

**A STUDY OF  
WESTERN FORMAL GEOMETRIC GARDENS AND  
EASTERN INFORMAL NATURAL GARDENS**

by

**Fang Liu**

A practicum  
presented to the University of Manitoba  
in partial fulfillment of the  
requirement for the degree of  
Master  
of Landscape Architecture

Winnipeg, Manitoba, 1989



National Library  
of Canada

Bibliothèque nationale  
du Canada

Canadian Theses Service    Service des thèses canadiennes

Ottawa, Canada  
K1A 0N4

The author has granted an irrevocable non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of his/her thesis by any means and in any form or format, making this thesis available to interested persons.

The author retains ownership of the copyright in his/her thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without his/her permission.

L'auteur a accordé une licence irrévocable et non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de sa thèse de quelque manière et sous quelque forme que ce soit pour mettre des exemplaires de cette thèse à la disposition des personnes intéressées.

L'auteur conserve la propriété du droit d'auteur qui protège sa thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

ISBN 0-315-54818-5

Canada

**A STUDY OF  
WESTERN FORMAL GEOMETRIC GARDENS AND  
EASTERN INFORMAL NATURAL GARDENS**

**BY**

**FANG LIU**

A practicum submitted to the Faculty of Graduate Studies of the  
University of Manitoba in partial fulfillment of the requirements  
of the degree of

**MASTER OF LANDSCAPE ARCHITECTURE**

© 1989

Permission has been granted to the LIBRARY OF THE  
UNIVERSITY OF MANITOBA to lend or sell copies of this practicum,  
to the NATIONAL LIBRARY OF CANADA to microfilm this  
practicum and to lend or sell copies of the film, and UNIVERSITY  
MICROFILMS to publish an abstract of this practicum.

The author reserves other publication rights, and neither the  
practicum nor extensive extracts from it may be printed or otherwise  
reproduced without the author's written permission.

## ACKNOWLEDGEMENTS

I wish to express my sincere appreciation to the members of my advisory committee: Professor Carl R. Nelson, Jr., Professor Charles H. Thomsen, (chair), and Professor Alexander E. Rattray, head of the Department of Landscape Architecture, for their valuable criticism and guidance in the completion of this project.

I would like to express my gratitude to my friends who have contributed their ideas and reference materials related to this study.

I also wish to thank my husband Hao Xiao, and all the members in my family for their support and encouragement which made this possible.

## **ABSTRACT**

This study attempts to demonstrate the design techniques for both formal and informal gardens, which can be used as guidelines for today's or future garden planning. The design techniques and elements are demonstrated through the aspects of unity, scale, boundary, revealing and concealing, straight and curved forms, vistas, spatial division and transition, direction, spaciousness, landform, plants, water, and stone.

This is completed by the explorations of historical evolution, philosophical backgrounds, and typical cases in western formal gardens and eastern informal gardens, as well as the historic impacts on contemporary garden designs.

The design guidelines are applied to a specific site. The site is studied, analyzed, and developed in two orders: geometrical formal order and naturalistic informal order. The environment of the site could be improved in either the formal or informal styles, however, these two styles would give people different feelings and different impressions in both physical and psychological views.

# CONTENTS

	PAGES
ACKNOWLEDGEMENT	i
ABSTRACT	ii
LIST OF FIGURES	iv
<b>1. INTRODUCTION</b>	<b>1</b>
1. 1. Issues	1
1. 2. Goals and Objectives	1
1. 3. Methodology	2
<b>2. HISTORY REVIEW</b>	<b>3</b>
2. 1. Formal Geometric Gardens of the West	3
2. 2. Informal Natural Gardens in the East	16
2. 3. Contemporary Gardens	29
<b>3. DESIGN PRINCIPLES AND MATERIALS</b>	<b>34</b>
3. 1. Unity	34
3. 2. Scale and Proportion	35
3. 3. Boundary	35
3. 4. Revealing and Concealing	36
3. 5. Straight and Curve Forms	38
3. 6. Vistas	40
3. 7. Spatial Division and Transition	41
3. 8. Direction	43
3. 9. Spaciousness	44
3.10. Landform	47
3.11. Plants	48
3.12. Water	50
3.13. Stone	51
<b>4. APPLICATION SITE SPECIFIC</b>	<b>53</b>
4. 1. Study Site	53
4. 2. Site Analysis	56
4. 3. Design Proposal I: Formal Order	58
4. 4. Design Proposal II: Informal Order	63
<b>5. SUMMERY</b>	<b>69</b>
BIBLIOGRAPHY	71

## LIST OF FIGURES

FIGURES	PAGE
1. The plan of a garden	4
2. Perspective of the garden	4
3. House of Greece	5
4. Courtyard in House of Vetti	6
5. Plan of House of Vetti in Pompeii	6
6. Villa of Tuscan	7
7. A cloister garden in Middle Ages	8
8. Plan: Court of Myrtles and Court of Lions	9
9. Court of Myrtles	10
10. Court of Lions	11
11. Plan of the Taj Mahal	11
12. The Taj Mahal	12
13. Villa Lante	13
14. Water parterre in Villa Lante	14
15. Water canal in Villa Lante	14
16. Plan: Garden of Vaux-Le-Vicomte	15
17. Garden of Vaux-Le-Vicomte	15
18. Imaged paradise	17
19. Painting of a scholar's retreat	18
20. Painting of a temple	19
21. Painting for the Garden of Golden Valley	20
22. Plan of the Western Garden	21
23. Painting of a water palace in Western Garden	21
24. Part of the painting of Wang River Villa	22
25. Views in the Garden of Net Master	23
26. Plan for the Garden of Net Master	24
27. Painting for the Garden of Lion Groves	25
28. Views in the Garden of Lion Groves	25
29. Plan for the Garden of Lion Groves	26
30. Central view in the Garden of Unsuccessful Politician	26
31. Plan for The Garden of Unsuccessful Politician	27
32. Plan of Lingering Garden	28
33. Small and dark spaces in Lingering Garden	28
34. Central view in Lingering Garden	28

35. Tight and dark spaces in Lingering Garden	28
36. The sculpture in Miller House	30
37. Plan of Miller House	30
38. Interior court in the Hotel of White Cloud	31
39. Plan of the Donnell Garden	32
40. The pond in the Donnell Garden	33
41. Views outside the Donnell Garden	33
42. Boundaries defined by fences, hedges, and tree trunks	35
43. A boundary wall concealed by rocks	36
44. A boundary wall masked by a meandering gallery	36
45. Elements in the Vaux revealed along the dominant axis	37
46. Rocks in front of a entrance	37
47. Straight path	38
48. Meandering Path, bridge, walking Gallery, and wall	39
49. A vista placed along axis	40
50. A vista located at a turning point of the paths	40
51. Space separated by hedges, steps, and trees	41
52. Window and door “framers”	42
53. Straight path and status act as guiding devices	43
54. Curved path and wall act as guiding devices	44
55. A vista along a path serves as a guiding device	44
56. A zigzag gallery functions as a guiding devices	44
57. A straight path makes its terminal vista seem farther	44
58. False perspective	45
59. A view seems farther when it is seen through several framers	47
60. A curved path prolongs the distance between two points	46
61. A pagoda is a borrowing object in the Summer Palace	46
62. Landform changed through ramps, terraces, or steps	47
63. Rocks erected as mountain to form undulating landform	48
64. Plant maze	48
65. Trimmed trees and hedges	48
66. Even-planted trees	49
67. A single tree located at the corner of a court	49
68. Random planted trees	49
69. Tree trunks strengthen the sense of enclosure	49
70. Pond and fountain	50
71. Natural stream	51
72. Pond and stream in irregular shapes	51
73. Rocks used as construction material	51
74. Rock mountain	52
75. Rock sculpture	52

# Introduction

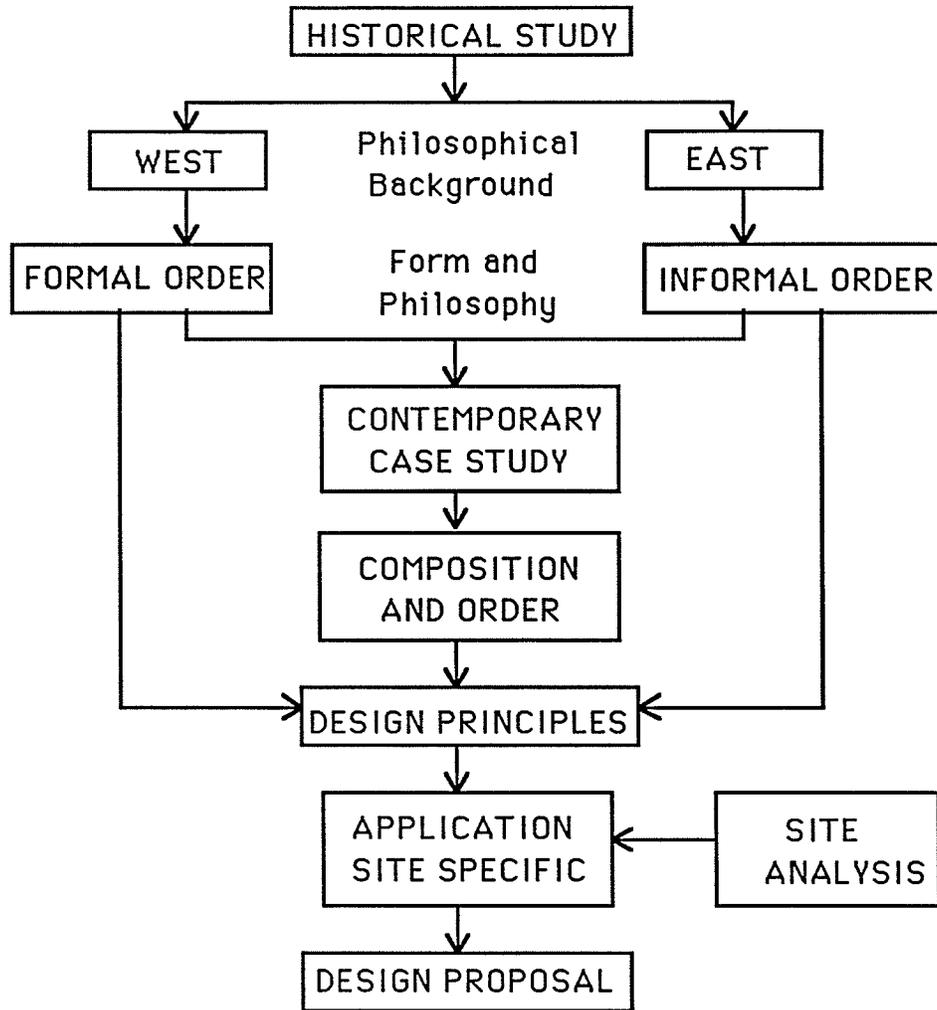
## 1.1. Issues:

Western formal gardens and eastern informal gardens are two basic streams in the history of garden evolution. Their designs are guided by two different philosophies, thus, two different garden images are created in the world. Both of the garden types have accumulated a large vocabulary of design techniques which are useful sources for today's and for future garden designs. A number of questions are raised through examination of the two philosophical directions: What are the philosophic thoughts and theory related to these two types of gardens? what are the distinguishing features in the design? and, how do we apply the design principles in today's garden designs?

