. (2017)). It is a fight or flight response developed in mammals to increase the chances of survival in response to a threat.

Rest

The parasympathetic system works to return the body to its resting state, restore digestion to its normal level, and reactivate various routine metabolic processes.

normal stress is used by ancestors to survive in extreme conditions, but generally stress conditions will soon subside when the moment of danger is gone. Unlike in the modern world our stress is problematic because many causes of stress never go away. Chronic or persistent stress can cause mental and physical health problems that are very detrimental, and even permanent.

strategies such as psychological therapy, meditation, drugs, and others are all used against it. it is universally agreed that reducing stress to at least some degree is possible. This is where architectural and interior design and their positive psychological effects become especially relevant. (Natalie Ricci, 2018)

The Positive Psychological Effects of Thoughtful Architectural Design

oxytocin, endorphins and DHEA

a prominent architect in Denver, Colorado believes that there are three components that make a building "beautiful": form, utility, and beauty. Seeing something that we think is beautiful causes us to feel pleasure. Feelings of pleasure are a result of the release of oxytocin, endorphins and DHEA in our brains. (Estren, M. J., & Potter, B. A. (2013). Healing hormones: how to turn on natural chemicals to reduce stress. Berkeley, CA: Ronin Pub.)

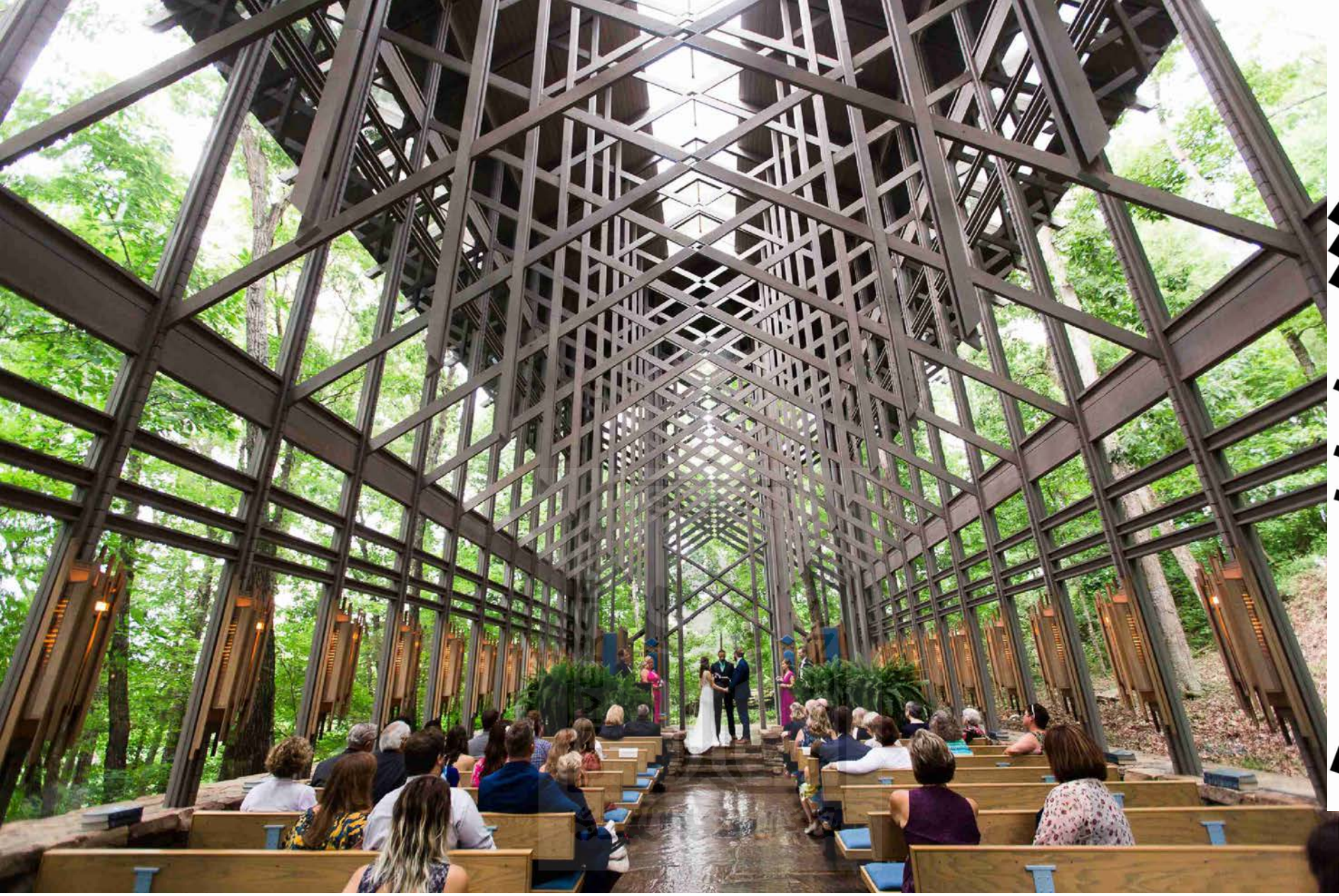
Pattern matching in Design by Brain

Buildings that give us pleasure are those that incorporate architectural elements that our brains recognize as having characteristics similar to the locations that helped our human ancestors to survive. There are several different ways in which our brains recognize patterns. The first, known as feature matching, is when the incoming pattern information is broken down by the brain into pieces which are then individually compared and contrasted with the parts of the previously stored pattern.

Prototype matching is similar to feature matching except that our brain matches an incoming pattern to a stored pattern, it tries to relate the incoming information to certain characteristics of a known prototype. one of which is template matching, where only certain aspects of an incoming pattern are matched against the template or prototype, rather than the entire pattern being entered.

Patterns represent consistency and organization; lack of chaos. The importance of patterns goes beyond being able to recognize something literal like a place to live or a house. Patterns in architecture are often referred to as rhythms; this is what causes the eye to flow from one focal point to the next


I don't think that architecture
is only about shelter, is only
about a very simple enclosure.
It should be able to excite you,
to calm you, to make you think.
Zaha Hadid Quotes
blog.miragestudio7.com



How to Design Beauty in Understanding of Neuroscience?

Co-Liniearity

Thomas Albright
the Academy of Neuroscience for Architecture

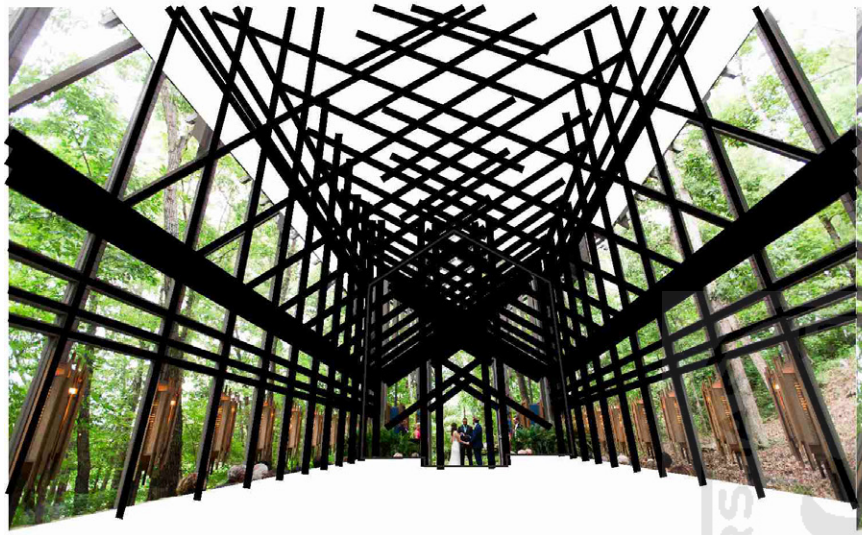
For an arrangement that contains colliniarity principles in building design, he cited Fay Jones' Thorncrown Chapel as an example. if you look at the design they are parallel, but because you are looking at them from below, they don't look parallel, and they change as you walk through space. and Thomas Albright say people respond very well to this co-linear pattern. This rhythm is considered suitable for use for users with mental disorders to facilitate the flow of beautiful communication to patients

https://www.archdaily.com/533664/ad-classics-thorncrown-chapel-e-fay-jones
https://www.ashleyporton.com/weddingblog/tag/thorncrown+chapel+wedding+photographer

- In geometry, collinearity is when an object whose properties have the same arrangement in a rhythm. also known as A set of points with aligned properties, i.e., objects are “in line” or “lined up”.

The way to get this rhythm is to combine the principles of order echo, alternating repetition, not separatness and gradients.

http://people.linguistics.mcgill.ca/~morgan/book/linear-regres

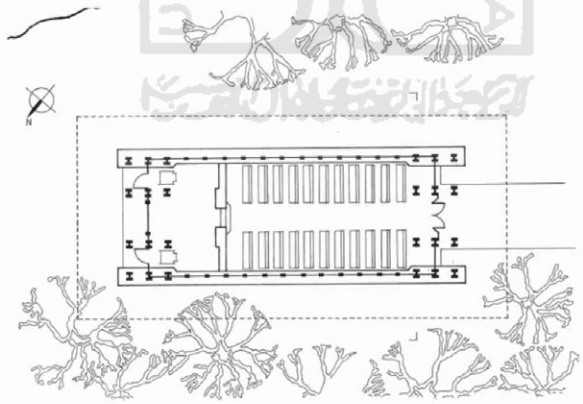


Repetition

provide vertical element simultaniously

Integrated with Tree Trunk

the vertical elements in the building blend with the vertical elements in the surrounding environment like tree trunks



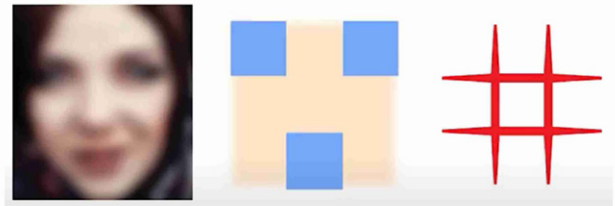
MILLEFIORI Aurélien - NUNES Antoine-Frédéric

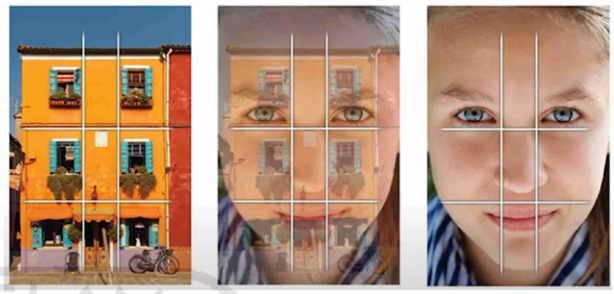
Flowing structural element

produce structure that all aligns with the building elements

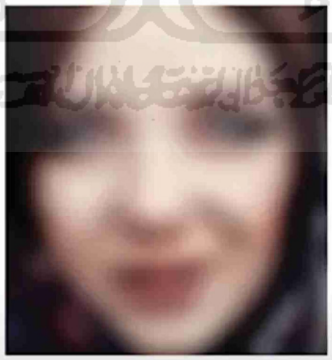
Rhythm from prespective

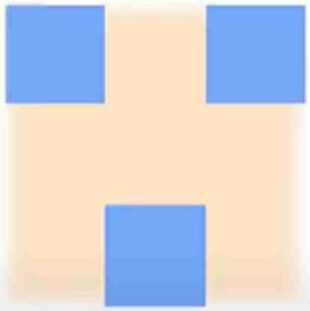
This rhythm flows when viewed from a perspective view and is emphasized by other elements such as furniture to form an interesting rhythm



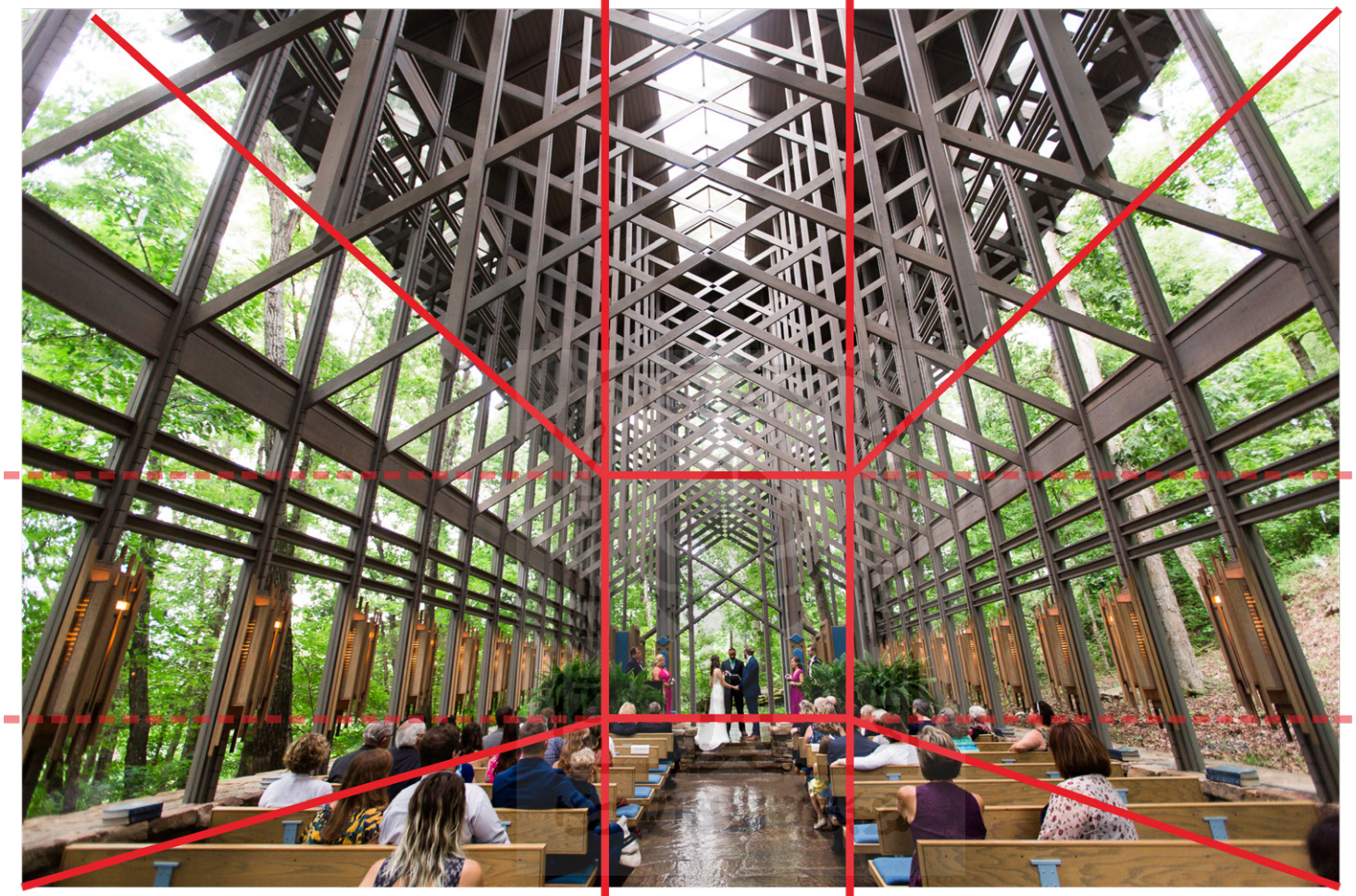


Researchers found that 3x3 composition was liked by people and was often used on building elements so that it never died out until now. This is known because of the connectivity between the composition and an affection





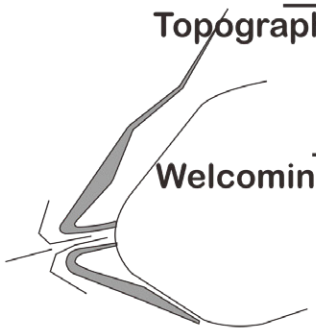
Like when a baby first opens their eyes, when it is first identified are the eyes and mouth. so this pattern sticks to memory as affection



and in this building you can also see that there is such a composition so that it generates the identification of the pattern that holds the feeling of affection and makes this room a visually pleasing and comfortable feeling. like at the time in the photo that many people use it as a favorite place for their wedding moments

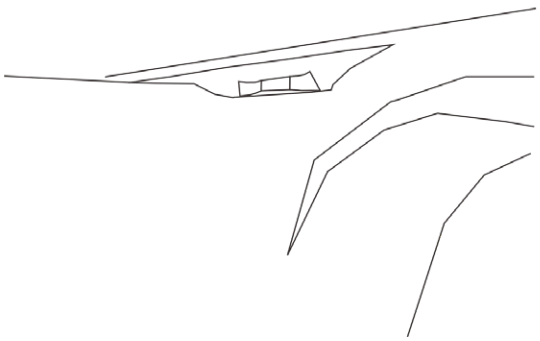
Landscape like Building

Dongdaemun Design Plaza (DDP)



Metonymic Landscape

successfully create positive contrast within the city, creating a need of landscape in the new program in functional building



metonymic landscape : Metonymy refers to a method of describing a specific object indirectly

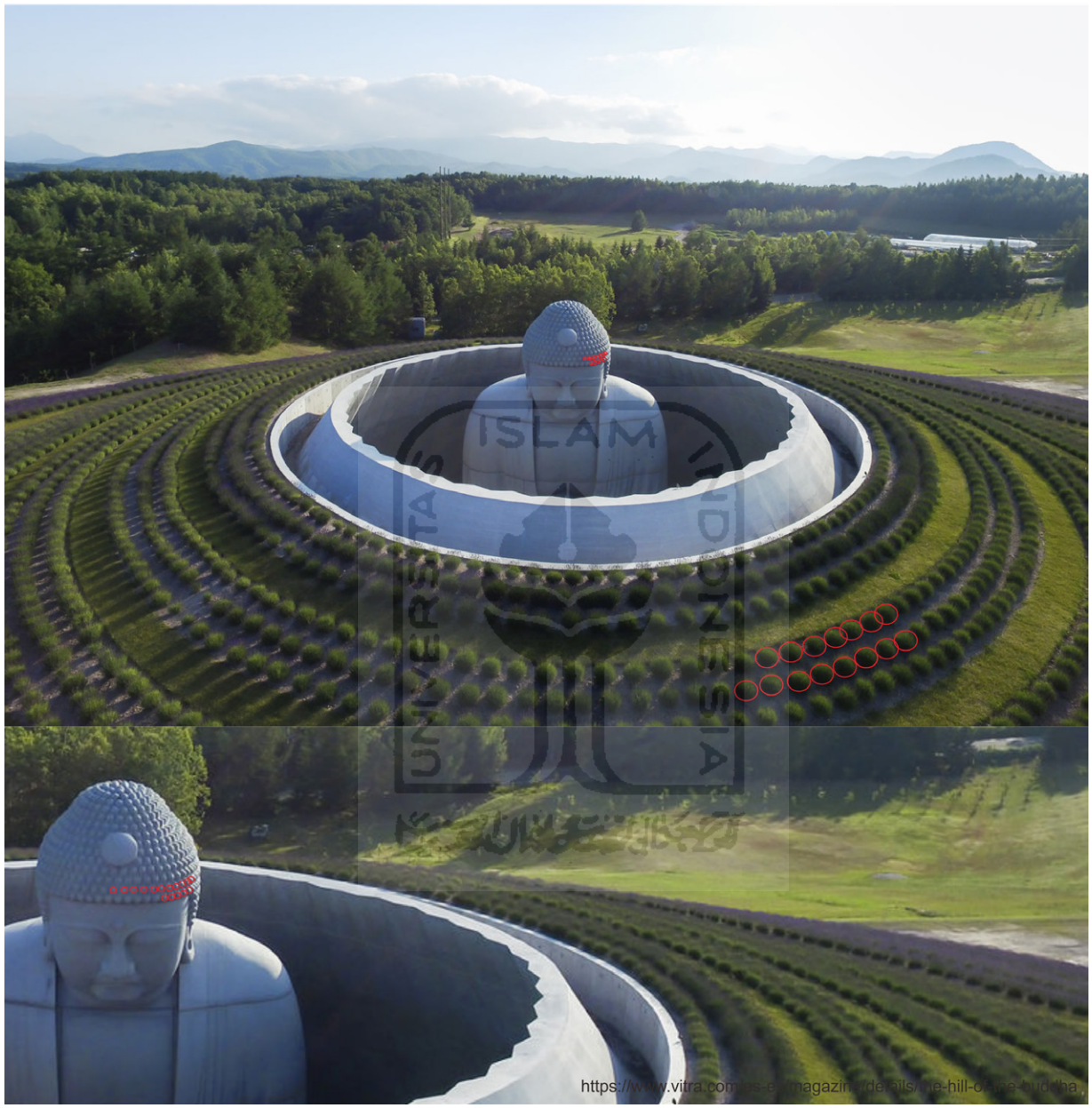
the building that look like the landscape its self merge with the surrounding environment and the city and then reproducing it with the various curves and various topographical variations that flow through the site. so that it becomes an explorative place to find beautiful angles

the welcoming curve on the building create explorative spaces like the landscape.

quoted from Don Ruggles 2020 in his argument at the Keynote: Beauty, Neuroscience, and Architecture seminar, stating that if we put curiousity into a design it will activate the anticipation of beauty. as in the DDP building which uses the elements to find beautiful corners

Man-Made & Natural Features

Lavender Hill of Buddha at Makomanai Takino Cemetery, Sapporo



buildings can be present along with the landscaping, one of which is to have the same pattern. The shape of the pattern in a building can be likened to how the plants are arranged around it

DEEP INTERLOCK AND AMBIGUITY

A living whole has several forms that connect the centers with their environment.

NOT-SEPARATENESS

a living whole, each center being deeply connected and fused into their surroundings, not separate from them.

Hill form help Framing the Surrounding

Playing landscapes on topographical heights can be done to unite buildings with their natural surroundings

Plant with some Colours

Work with the season

Plants that feature colors other than green in their arrangement can create scenes that vary depending on the season. and the way they are arranged can be likened to how we arrange the landscape itself, just like contour lines can be likened to how our lines arrange plants

building coupled with the view

Lining arrangement

Plants

https://twitter.com/hiphaist/status/756078619676467200

Lavender (lavandula angustifolia) = repellent and antifeedant with their aroma

Lavender plant is a plant that is used as a natural insecticide. The content of lavender plant is linalil acetate and linalol, so it is effective as a repellent (mosquito repellent).

https://unsplash.com/photos/-Py5mIHCfxY

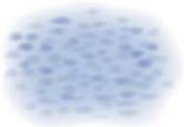
Flower Field

SIMPLICITY AND INNER CALM

a life comes from a variety of diversity, there are times to be strong there are times to be simple.

THE VOID

intensified by the presence of an empty center. This void needs to be on the pitch to maintain a balance between calm and emptiness.



ROUGHNESS

The whole of life has some local irregularities in it. The disorder is caused by adapting to irregularities in the environment and responding to demands and constraints from other nearby centers

Flowers in Our Brain Response?

A group of researchers explored the link between flowers and life satisfaction in a 10-month study. These participants studied the behavior and emotional response of receiving flowers. The results show that flowers are a natural and healthy mood regulator.
-Flowers have a direct effect on happiness. All those who participated in the study expressed a “true” or “excited” smile when they received the flowers, showing extraordinary joy and gratitude. This reaction is common and occurs at all ages.
-Flowers have a long-term positive effect on mood. Specifically, study participants reported that after receiving flowers, their feelings of depression, anxiety, and anxiety were reduced, and they showed a higher sense of enjoyment and life satisfaction.
-There is an intimate connection between flowers. The appearance of flowers increases contact with family and friends.

(Rutgers: Flowers Improve Emotional Health 2018. available in: <https://safnow.org/aboutflowers/quick-links/health-benefits-research/emotional-impact-of-flowers-study/>. (28 November 2000))

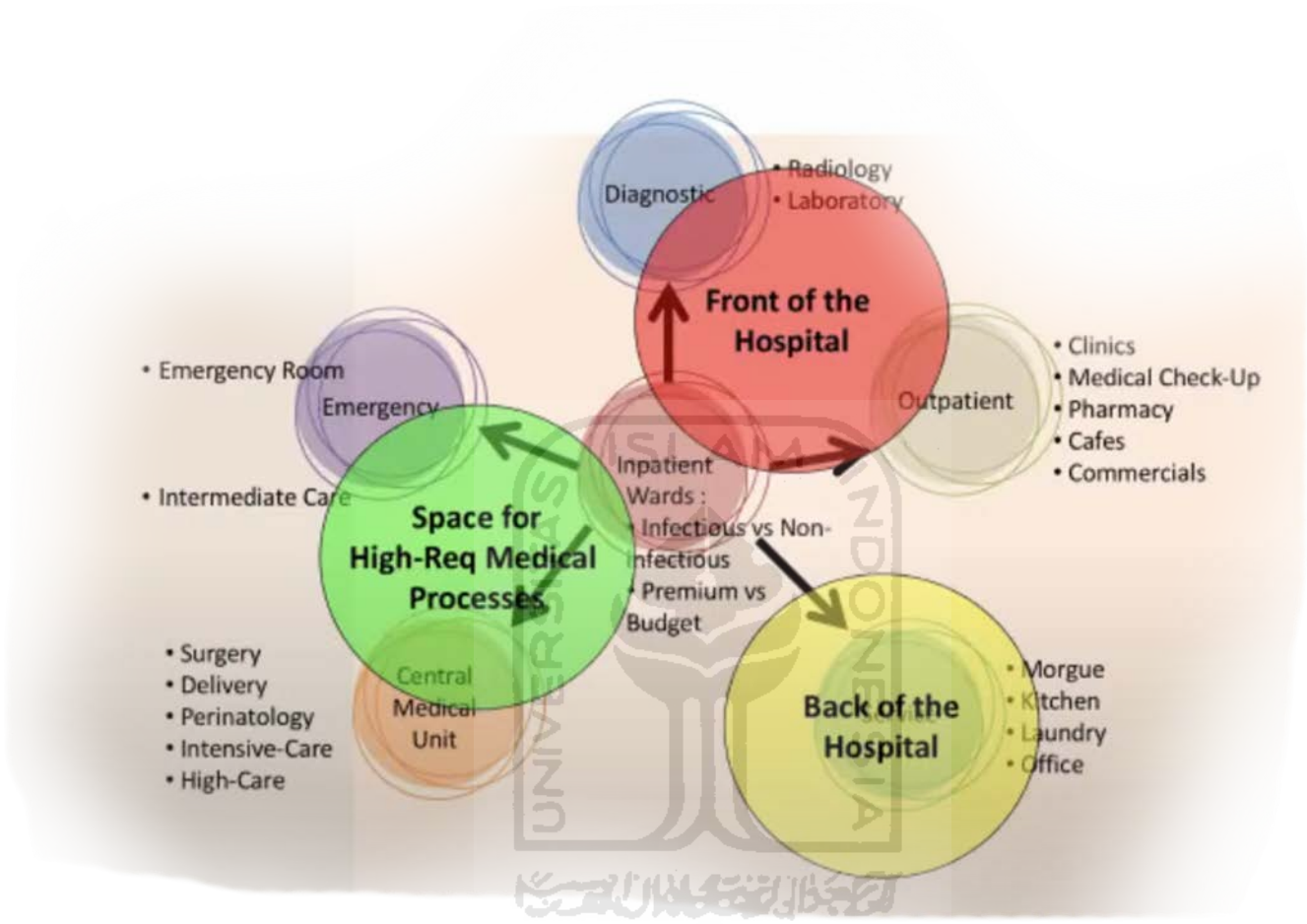
the other on sex and age group variations;

IIn three different studies, we showed that flowers are a powerful “inducer” of positive emotions. In Study 1, flowers always caused a Du Xing or real smile when presented to women. Three days later, the women who received the flowers reported more positive emotions. In Study 2, flowers given to men or women in elevators caused more positive social behaviors than other stimuli. In Study 3, flowers dedicated to older participants (over 55 years of age) elicited reports of positive emotions and improved episodic memory. Flowers have immediate and long-term effects on the emotional response, mood, social behavior and even memory of men and women. (An environmental approach to positive emotions: Flowers Janet Havilland Jones, Holly Hale Rosario, Patricia Wilson, Terry McGuire) (2005))

06

Design Exploration

Zonning Recommendations for Hospital Masterplan



Performance zoning recommendations for hospitals are divided into three parts that are integrated with each other at the right position on the site (Adi Utomo Hatmoko, Ir. M.Arch., IAI. AA.(2021)

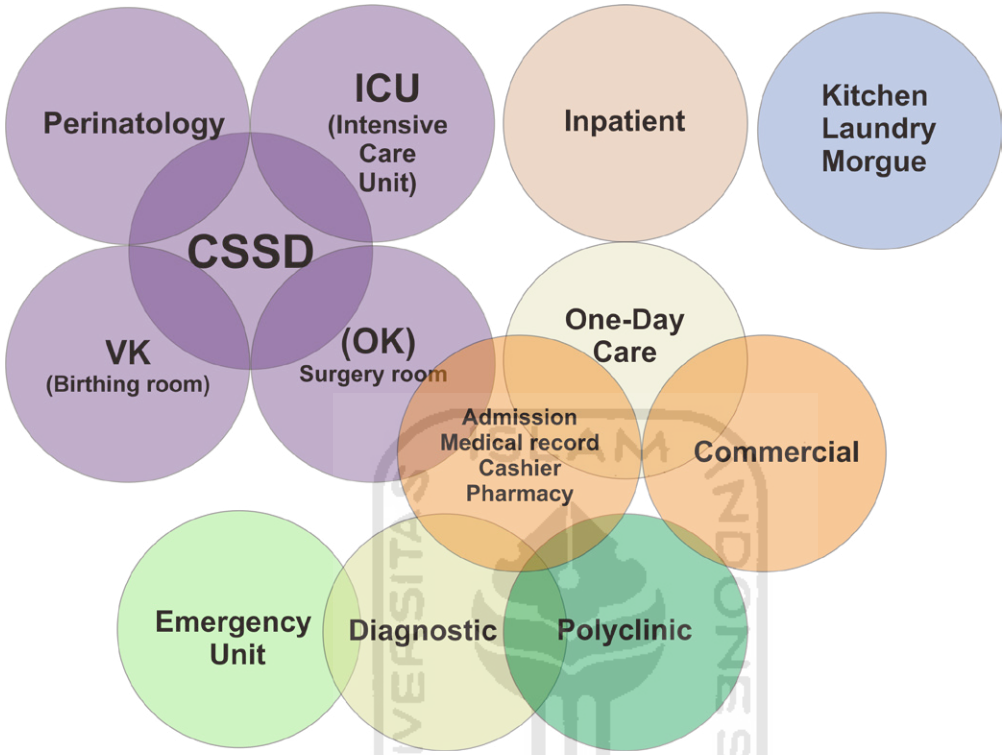
VS

Existing Zonning Masterplan

the location in the existing master plan has adjusted this zoning principle to the master plan. The front part of the master plan has prioritized high req medical processes and diagnostics at the polyclinic. the location in the inpatient ward is also in the middle of other facilities so that it is close to other facilities


