The Framework for the Development of The Southeast Tsinghua University Campus

by

Junfu Zhu

B. Arch (1997)

Tsinghua University

Submitted to the Department of Architecture in
Partial Fulfillment of the Requirements
for the Degree of Master of Science in Architecture Studies
at the
Massachusetts Institute of Technology
May 2000

Signature of Author.....
Department of Architecture
May 15, 2000

Certified by.....
Roy Strickland
Principal Research Scientist in Architecture
Thesis Supervisor

Accepted by.....
Roy Strickland
Principal Research Scientist in Architecture
Chairman, Department Committee on Graduate Students

THESIS READERS

Michael Dennis
Professor of Architecture

Perry Chapman
Principal of Sasaki & Associates Inc.

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Abstract

Tsinghua University is located in the northwest of Beijing. Tsinghua University is one of the best universities focusing on science, engineering, and technology in P. R. CHINA. At present, Tsinghua University is aiming to develop the University not only as one of the national bases for higher learning and for scientific research and technological development but also as one the most beautiful green campuses in the country.

My main goal in this design thesis is: remove and demolish some old buildings and build up a campus net for the 21st century; establish a clear strategy for the long-range growth and future development; create out a big green belt in the campus and contribute it to the whole city; establish and enhance the civic structure of the campus by defining open space, giving the space new character, and creating the visual linkages and movement patterns; design a 24-hour campus community.

Thesis Supervisor: Roy Strickland
Title: Principal Research Scientist in Architecture

Acknowledgments

During the summer of 1999, Prof. Zheng, Yankang, Vice president of the Tsinghua University visited to Sasaki & Associates Inc. He showed his strong orientation to invite a world-class campus-planning firm to participate in the Tsinghua campus master plan design. In October 1999, Prof. Wang, Dazhong, President of the Tsinghua University paid a special visit to Sasaki & Associates Inc and reached an oral agreement on the future corporation.

I was graduated from the Tsinghua University in 1997 and deeply love the university. I consider this is a very good thesis topic. From then on, I started to do research on the campus design. I discovered that making a long-range framework for the development of the campus should be based on the research of both the campus design principles and the Tsinghua campus architectural and planning history.

From November 1999, I began traveling around the New England District, visiting schools and conducting research at several institutions. I visited several campuses, including Harvard, MIT, Yale, University of Virginia, Columbia, Princeton, Brown University, Rode Island Design School, Brandeis, Tufts, Wellesley College, etc.

I am grateful for the help provided by: Roy Strickland, Principal Research Scientist of MIT, (my thesis advisor); Professor Michael Dennis, MIT; Perry Chapman, Principal of Sasaki & Associates; Daniel Berstein, Senior Associate of Sasaki & Associates; Professor William Mitchell, MIT; Professor Qingyan Chen, MIT; Professor John de Monchaux, MIT; Professor Dazhong Wang, President of Tsinghua University; Professor Yankang Zheng, Vice President of Tsinghua; Professor Shaoxue Hu, Tsinghua University; and Professor Wenyi Zhu, Tsinghua University.

I also thank those friends who help me to finish this design: Xiaofang Luo, Larry Lin, Hao Wang, Jones Timothy, Mathema Kiran, Ben Chung, Markus Elkasha, Tsui Jeffery, Ruopeng Wang, Jing Dong, and Hongyu Cai.

Finally, I want to express special gratitude to all the people who have given me help and strength.

This thesis is my gift to my parents, Wei Miao, and Huiling Gong.

Junfu Zhu
May 2000

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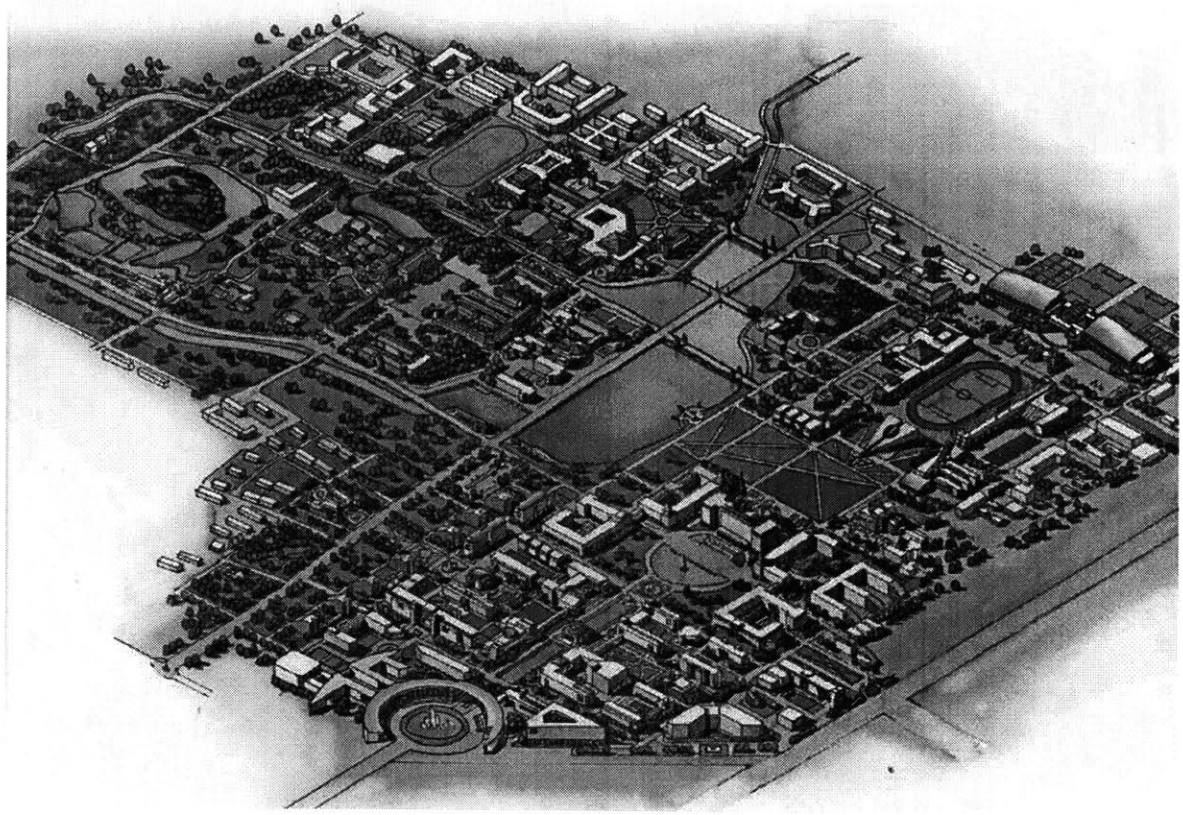
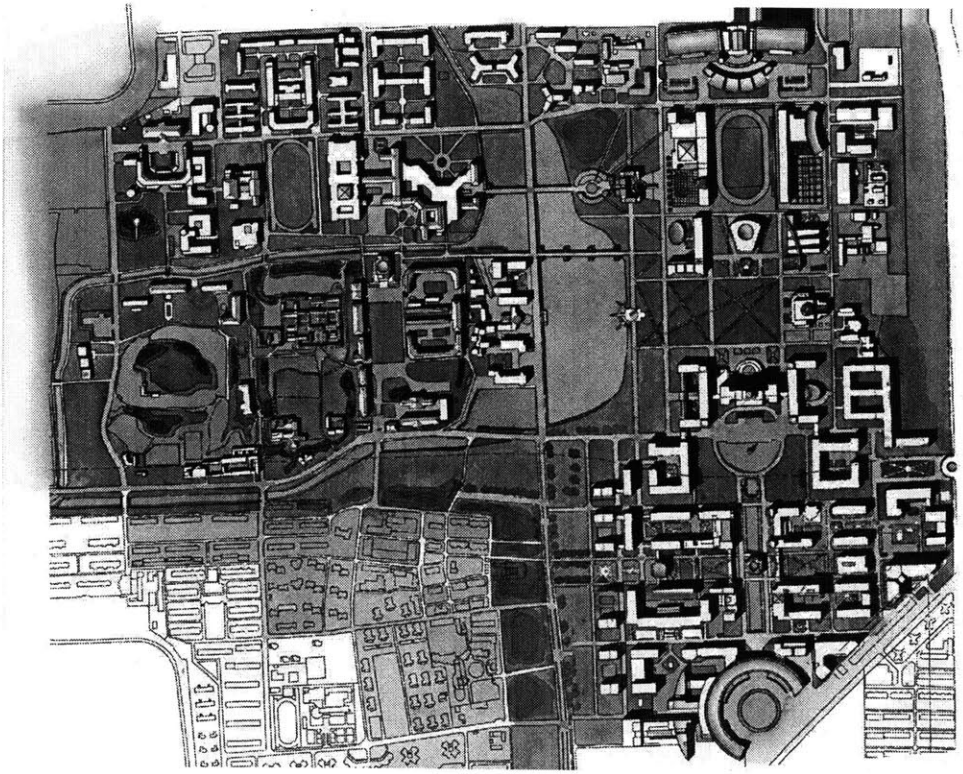


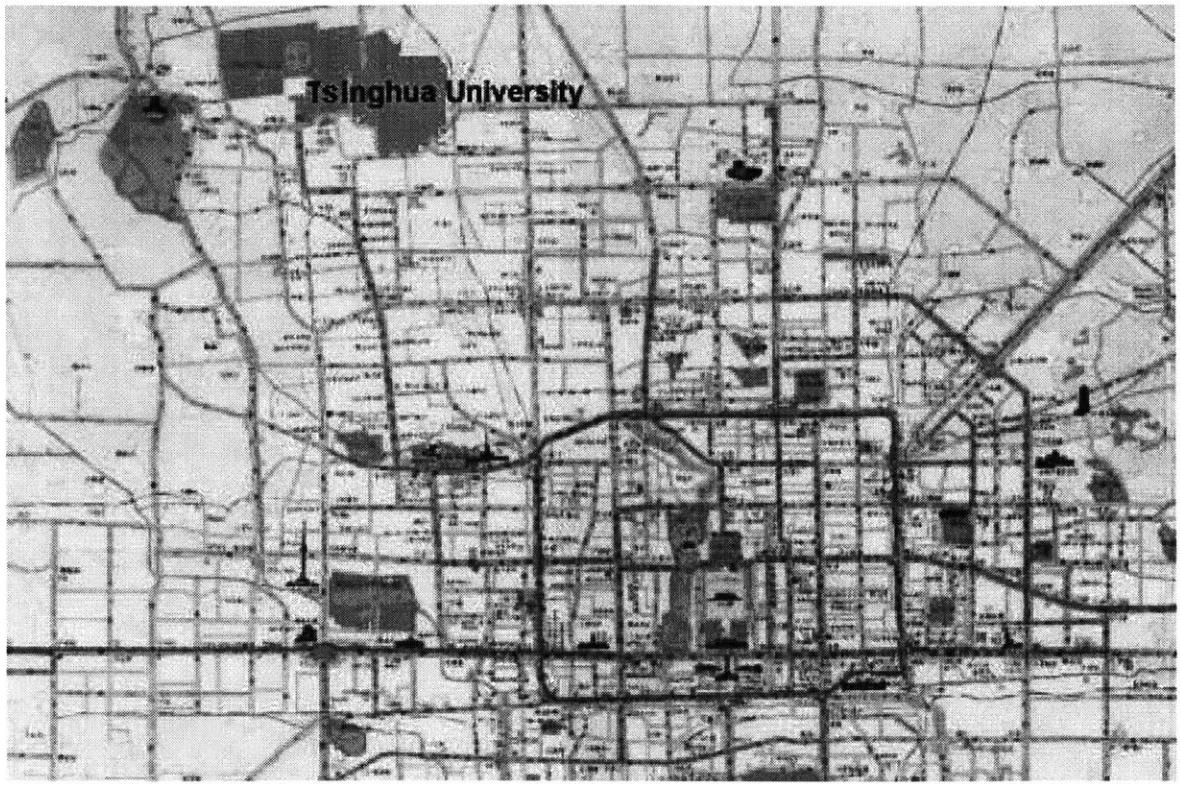
Tsinghua Campus Design



My gift to my family and my friends.

Chapter1: Architectural and planning history of Tsinghua University

Tsinghua University is located in the northwest of Beijing City. Its western gateway is facing to the Summer Palace and the Yuanming Royal Garden.



1. Map of the Beijing City. Tsinghua University is located in the suburban of Beijing.

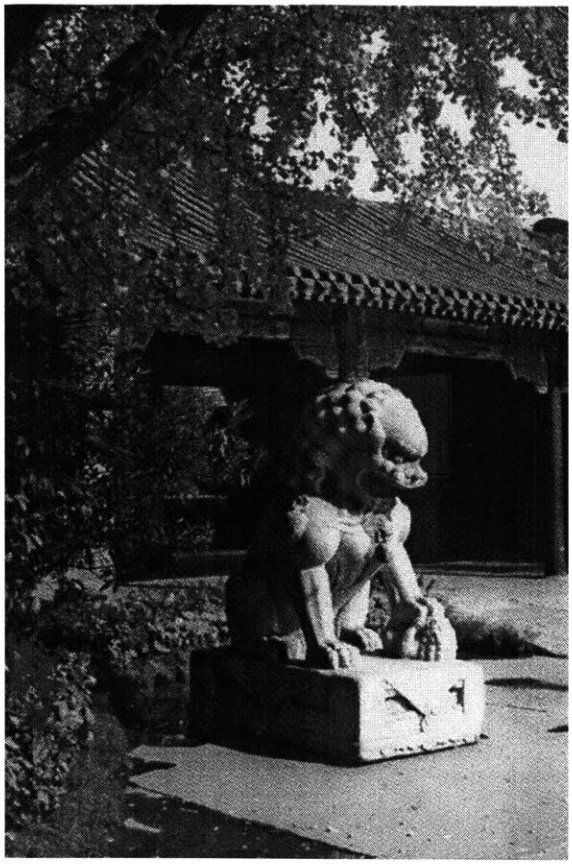
Tsinghua University is widely acknowledged as the best educational institution focusing on science, engineering, and management in the People's Republic of China. At present, Tsinghua University consists of 6 schools, 31 departments, 44 research institutes, 9 engineering research centers and 163 laboratories including 15 national key laboratories. Tsinghua University currently includes around 12,000 undergraduate students and 6,000 graduate students.

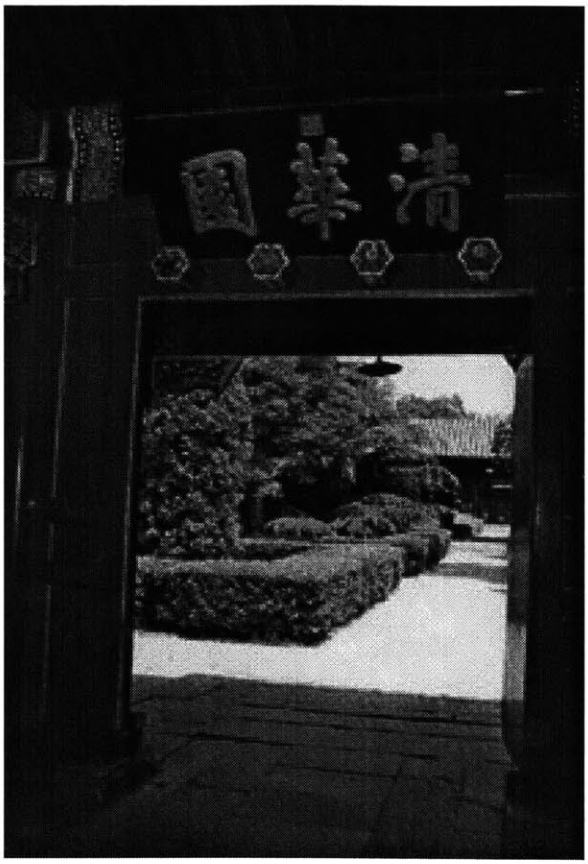
The Tsinghua campus planning history can be divide into four stages:

1. Former Royal Garden(1762-1909)

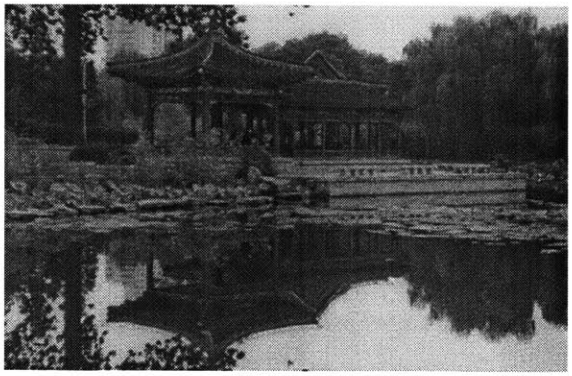
Tsinghua Garden was a former Royal Garden called Xi Chun Garden. At the beginning of the 1700s, Kangxi Emperor started to build five big Royal gardens in northwest of Beijing. In 1762, major constructions were completed. In 1822, Daoguang Emperor gave Xi Chun Garden to his forth son as a gift. The prince renamed the garden as

Tsinghua Garden. The whole area of this Garden was 450 acres. In 1860, the British and French army invaded Beijing and burned all the five gardens. The only part left was the Gongzi Palace which became the core of the Tsinghua campus today. In 1909, the Department of Education selected this abandoned garden as the site of the new founded preparatory school. In 1912, this school was named " Tsinghua School".





1.2. The gate of the Tsinghua Garden



3.4. Beautiful Royal Garden.

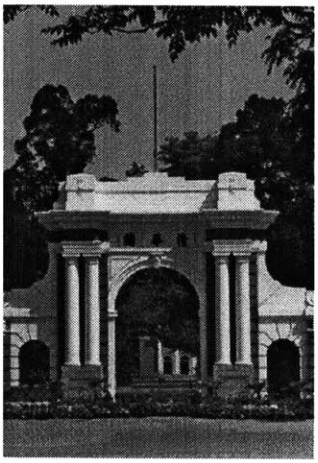
2. Neoclassical Academic Village

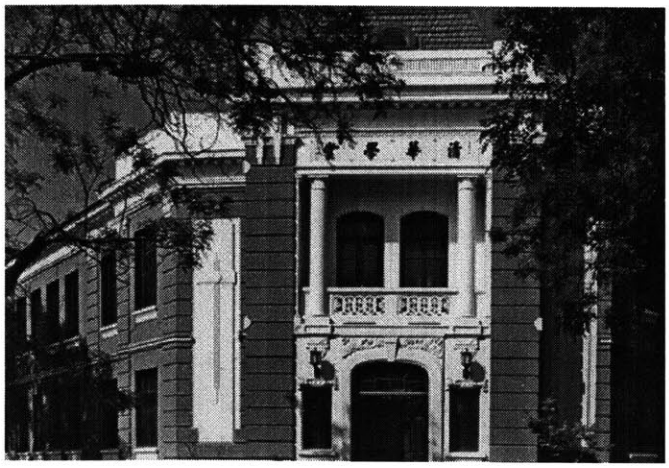
- **1909-1914**

On July 10, 1909, the Chinese Government set up a preparatory school called the 'American Education School'. Students would be sent by the government to study modern science and technology in the United States of America.

On October 25, 1909, the Department of Diploma and the Department of Education selected the Former Royal Garden, Tsinghua Garden, as the site of the campus. On April 19, 1911, the government named this school 'Tsinghua School'.

Tsinghua School initially served as a small institution. In 1909, the Department of Education hired Emil Sigmund Fisher, an American Austria architect, to design some new buildings close to the Royal Garden. The original constructions included the Main Gate, the Tsinghua Classroom, the Worship Hall; the residential houses for the American faculty families, and the medical care center. The total cost is approximately $350,000. Most of the construction was finished by the beginning of 1911 and could server over 600 students.





5.6. The gate and the first class room building designed by Emil Fisher.

Emil Fisher, born in Vienna in 1865, was a lawyer before coming to China. Fisher made a lot of valuable friends in the Chinese government, especially the officers in the Department of Diploma. These friendship and connection helped him to get his first major project—the constructions in Tsinghua. Fisher spent two months working on the initial design proposal. His design was widely accepted by the first president of the Tsinghua School and the government. Emil Fisher died in the Japanese camp during the Second World War leaving behind two famous books: *"Travel in China", "Guide to Peking and its Environs".*

The Tsinghua Classroom Building, finished in 1911, was one of the most important buildings in the early stage. It was a wood brick structure with a gray façade and a red roof. From then on, a lot of famous professors moved their offices into this 4650m^2 building.

On April 29, 1911, the Junior college 'Tsinghua College' officially opened to the public. At that time, there were 500 students from all over the country with 30 faculty members including 15 American faculty, and some staff. Tsinghua College became the top modern high-level education institute in China.

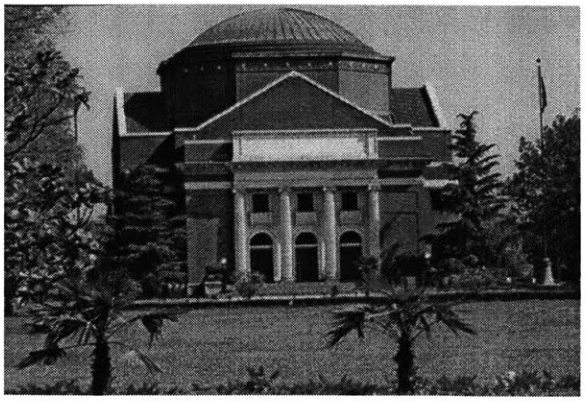
- **1914-1928**

In October 1914, two young American architects Henry Murphy and Richard Dana were hired by the Tsinghua College to make the first comprehensive master plan for the develop of the Tsinghua campus. They were also invited to design the four major buildings: the Great Hall, the Science Building, the Library and the athletic stadium. The total cost of construction was close to one million-dollar with the two architects receiving a commission of over $100,000. At that time it was the largest project in Asia.

Henry Murphy was born in New Haven, Connecticut in 1877. He obtained his Bachelor of Architecture from Yale University in 1899. From 1900 to 1904, Murphy practiced in several Architecture offices in New York City. In 1914, Murphy participated in the Episcopal Board of Missions and the Yale Foreign Religion Society. Since Yale Foreign Religion Society intended to build a China-Yale University campus in Changsha, Hunan Murphy was assigned as the principle architect.

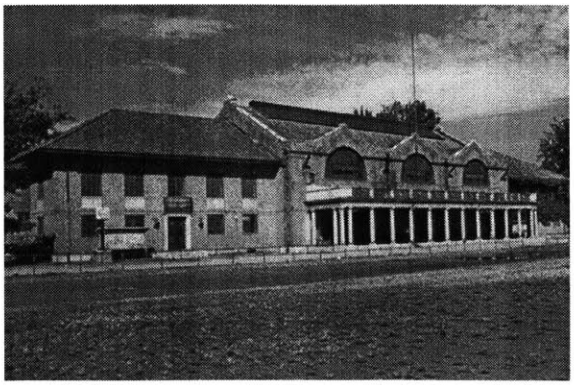
On June 6th, 1914, Henry Murphy was introduced to Zhou Yichun, the second president of the Tsinghua College. They had a very constructive conversation about the campus planning and development of the university. President Zhou invited him to make a master plan for the new Tsinghua campus. The main reason for Murphy getting this commission was his Yale background, an education was shared with the President.

From June 13th, to the 15th, Murphy and President Zhou talked extensively about how to expand the campus based on Fisher's initial design. The design proposal was finished by February 15th, 1915. The construction of the Library and the Stadium started during the middle of April and were completed one and a half years later.

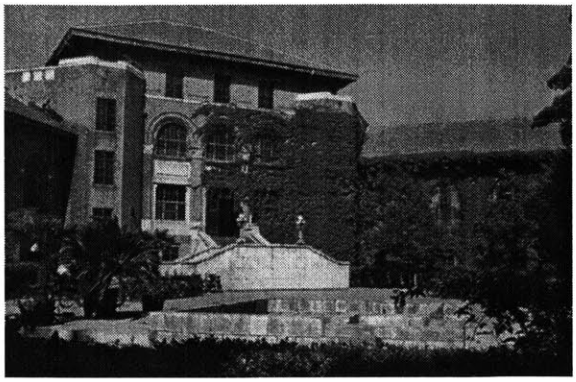


7.The Main Hall

8.Over look of the campus



9. The Stadium



10.The Library

1. The Library was first opened in March 1919. The total cost was $175,000. This luxurious library would contain more than 100,000 books within an area of 2114m^2.

2. The Stadium with an area of 3593m^2 was completed at the same time as the Library and cost $244,500. The statue of President Theodore Roosevelt was installed at the main entrance in the memory of his contribution to the found of the Tsinghua College.

3. The Science Building was finished in the September 1919. It cost $124,000 to build this three-story 3549m^2 building. It was rebuilt in 1980s after destroyed during the Cultural Revolution.

4. The Main Hall, stood in the center of the campus that cost $155,000, was finally finished by April of 1921. The Main Hall, a large cylindrical and domed structure, made the Tsinghua campus a dream for the young men in China.

Those four major buildings, the earliest Chinese modern architecture with American Renaissance spirit, became a very valuable part of the Modern Chinese architecture history.

- **1928-1949**

On Autumn 17th, 1928, the Tsinghua College changed to the National Tsinghua University. The University was composed of three schools and 14 departments. Founded 19 years after the first preparatory school, the National Tsinghua University had grown from 43 to 1338 students.

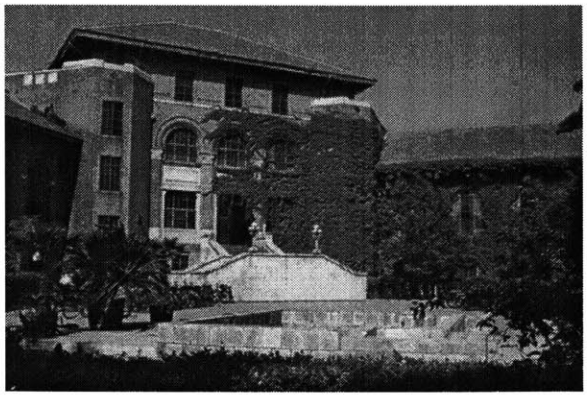
In 1930, President Luo founded the Campus Planning Committee of the Tsinghua University. In 1928, President Luo financed $400,000 from the China Bank and hired a young architect named Yang Tingbao to make a new master plan based on Murphy's plan.

Yang Tingbao was born in an Artist family in 1901. He entered Tsinghua preparatory school in 1915. After six years study in Tsinghua, he went on to study architecture at the

University of Pennsylvania. In 1926, Yang obtained his Bachelor of Architecture from the university. He spent a year in Europe studying the classical architecture. He went back to China in 1927.

In 1930, Yang Tingbao produced a long-range plan for the Tsinghua University. In 1932, the expanding of the library was finished. The new part fitted the old part perfectly and this project became the most successful expanding design example for the architecture students. During the summer of 1933, the Chemistry building, the largest department building in the university, was finished. Then, the Main Gate of the University, the Mechanize building, the Electric building were completed sequentially. From 1928 to 1937, Tsinghua campus expanded to 2000 acres and built 12 additional buildings, which cost $500,000 all together. In 1937, after 3 stages of development, Tsinghua campus became a full service community.

On July 1937, The Japanese army invaded Beijing. The faculty and students moved to South China. The Tsinghua University was reopened in May 1946. At that time, there were 2283 students and 368 faculty. During the next 3 years, there was no new construction on the campus.



11. The Library

12. The Chemistry Building

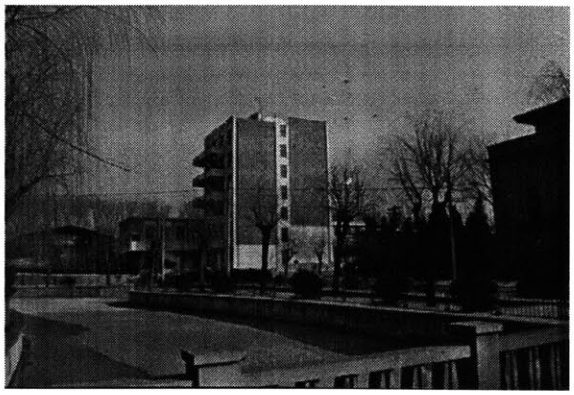
3. Development in the New China.

- **1949-1960**

In 1949, after the People's Republic of China was founded, the new government started to build a modern country with the help from the Soviet Union. It followed almost all the Soviet Union administration, industry, agriculture, military and education systems.

Tsinghua University was reorganized and reconstructed into a technology institute in this background in 1952. At that time, there were more than 5,000 students. In 1954, the Tsinghua President Committee decided to expand the campus. The major part of this plan was the design of the main building group. This design scheme strongly embodied the Soviet style as big symmetry main building, big square, and axis symmetry. The main building became the tallest building in Beijing in 1960s.


11.12. The Main Building

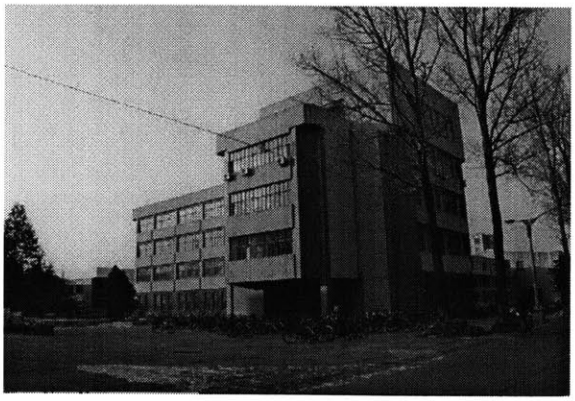
13. The Nuclear Building

14. The New Water Conservation Building

- **1960-1976**

- **1977-1989**

After the Culture Revolution, Tsinghua came into live again and grew very fast. There were 7604 undergraduate students, 751 graduate students, 8100 faculty and stuff in 1980.




15.16. Classrooms

17.Guest House

18. Dormitory

4. Fast Growing Stage. 1990-1999

Starting from 1990, Tsinghua University built a lot of new buildings all over the campus. Tsinghua became one of the largest Universities in P.R.China.

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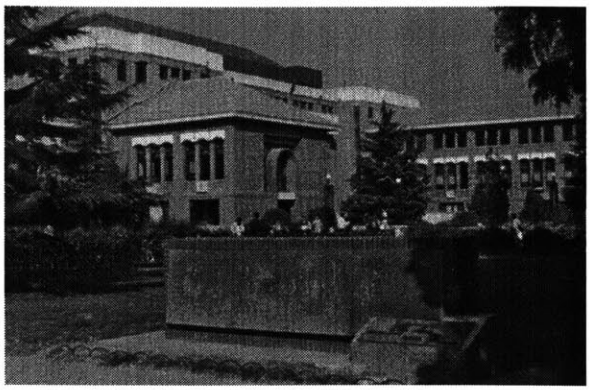
19. Mathematics School



20.New Library

21.Architecture School

22. Business School

Appendix A

Major building list of Tsinghua University

Building name	Usage	Structure type	Space (m^2)	Designer	Built date
Gongzi Palace	Tsing Dynasty of royal garden	Wood	3182.5	Unknown	Tsing Dynasty
Guyue Hall	Tsing Dynasty of royal garden	Wood	831.45	Unknown	Tsing Dynasty
Yicun Yard	Tsing Dynasty of royal garden	Wood	431.37	Unknown	Tsing Dynasty
Gate	Gate	Brick and concrete	N/A	Unknown	1909 --1911
Yard #1	Administration building	Brick and concrete	2325	Unknown	1909 -- 1911
Tongfang Bu	Exhibition	Brick and concrete	214.52	Unknown	1909 – 1911
North Yard	Dorm	Brick and concrete	3484	Unknown	1909 -- 1911
Campus hospital	Hospital	Brick and concrete	1110	Unknown	1909 -- 1911
Library	Library	Mixed	2114.44	H.K.Murphy	1916.4 – 1919.3
West gym	gym	Mixed	3593	H.K.Murphy	1916.4 – 1919.3
Science building	Academic Laboratory	Mixed	3549	H.K.Murphy	1917.4-1919.9
Great hall	Hall	Concrete	1843	H.K.Murphy	1917.4-1921.4
Civil building	Academic	Mixed	2183	Unknown	1922.3
South yard	Residential	Brick and wood	3150	Unknown	1920-1921
West yard	Residential	Brick and wood	3131	Unknown	1923-1924
Old library, second stage	Library	Mixed	5252	Yang, Tingbao	1930.3-1931.11
Bio-building	Academic and laboratory	Mixed	4221	Yang, Tingbao	1929.9-1930.11
Fourth yard	Dormitory	Mixed	4417	Yang, Tingbao	1929.9-1930.10
Chemistry building	Academic and laboratory	Mixed	5722	Shen, Liyuan	1931.7-1932

Water conservation laboratory	laboratory	Concrete	1928	Unknown	1931-1932
Fifth yard	Dormitory	Mixed	2202	Unknown	1932
Quite yard	Dormitory	Mixed	2109	Unknown	1932
Mechanical Building	Academic and laboratory	Frame structure	2216	Unknown	1934
Mechanics Engineering building	Academic and laboratory	Mixed	3038	Unknown	1934-1936
Xinlin yard	Residential	Brick and wood	6677	Unknown	1934
Sixth yard	Dormitory	Mixed	4050	Unknown	1935
Seventh yard	Dormitory	Mixed	2759	Unknown	1935
No.1 Classroom Building	Academic	Mixed	2607	Li, Daozeng	1952
West Classroom	Academic	Mixed	343	Zhou, Weiquan	1952
No. 2 Classroom Building	Academic	Mixed	1200	Zhou, Weiquan	1954
No,1-No.4 Dormitory	Dormitory	Mixed	24861	Zhou, Weiquan	1954
New Water Conservation Building	Academic	Frame structure	11230	Zhou, Weiquan	1955
Mechanics Physics Building	Academic	Mixed	12171	Yin, Yihe	1958
West Main Building	Academic	Frame structure	21396	Guan, Zhaoye etc	1956
East Main Building	Academic	Frame structure	21271	Guan, Zhaoye Etc	1958
Central Main Building	Academic	Frame structure	34011	Guan, Zhaoye Etc	1960-1968
9003 Building	Laboratory	Frame structure	16350	Fei, Ling	16350
No. 3 Classroom Building	Academic	Mixed	11922	Wang, Meijuan	1981.11-1983.8

No. 4 Classroom Building	Academic	Frame structure	12155	Xie, Zhaotang	1985
A Hotel	Hotel	Mixed	3500	Ye, Maoxu	1985
Culture Building	Academic	Frame structure	3076	He, Weiping	1988
Foreign Students Dormitory	Dormitory	Mixed	9617	Liang, Zengxian	1986
High rise No.1 and NO.2	Residential	Assemble	18720	Zhu, Shimin	1986-1987
Hotel	Hotel	Mixed	5663	He, Weiping	1987
New Library	Academic	Mixed	20120	Guan, Zhaoye	1987-1991
Architecture Building	Academic	Frame structure	15820	Hu, Shaoxue	1995.4
Ziguang Building	Office	Frame structure	Unknown	Huang, Hongxi	1995
Technology Building	Academic and Laboratory	Frame structure	Unknown	Hu, Shaoxue	1998
Business School	Academic	Frame structure		Hu, Shaoxue	1998
Mengmingwei Building	Student center	Mixed	4071	Cao, Hanfen	1995
Law School Building	Academic	Frame structure	Unknown	Hu, Shaoxue	1999
Math and physic Building	Academic	Frame structure	25000	Guan, Zhaoye	1999

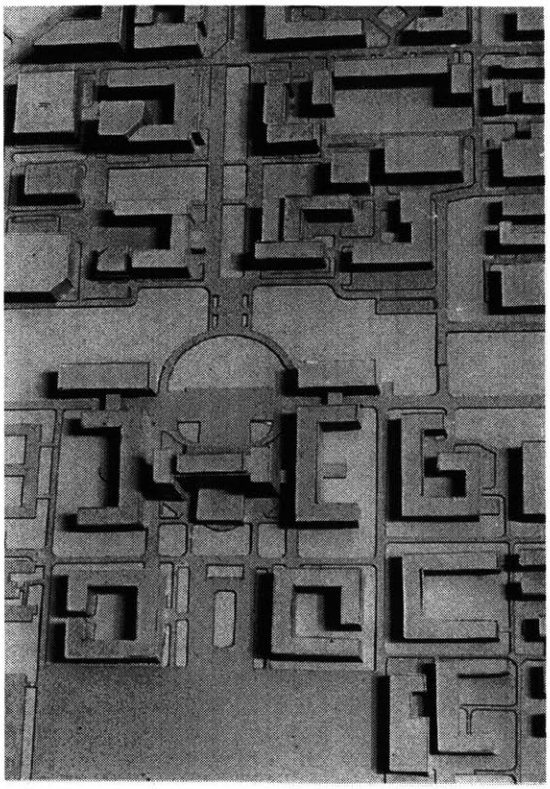
Chapter 2: Current Tsinghua University Campus Analysis.