## 2.2. Goals and Objectives:

1. to explore the origin of garden forms in both western and eastern philosophy;
2. to examine the impact of historic thought on contemporary open space design;
3. to identify design principles of form and order to guide the design of contemporary gardens, and
4. to demonstrate the application of these design principles in a specific situation.

### 3.3. Methodology:



# History Review

During the period from the earliest recorded history to the nineteenth century, there have been two basic approaches for garden design. They are the formal geometric tradition of the west, and the informal natural tradition of the east.

Formal gardens in the west are of a consistent, simple, geometrical variety. They seek a direct, logical, and rational manner of organization for the human environment. This geometrical order is imposed upon or cut into the natural environment. It is most often seen to be an abstract interpretation of natural order and intellectual phenomena, presenting the predominant philosophy that men are superior to and dominant over nature. In contrast, the informal gardens in the east are a symbolic display of natural landscapes composed in an assymetric and curvilinear layout. They express the philosophy that man is not separated from, but is part of nature, and that man exists as a function of nature. The fundamental attitude of this position might be seen to express an attitude of “stewardship” or “symbiosis” between man and the natural environment.

## **2.1. Formal Geometric Gardens of the West:**

The formal geometric gardens in western civilizations can be traced back to Egypt (3500-500 BC). The religion of Egypt was a primitive polytheism. The innumerable gods created the universe and controlled life and death on earth. After death, man would enter an external world where he might have unlimited enjoyment. Life on earth was only an introduction to a future world of paradise.

The Egyptian pharaoh held the highest power, and was accepted as God on earth. To glorify the greatness of pharaoh, and hence, the Gods, temples and memorial structures were constructed in superhuman scale, and in the shapes of an abstract geometry. The dominant spatial composition was a bilateral linear geometrical layout, displaying a progression and movement in a straight line from space to space and level to level. The principal axis composition represented a progression from the earth to paradise. Architectural proportion and composition was by means of simple geometrical forms capable of construction by “peg and chord” methods.

A Plan of a Garden which was found in a tomb painting from the XVIII Dynasty during 1503-1482 BC expressed this geometrical principle (Figures 1 & 2). The garden was enclosed with surrounding walls to separate the garden from the desert outside. A principal axis ran from the entrance gate to the far end of the house. Rectilinear ponds and beds of plants were arranged in a bilateral symmetry along the axis. In the plan, crucial climatic factors were considered. The vertical volumes such as the walls and plants were used as wind screens and shade generators. A shelter in the centre was covered with vines used to shade an enclosed space from the sunlight. Ponds were used for cooling the air. The owner maintained his garden in an order so as to express his imagined pleasure happening in the next world.

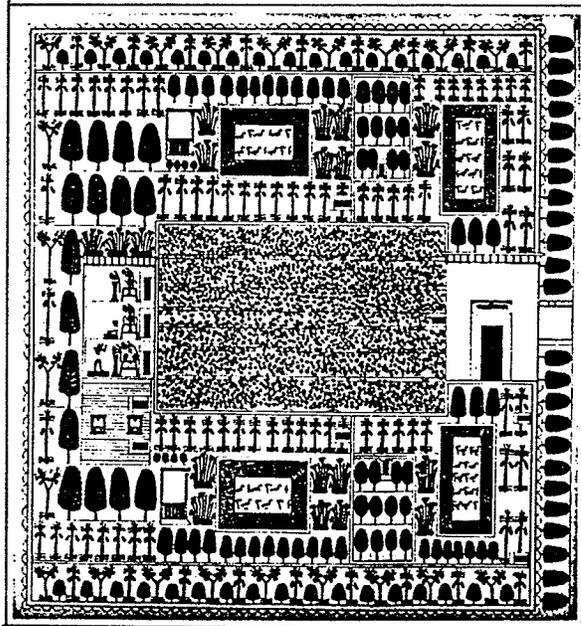


Figure 1. The Plan of A Garden

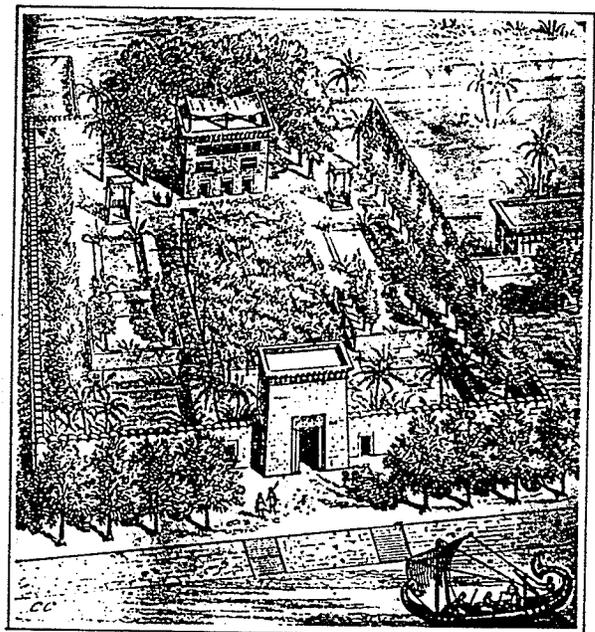


Figure 2. Perspective of the Garden

(From Newton, 1971)

The democratic society in Greece (500 BC - 200 AD) brought open and liberal thought, and consequently, led to developments in science, mathematics, and philosophy. Under such conditions, Greeks were interested more in human life, than in religion. Thus, a search for truth based not on myth, but on the scientific fact became paramount. To abolish man's alienation with the mysterious world, the great philosopher Plato, who was considered one of the most influential sources of western thought, created a rational way to look at the world and the universe. In his philosophy, the world where gods lived was created in a pattern of ideal form. This ideal form of perfection could be expressed by man through the scientific knowledge of mathematics and geometry. Plato stated that "the qualities of measurement and proportion invariably constitute beauty and excellence" (Lesnikowski, 1982, p.20). By the method of measurement and proportion man could understand the vast cosmos and this made him satisfied, in that he was able to conquer the elusive universe by constructing a finite geometrical whole. The temples erected in this time were embodiments of perfection and best personify ideal proportion and unity.

With the atmosphere of optimism, self-confidence, and affirming the value of individual man, Greeks constructed gardens firstly as the service to the spirit of man. In this time, the private courtyard gardens which were often paved and decorated with statues, and plants in pots functioned as an outdoor extension of the indoor living room (Figure 3). The public parks and the philosophers' gardens were pleasure places for relaxation and contemplation. In Plato's Academy, there was a colonnaded garden with shady walks to combine philosophical discussion with exercise.

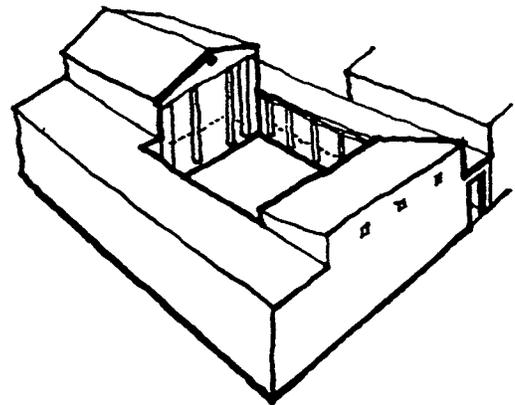


Figure 3. House of Greece  
(From Laurie, 1976)

The Roman Empire was a powerful imperial and materialistic society. It accumulated great wealth and maintained its economic stability by taxing heavily, the conquered countries. This

gave the Romans great creative opportunities to construct its cities. The influence of Greek thought and culture on life in Rome was profound. Romans accepted the Greek philosophy of the order of the cosmos, and built their gardens in a proportioned and geometrical form to show power, wealth and magnificence.

The private Roman gardens can be best understood by those courtyard gardens at Pompeii. Basically they followed the Greek pattern; these gardens were the inside courts surrounded by the rooms of the houses. They were made in a limited enclosed space to insure both privacy and security. A house was usually arranged based on the principles of axially integrated outdoor and indoor spaces. The entrance was usually by means of an atrium. This led a constricting corridor into the centre peristyle courtyard surrounded with columns. A small fish pond; bathing pool or a fountain in the centre, and evergreens, statues and flowers were frequently used to embellish the courtyard. The surrounding walls were painted with imaginary landscapes to extend the space. The House of Vetti, (Figures 4 & 5) in Pompeii is a typical example.

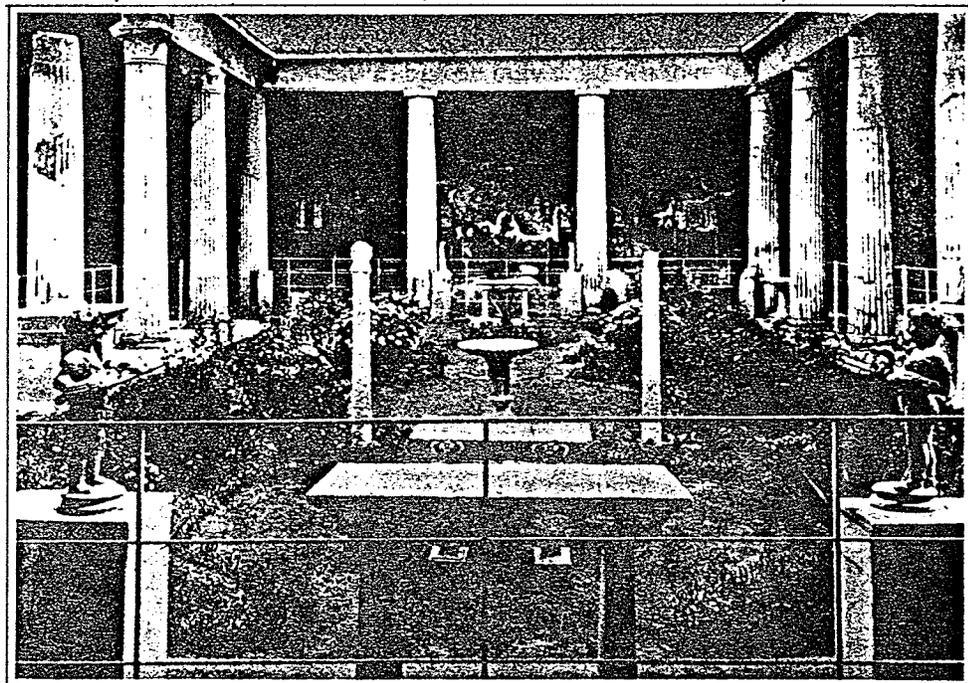


Figure 4. Courtyard in House of Vetti (From Newton, 1971).