Residential Area
Residential Area
Green Area
Wastewater Treatment Plant (IPAL)
Sports field
Drugs Buildings
Science Park
Riau State University
Generator Room
Temporary storage place for hazardous waste (TPS B3)
Sebayang Ward
Canteen
Back of The Hospital
Gazebo-like building (Pendopo)
Salem Riasim Building
Official Residence
Mortuary
Rokan Ward
Rehabilitation Park (Horticulture)
Inpatien Ward
Kampar Ward
Kuantan Ward
Siak Ward
Indragiri Ward
Upip (Psychiatric Intensive Care Unit) Building
Space
or High-Req Medical Processes
Central Supply Sterile Department (CSSD)
Registration Hall & Polyclinic
Front of The Hospital
Mushalla
Office
Official Residence
Emergency Department (IGD)
Parking Lot
Fish pond
Fish pond
Fish pond
Market
Security post
Security Post
Shop Houses
50 m

Recommendation of Facilites Integration for Hospital Performances



Performance zoning recommendations for facilities integration (Adi Utomo Hatmoko, Ir. M.Arch., IAI. AA.(2021)

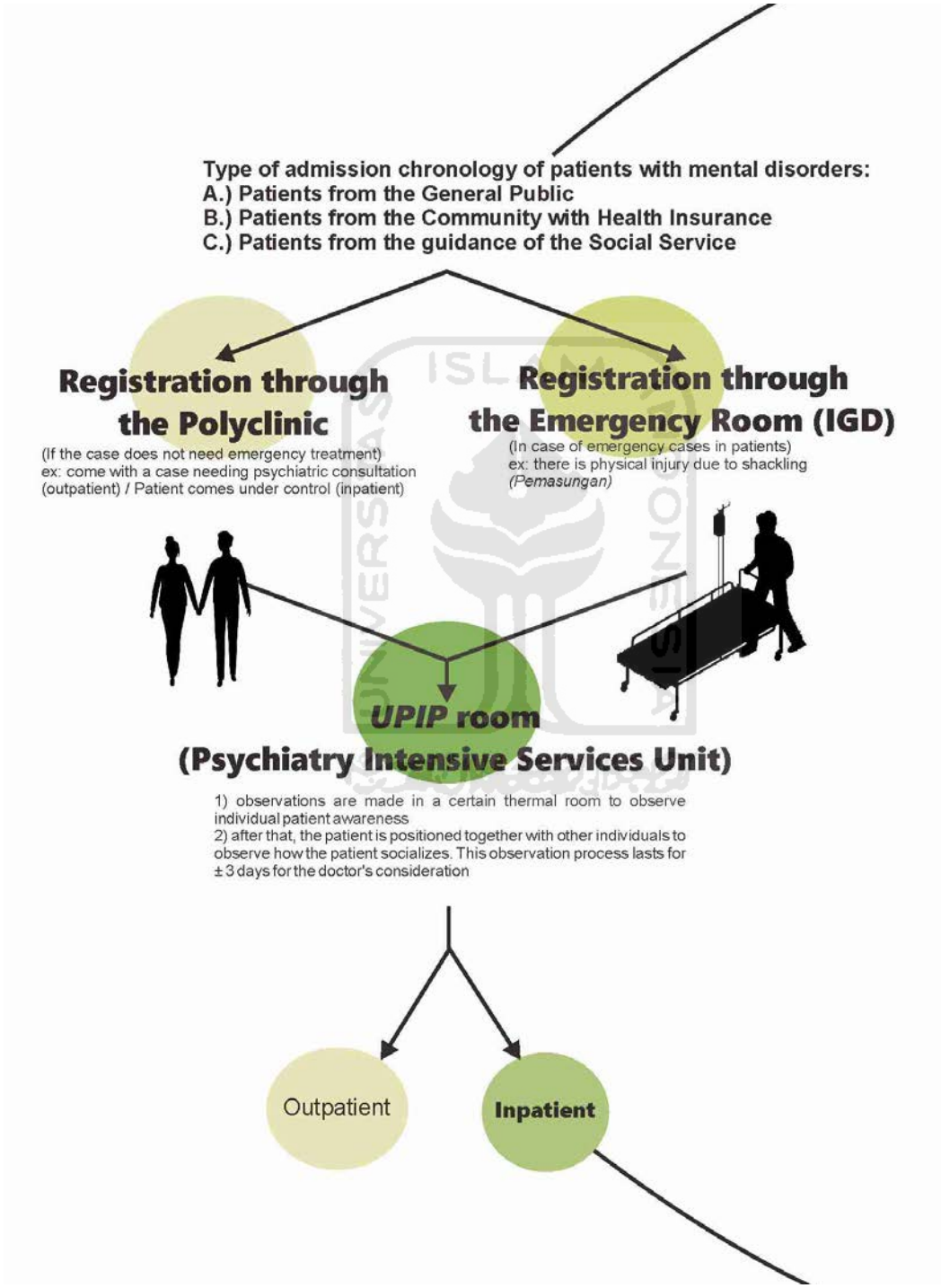
VS

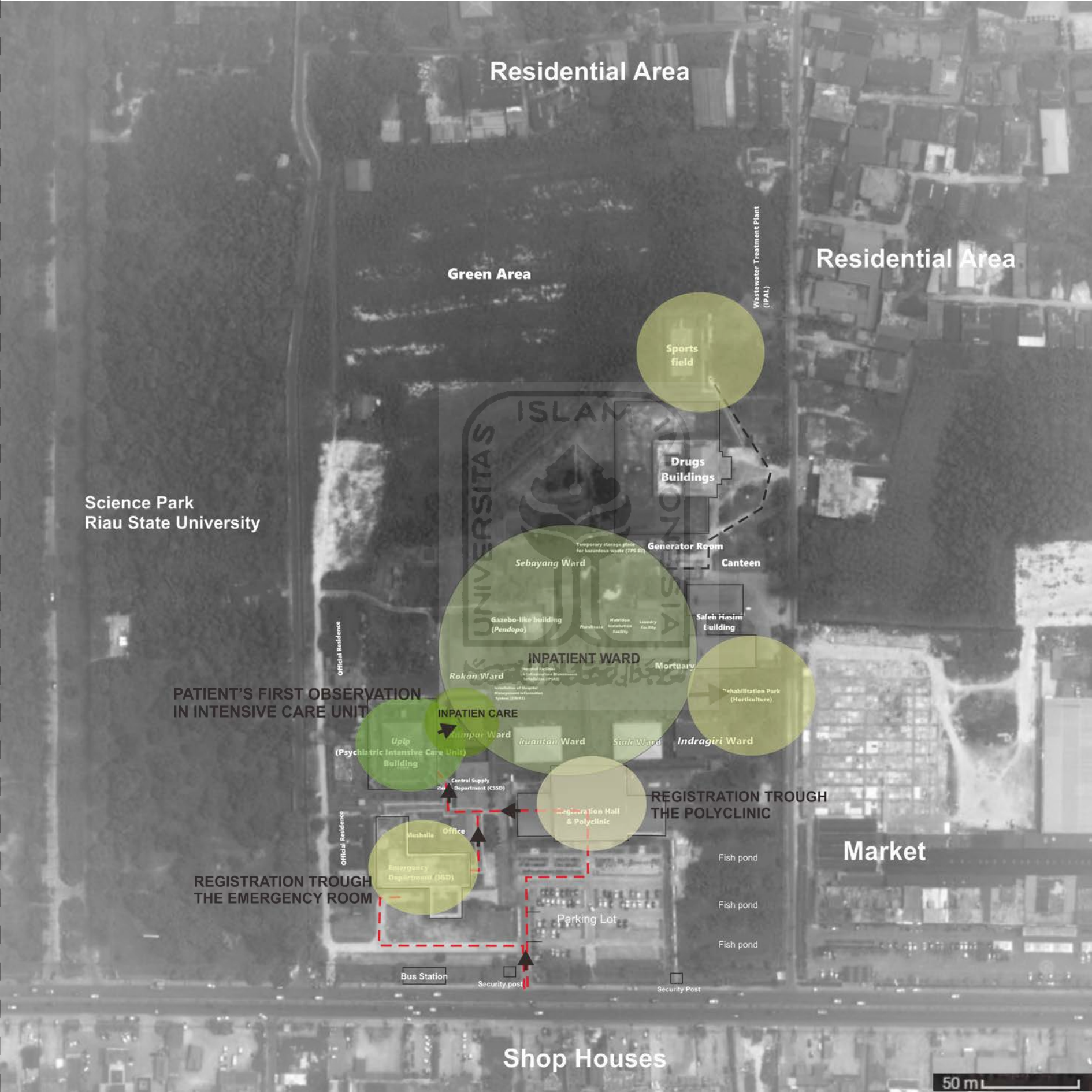
Existing Integration of Each Facilities

integration between facilities in the existing master plan has implemented these principles, such as the location of CSSD adjacent to the Intensive care unit, the inpatient ward area and the emergency room area. This proximity gives fast or direct performance in distribution


Residential Area
Residential Area
Green Area
Wastewater Treatment Plant (IPAL)
Sports field
Drugs Buildings
Science Park
Riau State University
Temporary storage place for hazardous waste (TPS B3)
Generator Room
Commercial
Sebayang Ward
Kitchen
Laundry
Morgue
Gazebo-like building (Pendopo)
Salen Nasim Building
Mortuary
Official Residence
Rokan Ward
Rehabilitation Park (Horticulture)
Inpatien Ward
Diagnostic
Kampar Ward
Kuantan Ward
Siak Ward
Indragiri Ward
CSSD
One-Day Care
Registration Hall
Emergency Unit
Diagnostic
Polyclinic
Admission
Medical record
Cashier
Pharmacy
Fish pond
Fish pond
Fish pond
Market
Parking Lot
Security post
Security Post
Shop Houses
50 m

Patient Admission and Treatment Procedures




Residential Area
Residential Area
Green Area
Wastewater Treatment Plant (IPAL)
Sports field
Drugs Buildings
Science Park
Riau State University
Generator Room
Canteen
Temporary storage place for hazardous waste (TPS B3)
Sebayang Ward
Gazebo-like building (Pendopo)
Safeir Hasim Building
Official Residence
INPATIENT WARD
Mortuary
Rokan Ward
PATIENT'S FIRST OBSERVATION IN INTENSIVE CARE UNIT
INPATIEN CARE
Upig (Psychiatric Intensive Care Unit) Building
Kuantan Ward
Siak Ward
Indragiri Ward
Central Supply Department (CSSD)
REGISTRATION TROUGH THE POLYCLINIC
Registration Hall & Polyclinic
Office
Mushalla
Official Residence
Emergency Department (IGD)
REGISTRATION TROUGH THE EMERGENCY ROOM
Market
Fish pond
Fish pond
Fish pond
Parking Lot
Bus Station
Security post
Security Post
Shop Houses
50 m

Types of mental disorders

CORNEOLA COCITA explains the types of mental disorders in Maslim (1998) in stating that mental disorders have various types, including:

1. Schizophrenia - Is the most severe form of functional psychosis, and causes the greatest disorganization of personality. Schizophrenia is also a form of psychosis that has been found everywhere since time immemorial. In severe cases, the client has no contact with reality, resulting in abnormal thinking and behavior. The course of this disease will gradually lead to chronicity, but from time to time attacks may occur. Complete spontaneous recovery is rare and if left untreated it usually ends in a damaged personality

2. Depression - is a period of interruption of human function related to sadness and accompanying symptoms, including changes in sleep and appetite patterns, mental movement, concentration, fatigue, feelings of hopelessness and helplessness, and suicidal thoughts. Depression can also be explained as a form of mental disorder in nature, which is characterized by depression, freedom, lack of enthusiasm for life, sense of uselessness, and despair (Hawari, 1997). Depression is similar to sadness. Sadness is a normal feeling caused by certain circumstances (such as the death of a loved one).

3. Anxiety - A circumstance where somebody feels stressed and apprehensive as a type of response to a danger that isn't explicit. The reason or source is generally obscure or obscure. The force of nervousness can be recognized from gentle to serious uneasiness. The degree of uneasiness is partitioned into four, in particular gentle, moderate, serious and alarm nervousness.

4. Personality Disorders - Clinic shows that the symptoms of personality disorder (psychopathy) and neurosis symptoms are almost the same in people with high or low intelligence. So it can be said that personality disorders, nerves and intelligence disorders are largely independent of one another or are uncorrelated. Classification of personality disorders: paranoid personality, affective or cyclothemic personality, schizoid personality, axplosive personality, anankastic or obsessive-conspulsive personality, hysterical personality, astenic personality, antisocial personality, passive aggressive personality, inadequate personality.

5. Organic Mental Disorders - It is a psychotic or non-psychotic mental disorder caused by impaired brain tissue function. Impaired function of brain tissue can be caused by physical diseases that mainly affect the brain or especially outside the brain. If the area of the brain affected is extensive, then the basic disturbances regarding mental function are the same, regardless of the disease that causes it, if only the part of the brain with certain functions is disturbed, then this location determines the symptoms and syndromes, not the disease that causes them. The division into psychotic and non-psychotic is more indicative of the severity of the brain disorder in a particular disease than the acute and chronic divisions.

6. Psychosomatic Disorders - Is a psychological component followed by bodily dysfunction. There is often a neurotic development that shows mostly or solely due to impaired function of the organs controlled by the vegetative nervous system. Psychosomatic disorders can be likened to what were formerly called organ neuroses. Because usually only physiological functions are disturbed, it is often called a psychophysiological disorder.

7. Mental retardation - Mental retardation is a state of mental development that is stopped or incomplete, so that it affects the overall level of intelligence.

8. Behavioral disorders in childhood and adolescence. Children with behavioral disorders show behaviors that do not conform to social requirements, habits, or norms. Children with behavioral disorders may cause difficulties in raising and education. The behavior disorder may come from the child or the environment, but in the end these two factors will influence each other. As we all know, the characteristics and shapes of limbs and general personality characteristics can be passed on from parents to children. In brain diseases such as head trauma and encephalitis, tumors can cause personality changes. Environmental factors can also affect children's behavior, and they are often more decisive, because the environment can change, which can affect or prevent behavioral disorders.

regarding the type of the Mental disorder, Tampan Psychiatric hospital determine it into 3 categories in inpatient facilities based on their awareness level

Patient Category 1

which is an acute patient. Patients in the acute category are rarely allowed to leave the room because the nature of the patient is still dangerous and aggressive.

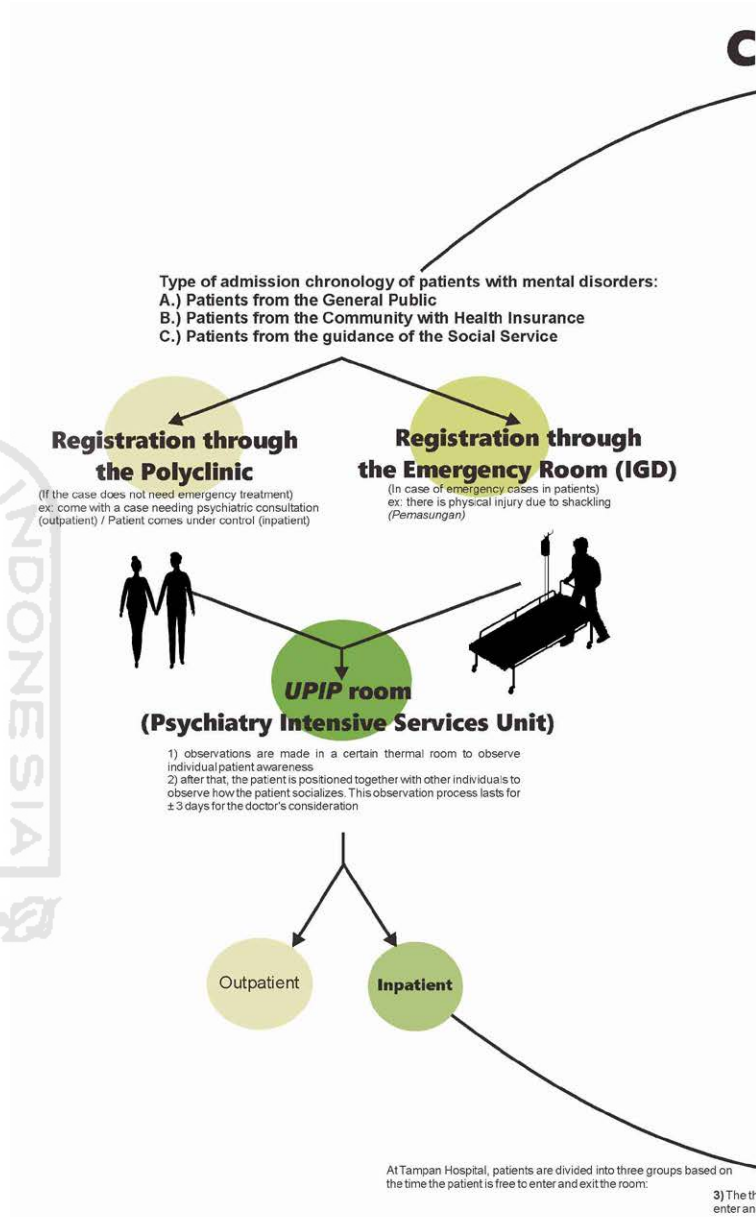
Patient Category 2

the intermediate stage. This patient is only allowed to leave a limited room. Intermediate patients are still in the process of forming mental structures and their level of consciousness is still low.

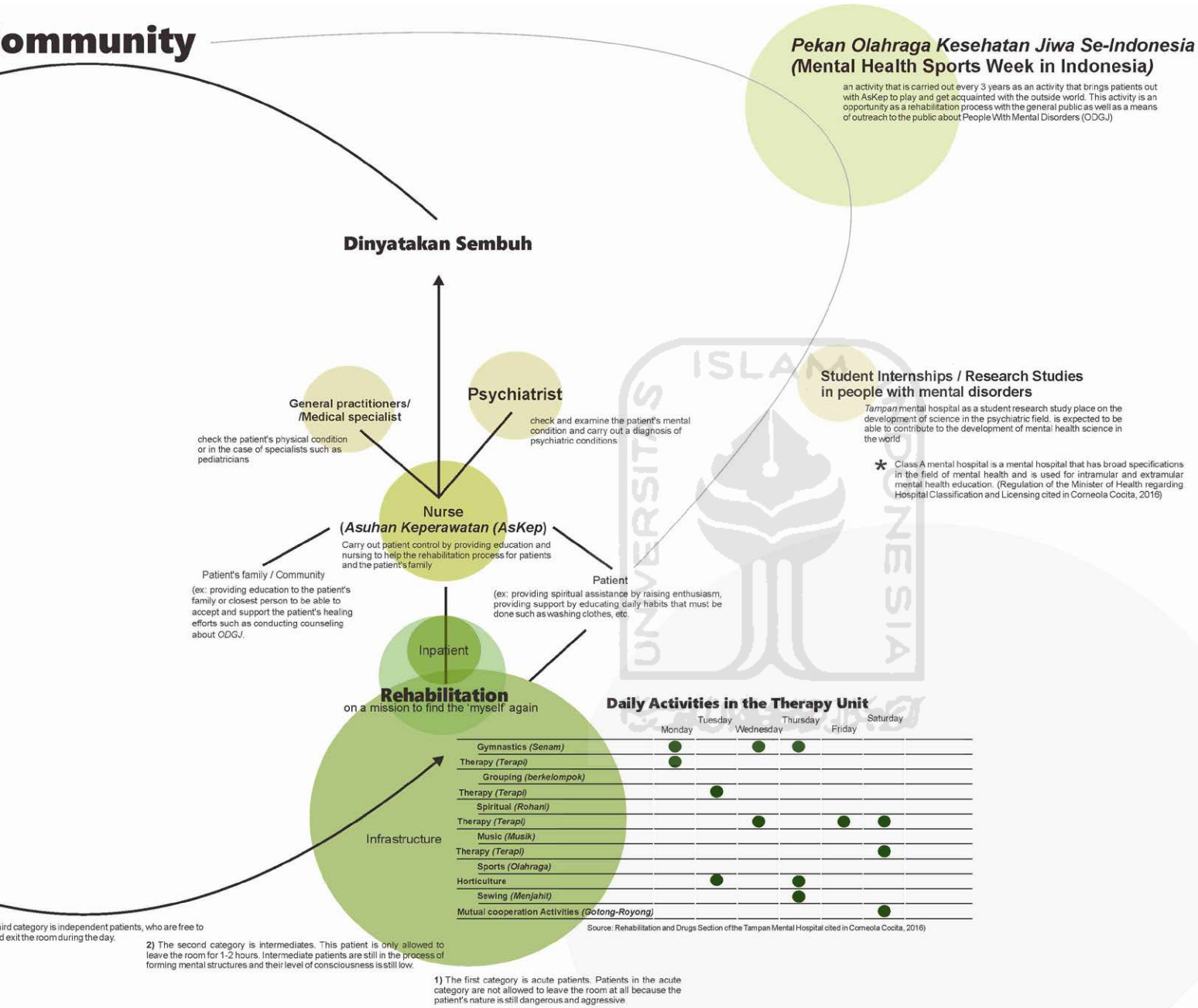
Patient Category 3

independent patients, who are free to enter and leave the room during the day.

Loop of Health Care Procedure &
Program in *Tampan* Mental Hospital



Source: Education and Research Section *(DIKLIT) Bagian Pendidikan dan Penel*



itian by Mr. Lukman

pada proses prosedur kesehatan yang ada, proses rehabilitasi menjadi bagian terbesar untuk menentukkan keber-hasilan prosedur. proses rehabilitasi ini mencapkup komunikasi antara keluarga yang harus mampu mengunjungi pasien sebagai modal kesehatan

Retained Facility Decision & Potension

EXISTING FACILITIES

Intensive Care Unit Position: (GOOD): in the closest position to the emergency department

Emergency Building Position: (GOOD): in a position adjacent to city access and is ‘in front’ of the site

Polyclinic Building Position: (GOOD): di posisi yang berdekatan dengan akses kota dan berada ‘‘didepan’’ site

Office Building Position: (GOOD): a position close to the community and good access without disturbing the inpatient unit area

Drug Building Position: (GOOD): in a position adjacent to city access and is ‘in front’ of the site

Inpatien Ward Position: still have to be among other facilities so that it can be easily accessed by other supporting facilities

First Idea to explore & Potention on site

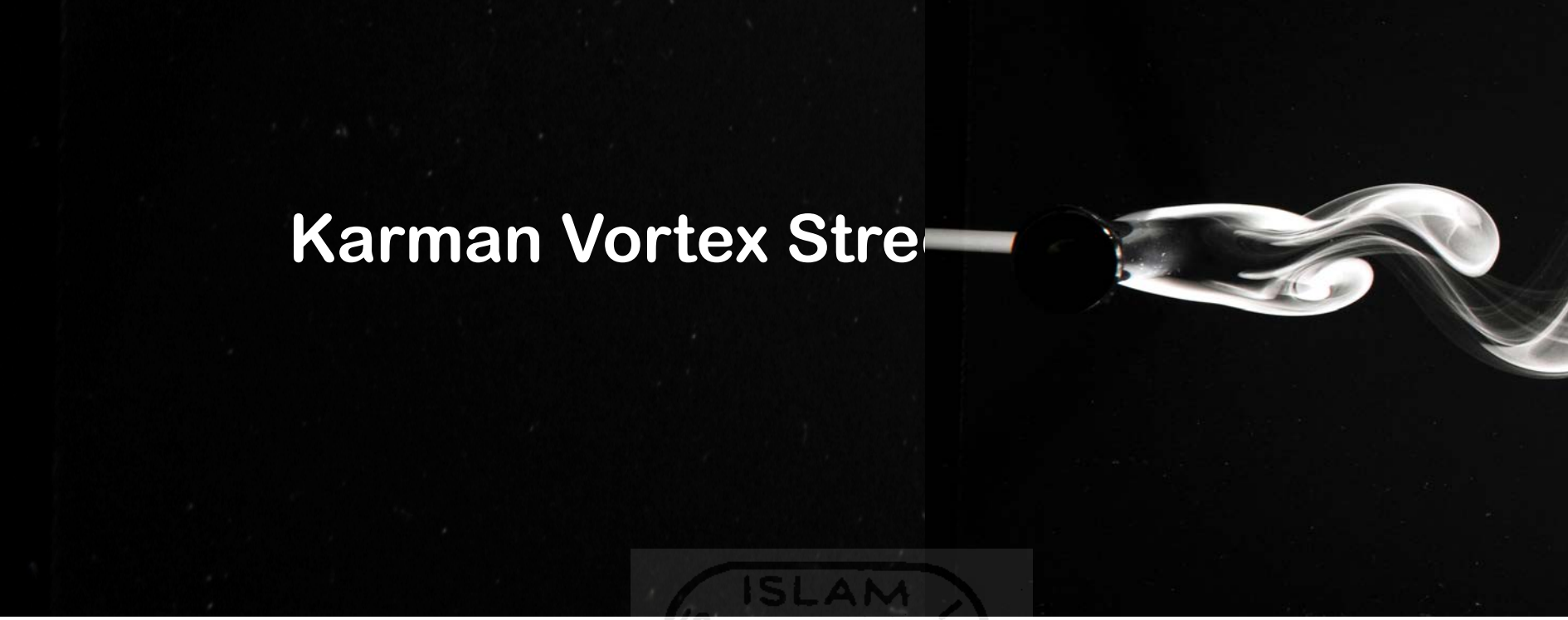
Potention on Existing Urban Landscape

- Existing Green Area
- Busy activity in shopping centers (Market)
- Street Access to the residential area

how to emerge the building with landscape?
how about to make the existing green area flow into the site?
and then flow into the Streets? so we can get the green area and countinue the great spirit of the green area, that can give a nice image into the place that a lot of people on the side


Residential Area
Residential Area
Green Area
Wastewater Treatment Plant (IPAL)
Sports field
Drugs Buildings
Science Park
Riau State University
Generator Room
Canteen
Official Residence
Upip Building
Central Supply Sterile Department (CSSD)
Registration Hall & Polyclinic
Official Residence
Musholla
Office
Emergency Department (IGD)
Market
Fish pond
Fish pond
Fish pond
Parking Lot
Security post
Security Post
Shop Houses
50 m

Karman Vortex Stre



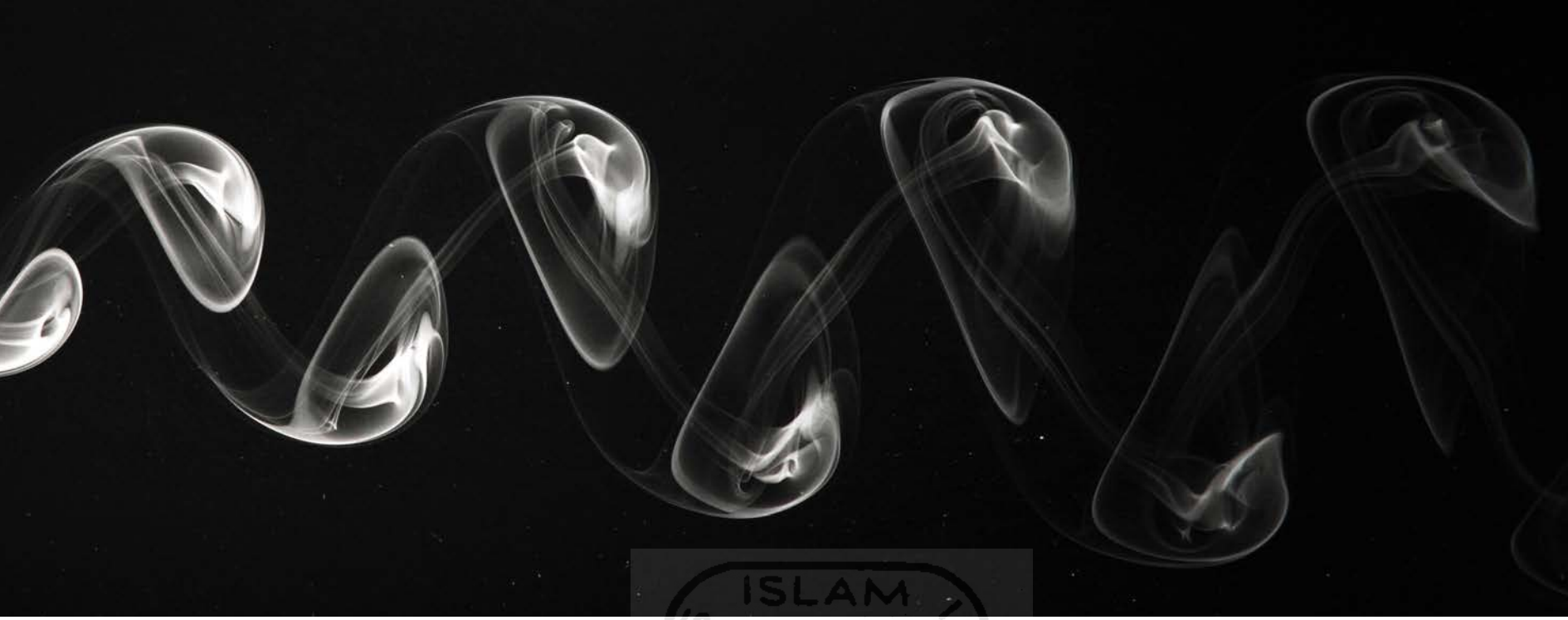
everyday fluids such as air or water, produce many amazing flow patterns The von Kármán vortex walk is a classic swirling vortex flow pattern, appearing in clouds, streams and rivers. The flow pattern dubbed the von Kármán vortex road, known for its aesthetic beauty has been created in the superfluid field

In fluid dynamics, the Kármán vortex path (or von Kármán vortex path) is a repeating swirling vortex pattern, caused by a process known as circular ejection, which is responsible for splitting the unstable fluid flow around the blunt object.