Tsinghua University has a history of more than ninety years. Compared to the achievement and accomplishment of the Institute, the architecture and the environment of the campus are far behind. The current campus can not embody the Tsinghua's educational spirit and reputation.

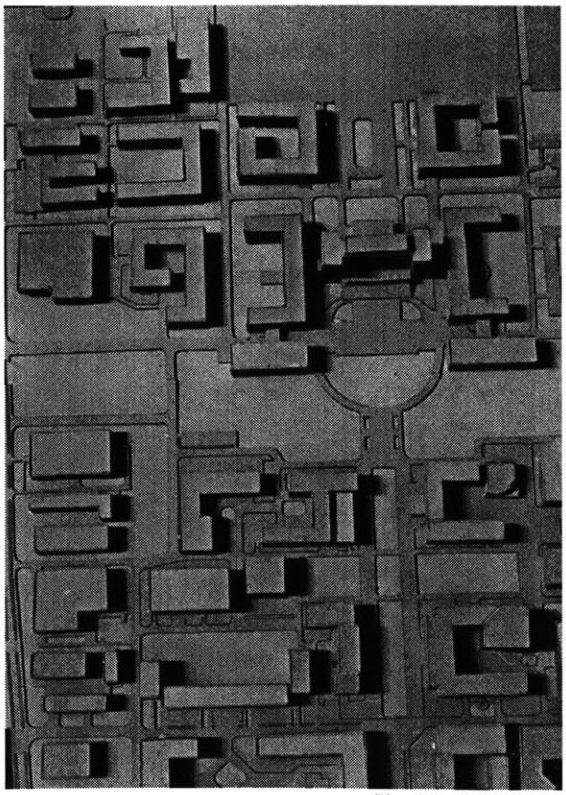
At present, Tsinghua University is aiming to build up a green campus in the next ten to twenty years. A successful campus design proposal is based on the existing environment analysis and the history background research.

Today's Tsinghua campus problem is:

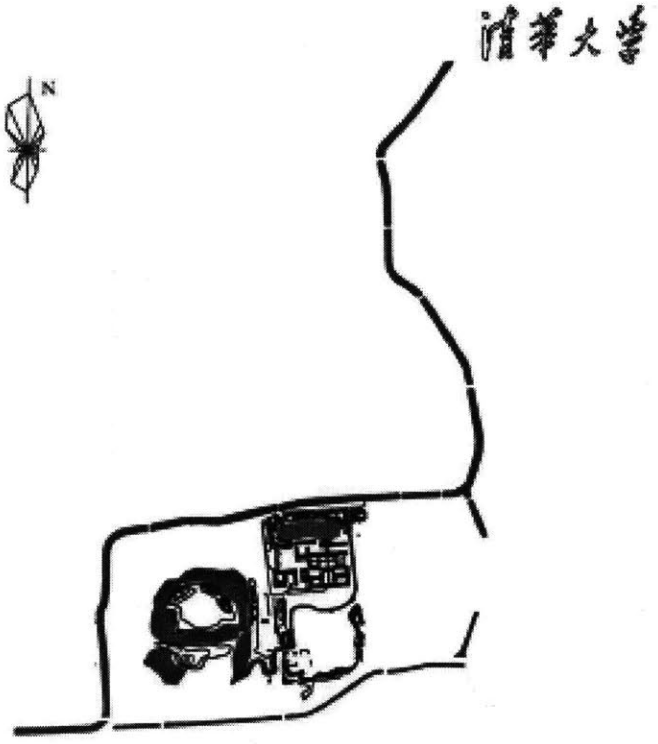
- Lack of public open space.
- The existing campus buildings don't have a consistent architecture form.
- The landmark building is not impressed.
- The entire campus is isolated without visual linkage and continuos architecture style.
- Lack of beautiful landscape design. No major campus landscape character.
- New development is not coherent with the existing campus buildings.



Site Model View 1



Site Model View 2



Tsinghua Garden, Former Royal Garden, 1762 - 1909
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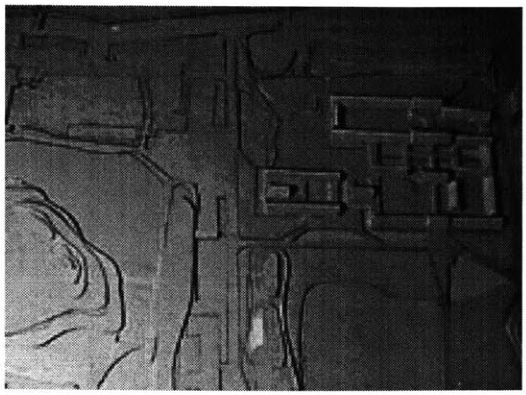
Site Model View 3



Site Model View 4

Tsinghua Campus, 1922
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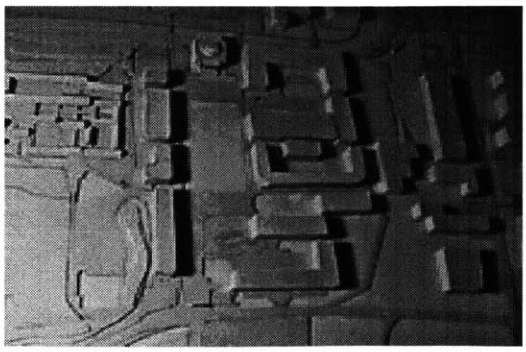
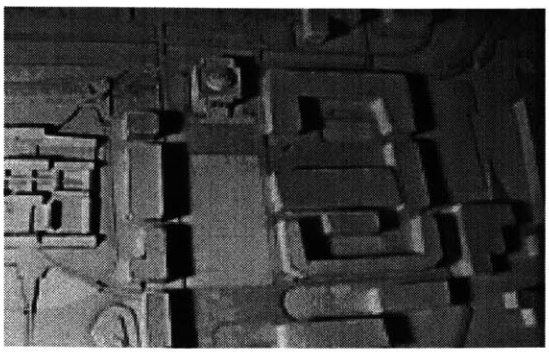


Site Model View 5



Site Model View 6

Tsinghua Campus, 1935
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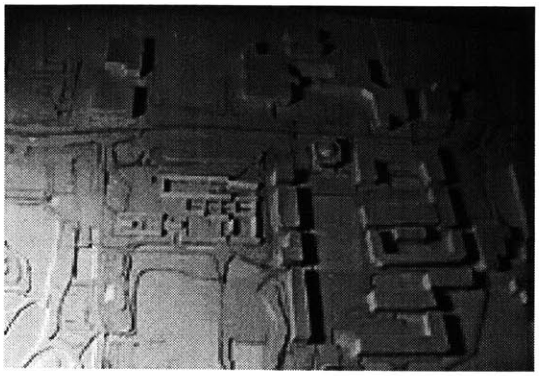
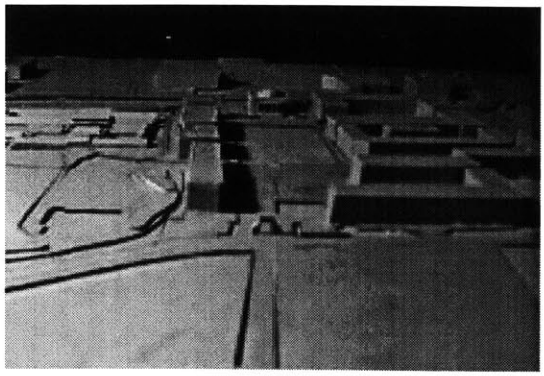
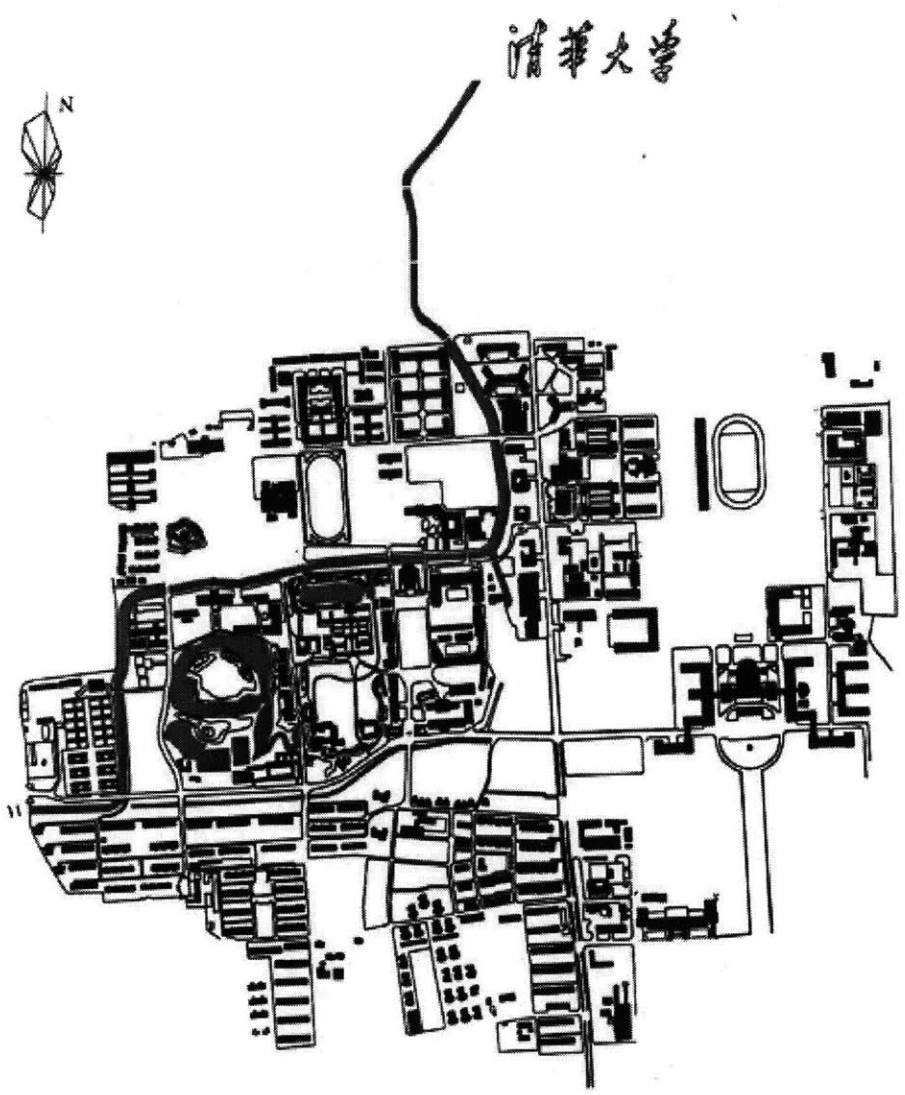


Site Model View 7



Site Model View 8



Tsinghua Campus, 1965
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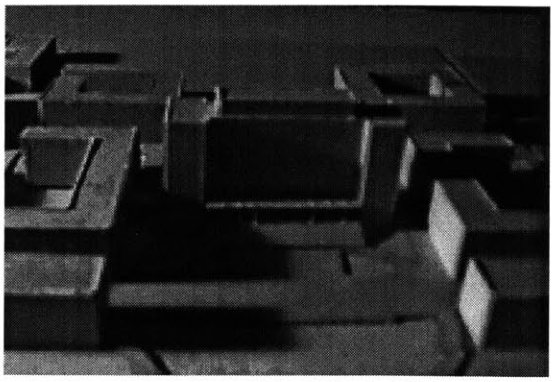
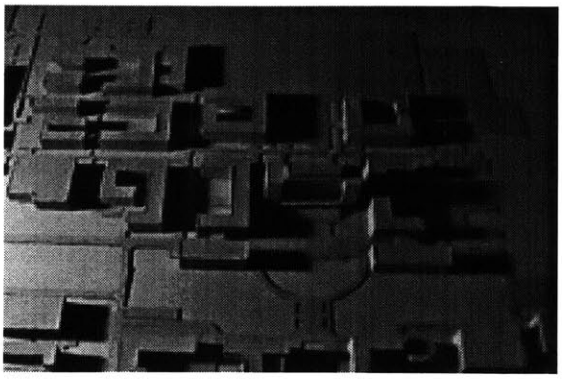
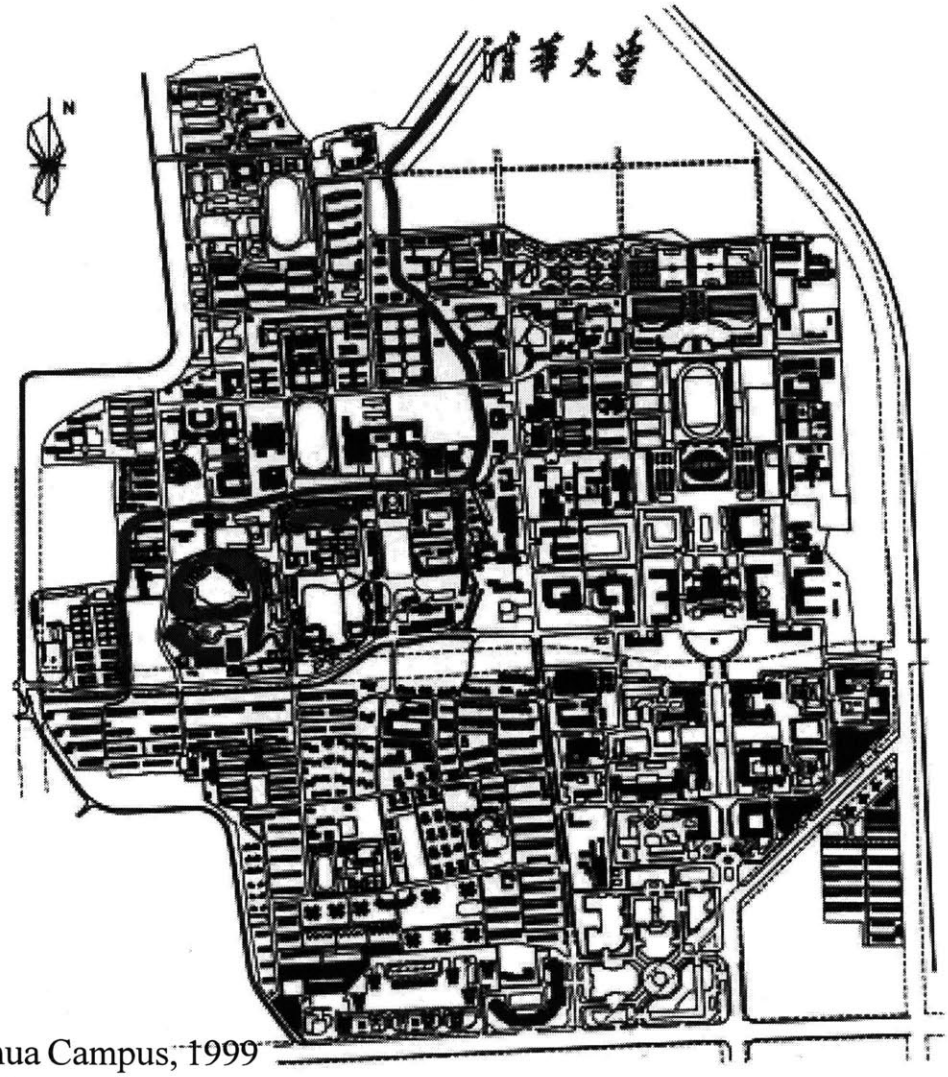


Site Model View 9



Site Model View 10



Tsinghua Campus, 1999
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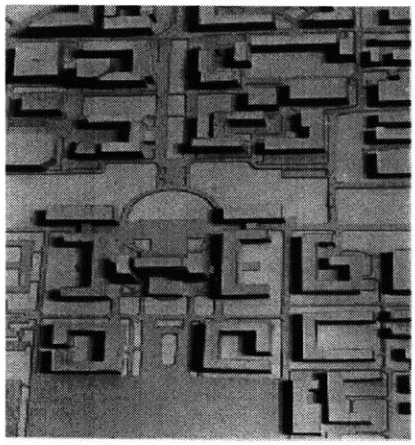
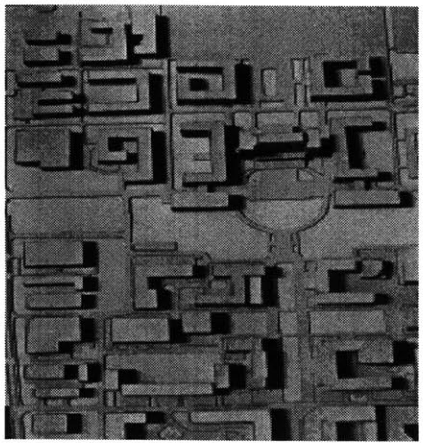
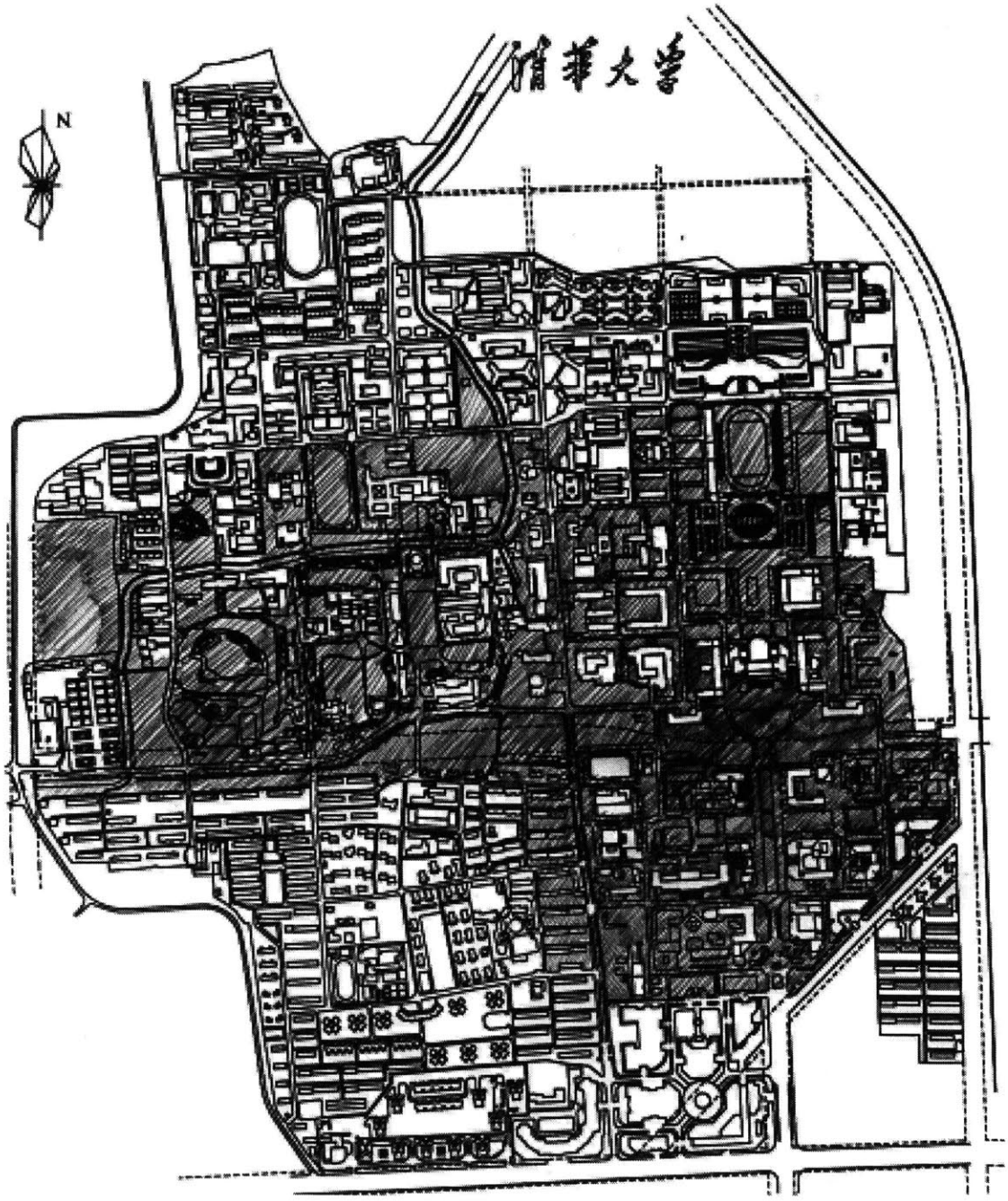


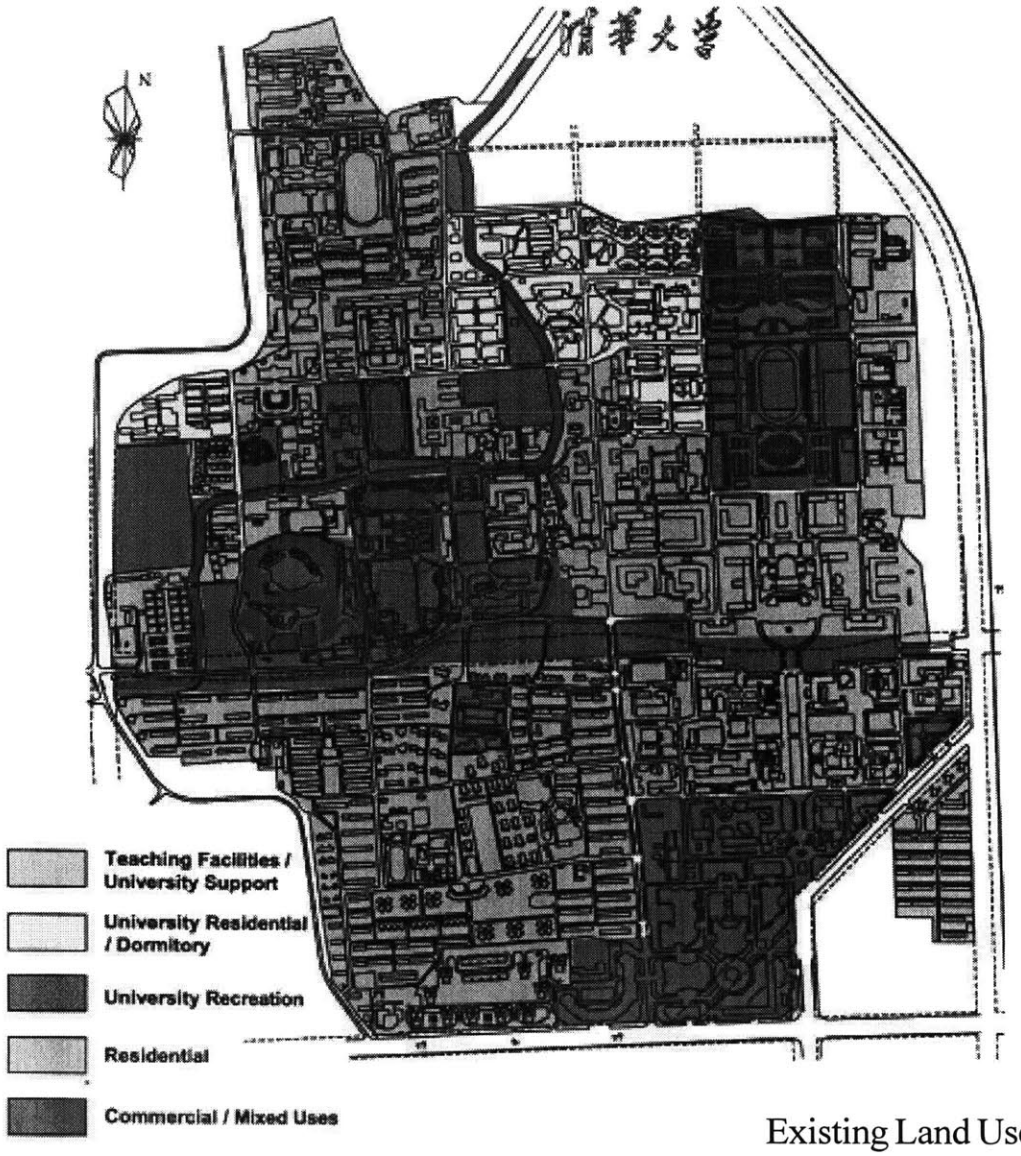
Site Model View 11



Site Model View 12



Existing Open Space
1:10000



Existing Land Use
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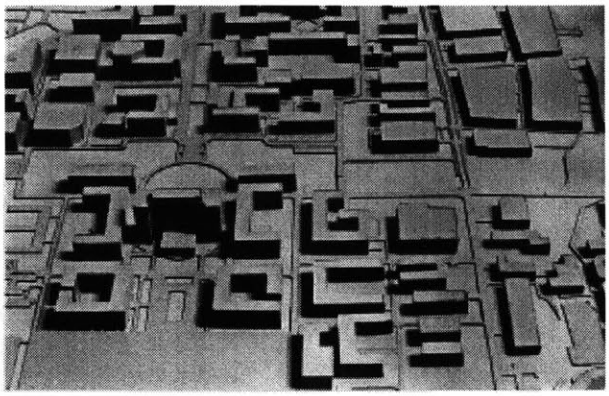
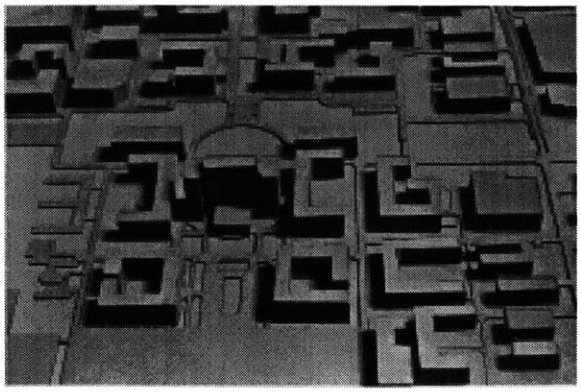
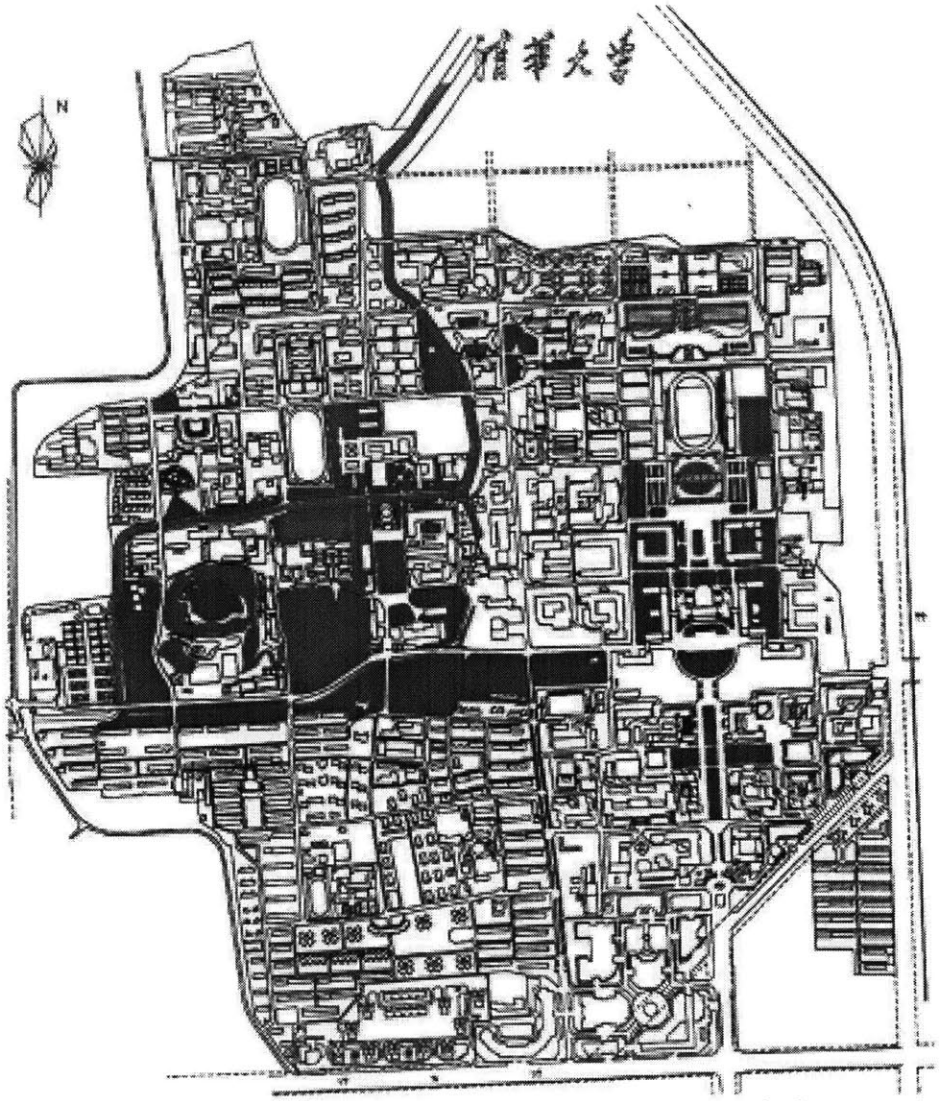