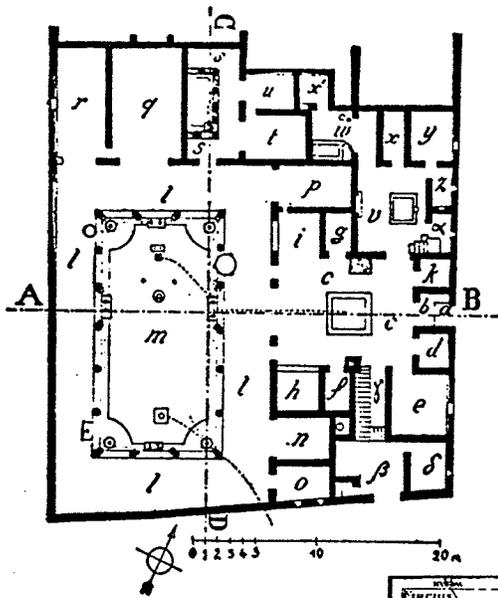


Fig. 5. Plan: House of Vetti in Pompeii  
(From Newton, 1971)

With a mild winter and hot summer climate in Rome, the wealthy built their retreats on hills to enjoy the breezes of summer and the views of the surrounding countryside. One of the most famous villas, Pliny's Tuscan villa (Figure 6), may give a good idea of the patrician garden during the Roman Empire. The villa was sited on the

hillside with water playing an important role. The water either appeared as fountains, or a pool with water falling into it from great height. Works of topiary were major features in the villa garden. At the entrance was a colonnade and a terrace decorated with a wood box hedge clipped into different shapes. In the middle were the main buildings and open space set off by trees. Beyond the building, were terraces with hedges clipped into innumerable shapes, some being letters which

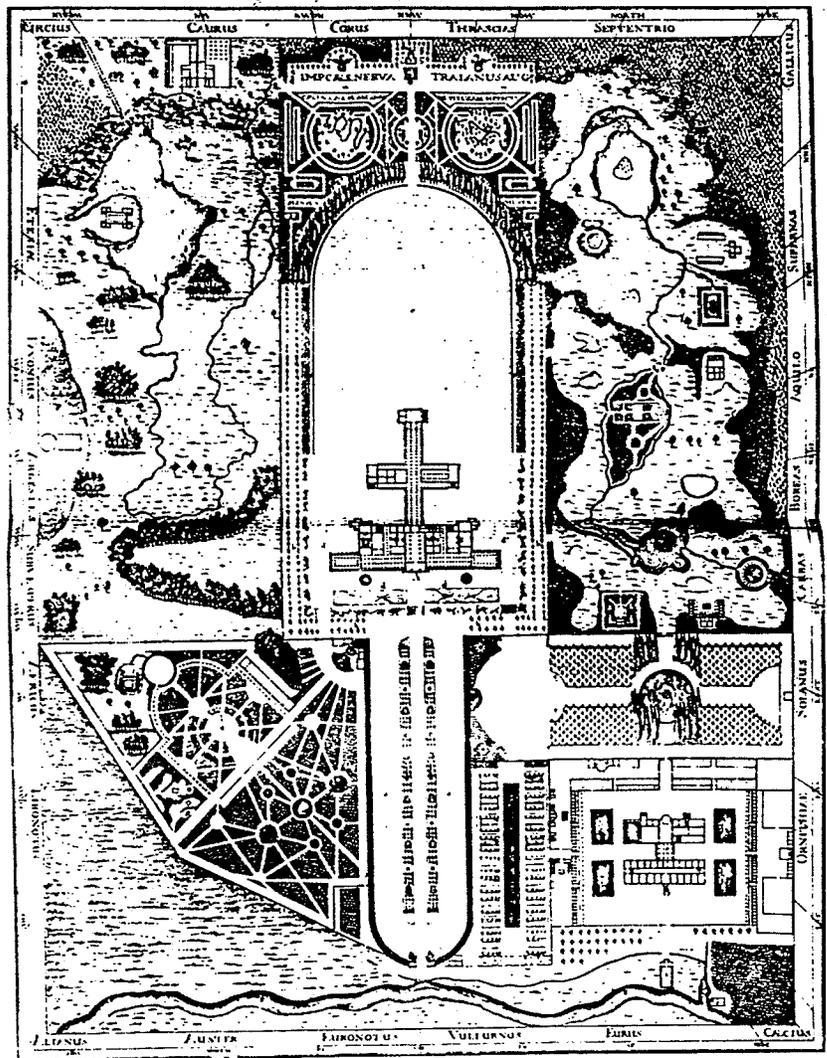


Figure 6. Villa of Tuscan (From Crowe, 1981)

spelled the gardener's or his master's name. To the left and right of the garden, appeared natural and rural landscapes.

From the collapse of the Roman Empire in the fifth century to the rise of the Renaissance in the fifteenth century was the period known as the Middle or Dark Ages in Europe. During this period, Christianity captured men's minds. Men believed in God rather than a reasoned method of science. The focus of life in the dark ages was to contemplate the future world, rather than the present life. This view gave people a strong resistant attitude to the forces of nature. During this period, most of the gardens were built as either church monastery cloister gardens, or small enclosed domestic, or castle gardens (Figure 7). The compositions of the enclosed courtyards were an imaginative expression of spiritual or worldly delight. These gardens' primary function was the production of vegetables and herbs and less for show.

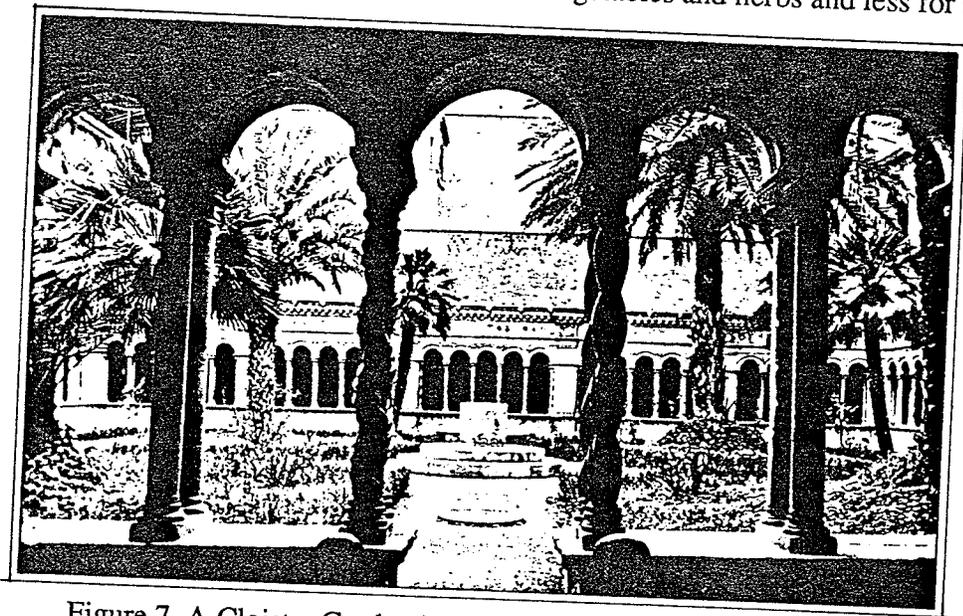


Figure 7. A Cloister Garden in Middle Ages (From Newton, 1979)

While in the dark period of Europe, the religion of Islam sprang up in the Arabian desert during the seventh century. As nomads from the Arabian desert, the Muslims showed profound appreciation for the outdoors. Owing to the hot and dry climate of the desert, the Muslims treated their inner courts as gardens of paradise full of fruit trees and water. This was a sharp contrast with the open and barren wilderness of the landscape surrounding their settlements.

Concerned more for the inner soul's tranquility and personal privacy, the Muslims were more interested in the space within, which made their gardens adopt the form of courtyards surrounded by dwellings. This form was well-suited to the hot desert climate where the outside walls provided shade and wind protection. The philosophy of the Muslims was that paradise should be enjoyed not only in an after life, but also in their day-by-day life on the earth. This philosophy made the Muslims try to bring the image of heavenly paradise to their gardens. Thus, their courtyard gardens were composed as a reflection of the cosmos, hence, paradise. The paradise which related to the concept of order and harmony was manifested through numbers, geometry, colour, and materials. The shape and space organized by these elements created a place that was restful, devoid of tensions, and conducive to contemplation. In the courtyard, the traditional pool, normally with fountains, provided a centre.

In Spain, the courtyard garden reached its highest development as a decorative adjunct to the house. The Alhambra, designed between 1240-1391 in Granada, presents a prototypical Islamic courtyard garden. Its most beautiful courtyards were the Court of Myrtles and Court of Lions (Figure 8). The centre of the the Court Myrtles (Figure 9) was a long, rectangular

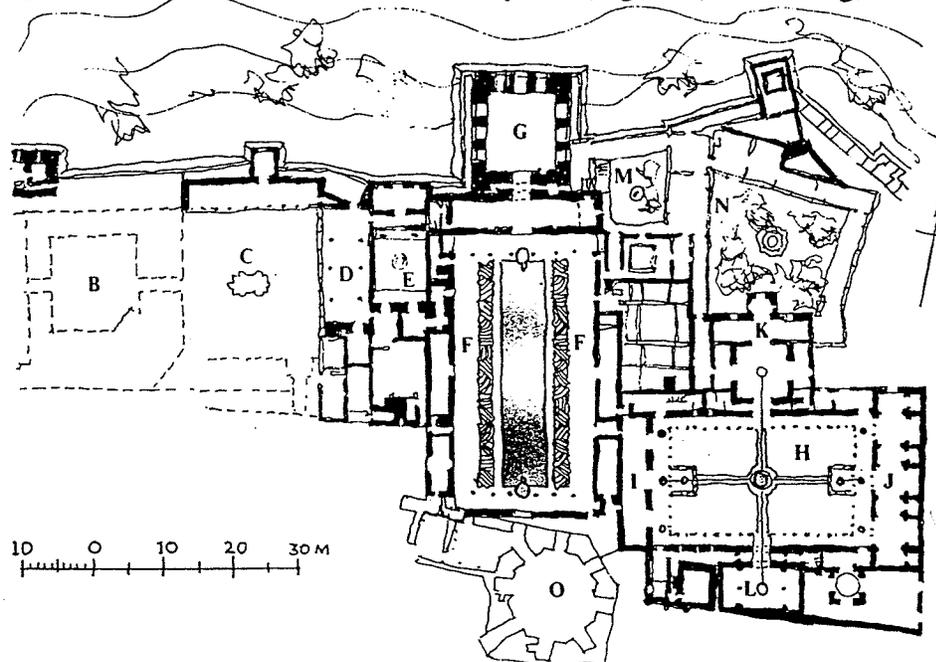


Figure 8. Plan: Court of Myrtles and Court of Lions  
(From Jellicoe, Geoffrey and Susan, 1987)

pool with clipped myrtle hedges lining the two long sides. The pool reflected the surrounding images of the tower, the arcade, and the dark central doorway, creating a sense of stillness and weightlessness. The Court of Lions (Figure 10) contained four canals which symbolizing water, milk, wine, and honey to represent the four rivers of life. The four canals crossed at the centre where a fountain decorated with twelve lions was the main focus of the courtyard.

