Campus Design of Shanto Mariam University of Creative Technology

Showcasing creativity through urban lens

By

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A thesis submitted to the Department of Architecture in partial fulfillment of the requirements for the degree of
Bachelor of Architecture

Department of Architecture
Brac University
August 2019

Declaration

It is hereby declared that

1. The thesis submitted is my/our own original work while completing degree at Brac University.
2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I/We have acknowledged all main sources of help.

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Approval

The thesis/project titled “Campus Design of Shanto Mariam University of Creative Technology” submitted by Tasnia Naila Rahman (14108023) of Summer, 2019 has been accepted as satisfactory in partial fulfillment of the requirement for the degree of Bachelor of Architecture on August 08, 2019.

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Abstract/ Executive Summary

In the recent years the government of this country of Bangladesh has made it a mandate upon all forms of universities of this country to function within a permanent campus of their own given the dire need of it. However, not all universities have the equal scope or opportunity to be able to avail a favorable site be it in terms of size or land price. At present, land prices in Dhaka are soaring to new heights every now and then, therefore it makes all the more difficult for universities to acquire desirable or adequate site areas. The rising population being another crucial factor, leads to more lands being developed as residential areas to accommodate the people. Therefore, universities have to be able to adapt to thrive within limited land space at the same time being in harmony with surrounding residential context.

The project of the permanent campus for Shanto Mariam university of creative technology is set to be designed within a context similar to the above mentioned scenario. The aim of this project was to design a campus within a limited site and rather create a cultural community hub for the surrounding dense residential areas while at the same time showcasing the creative persona of the university and its activities leading to cultural enhancement. In an attempt to do so, issues such as mobility and facilities for the public have been given keen attention to in order for the university to act as a breathing ground for the surrounding areas as well as adding value to the residential area.

Keywords: University; Creative technology; Cultural community.

Acknowledgement

This project for me began with quite a number of major personal setbacks in life continuing till the very completion of it, however it would have been next to impossible to draw a conclusion to it without Allah Almighty's grace and miraculous interventions.

Secondly, my sincere and utmost gratitude goes out to my course instructors, Mohammad Habib Reza, Abul Fazal Mahmudun Nobi, Fuad H. Mallick for their months long patience and constant guidance to help make the project become its best possible version. I am genuinely grateful to Mohammad Zillur Rahman and S.Y. Andalib for having shown such faith in my project and their never ending help at times when I lacked all sorts of confidence in myself.

The project would be incomplete without the unimaginable efforts and never ending support of my beloved friend Irina Sobhan, the sincere helps and undying motivation of my dear friends Nahid-e-Jabin Tanuja, Jannatun Nayeem Tinni and Tasliman Azam, therefore I thank them all for everything and more. Lastly my parents, siblings and family members for their constant prayers and never doubting my capabilities at times even when my own self belief have faultered. I owe this project to all the people who have helped me in every little and big ways.

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CHAPTER 1

Introduction

1.1 Project Brief

TITLE: Campus Planning of Shanto Mariam University of Creative Technology

LOCATION: Plot -6, Avenue- 6, Sector- 17, Uttara, Dhaka

TOTAL LAND AREA: 2.10 Acre (91,800 sft)

CLIENT: Board of Trustees, Shanto Mariam University of Creative Technology

1.2 Project Introduction

Throughout the world universities are expected to change to match changes in their host environment. In the developed world the value of higher education is often questioned for resources expended, while in developing countries education institutions are immensely valued for the contribution they can make towards national development.

As an under developing country it is highly essential in Bangladesh to increase design knowledge, experience and information on products, systems, materials, design and production processes related to traditional as well as modern technologies for the upcoming generation.

The Shanto-Mariam University of Creative Technology (SMUCT) aims to create versatile and resourceful experts with design, scientific, technological, cultural and social knowledge to equip them for the 21st Century in an educational environment that promotes innovation, entrepreneurship and commitment to excellence. It thrives to be a platform for the students who want to explore and become professional about various design related issues by obtaining a systematic way of technical learning. At the beginning it was only a short course academy for both children and adult in other countries. Later it was introduced in Bangladesh. As the popularity and reputation increased, the demands increased as well. Therefore, the project was submitted. The project received a government approval which is now the first design oriented Private University. Shanto-Mariam Academy of Creative Technology (SMACT) has been established in order to spread up-to-date design, cultural and technical education under the guidance of Shanto-Mariam University of Creative Technology.

1.3 Project Rationale

The university is a place with which I can relate to after 5 years of study. I can tell what a student and what a learning environment is. From this perspective it is easier for me to connect with and grasp at what role a university and it's environment plays in a student's life. Firstly, challenges like creating space within limited resources and area are always interesting which are existing in this project. Secondly, there is a lot to explore in order to build a 'Well-designed campus' which will be discussed elaborately in this paper. Furthermore, in the professional world, experience is an important issue. The site is in a residential area and the site has limitations and many real world challenges, but has favorable site conditions. This will give great scope of designing in order to develop professional skill as in realty sites will always have many limitations. Last but not least the world of media and graphics technology and creativity is always intriguing. These fields are yet to establish a strong background in Bangladesh although the whole world is now producing promising outcome from them. Film industries abroad are rich and popular due to their use of technology, knowledge and enhancement creative thinking. This project is perfect for creating opportunities for interested people.

1.4 Project Aims and Objectives

The project set to be designed at the fringes of Uttara sector 17 which is fated to see itself developed as a fully functional residential environment, will be taking upon the challenge to plan and design a university campus which will be a platform epitomizing creativity and technology through it's education system will make this nation known in the global radar. The main objective of this project is to establish a campus which promotes interaction through open spaces and landscapes, also creating grounds for other activities such as sports, exhibitions, etc. Within the urban chaos of Dhaka, the campus will be the green escape, encouraging students to spend more time within the university.

CHAPTER 2: LITERATURE REVIEW

CHAPTER 2

Literature Review

2.1 Education

When we consider that we all, regardless of whether we went to school or what type of school we attended, have been educated in some way, it seems inconceivable that the concept of 'what is education?' should still lend itself to a healthy debate. However, the concept of education is not merely contested, it is fluid and ever changing.

Education tends to promote such values and improve people's capacity that sustains environment and development issues of any countries. It helps create awareness, welfare attitudes, skills and behavior as well as a sense of ethical responsibilities among the people. According to some learned people, the word "Education" has been derived from the Latin term **"Educatum"** which means **the act of teaching or training**. A group of educationists say that it has come from another Latin word **"Educare"** which means "**to bring up"** or **"to rise**". According to a few others, the word "Education" has originated from another Latin term "**Educere"** which means **"to lead forth"** or **"to come out"**. All these meanings indicate that education seeks to nourish the good qualities in man and draw out the best in every individual. Education seeks to develop the innate inner capacities of man. By educating an individual we attempt to give him some desirable knowledge, understanding, skills, interests, attitudes and critical thinking. As an individual in the society, we have to think critically about various issues in life and take decisions about them being free from bias and prejudices, superstitions and blind beliefs. Thus, we have to learn all these qualities of head, hand and heart through the process of education.The term education described in the words of renowned philosophers –***"Education is the process of training man to fulfill his aim by exercising all the faculties to the fullest extent as a member of society". - Aristotle***

"Education means the bringing out of the ideas of universal validity which are latent in the mind of every man".

-Socrates.

"Education is a process of living through, a continuous reconstruction of experiences".

-John Dewey.

2.2 Aims and Essentiality of Education

Education is a conscious effort and, as such, it has definite aims and objectives. Aims give direction to activities. Aims of education are formulated keeping in view the needs of situation. Human nature is multisided with multiple needs, which are related to life. Educational aims are correlated to ideals of life.

The goal of education should be the full flowering of the human on this earth. According to a UNESCO study, "the physical, intellectual, emotional and ethical integration of the individual into a complete man/woman is the fundamental aim of education."

Education also aspires to form children into humane persons committed to work for the creation of human communities of love, fellowship, freedom, justice and harmony. Students are to be molded only by making them experience the significance of these values in the school itself.

Individual aims and social aims are the most important aims of education. They are opposed to each other individual aims gives importance for the development of theindividuality. Social aim gives importance to the development of society through individual not fulfilling his desire. But it will be seen that development of individuality assumes meaning only in a social environment. Education stimulates and empowers people to participate in their own development (Chowdhury, 2002). To enlist the necessity of education in every aspects of our lives –

- Education assists a child to develop certain human values, attitudes and habits which are essential for building a desirable character.
- It provides every individual with the scope of developing their inborn potentials and allows them to earn their own livelihood.
- Better education ensures better jobs which in turn leads to better earning.
- Every individual can make work of their education to become stable and self dependent.
- Economic growth of the nation is ensured.
- Education enables the children to grow as productive citizens by following the social and moral standards set by the society. Then everyone will begin to think about social and cultural welfare.
- It instills ethical values and morales within people, which ensures peace all over the world.
- Increased awareness of right and wrong.
- A healthier lifestyle and living.
- Exposure to the broad spectrum of what the world has to offer.

The essentiality of education is prevalent in all aspects of our lives. It serves as the backbone for the development of nations. The countries with the effective impressive need oriented, saleable and effective system of education comes out to be the leaders of the world, both socially and economically. It is the only education which can turn a burden of population into productive human resource.

2.3 Education System in Bangladesh

The education system in Bangladesh encompasses both formal and non-formal education. Both types are available in a religious variant. Non-formal education encompasses organised, structured learning that takes place outside of the school environment. Examples of this include programmes aimed at tackling illiteracy, work-related or talent development programmes, such as company training and lifelong learning programmes, but also training programmes for those who have left school without a qualification. Non-formal education is

provided at a variety of levels. Education commonly is divided formally into such stages as preschool or kindergarten, primary school, secondary school and then college, university, or apprenticeship. The educational system in Bangladesh is three-tiered and highly subsidized. The government of Bangladesh operates many schools in the primary, secondary, and higher secondary levels.

2.3.1 Tertiary Education

When it comes to the tertiary level, Bangladesh comprises of two categories- colleges (including madrasas) and universities. Colleges are known to provide degrees or diplomas in the professional, technological or special type of courses. A university, on the other hand, provides Bachelor's degree up till Ph.D. (EPNuffic,January2012,Educational Institute of Bangladesh)

The Ministry of Education (MoE) and the Ministry of Primary and Mass Education (MoPME) share responsibility for the entire education system, with the MoE responsible for all education after primary education. This includes religious education (taught at Madrasahs) and technical and secondary vocational education. The MoE prepares legislation and regulations, drafts policies and carries out supervision of educational institutions. The MoPME is responsible for primary education and non-formal education. University Grants Commission plays an advisory, supervisory and regulatory role in respect of public higher education in Bangladesh.

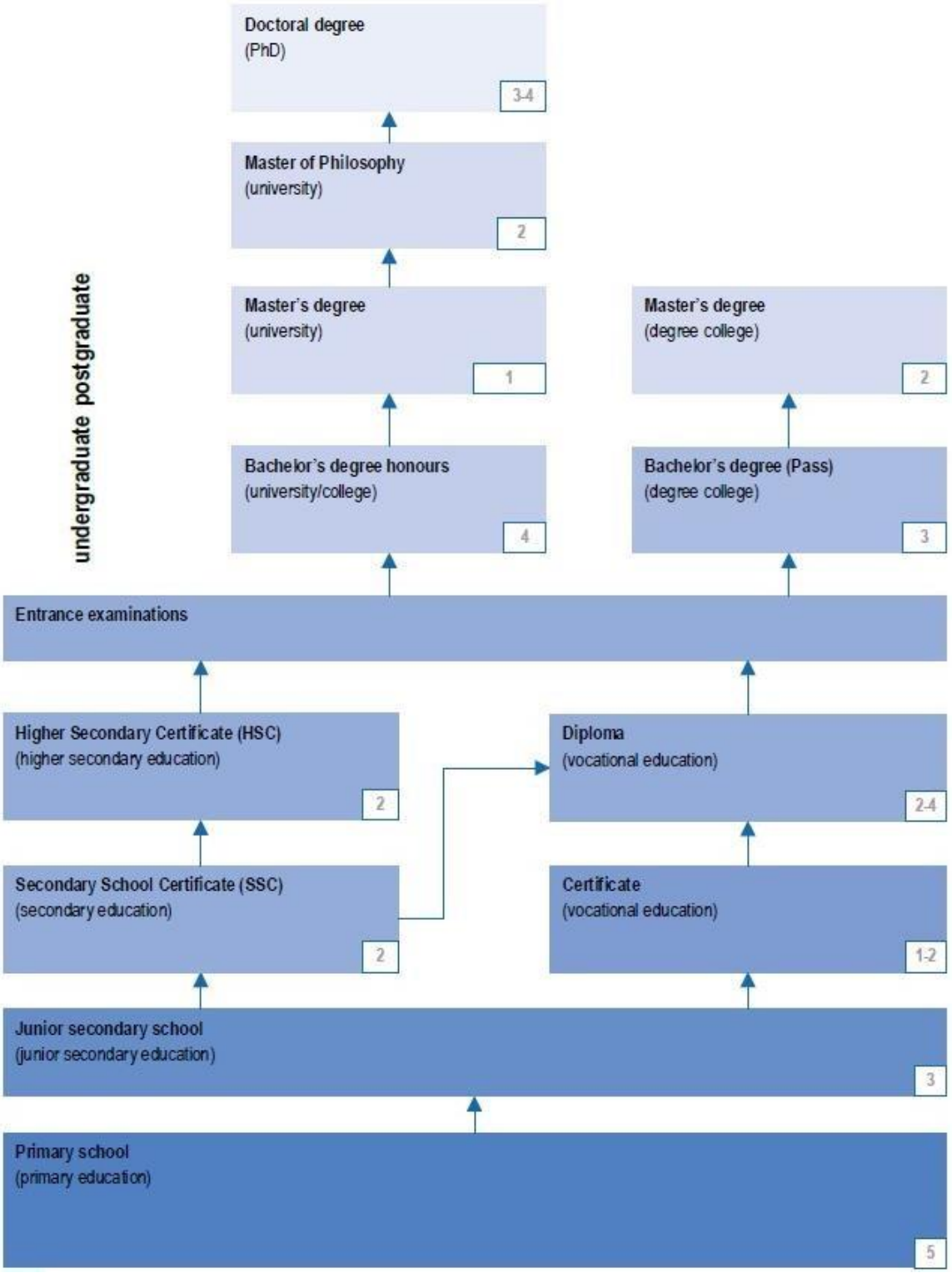

Fig 1: *Education system in Bangladesh*
Source : *(NUFFIC, 1st Edition, October 2012)*

2.4 Higher Education Scenario in Bangladesh

In a country where literacy rates were significantly low, higher education was once known to be a luxury. Before the British rule (1757), education was considered a social prestige in the context of Bangladesh. After their intervention however, they designed a system which educated a selective group of locals to serve the economy and political interest. Most of the institutions were located in the urban centres and English became the medium of communication.

Higher education is offered by a total of around 2,000 education institutions, encompassing public institutions, international universities, (a growing number of) private institutions as well as specialized colleges. Examples of specialized programmes offered by these colleges include medicine, dentistry, law, teacher training programmes, leather technology and physical education. There is also a large category of around 1,800 degree course offering colleges under the National University.

In addition to general higher education, a religious form of higher education is also available (taught at Alia Madrasahs), with a 2-year Fazil programme followed by a 2-year Kamil programme. The diplomas for these programmes are awarded by the Bangladesh Madrasah Education Board.

While the degree colleges (like medical colleges, textile colleges) almost exclusively focus on higher programmes with a professional focus, on the other hand Universities largely offer a combination of higher professional study programmes and research-oriented programmes.