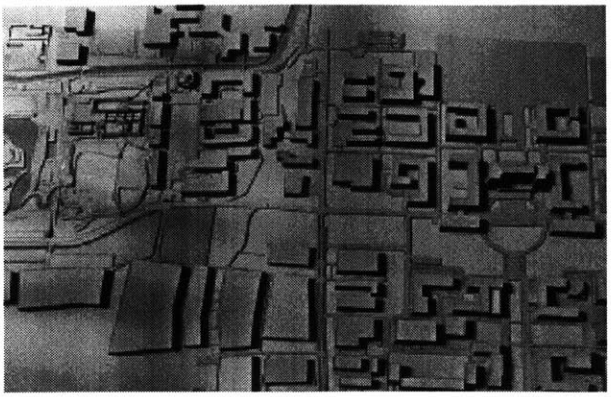
Site Model View 13



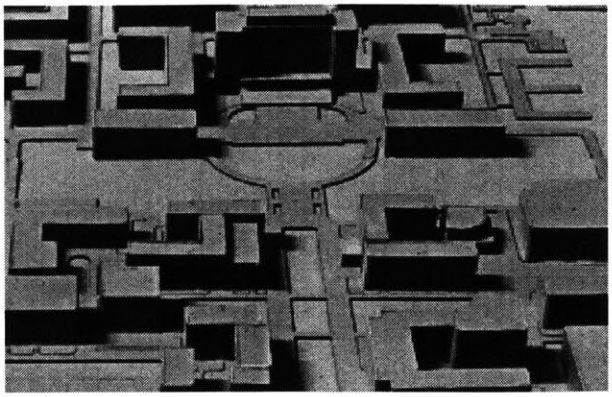
Site Model View 14



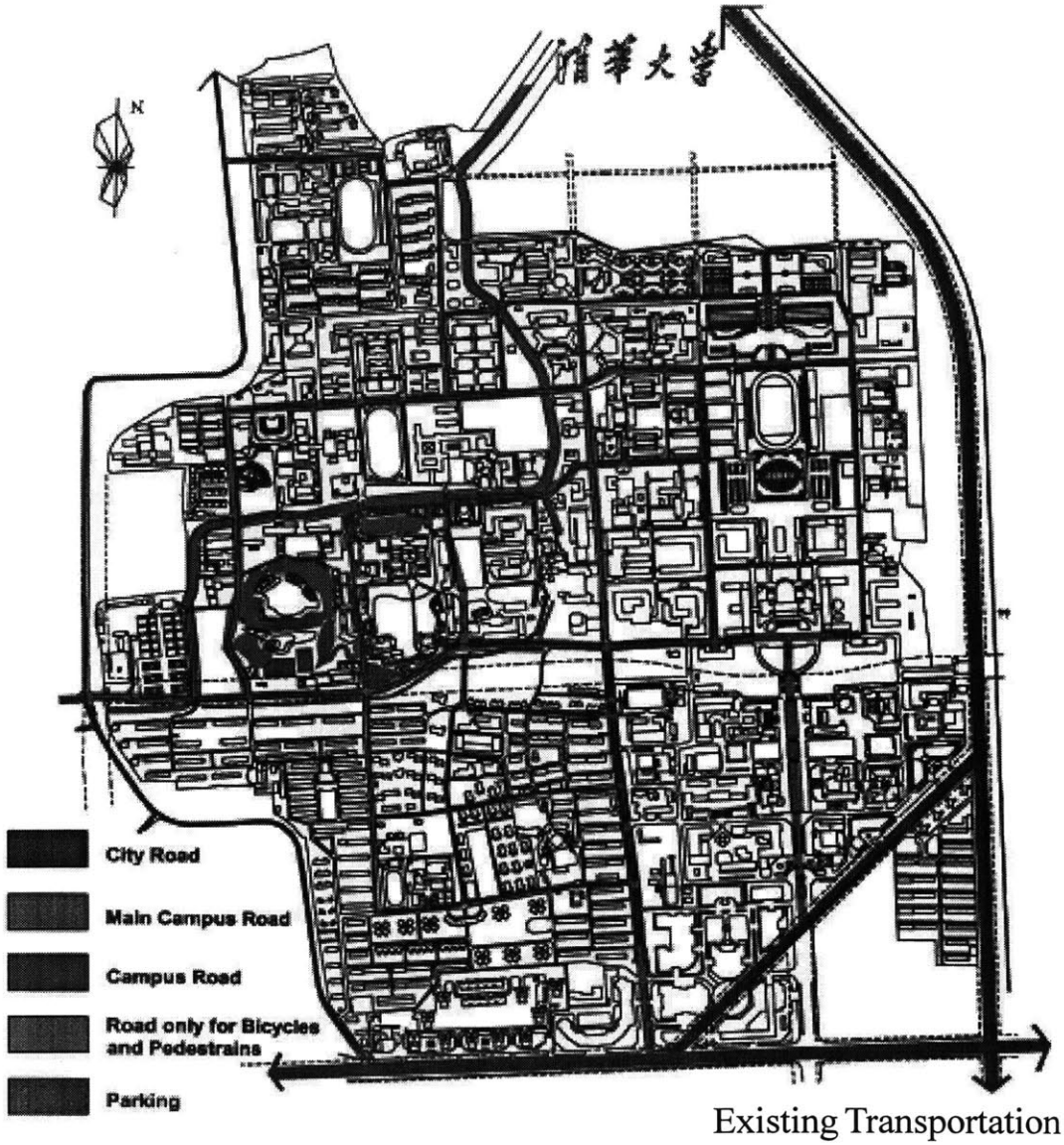
Existing Landscape
1:12000



Site Model View 15



Site Model View 16



Existing Transportation
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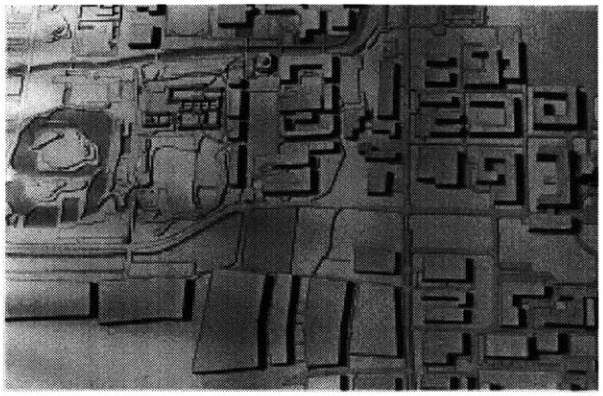
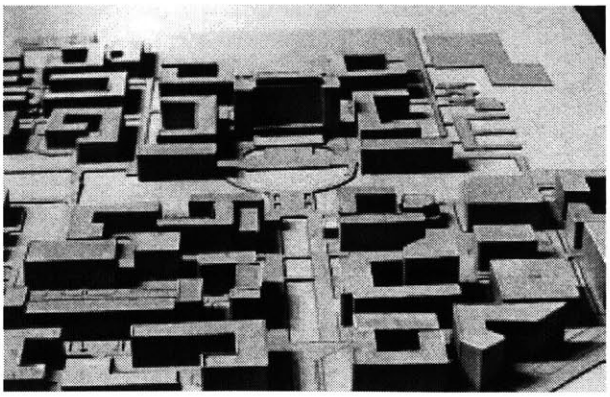


Site Model View 17



Site Model View 18

Chapter 3: Campus Design Principles:

City within a City

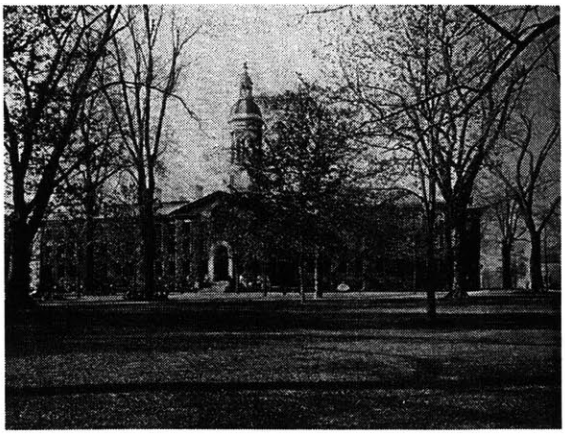
The campus can be considered a city within a city. Campus design is a special architectural and urban practice that is concerned with architectural style and fashion testing. By offering form, function and meaning to intentions, campus design practice makes a contribution to the environment. Therefore, successfully designed campuses can clearly define a sense of place and communicate an institution's purpose. The goal of campus planning is to provide a terrific educational environment consisting with the perspective future.

1. University of Virginia, Charlottesville, Designed by Thomas Jefferson, 1817.

The term campus was firstly used informally by a group of Princeton students in the 18th-century. It was a transformation from the Italian word *campo* that they used to describe the school's grounds. The earliest formal usage of the word 'campus' was found in a letter written by a Princeton student in January 1774. It was used to describe a shaped, public, open space that was considered to be the central symbolic place of Princeton University at that time.[1]

'Campus' embodied a special kind of setting that consisted of spacious country green sets the college apart from the traffic of the city. Today, 'campus' is used to describe all of a university's grounds and buildings arrangement of a university.

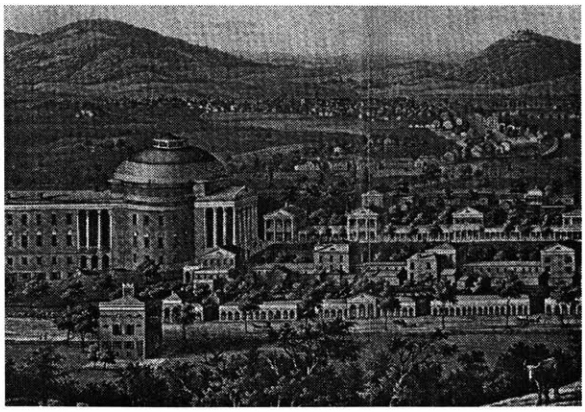
[1] Turner, Paul Venable, *Campus, An American Planning Tradition.* 1984. P47-49.



2,3 The College of New Jersey, later named the Princeton University. (1764) The space in front of Nassau Hall that came to be called "the Campus" in the 1770s.

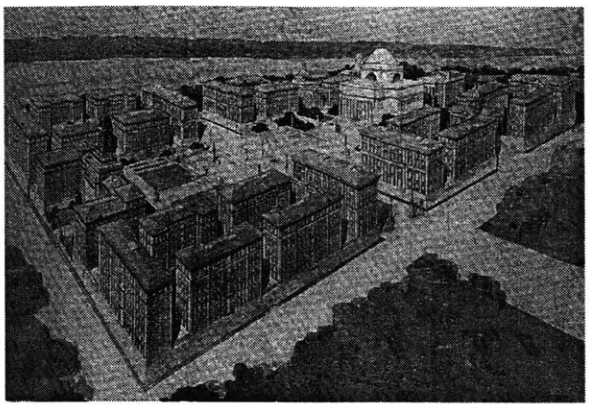
Colleges and universities include a wide range of social activities. It was not until the first half of the 19th-century that the campus design came to develop a new view of humanity. The Jeffersonian view of humanity emphasized "a liberal education was aimed as special means for young students to protect their democratic freedoms over their lifetimes."[2] On April 3, 1825, Thomas Jefferson wrote to Judge Augustus B. Woodward , "the University withdrawn by age from all other public services and attentions to public things, I am closing the last scenes of life by fashioning and fostering an establishment for the instruction of those who are to come after us. I hope its influence on their virtue, freedom, fame and happiness, will be salutary and permanent. The form and distributions of its structure are original and unique, the architecture chaste and classical, and the whole well worthy of attraction the curiosity of a visit."

Campus urbanism needs to respect the history of the setting while creating and shaping the future. Tradition and existing environment become the most important source for determining architectural form. The new layout should reflect both the past and the future.

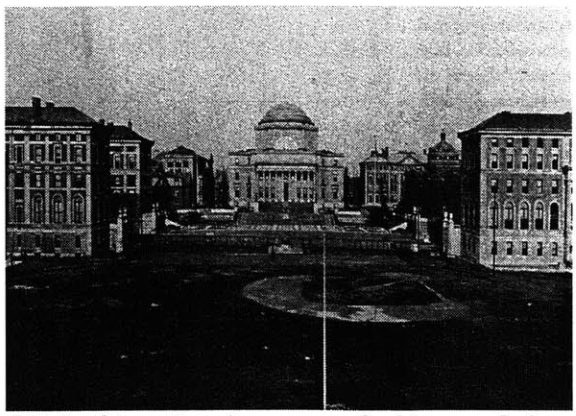


4.View of the University of Virginia from the west. Rendered by F. Sachse and Co., 1856. In the background is the town of Charlottesville. A country-like campus in the city is Jefferson's idealize setting of the campus design.(University of Virginia Library)

[2] Guinness, Desmond & Julius Trousdale Sadler, Jr, Mr Jefferson Architect, 1973. P109



5.McKim, Mead & White, view of projected campus built to full density, 1903; Jules Crow, delineator.

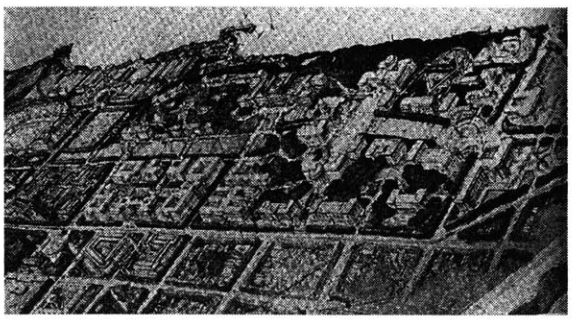


6.Columbia university campus looking north from 114th Street, ca. 1918.

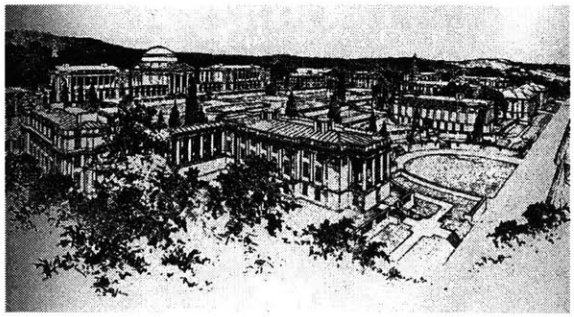
1. Open Space

The public open spaces serve as the skeleton of the campus.

Campus design should aim to create a place that recognizes and records its use. A great campus not only works functionally and programmatically but also represents the footprints of the university's history and points the direction for the future.



7. .University of Wisconsin in Madison. "General Design for Future Constructional Development," by Paul Philippe Cret, Warren Powers Laird, and Arthur Peabody, 1908. (University of Wisconsin Archives)

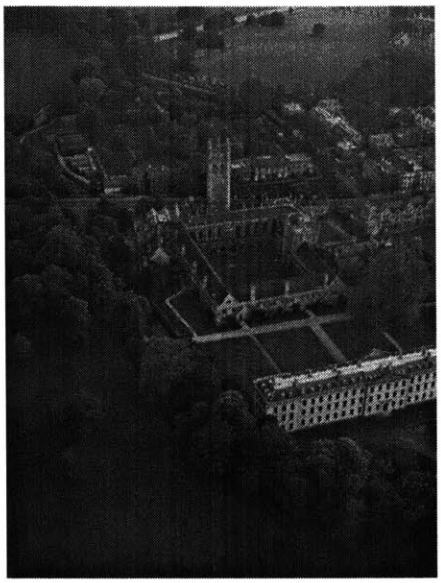


8. .Sweet Briar College, Sweet Briar, Virginia. To the left is the main campus space that is formed by academic buildings and dominated by domed Commencement Hall. To the right is a secondary courtyard.

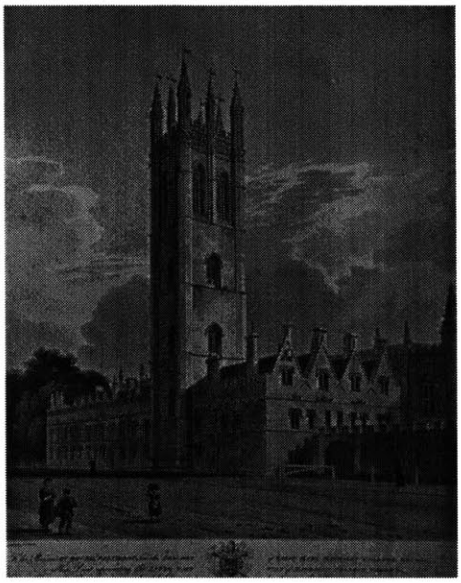
Campus design is a special architecture and urban design process that is accomplished by organizing buildings and open spaces in a unique environment.[3] Through their facades, location and architecture form, campus buildings help to shape a continuous form of open space that represents and describes the significant character of the campus.

[3] According to the conversation focusing on the campus space design issues with Daniel Berstein, Seneior Associate of Sasaki & Associates. Octorber, 1999

A series of designed open spaces with different sizes and shapes contribute to a beautiful green campus. The open spaces, with individual characteristics connect with each other through both visible and invisible linkages. When one walks through Princeton University or the University of Wisconsin, Madison, the colorful open spaces and the buildings that define the edge of the space gives one clues about the largest organization of the campus. Andrew Fleming West described perfect campus as: "quadrangles shadowing sunny lawns, towers and gateways opening into quiet retreats, ivy-grown walls looking on sheltered gardens, vistas through avenues of arching elms, these are the places where the affections linger and where memoirs cling like the ivies themselves, and these are the answers in architecture and scenic setting to the immemorial longings of academic generations."[4]



9. .Beautiful open space. Oxford University.



10. Oxford University.

The carefully designed open-space sequence also separates the campus from the turbulence of the outside world. The campus's open space ranges in landscape character from small to large, from indoor to outdoor, from simple to complex. In his essay, *On Campus-Making in American*, Stefanos Polyzoides said that it is the size function, and character that should be used to define the campus open spaces:

- **A patio** is a room-sized space, less than twenty-feet on each side.
- **A courtyard** is a space no more than one hundred feet on each side.
- **A quadrangle** is a space no more than four hundred feet on each side.
- **A lawn** is a space measured at the scale of the whole campus.
- **A field** is a scope typically located on the edge of a campus to separate the campus from the city. [5]

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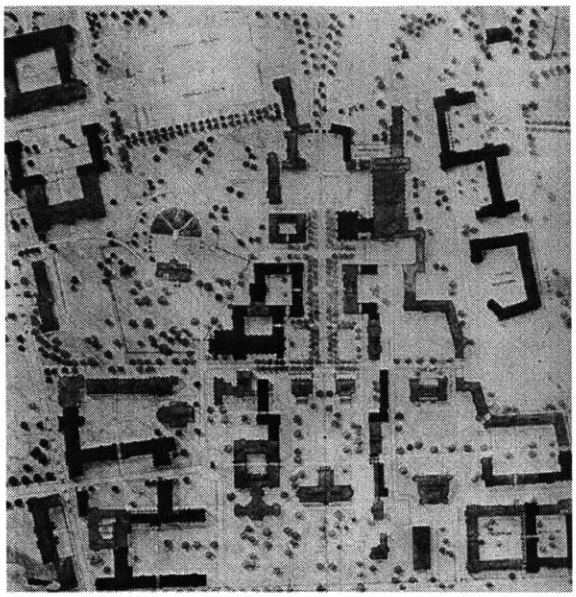
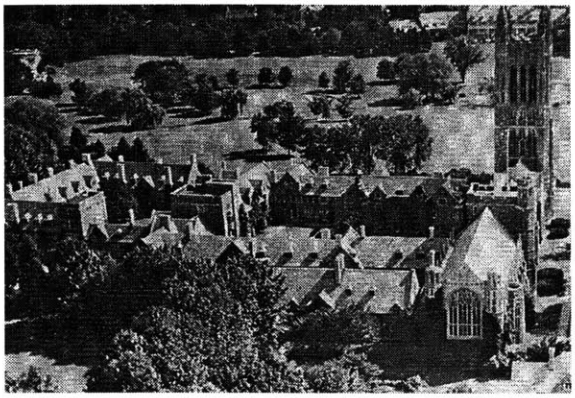
[4] Roger White, *The Architectural Evolution of Magdalen College,* 1993. P.28.

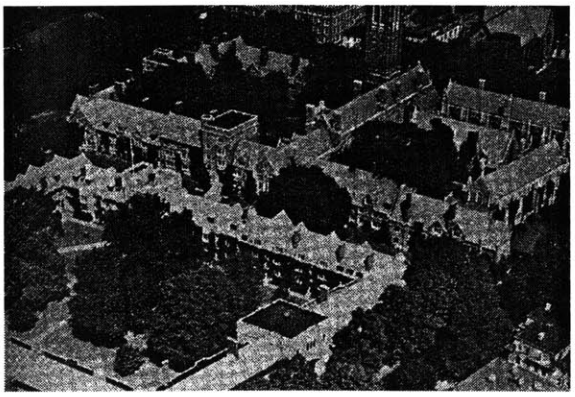
[5] Defined by Stefanos Polyzoides, *On Campus-Making in American*, p 12.Ojeda, Oscar Riera and Wendy Kohn, *Campus & Community, Moore Ruble Yudell, Architecture & Planning*, 1997.

The different characteristic open spaces respond to different centers of academic buildings. Open spaces creatively embody the skeleton in the campuses.

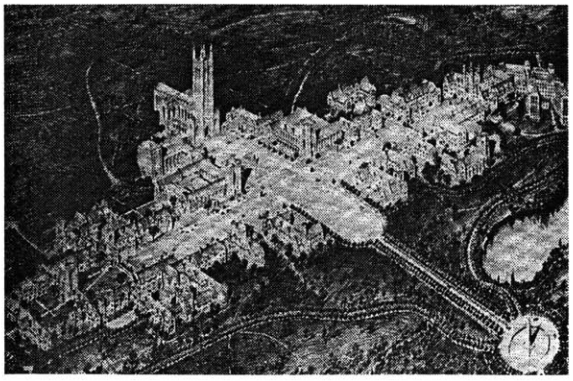


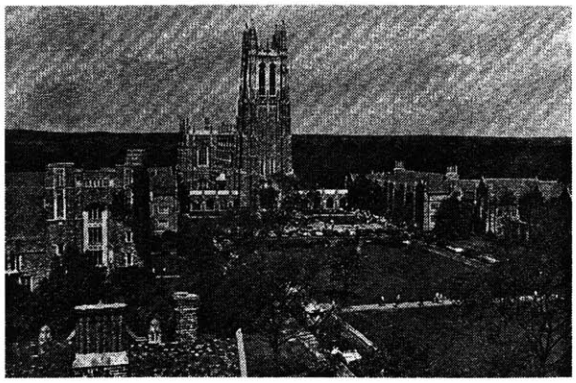
11.From 1906 to 1911, Ralph Adams Cram produced a long-term development plan for the new Princeton University. In this drawing, the light-gray represents the existing building; the dark-gray represents the proposed buildings. The whole campus was connected by different characters quadrangles. In the 1890s, Professor Woodrow Wilson, President of Princeton, described his idea campus as 'a place full of quite chambers, secluded ancient courts and gardens shut away from intrusion.' Prof. Wilson wanted to create "quadrangle system of residential colleges" for Princeton. Ralph Cram helped him to accomplish this idea. All the new construction was designed to make the campus eventually reach the character of an enclosed community with quadrangular or near-quadrangular public green spaces.





12.13.Graduate College at Princeton Designed by Ralph Adams Cram.



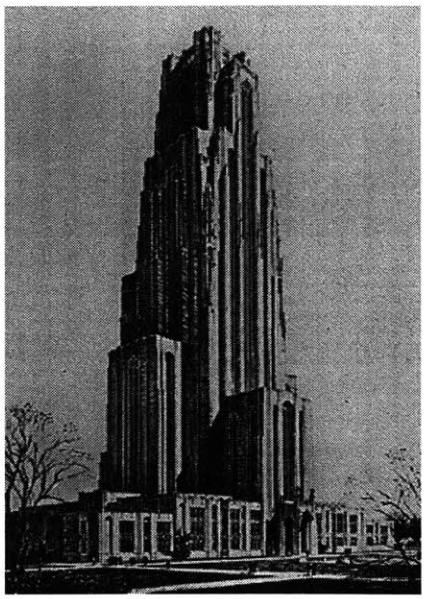


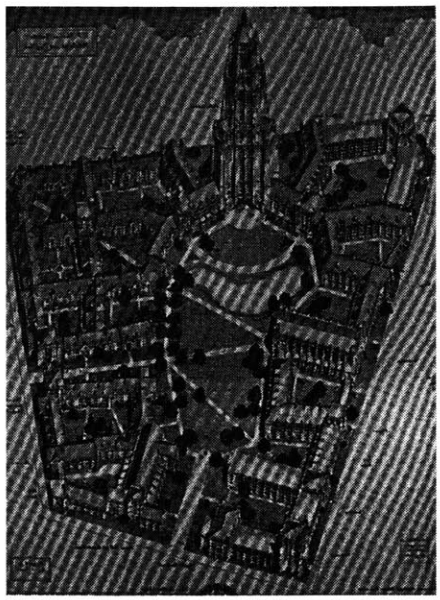
14.15.Duke University. Designed by Horace Trumbauer.

2. Campus Building

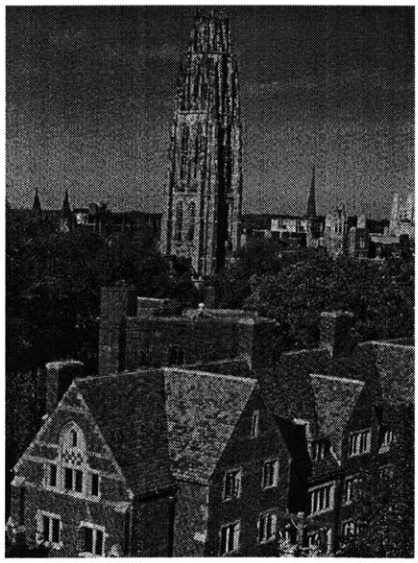
The campus buildings are the organs of the campus body.

Some campus buildings with strong image and special characters play a role as a landmark within the campus community. Those buildings emphasize the university campus with an architectural character that illustrates institutional advancement.

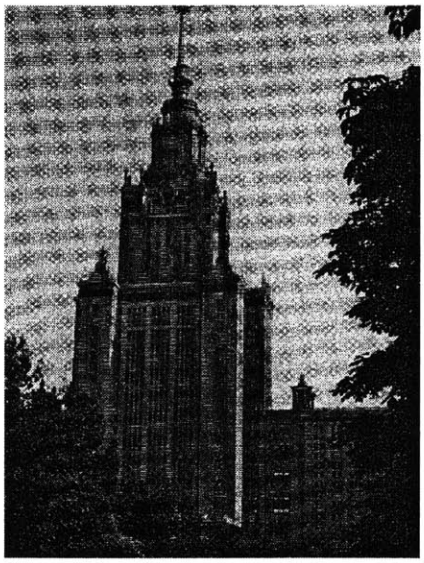




16.17.E. P. Mellon's 1927 concept plan for the University of Pittburgh. An image of Collegiate Gothic unfettered by the realities of site, program, or budget. (University of Pittsburgh)

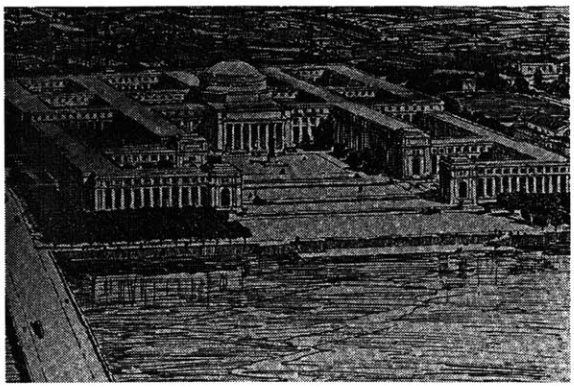


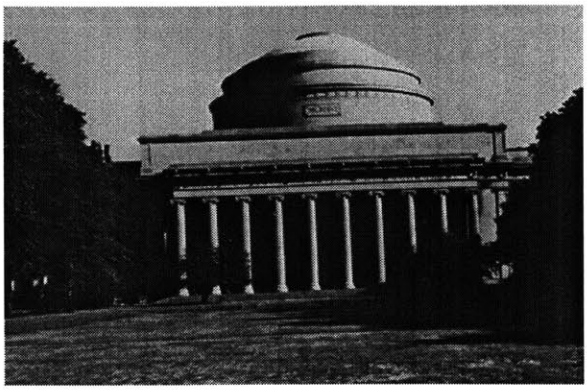
18 Brandford College, Yale University.



19.Main Building of the University of Moscow.

The William Wells Bosworth complex at the Massachusetts Institute of Technology is a large, landmark building that is dominant within its skyline spreading along the Charles River.[6] In the September 1913, issue of *The Architecture Review,* Bosworth offered a description of the technological advances displayed in this building complex. 'The architectural character of the buildings is severely simple, a pilaster treatment of walls being adopted, as giving the maximum amount of light, in connection with a use of Ionic order, forty-five feet high.'[7]





20.21.Massachusetts Institute of Technology, on Charles River, Cambridge.

Bosworth combined ten building segments into a complex that defined a series of courtyards, the largest of which was open to the beautiful Charles River. The two major intersections in the corridor system are emphasized with a dome and a colonnade. The opens exterior masonry and detailing imply a dominant Roman influence, which the overall site plan is a classical beaux-arts scheme.[8] The consistent exterior of the MIT complex along the Charles River became one of the most important landmarks of both Boston and Cambridge.[9]

In this urban context, the campus buildings' exterior forms become more important than their internal plans. Also, their combined form becomes more important than the individual form. In Dober, Richard P.' s book *Campus Planning*, he defined five types of buildings in campus[10] and noted that the overall character and image of the campus depends on the relationships between its buildings. Each type discussed below generates buildings of particular formal characters:

- **Landmark buildings** are the most physically and spatially buildings in campus. Landmark building forms are emblematic of the history and urbanism importance of the whole university. They are always viewed as the symbolic monumental structures in the campus.

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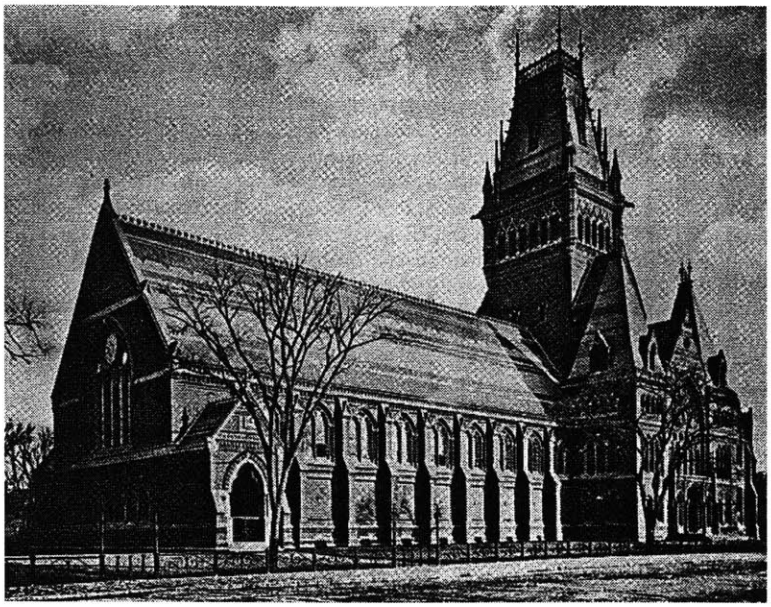
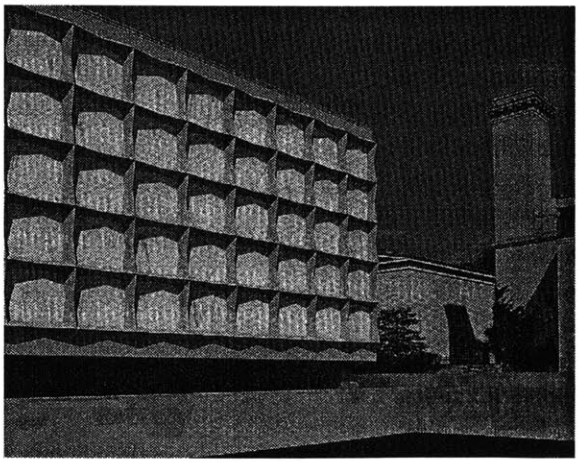
[6]. Francis E. Wylie, *MIT in Perspective.*
[7] Chapter 3, *MIT Main Group Window & Façade Program,Historical Background of MIT,* MIT Museum.
[8] Related to Dober, Richard P. *Campus Design*, p 39-54, describing the MIT main building complex.
[9] *MIT Today and Tomorrow,* MIT Campus Design Forum.
[10] Dober, Richard P. *Campus Planning,* New York, 1963. P 65-71.

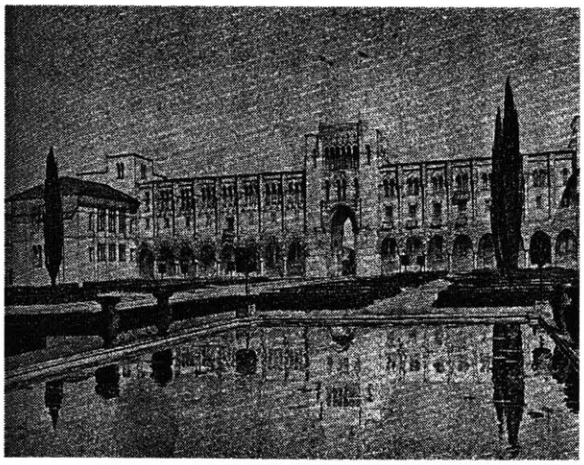


22. Memorial Hall, Harvard University. Designed by Ware & Van Brunt, 1866-1868; constructed 1870-1878. The exterior of Memorial Hall evoked Ruskin's version of gothic design. Memorial Hall is one of the most important landmark buildings within the Harvard campus, because it also servers as a landmark for the city of Cambridge.

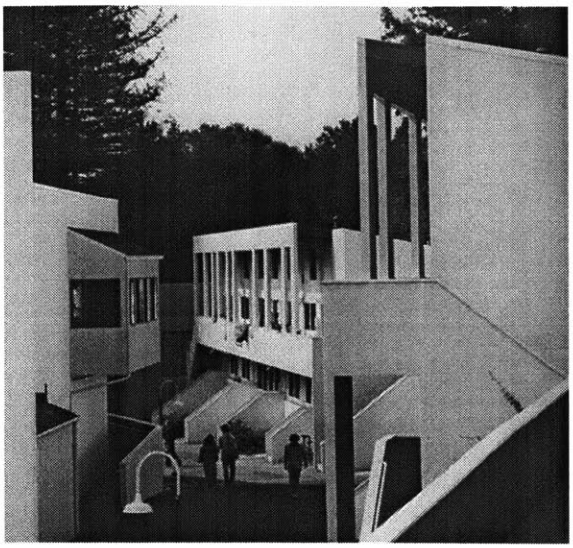
- **Academic buildings** are the most common building types of all campus buildings. Most of the teaching and research activities take place in academic buildings. Academic buildings are the building blocks of the campus reflect the footprints of the campus historical development.
- **Laboratory buildings** are designed with specific requirements of mechanical supply, electric support and special service. Their plans and sections rely on the functions.
- **Dormitories** are building environments that provide facilities for students' living. Serving as a local neighborhood within the campus, the dormitories always embody the most active part of the campus.
- **Recreation buildings** comprise of all the athletic buildings.



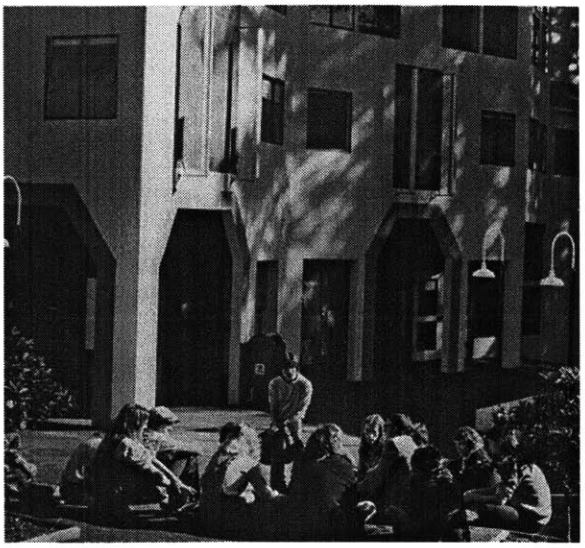
23. Beinecke Rare Book and Manuscript Library, Yale University. Designed by SOM.