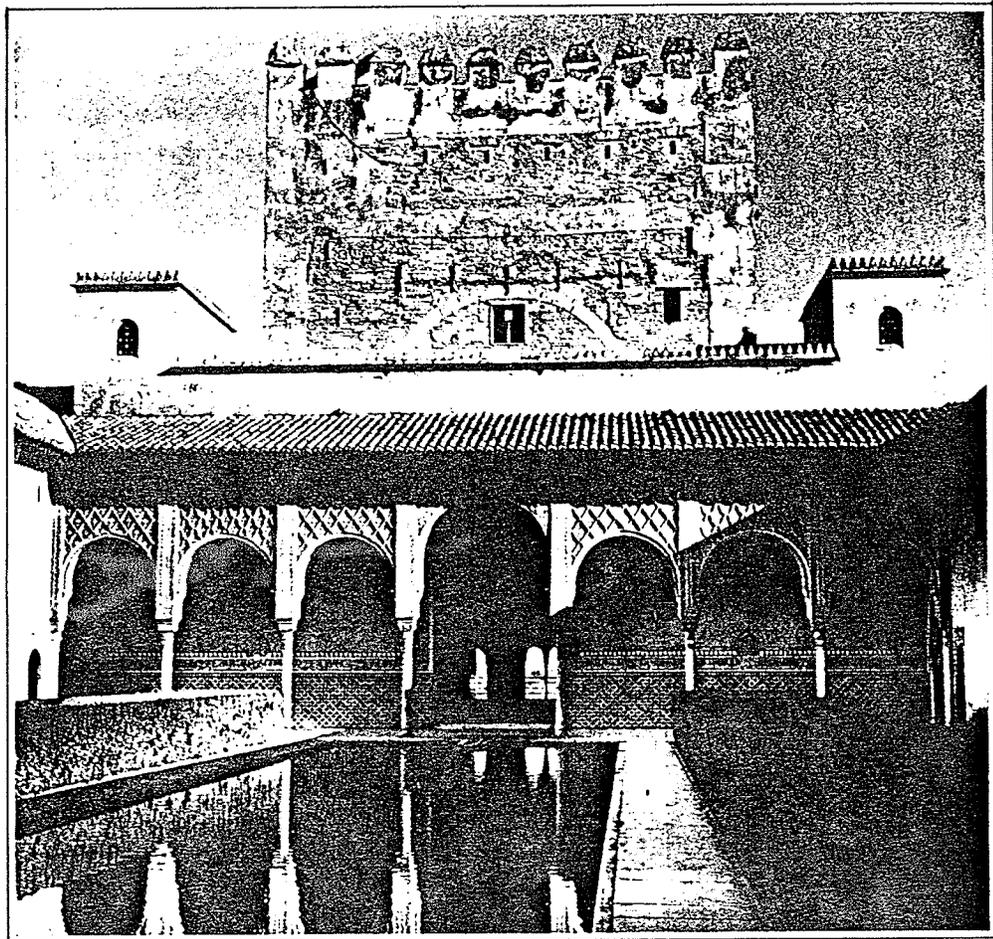


Figure 9. Court of Myrtles (From Jellicoe, Geoffrey and Susan, 1987)

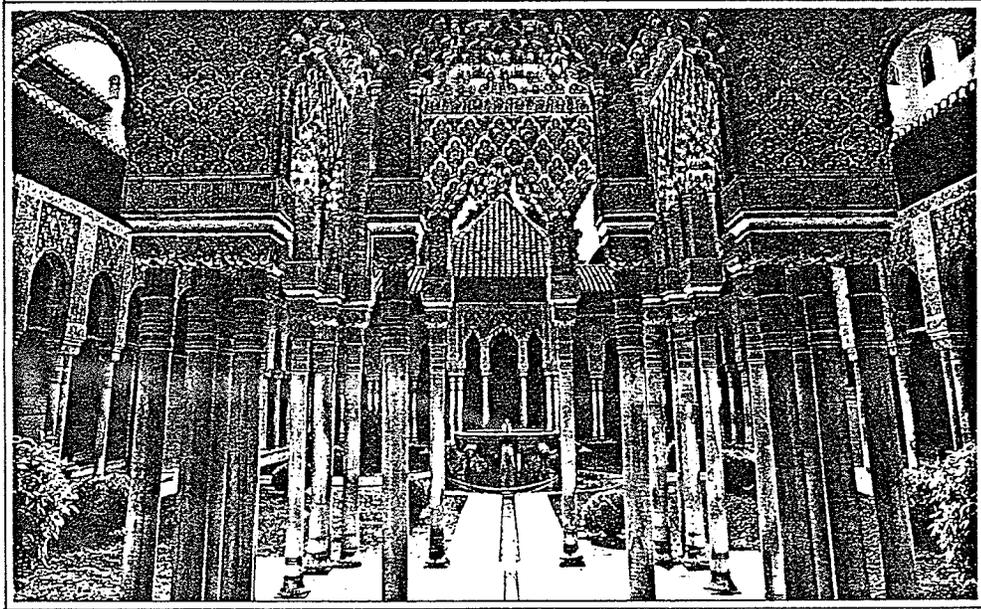


Figure 10. Court of Lions (From Balston, 1986)

The outdoor art of Islam reached another peak in the Mughul gardens in India. The Taj Mahal built in 1632-54 is cited as a best example (Figure 11 & 12). The form of the garden became that of a palace itself. In the garden, the pools, canals, and plants which were situated as an extension of the building, were bilaterally arranged along a central axis, and were arranged in the shape of rectangle.

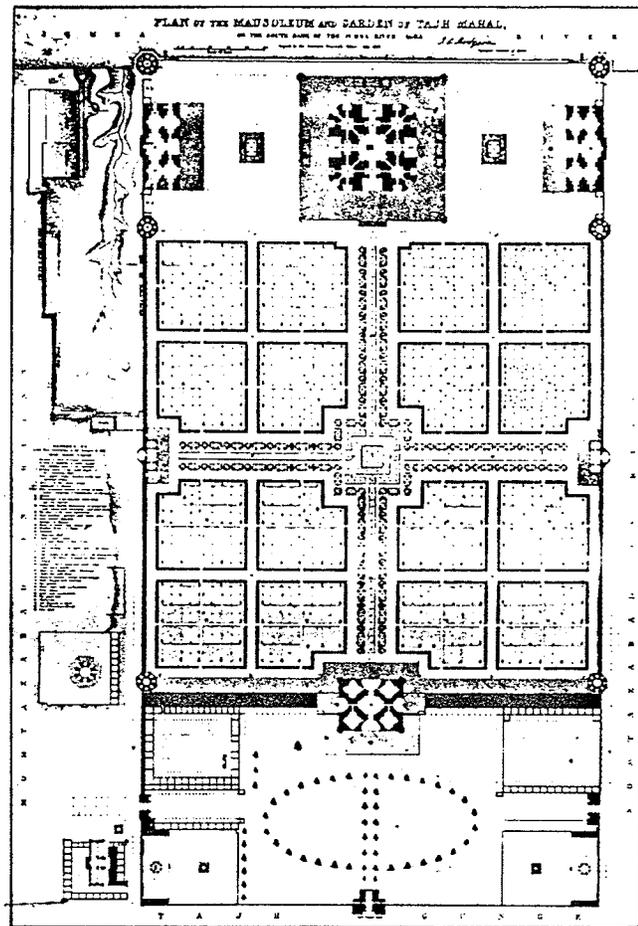


Figure 11. Plan of the Taj Mahal (From Jellicoe, Geoffrey and Susan, 1987)

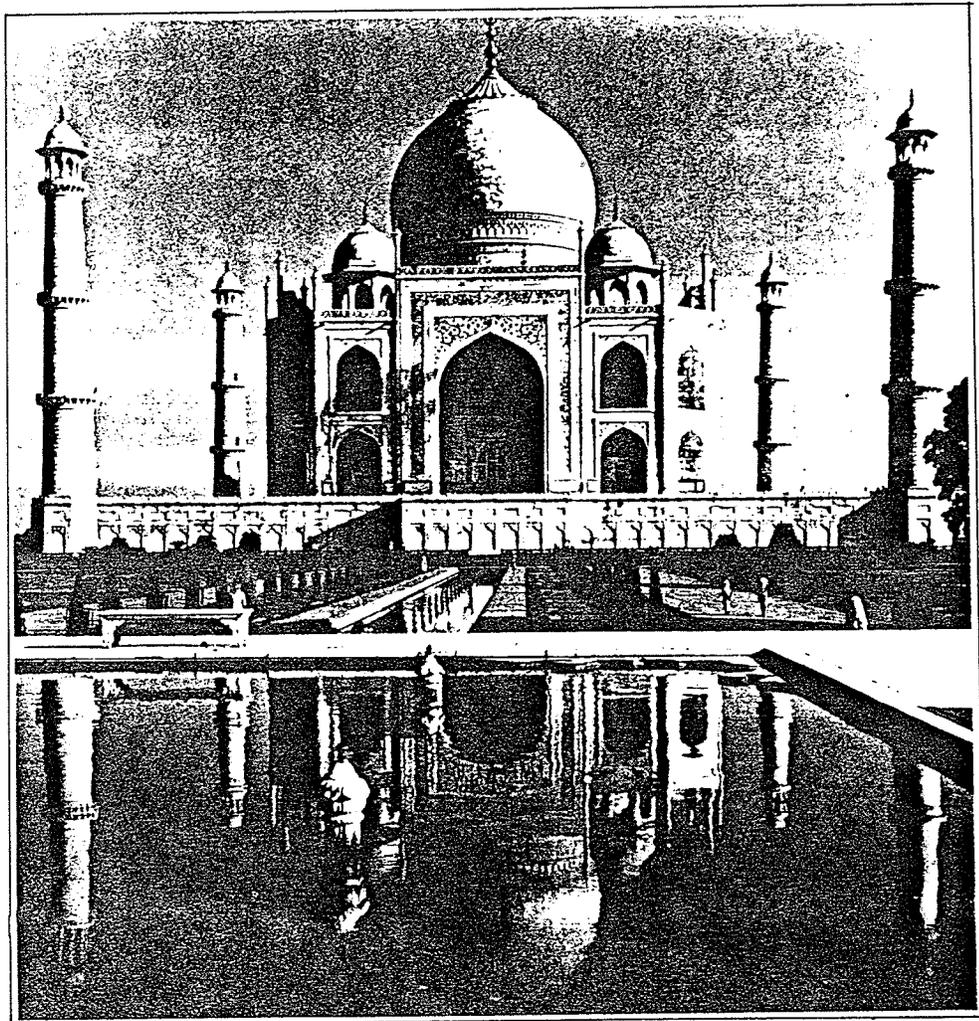


Figure 12. The Taj Mahal (From Jellicoe, Geoffrey and Susan, 1987)

Emerging from the Middle Ages in Europe in the fifteenth century, western man found himself, as well as the beauty of the world around him, as an individual. He began to regard himself, as God's most perfect creation, and as the centre of the universe. He found inspiration and guidance from the ancient Romans, and initiated the Renaissance. The garden art, which had an equal position with music, fine art, and architecture, became one of the major preoccupations in the Renaissance period. Gardens were designed to be expressions of the limitless possibilities of man's mind. The proportions, geometrical patterns, together with the architectural features of the Roman gardens formed the basis for the scale and composition of the Italian gardens in that period. The country villas achieved the most significant state in

this period. Usually located on hillsides, construction gave importance to the steps and terraces which acted as a means to unify the house with the contours of the land. Steps and terraces were integrated with pools, fountains, ornament, and sculpture. To impose man's authority over land, the gardens were organized to progress down a straight central axis which had special authority by the symmetrically balanced sides, and greenery was forced into rectilinear, ideal forms.