2.5 University Education

"The University brings out all abilities, including incapability" (Chekhov, n.d.). Tertiary level education is the most important time of a student’s educational life. It is about not only the degrees and jobs afterwards but In fact, universities holds a responsibility of educating a generation. Building the backbone of a country. The idea of academic freedom is an important notion in the definition of university level education. Following the gradual developments process of the world, the journey of universities for providing formal education started in 1921 with Dhaka university in Dhaka ,Bangladesh (UGC-Handbook Universities of Bangladesh, 2009, p. xvii). Gradually it expanded to other divisions, then into cities of the country. On the increasing number of students and demands for higher education led to establish other

universities beside public universities Advent of private universities in Bangladesh was in 1992 (UGC-Handbook Universities of Bangladesh, 2009, p.xx).

The education system in Bangladesh encompasses various bachelor's degree programmes with a nominal duration varying from 3 to 5 years. The universities mainly offer 4-year honours programmes, while the degree colleges, most of which are affiliated with the National University, concentrate on the 3-year Pass Bachelor's, although they may also offer honour's programmes. Universities further provide degrees for Masters and phD as well usually with a tenure of 2-3 years.

2.6 Significance of Private Universities

The positive role of private Universities in the higher education in Bangladesh is now undeniable (Siddique 2005). The epoch-making Private University Act was passed in 1992. To meet the increasing demand for higher education and develop skilled, efficient and competent manpower the then Government felt the need for establishing private universities and approved the Private University Act 1992. Islam S. (2003) states that education was seen as the essential factors for rapid economic growth and formal education controlled by the state, as the indispensable instrument for improving the production capacities of a population. Most countries of the world are now facing the dilemmas of having to satisfy the need of the increased demand for education (Islam S. 2003). Higher education system needs to be flexible if they are to be the most effective (Muzaffar A.T. and Khan A.H. 2004). Education systems need to be able to adapt quickly to changing enrolment levels, to the rise and fall of different fields of study and to changes in the mix of skills demanded in the labor market. Muzaffar and Khan (2004) also argued that open systems are more likely to keep pace with significant external changes. In 2008, there were 1.64,624 students studying in public universities (excluding National University and Open University) and 1,82,641 students were studying in Private Universities (UGC Report 2008). In recent years private university enrolment trend is sharper than public university.

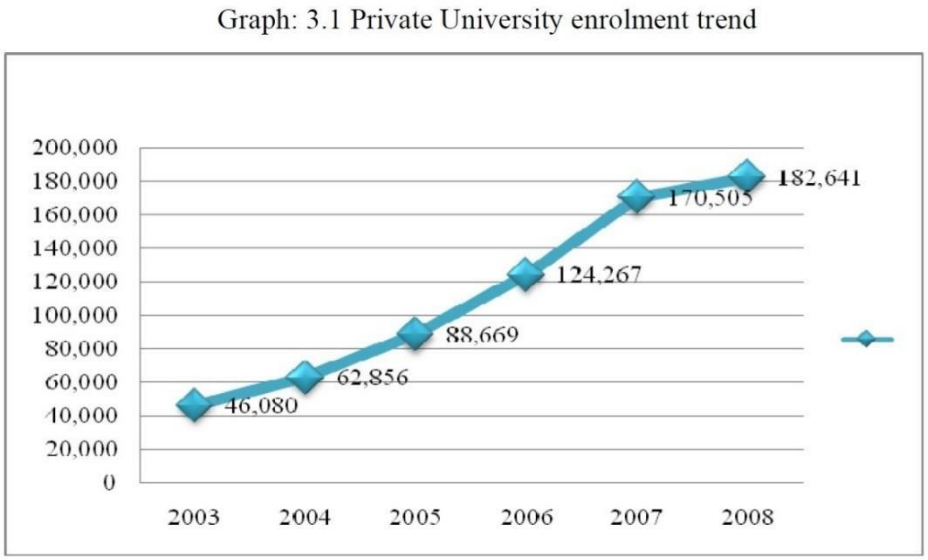

Fig 2: *Graph, Private University enrollment trend*
Source : *(UGC report, 2008)*

On this current day private universities are important part of educational, social and cultural life of this country. Private universities are significant for providing higher education for the growing number of students. As the Whole world is going through technological transformation, a major shift in education system is predictable in near future. Institutions are changing the way of teaching. Not only adding hi tech gadget and facilities but also rethinking goals and priorities. A better student life experience has become a priority. Better campus life experience, importance of social interaction and networking. It is no longer only about getting lecture, attending exam inside a classroom. Learning throughout student life and waiting to apply the knowledge in a job. The initial concept is to create an environment, which will enable student to learn in a better way and apply their knowledge and skills in campus. Develop their network and get fully prepared for the future. Teachers will get along with students in interaction and gathering that is more informal, to be a part of their journey of learning. A future based model of a university campus is a combination of research institutes, incubators, accelerators, innovation centers, co-working spaces, start-up spaces. By incorporating these activities, a bridge between academic and corporate sector will develop. A campus without barrier. Students can get along with corporate employees, sharing knowledge and experience. Knowledge and skill development process will be following the present economy and market value.

CHAPTER 3: SITE APPRAISAL AND CONTEXTUAL STUDY

3.1 Site Appraisal

3.2 Site Location

3.3 Existing Site Scenario

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- 3.4.1 Road Network
- 3.4.2 Future Land use Pattern

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- 3.5.1 Strength
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CHAPTER 3:

Site Appraisal and Contextual Study

3.1 Site Appraisal

In 2011 the Government of Bangladesh amended the Local Government City (City Corporation) Act 2009, and divided the Dhaka City Corporation into two namely, Dhaka South City Corporation (DSCC) and Dhaka North City Corporation (DNCC). This divided the old capital city of Dhaka administratively into two broad areas and gave birth to the capital city of Dhaka North. Dhaka North is situated within Longitude 90º20' to 98º28' and Latitude within 23º44' to 23º 54'. Its total area covers 82.638 sq. kms which consists of five zones including 36 Wards). It has all the positive and negative characteristics of a Megacity like large population, economic boom, employment opportunities, various service opportunities, slums, homelessness, traffic congestion, urban sprawl, gentrification, air pollution etc. The major zones and areas of DNCC includes 'Zone-1 Uttara' among other zones of Mirpur, Gulshan, Kawran Bazar.

In the period between 1950s and the mid 1980s, Uttara along with Mohammadpur, Banani, Gulshan and Baridhara slowly developed. The built-up development was limited to the highlands available and the low lying areas and water-bodies were very profitably used, which no doubt added to the beauty of the areas as upper class residential enclaves. Then came the 'growth rush'. Between 1990s and 2000s the new Dhaka North expanded to its present boundaries and is still expanding. The important areas which grew and expanded during these periods are Mohammadpur, Mirpur, Tejgaon, Banani, Gulshan, Baridhara and Uttara.

Uttara Model Town or simply Uttara is a northern Thana and a suburb of Dhaka, the capital of Bangladesh. The name derives from the Bengali word ut'tar meaning "north". It lies on the road to Gazipur, and adjoins Shahjalal International Airport. Uttara is primarily planned square grid residential suburb, geographically elevated from southern Dhaka saving it from floods, and is divided into several "sectors". It can be said that Uttara is far from the congestion and pollution of Dhaka. The suburb is well-served by a proliferation of shopping complexes, shops, and schools & colleges. Planned by RAJUK, Uttara was initially divided into 14 sectors, starting from sector 1 to sector 14. Due to increase in population, new sectors were planned. Uttara Residential Area (3rd Phase) project is now underway. This new phase comprises of new sectors of – 15,16,17 and 18.

3.2 Site Location

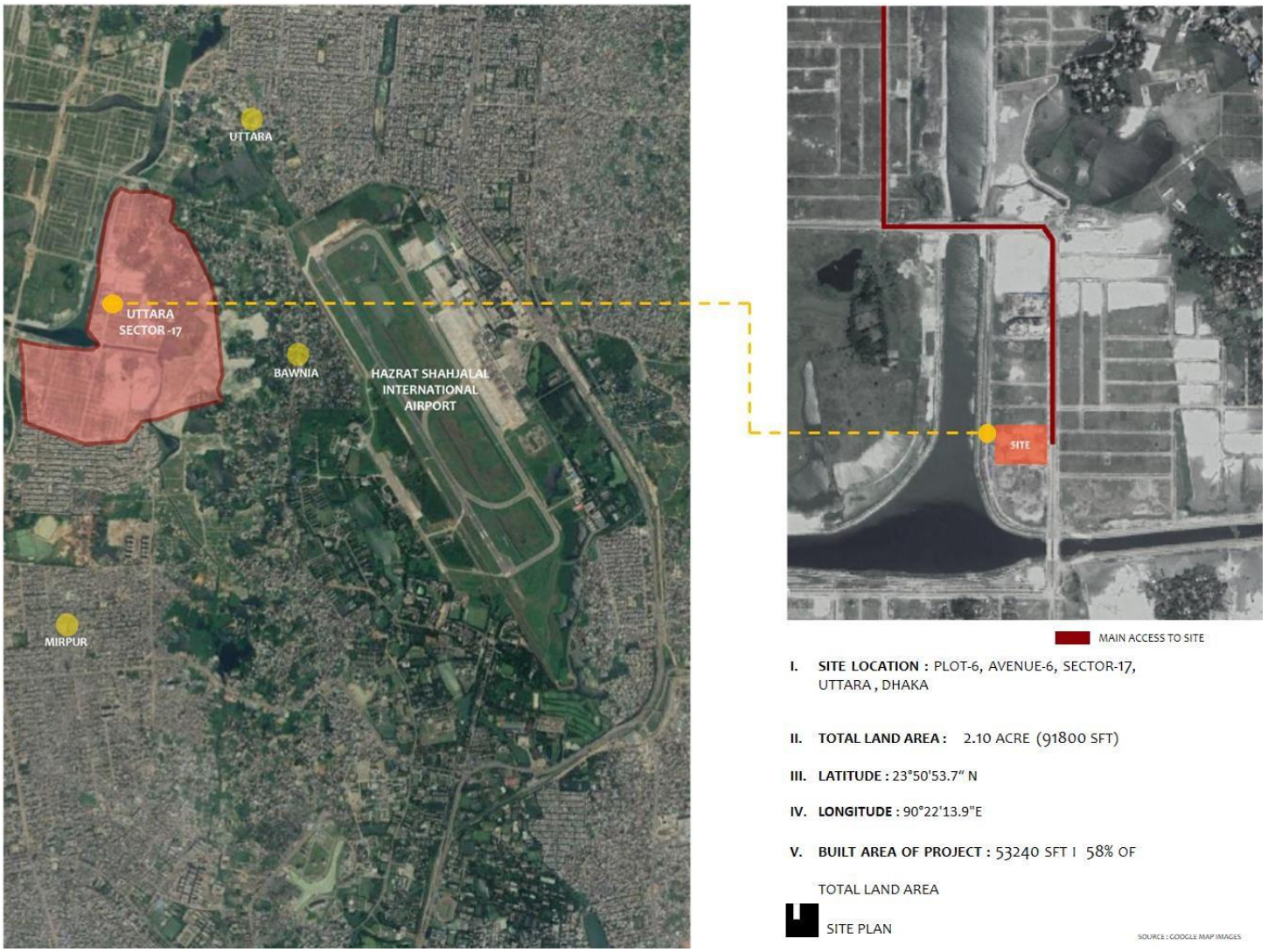

Fig 3: *Site Location*
Source : *(Google maps)*

The site is located within sector 17 of Uttara, one of the newly planned sector and is yet to see the face of development. On the top, at the north side, the site connects with rest of the sectors of Uttara. At South side, the Mirpur area connects to the side. On the east of the site exists the significant Hazrat Shahjalal International Airport of Dhaka which connects to the site through the Jashimuddin road. On the west of the site lays areas yet to be planned or developed.

3.3 Existing Site Scenario

The site possesses diverse potentials. It is an almost rectangular site elongated on its north to south directions. The site therefore is mostly east and west facing. On its west there is a lake. The current state of the location is, the site is a huge open space with no infrastructure and no development. RAJUK has future developing urban plan for it which includes a fully functional residential area with temples, mosques, playground, academic institute, hospitals and many more. The site has roads on west and east side. The main access to the site currently being through the 100ft wide road on the east.

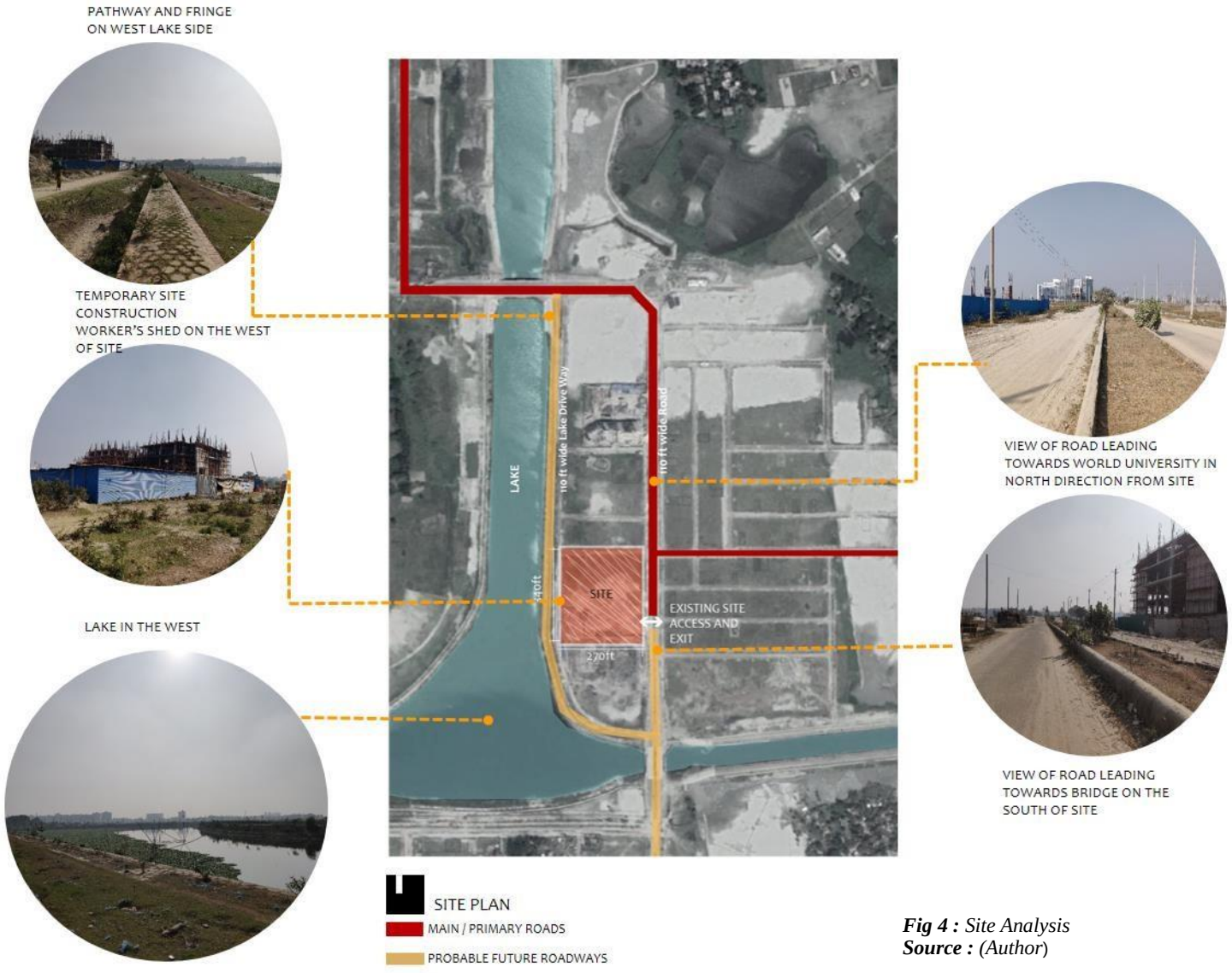

Fig 4 : *Site Analysis*
Source : *(Author)*

3.4 Predicted Future Site Development

3.4.1 Road Network

Fig 5 : Road Network
Source : *(Author)*

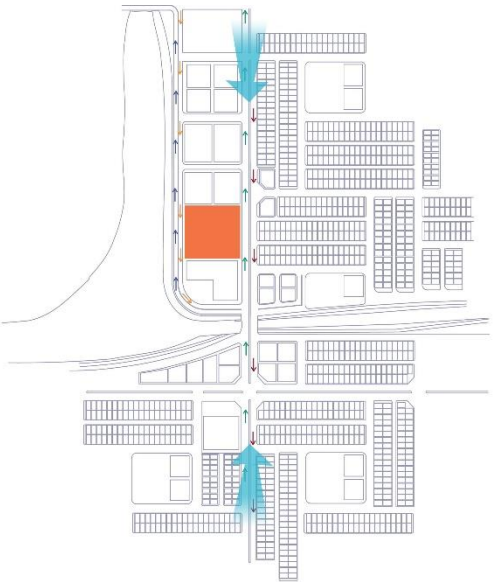

Fig 6: *Vehicular Flow*
Source *: (Author)*

As per proposed plan for the development of the site location of Uttara sector-17 by RAJUK, the figure above displays the future pathways connecting through the site area. The primary roads are planned to be of 100 ft wide, while the secondary roads are to be 60 ft wide. Lastly the tertiary roads within the sector blocks are to range between 30 ft to 40 ft in width.