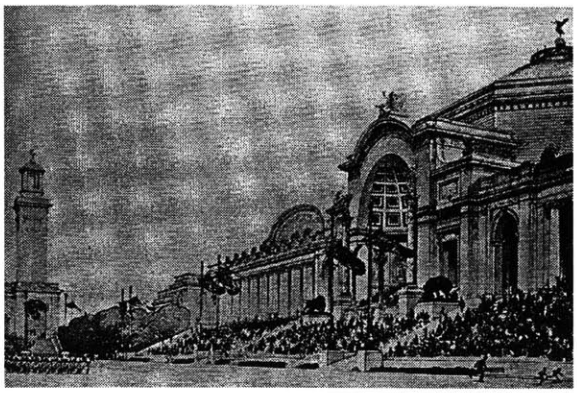
24. Woodson Research Center, Rice University.



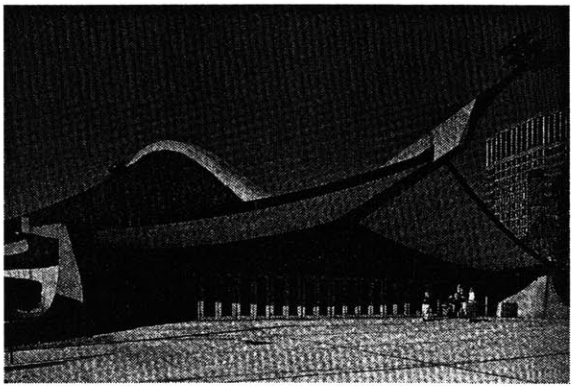
25.Student residences, Kresge College, University of California, Santa Cruz.



26.Designed by Charles W. Moore and finished In 1974.



27..Stadium, University of California, Berkeley, 1899



28..David S. Ingalls Rink , Yale University

The campus buildings evolved not only as a series of individual building relates to specific programmatic requirements but also from developing needs of the university by establishing a framework for the future growth. [11]

3. Style and Trend

Style and Trend for a campus body is as the face for a person.

Architects are constantly attempting to develop strategies to design in a historic campus. With a fresh understanding and respecting of history as well as recent technological innovations, campus design is facing the challenge of the new century.

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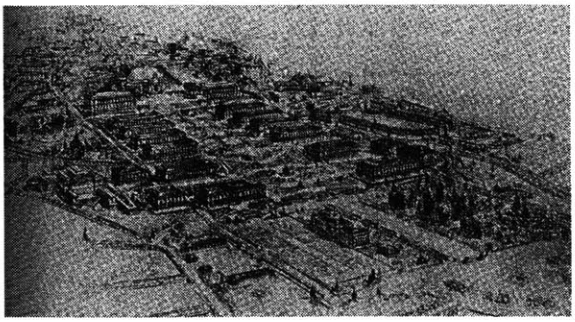
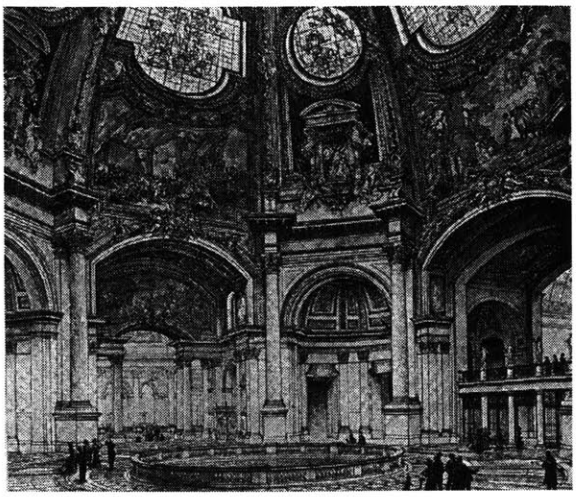
[11] Perry Chapman and Michael Dennis, *A Framework for Change and Improvement: The Campus Master Plan of the Ohio State University*, Volume V, South Campus District Plan. November 7, 1997.



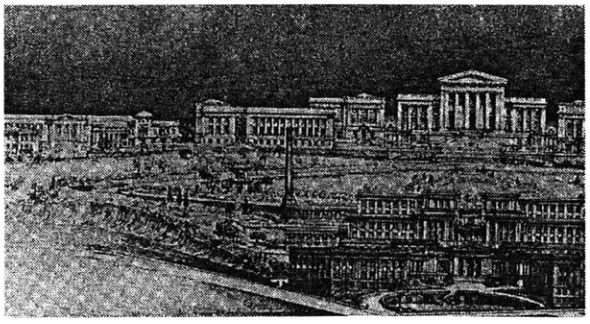
29.30. University of California, Berkeley. 1899. Designed by John Galen Howard and S.M.Cauldwell. Howard was hired as campus architect from 1901-1924.



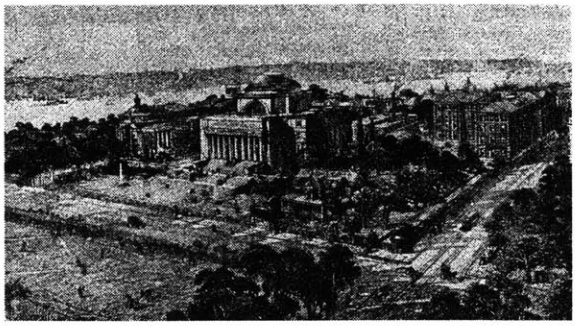
According to Mr. Richard Economakis, in his book *Interventions for the Future*: the emergence of a new critical movement founded in tradition and respectful of the forces of cultural continuity, so vigorously resisted by the Modern Movement, is clearly more a manifestation of outrage with the declining quality of contemporary urban space than an outpouring of nostalgic feeling that critics would have it be.[12]

In Richard P. Dober's book *Campus Design*, campus design styles can be categorized as *monoforms, metamorphorics* and *mosaics.*[13]

- *Monoform* campus design is with a singular style. For example, the Graduate College of Princeton University, designed by Ralph Adams Craw in the 18th Century, is presneted in one diagram.
- *Metamorphics* campus design follows the campus traditional style. Campus designed by metamorphic method captures our eyes by continually and unique architecture form and historical memory.
- A *Mosaics* style campus is one in which the different campus buildings reflect the different stages of the architectural history.



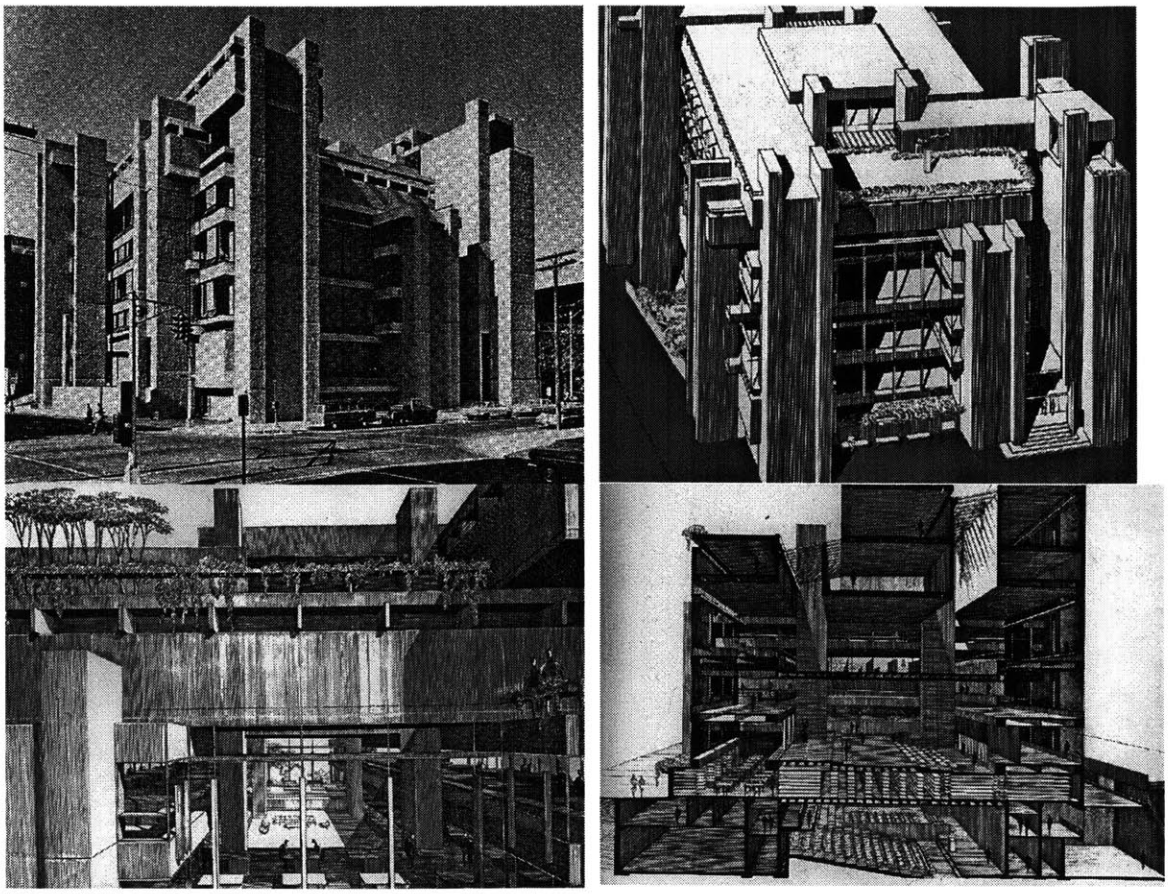
31. University of Pittsburgh, 1908. Very strong classical style elevation.



32. University of Columbia. Designed by Mecum. Romeo style Dome.

[12] Economakis, Richard, Interventions for the Future, p4-6
[13] Dober, Richard P. *Campus Design*, p 41-43

After the Second World War, the modern architecture movement dominated the architecture style. For example, Paul Rudolph's design for the School of Art and Architecture in Yale(1958) has in its surface mannerisms which likely might be the fashion of the 1950s. In the 1950s, Whitney Griswold, President of the Yale University had a very strong personal interest in contemporary architecture. He hired Paul Rudolph to design the New Art and Architecture building. Yale campus became a "architectural laboratory". [14]



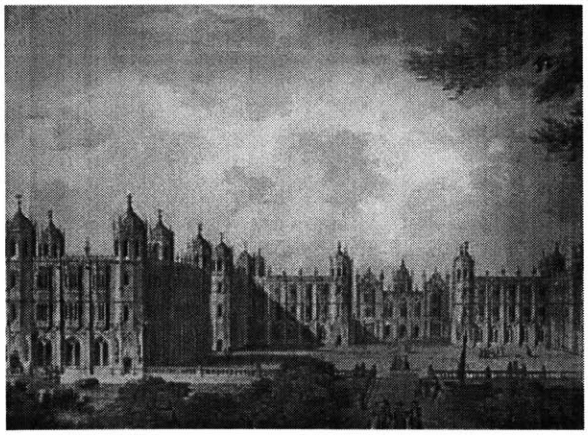
33.34.35.36. Art and Architecture Building, Yale University. Designed by paul Rudolph.

Choosing an appropriate style for campus architecture is a quite serious and difficult task. The historical success of these planning and growing patterns can be discovered from a campus. Most campuses have specific individual character that develops as the campus grows and changes. This character embodies the spirit of the specific institute and the content in which it is located.

[14]. Information related to kelley, Brooks Mather, *Yale, A History*. Yale University Press.

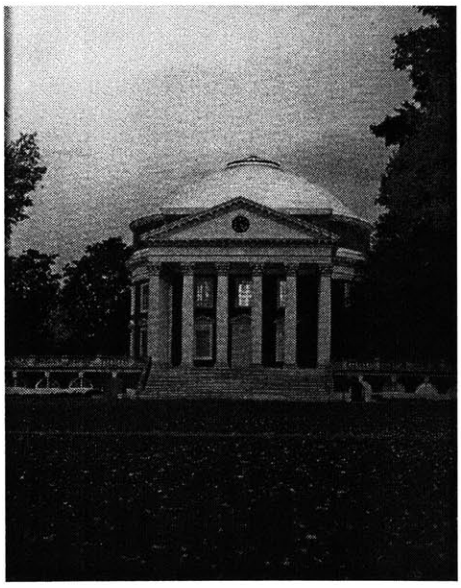
In the book *Campus Design*, Richard Dober made a conclusion on the styles of college and university design:[15]

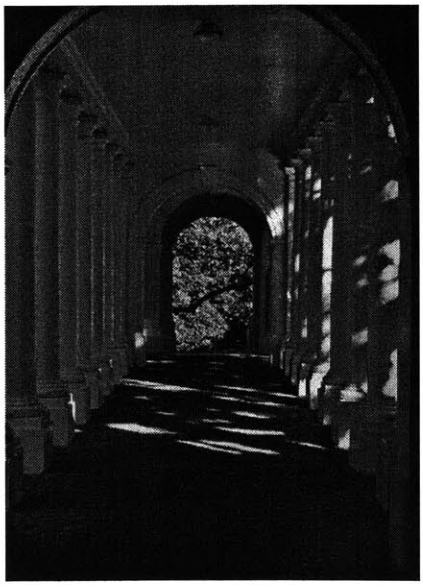
- Colonial
- Early Georgian
- Late Georgina



37.38. Magdalen College, Oxford.

- Jeffersonian Classicism



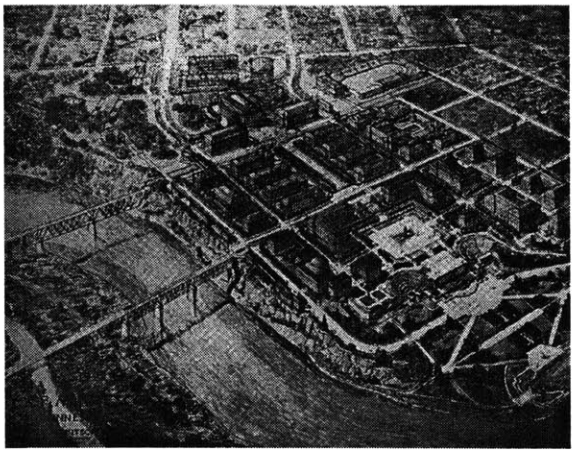


39.40. University of Virginia.

- Greek and Romanesque Revival
- Victorian Gothic

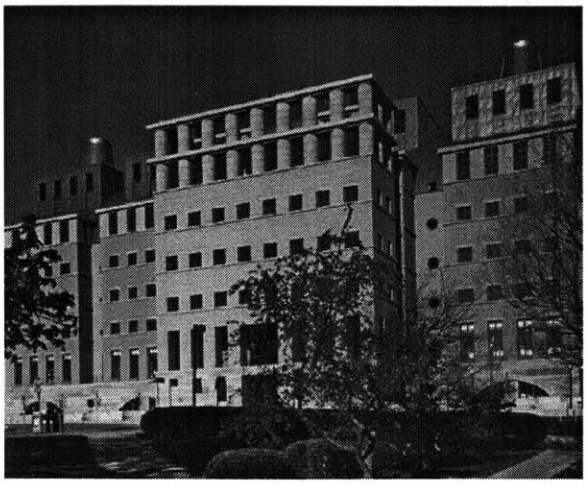
[15] Dober, Richard P. *Campus Design*, P 41. Richard Dober concluded the American campus styles based on 18 guides and stylebooks, describing American architecture and published between 1975 and 1990.

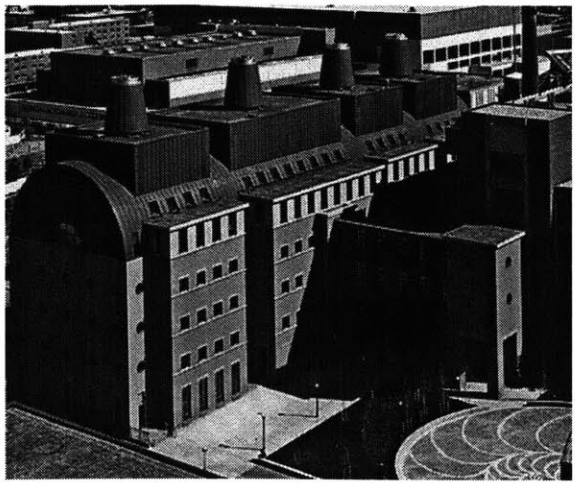
- Richardsonian Romanesque
- Industrial
- Beaux Arts Classicism



41. University of Minnesota, on the Mississippi River, Minneaplois. 1910. Typical Beaux-Arts style campus.

- Regionalism
- Ornamental Modern
- International
- Miesian
- Fashioned Materials
- High-Tech
- Contextual
- Post Modern
- Neo Modern
- Deconstruction





42.43.. . Post Modern,
University of Cincinnati, Engineering Research Center. Designed by Michael Graves

44.45. Hi-tech

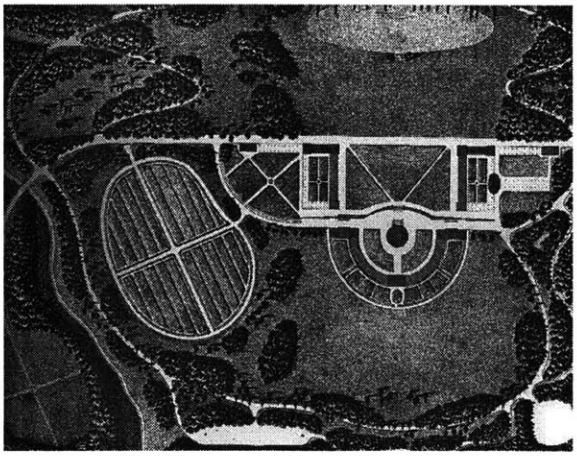
Cambridge University Law Faculty
Foster and Partners Cambridge University Law

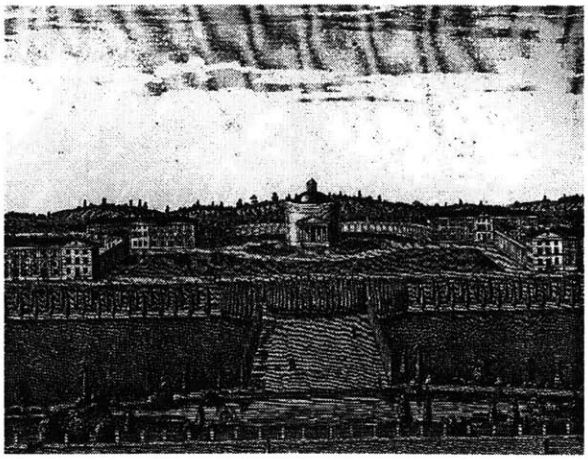
4. Campus Landscape

Campus landscape is the blood of the campus body.

A campus without landscape is like an arch without a keystone, a fish without water. Most campuses have a significant amount area devoted to lawns, greens pace. the. Campus landscape is the blood of the campus body. The interior circulation systems, such as sidewalks, roads and pathways are the veins that distribute the landscape.

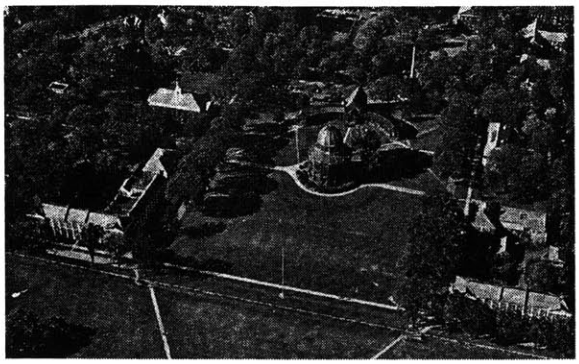
One of the best examples of campus landscape design emerged in1813 for the Union College in Schenectady, New York, produced by a French architect named Joseph-Jacques Ramee. [16][17]





[16] I visited this Union College in Schenectady twice and deeply impressed by the incredible beautiful campus landscape. In Turner, Paul Venable's *Campus, An American Planning* Tradition, he highly applauded the Union College campus from p68-72.

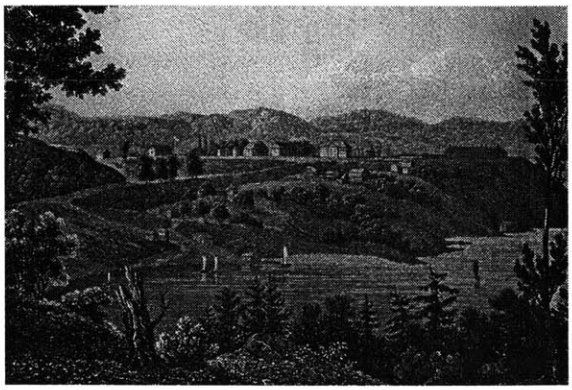
[17] Roymond, Andrew V, *Union College, Its History, Influence, Characteristics, an Equipment.* New York.



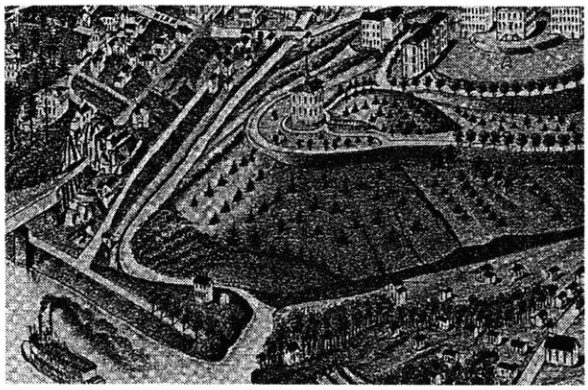
46.47.48. Union College was founded in 1795, representing many of the freedom and revolution ideas in American of that period. A long with the Jefferson's schemes for the University of Virginia of four years later, the proposal for the Union College epitomizes the dreams of the idea education institutions. Ramee, an architect and landscape designer trained in Paris and practiced in Germany, created out a incredible beautiful landscape designed campus for the 19th-century.

The campus landscape also includes the seating and sitting areas, signs, and natural features on the site. The landscape and plant material can reduce noise, control dust, divert traffic, secure boundaries, afford privacy, and be arranged for pleasure.[18]

According to the landscape architect Garrett Eckbo, the physical landscape is a "four-dimensional sequential pattern of earth, rock, water, plants, man-made structures, air weather, light and energy." A parallel history can be written about changes in the campus landscape. [19] Some Colleges moved the entire campus in order to obtain the best landscape and environmental position.



49.United States Military Academy, West Point. 1831.
The University was built at the very beautiful site on the bank of the Hudson River.



50.University of Tennessee, 1826
The whole campus moved to the site along the Tennessee River.

Campus landscape is equal and parallel to the architecture in terms of the major emphasis within the campus-developing tradition.[20] Landscapes can strength the spirit of the entire campus by the sizes, forms, colors, textures, scales, and other architectural characteristics. Blue sky, quite lake, white clouds, large green fields, tall trees, curved paths and wide squares all contribute to a dream land where people from all over the world, young and old, poor and rich, want to be.

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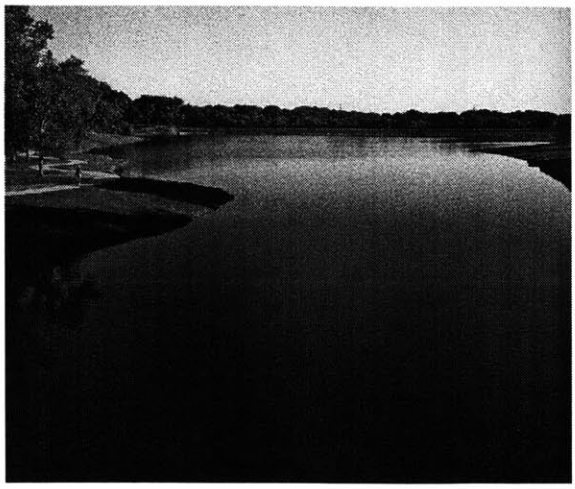
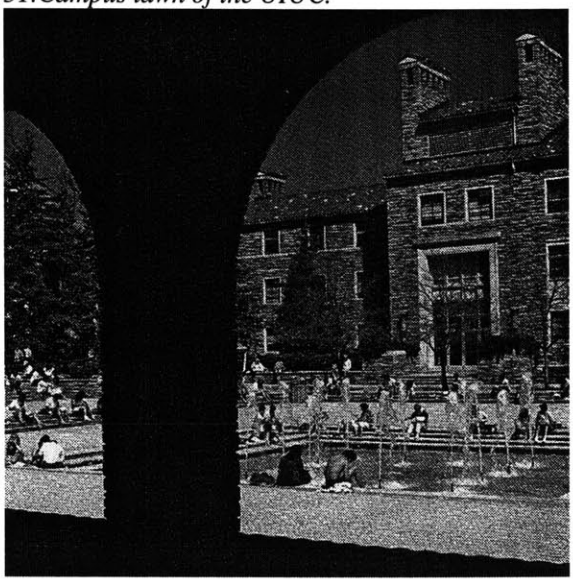
[18] Related to the interview with Mr. Joe Hibber, Landscape Principal of Sasaki & Associates, March, 2000
[19] Newton, Norman T. *Design of the Land, The Development of Landscape Architecture*. P63.
[20] According to the conversation with Jie Hu, Landscape Architect of Sasaki & Associates in October, 1999.

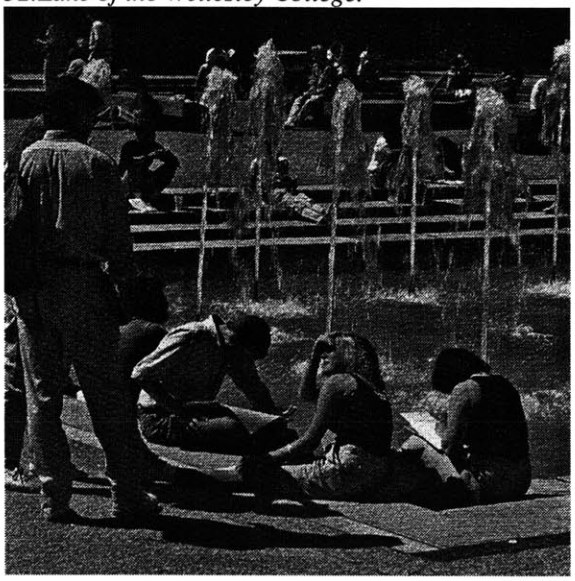
51.Campus lawn of the UIUC.



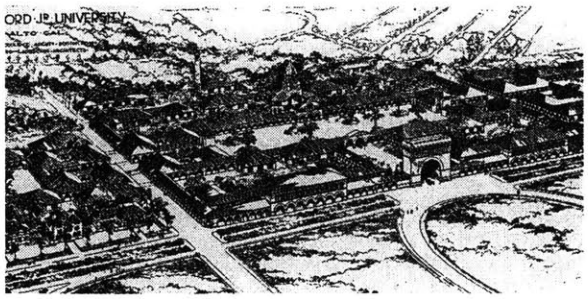
52.Lake of the Wellesley College.



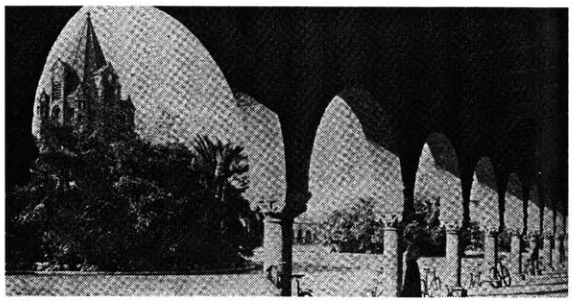
53.The University of Colorado



54.landscape and life.



55..Central group of buildings of Stanford University.

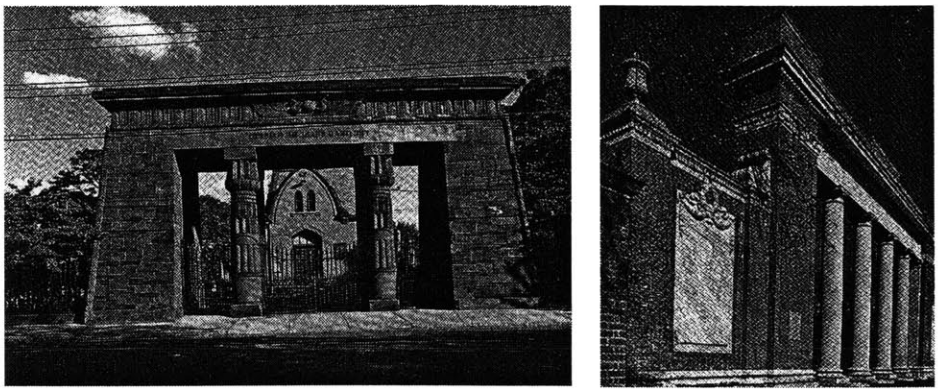


56.The space is surrounded by arcades.

In Thomas Jefferson's University of Virginia, the Lawn, the bricked wall gardens, and the surrounding buildings are all informed by the gentle sloping of the Charlottesville terrain. Plant materials can be used in a painterly fashion, adding color, season character and texture to architectural compositions. [21]

The principle components in the campus landscape design are: [22]

- Edges, and Boundaries
- Gateways and Entrances
- open spaces
- Gardens and Parks
- Vehicular and Pedestrian circulation routes
- Campus Transportation road
- Sculpture, fountains, memorials
- Lighting, signs
- Plantings and special effects



57.58 Different gate style in Yale University.

5. Coherence and Development

Campuses developing process is a procedure of coherence and improvement.

A successful great campus is contingent upon the definition of a long-term framework of development. The academic leadership of universities should encourage the traditional notion of a campus as an education institute and as an expression of the community whose purpose is aimed toward the entire society. Campus designers typically need to modify and improve an existing environment.[23]

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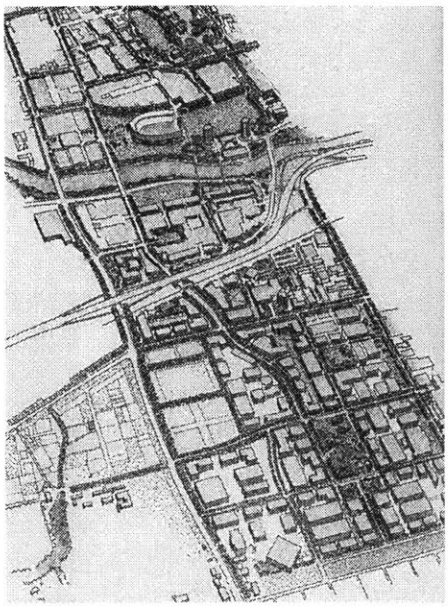
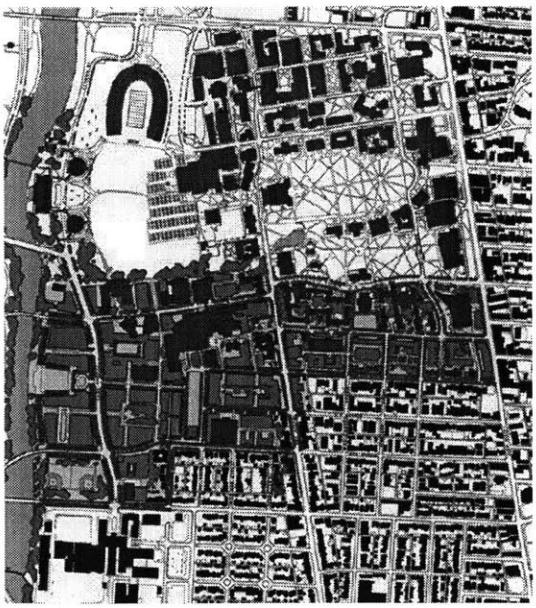
[21] In Brawne, Michael's, *University of Virginia Lawn*, he pictured the four seasons change of the University of Virginia Lawn.

[22] Those items based on the interview with Mr. Joe Hibber, Landscape Principal of Sasaki & Associates in January 2000. Also related to Dober, Richard P. *Campus planning*, P 72-92

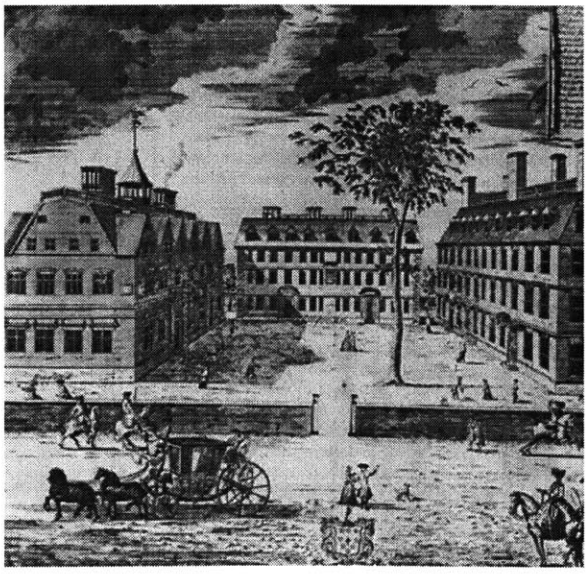
[23] According to the conversation with Prof. Michael Dennis in January, 1999 while working on the *Student Performance Center of the Emory University.*





59.60.. Perspective and Master plan for the future development of the Ohio State University, designed by Michael Dennis and Perry Chapman.

Both campus planning and campus facility construction needs to be carefully considered and researched. The campus development undermines the long-term viability of the entire architectural profession.[24] Ever since 1636, Harvard has always represented the architectural and urban stories.[25] During its early stages of developments, Harvard's physical layout was the result of long-range planning...[26]



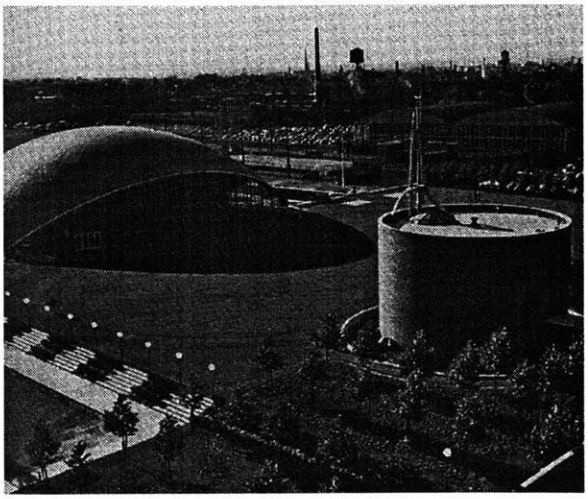
61.62.Harvard University in the early stages.