Villa Lante built in 1560 illustrates the ideas of Italian villa-making. The villa was opened out from the thick woodland on the hill. Along the central axis, the house on the hillside was divided into two parts in order to let the central vista of the garden run through without interruption, and to provide a framed, distant view (Figure 13). The villa was stepped down through a series of terraces linked by changing forms of water (Figure 14), then came to the open, spacious parterres at the foot. The water came from the grotto built on the natural rocks in the native woodland, and ended in a formal and architectural water parterre (Figure 15).

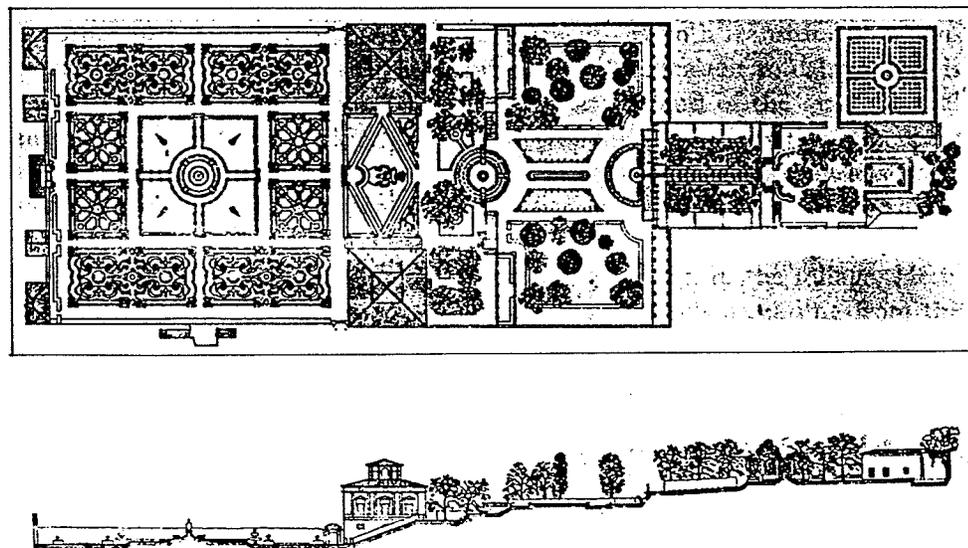


Figure 13. Villa Lante ( From Newton, 1971)

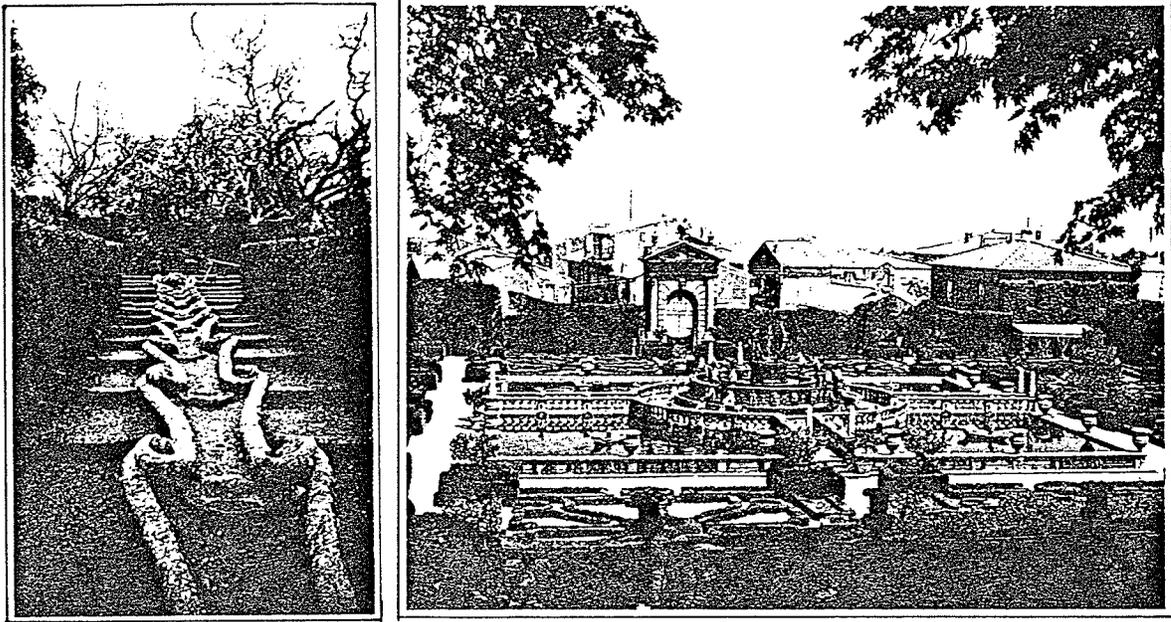


Figure 14. Water Canal in Villa Lante; Figure 15. Water Parterre in Villa Lante  
(From Balston, 1986).

Influenced by the Italian Renaissance, the French created a new and distinct formal garden style in the seventeenth century. France is a country with wide forests, gently rolling terrains and large expanses of water. As an autocratic society in seventeenth century, French rulers' interest were focused on the power of politics, of wealth, and of man's authority over nature. To reflect such spirit of nation, the gardens were created in an ordered, unified and logical way. More than any other art form, the gardens with their formal geometrical and architectural composition were man's triumph over nature, and man's faith in himself as centre of the universe. In the gardens, broad and straight roads were cut through the dense forests, while wide, still waters were created to reflect the images of the clear sky and surrounding objects. A garden became a theater to display the power of the king, his concept of the monarchy, and the crowded life in court for entertainment.

The garden of Vaux-Le-Vicomte which built during the period of 1650-61 is much smaller than that at Versailles. It may let us better understand the conception of garden composition at that period. The garden was united by a strong main axis, On each side of the axis, the garden was symmetrically arranged, but had difference and variety in detail. The space at the

entrance to the building was simple, while, passing over the moat and the building, parterres, and formal styles of fountains gave increasing interest; the grotto and cascades gave a grand climax on the axis; beyond them, the Farnese Bull on the hill gave a view to the far horizon. The whole garden area was highlighted through contrast with the surrounding dark woodlands (Figure 16 & 17).

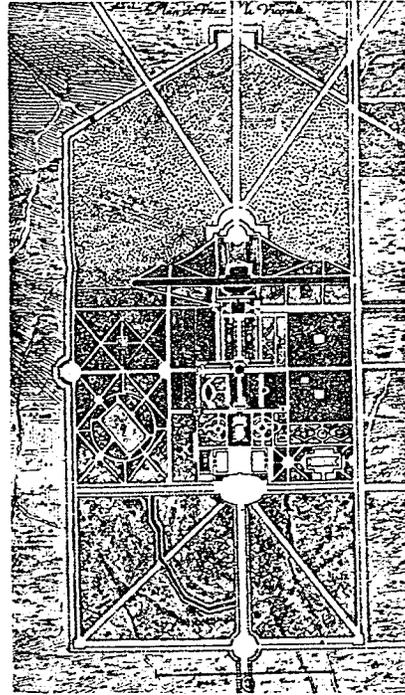


Figure 16: Plan: Garden of  
Vaux-Le-Vicomte

(From Jellicoe, Geoffrey and Susan, 1987)

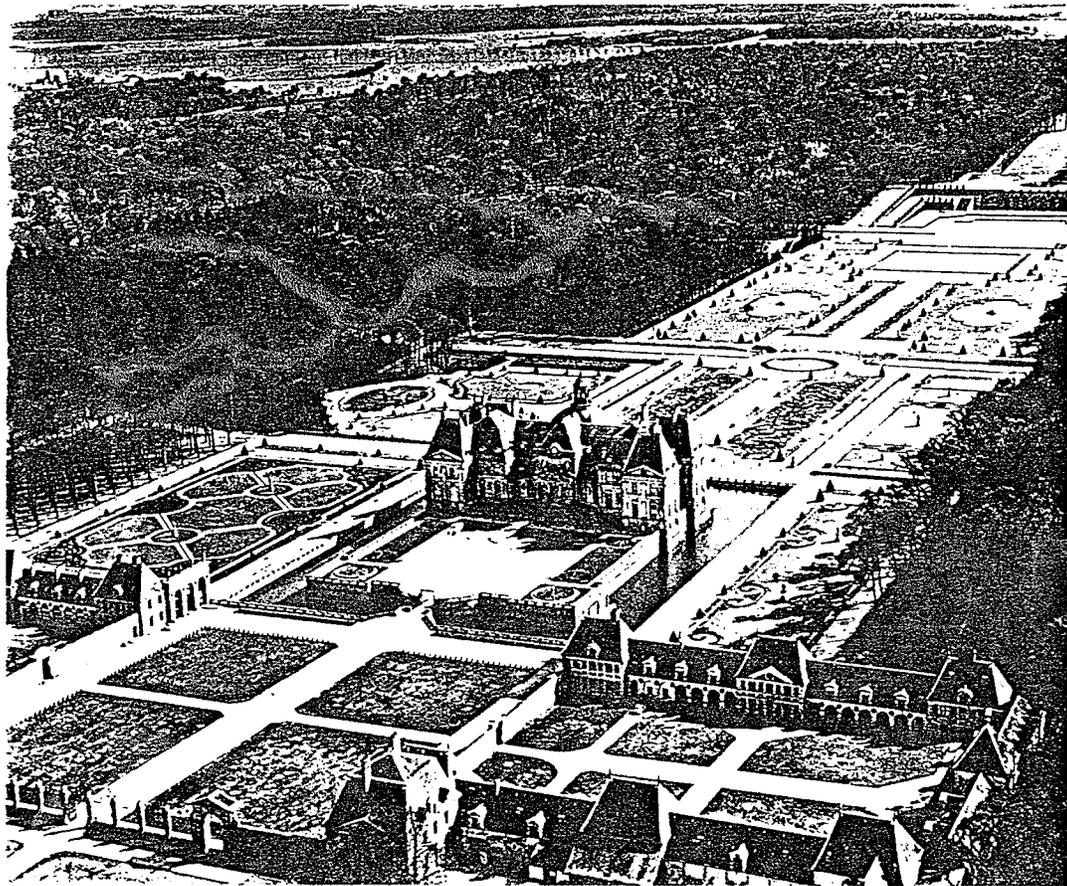


Figure 17: Garden of Vaux-Le-Vicomte (From Jellicoe, Geoffrey and Susan, 1987)

## 2.2. Informal Natural Gardens in the East:

Shang (1500-1027 BC) is the earliest Chinese civilization with its origin two thousand years later than the civilization of Egypt. Shang people established an agricultural society rather than a hunting society. The agrarian life was closely bonded to the earth, and greatly relied on the natural forces. People had to understand and to successfully control natural forces to achieve a harvest each year.

From such a close attachment of man with nature the Chinese generated a different philosophy of the universe from the Egyptian who thought the existence of the cosmos was dependent on an external force, or a creator. The Chinese regarded the cosmos as a self-generated whole from which all forms of life were produced, and all life acted naturally by following the order of the cosmos, or the forces of nature. Such a view made man, who was no different than other life forms, evolve the idea to co-operate with nature; commune with her; and have a friendly relationship with her. This idea dominated Chinese philosophy for more than two thousand years.