A cylinder pulled through ordinary fluid produces a von Kármán vortex path: a vortex of circulating fluid (blue) is released from one side, followed by a vortex with opposite circulation (red) from the other side. These repeat to form the well-known downstream pattern of staggered vortex “footprints”. Yong-il Shin and co are aware of the quantum version of this path in an effective two-dimensional super liquid. Because eddies are restricted to having one circulating quantum, the von Kármán quantum path appears via staggered emission from the identical quantum vortex minicluster (below).

https://en.wikipedia.org/wiki/K%C3%A1rm%C3%A1n_vortex_street

https://www.google.com/search?q=karman+vortex+street+on+water&source=lnms&tbm=isch&sa=X&ved=2ahUKEwimsbbIit_vAhVlgtgFHVr-BoIQ_AUoAXoECAEQAw&biw=1536&bih=722#imgrc=uCPBGxMTVsU97M



This beautiful natural phenomenon is often depicted in various famous works of art from ancient times to the present such as in the paintings of traditional objects and batik, this arch shape is very common.

Left. A von Karman Vortex street, which maps the onset of turbulence using a range of R or Reynolds number - a ratio of flow to resistance to flow. The R of a river is in the millions.

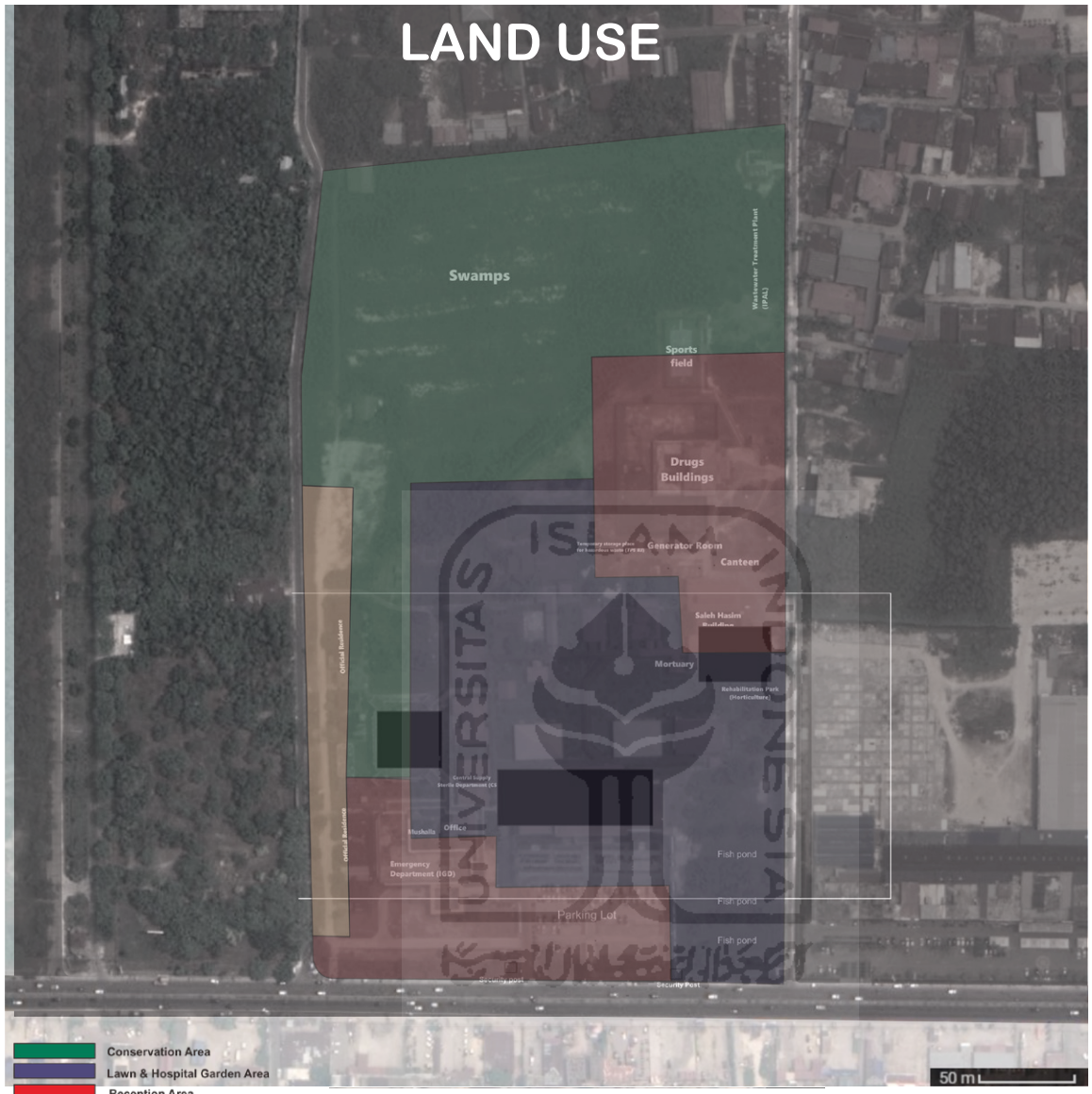
Source: http://hmf.enseeiht.fr/travaux/CD0102/travaux/optmfn/gpfmho/01-02/grp6/pages/page1.htm

Right. Painted Ngai Tamanuhiri hoe (paddles) collected on 12 October 1769, during Cook's first Pacific voyage, sketched on board the Endeavour by Sydney Parkinson.

© British Library Board Add. 23920, f.71

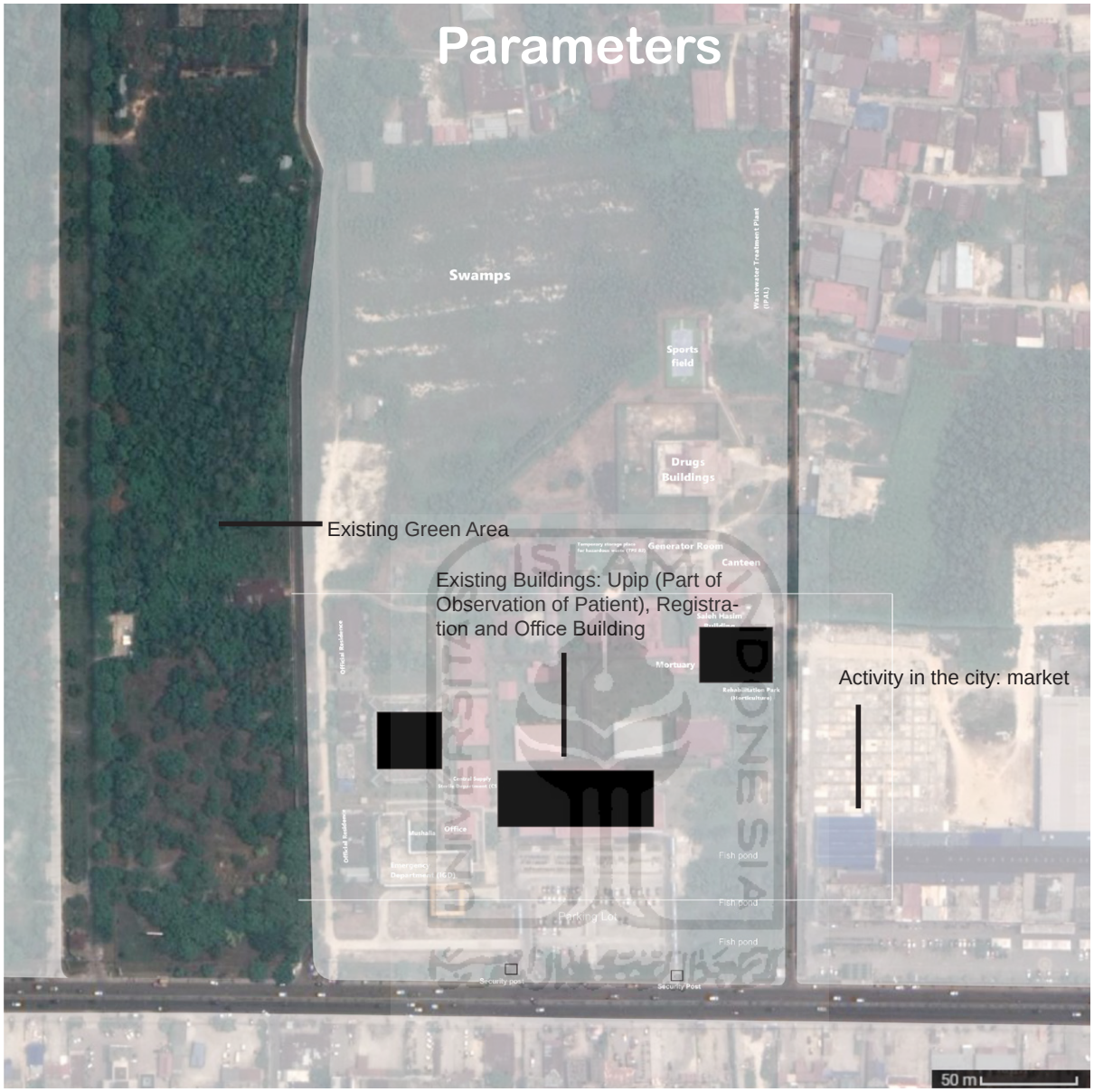
https://semuatentangtekstil.wordpress.com/2011/07/01/motif-batik-mega-mendung-cirebon/

http://sungaikuantan.blogspot.com/2009/07/motif-batik-melayu-dan-filosofinya.html



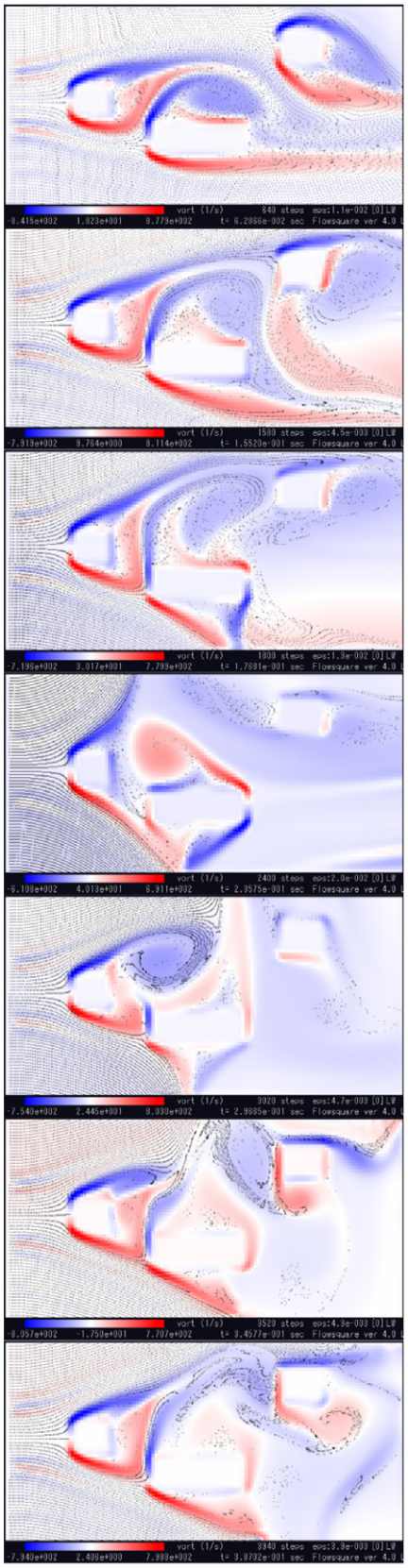
Source: Thesis of *DESAIN TAMAN RUMAH SAKIT JIWA TAMPAN PEKANBARU RIAU*, Corneola Cocita, Landscape architecture Departement Bogor 2016

To perform a dynamic fluid simulation of the search for shapes, it is necessary to first identify the mass of the existing building which is the parameter of the movement and bounding of the flow. then considering the existing building parts, 3 masses are selected which bind each other between land use zones with one another.

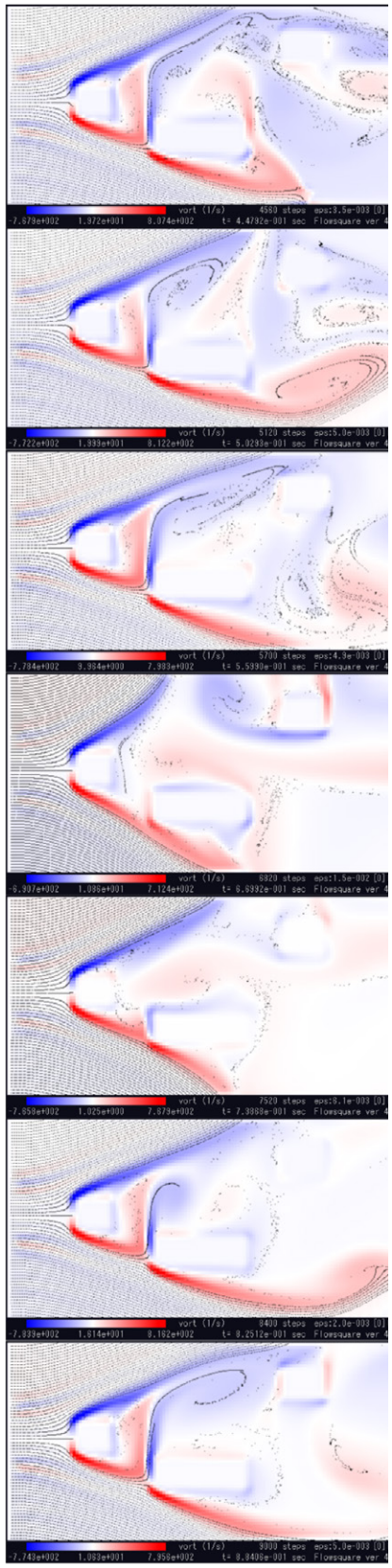


The three main masses are the Intensive care unit, registration and polyclinic buildings, and offices. Another parameter is the presence of green space beside the site which determines the start of the flow movement, this parameter is chosen to continue the feeling of green open space into the site. Then to determine where the flow is going, the market area next to the site is determined as the end point for the flow of flow, this is considering how the flow can present the openness of the agency with the activities next to it.

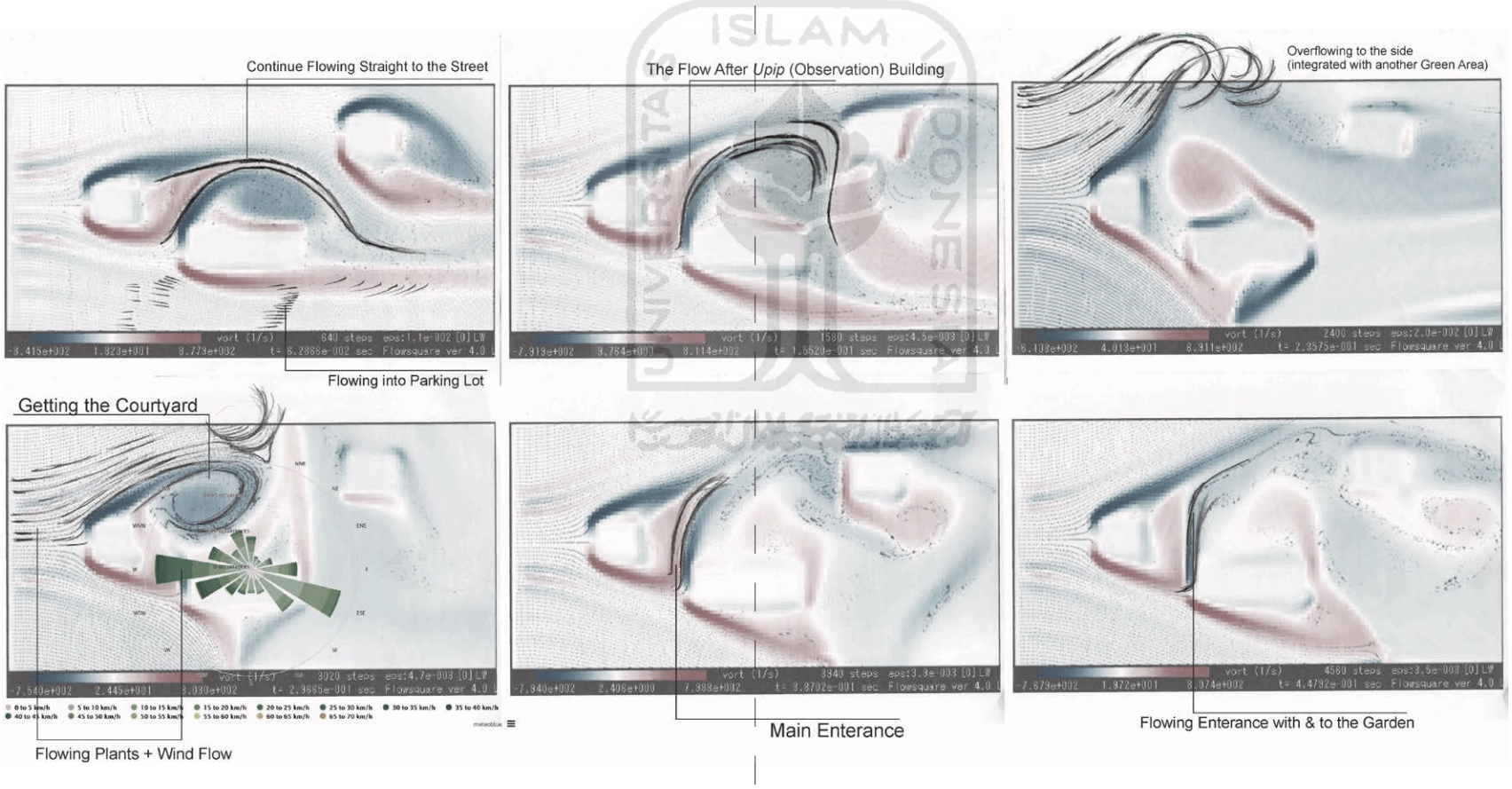
determining the boundary for simulating flow at the site, the area was chosen to make it easier for the simulation to run with the FLOWSQUARE 4.0 application



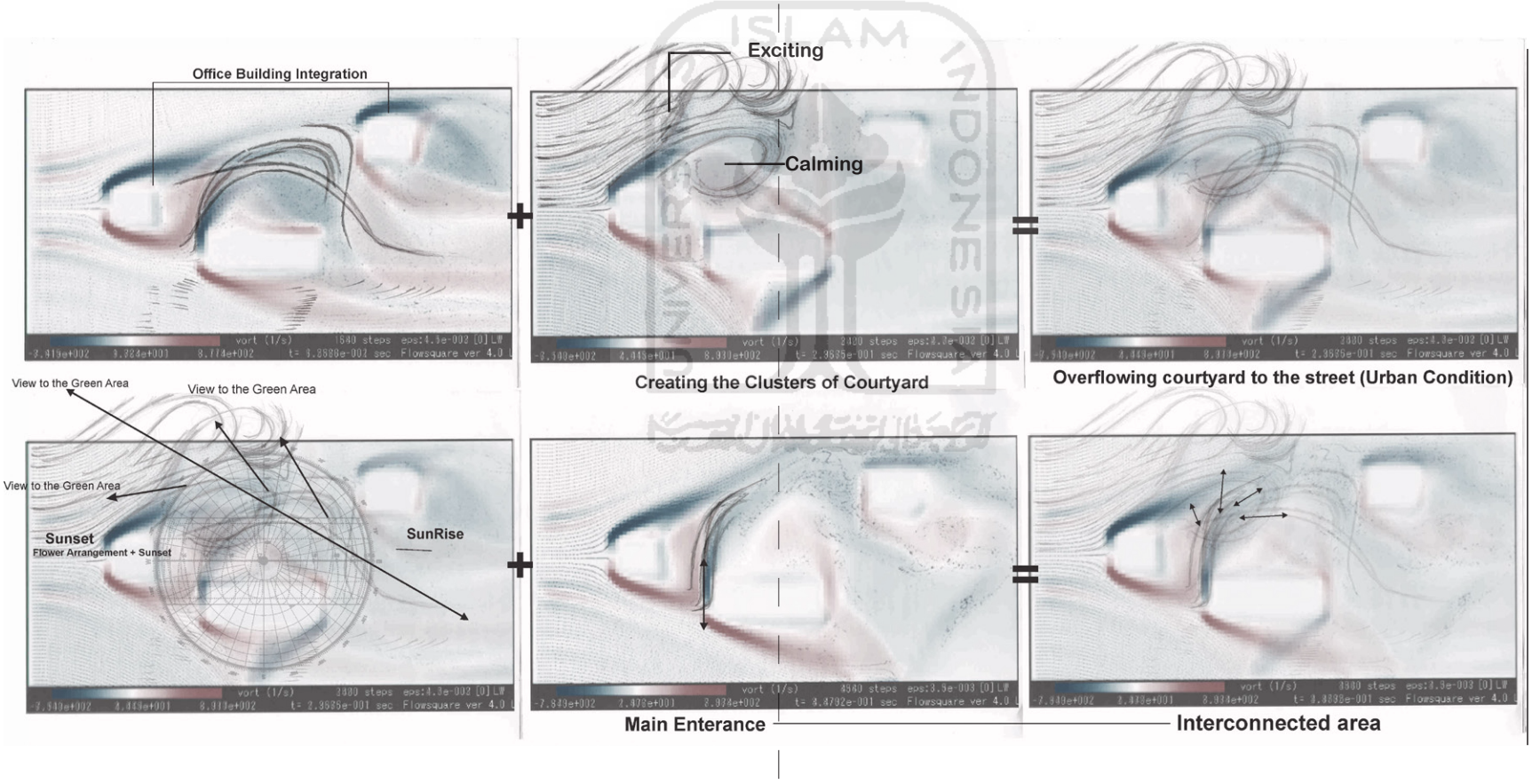
After being simulated, 14 images are taken randomly with a certain distance, the simulation seconds are close to each other. These captured images will then be used as inspiration for the search for beautiful shapes according to the site layout with the climate and surroundings

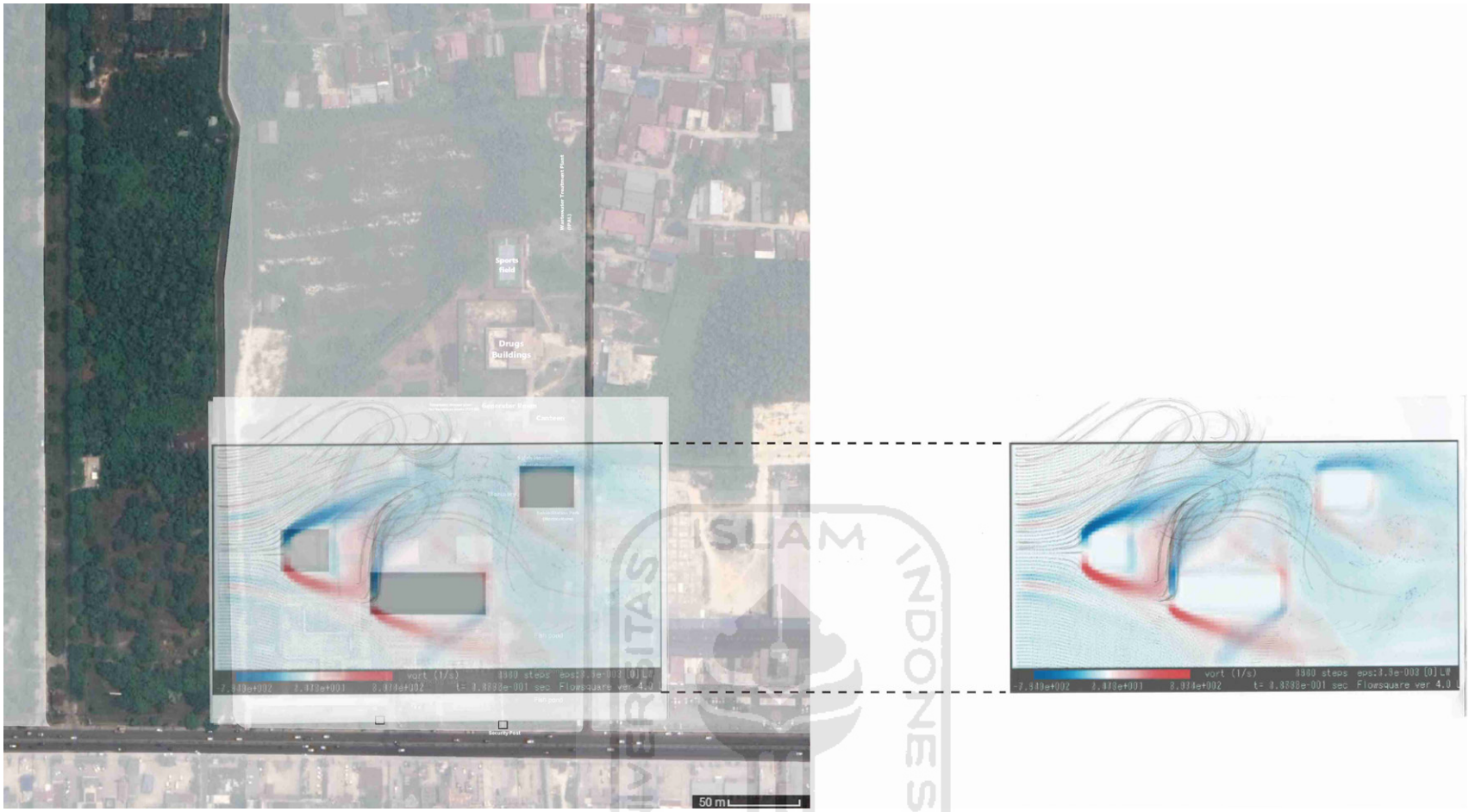


The search for shapes is captured by sketching the previous drawings, sketch lines define ideas with certain parameters. such as the line of integration between the existing building and the new building, the creation of courtyard and cluster forms and the dominant wind direction to capture air flow in order to use passive thermal principles.

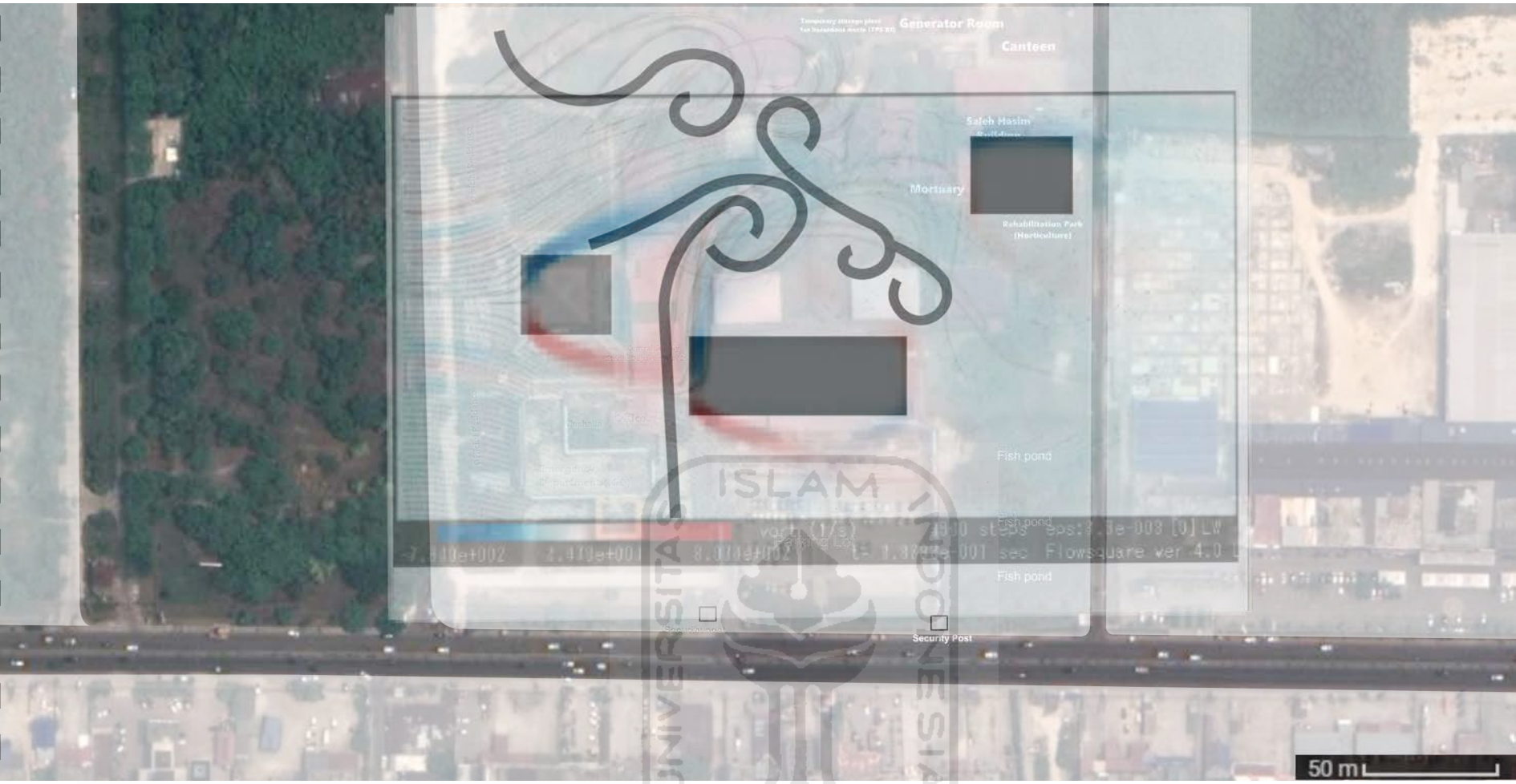


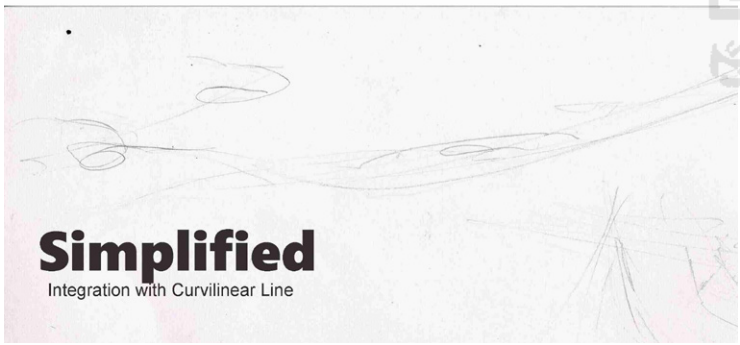
then the previous lines that have been obtained with certain considerations are superimposed and traced again to see how these ideas are integrated and create new ideas in complementing other parameters. such as how each line merges to form space and how these spaces have a good view along with how the sun moves in the geometry found. and in the end how all the lines come together to form a connection, a collection of clusters with a courtyard in the middle





the results of all sketches with ideas that include existing thoughts are positioned on the site to find the exact shape of the sketches obtained

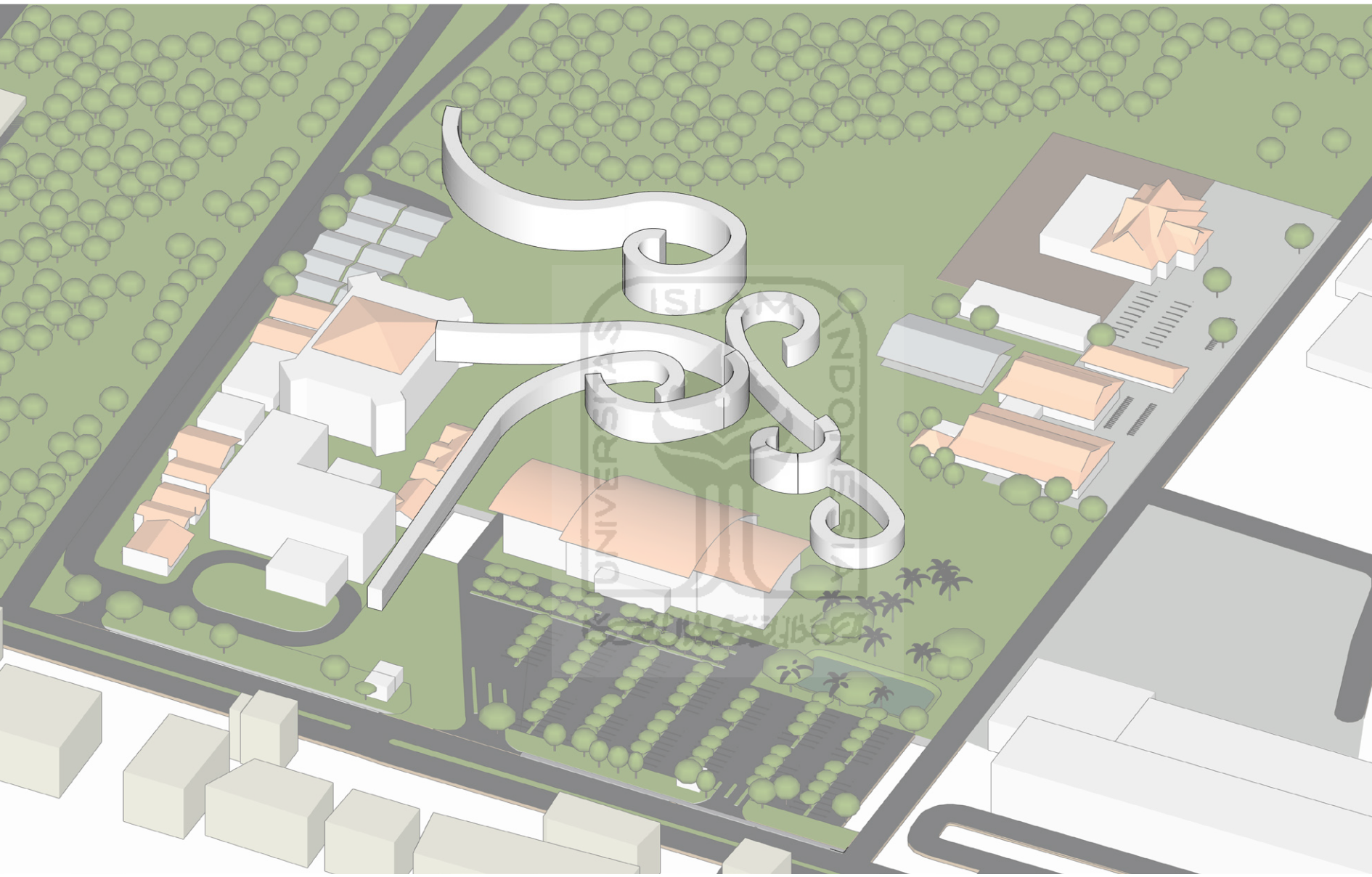




Determination of the final shape to determine the geometric space is done by simplifying the dominant lines again into one interconnected outline.