[24] According to the conversation with Perry Chapman, Principle of Sasaki & Associates, March 2000.
[25] Harvard history development related to Bunting, Bainbridge, *Harvard, An Architecture History.*
[26] According to the conversation focusing on the program of the campus development with Perry Chapman, Principal of Sasaki & Associates, March 2000.

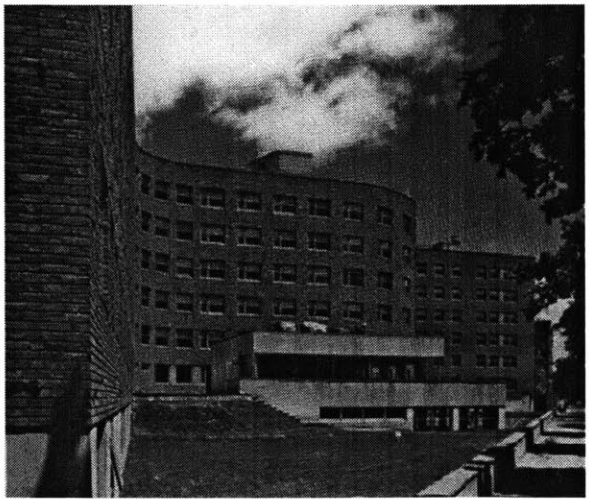
The planning and building campus process is:[27]

- Proposing to build a new school or renovate an existing school
- Selecting design team
- Selecting the site and preparing a master plan
- Preschematic design
- Schematic design
- Architectural design development
- Producing the contract documents
- Bid-opening day
- The construction phase
- Moving in; Occupancy of the new or renovated facilities
- Evaluating

After the Second World War, campus planners did not produce ambitious master plans anymore. In this sense, the process of development became more important than the final form. MIT was among the first schools to take advantage of the coherence offered by a long- term plan. It has built some 200 buildings for advanced learning and research. The development of MIT resonated the development of America from 1861 to the present time. These buildings, such as Alvar Aalto's dormitory in 1949 and Eero Saarinen's thin-shell domicile auditorium in 1953 were conceived as individual shapes contrasting to the other buildings and the environment around it. [28]



63.MIT campus



64.MIT Baker house

Certain campus forms shapes and styles may evoke precedent and history trace. This connection is also embodied in the architectural materials. The campus architecture serves as a series of icons that represent desired change and important development.

6. 21th-Century Campus

[27] Related to the interview with the MIT Planning office, March 2000.

[28] The MIT Architecture history development resources related to the MIT Museum and the Rotch Library.

When we step into the 21th-century, we see the new technology brings deeply influences to each corner of the campus. The digital immersion makes students and faculty spending more and more time in front of the computer. Students will experience an absolutely different learning process than their previous generation. The virtual library, electronic campus, distance learning, telecommunication and digital technology will have a profound effect on the campus structure. For the campus designers, it was an architecture that had to possess the conspicuous look of technological efficiency. Advances in science, digital technology, engineering, and new ways of expressing the world of ideas and art, found their counterpart in campus architecture.

- **24-hour Campus**

Since 1990, computer science and digital technology become the most important industry. President Bill Clinton said: "the new technology is a 21st century industrial revolution, it bring us a huge amount of new opportunities." Today, people from all over the world can talk to each other at anytime through the Internet Academic institutions can collect information from anywhere on the earth virtually.

Virtual communication raises a prevalent chance for the globalization education. Asian students can sit in their classrooms while taking a course in MIT. They can talk with the MIT groups as well as they are presenting the class in person. The faculty members can give the lectures for the students all over the world at the same time.

The most dramatic general effect of this long-distance digital telecommunications infrastructure is to create new kinds of interdependencies among academic institutions. We are living on the round earth in the universal; people from different countries use the different time zone. For the old generations, Asian students went to class while American students fell into sleep. Globalization education offers a great chance for Asian students, American students, and European students learning together. Some of the students may have to take a course during the mid-night. Some of them have group meetings at the very early of morning. Therefore, 24 hours a day, there are different group of students are studying, meeting, group working in some parts of the campus.

Design a 24-hour campus should satisfy:

- Walking distance safety and circulation security
- 24 hours refreshment service
- 24 hours available facilities
- Night recreation center and outdoor landscape design
- Energy saving
- New curriculum system

24 hours campus can be selected as a part of campus that should be make use of all the time. The colleges and universities become more fluid and heterogeneous. Campus becomes a lively place where can bring the people together.

- Campus net

Charles Vest, President of MIT, said: "The decade-long evolution of MIT into a residential must accelerate. It must better and more specifically support our students and instill in them both a sense and a reality of pride, accomplishment and well being. It must foster personal and intellectual community-physically, socially and electronically. It must link us together, make us meet across the boundaries of our disciplines and activities, and transport us from the grand courtyard and columns of the early 20th century to the spaces and activities of the future." [29] The linked complex of MIT main building, including the entrance, the great dome, killian court, the infinite corridor, define the ceremonial spaces that are most characteristic of MIT. Different departments share source and information. The double-loaded corridor, dome café and the Athena cluster become the most important communicate places that connect the whole campus together. MIT is an original model of the campus net.

The digital technology and internet change the students' life as well as the campus environment. Like a small city, the campus has its residential neighborhood, work centers, recreation zones, circulation and open spaces, supporting infrastructure, and redevelopment opportunities. William Mitchell, Dean of the MIT Architecture School raised a new campus structure idea: Space In and In Between, aims to examine the complexity, reflect upon the academic needs now and in the future, and generate new ideas about the design of campus and how it relates with its environs[30].

Today, most of the students spend more than 50% of their study time in front of computer, downloading information, sending email, writing paper, doing exercise, searching text books. The students intend to live as close to the academic buildings as possible since they do not necessary to spend too much time in the back and forth traffics. At the same time, different disciplines and background of students need take advantage of the public resources and share the information. So in the end, academic buildings, student dormitories, laboratories, libraries, computer center, student services will be linked together and contribute to a potential campus net.

The challenge of the campus net is to:

- Examine how to preserve and enhance campus space
- Create a variety of new, recognizable, functional and experiential spaces
- Blend these varied experiences to form a identifiable, pleasant, smart, convince campus environment that contributes to the talent students and faculty.

MIT students said that we do live in corridors around here, we like to gather in the middle of the highway... We propose a so-called great street system to link the whole campus. This great street includes:

- Corridors
- Indoor landscape

[29] Related to Professor Charles Vest, President of MIT's speech in the MIT Campus Design Forum, 1999.
[30] According to the interview with William Mitchell, Dean of the MIT Architecture School, March, 2000.

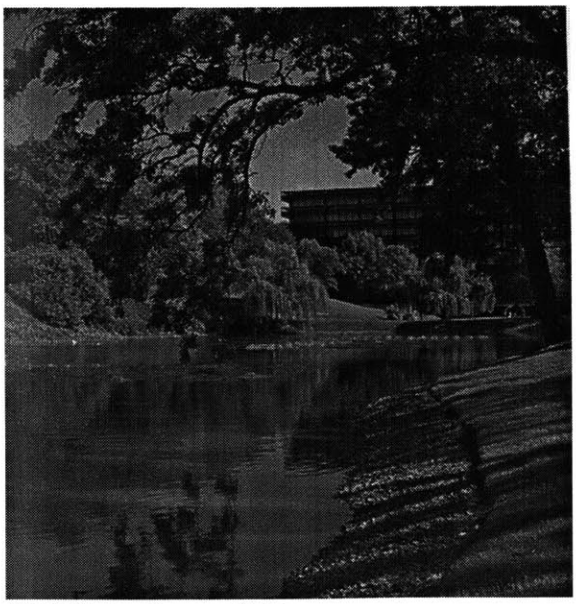
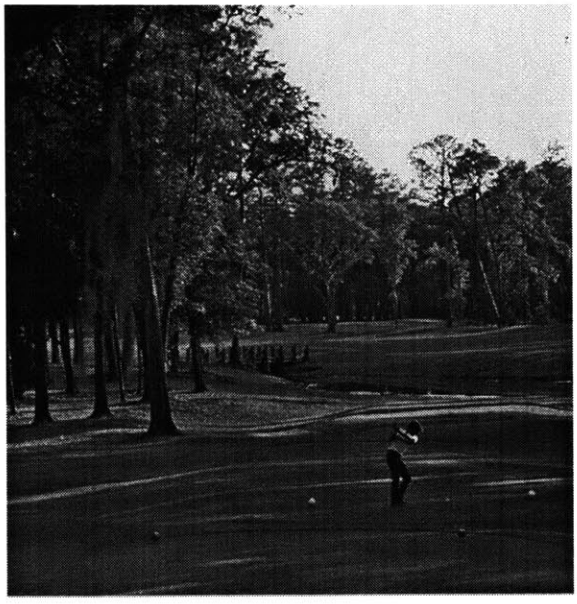
- Gray space
- Café
- Seating area and desk with computer plug in
- Information center and computer cluster

The consistence great street system will be the most important and lively place in the 21th century campus.

- **Campus green**

In the future campus life, students only walk less than 5 minutes to the classrooms. This indoor life makes the outdoor life become even important. Cyberspace and social space must complement one another. Since the previous campus develop into a campus net step by step, the campus buildings link together and concentrate more then ever before. A lot of old buildings will be demolished. We can make use of those empty spaces and change the campus into a big green park with all kinds of entertainment facilities and recreation facilities. We bring back the disappearing natural environments and design the big campus green for the dream place.

The campus green is not like the traditional lawns or green space. It is a big natural park full of energy and fresh nature. The impression of a coherent, natural green campus separates the campus from the city and shows the image of the heaven-like place close to our life.

65.66.Natural green field.

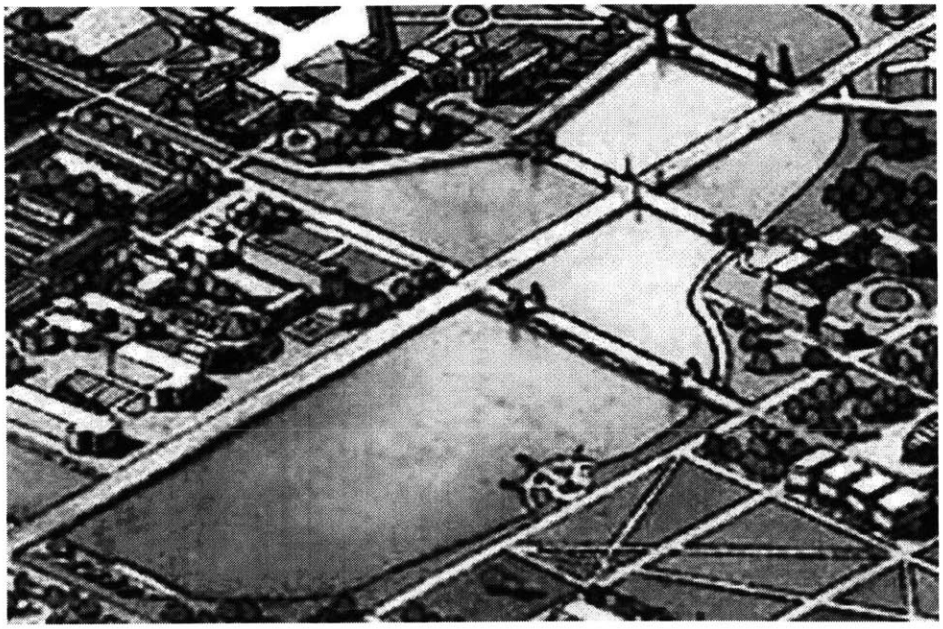
Chapter 4: The New Tsinghua Campus Design Proposal.

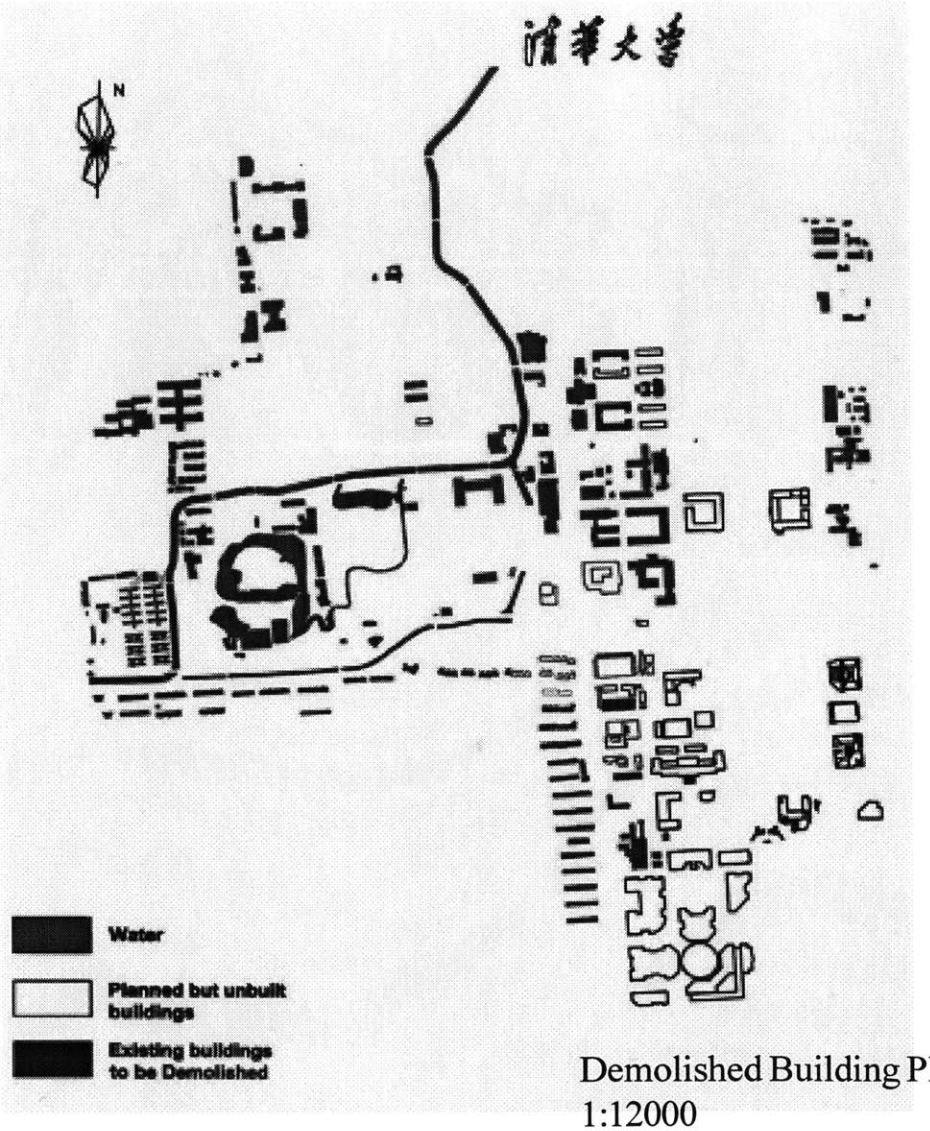
In Chapter 3, we discussed the prime issues of the campus design. My main goal in the Tsinghua Campus design is:

- Remove and demolish some old and empty buildings.
- Establish a clear long-term growth program for the Tsinghua campus development.
- Create out a large natural green belt in the campus. The new green field and water systems combined with the Summer Palace can also benefit the Beijing City.
- Establish and enhance the civic structure of the campus by defining open space, giving the space new character, and creating the visual linkages and movement patterns.
- Design a 24-hour campus community. Build up a 21-th century campus net.

I am aiming to reach the result as:

- Develop the southeast campus.
- Make the campus green coverage over 50%. Garden like campus landscape.
- Pedestrian system circulation design.
- Design reflects the new century technology focusing.