As an expression of such a concept in sympathy with nature, the common interest of Chinese garden art was, and is, to focus on the creation of a natural image. The gardens were considered as places where man would feel in harmony with cosmic forces. Their composition was an unsentimental effort to penetrate to the essence of nature, rather than to impose order from without. The garden as a representation of the natural landscape may be found throughout its long and historic evolution.

The earliest Chinese garden found and described in recorded literature was the vast hunting park in Chao dynasty (1027-221BC). The hunting park was built by enclosing a large wild area where the plants and beasts were left to thrive naturally within. The park was set apart for the emperor, and acted as the symbol of imperial might. The park's primary function was for imperial hunts, or for military exercises because hunting and war were closely connected at that time. The pleasure of visual enjoyment became secondary.

After conquering all the small kingdoms, Chin became the first united imperial state in Chinese history during the period of 221-206 BC. It was an autocratic rule with Chin Shin-huan, the first emperor, at the head. To reflect his supreme right and the splendor of the dynasty, Chin Shin-huan built a series of palaces and parks during a short period when he was in power. One of them was the vast hunting preserve, Shan-lin Park, built south of Wei River in Shian Yan. According to the literature, the park was huge in scale existing one thousand li (1 li = 0.5 km), and was covered with hills, rivers and forests. As well as being used for hunting, the park contained both palaces and villas for administration and dwelling. Rare beasts, birds, and trees were included for enjoyment.

After the collapse of Chin, the Shan-lin Park which symbolized the imperial power by its size and luxuriance was taken over by the emperor of Han dynasty during the period of 206 BC-220 AD. Believing in myth and desiring longevity, the Han emperor added the idea of the immortality to the park to complement the earlier role of hunting park. Three mountains and a sea which was supposed to be the magical dwelling place of immortal gods were imitated and built in the Jian Zhan Palace in Shan-lin Park. During this period, the landscape gardens were basically full-size productions of natural mountains and rivers. The three mountains and the sea (Figure 18) which suggest the pleasure of the universe was constructed and became a model for successive imperial gardens.



Figure 18. Imaged Paradise (From Keswike, 1978)

The period after the collapse of the Han dynasty until the rise of the Sui dynasty (220-589 AD) was marked by constant warfare. To escape from the problems of society and political chaos, people became interested in Taoism and Buddhism. Fundamental to these philosophies was moving back to nature. It became fashionable for people to either wander among wild mountains and rivers to get sensual pleasure; or stay in the countryside retreats to live in seclusion.

A scholar's retreat in the countryside was constructed in an austere style to correspond with the Taoist idea of removing a desire for physical pleasure, while insisting on spiritual pleasure by truly loving nature and searching for the meditative state to unify oneself with nature (Figure 19).

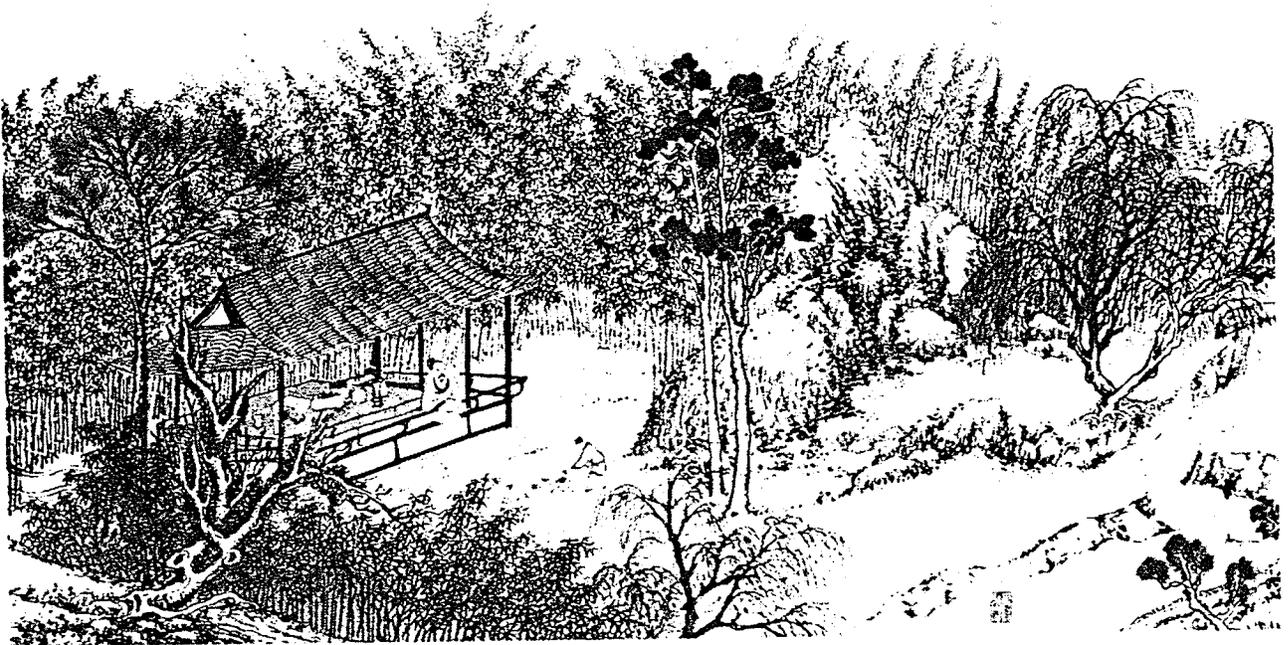


Figure 19. Painting of A Scholar's Retreat (From Keswick, 1978)

Temple gardens were laid out with the spreading of Taoism and Buddhism (Figure 20). The sites for hermits' retreats were usually chosen deep in the mountains with water flowing about. This allowed the hermits to touch nature and commune with her at all times. One of the examples was the Lu Shan park built on the beautiful mountain of Lu Shan by the monk Hui Yuan. The atmosphere within the park was deeply peaceful. This was to help the monks concentrate while in mediation.

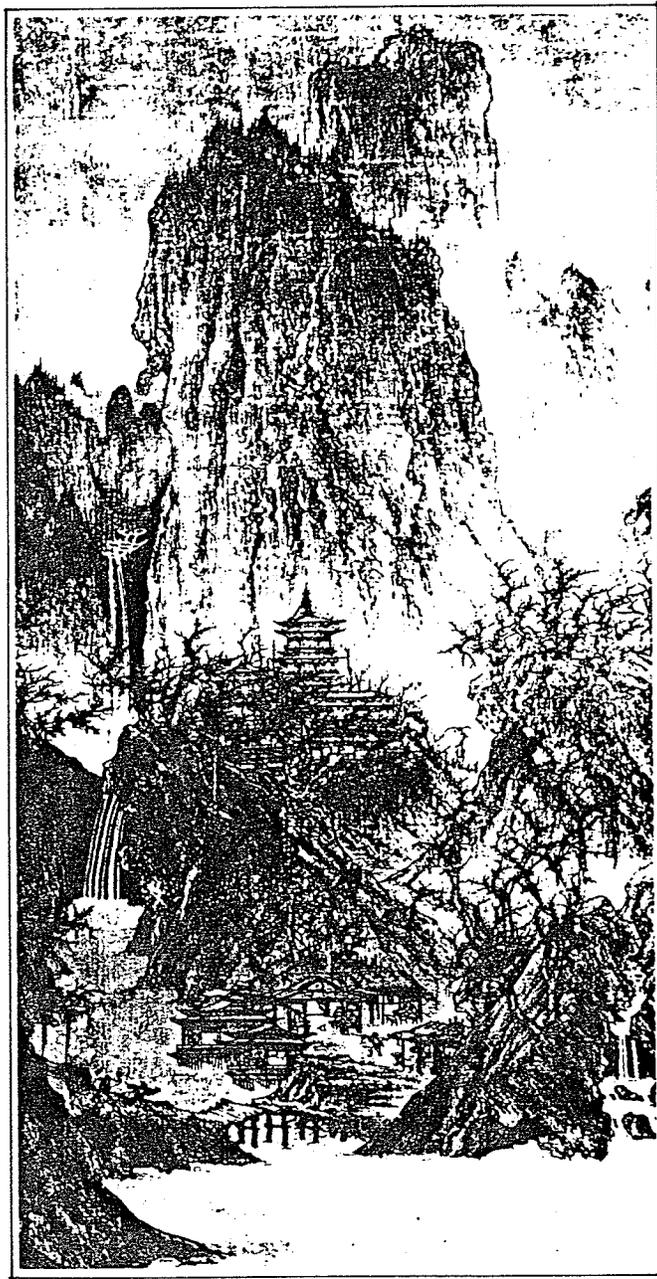


Figure 20. Painting of a temple (From Keswick, 1978)

Some wealthy indulged in the extravagant life through their elaborate gardens in order to escape the chaos of the society. The Garden of Golden Valley built by Shin Cheng in the third century had been accepted as a most lavish garden at that time. The garden was located in the Golden Valley within a wonderful natural surrounding. The garden functioned firstly for the enjoyment of such fantastic natural landscape features as springs, water falls, and dense forests; and secondly for the production from the planted fruit trees, and herbs, and from fish ponds (Figure 21).

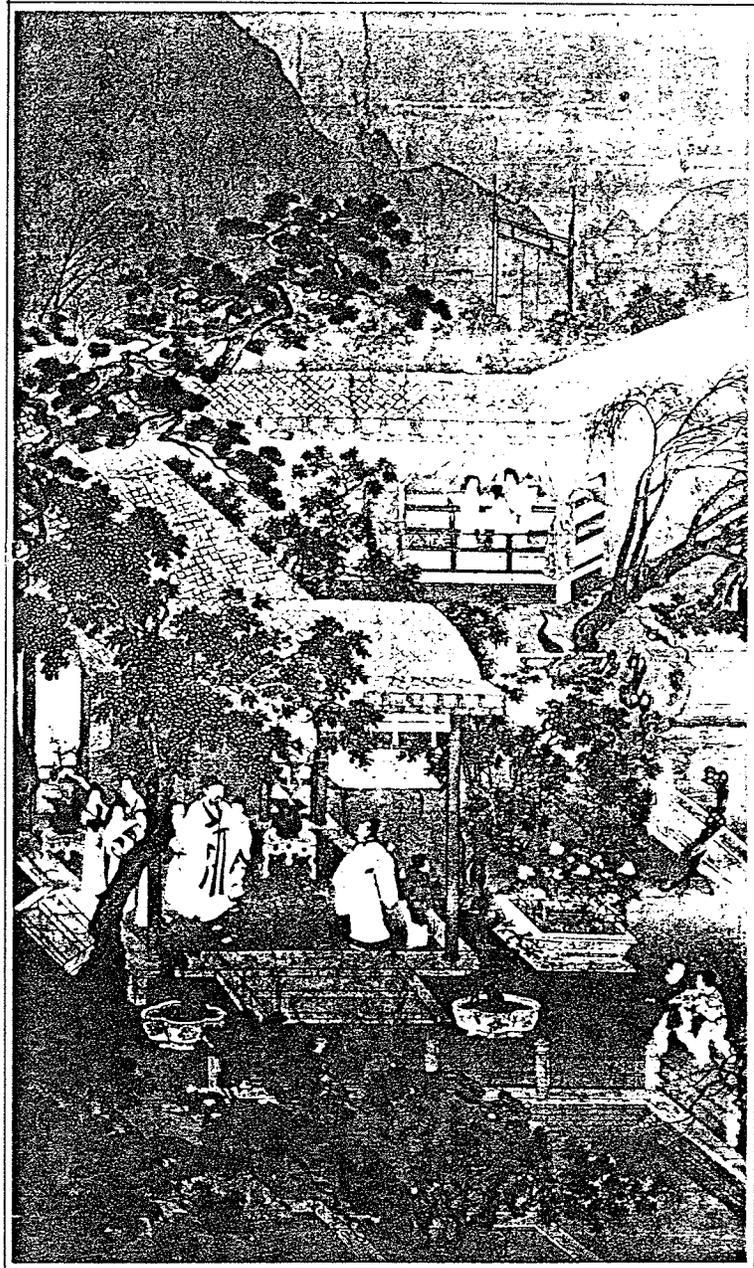


Figure 21. Painting: Garden of Golden Valley  
(From Keswike, 1978)

The Sui dynasty (581-618 AD) united China after four

hundred years of disorder, and was characterized as a peaceful and prosperous period. From this time to the Tang dynasty (618-907 AD) was a golden era of consolidation, and of achievement in Chinese history. Under such conditions, not surprisingly, garden art flourished.