SIMPLICITY AND INNER CALM

a life comes from a variety of diversity, there are times to be strong there are times to be simple. calming simplicity considering where everything unnecessary is removed



Adding Volume

Social Services: max 4 Floors (REGIONAL REGULATION OF PEKANBARU CITY
Number: 14 of 2000)

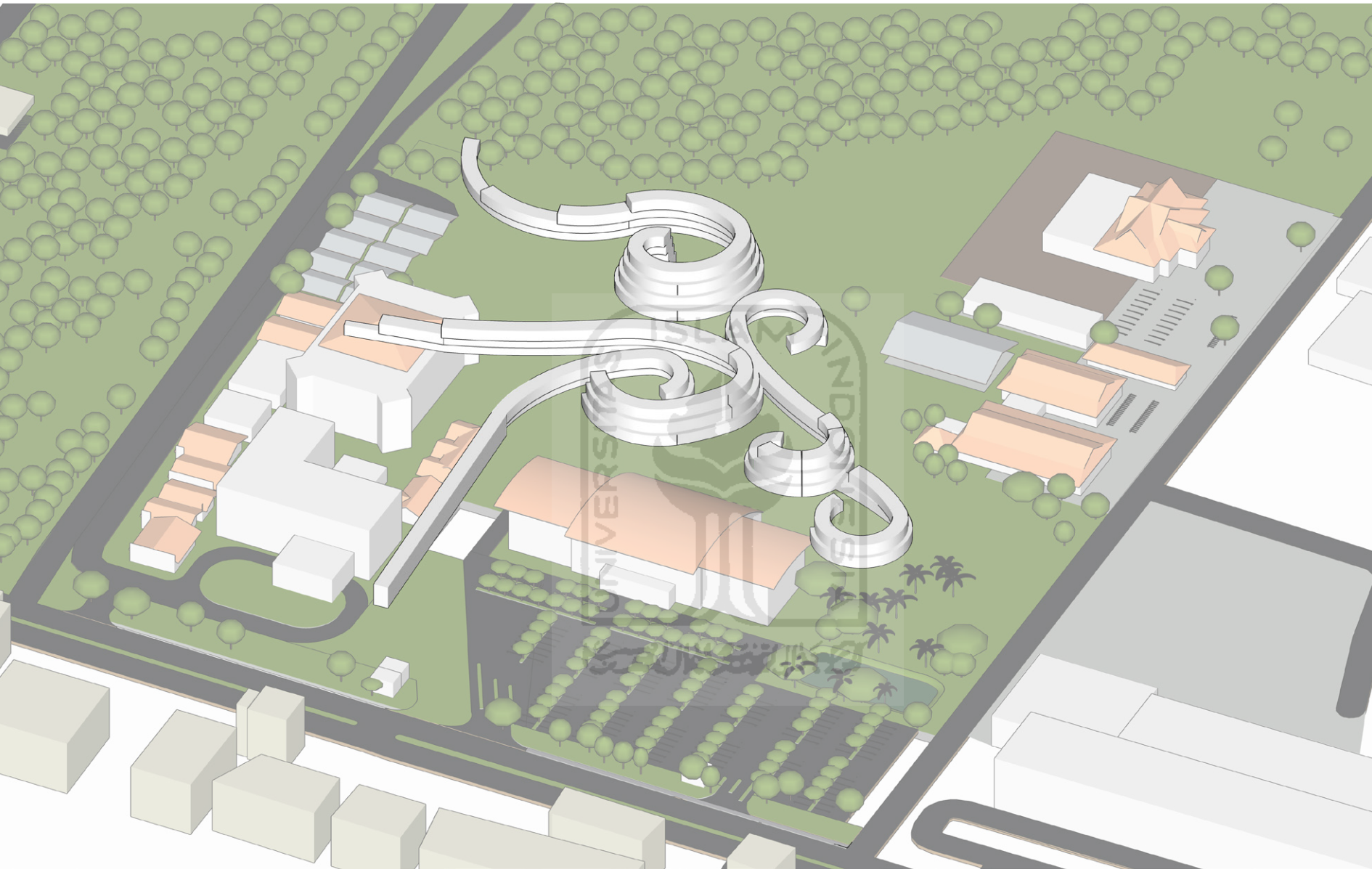
ECHOES

A whole life contains a deep fundamental similarity in it. The similarity of these elements binds them into a cohesive whole

POSITIVE SPACE.

For something to be whole, both the elements themselves and the space around them must engage with one another, each reinforcing the other.

The shape of the mass arrangement resulted from a beautiful simulation at the site in the previous stage, of how water flows from the green area to the vicinity of the existing building that forms a vortex with a courtyard, which is then volumed based on local regulations with certain width and height variations to create diversity similar to that shown in nature. building masses that flow close to each other create a positive space because their presence supports each other



Mass Shifting

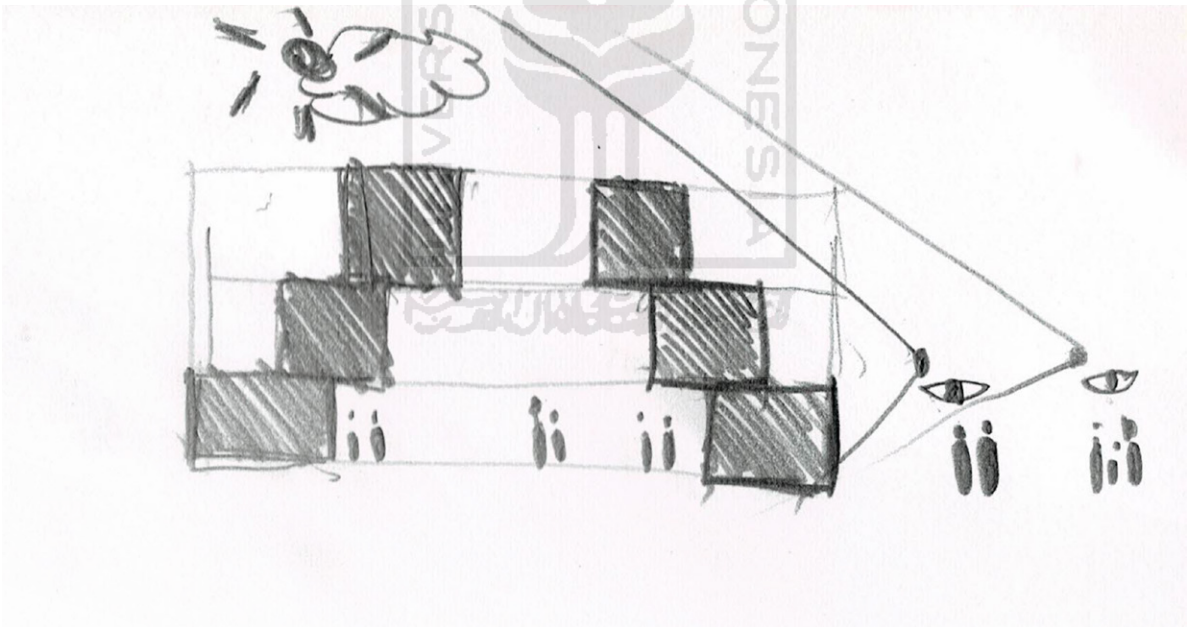
Get Protection when inside - Get Open from the Outside

ALTERNATING REPETITION

intensified when they repeated with subtle variations. applied recursively to all entities, the space between entities, and the process of repetition, it creates a beautiful harmony.

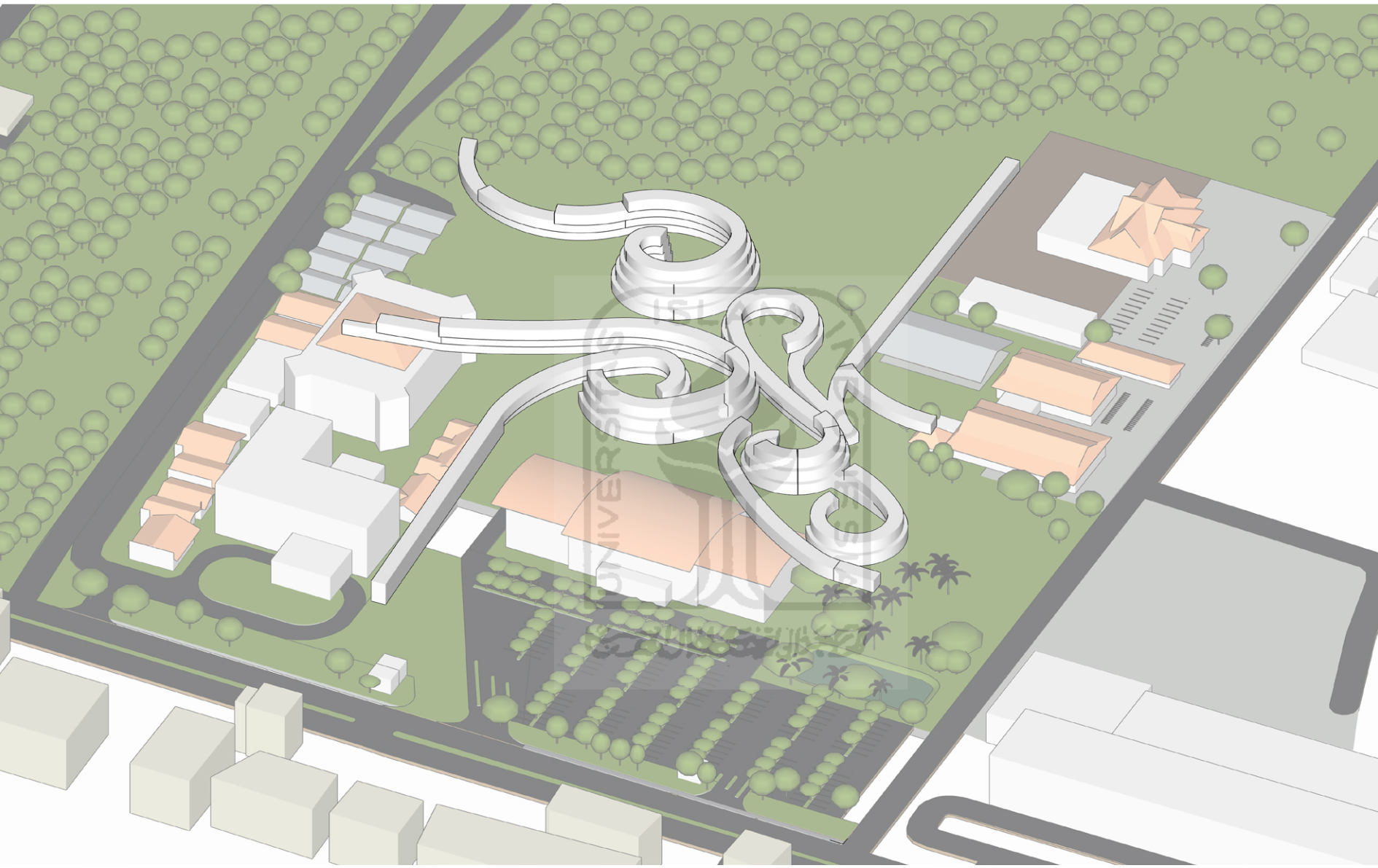
GRADIENTS

varies gradually, not suddenly, across space in a living whole. This gradient is caused by a response to the natural variation of circumstances.



then the vertical mass of the building is shifted one by one coherently to provide a semi-open space in the middle for the patient to adjust to the outside world and provide a sense of openness when viewed from the outside towards the building while providing a foothold to facilitate maintenance on the building. it uses the principle of switching repetitions by making the buildings intensify when they repeat with subtle variations. applied recursively to all entities, the space between entities, and the process of repetition, creating a beautiful harmony.

The mountainous arrangement also provides a gradation between the ground surface and the vertical structure of the building, making it a unified whole with nature



Access with Surroundings

the addition of a corridor that connects curvilinear-ly with other Facilities

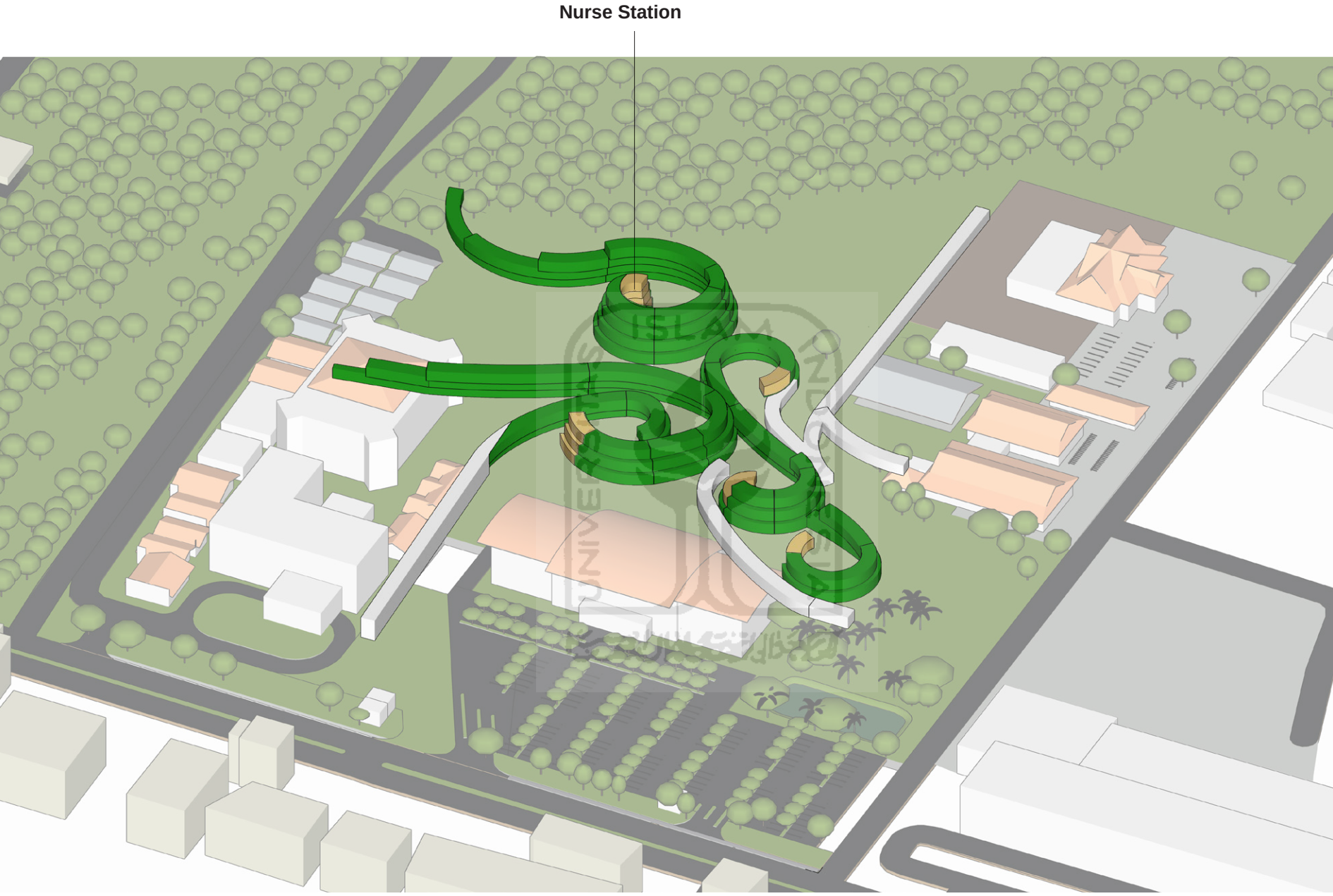
NOT-SEPARATENESS

a living whole, each center being deeply connected and fused into their surroundings, not separate from them.

ECHOES

A whole life contains a deep fundamental similarity in it. The similarity of these elements binds them into a cohesive whole

the building is tied to other facilities by forming a rhythmic corridor between the new building and the old building by flowing between them to provide patient entry and exit routes. The inseparability in this composition is intended to not separate the building from the existing life around it, increasing the sense of complete unity in the site with perpendicular lines that continue to form a circle making it a beautiful harmony



Nurse Station & Inpatient Location

BOUNDARIES

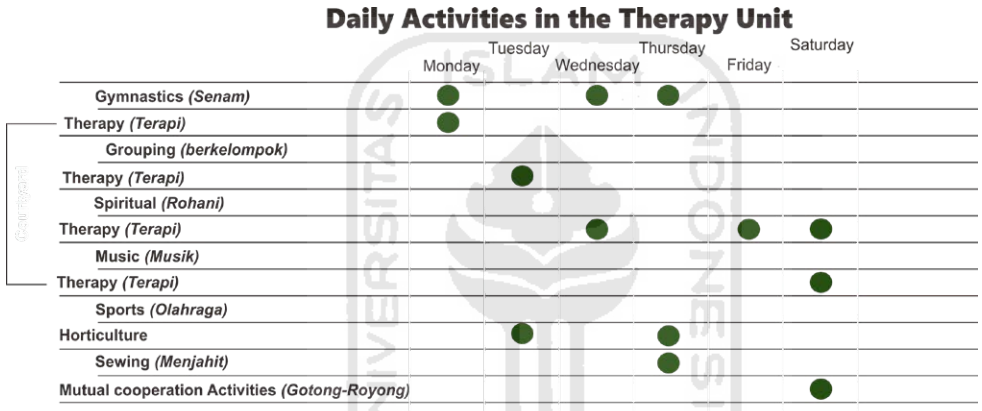
create a field-like effect that intensifies the constrained center.

THE VOID

intensified by the presence of an empty center. This void needs to be on the pitch to maintain a balance between calm and emptiness.

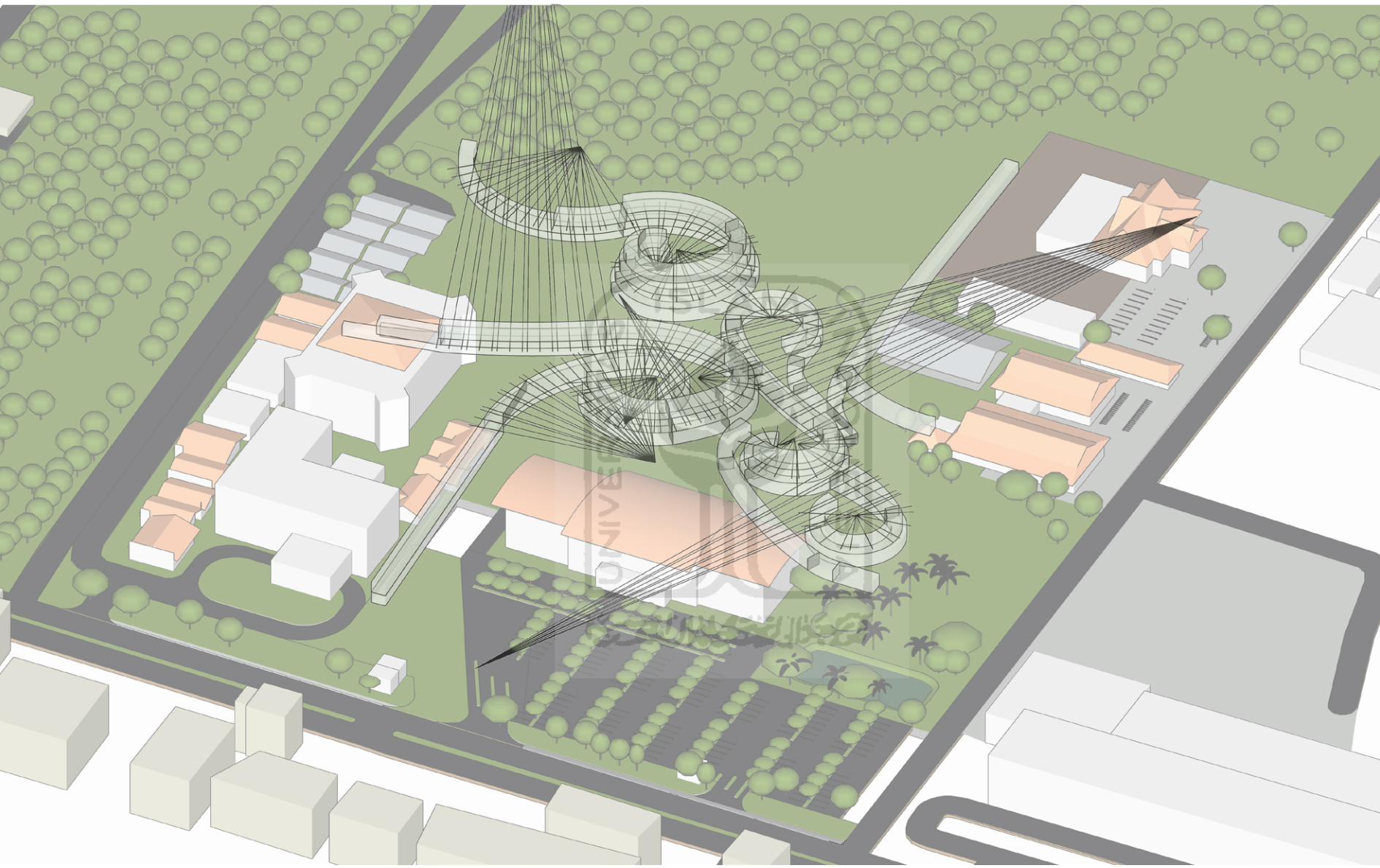
STRONG CENTERS

each strong center consists of several smaller strong centers. The strong Center has a field effect generated by nesting it.



In daily activities, the location of the inpatient rooms and supporting rooms are in the green zone that surrounds the courtyard so that the courtyard becomes an empty semi-open shelter that creates serenity and emptiness in it. The empty space then supports the patient's atmosphere to be able to gather together.

Meanwhile, the location of the nurse station is located at the center point of the courtyard. facilitate monitoring the condition of patients in each cluster



Curve Segment & Structural Grid

Structure Position

Unit Scheme

the provision of the structure is based on the planning of a room with one unit of one toilet which is proven to provide peace to the patient because of the value of privacy that must be applied during the rehabilitation period The room divider can then become a structural space without disturbing the patient's view.

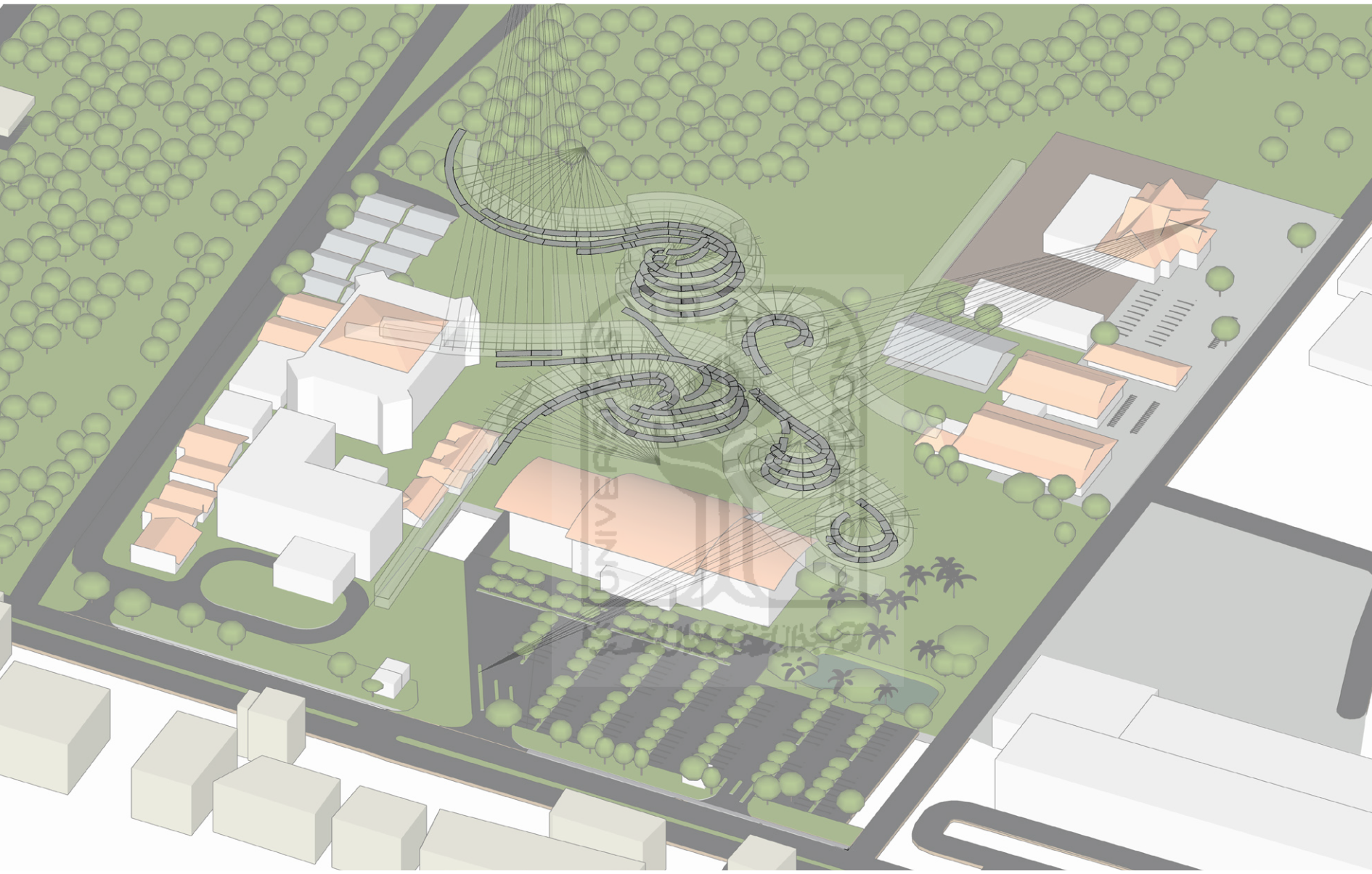
the rhythm of the spatial arrangement that follows each segment of the arch then produces a unique rhythm with the arch. At the same time, the planting of mahogany trees is arranged to support the rhythmic pattern of the building structure, this creates a collinearity pattern where the information regarding the vertical pattern of the structure with the vertical tree blends with each other.

ALTERNATING REPETITION

intensified when they repeated with subtle variations. applied recursively to all entities, the space between entities, and the process of repetition, it creates a beautiful harmony.