3.4.2 Future Land use Pattern

In the future the lands surrounding the site for the Shanta Mariam university campus will be purely commercial and residential. The commercial buildings including the university campus is to be within height restrictions of 15 stories due to aviation. While the residential buildings are predicted to be of 5 to 7 storey high.

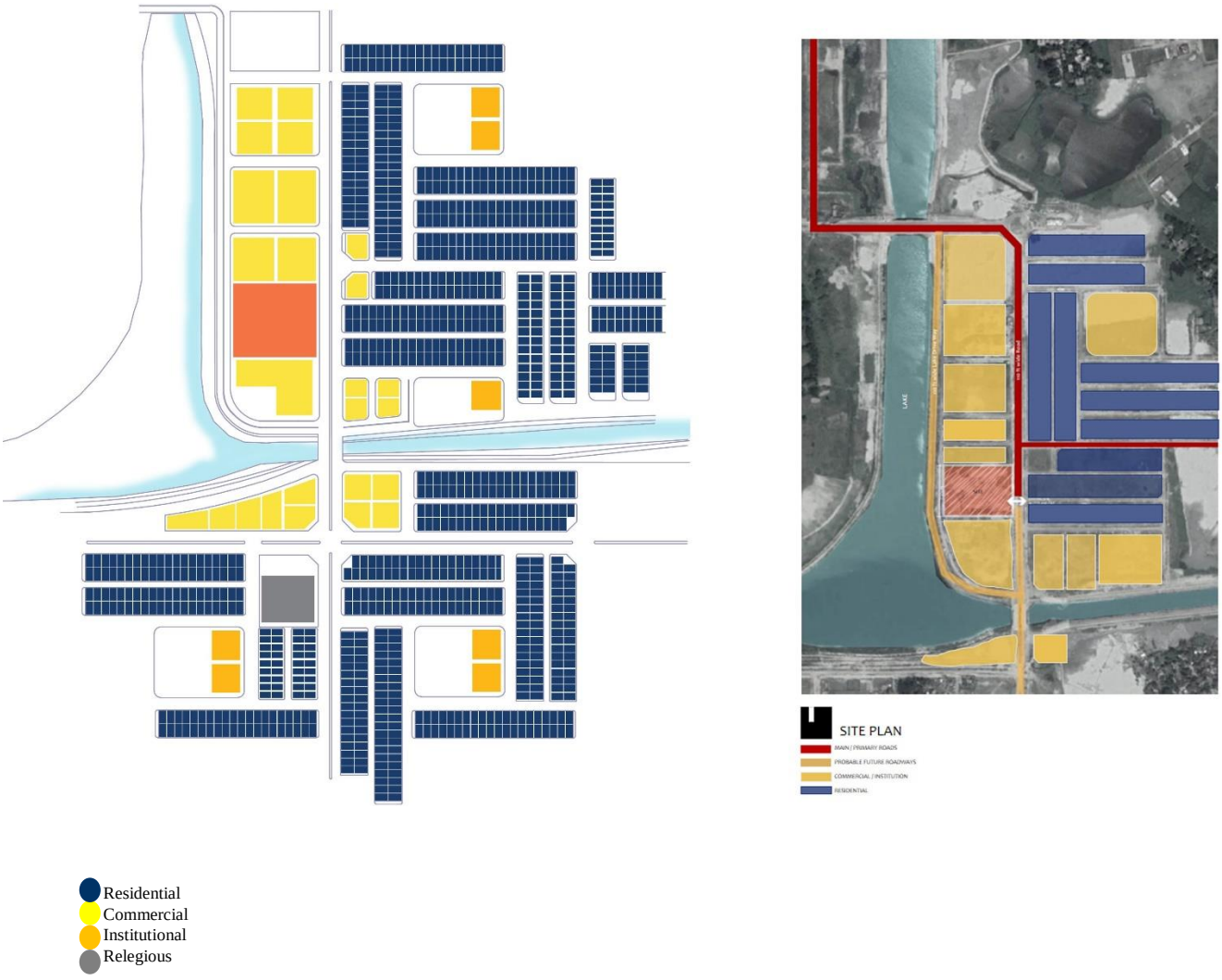

Fig 7: *Predicted Land use Pattern*
Source : *(Author, RAJUK Uttara sector-17 Development plan)*

3.5 S.W.O.T Analysis

3.5.1 Strength

- This sectors of Uttara still have not seen the face of development but it has future plans. For that it has a good potential of becoming a good urban zone with development.
- Wide roads around the site.
- A lake at the west side. It can neutralize the hot air flows through the west and make it cool.
- As the south-east side of the site has a very few structure and the lake also continues there as well, there is possibility of wind flow through the site allowing a cross ventilation of cool air and making a micro climatic effect.
- Students may have the opportunity to enjoy the lake view.
- Nearby the site at the south side there is a bridge which may turn into an important node and a place for recreation.
- There is a very less dominant high rise structure plan for the future. So daylight and view of the landscape at west and south can be used at its best.
- The overall area has the chance to connect Uttara and Mirpur. As a result, it is an opportunity for a huge amount of students to fulfill their dreams.

3.5.2 Weakness

- As the strength is a lake at the west the weakness is also the lake at west. Ensuring the view at the west will be difficult because of the Sun.
- Being west- east oriented the Sun heat will directly cause trouble for people.
- The north view will be blocked due to high rise plans of future.

3.5.3 Opportunity

- The front side (east side) with be full of residential buildings but of only 5-6 storied which may bring out a positive site force.
- Important nodes can be created in distance future surrounding the University.

- It has the ability to connect the people of Uttara and Mirpur.
- The lake side can be of good use for the students.

3.5.4 Threat

- Unplanned development of this urban area can put negative impact on the University.
- Unplanned development of the project may have negative impact on the residential part.
- May create sound pollution.

CHAPTER 4: CASE STUDY

4.1 International Case Study 01

- 4.1.1 Project Background
- 4.1.2 Project Description
- 4.1.3 Project Analysis
- 4.1.4 Findings and Interpretation

4.2 International Case Study 02

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- 4.2.5 Programs
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- 4.2.7 Findings and Interpretation

CHAPTER 4

Case Study

4.1 International Case Study 01

4.1.1 Project Background

- **Project Name : International Management Institute**
- Architects : Abin Design Studio - Abin Chaudhuri
- Location : Bhubaneswar, Orissa, India
- Category : Institute
- Area : 484,300 sft
- Project Year : 2011

Fig 8 : *Image of front view of IMI center*
Source : *(Arch Daily)*

4.1.2 Project Description

Set in a cultural and historically rich backdrop IMI Bhubaneshwar aims at presenting a timeless piece of architecture which bridges the gap between the past and the present cultural and social life of the Orissan people. Orissa is a state widely known for its opulent cultural heritage and rich architecture. Geographically, Bhubaneswar is situated in the eastern coastal plains of Orissa, India. It is one of those rare places where tradition matches its steps with modernity, where culture and technology flourish together, where the glorious past is preserved and an

illustrious future is in the making. The architecture of the city should reflect the very essence of Bhubaneswar. Instead of letting the treasures be a part of the past, the IMI attempted to recreate it in a modern setting, so people remember their roots, yet grow with time.

The site is situated 14kms away from the city centre and is in a barren and undeveloped area on the outskirts of Bhubaneswar. A strong vertical axis in the form of a tower as a feature element has been designed, with a visibility from 3kms away, making it a landmark in the surrounding areas.