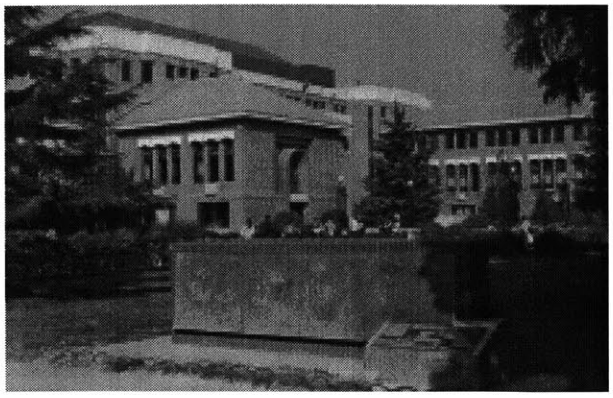


Demolished Building Plan
1:12000

Acadamic Building need to be demolished

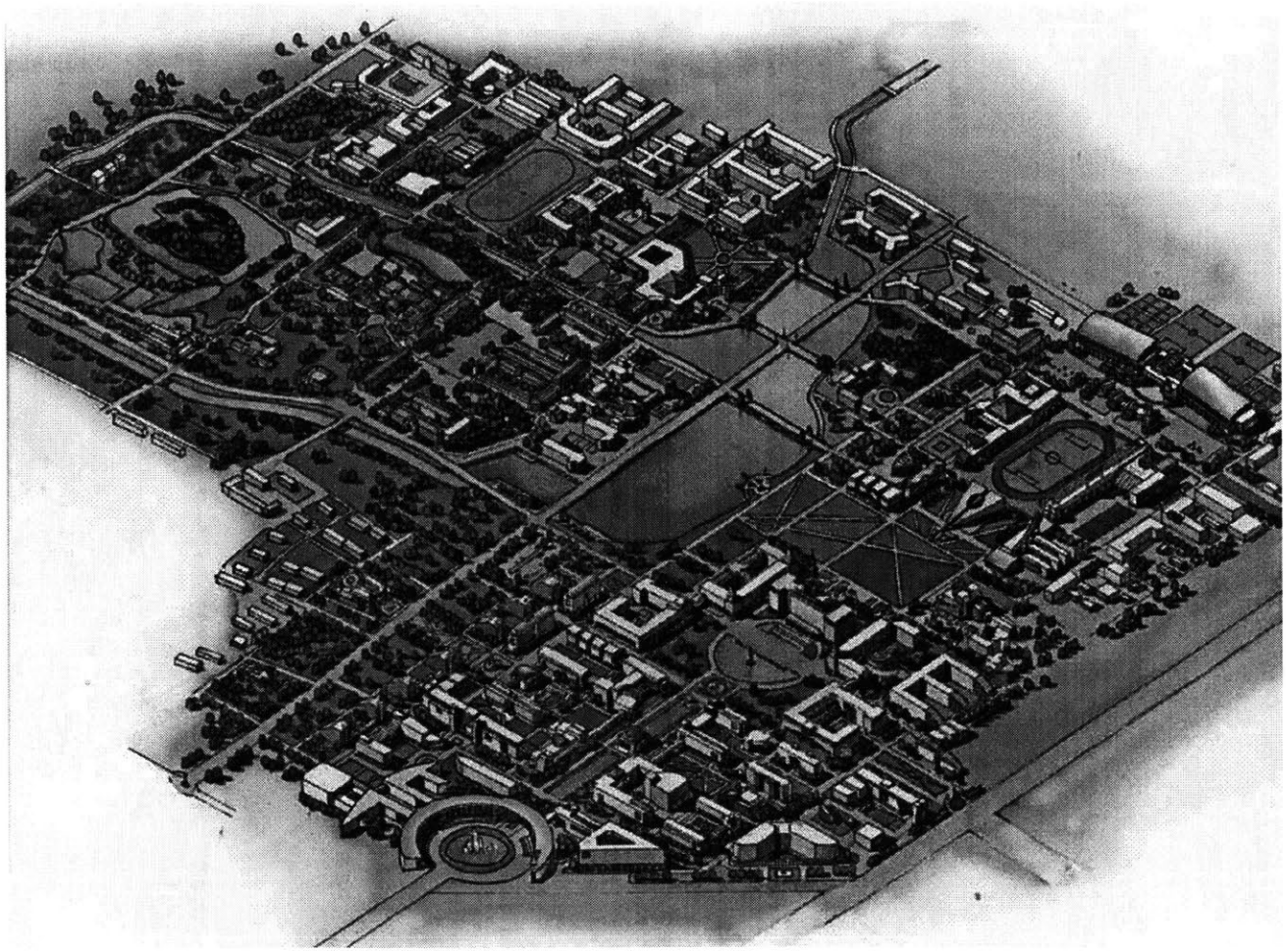
Office Building need to be demolished

Maintained Existing Building
1:12000



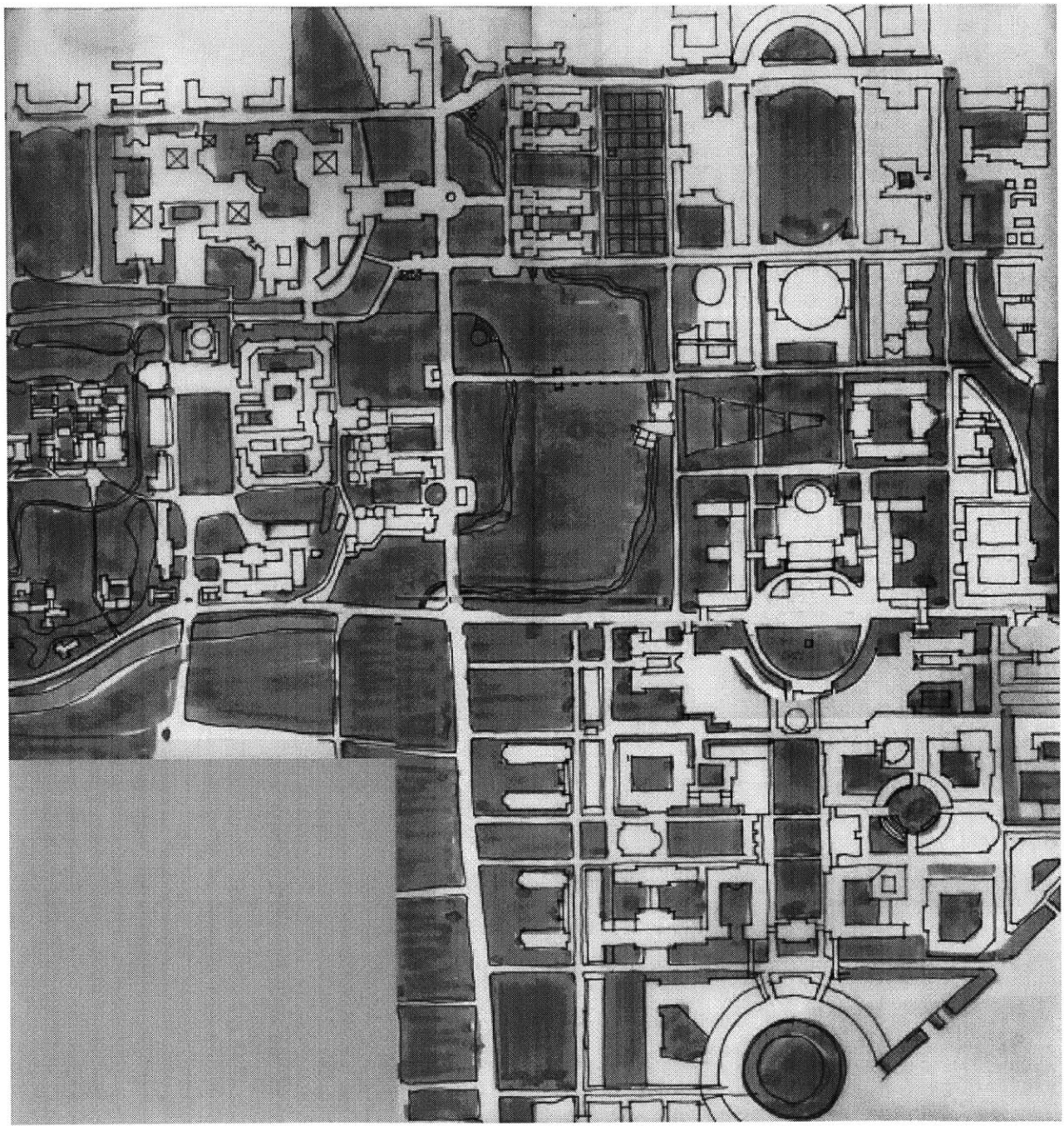
Maintained Library

Maintained Main Building

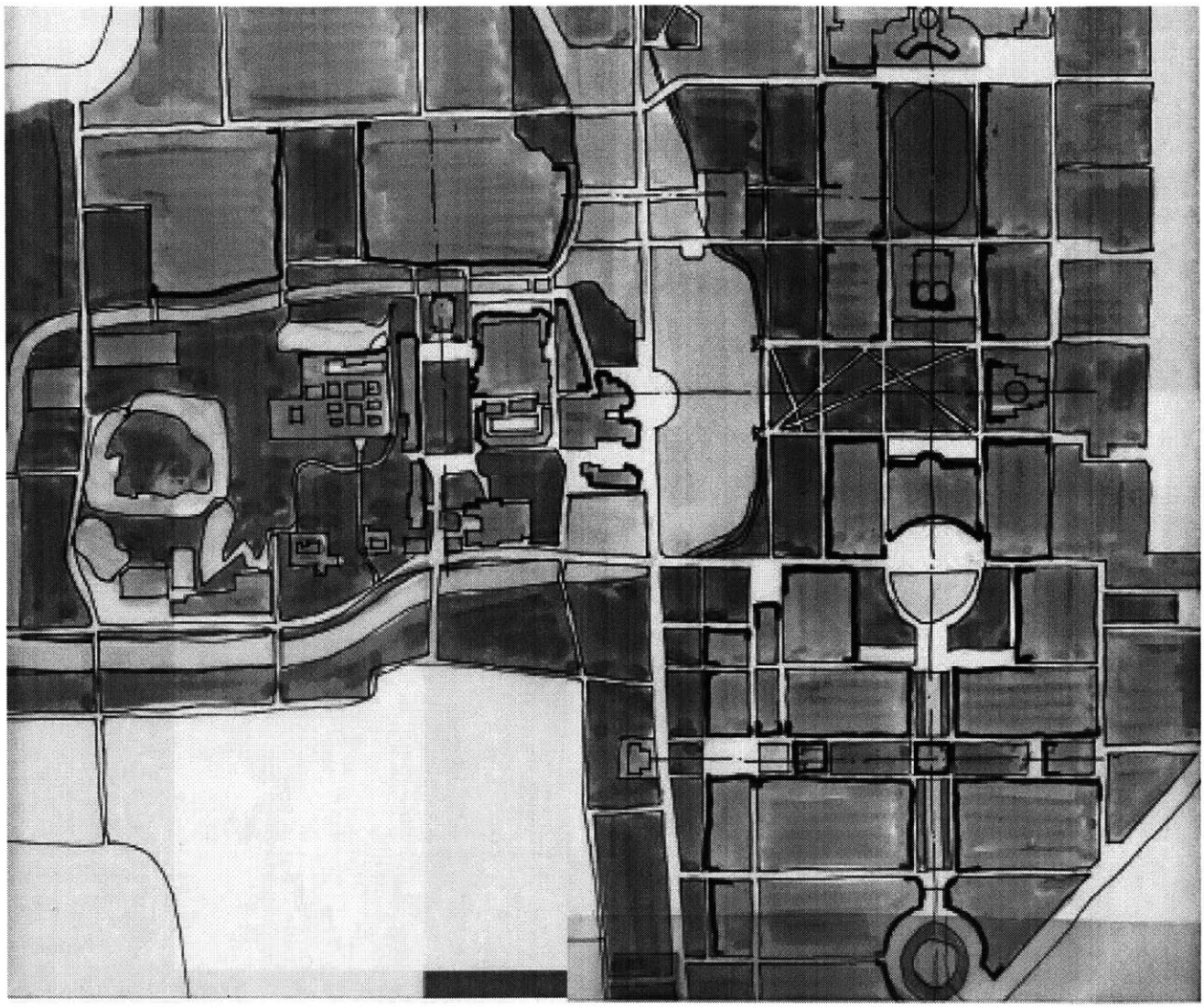


Tsinghua New Campus

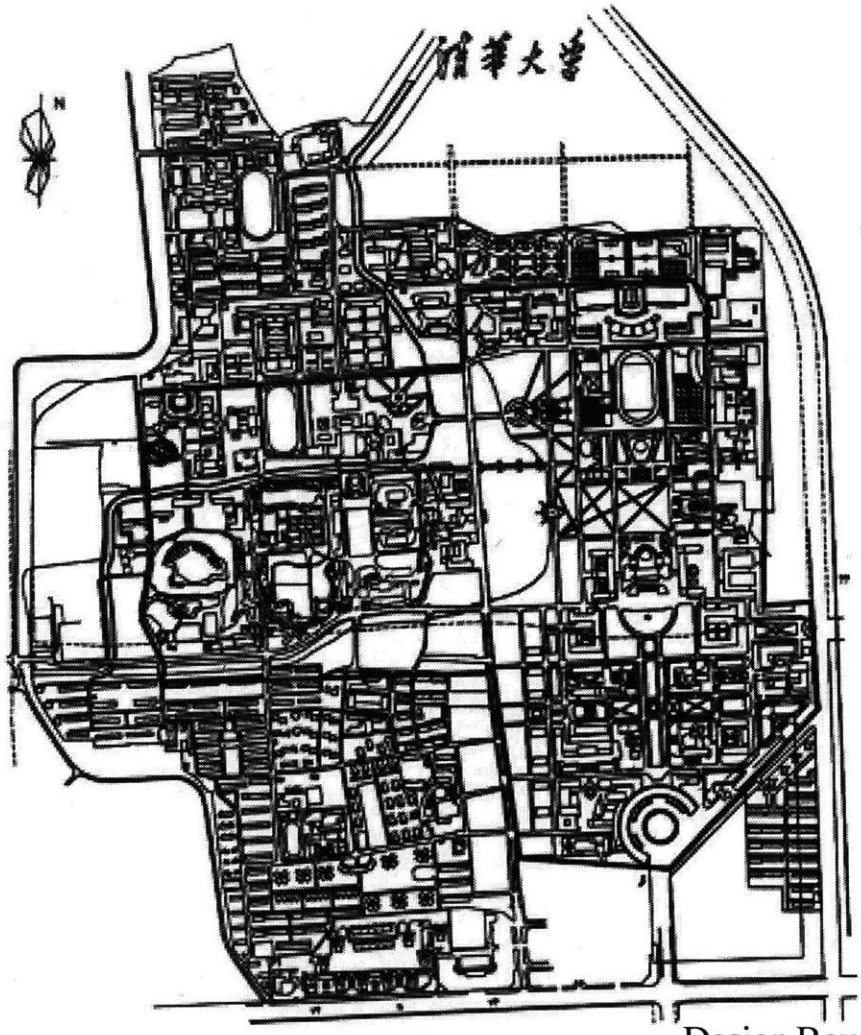
Master Plan
1:10000



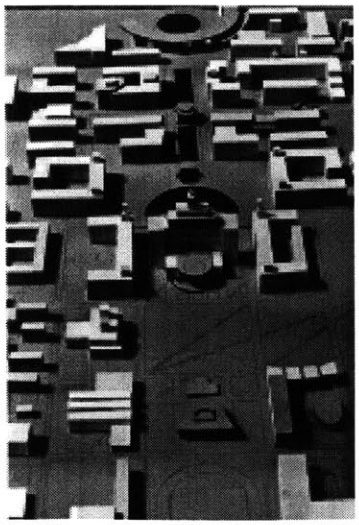
Design Concept



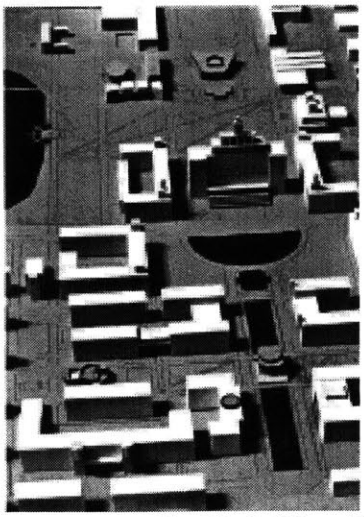
Design Guidelines



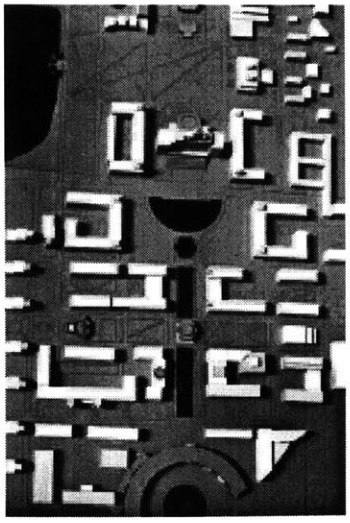
Design Boundary
1:12000



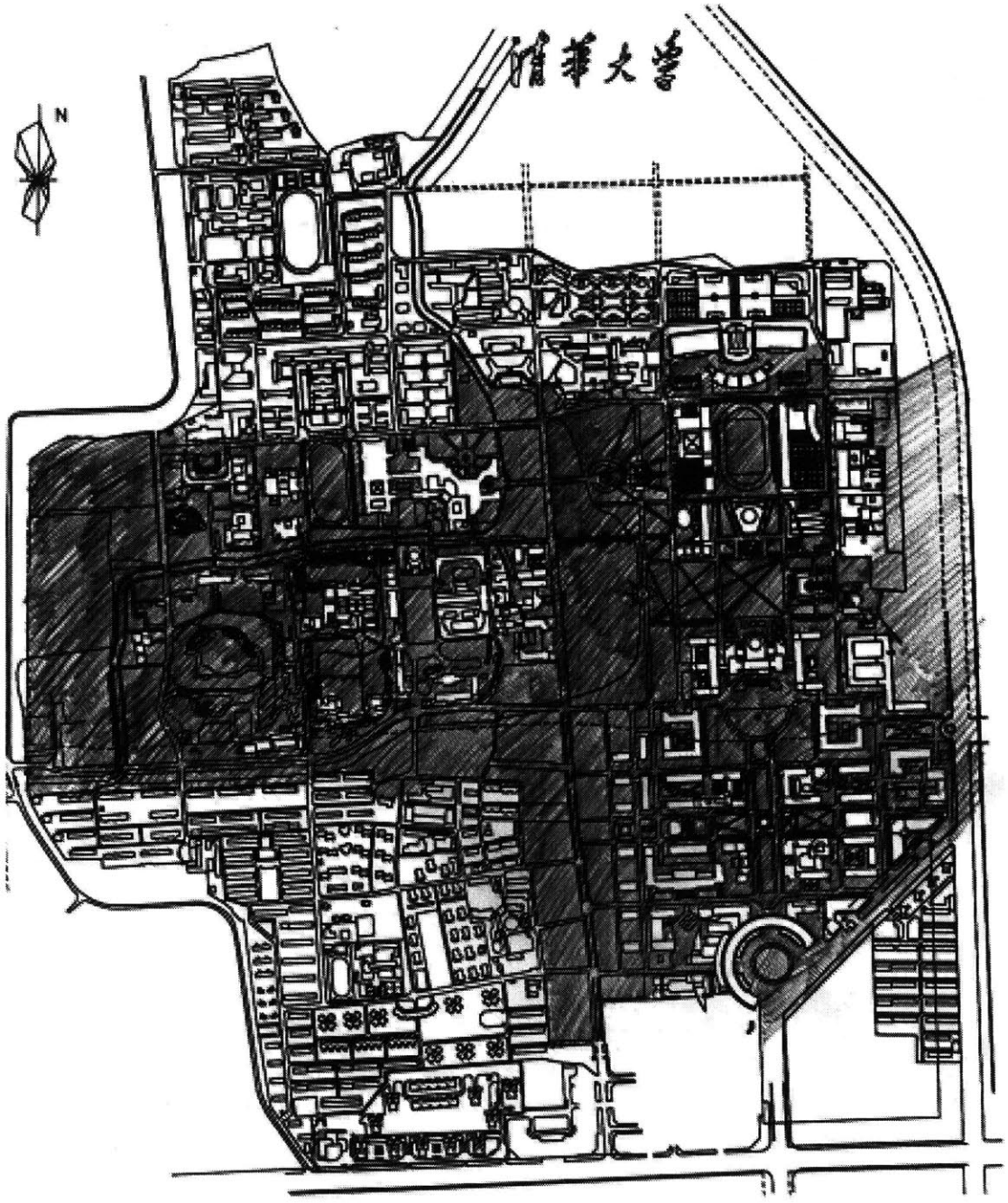
Site Model View 19



Site Model View 20



Site Model View 21



New Open Space
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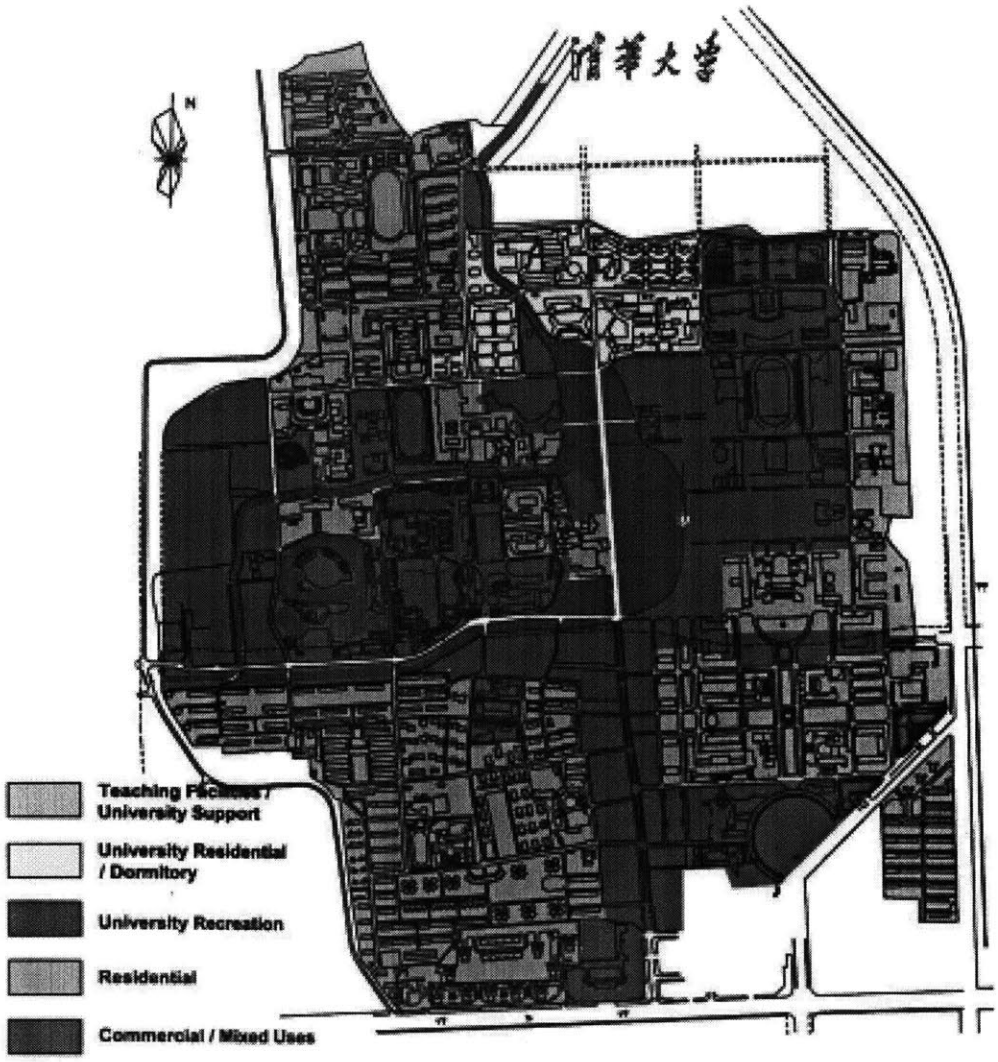
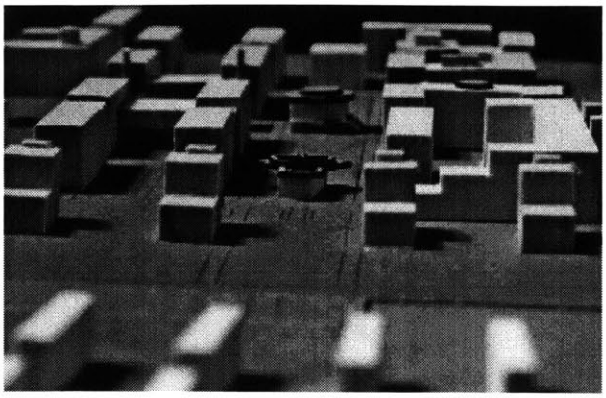
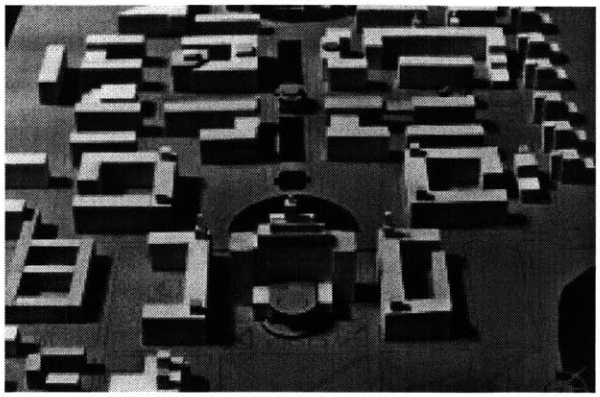


Future Land Use

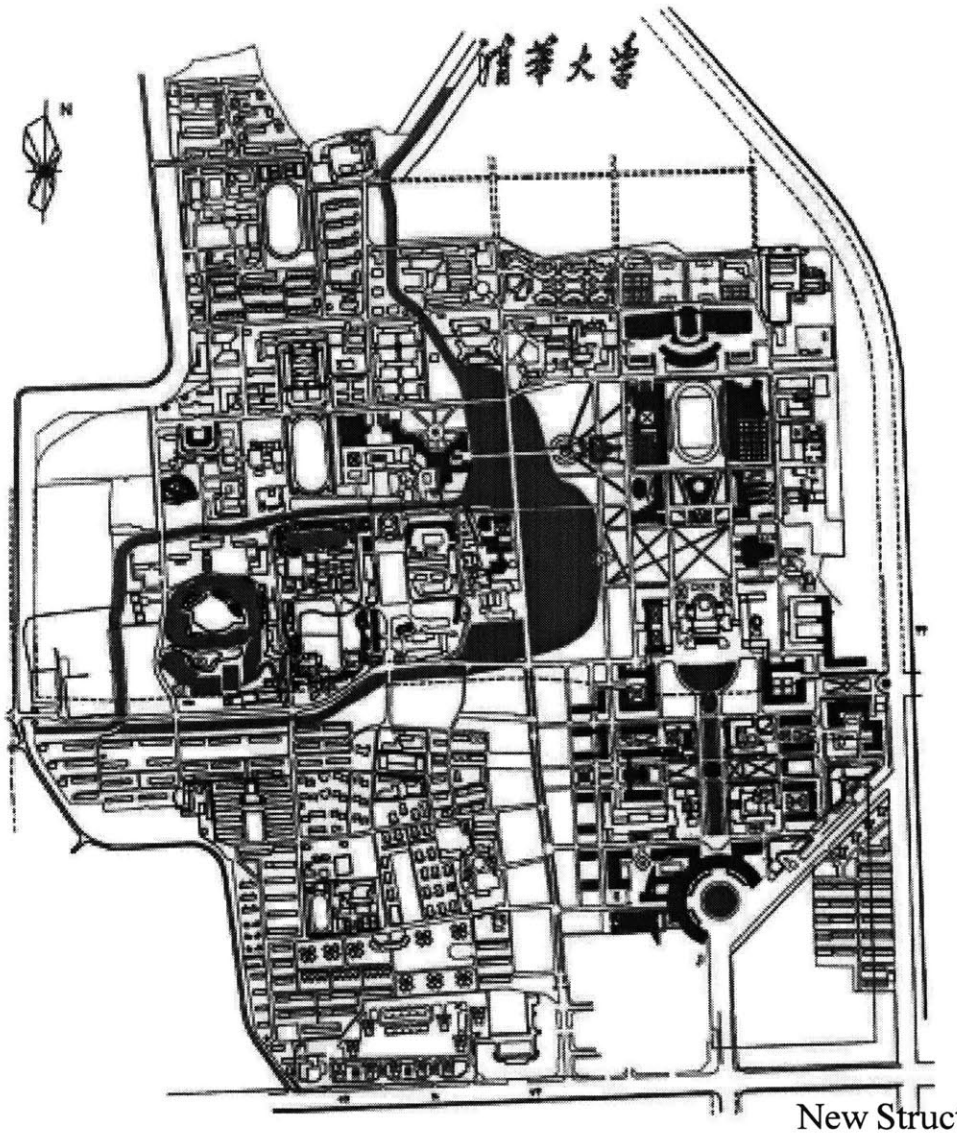
1:12000



Site Model View 22



Site Model View 23



New Structure
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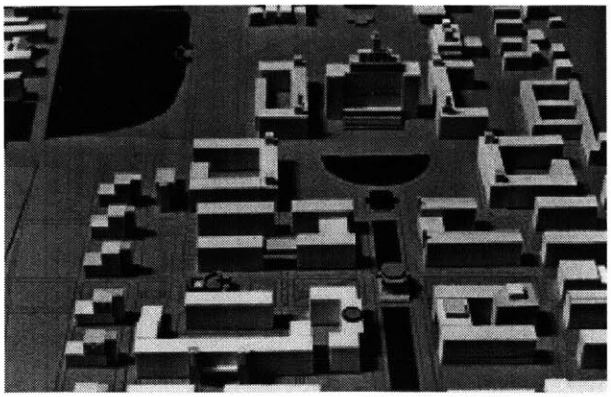

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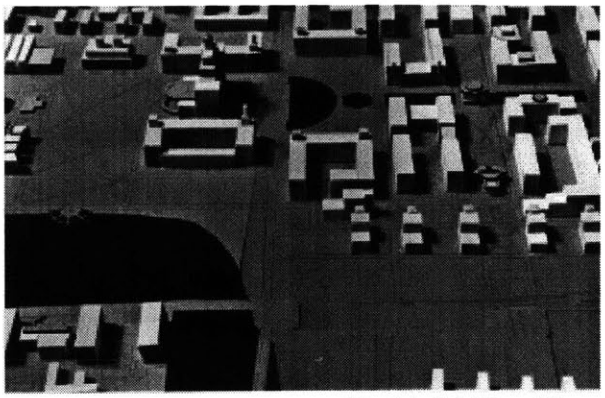
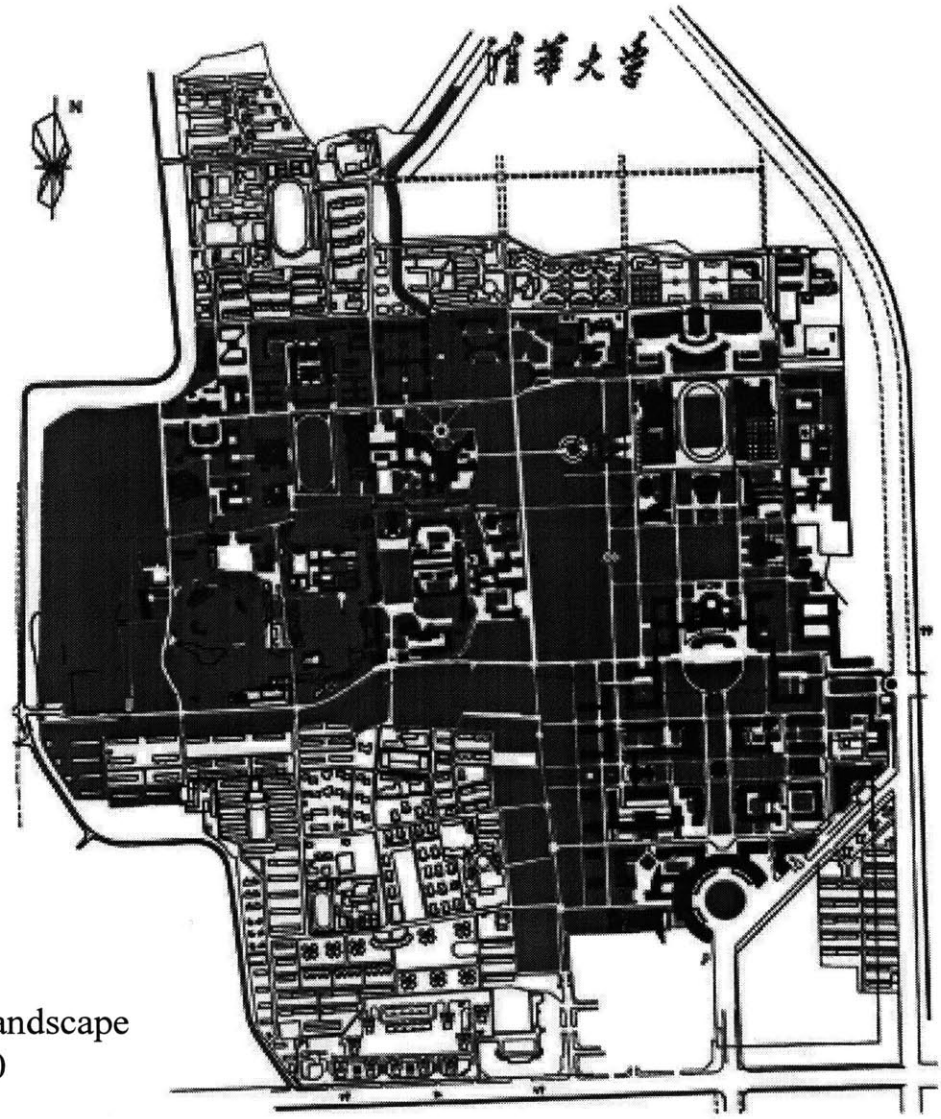
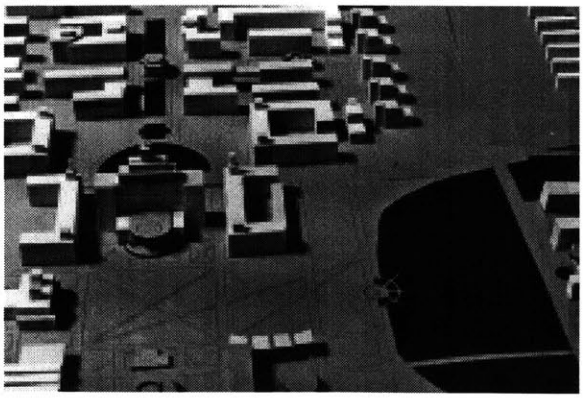


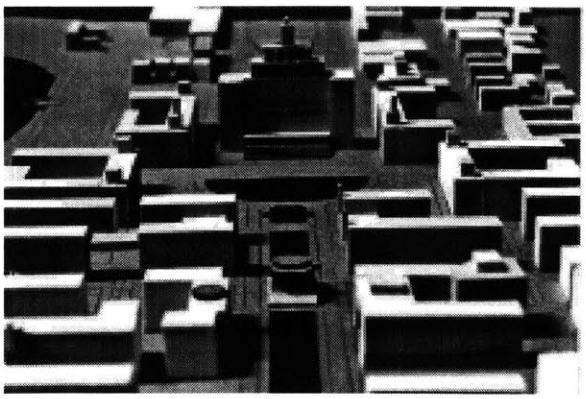
Site Model View 25



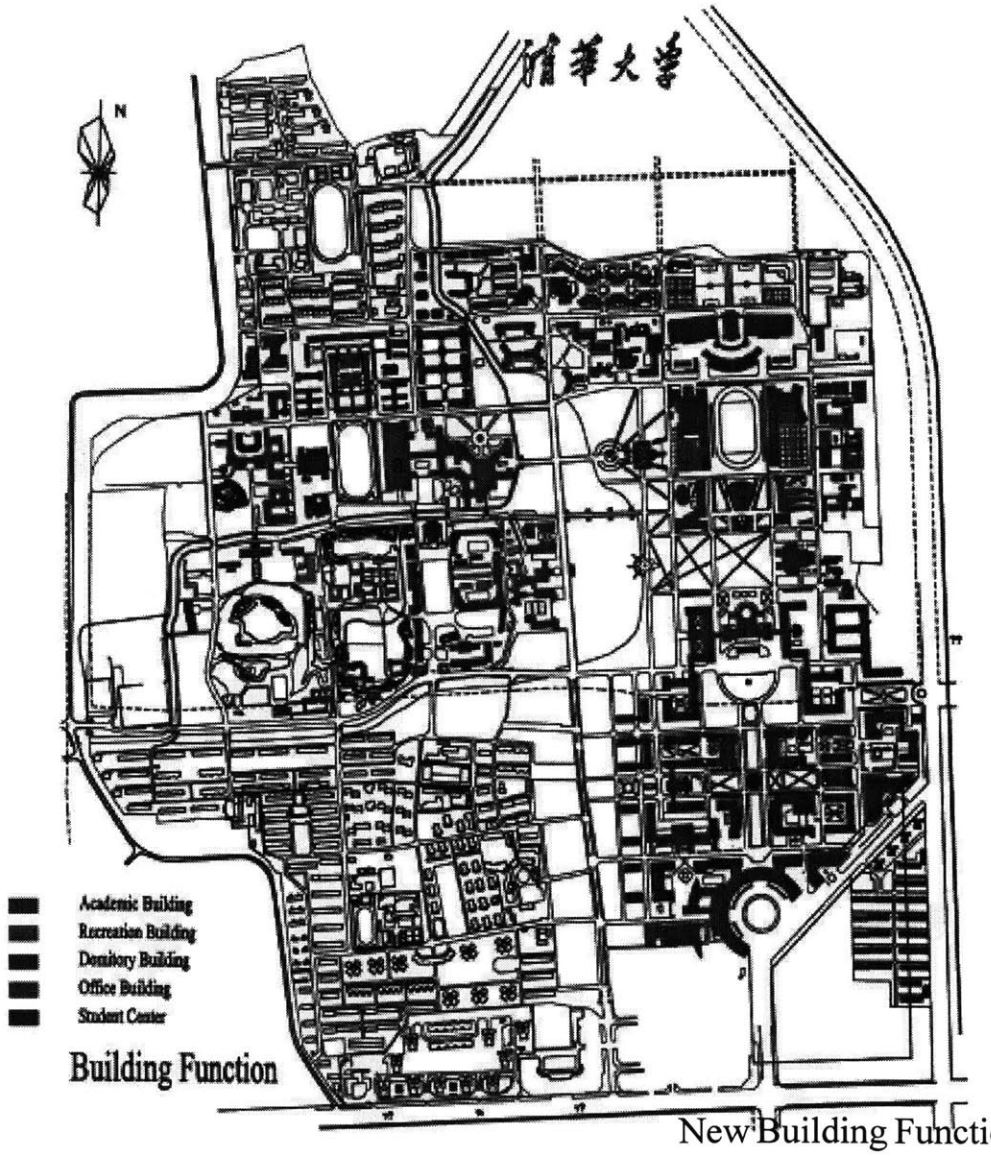
New Landscape
1:12000



Site Model View 26



Site Model View 27



New Building Function
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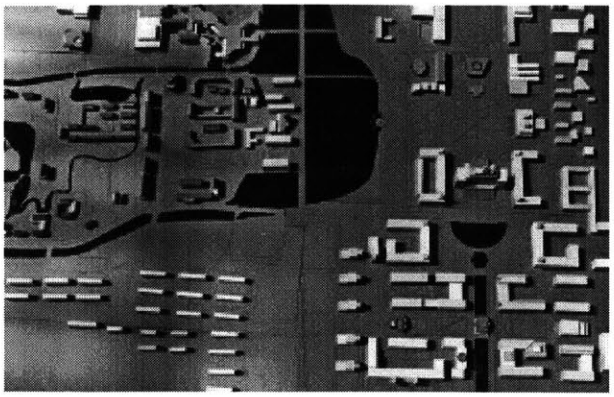
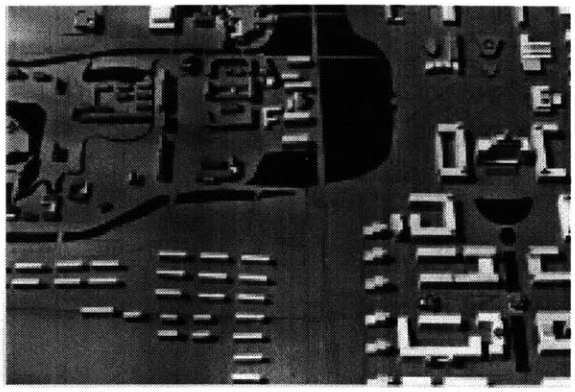
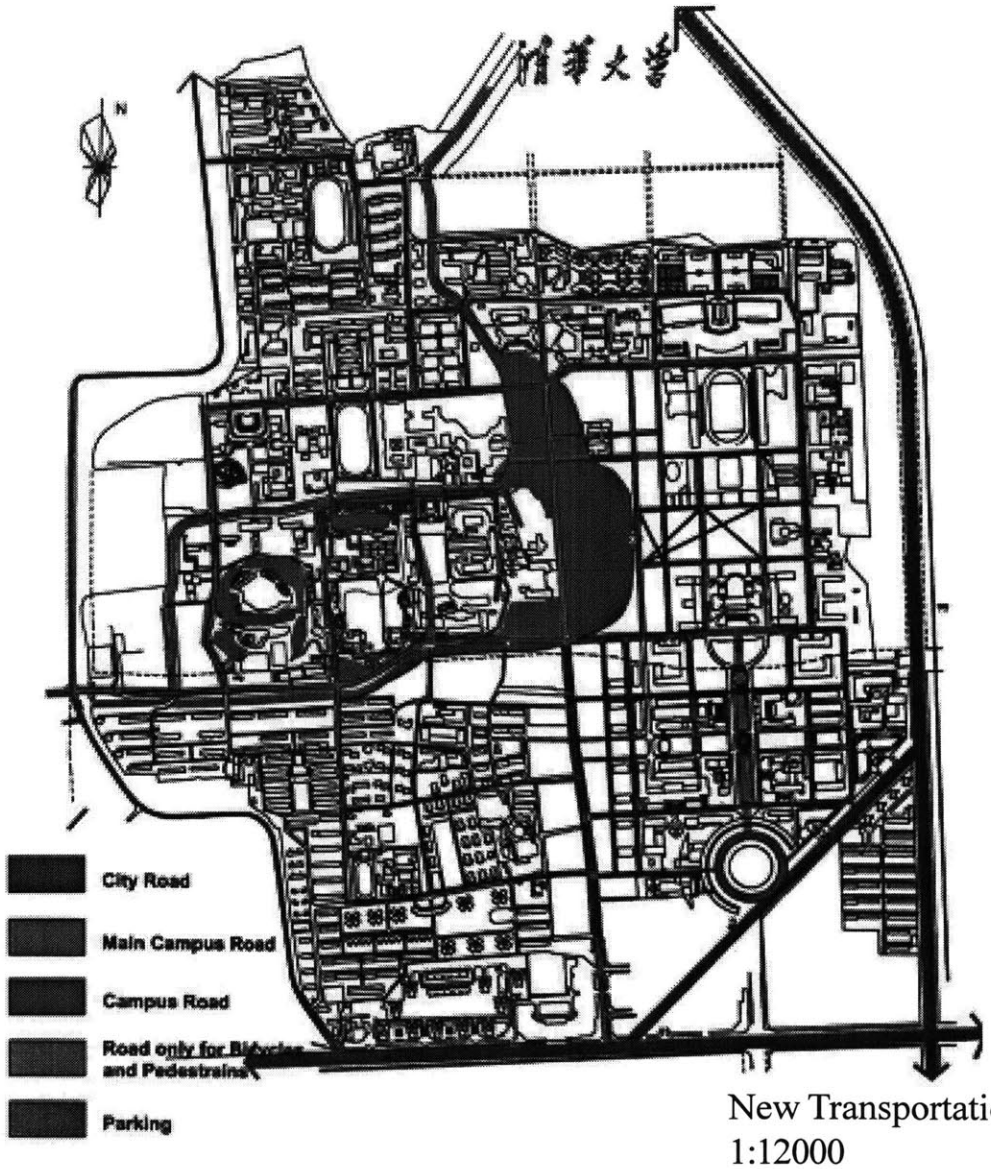