ECHOES

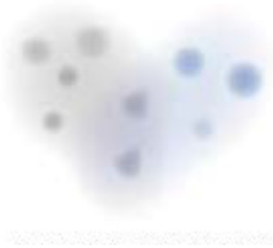
A whole life contains a deep fundamental similarity in it. The similarity of these elements binds them into a cohesive whole



Building Like Landscape; Slopes

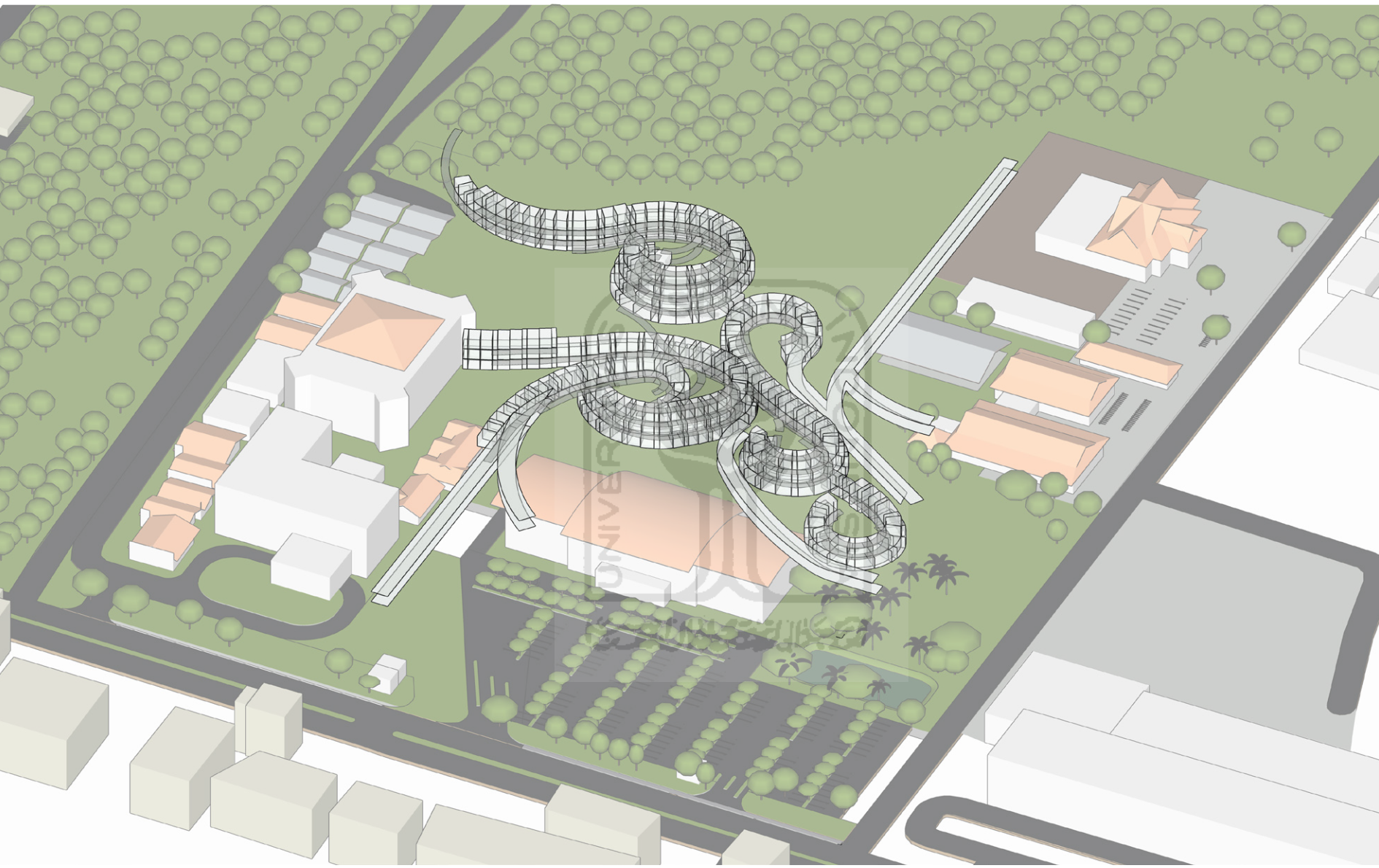
1:14 Ramp with approximately lenght ±9 m

DEEP INTERLOCK AND AMBIGUITY



A living whole has several forms that connect the centers with their environment.

Access to each patient room uses a ramp to provide easy and safe access for vertical wheeled users. It creates a fluid environment similar to a natural site with a slowly rising vertical plateau. creating attachment and ambiguity with the plains itselves



Singularity between Units & Ramp

NOT-SEPARATENESS

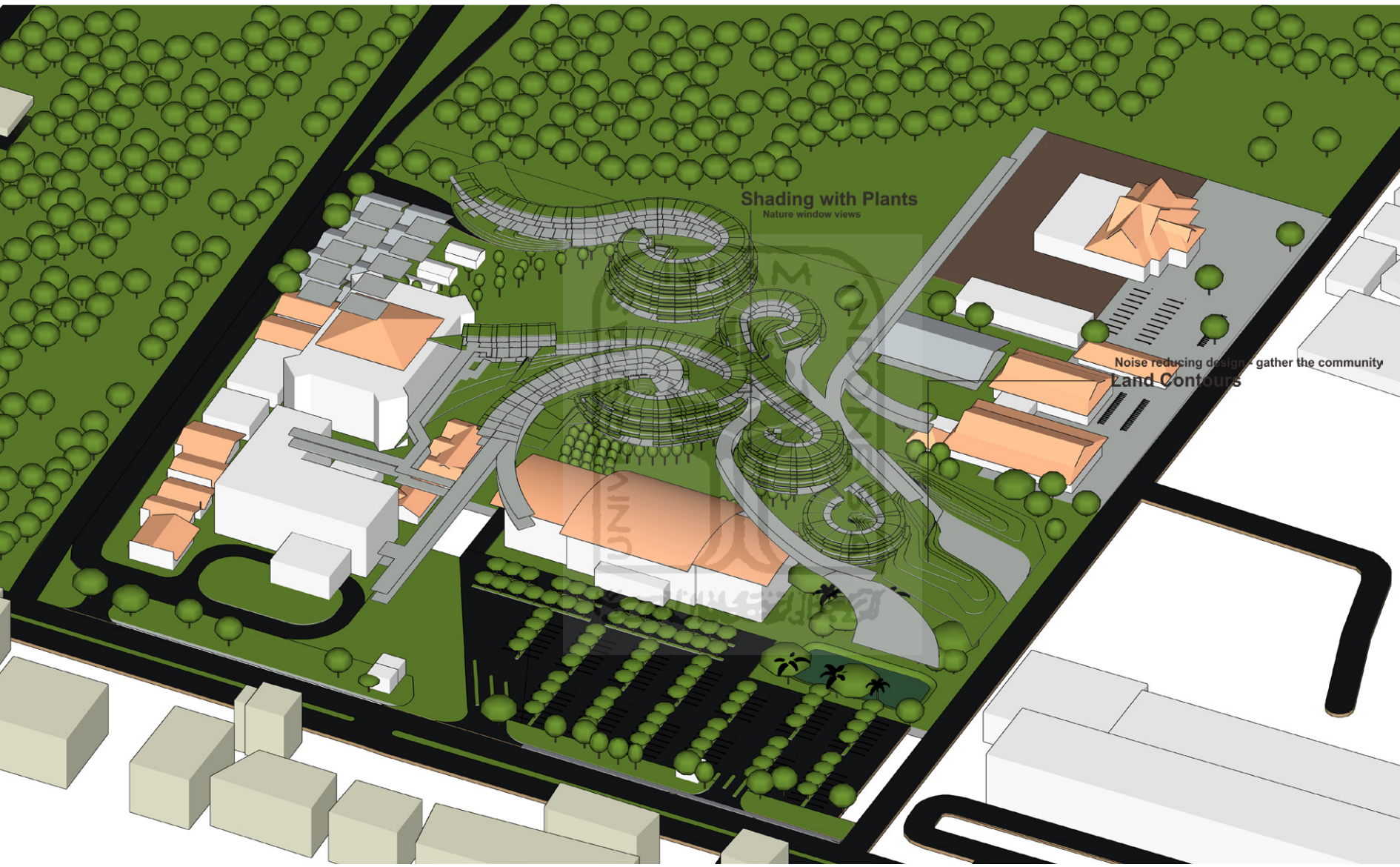
a living whole, each center being deeply connected and fused into their surroundings, not separate from them.

GOOD SHAPE.

Good form is an attribute of the whole, but the whole must be made of intense centers which in itself are whole. (a complete whole)

The elevation on each unit is the same as the elevation on each ramp so as to provide directivity to get to each unit easily while playing and enjoying the journey to their respective rooms.

The order, then forms an inseparable unity as in nature and the form that is designed to be good by unified the whole



Building & Land Contour

GRADIENTS

varies gradually, not suddenly, across space in a living whole. This gradient is caused by a response to the natural variation of circumstances.

NOT-SEPARATENESS

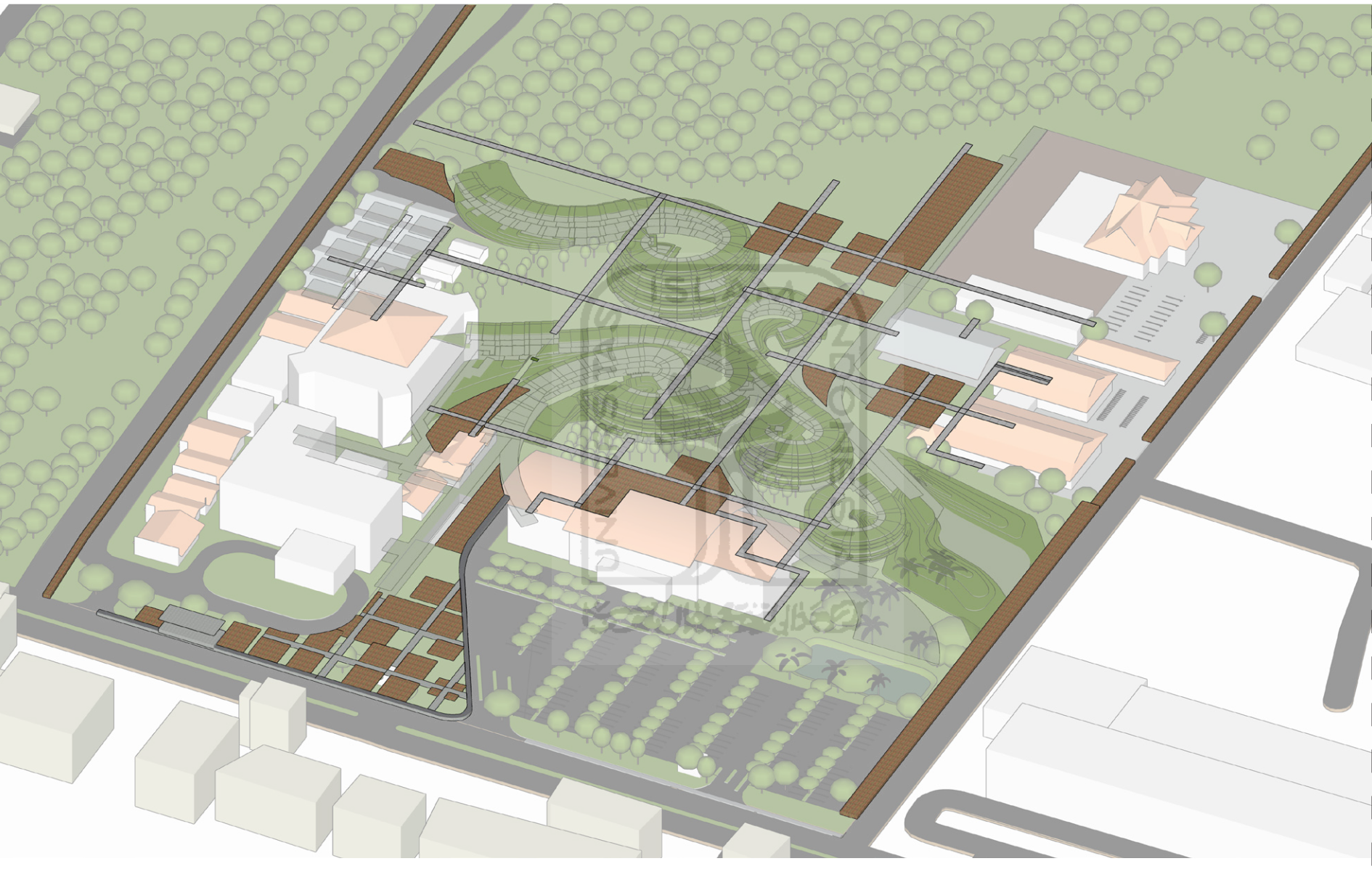
a living whole, each center being deeply connected and fused into their surroundings, not separate from them.

GOOD SHAPE.

Good form is an attribute of the whole, but the whole must be made of intense centers which in itself are whole. (a complete whole)

Then to unify the appearance and position of the building with the landscape, various contours are arranged to create elevation for several activities such as forming an amphitheater for a sports hall with a natural exposed concrete footing.

These elevation lines blend with the horizontal shading line that protects the building from direct sunlight as well as a place to hang several plants that are easy to care for and minimal maintenance.



Urban Grid System

LOCAL SYMMETRIES

interlocking and overlapping symmetrical segments. serves as an adhesive that forms a whole

CONTRAST

sharp differences between one and the other. The differences between opposite sites not only separate things but also bring them together.

inspired by the shape of the surrounding order and the shape of the grid in the city. the arrangement on the grid has been known for a long time with its practicality. Directivity in its geometric can be used as a special direct line for nurses in overcoming aggressive behavior when it occurs.

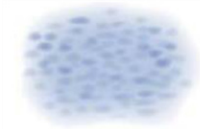
this creates interlocking and overlapping symmetrical segments. serves as a glue that forms a single unit. and create contrasts that do not separate each other, but strengthen and beautify each other.

SIMPLICITY AND INNER CALM

a life comes from a variety of diversity, there are times to be strong there are times to be simple.

THE VOID

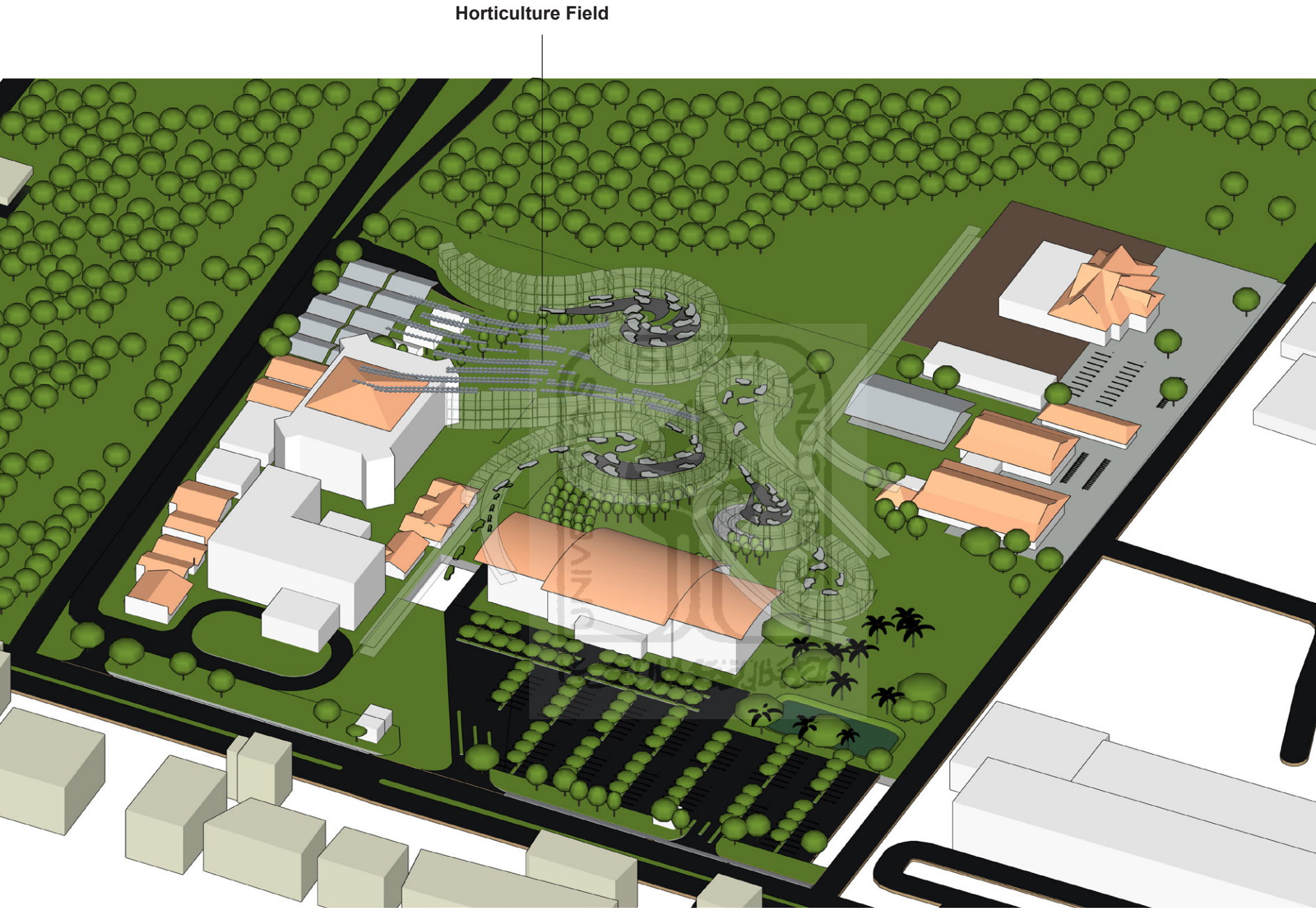
intensified by the presence of an empty center. This void needs to be on the pitch to maintain a balance between calm and emptiness.



ROUGHNESS

The whole of life has some local irregularities in it. The disorder is caused by adapting to irregularities in the environment and responding to demands and constraints from other nearby centers

These shapes are also given purslane flowers which are easy to care for and arranged to fit the geometry in each path, providing a simple open space for nurses to calm down and the patient's view to remain calm with the texture of the blooming flowers.



Horticulture Flow & Building Flow

Integrate the flow from the horticultural rehabilitation area with the flow in the building by arranging it to flow through soil-filled bowls at each stop access line on the ramp thus creating balconies that continue planting from the horticultural area.

This forwarding continuity from the colliarity rhythm, where the plant pattern follows the building pattern. form a synergy between landscapes and buildings with beautiful harmony.

NOT-SEPARATENESS
a living whole, each center being deeply connected and fused into their surroundings, not separate from them.

GRADIENTS
varies gradually, not suddenly, across space in a living whole. This gradient is caused by a response to the natural variation of circumstances.

ALTERNATING REPETITION
intensified when they repeated with subtle variations. applied recursively to all entities, the space between entities, and the process of repetition, it creates a beautiful harmony.

ECHOES
A whole life contains a deep fundamental similarity in it. The similarity of these elements binds them into a cohesive whole

Olericultural Plants (vegetables)

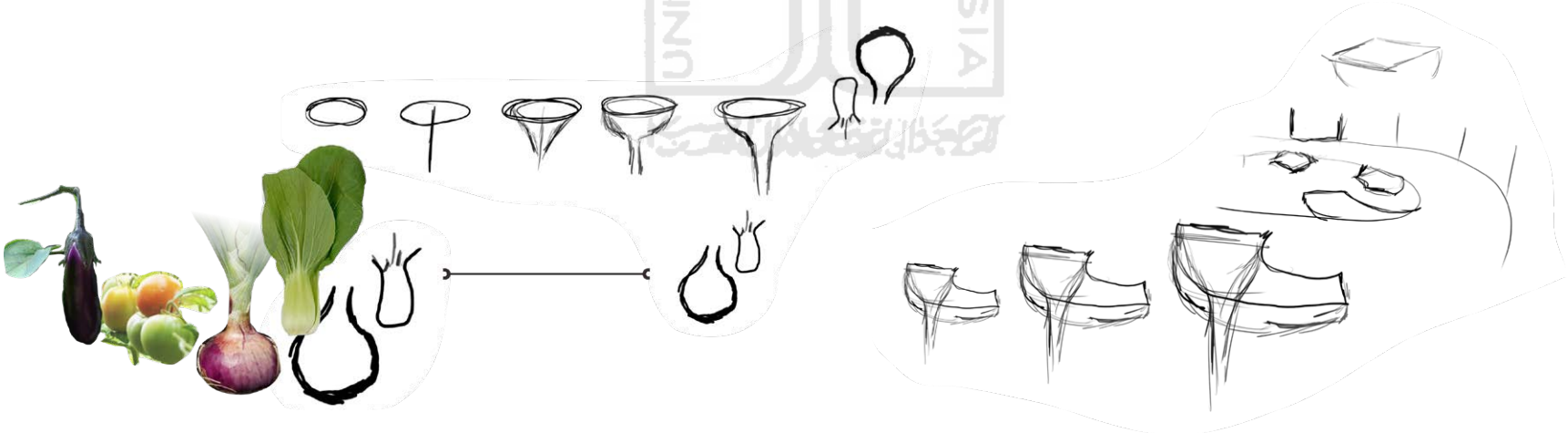
Floricultural Plants (ornamental)

English Lavender *(Lavandula angustifolia)*

Taro *(Colocasia esculenta)*

Lady Fern *(Athyrium filix-femina)*

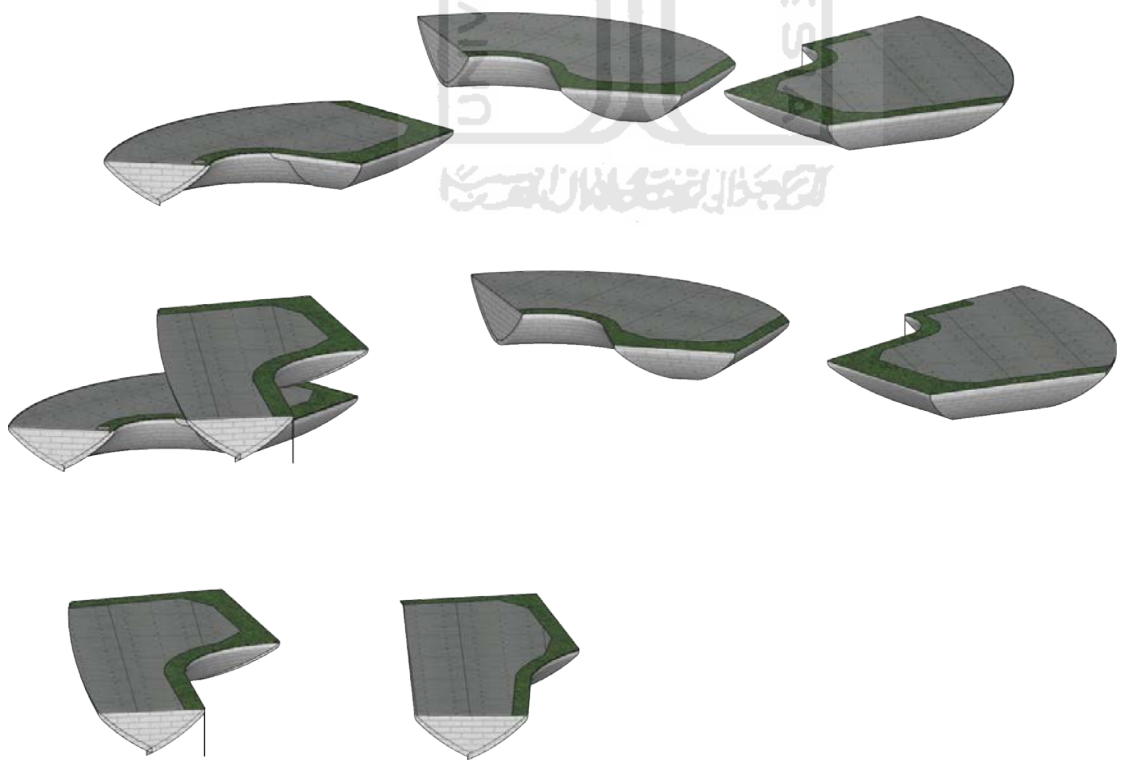
The memory generated from the attached plants in the form of gratitude is traced using the blob or arch shape found in fruits and leaves on horticultural plants. made into a shape for a container in these bowls



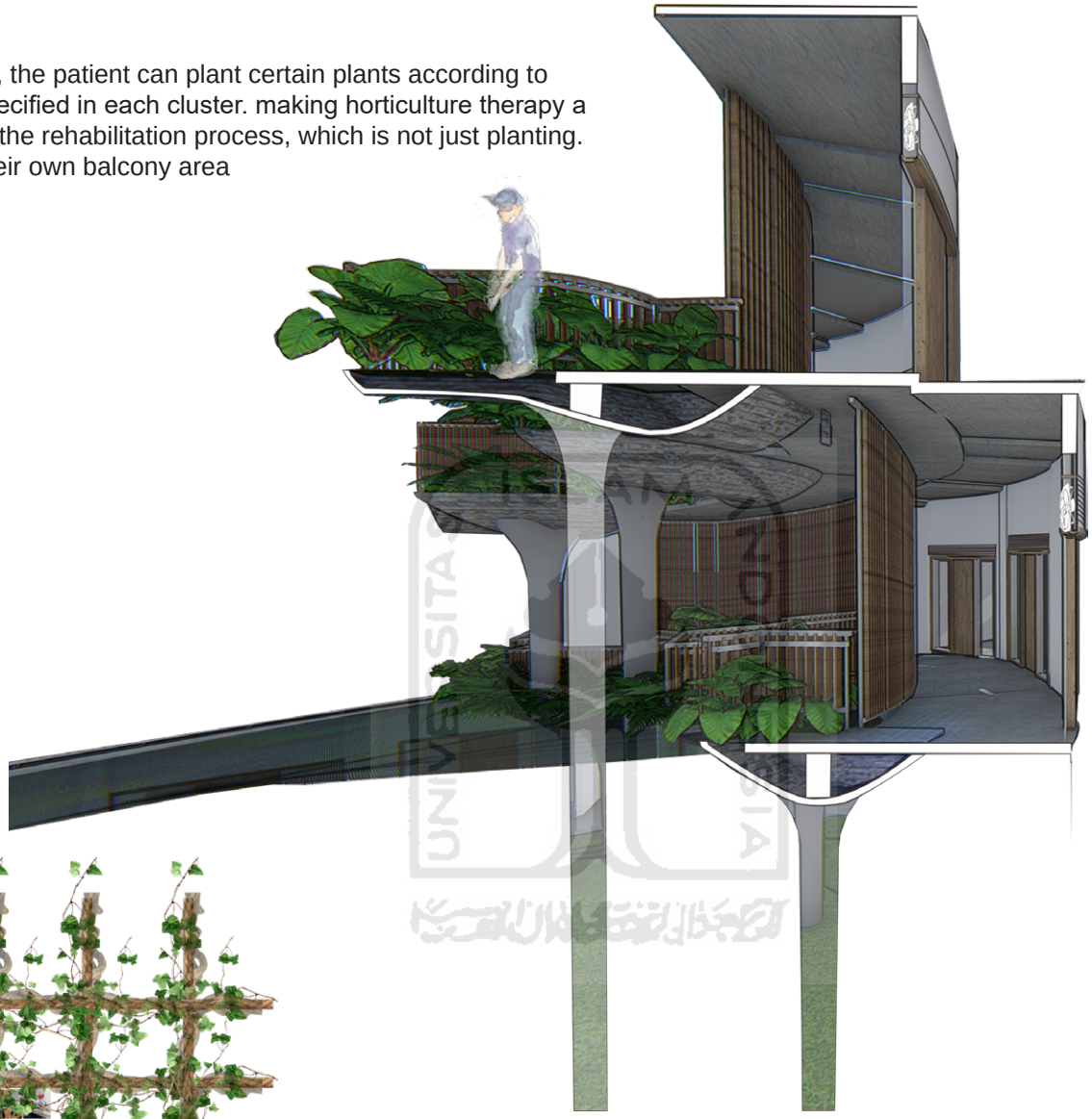
The blob shape which is then adjusted to the geometrical segment of the patient's room provides a connection between the balcony area and the patient's room. and shape it to follow the shape of the flow on the curve of the ramp. this still makes these plant bowls a part of the building and landscape itself.