The Western Garden (Figure 22), which is the most famous rural garden in Chinese history, was built by the Sui emperor, Sui Yang-ti, to signify the might, glory, and the restoration of imperial unity. The park covered an area of seventy five miles in circumference. Besides the immortal view of three mountains and a sea which was almost six miles long, there were sixteen water palaces distributed along the lakes and water ways. Each of the water palaces were elaborated and artfully decorated (Figure 23).

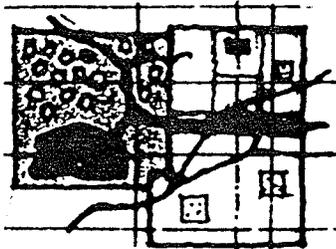
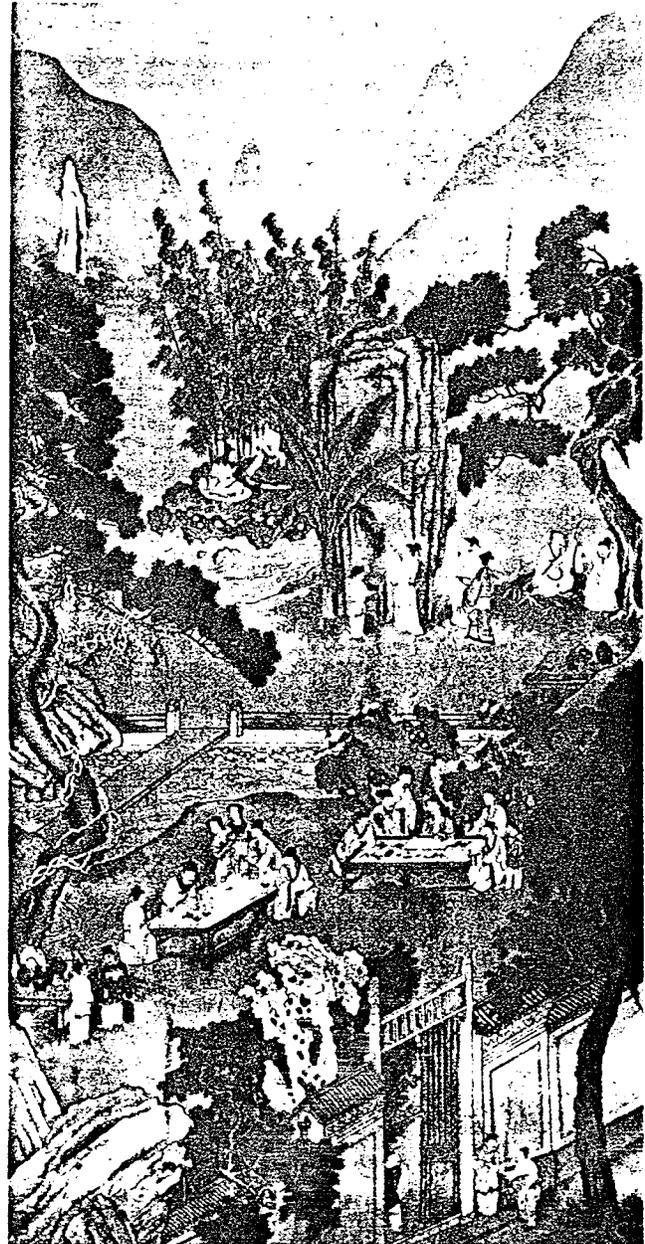


Fig. 22. Plan of the Western Garden:  
 Fig. 23. Painting of a Water Palace  
 in the Western Garden  
 (From Pen, 1986).



In the Tang dynasty, poets and painters not only depicted the natural beauty by their poems and paintings, but also expressed the beauty in three dimensional gardens which exuded a poetic and picturesque atmosphere. An example of this was the Villa of Wang River built by Wang Wei in a valley within a dramatic natural landscape. Pavilions and dwelling houses were arranged either on the round peaks or near the gentle river banks. Wang Wei painted his Villa of Wang River as a long scroll which unfolded from the right to left. Each space was painted as an individual viewing point linked together by water and mist (Figure 24).



Figure 24. Part of the Painting of Wang River Villa (From Keswick, 1978)

From Lao Tze's philosophy that "too many colors dazzle the eye; too many sounds deafen the ear; and too many tastes confuse the tongue", Wang Wei believed that dazzling the eye was a sure way to confuse the soul. Therefore, Wang Wei developed the technique of monochrome, and rare colour was used in his paintings. Following his example, the scholars gardens in Suchao were dominated by colors of white, grey, and black rather than a variety of bright colour.

During the Sung dynasty, painters began to pay more attention to reflect their own character and emotion in the works, because they found depicting only nature was not enough. The natural world may change according to men's emotion, and men's emotion follows the mood of nature. Thus, a new theory of landscape painting evolved, calling for a vivid presentation of the emotional expression in landscape painting. The technique for 'depicting the feeling', and not 'depicting the reality' greatly influenced garden art. In a garden, a single rock may represent a whole range of mountain; and a small pool represent a large body of water. The vastness of the universe, through this means, was transferred into a small space.

At this time, private gardens were widespread in urban cities. They were usually attached to dwellings and enclosed by walls or galleries. To show nature in a limited area, the way of “depicting the feeling”, or the process of symbolism and condensing nature were adopted. Such a garden was valued for the character of the creator as well as the intrinsic brilliance of its parts or conception.

Literature played an important role too, in expressing the character of owners. In the Garden of the Net Master, the name implied the owner’s love for water and his longing for the simple life led by a fishman. Therefore, water was the central feature of interest in the garden. It was emphasized not only because it was placed in a central position, but also because it occupied a large area in comparison with the surrounding courtyards. With an irregular shape, the pond seemed larger because parts of it were hidden by rocks or under terraces. Around the water were grouped halls, pavilions and walking galleries that were situated more or less along the enclosed walls to extend space for the central water. The mirroring effects of the water surface intensified the spaciousness and the significance of the central garden (Figures 25 & 26).

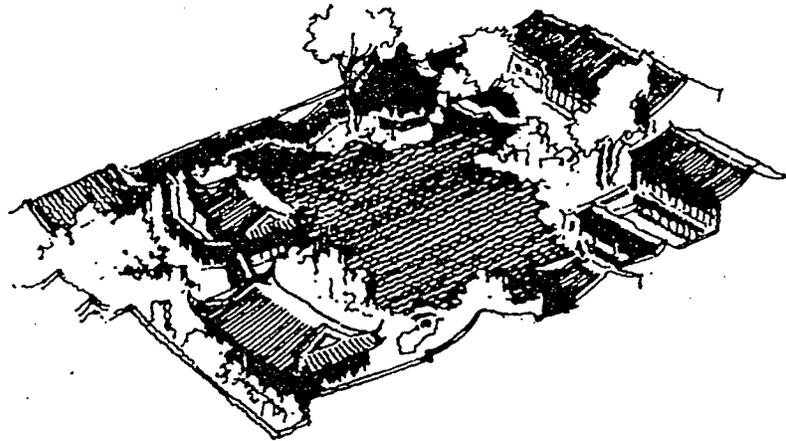
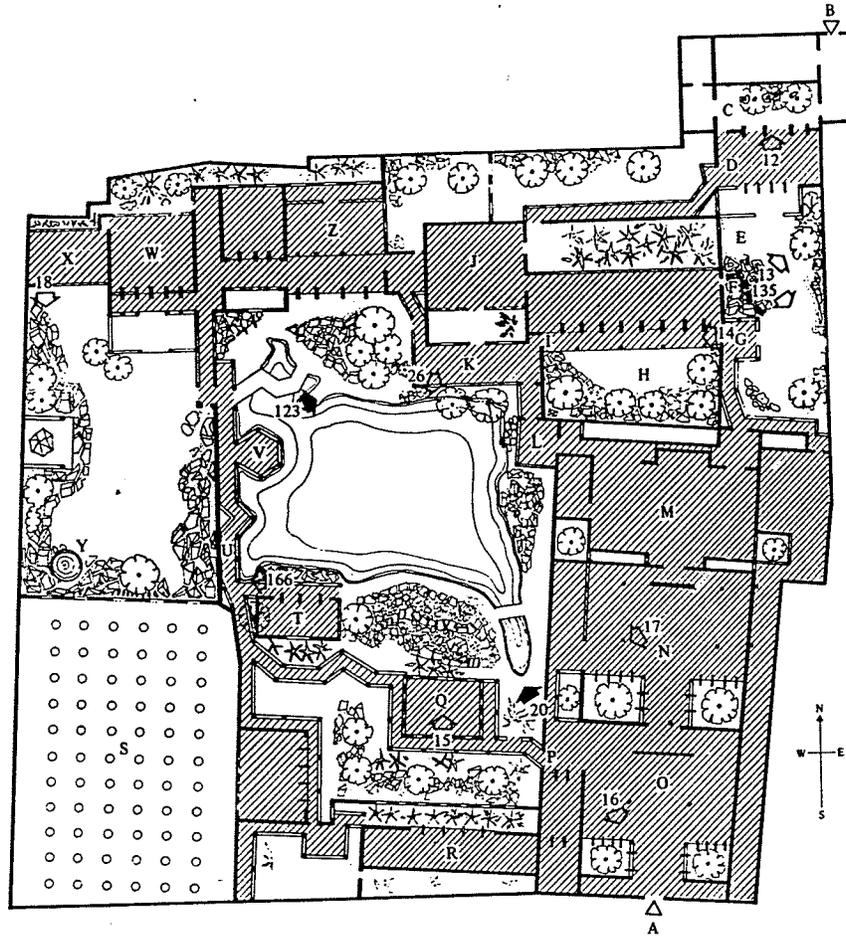