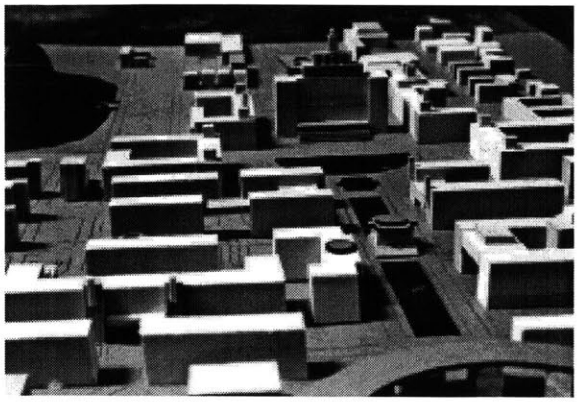
Site Model View 28



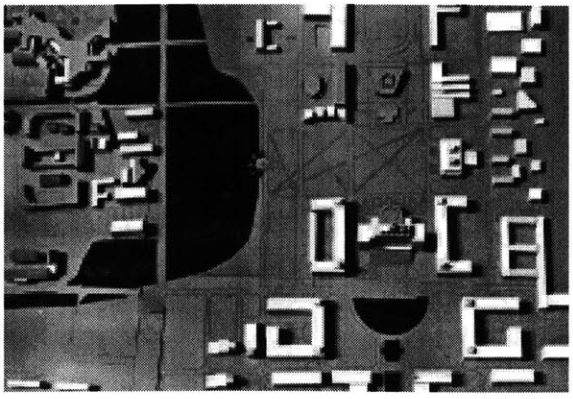
Site Model View 29



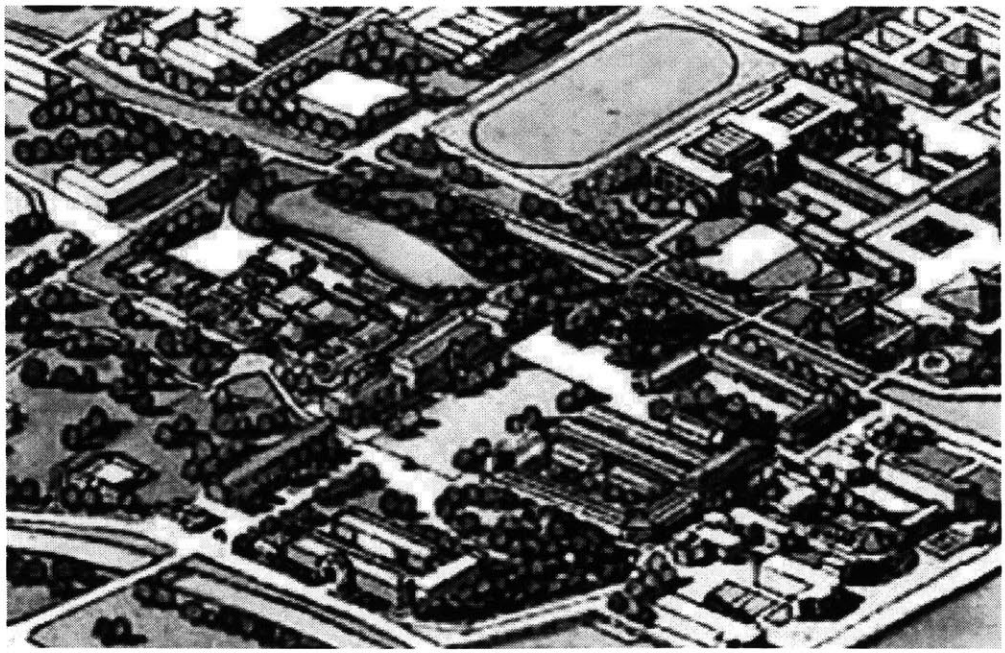
New Transportation
1:12000



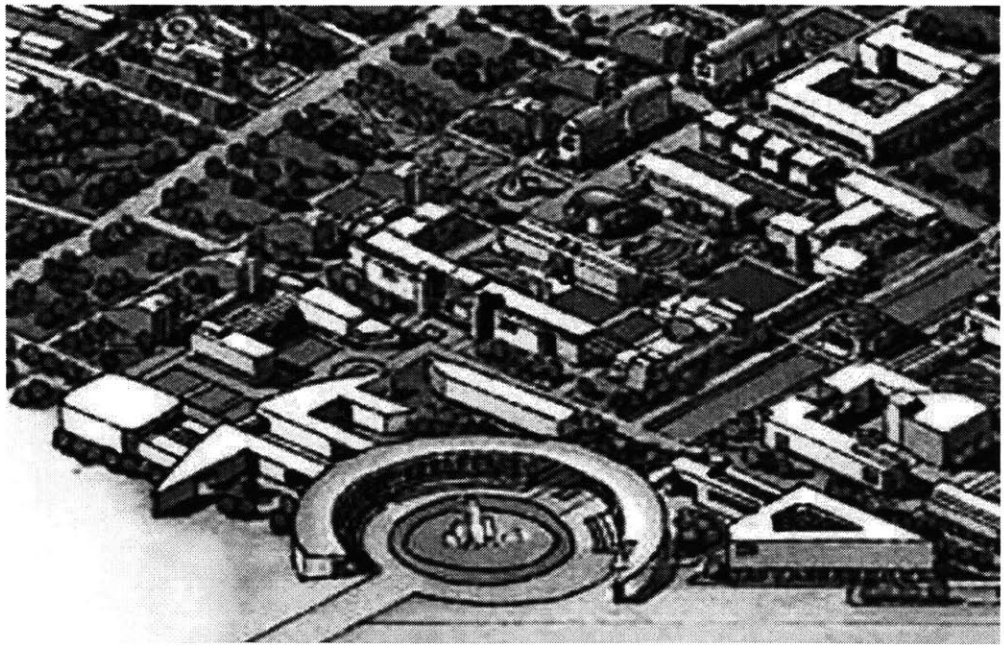
Site Model View 30



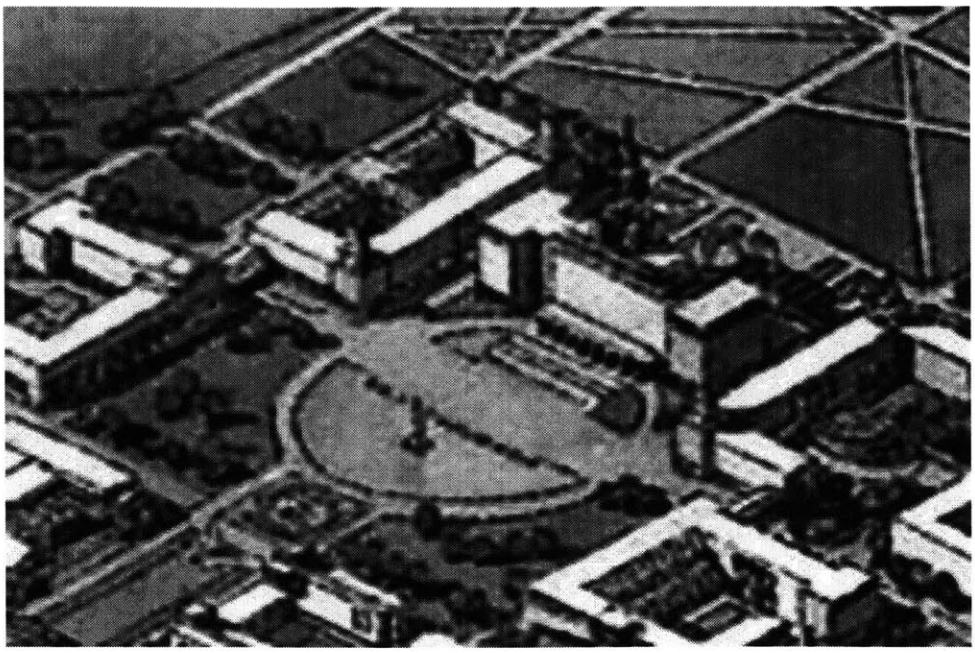
Site Model View 31



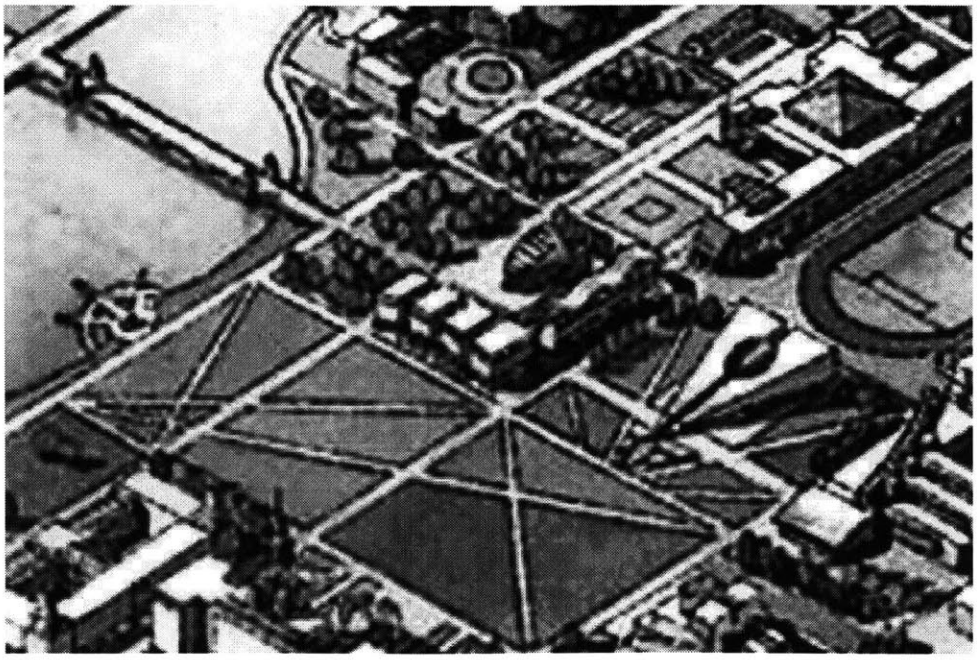
the Old Campus



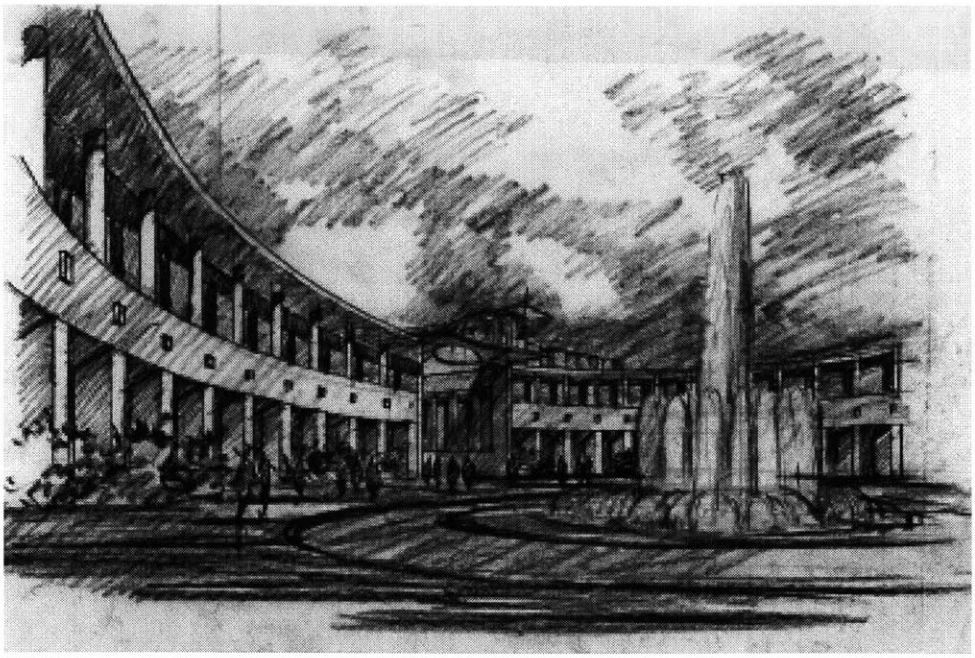
New Campus



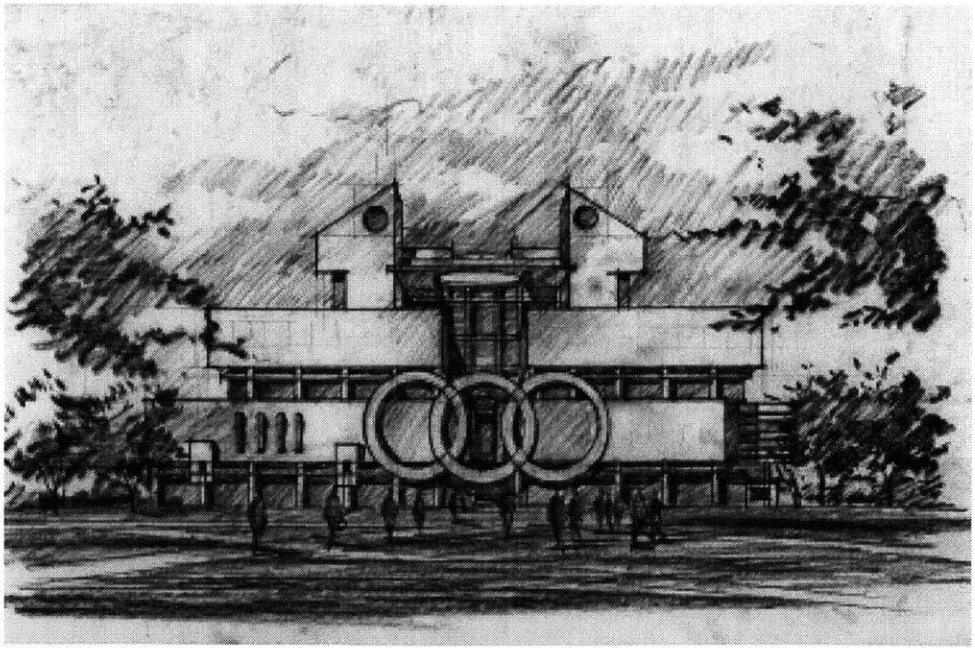
the Main Building Square



the New Lawn

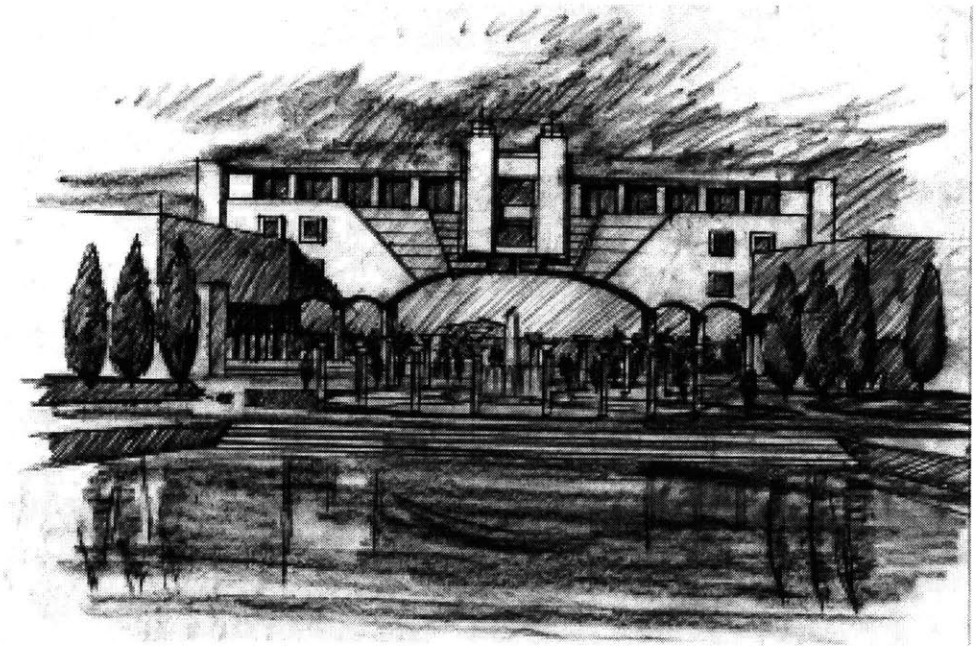


the New Entrance



the New Museum

Main Library Expension



New Student Center

Conclusion

In my design proposal, I realized the main goal:

- Demolish 112430 m^2 buildings and build up 240000 m^2 new buildings. Double the architecture space.
- Create out a 600-m wide big natural park with beautiful water system. The new green coverage is 65%.
- Clearly define the campus open space. Designed several crossing space axis in the campus.
- The student life emphasis reversed to the southeast part of the campus, close to the city train station.
- Different departments share the public information and technology resources.
- Very strong landscape image and character.

In the next 20 to 30 years, we will build up the water systems stage after stage. This ambitious plan will thoroughly change and improve the Tsinghua campus.

Appendix B

Demolished building list of Tsinghua University

Building name	Usage	Structure	Space(m^2)
No. 12 Dinning Hall	Dinning Hall	Mixed	560
No. 7 Dinning Hall	Dinning Hall	Mixed	724
No. 8 Dinning Hall	Dinning Hall	Mixed	581
Dormitory 5	Girl's Dormitory	Mixed	3760
Dormitory 6	Girl's Dormitory	Mixed	3760
Dormitory 7	Girl's Dormitory	Mixed	3760
Dormitory 8	Girl's Dormitory	Mixed	3760
Dormitory 9	Boy's Dormitory	Mixed	3575
Dormitory 10	Boy's Dormitory	Mixed	3575
Dormitory 11	Boy's Dormitory	Mixed	3575
Dormitory 12	Boy's Dormitory	Mixed	3575
Old Student Center	Student Performance	Mixed	609
Facility Center	Shop	Mixed	1121
Unknown Mixed Use Building	Unknown	Mixed	6000
Unknown Building	Unknown	Mixed	1018
Laboratory	Laboratory	Mixed	1217
No.3 Classroom Building	Academic	Mixed	11922
Auto Building	Laboratory	Mixed	3300
Mechanics Lab	Laboratory	Mixed	2152
Soil Lab	Laboratory	Mixed	2400
Office Building	Office	Mixed	1517
New Water Conservation Building	Academic	Frame Structure	11230
No.1 Classroom Building	Academic	Mixed	1200
West Classroom	Academic	Mixed	343
East Gem	Recreation	Mixed	1150
Residential 11	Residential	Mixed	2300
Residential 12	Residential	Mixed	2300
Residential 13	Residential	Mixed	1900
Residential 14	Residential	Mixed	1900
Residential 15	Residential	Mixed	2100
Residential 16	Residential	Mixed	2100
Residential 18-24	Residential	Mixed	8400
Unknown Office Buildings	Unknown	Mixed	5000

Total Space: 102384(m^2)

Appendix C

Proposed New Building list of Tsinghua University

Building Name	Usage	Location	Space(m^2)
West Main Building	Academic	South-east campus	12000
East Main Building	Academic	South-east campus	12000
Business School 2	Academic	South-east campus	6000
Business School 3	Academic	South-east campus	6000
Student Center	Mix use	South-east campus	2000
Law School 2	Academic	South-east campus	6000
Law School 3	Academic	South-east campus	4000
Civil Engineering Center 1 , 2	Academic and Laboratory	South-east campus	12000
Architecture Institute Building	Academic and office building	South-east campus	5500
Nuclear School Building	Academic and Laboratory	South-east campus	9000
Technology School	Academic and laboratory	South-east campus	6000
Mechanics School	Academic	South-east campus	6000
Information Center and Science Library	Academic	South-east campus	4000
Computer Center and Information School	Academic and Laboratory	South-east campus	22000
Parking Garage 1	Parking	South-east campus	5000
Parking Garage 2	Parking	South-east campus	3000
Public Classroom	Academic	South-east campus	8000
Student Dormitory	Dormitory	South-east campus	9600
Office Building for Rental	Office and Research	South-east campus	10000
International Conference Center	Conference and Performance	East campus	6000
Tsinghua Museum	Exhibition	East campus	4000
New Auto Building	Academic and Laboratory	East campus	8000
24-hour Classroom Building	Academic	East Campus	6000
West-lot Gem	Recreation	North-east campus	8000
East-lot Gem	Recreation	North-east campus	7400
University Park	Mix-use	North-east campus	2000
Parking Garage	Parking	North-east campus	1000
Swimming Gem	Recreation	North-east campus	12000
New Library	Academic	West campus	25000

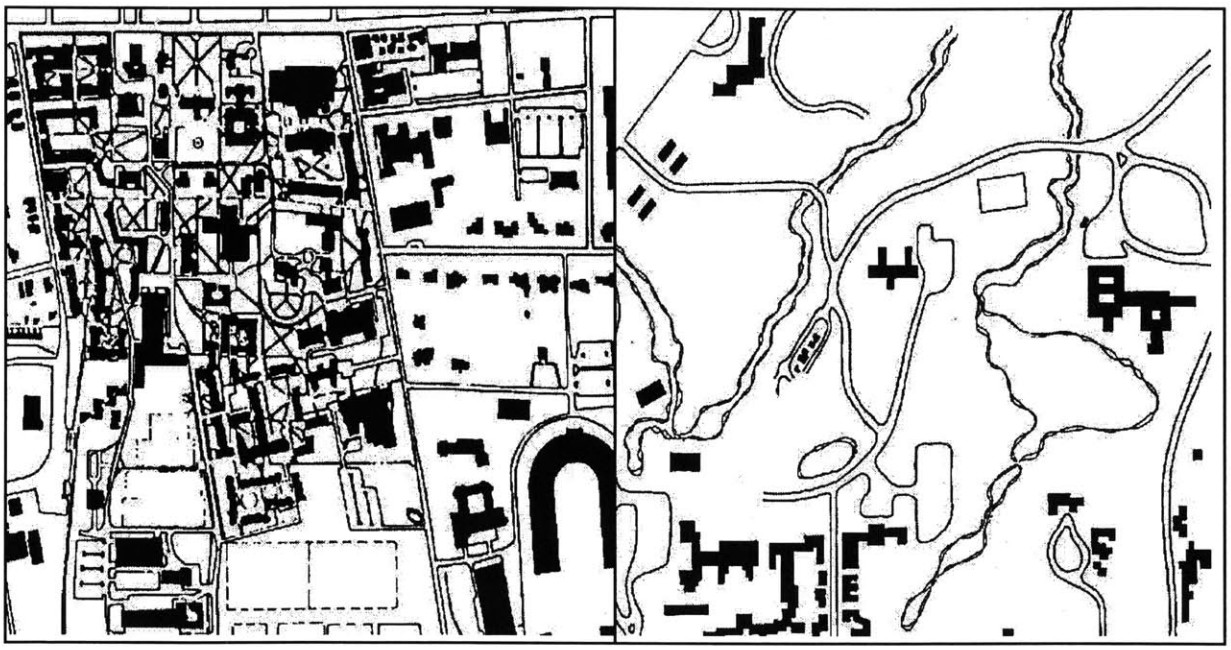
Tsinghua Art Gallery	Exhibition	West campus	2000
Human and Social School	Academic	West campus	8000
Headquarter Building	Office	West campus	1000
Student Entertainment Center	Entertainment	West campus	1500

Total Space: 240000(m^2)

Appendix D

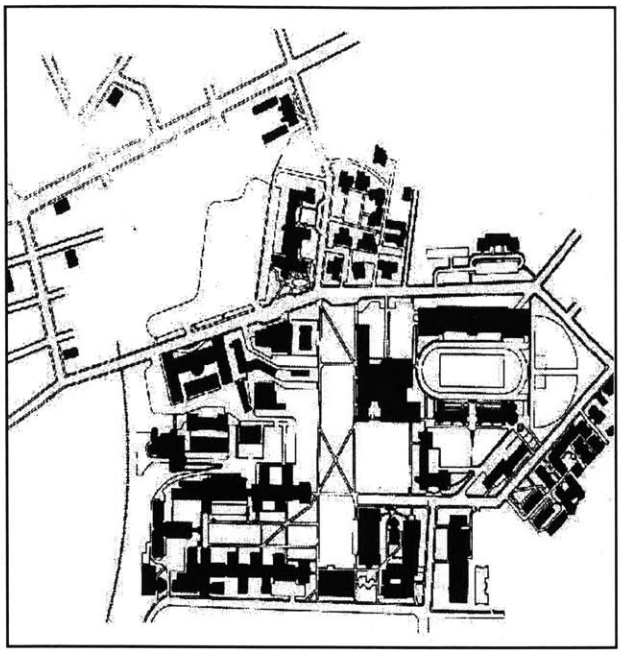
Comparing American Campuses

Information comes from Ayers Saint Gross, Baltimore, Maryland, 1998-1999.

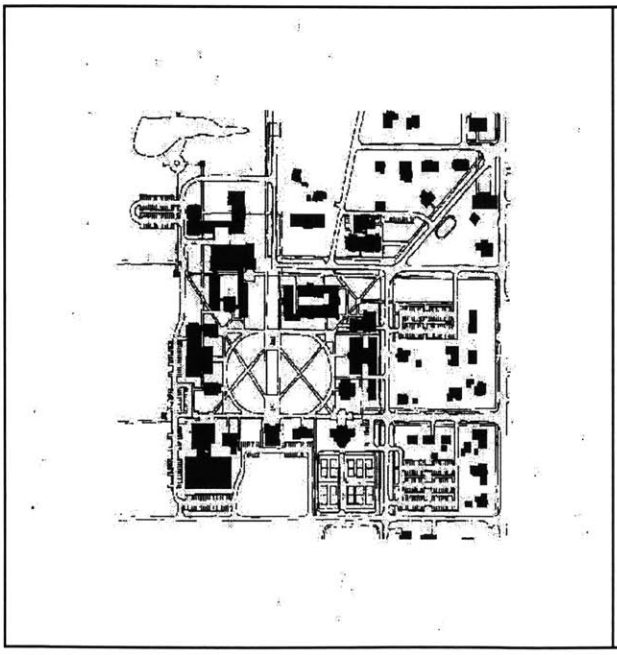


Princeton University
Princeton, New Jersey (Founded 1746)

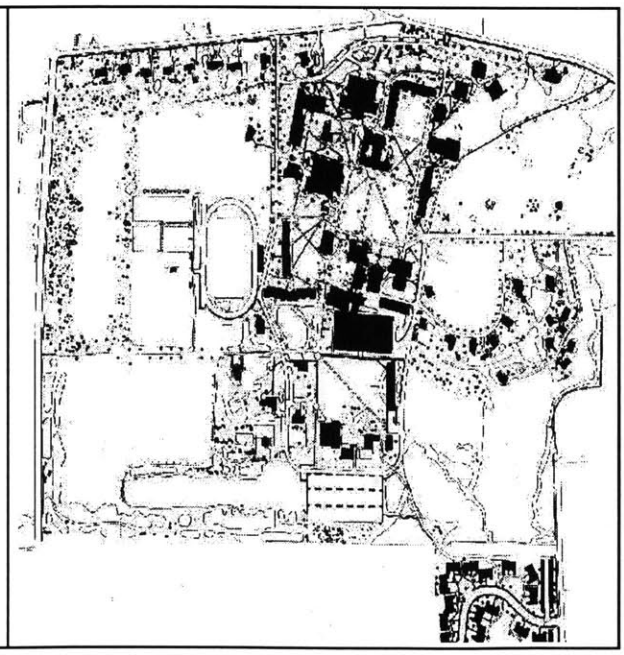
Cranbrook Academy
Bloomfield Hills, Michiga (Founded 1932)



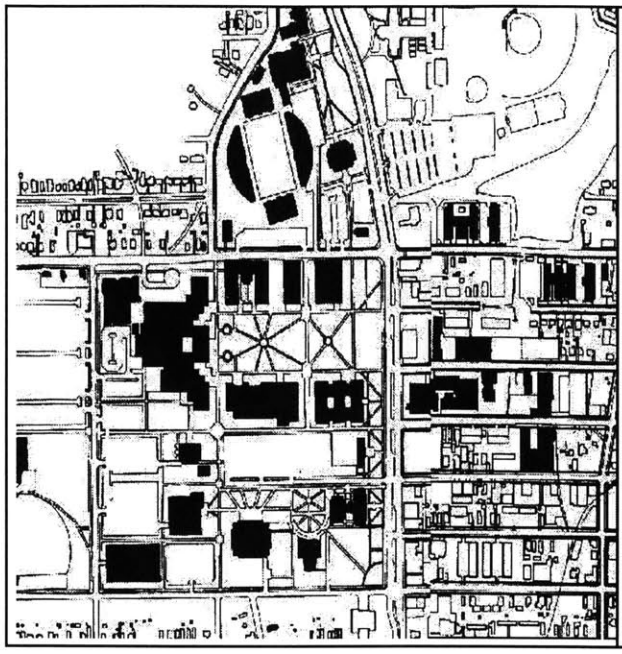
Carnegie Mellon University
Pittsburgh, Pennsylvania (Founded 1900)



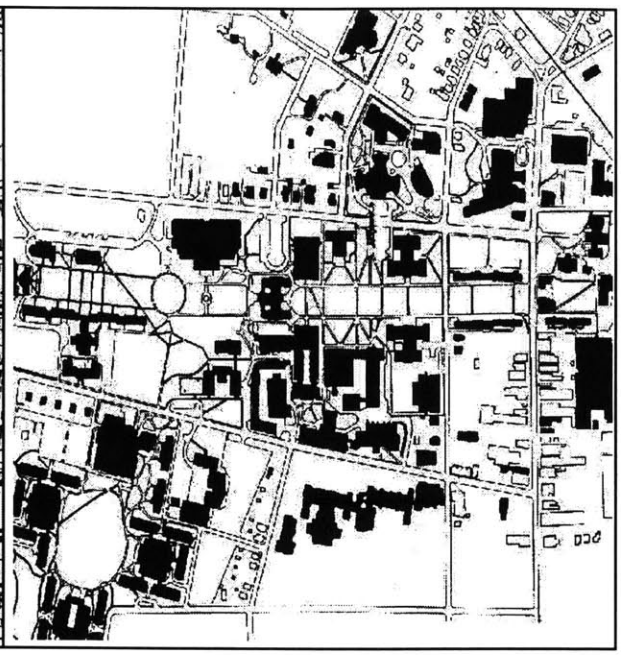
Oxford College of Emory University
Oxford, Georgia (Founded 1836)



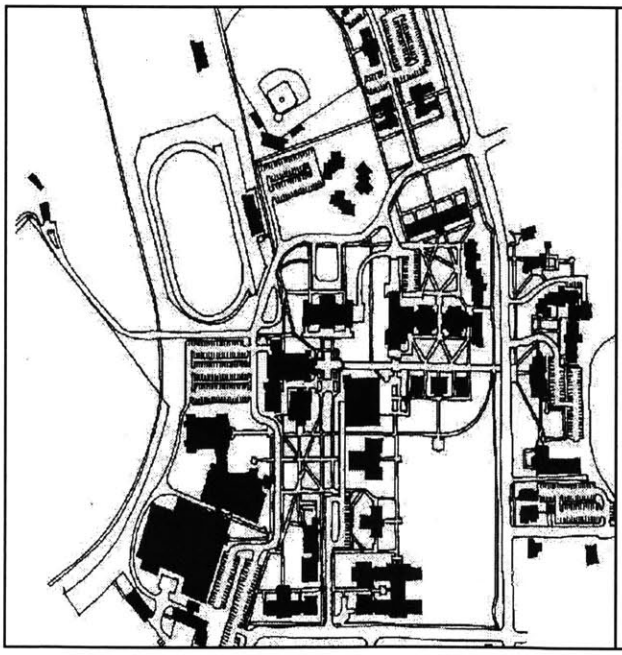
Haverford College
Haverford, Pennsylvania (Founded 1833)



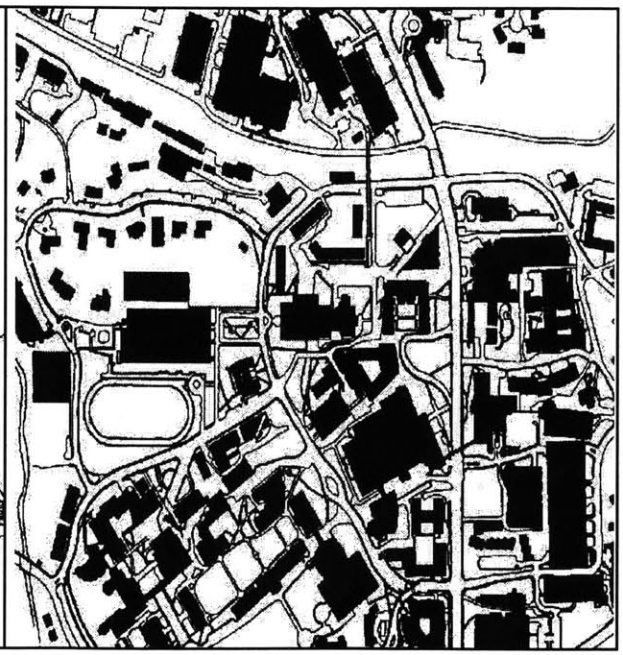
Old Dominion University
Norfolk, Virginia (Founded 1930)



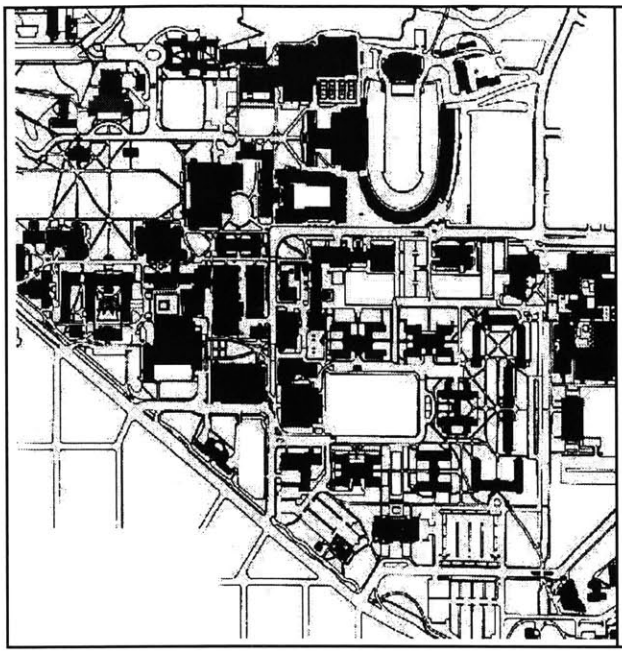
University of Delaware
Newark, Delaware (Founded 1743)



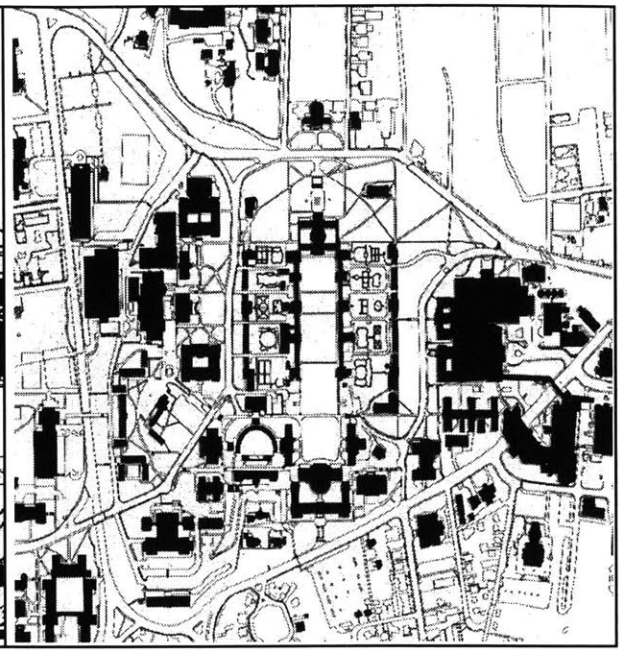
Washington College
Chestertown, Maryland (Founded 1782)



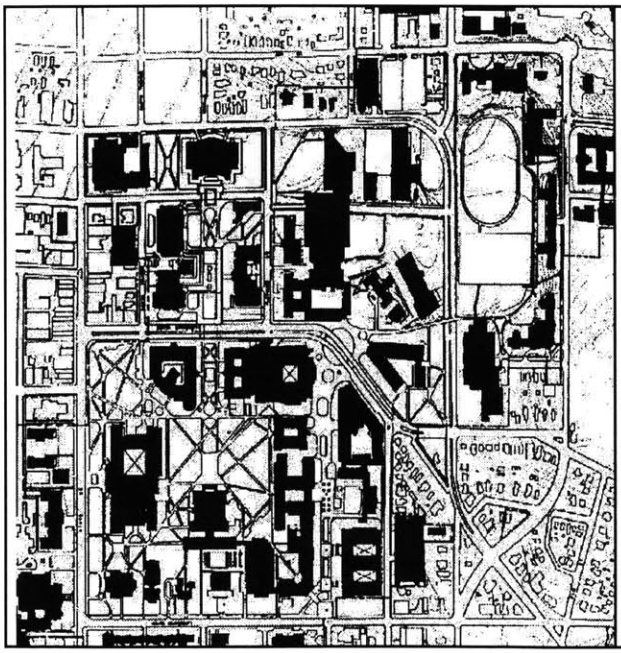
Emory University
Atlanta, Georgia (Founded 1836)



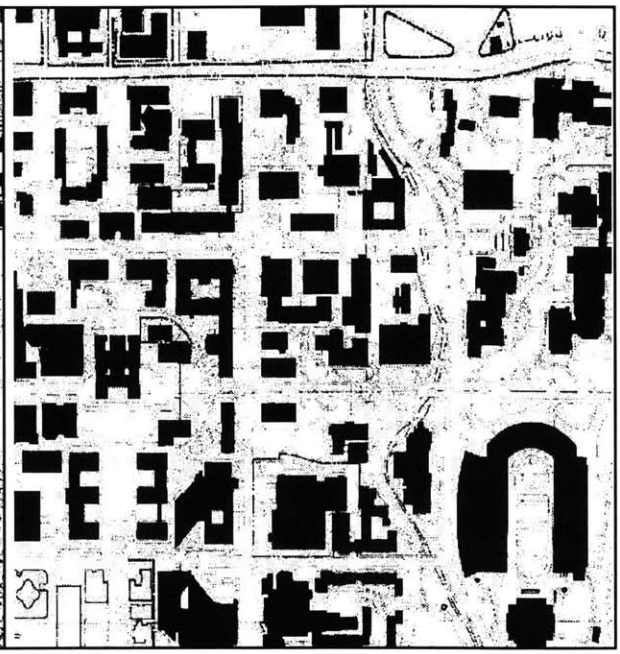
University of Colorado
Boulder, Colorado (Founded 1876)



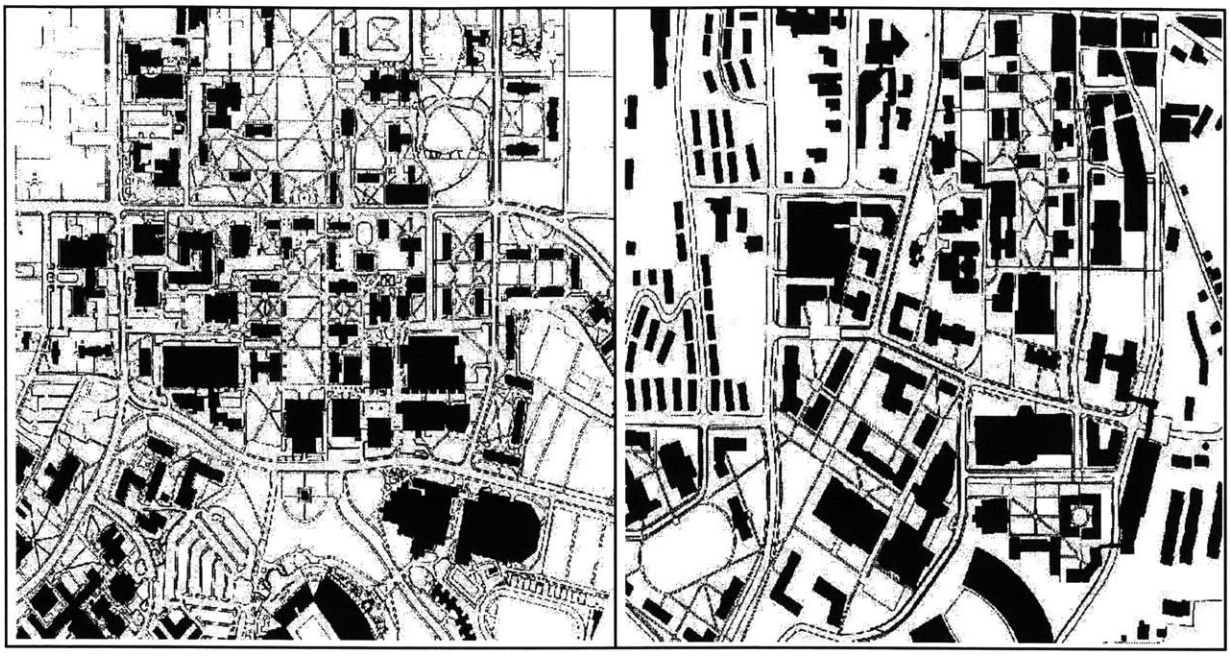
University of Virginia
Charlottesville, Virginia (Founded 1819)



University of Michigan
Ann Arbor, Michigan (Founded 1817)