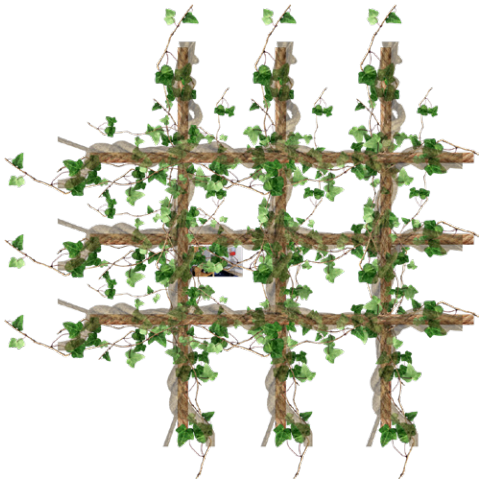
Bowl of Plants

Communal areas with movable seating and ample space to regulate relationships



In these bowls, the patient can plant certain plants according to the species specified in each cluster. making horticulture therapy a deeper part of the rehabilitation process, which is not just planting. but beautify their own balcony area





made of rope knitted to form a net overgrown with vines. slowly when this rope wears off with time, the plants will replace it by forming hard stems that follow the shape of a net

07

Design Evaluation

Design Schematic

Design Development

Conducting Simultaneously: Design with Simulation

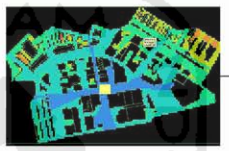
search for beautiful forms in nature using dynamic fluid simulations that often occur in nature

FLUID DYNAMICS - KARMAN VORTEX STREET

Form on site

Analyzing the space that created by visual barrier such as buildings and vegetation in certain position

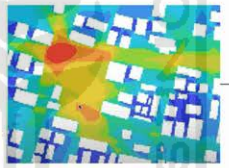
LINE OF SIGHT - VISUAL STEP DEPTH



Each vision in rendering

how the space visually connected all space in the footprint and to see the distribution of people, see where more people see & gather. so that design decisions in the design feature can be based on the movement of patient and based on the order that has been designed (master plan). due to the visibility and accessibility which are composed of fields the stimulation of Neuron can be maximize

VISIBILITY GRAPH ANALYSIS - VISUAL INTEGRATION



View of exterior - interior

Each position in the analysis will then simultaniously be seen in real time rendering as a consideration in the next stage of design exploration

to simulate the atmosphere in the closest conditions to the actual conditions of any previous explorations that have been carried out

REAL-TIME RENDERING

as an Aesthetic tester in Real figure

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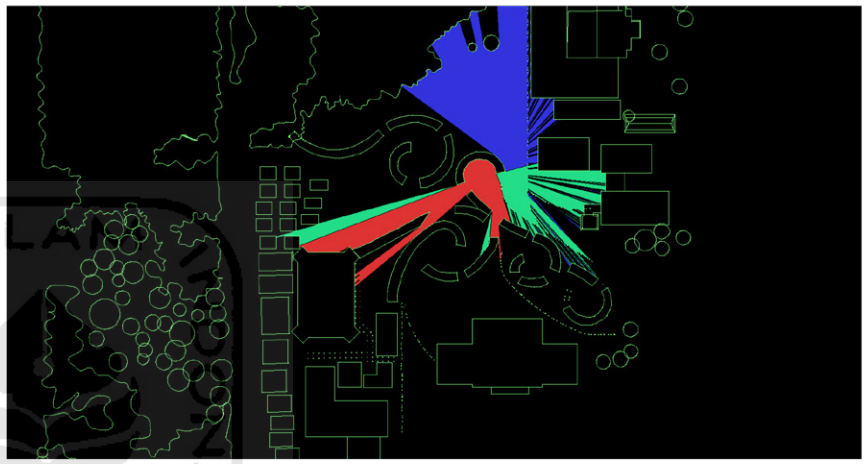
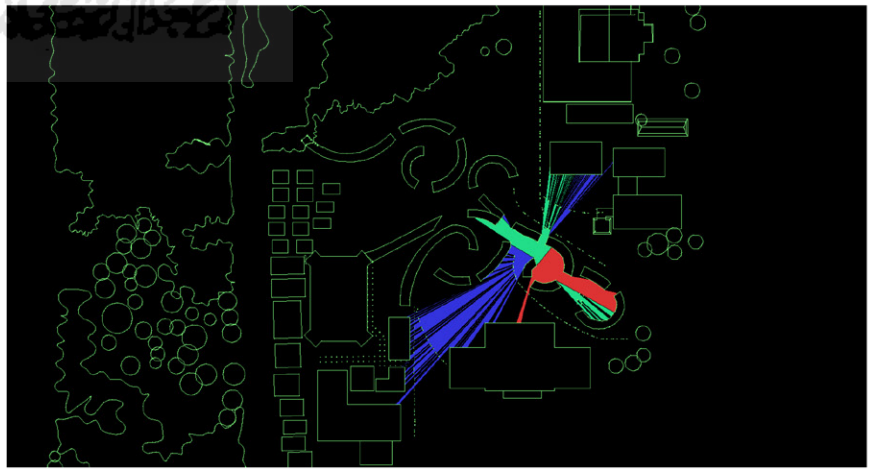
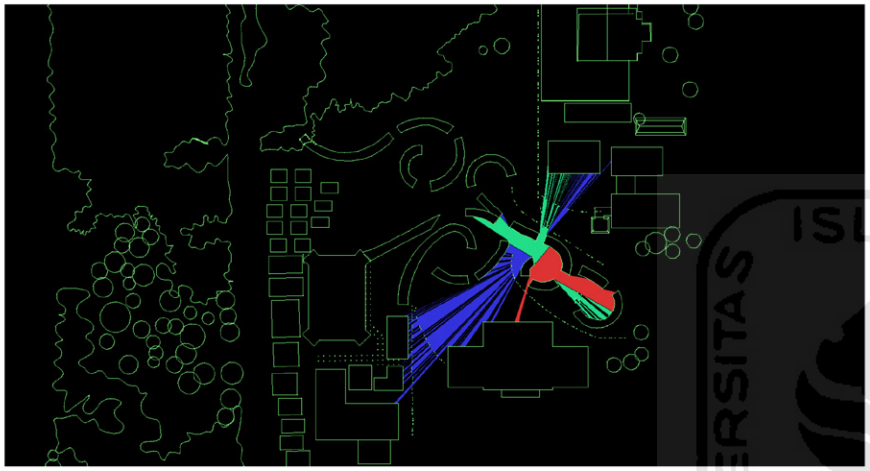
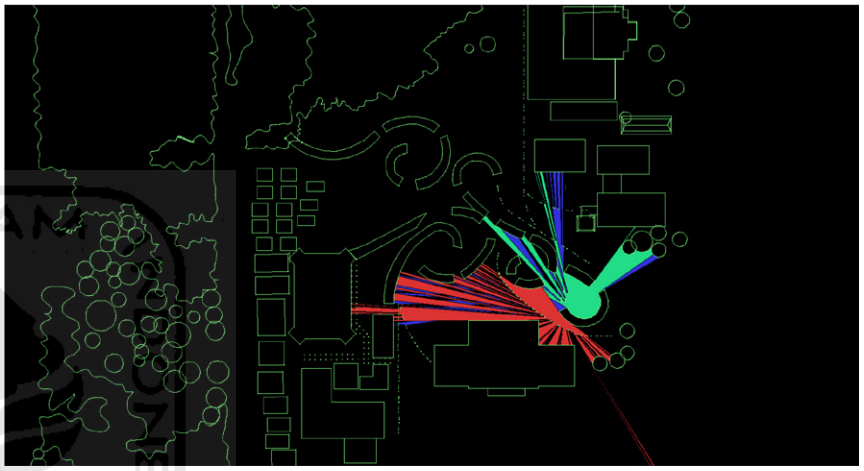
Space Syntax - Line Of Sight

In order to understand the nurse's perspective on a patient in a static condition in his office position



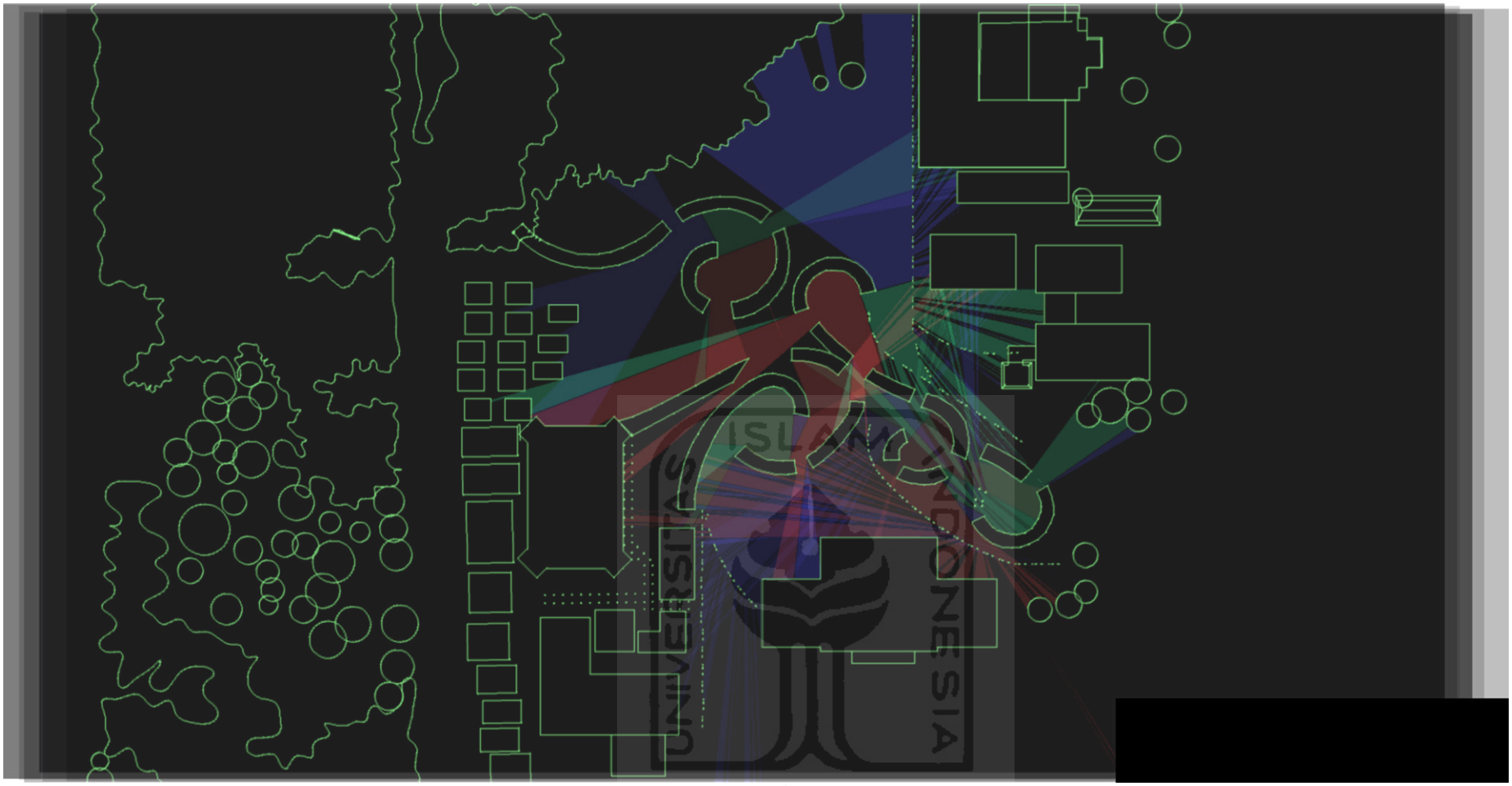






Every point of static movement in the Nurse position can View its own Cluster very well. From these results, it can be concluded that the position of the nurse who is in that position will be able to monitor patients in their own cluster

Visibility for Nurse to anticipate aggression based on Design Geometry on Site

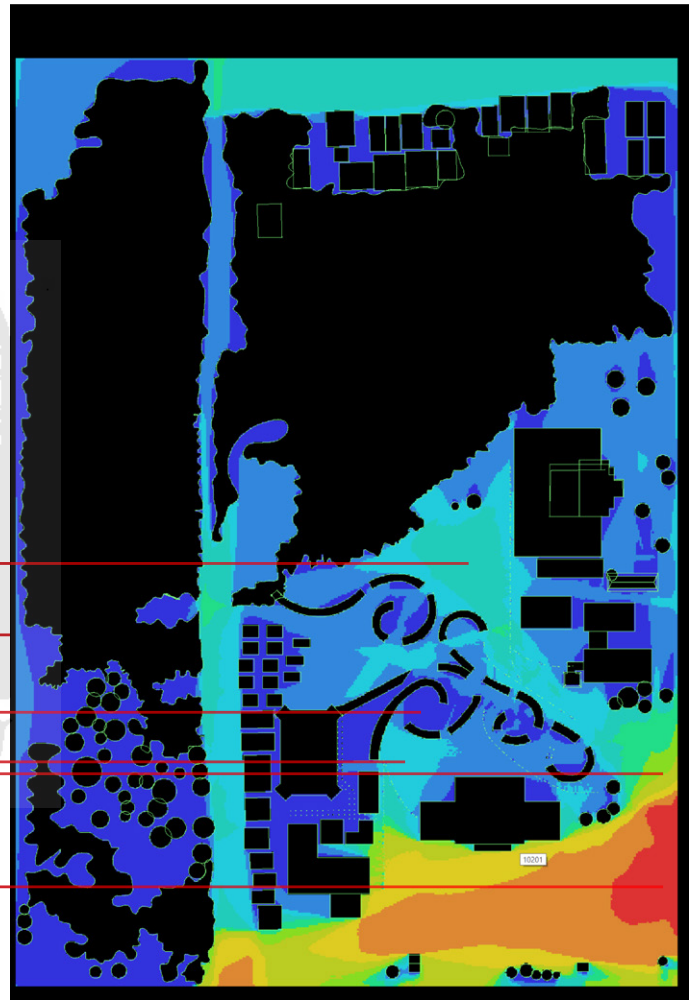


when the analysis on each cluster is superimposed, the results will be as shown in the picture

The results are then obtained static position points on nurses if each cluster is calculated and combined the results are able to **cover almost the entire area at the inpatient location**, **but certain points** in other surrounding facilities **such as offices and upip rooms** are **still not reachable** so it is **recommended to provide monitoring points on the area**

Space Syntax - Visual Integration

integration of the view from the Visitors & patient's side according to the geometric results of the building and the position of trees that can obstruct the results:



on this side it is quite effective in providing an empty point opening to escape from various activities

the visual integration on that side is rated ''medium'' meaning this position can flow views to various sides

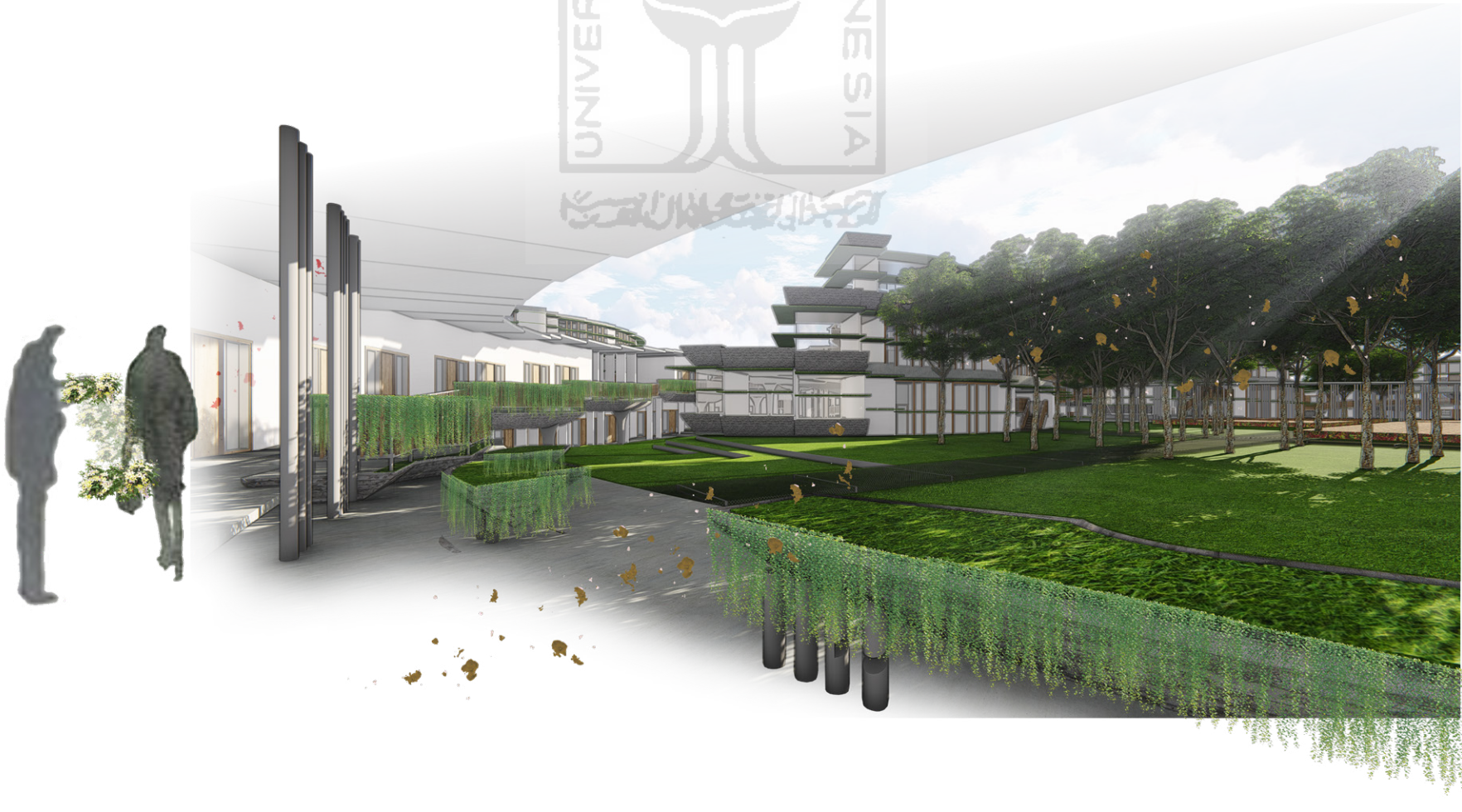
The room area for the **patient gets a private view** so it is considered good to maintain the stability of the patient if he/she wants to rest

The intensity of the integration of views is considered to be **layered while changing the position** of the point of view, this is considered good because it can produce a rhythmic viewing experience & this rhytmic is a good chance to provide image of Mental healthcare Institution Building

This dense area of view is recommended as an area that is easy for visitors to see. and positioning the parking lot in the area is deemed appropriate to facilitate accessibility and the value of openness from the institution image

08

Final Design



From Bus Station

starting when the patient comes to the psychiatric hospital area, the hospital view will be heeded by the flower field that is arranged. This flower is meant to give the site a taste, making it full of affection, a sense of worth and a triumphant path. as our minds think about images of flowers

After Registration

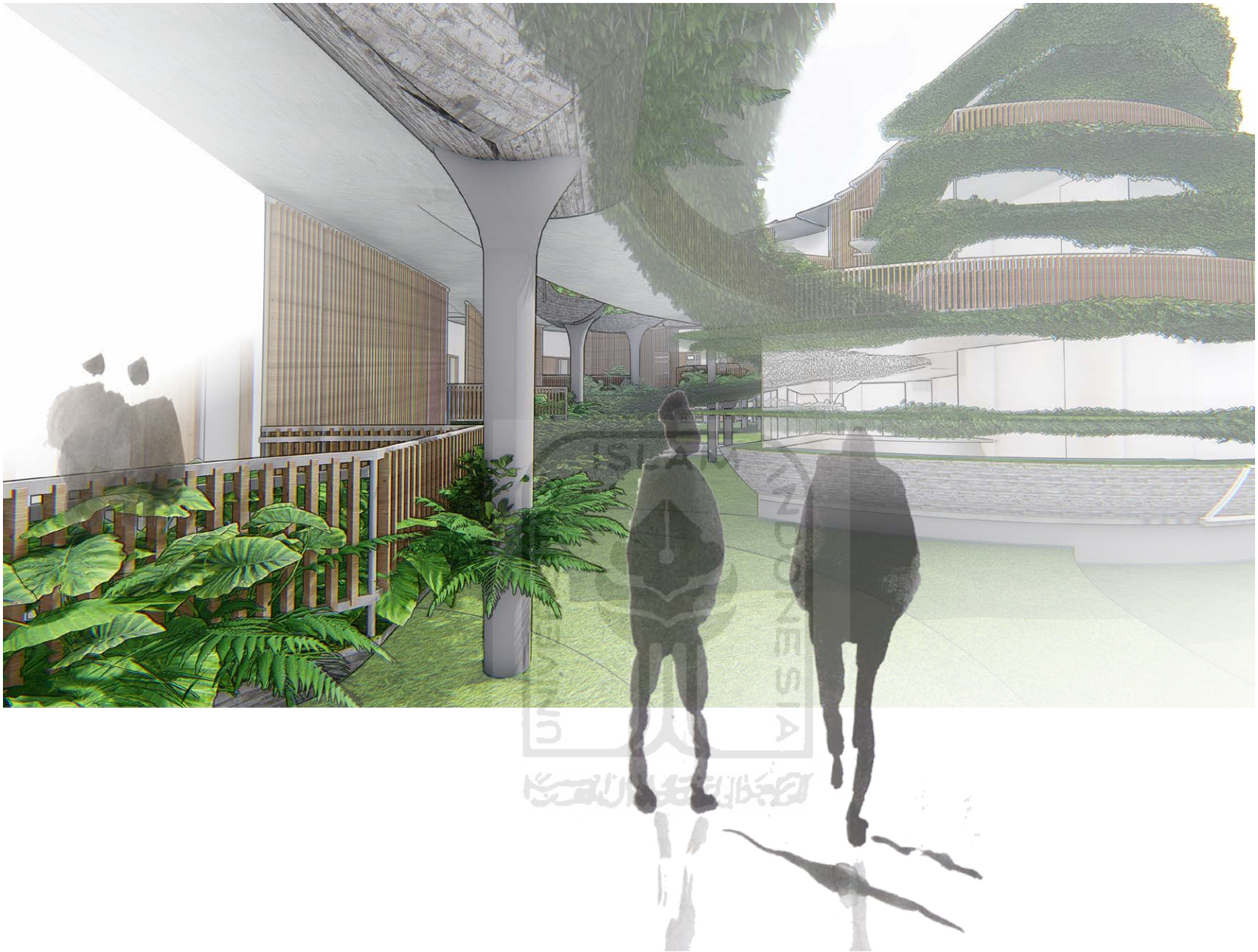
The flow of these flowers continues even after the registration process is complete, continuing to flow towards the ‘front door’ of the inpatient ward who blends in with the surrounding environment.

Enterance to Inpatient Ward

The entrance area is guided and accompanied by natural patterns that have previously been explored, which is expected to be able to provide a consistent flow of natural beauty from the initial entry of the site to the part of the building.

Courtyard

after the flowers are passed, there will be bowls containing beautifully arranged plants. such as the presence of vernonia elliptica which unites with the vertical elements on the fence, arranged in branches and gathered together to form a beautiful harmony for visitors and patients who enter the courtyard area.



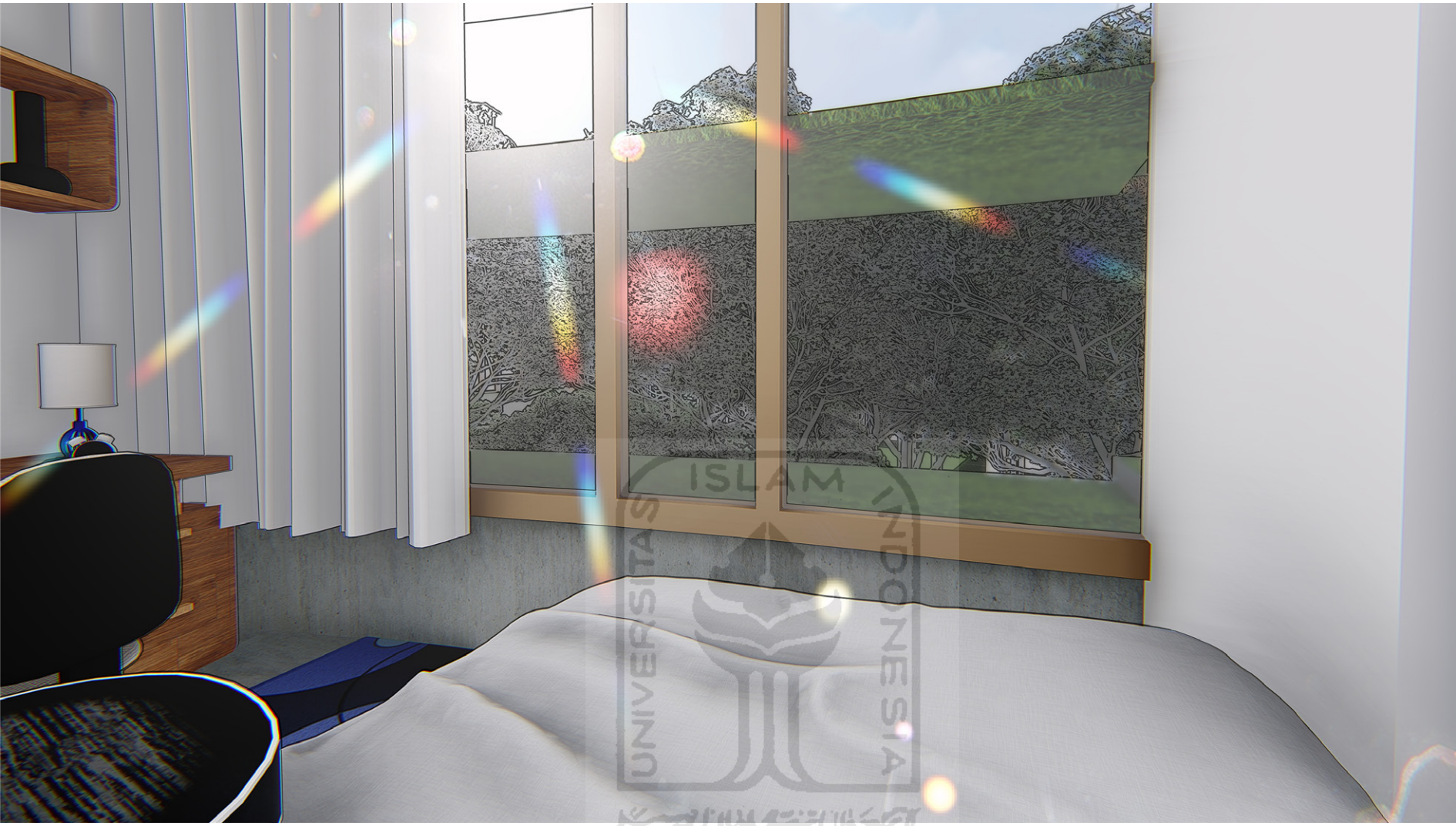
from the courtyard these elements lead the patient to his room, helping to keep calm with planned patterns.

to the Inpatient Bedroom

The synchronization between each pattern blends with each other following a flow curve, guiding the patient to his room in their respective clusters. This synchronization pattern makes it easier for patients to receive visual information and triggers the beauty of each side of the room

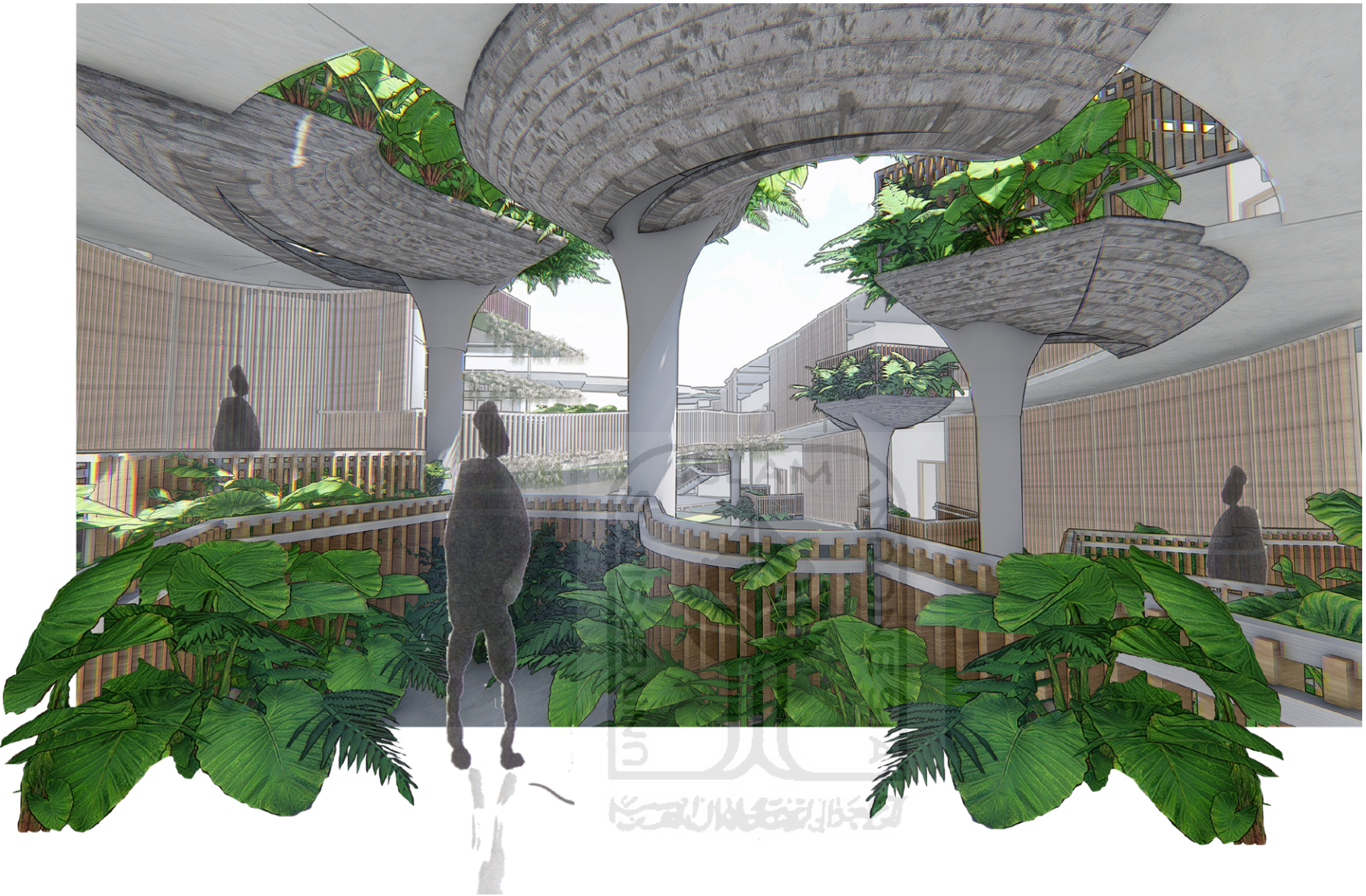
Bedroom Interior Perspective

when entering his room, the patient is in an environment that he can manage himself, the natural element that previously existed side by side with the patient are now reduced to avoid overloading the natural vision. The nature game here is only located in the window facing the outside view where many individual trees are playing.