4.1.3 Project Analysis

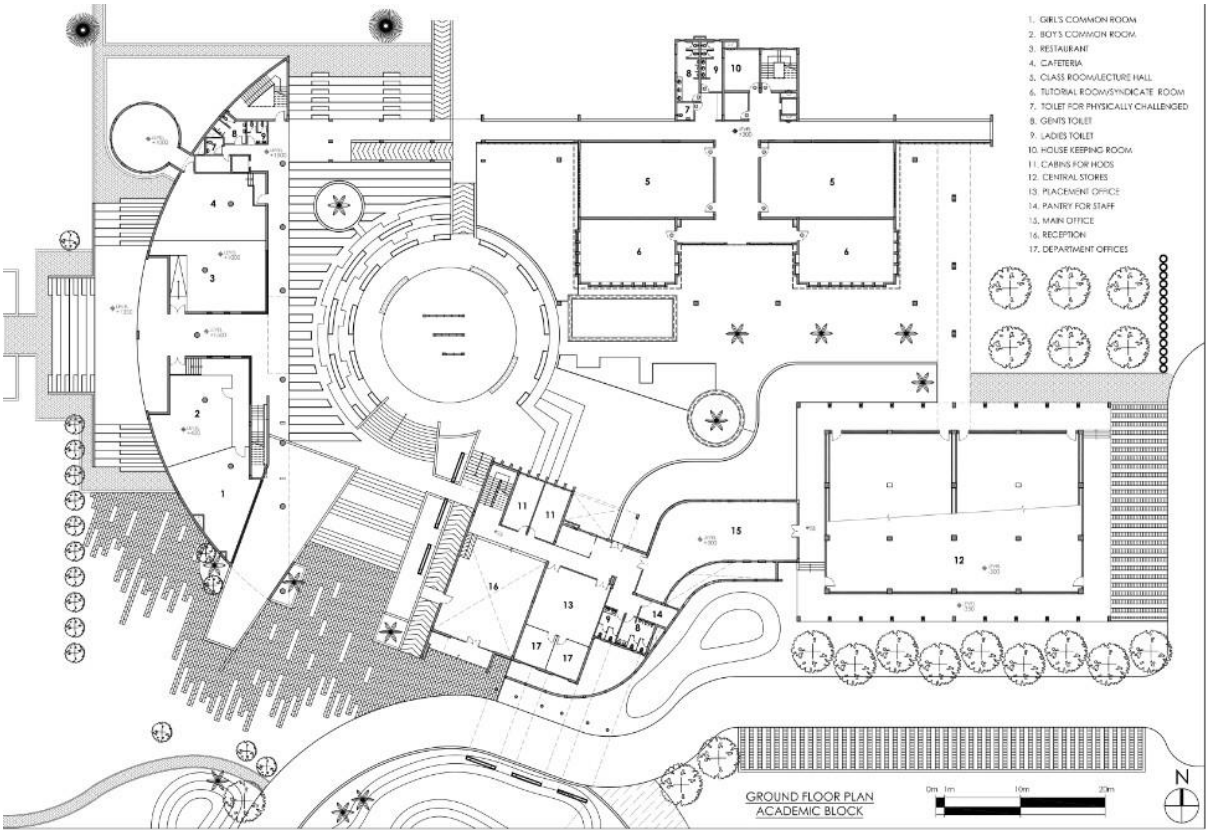


Fig 9: *Ground floor plan of IMI center*
Source : *(Arch Daily)*

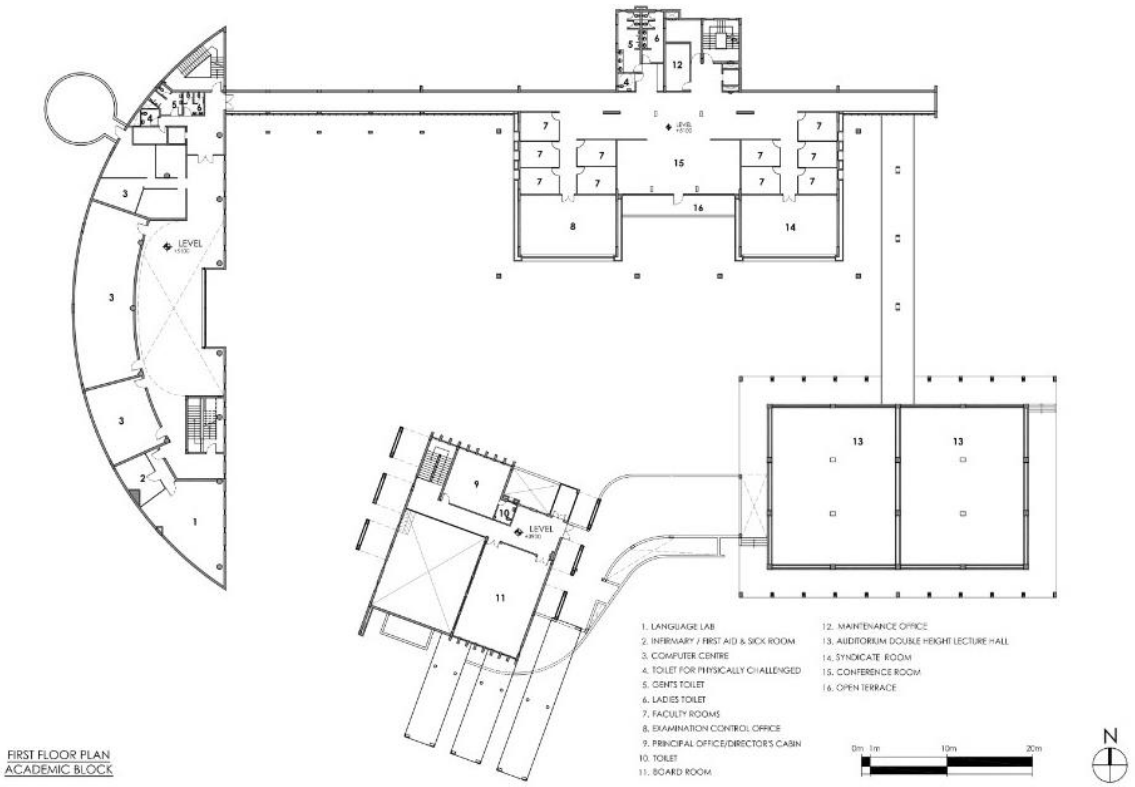


Fig 10: *First floor plan of IMI center*
Source : *(Arch Daily)*

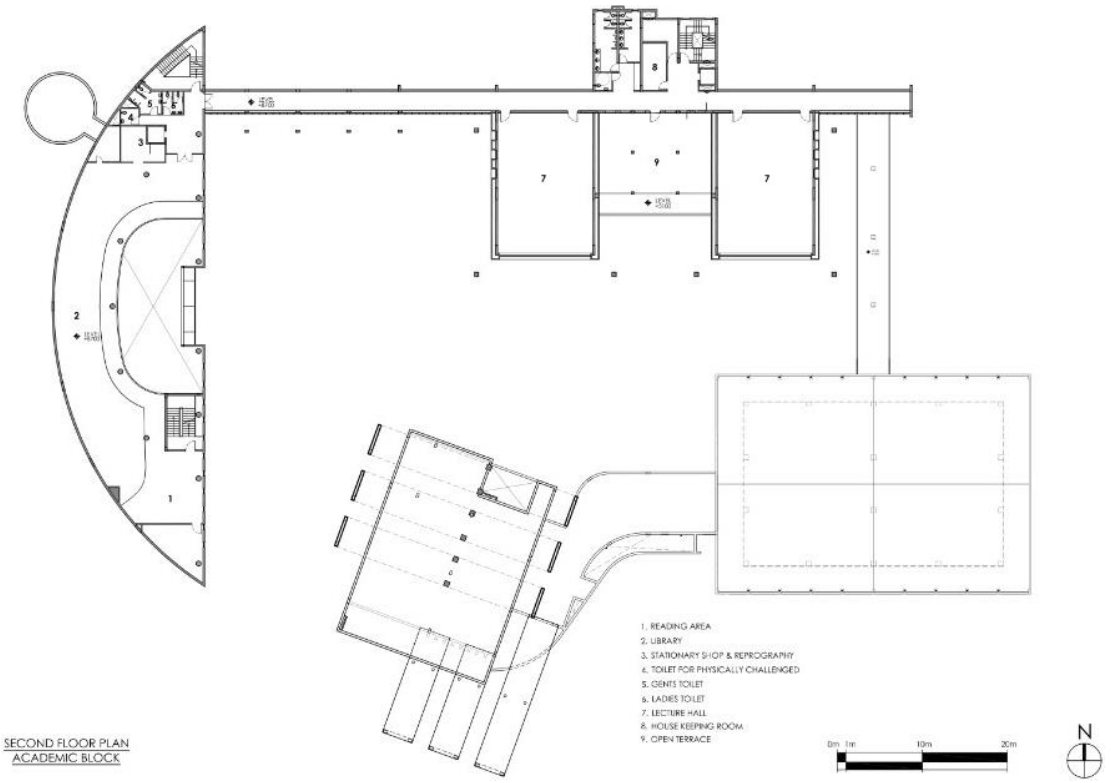


Fig 11: *Second floor plan of IMI center*
Source : *(Arch Daily)*

Fig 12: *Images of central court of IMI center*
Source : *(Arch Daily)*

Keeping in mind the extreme tropical summer temperatures, the structures have been designed and oriented on site to minimize heat gain and reduce use of electro-mechanical energy.

Interactive zones where students can spill out, unwind or just be inspired are a very essential part of campus design. A lot of attention has been paid to the spatial quality of the central plaza as it will be the biggest and most popular interactive node of the campus. The water court at the centre acts as a natural exhaust, cooling the air passing over it, and hence making the middle court a solace in the hot summer, providing relief from the hot and sultry tropical climate. The iconic tower in the centre of the plaza acts as a windbreaker and also helps in the evaporative cooling hence controlling the microclimate of the central plaza. There is a strong physical link between the library block and the academic block by a shaded walkway which eventually leads to maximization of interaction between the spaces.

The huge library block has been strategically placed to cast shadows all over the central plaza at different times of the day to create comfortable outdoor spaces in the scorching heat. To substantially cut down heat absorption, large overhangs have been integrated in the design from the very beginning to create huge shadows on the building itself and the outdoor spaces.

4.1.4 Findings an Interpretation

I. Orientation of forms and functional layout keeping in mind extreme tropical weather conditions. Therefore, the climatic responsive approach of the project is noteworthy.
II. Spatial layout and zoning of functions especially at the ground level. Better understanding

of ground level functional distribution and connection.

III. Addressing the context, modern approach yet staying true to the roots. Universal language in terms of global context through traditional steps.

4.2 International Case Study 02

4.2.1 Project Background

- **Project Name : Hongkong Institute of Design**
- Architects : CAAU
- Location : Tseung Kwan o, Hongkong
- Category : Institute
- Area : 452,000 sft
- Project Year : 2010

4.2.2 Site Context

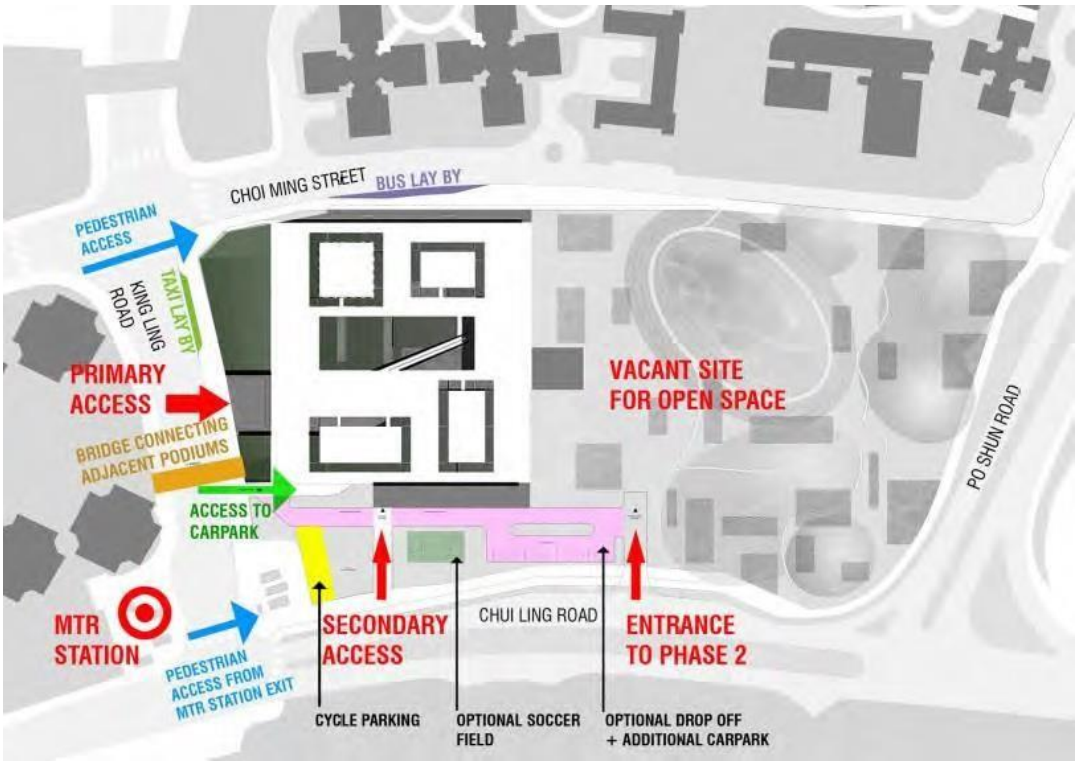


Fig 13: *Site image of Hongkong Institute of design*
Source : *(Sergiopirrone.com)*

The building is located in the Tiu Keng Leng area, to the north east of Hong Kong Island. The area is served by the metro, on the Tseung Kwan O line, 20 minutes from HK Central, and also has a bus station. Although activity there is mainly residential and commercial, nature is also very much present for the site is surrounded by green hills and the view over Junk Bay is everywhere.

4.2.3 Form Analysis

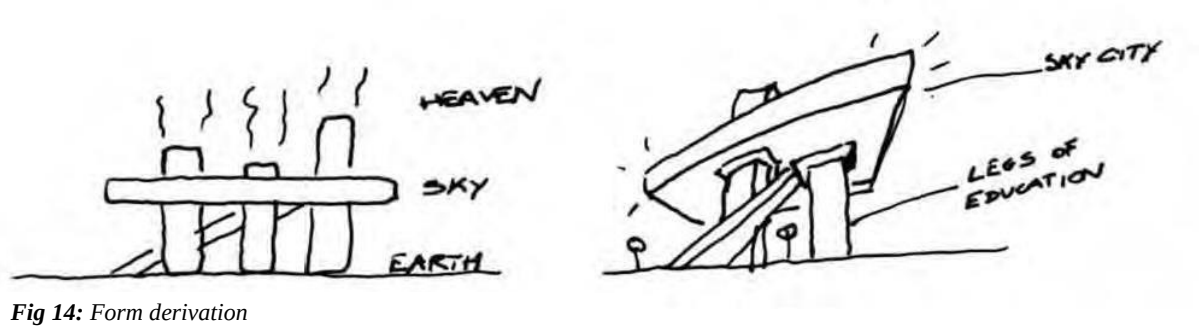


Fig 14: *Form derivation*
Source : *(Sergiopirrone.com)*

• The form is composed with four vertical towers.
• These four towers represent four departments of the institution.
• These towers are linked in the 7th floor level by an aerial platform.
• The platform represents the scale of education

4.2.4 Design Feature

• The base of the building is a giant urban lounge.
• It favors meetings and exchanges.
• It gives advantage of internal and external green spaces and views of the countryside.
• The podium can be used as a common space as well as an external gallery.
• A specially designed escalator in the central space gives a unique look.
• The escalator is directly linked to the platform at 7th floor.
• It is covered in glass which is screen printed white.
• The platform floats above the towers like an aerial city.

4.2.5 Programs

Academic Programme: 4 departments for the four major disciplines taught.
• Department of Design,
• Department of Fashion and Textile,
• Department of Printing and Digital Media,
• Department of Multimedia and Internet
Technology. Other Programmes :
Auditoriums
Library Cafeteria
Sports hall
Exhibition space

4.2.6 Section and Elevation

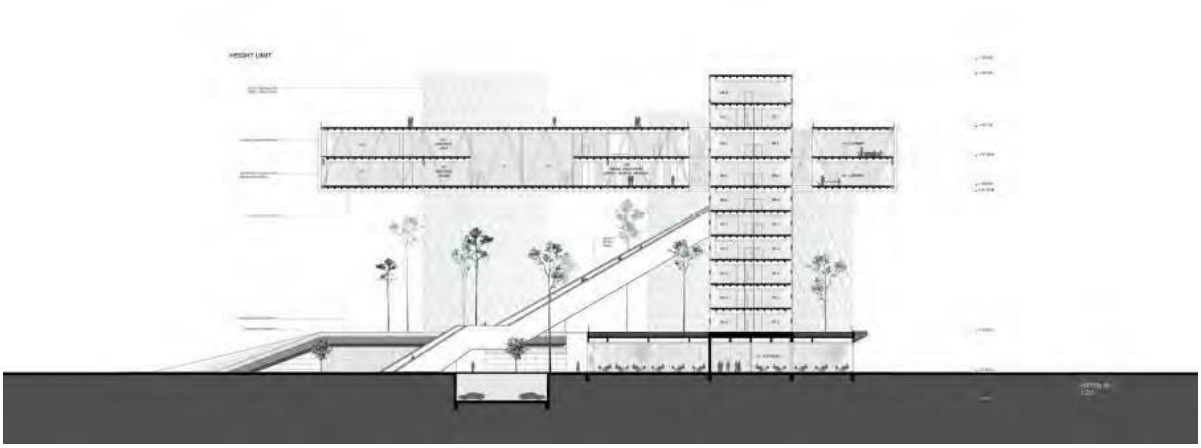


Fig 15 : *Section*
Source : *(Sergiopirrone.com)*

Fig 16: *Elevation*
Source : *(Sergiopirrone.com)*

4.2.7 Findings

• The project becomes unique and identical with the presence of special architectural features.

• Functions can be identified by the form.

• Relation between internal and external spaces is created wonderfully.

• The institute becomes a community gathering space of the city.

• It will bring energy to the social life of the area by the presence of 4000 students in the campus.

CHAPTER 5: PROGRAM DEVELOPMENT AND ANALYSIS

5.1 Program Rationale

5.1.1 General Information for Program Derivation

5.2 Program Derivation and Spatial Organization

5.2.1 Functional Accessibility

5.2.2 Functional Relationship of Spaces

5.3 Proposed Programs and Space Requirements

5.3.1 Departments

5.3.2 Administration

5.3.3 Recreation / Common Facilities

5.4 Program Development Synopsis

CHAPTER 5

Program Development and Analysis

5.1 Program Rationale

This chapter aims to provide how programs were derived for the project meeting the fundamental requirements of the project client. Overall the program was provided by the university authority as per their student, professor ratios and their future plans on expanding. In terms of designer input, suggestions were made to introduce zones or spaces that will be placed to attract gathering and interaction within departments, as discussing and debating, engaging in dialogues is an essential part of the learning process when it comes to developing students as unique and thriving individuals.

5.1.1 General Information for Program Derivation

The program of Shanto-Mariam University of Creative Technology comprises of eight departments:

- Department of Fashion design & technology
- Department of Graphic Design &
- Multimedia Department of Interior
- Architecture Department of Architecture
- Department of CSE/ CSIT
- Department of Business Administration
- Department of English
- Department of Law

All the department requires offices for operating and a departmental headroom which is at least of 150 sft and about 25 sft is needed for per teacher. There is also space for teachers common room and storage to contain essential files and documents.

A workshop space is necessary for students of architecture and fashion designing.

There is also a need of a library for 350 students. For sitting about 5250 sft space is needed considering the fact that the per student needs 15 sft for sitting.

An exhibition gallery is provided for the students to display their work which will be around 6000 sft.

Fashion show or other programs can be performed here.

The administration block will have the control over the university. It will have Reception & Admission Office, Foundation Office, VC's office, Registrar's Office, Office Controller of Exam, Proctor & Director room, Student Welfare, Treasurer's Office, Accounts Office and more.

5.2 Program Derivation and Spatial Organization

The total program of the university can be categorized into three major parts: administration, recreation / common facilities and academics. These three categories then carry sub categories which comprise of all the functions a university may require such as lecture rooms, indoor sports, auditorium and guest houses.