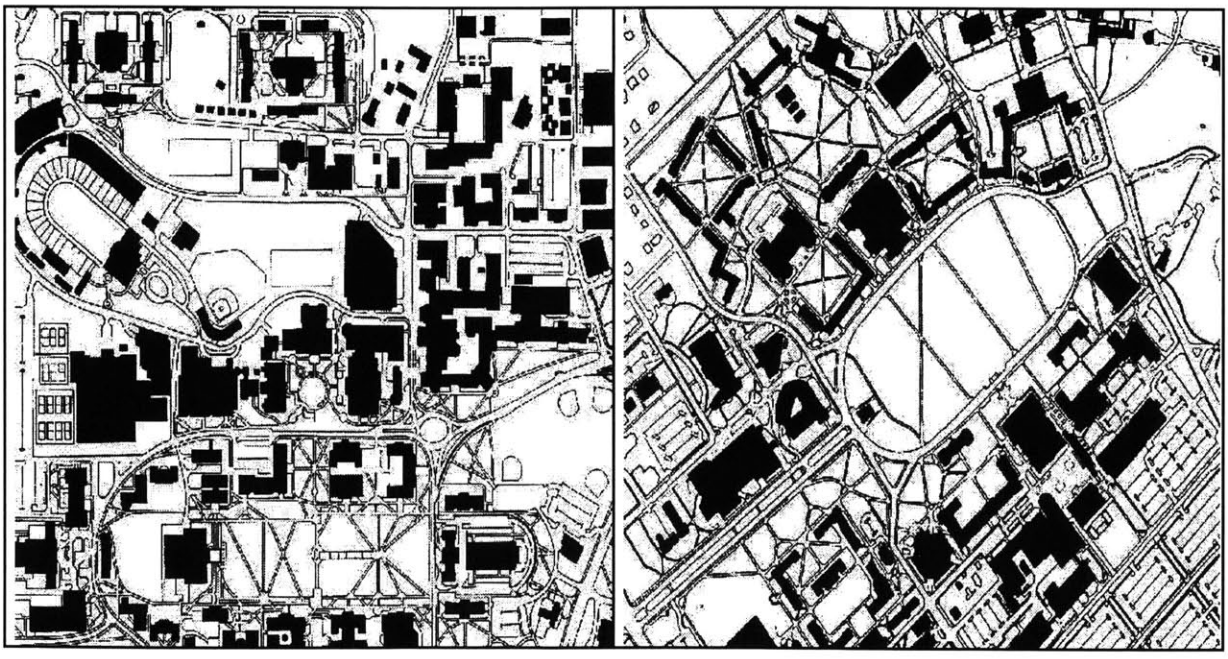


University of Texas at Austin
Austin, Texas (Founded 1883)



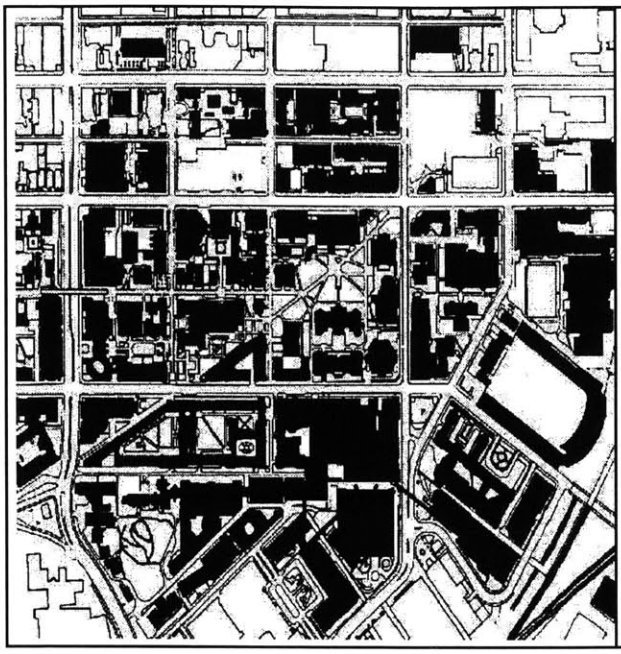
University of North Carolina
Chapel Hill, North Carolina (Founded 1789)

University of Georgia
Athens, Georgia (Founded 1785)

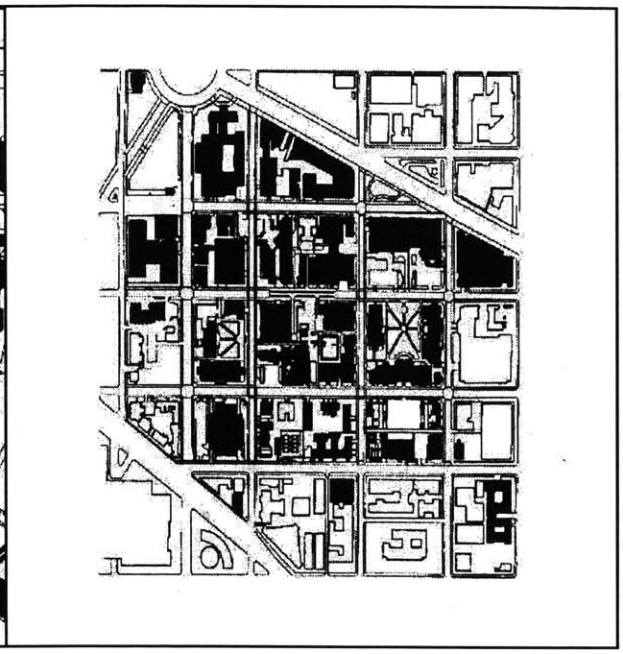


University of Maryland at College Park
College Park, Maryland (Founded 1856)

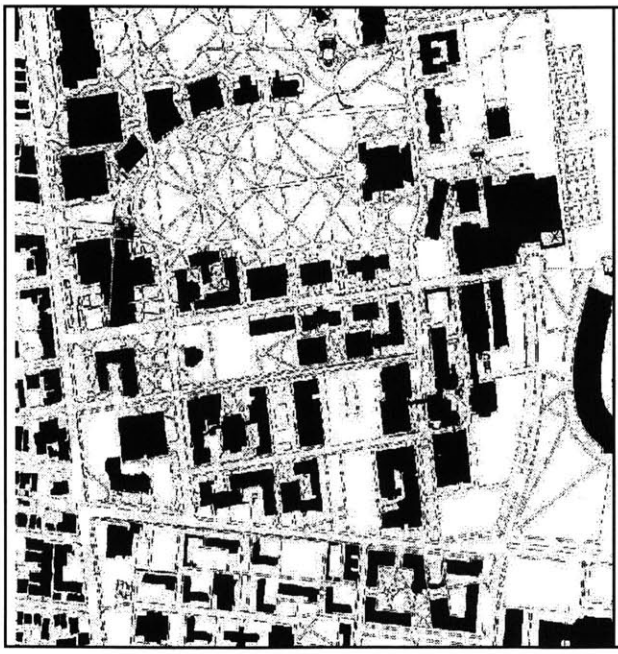
Virginia Polytechnic Institute
Blacksburg, Virginia (Founded 1872)



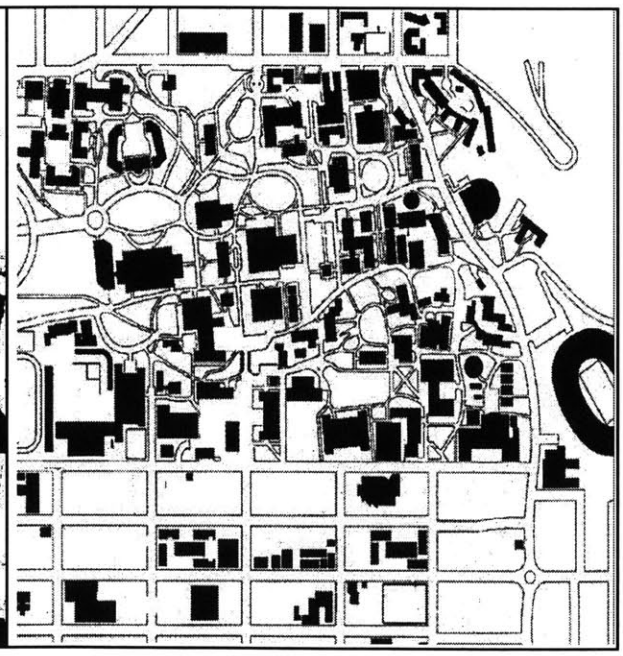
University of Pennsylvania
Philadelphia, Pennsylvania (Founded 1740)



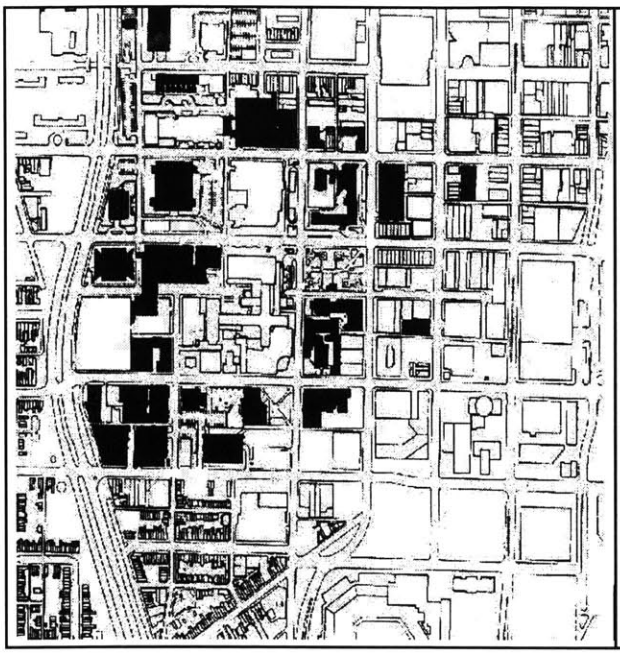
George Washington University
Washington, D.C. (Founded 1821)



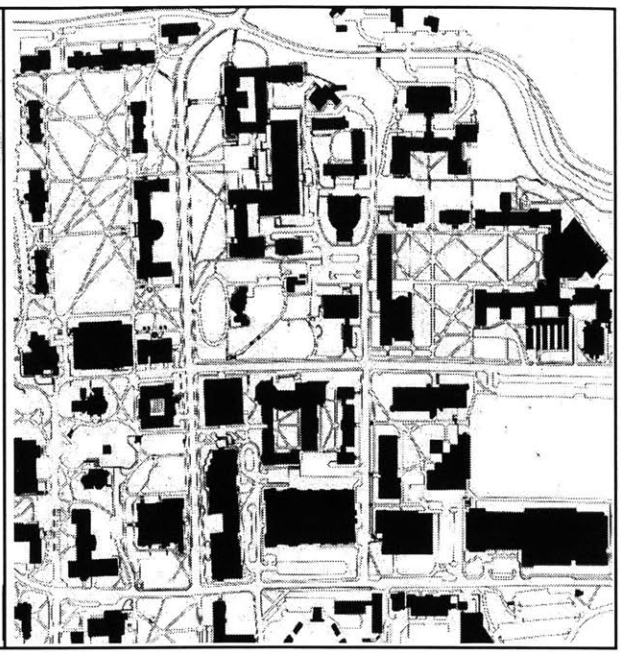
Ohio State University
Columbus, Ohio (Founded 1870)



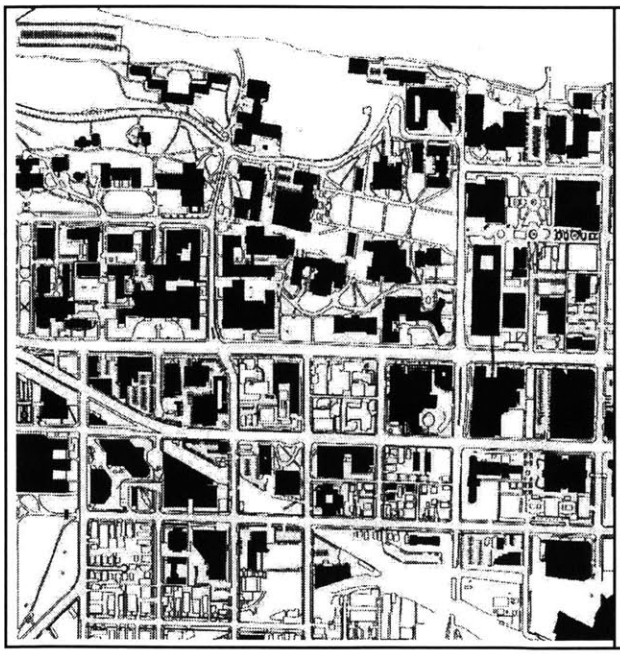
University of California at Berkeley
Berkeley, California (Founded 1868)



University of Maryland at Baltimore
Baltimore, Maryland (Founded 1856)

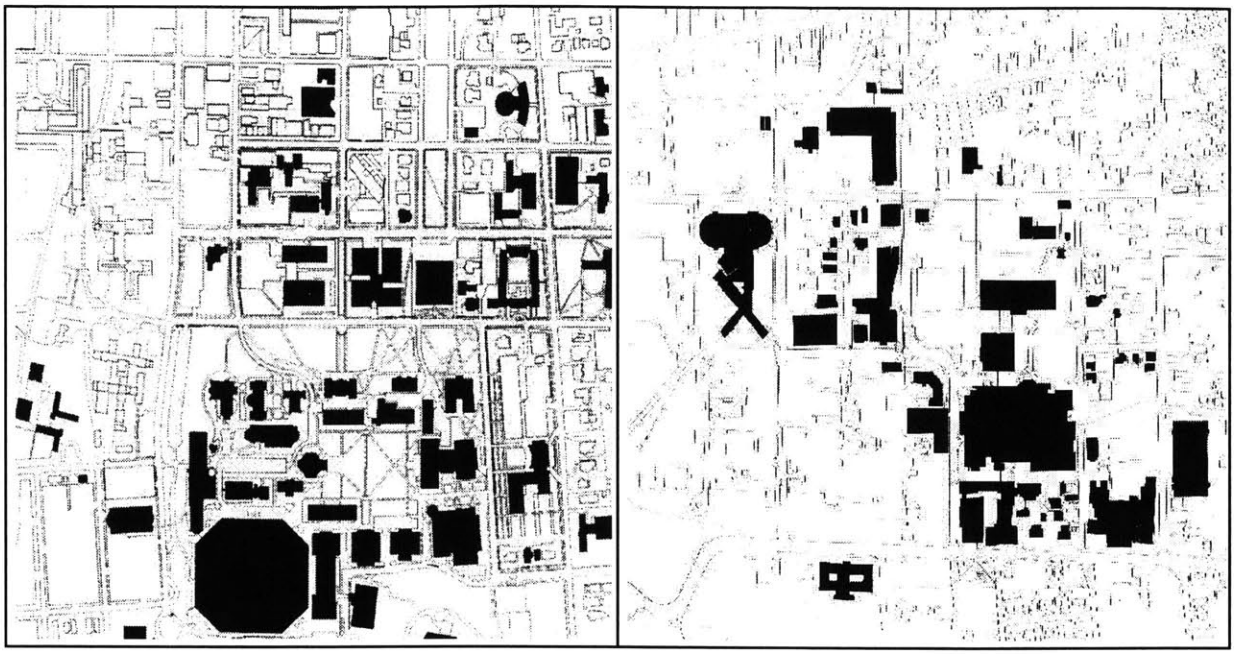


Cornell University
Ithaca, New York (Founded 1865)



University of Wisconsin at Madison
Madison, Wisconsin (Founded 1848)

Florida State University
Tallahassee, Florida (Founded 1857)

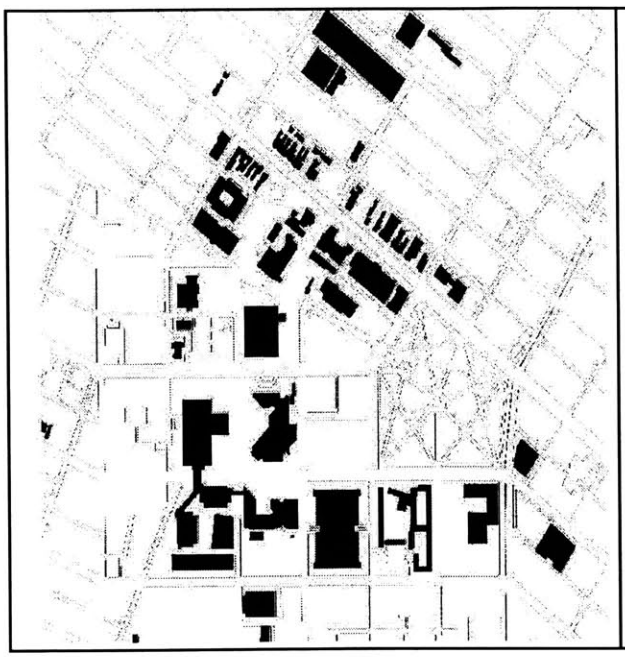


Syracuse University
Syracuse, New York (Founded 1870)

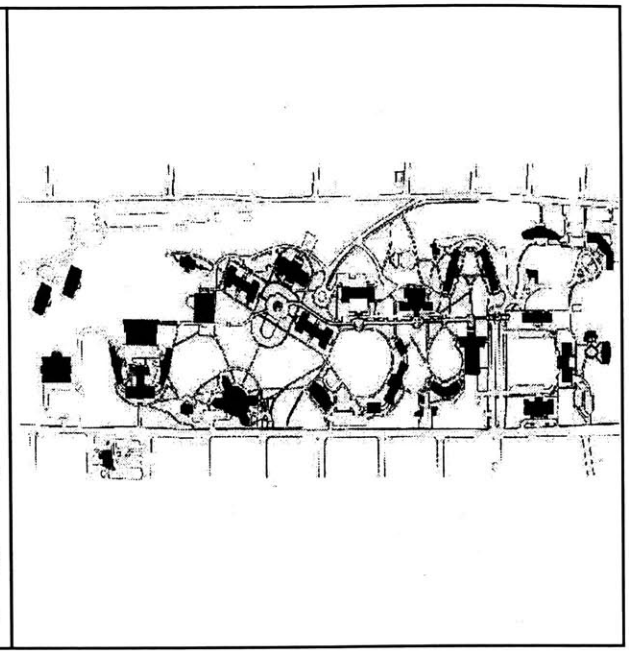
Medical University of South Carolina
Charleston, South Carolina (Founded 1865)

Louisiana State University
Baton Rouge, Louisiana (Founded 1860)

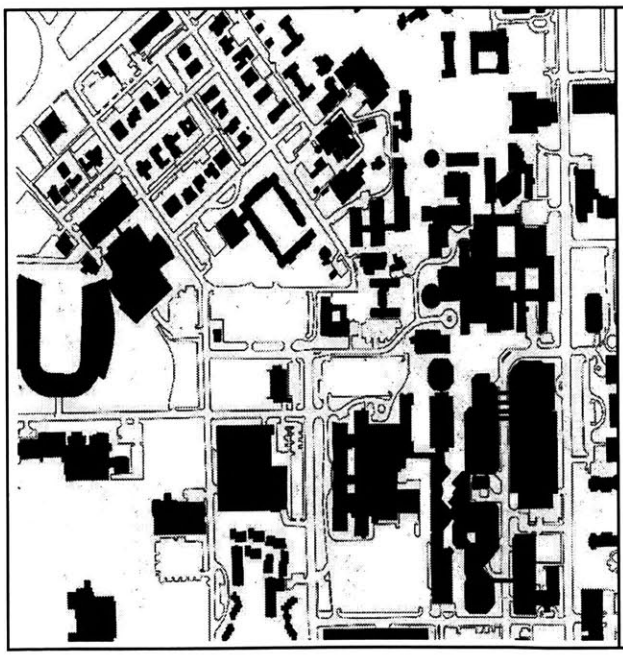
Kansas State University
Manhattan, Kansas (Founded 1863)



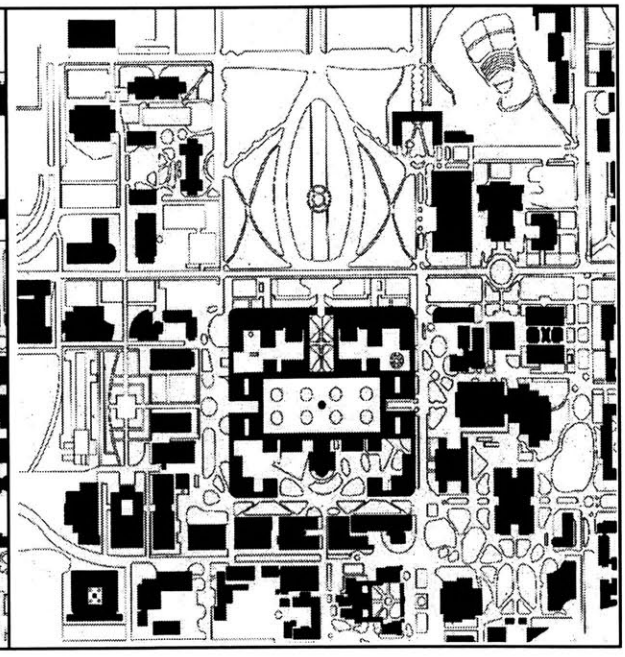
Virginia Commonwealth University
Richmond, Virginia (Founded 1888)



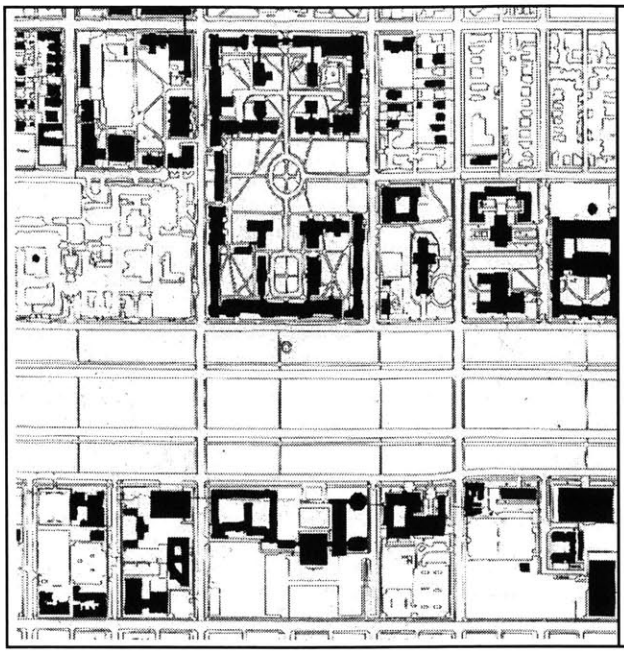
Mary Washington College
Fredericksburg, Virginia (Founded 1908)



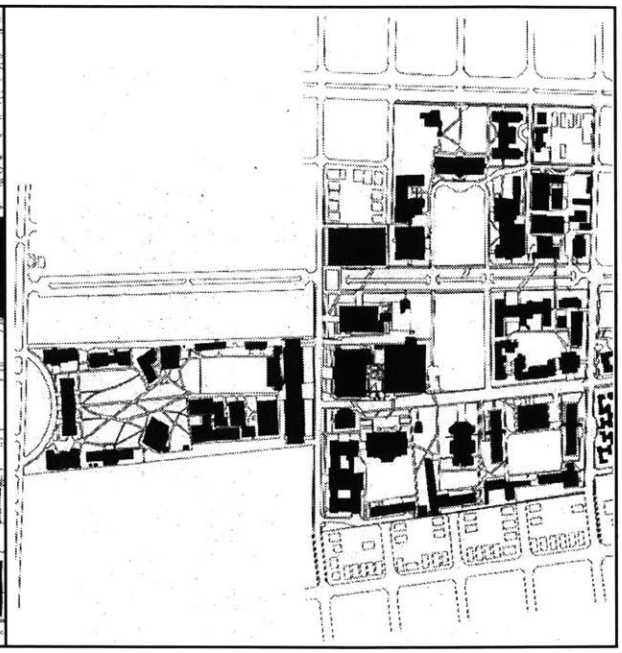
Vanderbilt University
Nashville, Tennessee (Founded 1873)



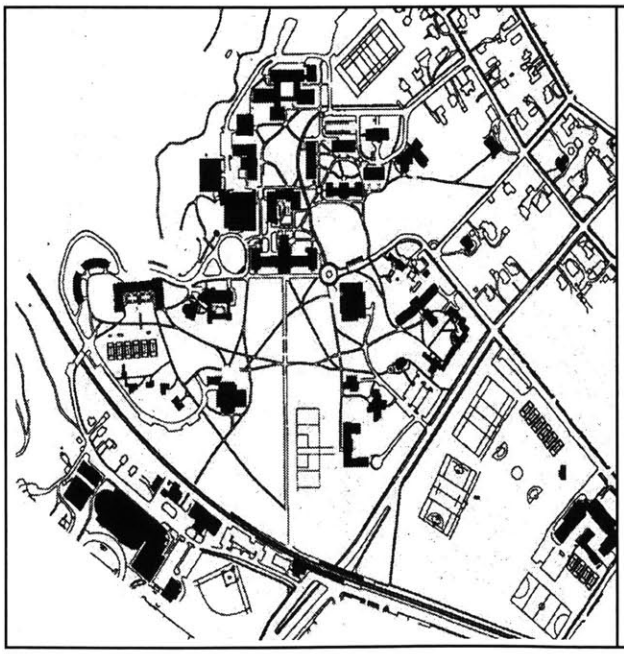
Stanford University
Stanford, California (Founded 1885)



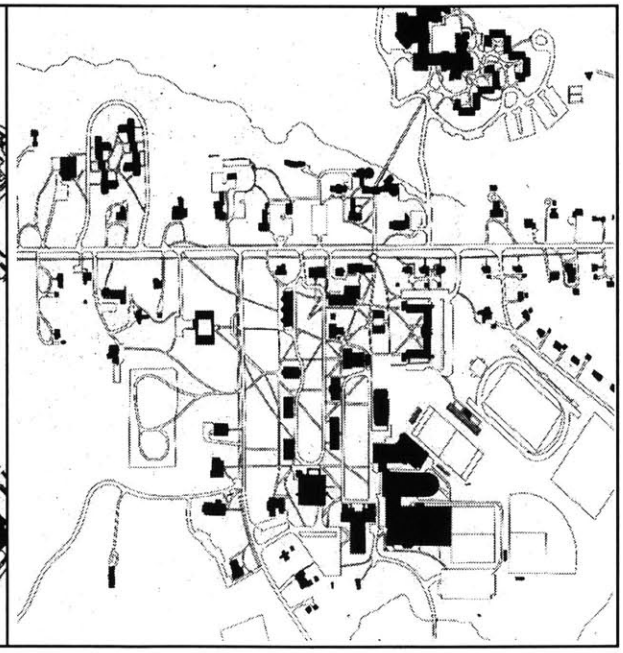
University of Chicago
Chicago, Illinois (Founded 1892)



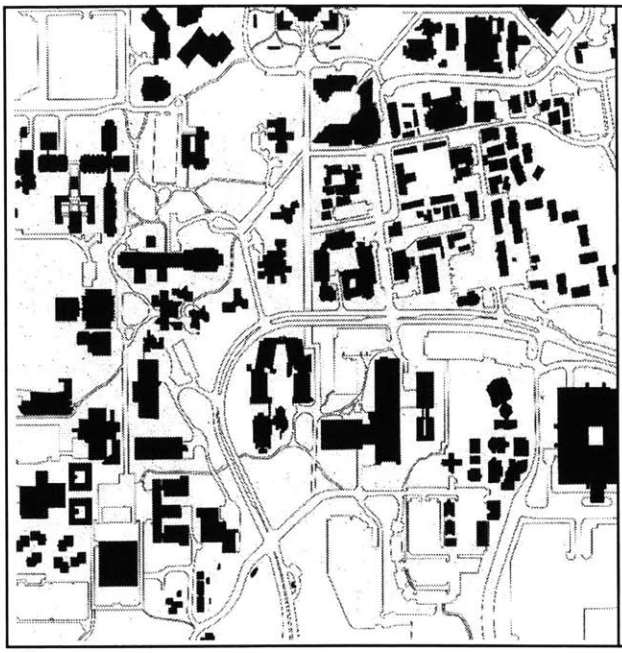
Tulane University
New Orleans, Louisana (Founded 1837)



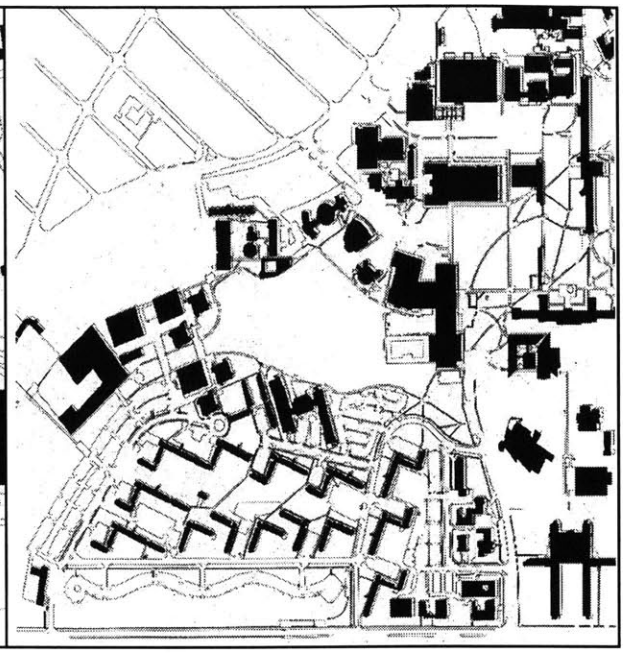
Swarthmore College
Swarthmore, Pennsylvania (Founded 1864)



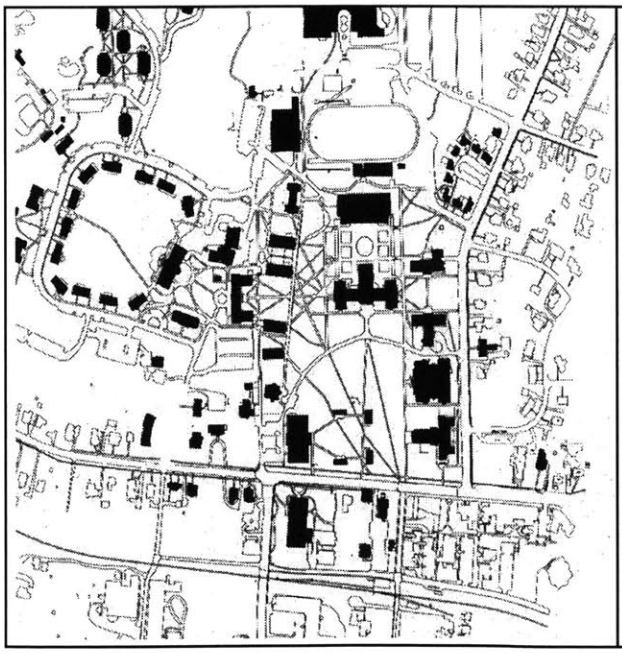
Hamilton College
Clinton, New York (Founded 1812)



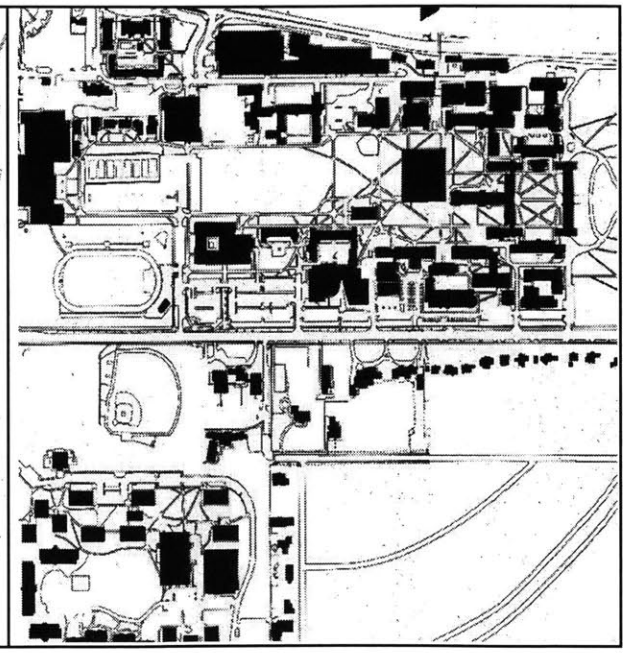
University of California San Diego
La Jolla, California (Founded 1960)



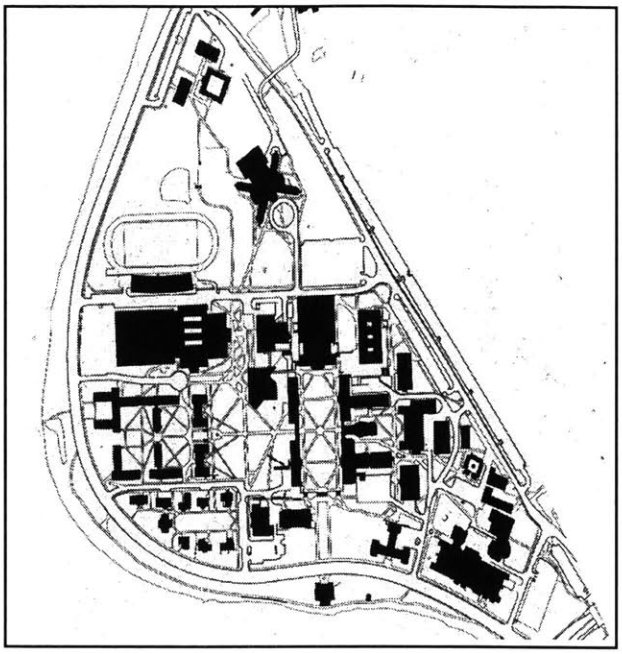
University Miami
Coral Gables, Florida (Founded 1825)



Davidson College
Davidson, North Carolina (Founded 1837)



Washington University in St. Louis
St. Louis, Missouri (Founded 1853)



University of Rochester
Rochester, New York (Founded 1850)

Illustration Credits of Chapter 3

1. Hogan, Pendleton. *The Lawn: A Guide to Jefferson's University*. Charlottesville: University of Virginia, 1987, P.1.

2. Turner, Paul Venable, *Campus, An American Planning Tradition, MIT Press*, Cambridge, 1984, p.48.

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