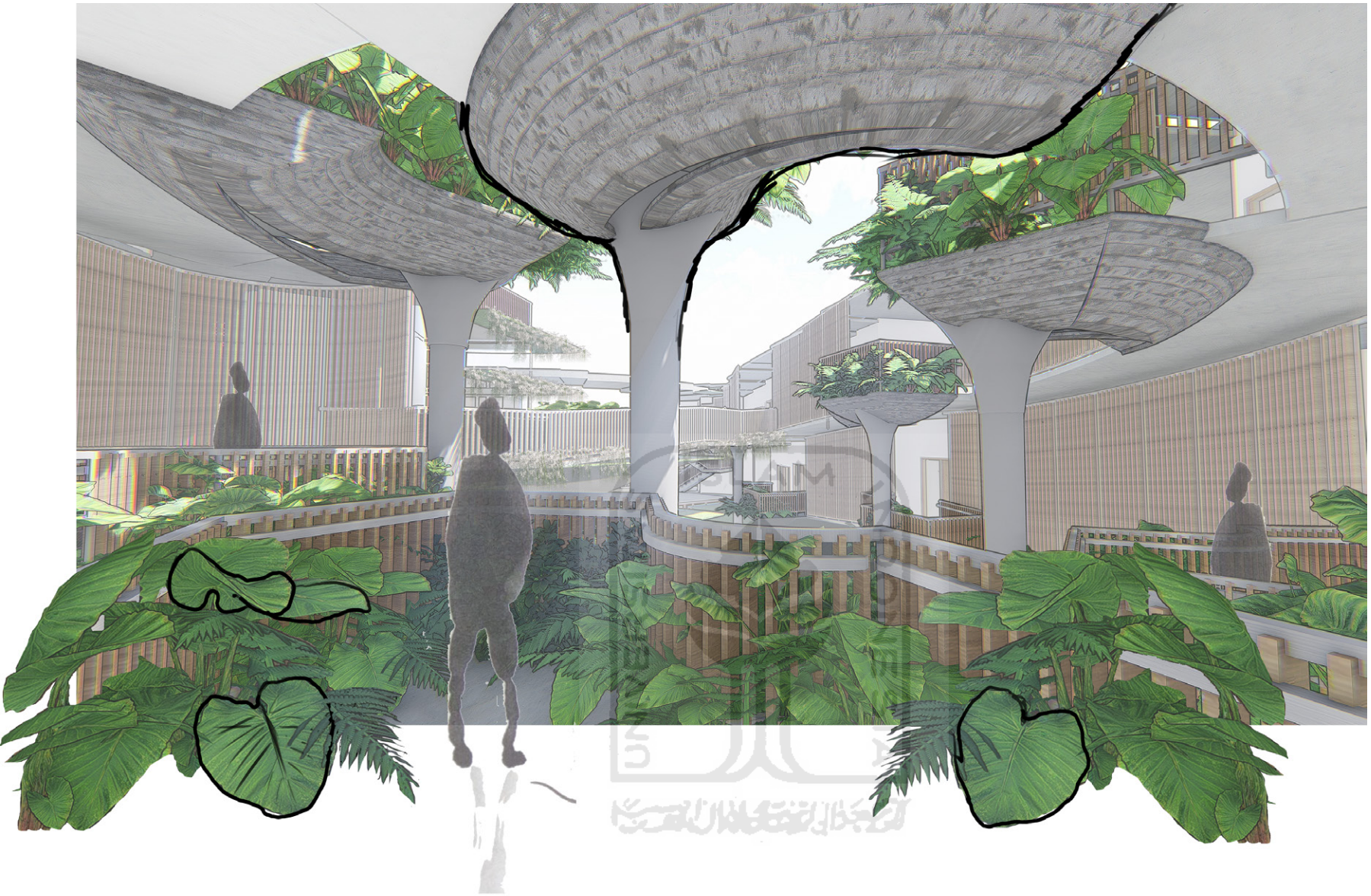
Bedroom Interior Perspective (wakeup moment)

when the patient wakes up, it is hoped that the natural scenery can calm the patient with the beauty of the shape and natural order with the cool morning sun and give the spirit to be excited again for today’s activities.

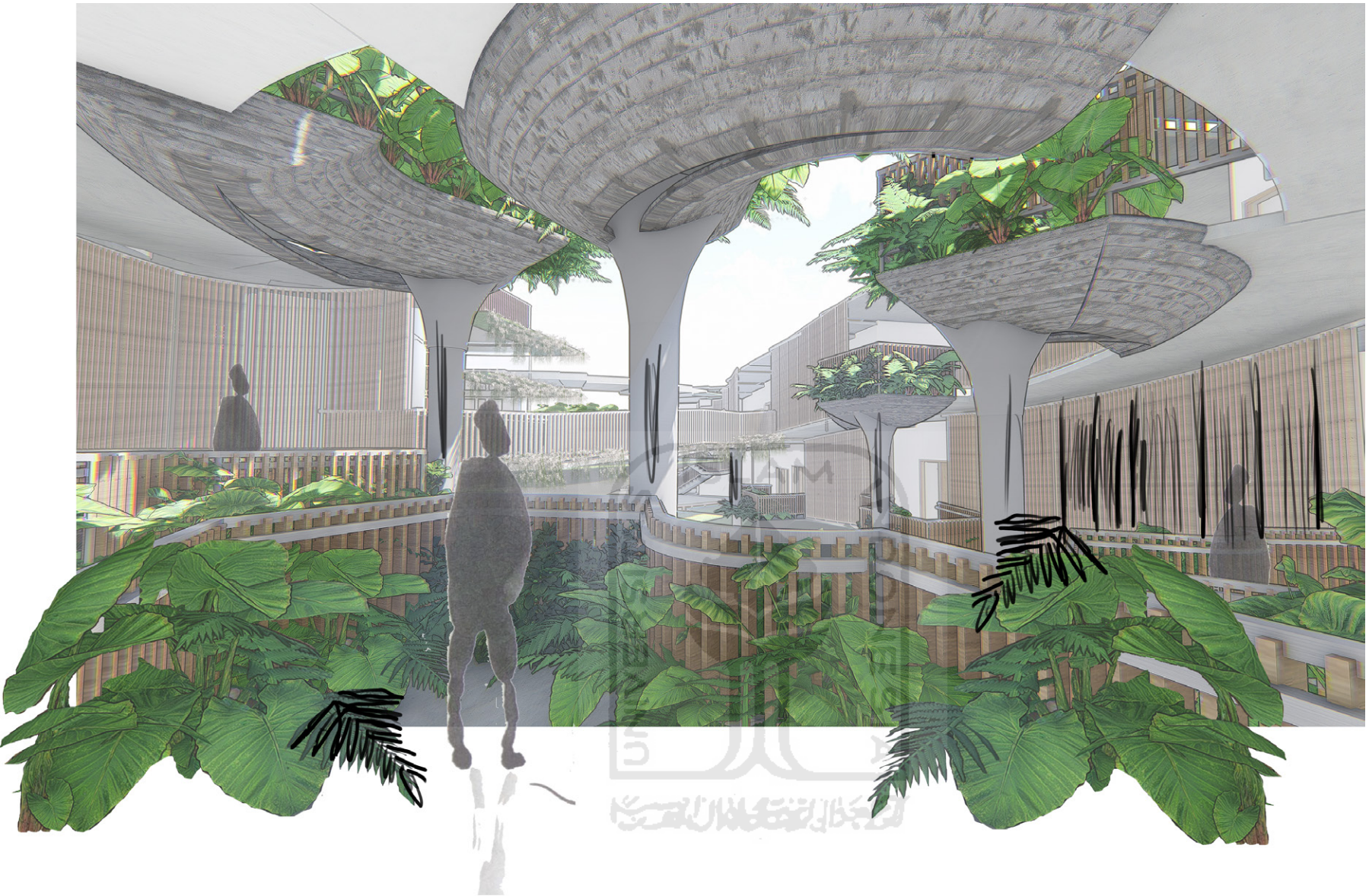


Balcony in Front of the Inpatient Bedroom

After waking up, patients can use the balcony as an area to cool off, relax and socialize.

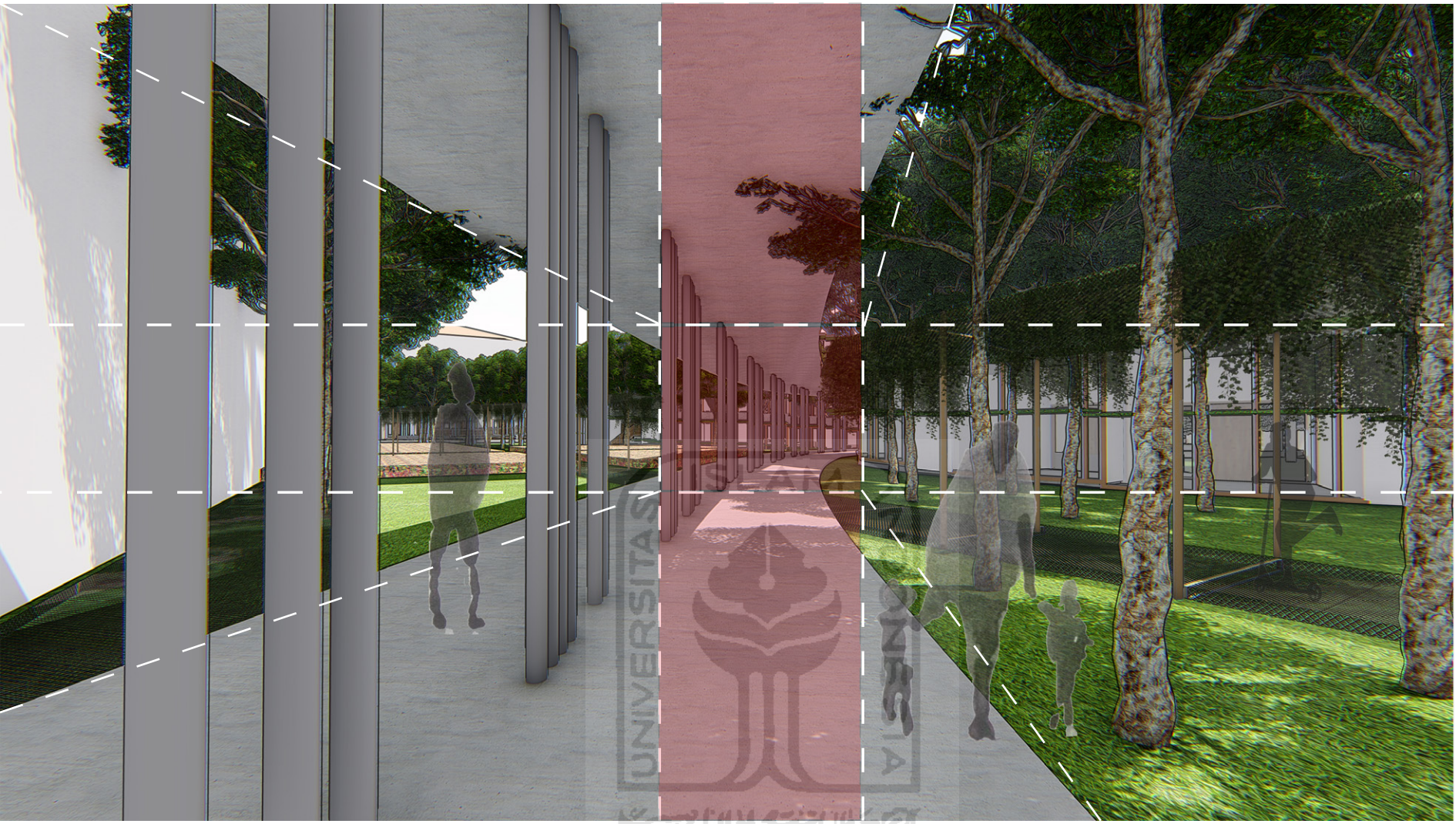


the arrangement of forms on the balcony adjusts the shape of the plants planted around the balcony, forming integrity and synchronization to form a beautiful harmony between the building and the landscape for patients to be active around them. bind the vision of the beauty between beautiful buildings and beautiful buildings.



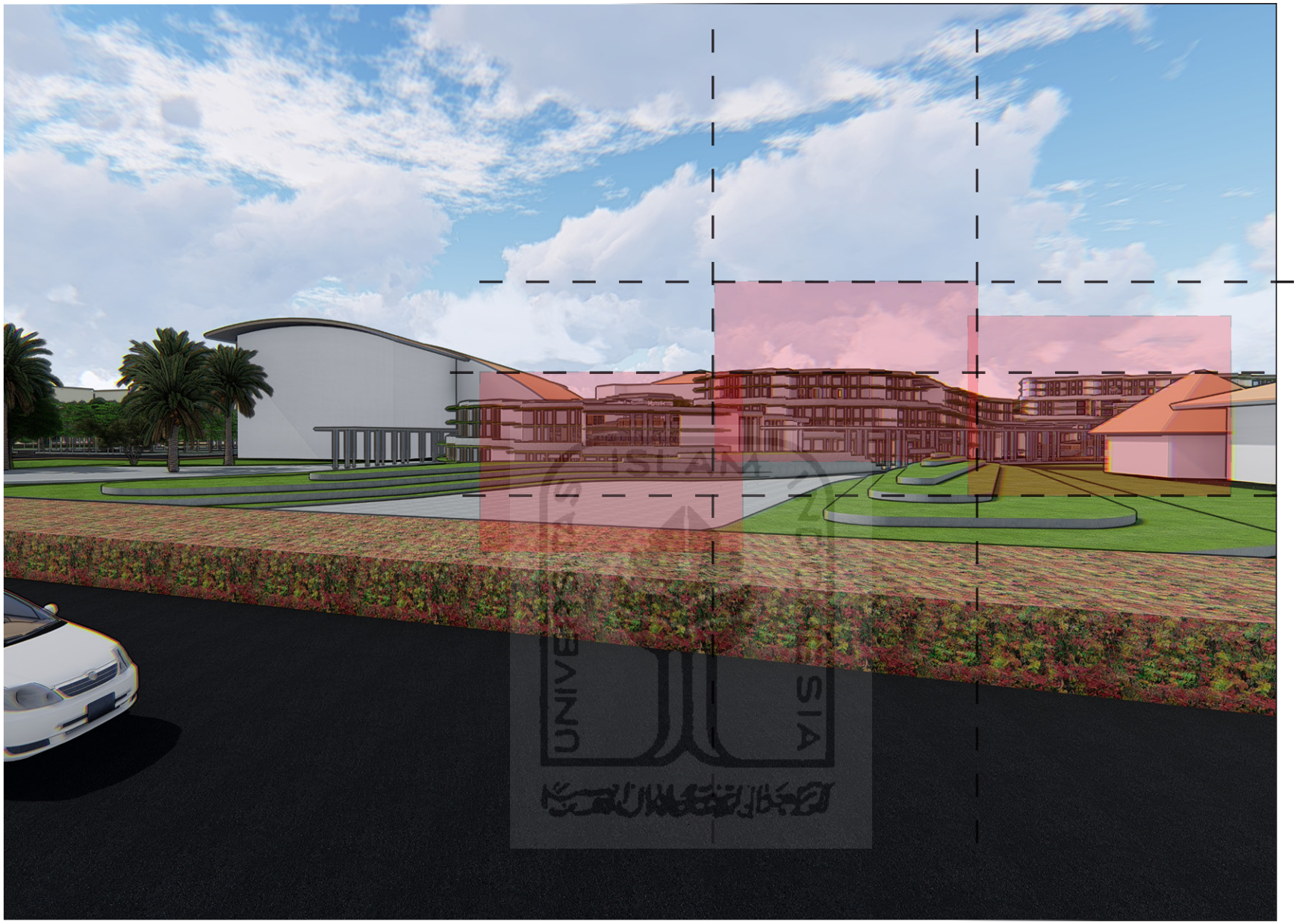
Corriodor

This pattern blends with the vertical shape of the tree trunk, creating a beautiful harmony and rhythm of colliniarity where one pattern is tied to another pattern that is easily accepted by the brain, much like how our visual system works in adjusting information. similar to when we listen to music, the neurons in our brain actually work in the exact same pattern that we hear when we hear it



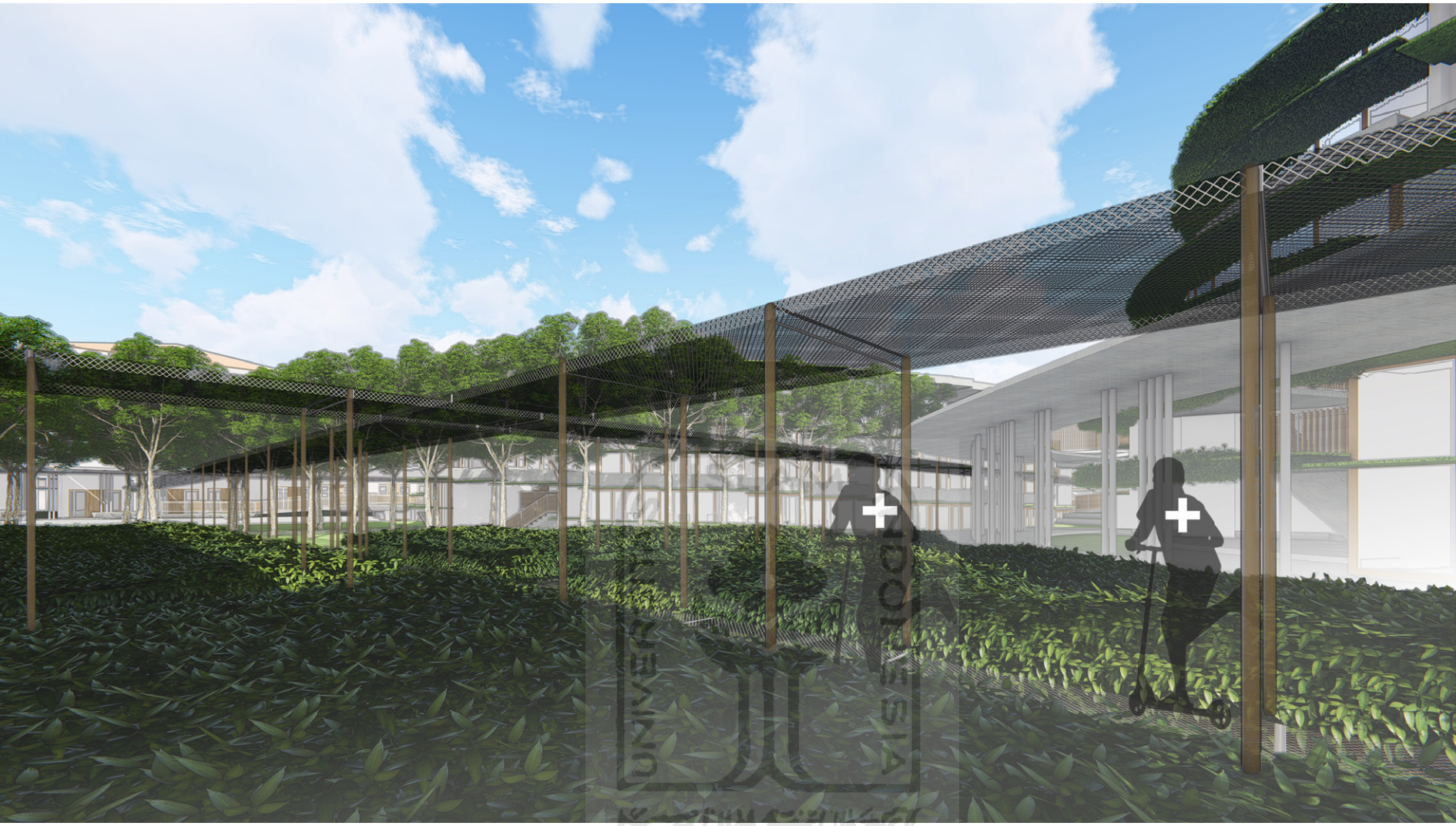
3x3 Compisotion in Design

when going to the patient’s room, they will be guided by the patterns of pillars in the 3x3-shaped corridor that recall the memory of affection created when our eyes are opened to identify our parent



The 3x3 composition that is visible from the outside, gives a very blend facial pattern with contour and flow into the city street

The resonance of these patterns continues, blending the building and nature. to every point in the patient's activity area in the rehabilitation process.



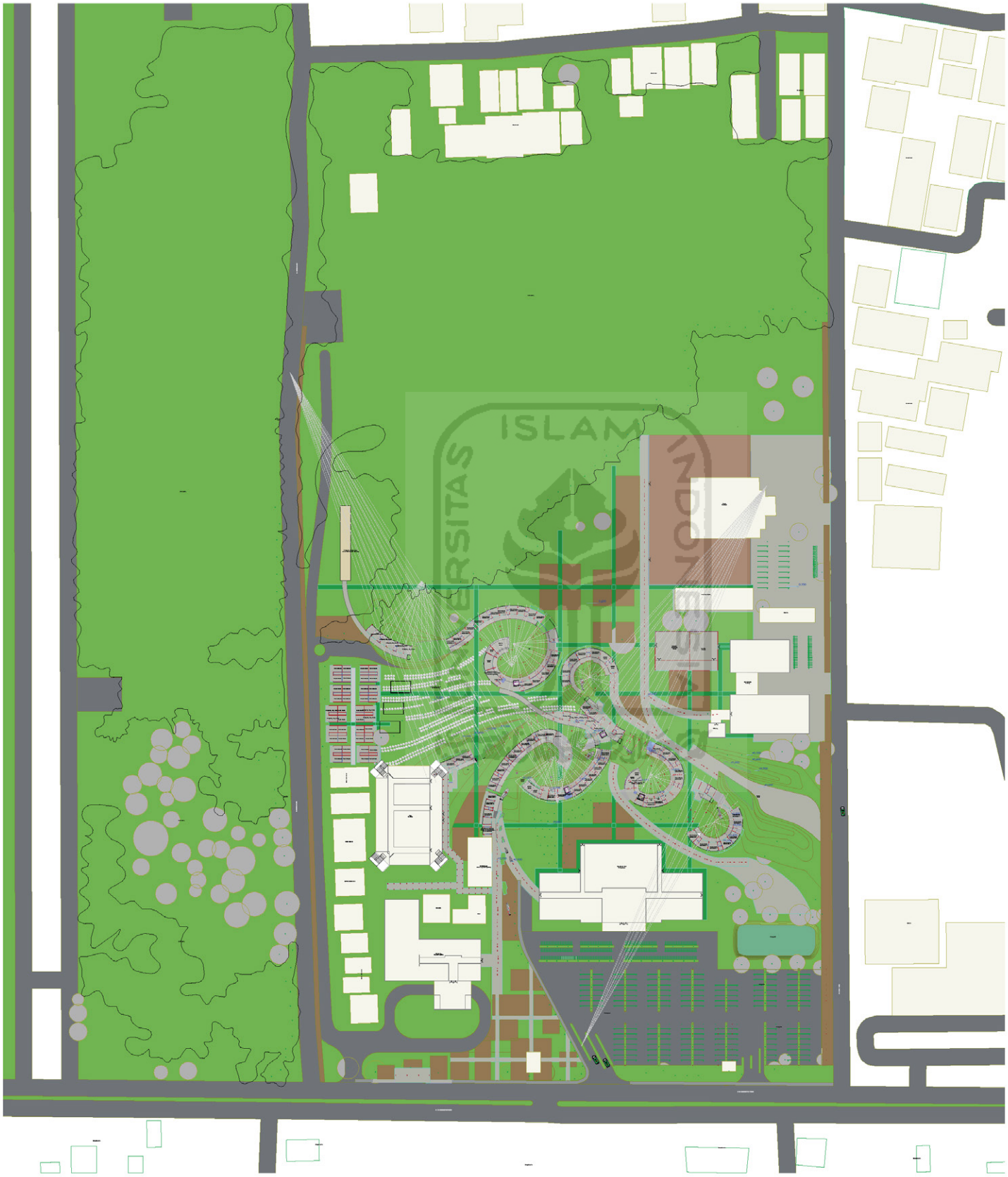
A special lane for nurses that can be passed without disturbing the area where the patient passes so as not to disturb the patient’s calm when walking on his own path

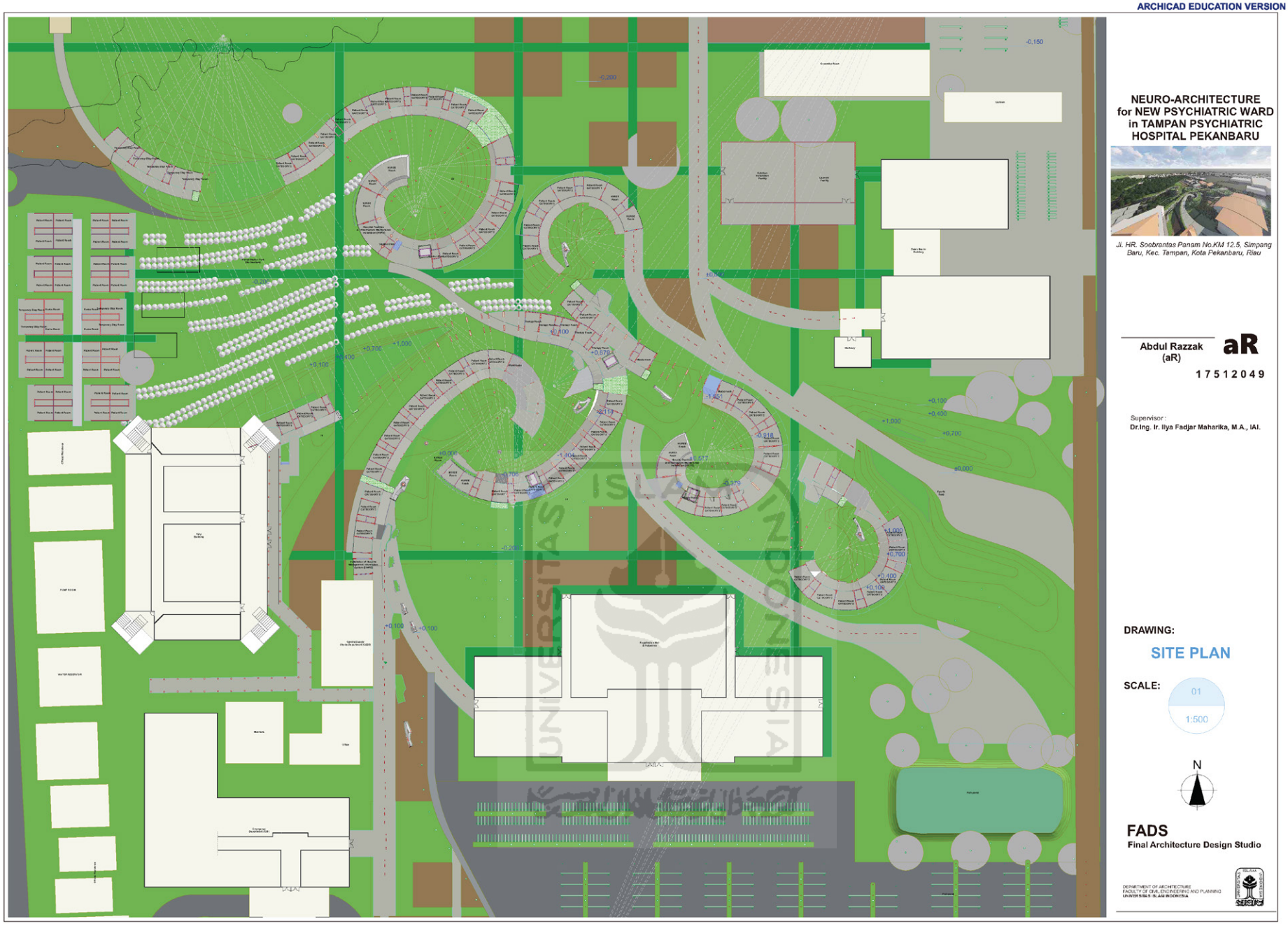
Site Vista

From the outside community's view of the mental hospital area, the building tries to present a good impression with openness that presents patient activities accompanied by a beautiful environment. changing the mental hospital view that is closed and seems too protective of patients without trying to synchronize patient activities with community activities

when patients go home, they can bring the plants they like as a form of remembrance which will also be part of the outpatient process at home accompanied by beautiful positive distractions. This is possible because the building's efforts to try to create a beautiful environment can be stored in the beautiful patterns in the plants that we previously tried to integrate.

Site Plan

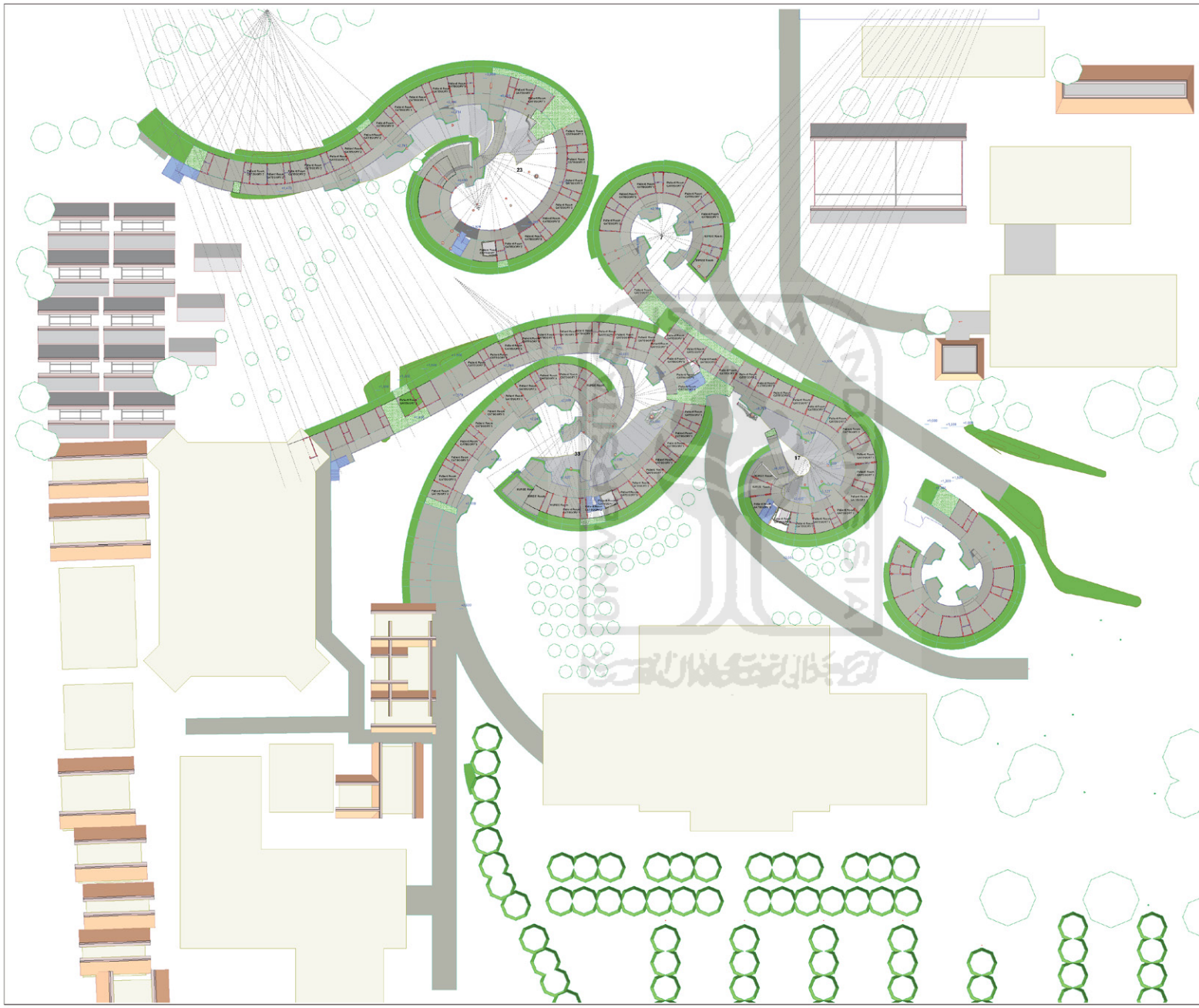




Unit Capacity Calculation
BOR (Bed Occupancy Rate) formula = (Number of days of hospitalization / (Number of beds x Number of days in one period)) X 100%

Ideal target of Tampan Psychiatric Hospital = 80%
BOR = 200 patient per-day x 30 days in one month / 250 beds x 30 days
BOR = 6000 / 7500 x 100%
BOR = 80%

in summary they need 250 bed more or less, we already **provide 268 beds including new temporary accomodation for patient return to achieve this performance**



NEURO-ARCHITECTURE for NEW PSYCHIATRIC WARD in TAMPAN PSYCHIATRIC HOSPITAL PEKANBARU

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SCALE:

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1:500

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NEURO-ARCHITECTURE for NEW PSYCHIATRIC WARD
in TAMPAN PSYCHIATRIC HOSPITAL PEKANBARU

Jl. HR. Soebrantas Panam No.KM 12.5, Simpang Baru, Kec. Tampan, Kota Pekenbaru, Riau

Abdul Razzak
(aR)
aR
17512049
Supervisor : Dr.Ing. Ir. Ilya Fadjar Maharika, M.A., IAI.