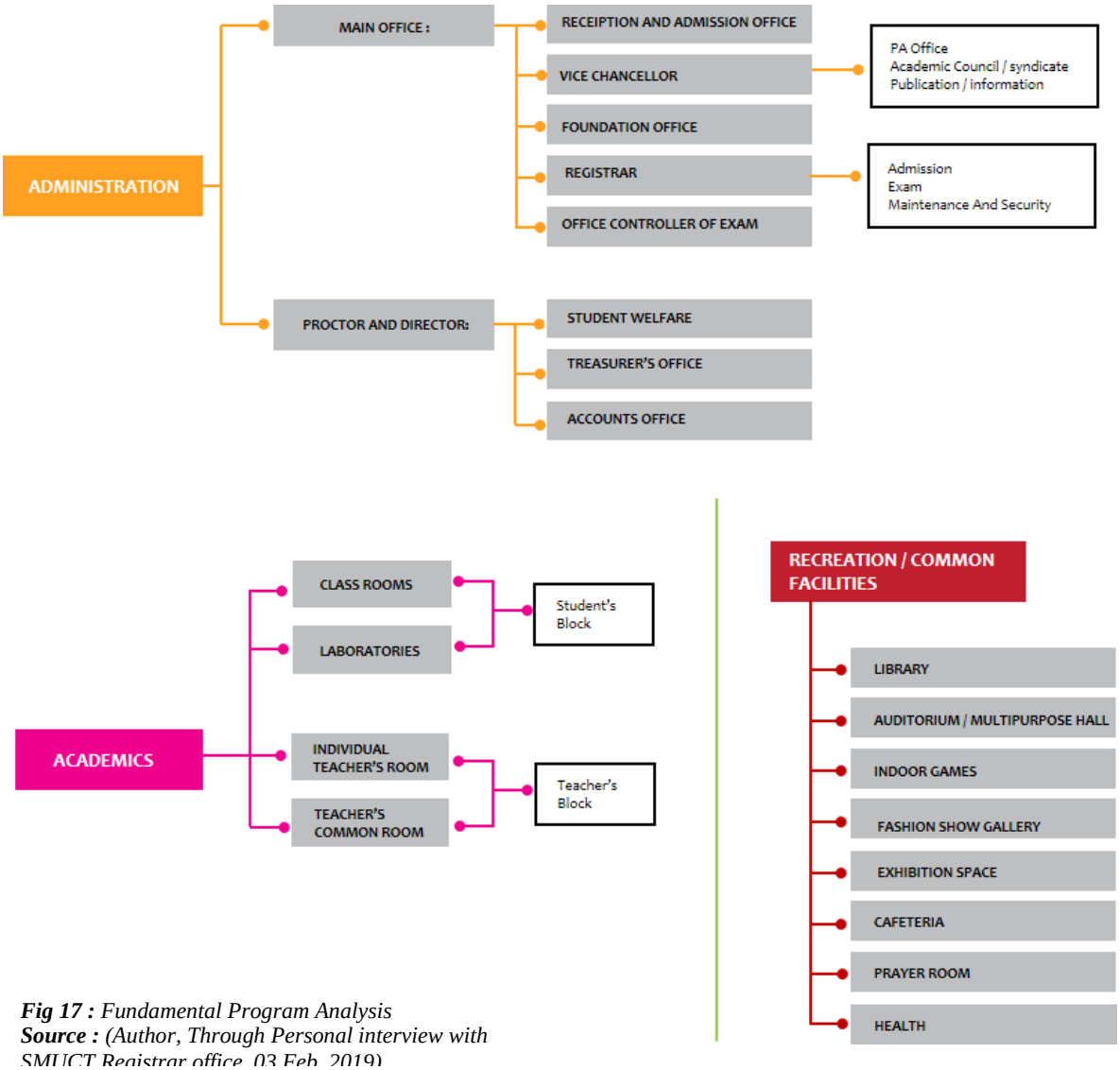


Fig 17 : *Fundamental Program Analysis*
Source : *(Author, Through Personal interview with SMUCT Registrar office, 03 Feb, 2019)*

5.2.1 Functional Accessibility

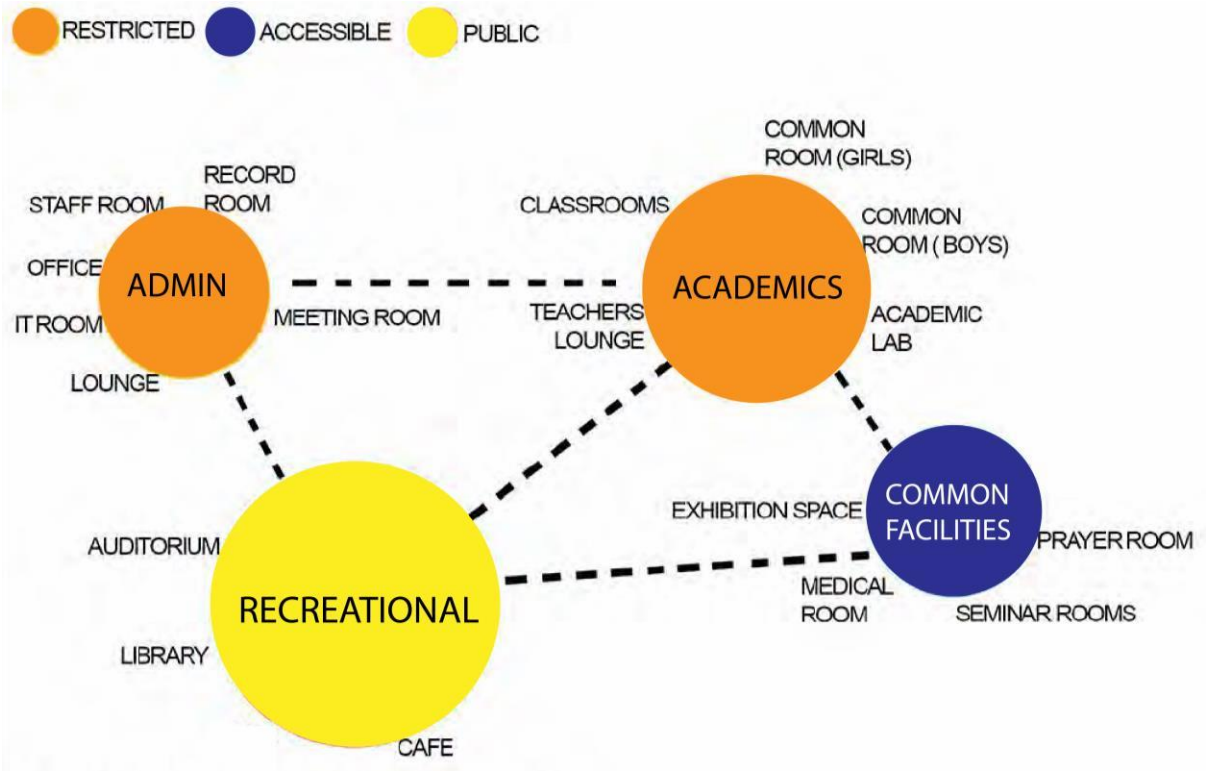
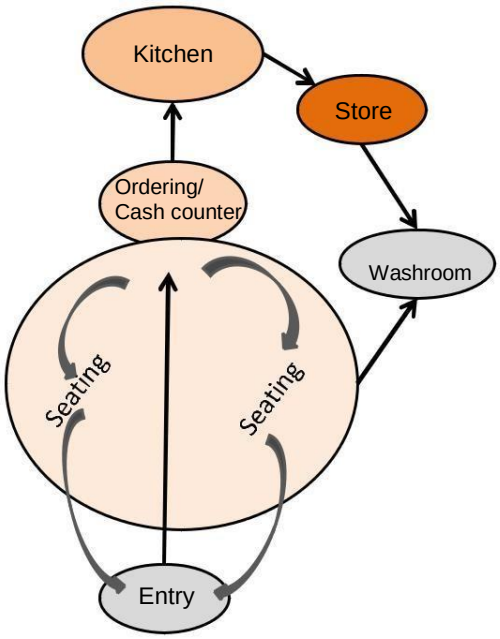


Fig 18 : *Functional Accessibility of zones*
Source : *(Author, Interpretation of information acquired through personal interview with SMUCT project consultant, 03 Feb, 2019)*

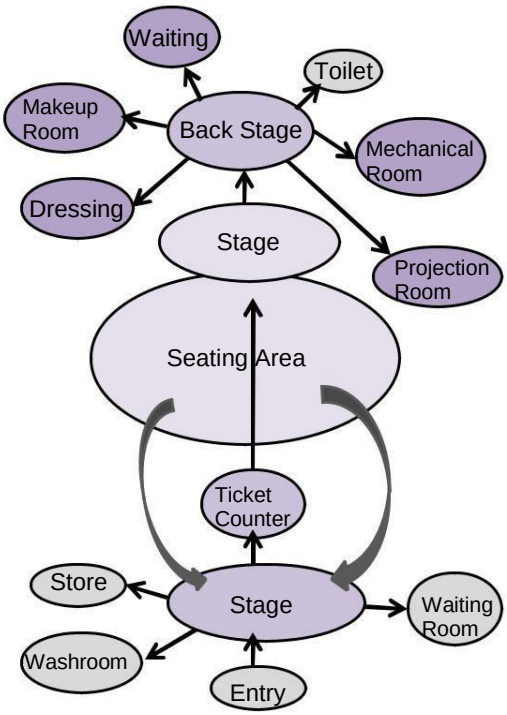
The spaces and zones to be designed for the project can be initially categorized under four headings being- Administration, Academic, Recreational and Common facilities. The two major zones would be Academic since it comprises of activities and functions accommodating the majority stakeholders of the project- students and faculty or staff bodies and second being the recreational zones which will take up a considerable amount of space in the project such as – auditoriums, multi purpose halls, cafeteria etc. Thus, the varying sizes of the zones in the above mentioned figure comprising of the basic zones to be designed within the university.

5.2.2 Functional Relationship of Spaces

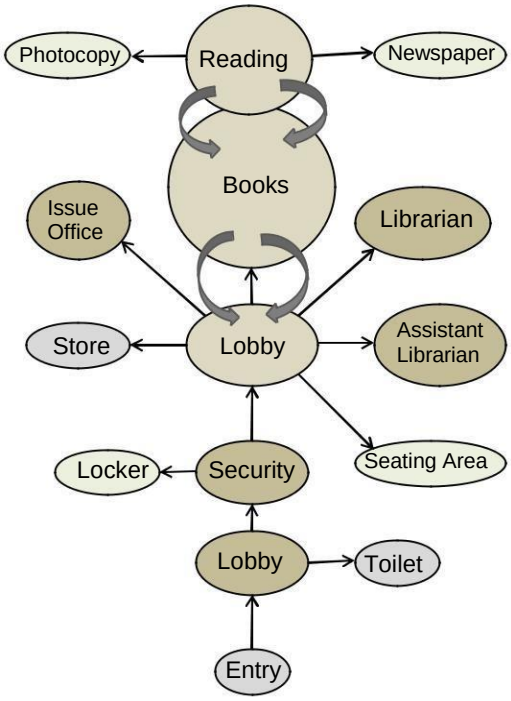
Cafeteria



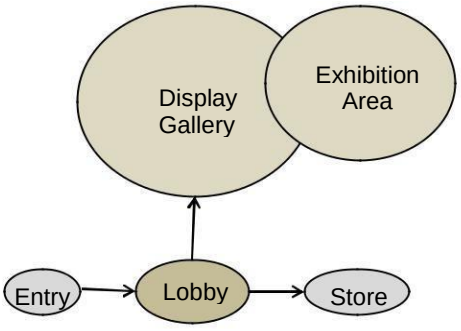
Auditorium



Library



Exhibition Space



Indoor Games

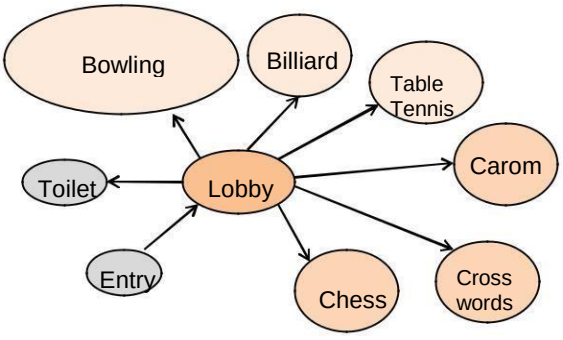


Fig 19: *Functional flow diagram of key zones*
Source : *(Author)*

5.3 Proposed Programs and Space Requirements

- **Total Area of Site : 91,800 Sft (2.10 Acre)**
- **Maximum Ground Coverage (MGC) 58% of site : 53,240 Sft**
- **Total Built Area : 2,22, 900 Sft**
- **Students per Department : 200 Approximately**
- **Total Students : 1400 – 1600 Approximately**
- **Faculty / Staffs : 200 – 250 Approximately**

The areas required for all the functions to be allocated within the university premise have been acquired through interview discussion with the Registrar office of SMUCT and the engineer consultant from MAATRIK architects who are responsible for the design of SMUCT permanent campus. Then the acquired information has been reviewed by the author herself and comparative analysis were done with space requirements of other universities as well as cross referenced with Time Saver's Building Standards and necessary changes have been improvised.

5.3.1 Departments

Department of Fashion Design & technology							
Function	No	Detail	Room no.	Use		Area (sft) per Room	Area
				Student (per)	Staff		
Bachelor of art (HONS) in Fashion Design & technology and Bachelor of Art (HONS) in Apparel Manufacturing technology & Management	1	Head of the department	1		1	150	
	2	Attach toilet	1		1	30	
	3	Coordinator	1			120	
	4	Computer Operator	2				
	5	Personal Secretary	1		1	120	
	6	Common space	1				
	7	Teachers room	4		50	600	1200
	8	Teachers toilet	4		40		
	9	Meeting room	1			600	
	10	Lecture room	12	60		1200	14400
	11	Lecture room	6	30		600	3360
	12	Pattern Laboratory	10	30		1200	12000
	13	Sewing Laboratory	8	30		1200	9600
	14	Color Laboratory	2	30		1200	2400
	15	Textile Laboratory	2			1200	2400
	16	Print shop	1				
	17	Sample room	1				
	18	CAD/ CAM LAB	4	30		1200	4800
	19	Departmental library	1			600	
	20	Lab in charge	1		2	160	
	21	Lab operator	1		1	140	
	22	Wash room	1				
	23	Record room	1		1	140	
	24	Tea preparation room	1				
	25	Teachers dining room	1			560	
	26	Staff seating area	1				
	27	Common lobby for student and visitor	1				
	28	Common toilet (male & female)	2+2				
					Total		52500

Table 1 : *Dept. of Fashion design and technology space requirements*
Source : *(SMUCT administration office and author)*

Department of graphic design & multimedia							
Function	No	Detail	Room no.	Use		Area (sft) per Room	Area
				Student (per)	Staff		
Bachelor of art (HONS) in Graphic Design & Multimedia	1	Head of the department	1		1	150	
	2	Attach toilet	1		1	30	
	3	Coordinator	1			120	
	4	Computer Operator	1				
	5	Personal Secretary	1		1	120	
	6	Common space	1				
	7	Teachers room	2		30	600	1200
	8	Teachers toilet	4		20		
	9	Meeting room	1			600	
	10	Lecture room	6	60		1200	7200
	11	Printmaking studio	1	30		1200	1200
	12	Typography Studio	1	30		1200	1200
	13	Computer LAB	3	30		1200	3600
	14	Animation LAB	1	30		1200	1200
	15	Chroma studio	1			600	
	16	Audio studio	1			600	
	17	Video Editing panel	1	30		1200	1200
	18	Departmental library	1			600	
	19	Lab in charge	1		4	120	
	20	Lab operator	3		2	120	
	21	Record room	1		1		
	22	Teachers dining room	1			600	
	23	Staff seating area	1				
	24	Common lobby for student and visitor	1				
	25	Common toilet (male & female)	2+2				
					Total		23000

Table 2 : *Dept. of Graphic Design and Multimedia space requirements*
Source : *(SMUCT administration office and author)*

Department of Interior Architecture							
Function	No	Detail	Room no.	Use		Area (sft) per Room	Area
				Student (per)	Staff		
Bachelor of art (HONS) in Interior Architecture	1	Head of the department	1		1	150	
	2	Attach toilet	1		1	30	
	3	Coordinator	1			120	
	4	Computer Operator	1				
	5	Personal Secretary	1		1	120	
	6	Common space	1				
	7	Teachers room	2		20	300	600
	8	Teachers toilet	4		20		
	9	Meeting room	1			560	
	10	Lecture room	4	30		1200	4800
	11	Design studio	6	30		1200	7200
	12	Model making room	1	30		1200	1200
	13	Computer LAB	1	30		1200	1200
	14	Lab in charge	1		2	120	
	15	Lab operator	1		1	120	
	16	Record room	1		1		
	17	Departmental library	1				
	18	Jury/ Display area	1				
	19	Teachers dining room	1			600	
	20	Storage room	1			150	
	21	Common lobby for student and visitor	1				
		Common toilet (male & female)	2+2				
					Total		18000