DRAWING: **Elevation A**

SCALE: **1:500**

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DRAWING: **Elevation D**

SCALE: **1:500**

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17512049

Supervisor : **Dr.Ing. Ir. Ilya Fadjar Maharika, M.A., IAI.**

DRAWING: **Elevation B & C**

SCALE: **1:500**

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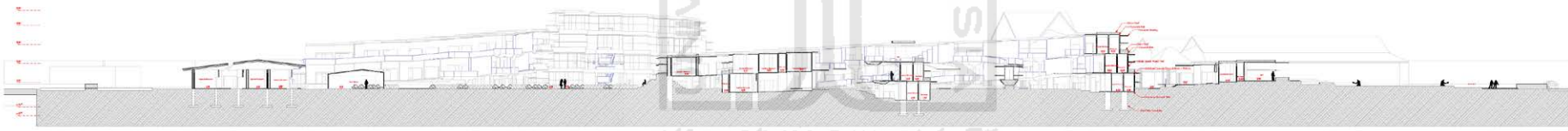

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aR
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Supervisor : Dr.Ing. Ir. Ilya Fadjar Maharika, M.A., IAI.

DRAWING: **Section A - A**

SCALE: S-02 1:500

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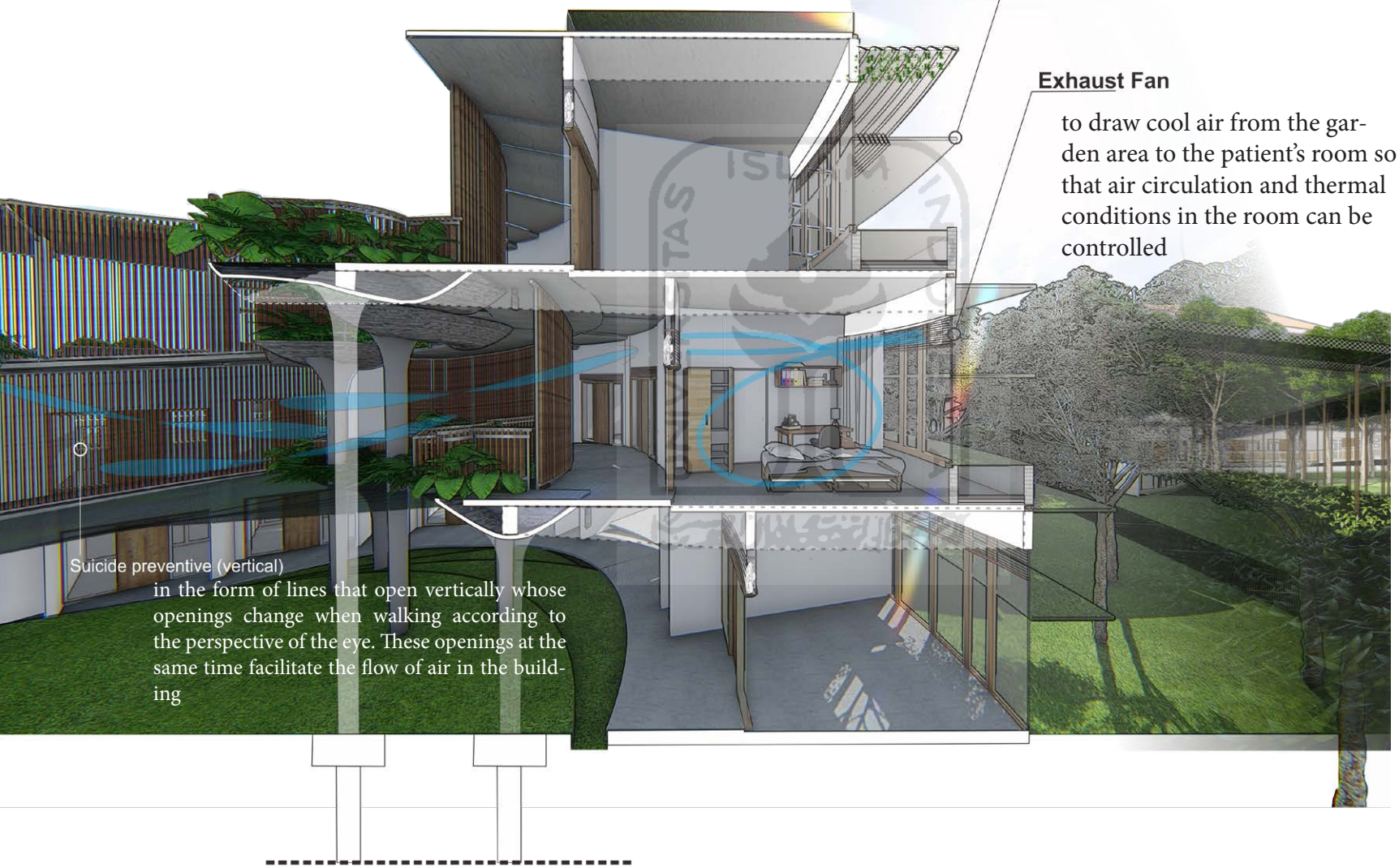
The porous horizontal shading provides an opening for hanging vines when we can to protect the building from direct sunlight

This retractable shading can be pulled back and forth to simplify the maintenance path process on the building

Retractable Horizontal Shading

Exhaust Fan

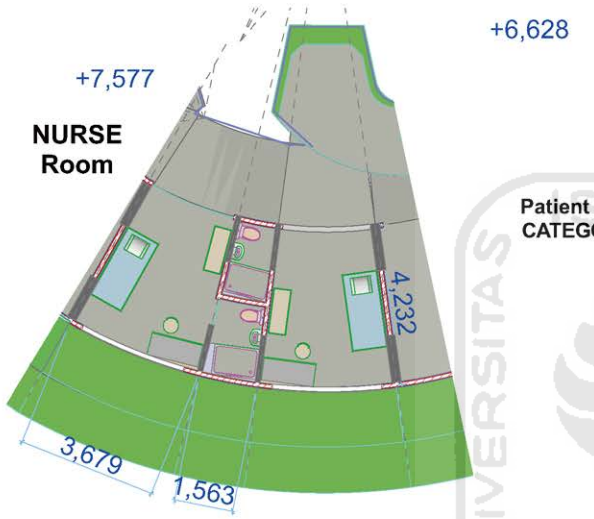
to draw cool air from the garden area to the patient's room so that air circulation and thermal conditions in the room can be controlled



Suicide preventive (vertical)

in the form of lines that open vertically whose openings change when walking according to the perspective of the eye. These openings at the same time facilitate the flow of air in the building

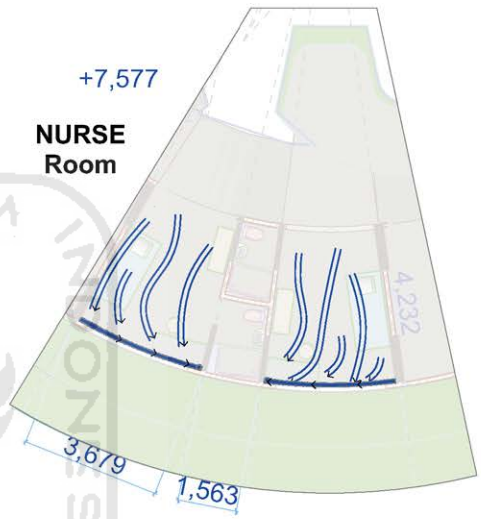
Patient Room Category 2 & 3



03
1:100

N

Patient Room Category 1

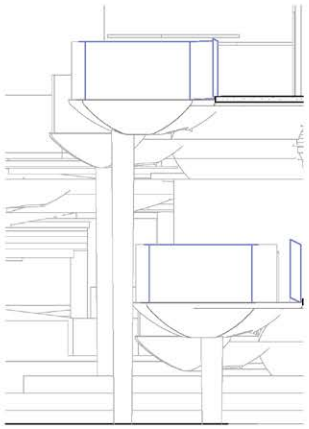


03
1:100

N

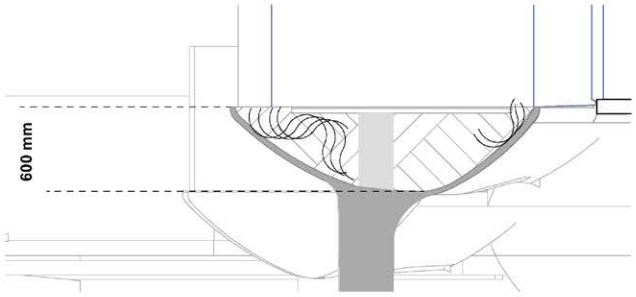
Additional DRAINAGE:

In case if there is an emergency in need to clean off the floor, which is where this drainage system will simplify the cleaning process



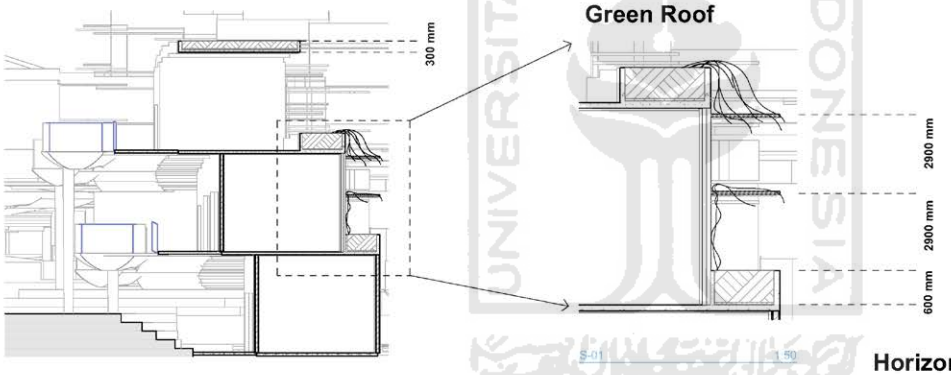
S-01 ELEVATION 1:50

FEATURE; BOWL OF NATURE



S-01 SECTION 1:20

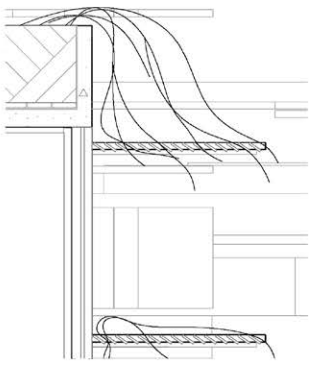
FEATURE; BOWL OF NATURE



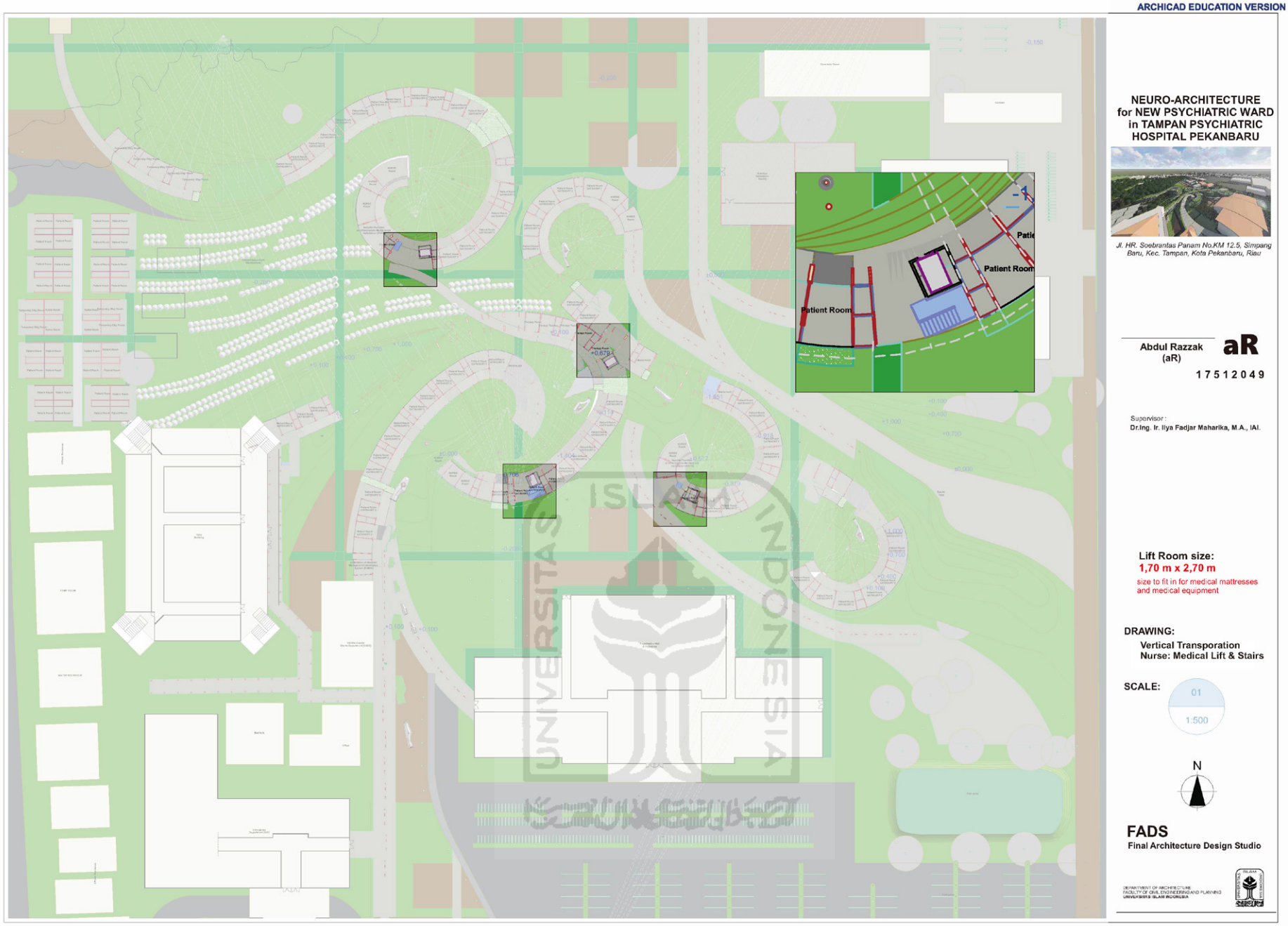
S-01 1:100

Green Roof & Horizontal Sun Shading

Horizontal Sun Shading



S-01 1:20



sistem grid yang direncanakan bersentuhan dengan titik akses vertikal untuk lift medis serta tangga. dimana lift yang digunakan adalah lift medis yang dapat dimuati kasur dan peralatan medis dengan ukuran 1,7 x 2,7 meter.

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Assembly Point in
open space 45 meters radius

DRAWING:
Evacuation Point

SCALE:
01
1:500

N

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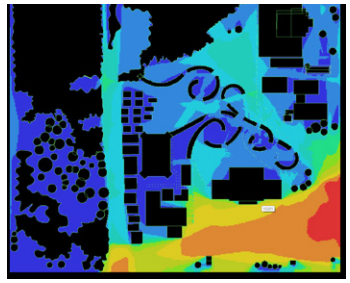
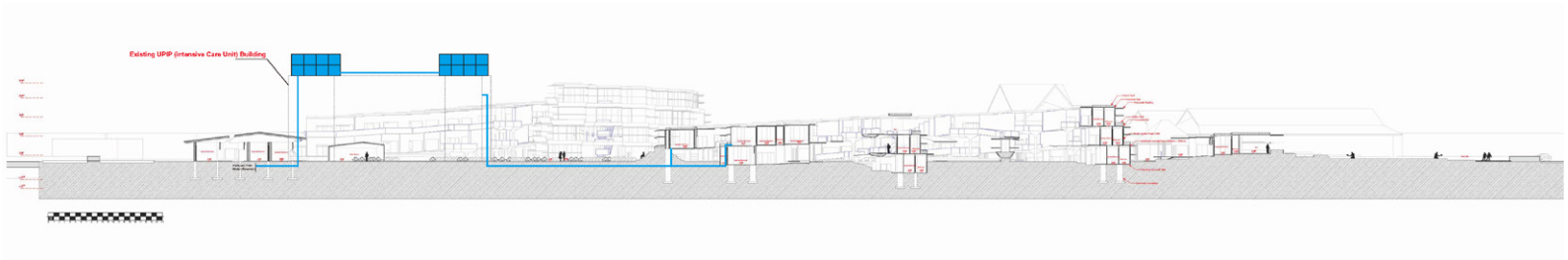
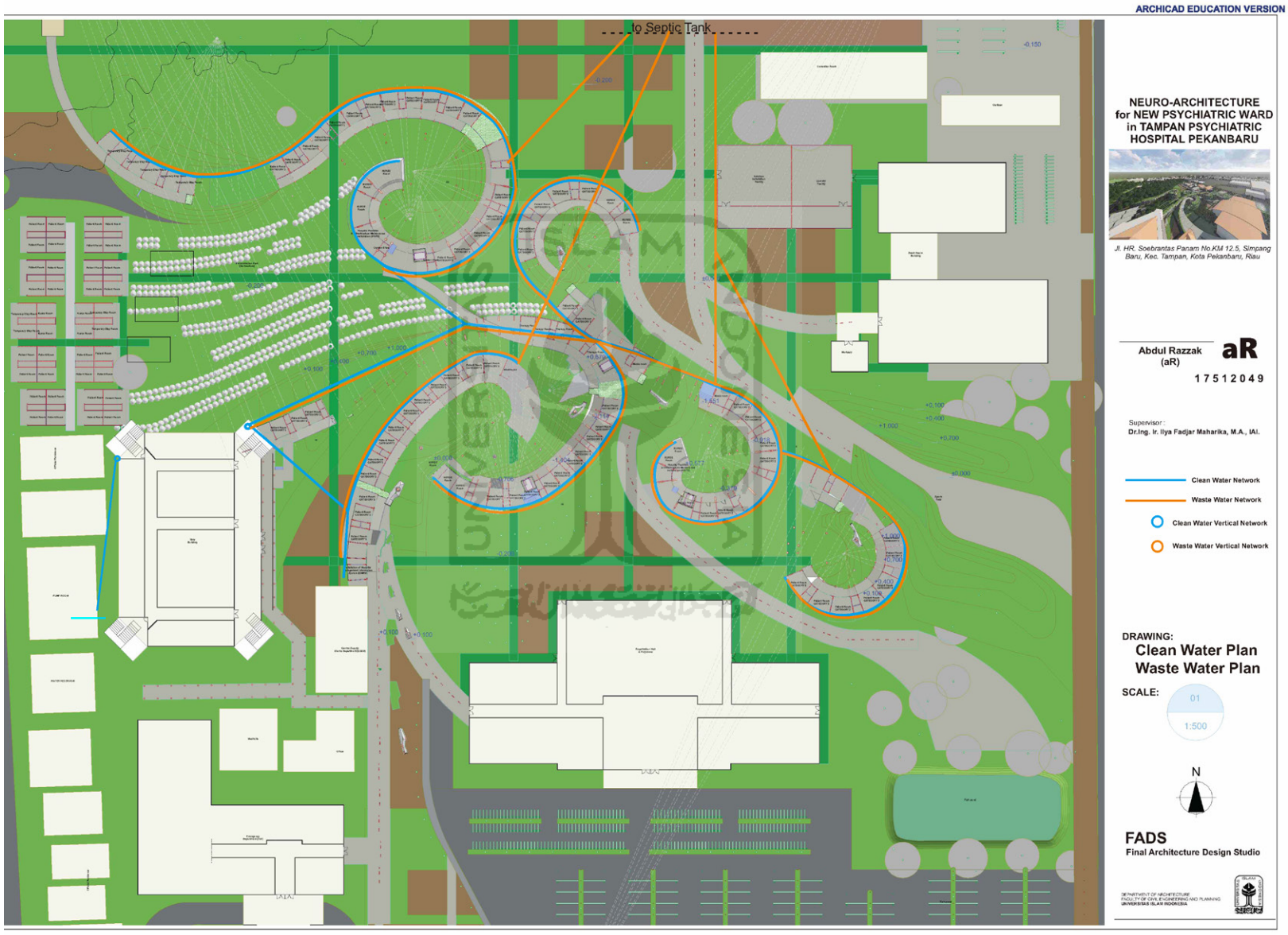
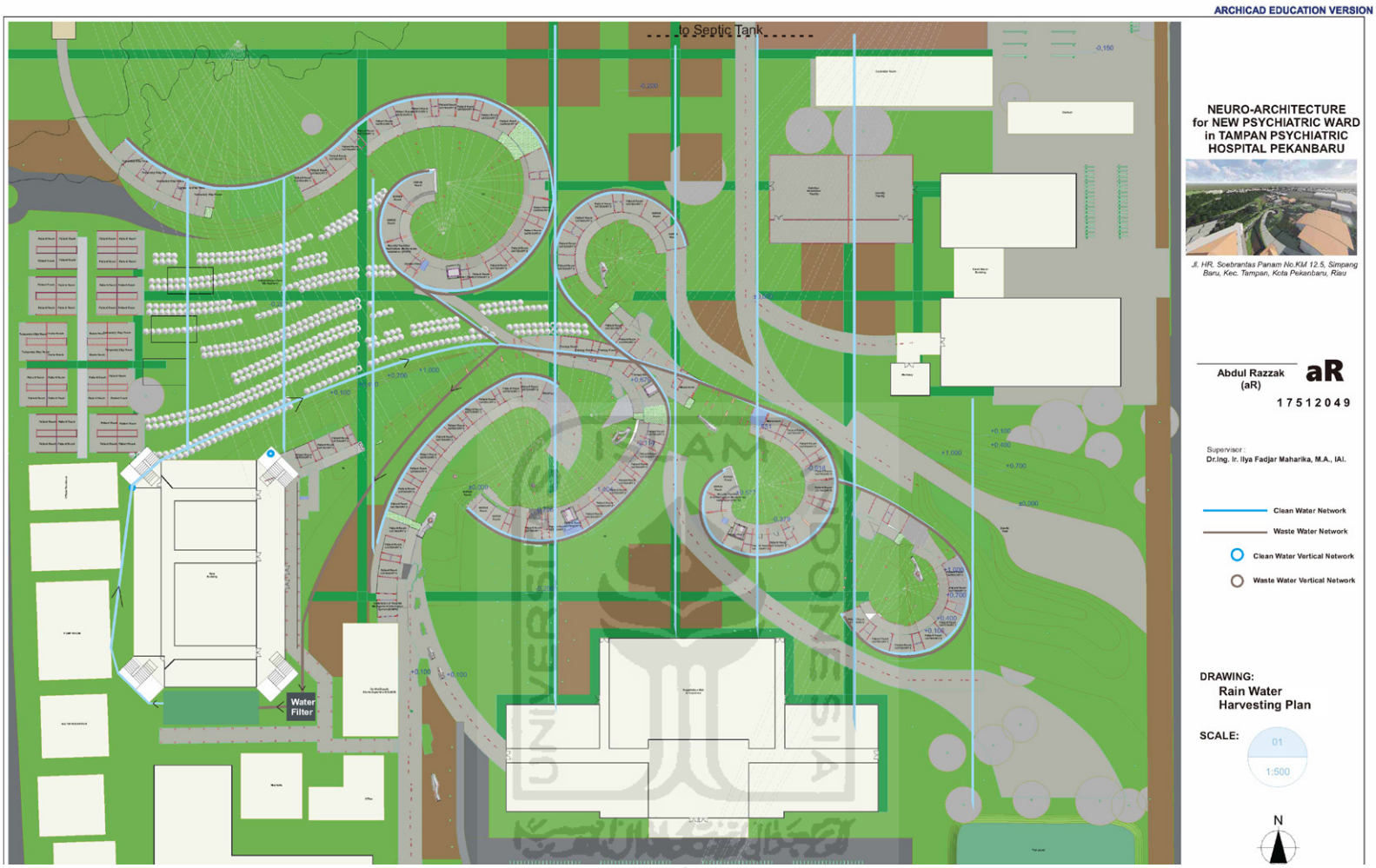
PUPR Ministerial Regulation No. 14 of 2017 concerning Requirements for Ease of Building Buildings. clearly identified, marked, and easily visible. Workers and all people in the company environment can get out of the building more quickly to a safer place that has been determined by the company's emergency response team. and based on visual integration analysis with the use of space syntax, the specified location is a location that is easily readable from any access







The flow of the clean water system uses the Down Feed System which uses the existing pump location system and is then accommodated on the rooftop of the existing building with a height that is able to balance the water pressure for a 4-story building in an inpatient building to facilitate water needs at different time variations.



water supply for watering plants using rainwater is filtered, collected and then pumped to the points of the garden area both horizontally and vertically at certain hours when watering is needed, thus helping the garden maintenance process.

09

Jury Comments and Explanations


elped our ancestors
Why Beautiful Things Make us Happy – Beauty Explained
Why Beautiful Things Make us Happy – Beauty Explained

9.1 Explicit Explanation of what is Neuro-Architecture

by Jury 1: Ir. Wiryono Raharjo. M. Arch., Ph.D

Neuro-Architecture

A new awareness of the complexities of cognitive and emotional processes involved in everyday experiences of the designed environment Through understanding how the brain responds to certain patterns, shapes and rhythms in architecture.

Beauty on Neuroscience

Beauty, which is the result of understanding physical and mental forms is believed to reduce stress triggers aggression in patients. What is considered beautiful is something whose characteristics are very close and rooted in nature. referring to Beauty on Neuroscience, the research also shows that humans unconsciously like nature and elements that are closely related to nature, this is indicated by interest and reactions to certain patterns & rhythms related to nature.

this happens because of the evolution of our ancestors who associate these natural patterns with safety, security, well-being, and survival. The thought evolved into a form of happiness that was identified through a part of the brain system to monitor the goodness in experiencing aesthetic qualities. This aesthetic judgment still functions even when other brain functions stop functioning. (Andrea R. Halpern, et.al, 2008)

so it is hoped that the creation of certain patterns and rhythms that represent these natural characteristics can create physiological reactions and feelings of pleasure that can release oxytocin, endorphins, and DHEA which strangles the sympathetic nervous system which commands the stress position (Natalie Ricci, 2018).

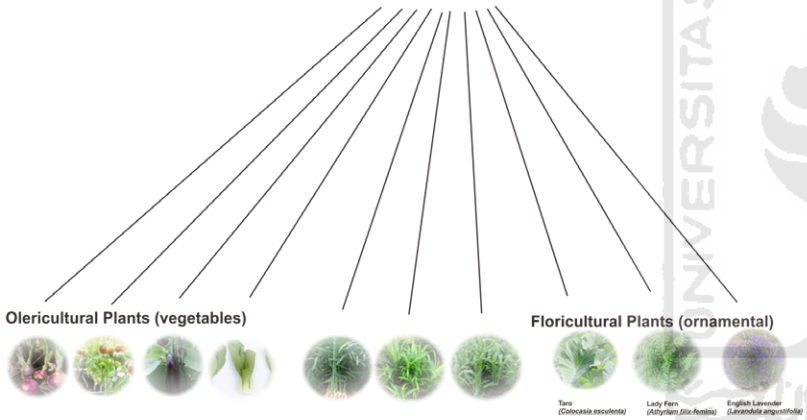
9.2 How to Manage Constrain with Plantation

by Jury 2: Dr. Ir. Revianto Budi Santoso, M. Arch

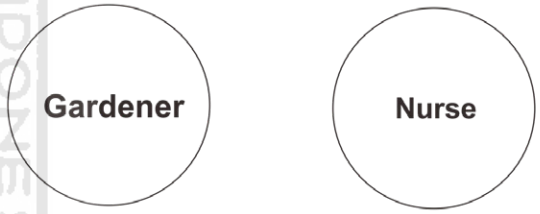
actually the plants are managed by the patient and the gardener, so the placement of the plants is not done entirely by the gardener. This program is also part of the Horticulture rehabilitation program process, however the plants planted by the patients are plants that are easy to grow and easy to reach.

Horticulture x Beauty

Plant were grows with and by patient
as Horticulture Therapy Program

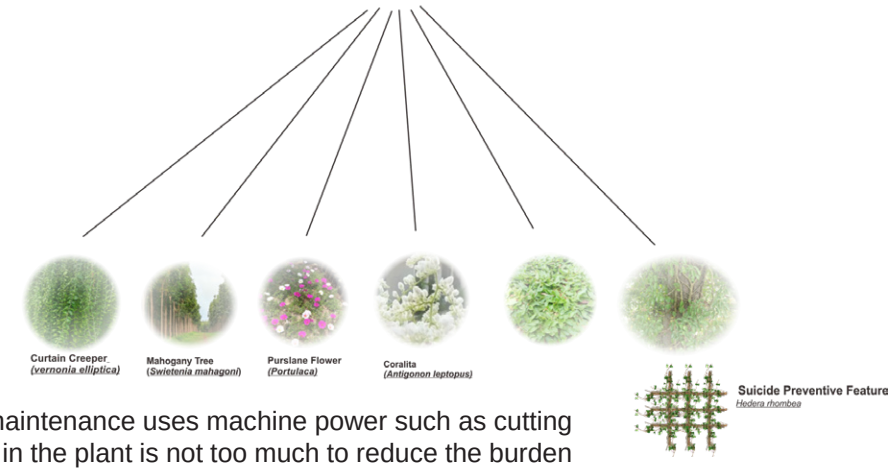


Gardener & Nurse



The gardener here also acts as a nurse for the patient, which is to provide good land for planting sketches.

Meanwhile, the nurse pays attention to how the patient is progressing in each rehabilitation process



the gardener takes care of the plants whose maintenance uses machine power such as cutting grass and large plants. the number of species in the plant is not too much to reduce the burden on the gardener, but rather planted in groups to get its beauty and make it easier to maintain

Some of the parts that will be done by the gardener are the shading plants, grass and vines.

This retractable shading can be pulled back and forth to simplify the maintenance path process on the building

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