Table 3: *Dept. of Interior Architecture space requirements*
Source : *(SMUCT administration office and author)*

Department of Architecture							
Function	No	Detail	Room no.	Use		Area (sft) per Room	Area
				Student (per)	Staff		
Bachelor of art (HONS) in Architecture	1	Head of the department	1		1	150	
	2	Attach toilet	1		1	30	
	3	Coordinator	1			120	
	4	Computer Operator	1				
	5	Personal Secretary	1		1	120	
	6	Common space	1				
	7	Teachers room	2		20	300	600
	8	Teachers toilet	4		20		
	9	Meeting room	1			600	
	10	Lecture room (20sft/student)	4	30		900	3600
	11	Design studio	8	30		1200	8960
	13	Computer LAB (30sft/student)	1	30		1200	1200
	14	Lab in charge	1		2	120	
	15	Lab operator	1		1	120	
	16	Record room	1		1	600	
	17	Departmental library	1			600	
	18	Jury/ Display area	1				
	19	Teachers dining room	1			600	
	20	Storage room	1			150	
	21	Common lobby for student and visitor	1				
		Common toilet (male & female)	2+2				
					Total		18000

Table 4 : *Dept. of Architecture space requirements*
Source : *(SMUCT administration office and author)*

Department of CSE/CSIT							
Function	No	Detail	Room no.	Use		Area (sft) per Room	Area
				Student (per)	Staff		
Bachelor of science (HONS) in Computer science &	1	Head of the department	1		1	150	
	2	Attach toilet	1		1	30	
	3	Coordinator	1			120	
	4	Computer Operator	1				
	5	Personal Secretary	1		1	120	
engineering and computer science & information technology	6	Common space	1				
	7	Teachers room	2		30	450	900
	8	Teachers toilet	4		20		
	9	Meeting room	1			600	
	10	Lecture room	6	60		1200	6720
	11	Digital Logic design LAB	1	30		1200	1200
	12	Micro processor LAB	1	30		1200	1200
	13	Computer LAB	3	30		1200	3360
	14	Electrical & electronic LAB	1	30		1200	1200
	15	Physics LAB	1	30		1200	1200
	16	Circuit LAB	1	30		1200	1200
	17	Computer Networking LAB	1	30		1200	1200
	18	Lab attendant	4		4	120	
	19	Lab operator	1		2	120	
	20	Record room	1		1	600	
	21	Departmental library	1			600	
	22	Staff seating area	2				
	23	Teachers dining room	1			600	
	24	Storage room	1				
	25	Common lobby for student and visitor	1				
	26	Common toilet (male & female)	2+2				
					Total		21500

Table 5 : *Dept. of CSE / CIT space requirements*
Source : *(SMUCT administration office and author)*

Department of Business Administration							
Function	No	Detail	Room no.	Use		Area (sft) per Room	Area
				Student (per)	Staff		
Bachelor of Business Administration	1	Head of the department	1		1	150	
	2	Attach toilet	1		1	30	
	3	Coordinator	1			120	
	4	Computer Operator	1				
	5	Personal Secretary	1		1	120	
	6	Common space	1				
	7	Teachers room	4		40	300	1200
	8	Teachers toilet	2		20		
	9	Meeting room	1			600	
	10	Lecture room	8	60		1200	9600
	11	Computer LAB	1	30		1200	1200
	12	Lab in charge	1		2	160	
	13	Lab operator	1		1	120	
	14	Record room	1		1	120	
	15	Departmental library	1			600	
	16	Staff seating space	2				
	17	Teachers dining room	1			600	
	18	Common lobby for student and visitor	1				
	19	Common toilet (male & female)	2+2				
					Total		15000
Master of Business Administration	1	Teachers room	1		15	600	600
	2	Teachers toilet	1		15	30	
	3	Class room	4	60		1200	7200
	4	Record room	1		1		
	6	Common lobby for student and visitor	1				
	7	Common toilet (male & female)	4				
					Total		8000

Table 6 : *Dept. of Business Administration space requirements*
Source : *(SMUCT administration office and author)*

Department of English							
Function	No	Detail	Room no.	Use		Area (sft) per Room	Area
				Student (per)	Staff		
B.A. (HONS) and M.A. in English)	1	Head of the department	1		1	150	
	2	Attach toilet	1		1	30	
	3	Coordinator	1			120	
	4	Computer Operator	1				
	5	Personal Secretary	1		1	120	
	6	Common space	1				
	7	Teachers room	1		30	720	
	8	Teachers toilet	6		30		
	9	Meeting room	1			600	
	10	Class room	12	30		600	7200
	11	Computer LAB	1	30		1200	1200
	12	Lab in charge	1		2	120	
	13	Lab operator	1		1	120	
	14	Record room	1		1	600	
	15	Departmental library	1			600	
	16	Staff seating space	1				
	17	Teachers dining room	1			600	
	18	Common lobby for student and visitor	1				
	19	Common toilet (male & female)	2+2				
					Total		12000

Table 7 : *Dept. of English space requirements*
Source : *(SMUCT administration office and author)*

Department of Law							
Function	No	Detail	Room no.	Use		Area (sft) per Room	Area
				Student (per)	Staff		
Bachelor of Law (Honours) (LLB	1	Head of the department	1		1	150	
	2	Attach toilet	1		1	30	
	3	Coordinator	1			120	
	4	Computer Operator	1				
	5	Personal Secretary	1		1	120	
	6	Common space	1				
	7	Teachers room	1		20	600	
	8	Teachers toilet	2		20		
	9	Meeting room	1			600	
	10	Class room	8	30		600	4800
	11	Computer LAB	1	30		1200	1200
	12	Lab in charge	1		2	120	
	13	Lab operator	1		1	120	
	14	Record room	1		1	600	
	15	Departmental library	1			600	
	16	Staff seating space	1				
	17	Teachers dining room	1			600	
	18	Common lobby for student and visitor	1				
	19	Common toilet (male & female)	2+2				
					Total		10000

Table 8 : *Dept. of Law space requirements*
Source : *(SMUCT administration office and author)*

5.3.2 Administration

Function	No	Detail	Room no.	Use	Area (sft) per	Area
Reception & admission office	1	Reception/ Visitor	2			
	2	Pro	6			
	3	Counseling room	4	4	140	560
	4	Computer Operators	1	4	140	
	5	Account/Payment of fees	1	4	280	
	6	Student temporary record room	2		280	560
	7	Document processing room	2		280	560
	8	Store	2		280	560
	9	Deputy registrar's room	1	1	140	
	10	Attached toilet	1		30	
				total		3000

Block- 1						
Function	No	Detail	Room no.	Use	Area (sft) per	Area
Foundation Office	1	Chairman's office	1	1	240	
	2	Attached Toilet	1	1	40	
	3	PA & visitors		3	160	
	4	Director's office	8	8	140	1120
	5	Committee meeting room	1	20	600	
	6	Secretary office	1	1	140	
	7	Conference room	1	50	1200	
	8	Record room	1	1	280	
	9	Office lobby	1			
	10	Information & reception	1			
	11	Catering	1			
	12	Dining area	1		560	
	13	Tea prep room	1			
	14	Wash room/Toilet	4			
	15	Store	1		140	
				total		5000

Block- 2						
Function	No	Detail	Room no.	Use	Area (sft) per	Area
VC's office	1	VC's room	1	1	200	
	2	Attached toilet	1	1	40	
	3	PA & visitors	2		200	
	4	Pro VC's room	1	1	200	
	5	Attached toilet	1	1	40	
	6	PA & visitors	2		200	
	7	Visitors Waiting room	1		200	
	8	Co-ordinate Officer	1	2	200	
	9	Student record room	1		200	
	10	Conference room	1	40	1200	
	11	Office lobby	1			
	12	Information & reception	1		600	
	13	Tea preparation room	1			
	14	Wash room	2			
				total		4000

Block- 3						
Function	No	Detail	Room no.	Use	Area (sft) per	Area
Registrar's Office	1	Registrar's room	1	1	200	
	2	Attached toilet	1	1	40	
	3	PA & visitors	1		200	
	4	Visitors waiting	1		200	
	5	Joint registrar	1	1	200	
	6	Attached toilet	1		40	
	7	Deputy Registrar	3	6	200	600
	8	Assistant Registrar	2	4	200	400
	9	Computer operators	1	2	200	
	10	Section officers	2	4	200	400
	11	Store	1		150	
	12	File/ record room	2		600	360
	13	Document processing room	1		400	
	14	Common toilet	2			
				total		4000
Office controller of exam	1	Head controller	1	1	200	
	2	Attached toilet	1	1	40	
	3	PA & visitors	1		200	
	4	Visitors waiting	1		200	
	5	Deputy controller, senior	1	1	200	
	6	Attached toilet	1		40	
	7	Deputy controller	3	6	200	600
	8	Assistant controller	2	4	200	400
	9	Computer operators	2		200	400
	10	Section Officers	2	6	200	400
	11	Store	1		200	
	12	File/ record room	2		200	400
	13	Document processing room	1		200	
	14	Common toilet	2			
				total		4000

Proctor & Director Student welfare						
Function	No	Detail	Room no.	Use	Area (sft) per	Area
VC's office	1	PA & visitors	1	1	200	
	2	Proctor	1	1	200	
	3	Attached toilet	1		40	
	4	Director student welfare	1	1	200	
	5	Attached toilet	1	1	40	
	6	Joint proctor	1	1	200	
	7	Deputy Proctor	1	4		
	8	Computer operator	1	1	200	
	9	Store	1		200	
	10	Common toilet	2			
Treasurer's Office	1	Treasurer room	1	1	200	
	2	Attached toilet	1	1	40	
	3	Co- ordinate officer	1	2	200	
	4	Secretarial services	1	1	200	
Accounts Office	1	Director of accounts	1	1	200	
	2	Chief accounts officer	1	1	200	
	3	Accountants	1	2	200	
	4	Accounts officer	1	2	200	
	5	Confidential records room	1	2	200	
	1	Common Lobby	1			
	2	Information & reception	1			
	3	Wash room/ toilet				
				total		3000

Table 9 : *Administration Block space requirements*
Source : *(SMUCT administration office and author)*

5.3.3 Recreation / Common Facilities

Function	No	Detail	Room no.	Use	Area (sft) per	Area
Library (capacity 350 student)	1	Entry lobby				
	2	Issue office				
	3	Librarian room				
	4	Asst. Librarian room				
	5	Seating area				
	6	Books stacks				
	7	Photocopier Machine space				
	8	Store room				
	9	Toilet				
				total		15000
Auditorium (capacity 800 student)	1	Foyer				
	2	Waiting room				
	3	Ticket Counter				
	4	Store				
	5	Seating Area				
	6	Stage				
	7	Back stage				
	8	Make up room				
	9	Dressing room				
	10	Waiting room				
	11	Toilet				
	12	Projection room				
	13	Mechanical room				
	14	Common toilet				
				total		20000
Exhibition space	1	Display gallery				
	2	Exhibition area				
				total		8000
Indoor Games	1	Bowling, Billiard, Table tennis				
	2	others	total	5000+ 230 x 2+ 380 x 2		10000
Cafeteria	1	Foyer				
	2	Dining				
	3	Kitchen				
	4	Store				
	5	Services Counter				
	6	Toilet				
				total		5000

Table 10 : *Recreation Facilities space requirements*
Source : *(SMUCT administration office and author)*

5.4 Program Development Synopsis

The programs and areas required for the functions to be included in the design have been thoroughly revised. Although, provisions for changes and alterations to be made as the design phase of the project begins are left open for consideration for the betterment of the design itself.

CHAPTER 6: Design Development

6.1 Concept Development

6.2 Form Development

6.3 Functional Distribution

6.4 Drawings

6.5 Section and Elevation

6.6 Perspective Sketches

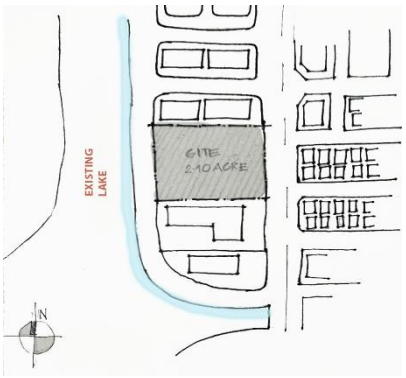
6.7 Model Images

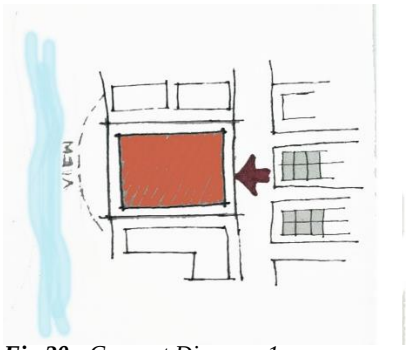
CHAPTER 6

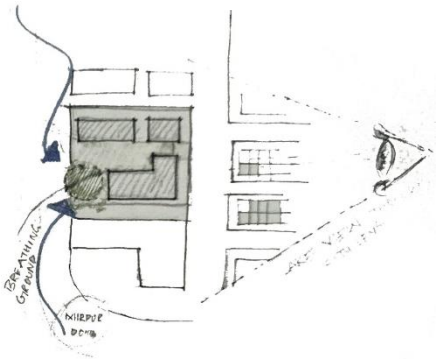
Design Development

6.1 Concept Development

The idea was to design a campus by taking up the challenge of a compact site and the surrounding residential context in a positive manner. This was attempted through taking advantage of the potential existing lake on one side of the site and connecting it through the campus itself and linking it to the surrounding residential neighborhood by creating a public plaza. As a result, designing a public strata within the campus that would on one hand act as a cultural hub for the neighborhood as well as showcase the creative elements and activities of the university itself.







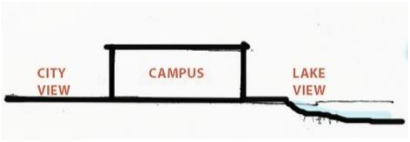
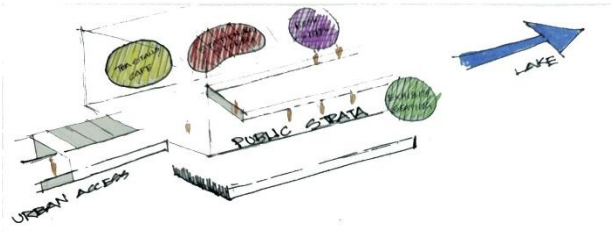


Fig 20 : *Concept Diagram 1*
Source : *(Author)*

Based on the study and interpretation of the vehicular flow in the given site context as illustrated in site appraisal chapter, the aim was to design prioritizing pedestrian movement, ease of accessibility of users from the surrounding neighborhood and also to avoid traffic hindrances. Thus, the public plaza was elevated to first floor level rather than the ground level- a more people oriented approach for convenient movement and experience. However ensuring the individuality and sanctity of the university functions.



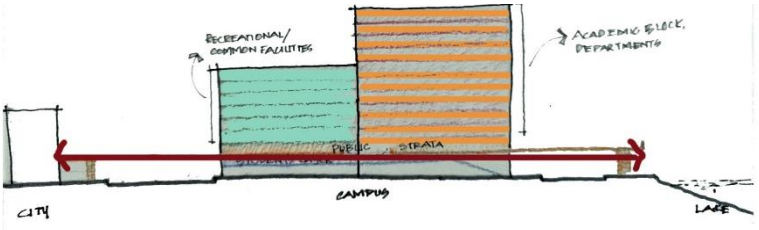


Fig 21: *Concept Diagram 2*
Source : *(Author)*

6.2 Form Development

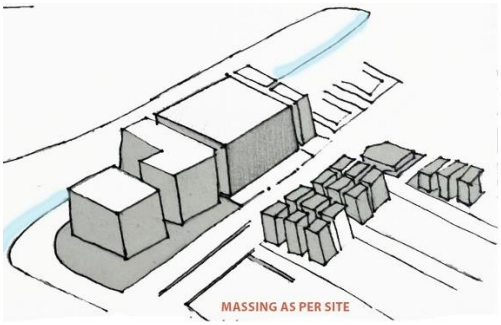


Fig 22: *Form Derivation A*
Source : *(Author)*

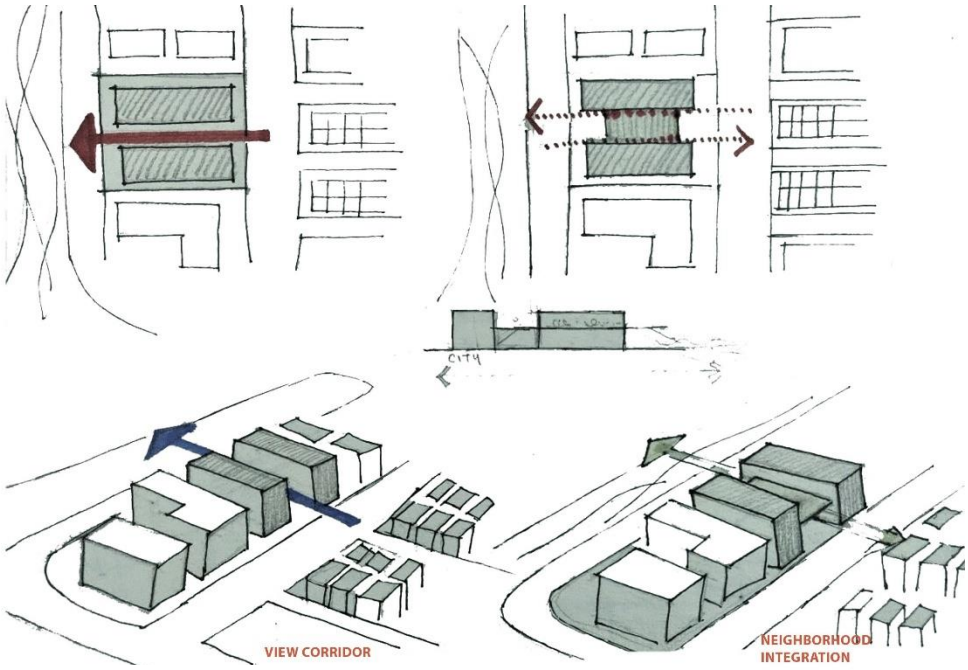


Fig 23 : *Form Derivation B*
Source : *(Author)*

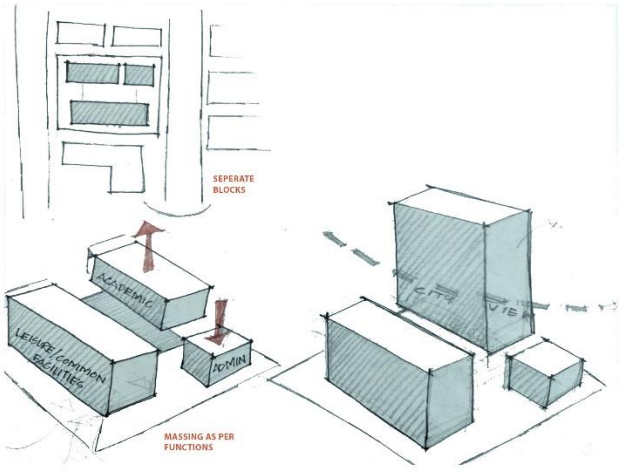
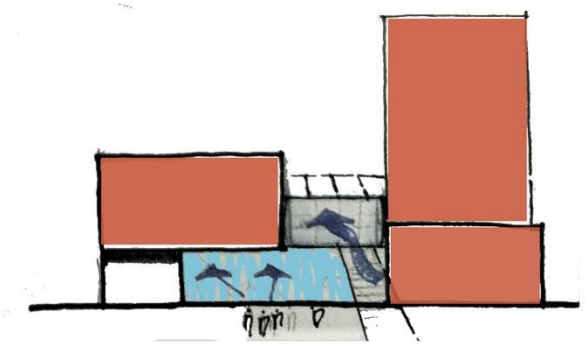
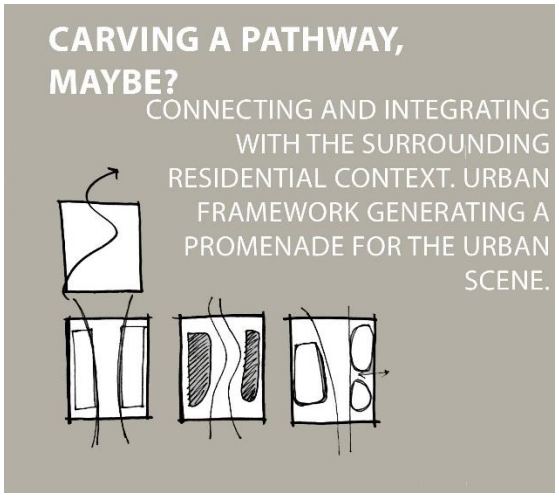


Fig 24: *Form Derivation C*
Source : *(Author)*

Initially the derivation of the form began by massing the form based on the site. Then in an attempt to connect the residential neighborhood on the east of the site to the lake on the west, a pathway was created through the site itself. It was mainly done in order to achieve an integration of the neighborhood with the site context. Further on, views and climatic conditions were taken into account in terms of massing.





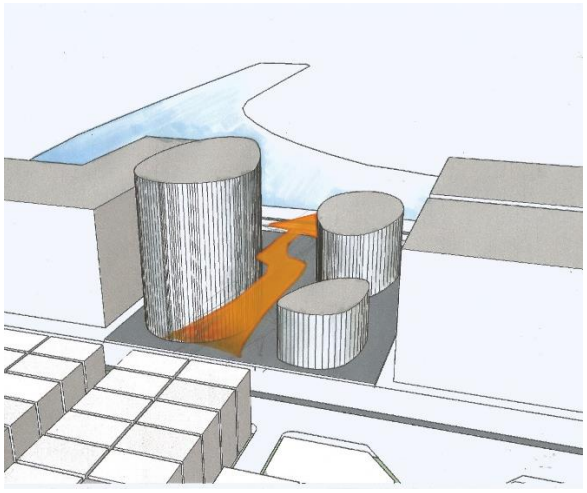


Fig 25: *Form Derivation D*
Source : *(Author)*

Considerations of and emphasis on the site context and climatic issues, the form took a more organic or fluid approach to break the rigidity of the dense surrounding scenario. Since the site is packed on both its north and south by fifteen storied commercial buildings, the fluidity of the campus's mass will allow more natural ventilation and lighting conditions and also act as an urban window for the entire neighborhood through the elevated public plaza. Resulting in a vibrant scene and a breathing ground.

6.3 Functional Distribution

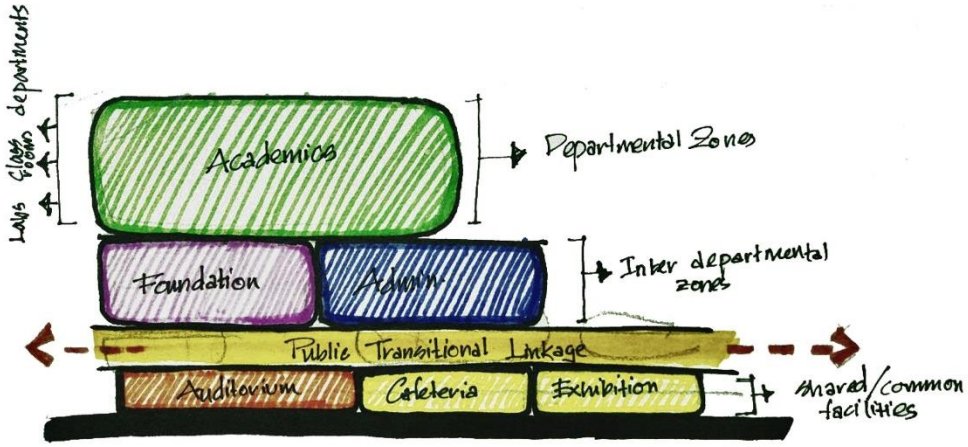


Fig 26: *Conceptual Zoning*
Source : *(Author)*

A university comprises of numerous multi faceted functions. The design of the project therefore primarily began by segregating all these variety of functions under three main categories- Administrative, Communal/ Leisure facilities and Academic Functions. The Shanto Mariam University of Creative Technology consists of 8 departments. These departments were again divided into 2 sub categories- i) Creative departments and ii) Science / Theoretical Departments. The spatial distribution of the functions were done based on the two types of department categories since the creative departments are more studio based while the theoretical ones are more lecture based. This will allow more optimal utilization of the classrooms and studios. While, the administration of these departments were placed in the layer in between connecting all the departments into one giant core.

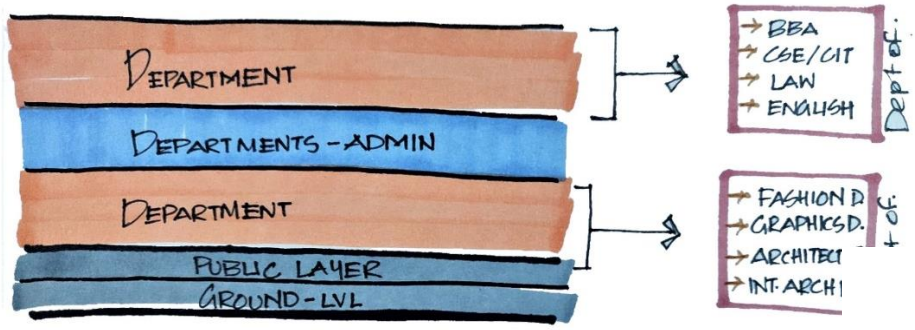


Fig 27: *Academic Function Distribution*
Source : *(Author)*

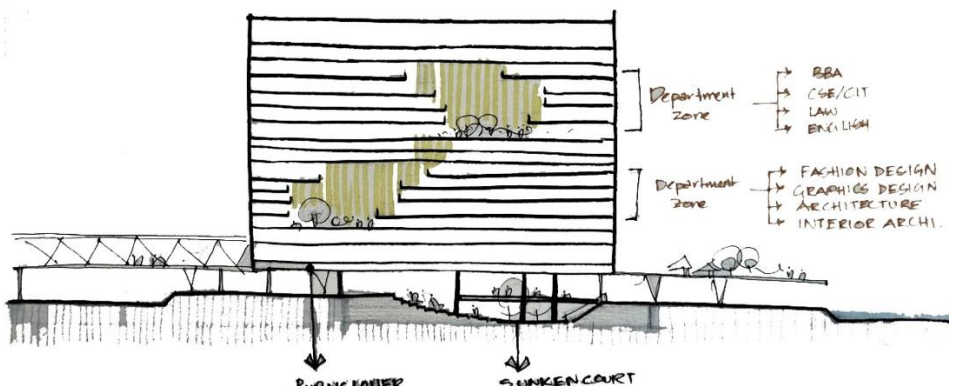


Fig 28: *Conceptual zoning section*
Source : *(Author)*

6.4 Drawings

Fig 29: *Ground Floor Plan*
Source : *(Author)*

PLAN AT LVL- 1

Fig 30: *Plan at Lvl -1*
Source : *(Author)*

Academic Block Typical Floor Plans

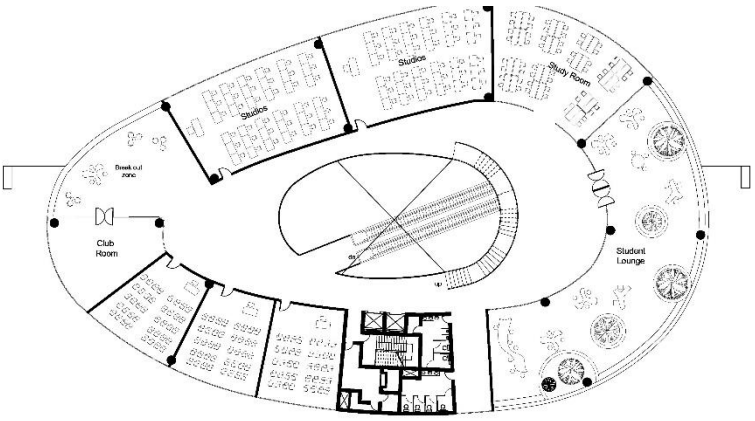


Fig 31: *Plan at Lvl - 2*
Source : *(Author)*

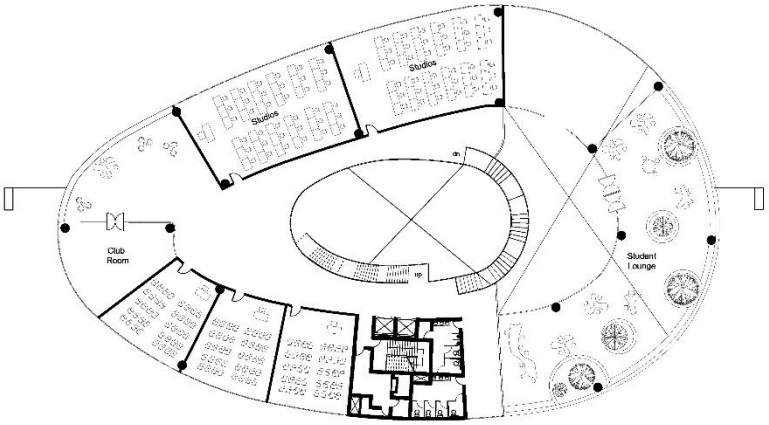


Fig 32: *Plan at Lvl - 3*
Source : *(Author)*

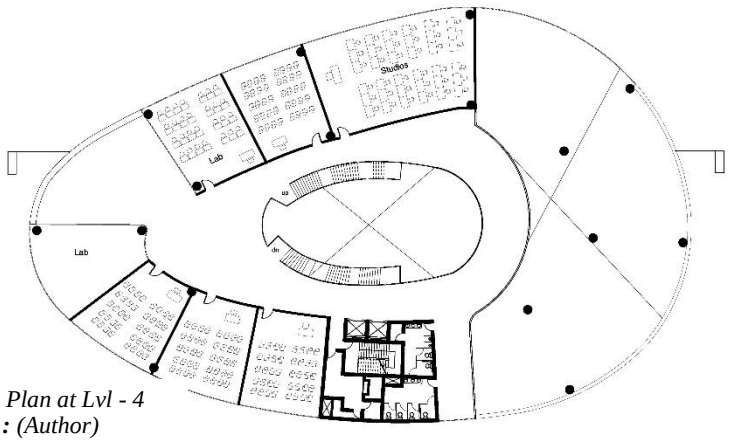


Fig 33: *Plan at Lvl - 4*
Source : *(Author)*

Floor Plans

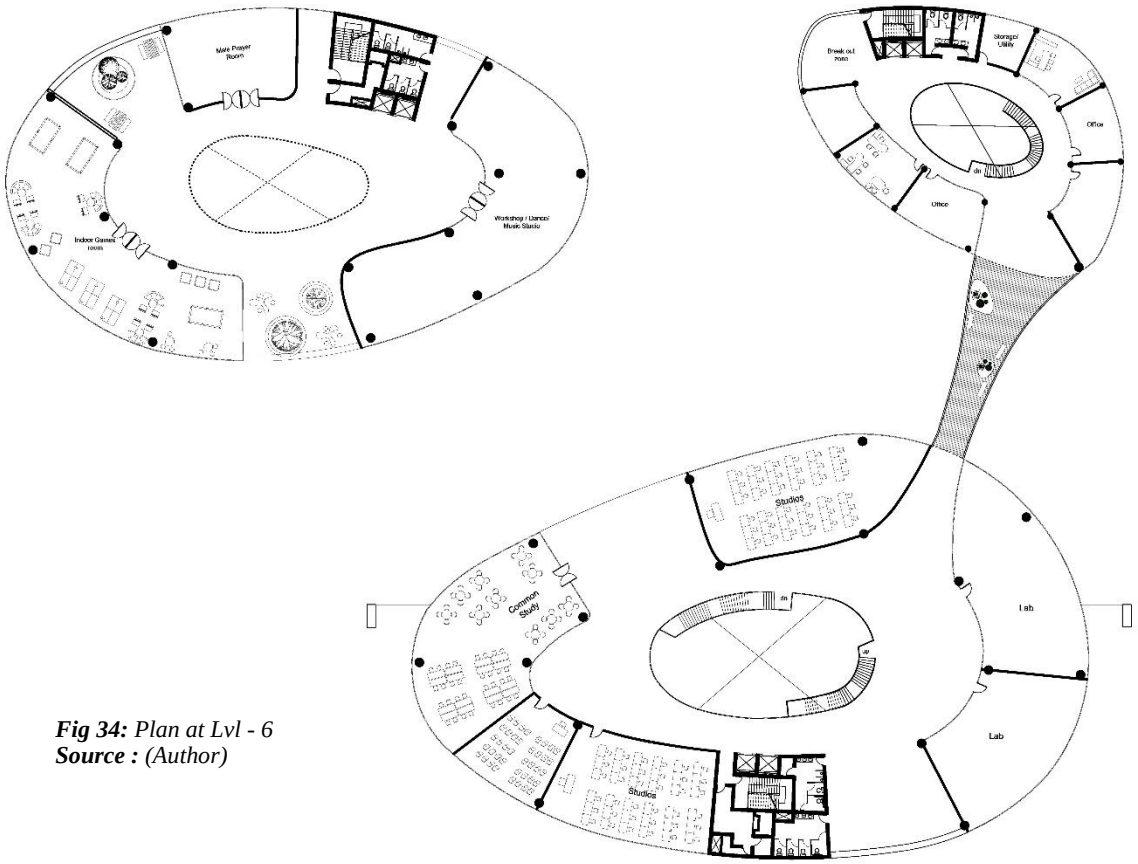


Fig 34: *Plan at Lvl - 6*
Source : *(Author)*

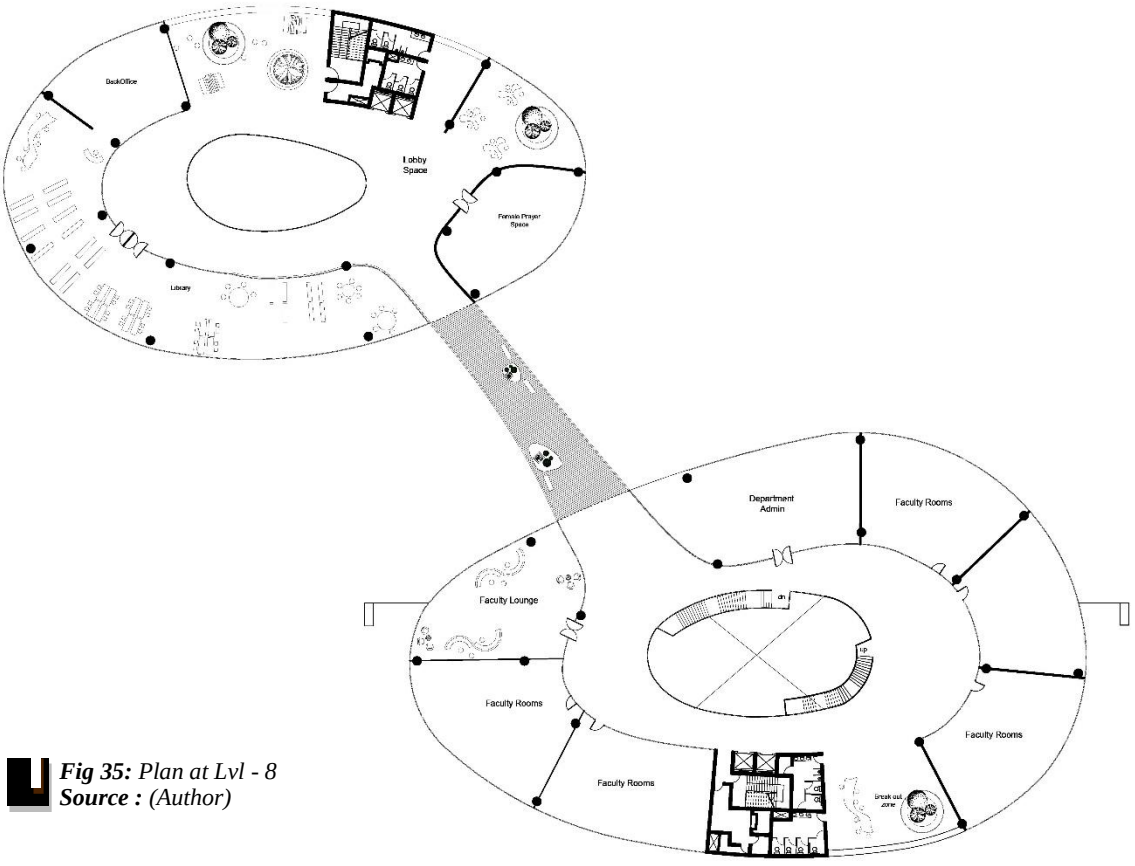


Fig 35: *Plan at Lvl - 8*
Source : *(Author)*

6.5 Section and Elevation

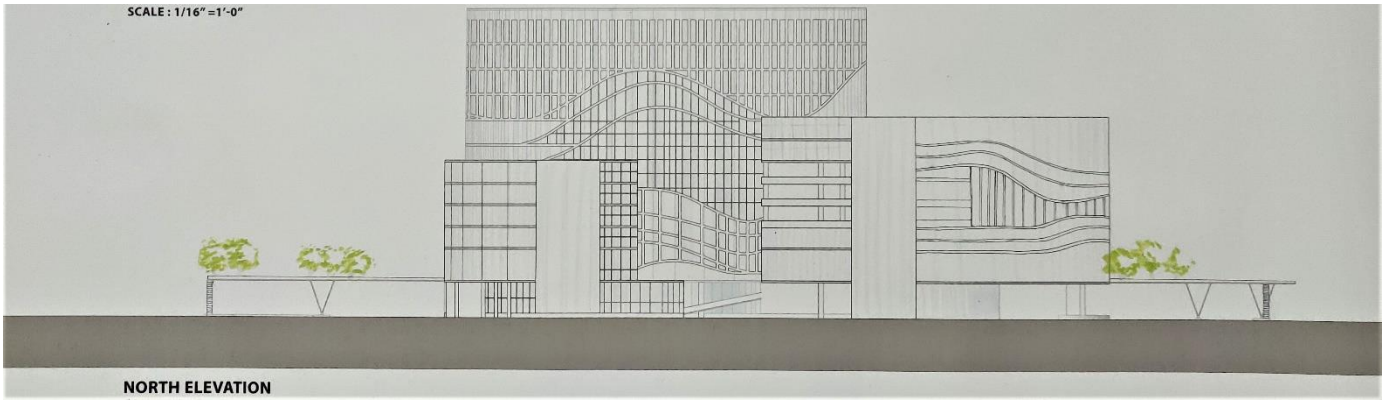


Fig 36 : *North Elevation*
Source : *(Author)*

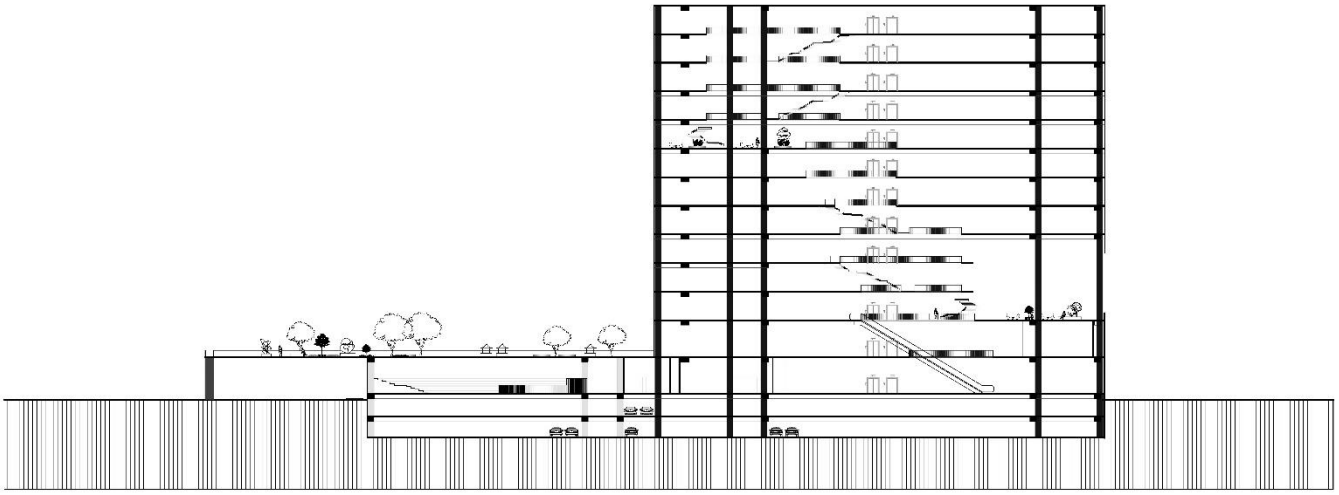


Fig 37: *Section AA*
Source : *(Author)*

6.6 Perspective Sketches

Fig 38: *Plaza level aerial perspective*
Source : *(Author)*

Fig 39: *Sunken courtyard perspective*
Source : *(Author)*

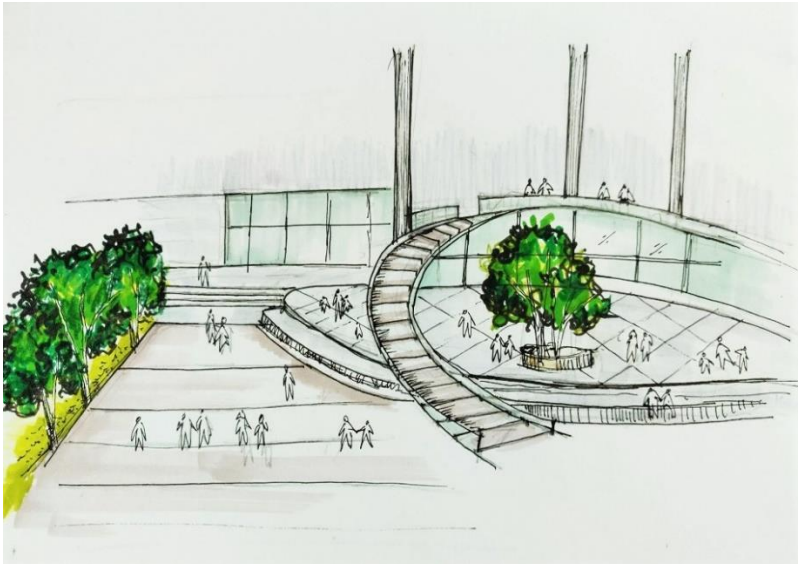
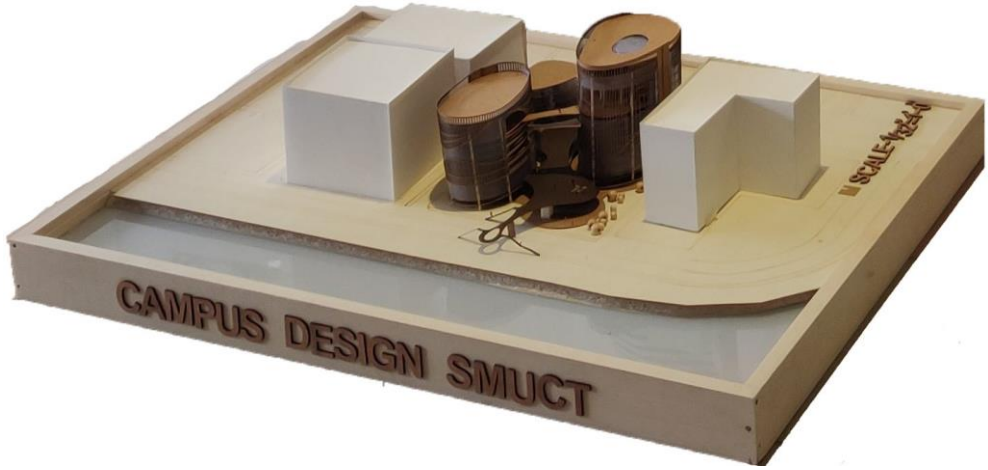


Fig 40: *Central court at ground level*
Source : *(Author)*

6.7 Model Images



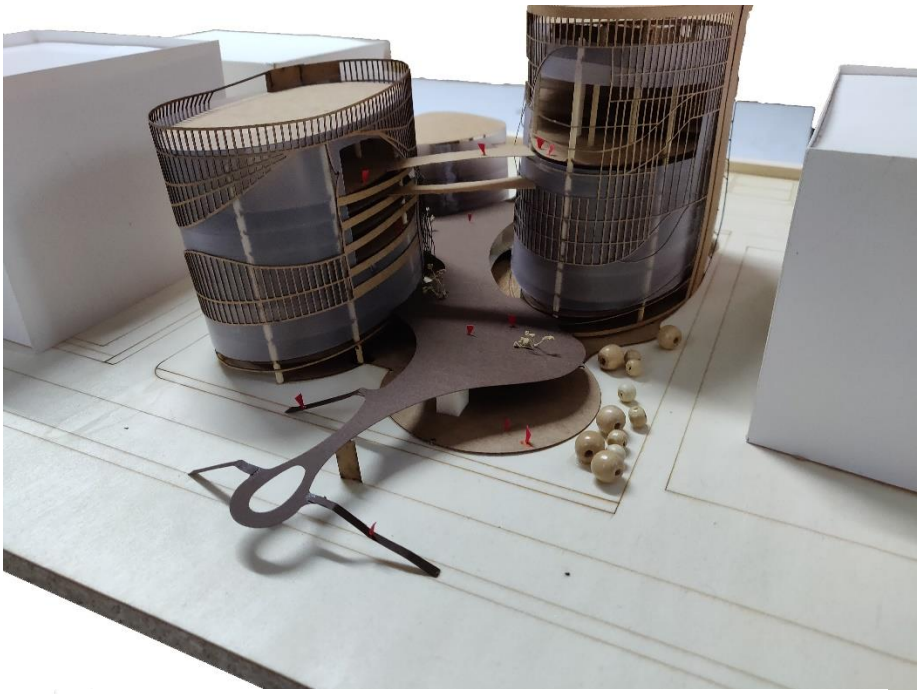


Fig 41: *Model images*
Source : *(Author)*

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