Figure 25. Views in the Garden of Net Master (From Pen, 1986)



Wang Shih Yuan, Suchow		
	- walls	A South entrance
	- windows in walls	B North entrance
	- walls below knee height	C Courtyard
	- walls with pillars supporting roofs	D Hall (present-day shop) with terrace
	- roofed areas	E Courtyard
	- trees with shrubs	F Rock-pile with cavern and steps to top floor of Library
	- flowers and shrubs in pots	G <i>Hsieh</i> over entrance to library courtyard
	- rock piles and hills	H Library courtyard
	- bamboos	I Door to gallery on lake
	- pavilions	J 'Pavilion of the Accumulated Void'
	- direction from which black and white photograph taken	K Gallery on lake
	- direction from which colour photograph taken	L <i>Hsieh</i> over entrance to house
		M
		N Halls of house (two storeys)
		O
		P Entrance to garden from house
		Q 'Barrier of Clouds' Hall
		R Hall with secluded courtyards
		S Area now used for pot culture
		T Small hall on the water
		U Covered galleries with calligraphy set into walls on stone tablets
		V 'Pavilion of the Clouds and Moon'
		W Hall with terrace
		X Study
		Y Well
		Z 'Hall from which One Looks at the Pines and Contemplates the Paintings'
		Total area covered is approx. 1 acre

Figure 26. Plan for the Garden of Net Master (From Keswick, 1978)

Inheriting the Sung's tradition and continuing this development for a longer period, garden art flourished and matured during Yuan (1271-1368), Ming (1366-1644), and Qing (1661-1911) dynasties. The following are several examples of the private gardens in Suchao.

The garden of the Lion Grove (Shin Tzu Lin), built in Yuan dynasty in Suchao was characterized by its large “false mountains” composed by rocks. The “mountain” surrounded a pond of water, and covered the garden in south, east, and west directions. Inside the garden mountain core was a labyrinth of caverns, chasms, gullys and tunnels which twisted through the rocks. Outside, the different shapes resemble innumerable lions which gave the garden its name (Figures 27, 28 & 29).



Figure 27. Painting for Garden of Lion Grove (From Keswick), 1978)



Figure 28. Views in the Garden of Lion Grove (From Pen, 1986)

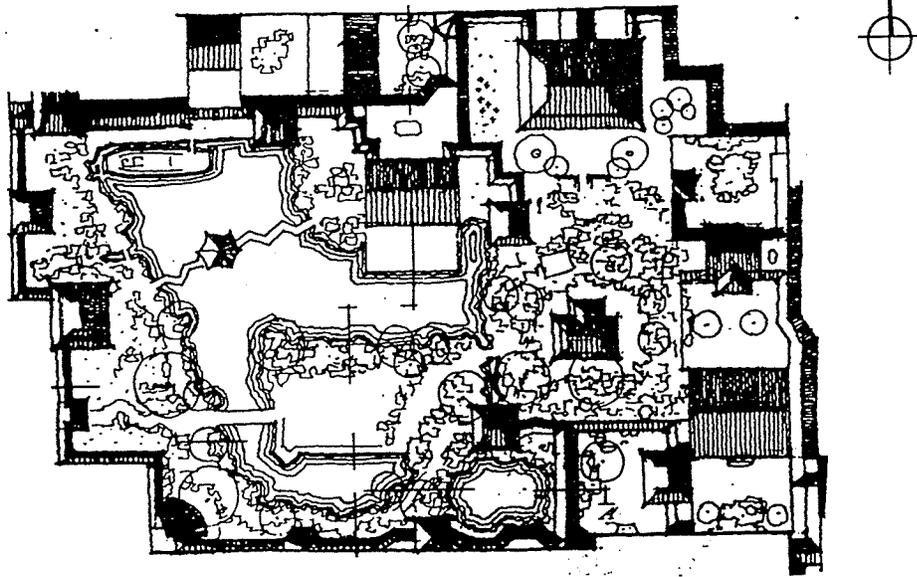
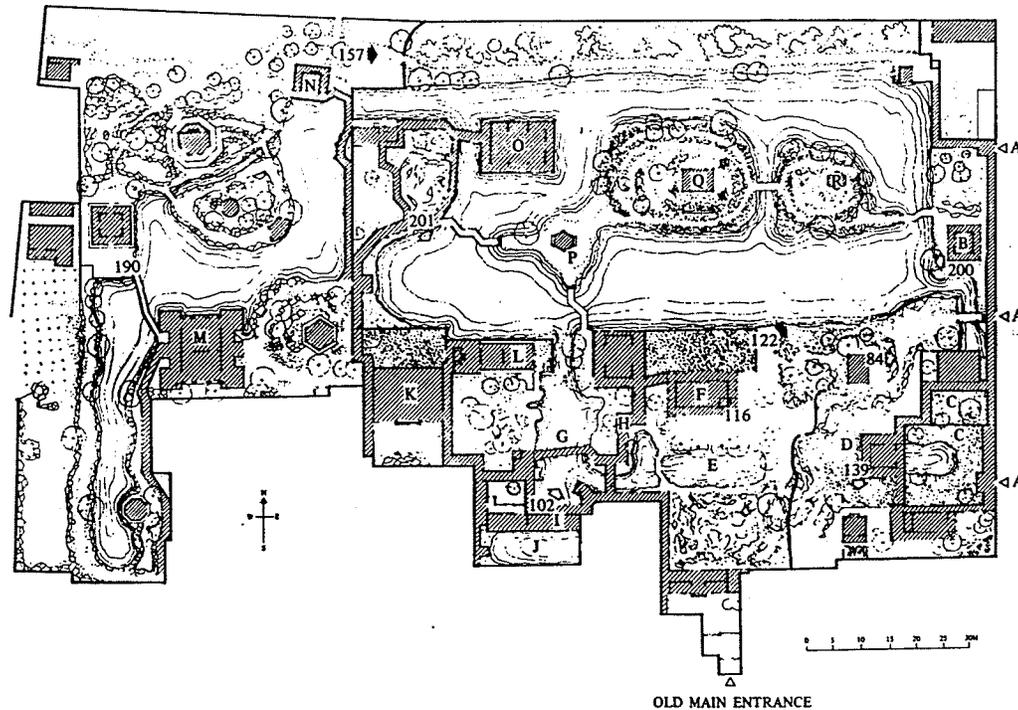


Figure 29. Plan for the Garden of Lion Groves (From Pen, 1986)

The garden of the Unsuccessful Politician was built during the Ming dynasty in Suchao by a person who retired from an unhappy political career. The title of the garden commemorates his feeling of frustration. The garden is famous for its use of water. The waters which occupied as much area as the land were divided by halls, pavilions, islands, and bridges into a series of complex, but interconnecting pools. In the central part of the garden, the islands in the lake blocked the view of the shore and gave one a feeling that the water might flow into infinity (Figures 30 & 31).



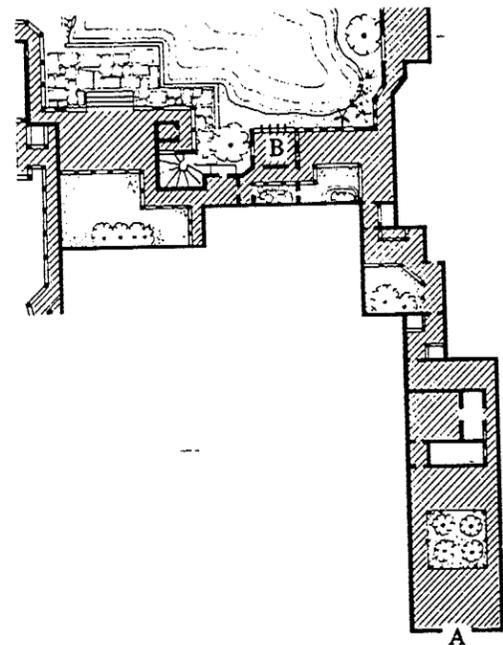
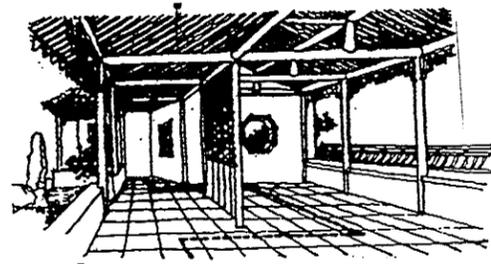
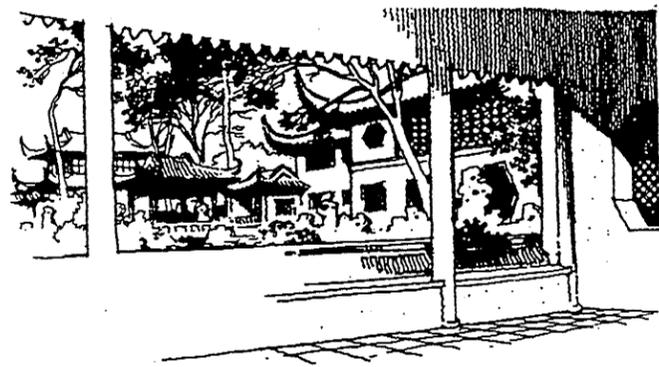
Figure 30. Central View of Middle Part in the Garden of Unsuccessful Politician (From Pen, 1986)



Chuo Cheng Yuan, Suzhou					
—	- walls	◊	- direction from which black and white photograph taken	H	Open galleries
- - -	- doors	◄	- direction from which colour photograph taken	I	'Clarity and Magnificence Pavilion'
— ◯ —	- walls with windows			J	Backwater
— ◯ —	- walls below knee height			K	Pen and Flower hall
— ◯ —	- low walls with pillars supporting roofs			L	Tea house stone boat 'Travelling by sea'
◯	- false mountains, rock piles and hills	A	Entrances from eastern part of garden	M	Mandarin Duck hall, with blue glass windows
◯	- trees and shrubs	B	'Quiet retreat among bamboo and wu'tung trees'	N	Hall with mementoes of Wen Cheng-Ming
◯	- pebble pavings	C	Small enclosed courtyard	O	'Lou for viewing the mountains'
◯	- dwarf trees and flowers in pots	D	Pi-p'a garden	P	'Lotus Wind on all sides' <i>t'ing</i>
		E	Deep pool	Q	'Beautiful Snow, Beautiful Clouds' <i>t'ing</i>
		F	'Hall of Distant Fragrance'	R	'Persuading One to Farm Diligently' <i>t'ing</i>
		G	'Little Flying Rainbow Bridge'		

Figure 31. Plan for the Garden of Unsuccessful Politician (From Keswick, 1978)

Lingering Garden (Liu Yuan) (Figure 32) in Suzhou in Ching dynasty is celebrated by the spaces that included contrast: large versus small, open versus closed, and bright versus shade (Figure 33). After one passed a series of dark and tight spaces from the entrance, he was confronted by a broad and bright central view of the garden (Figure 34). This abrupt vista might excite people and arose more interest in viewing the rest of the garden. After the admiration of the central part, the visitor would pass another group of dark and tight spaces to get to the second interesting view of the centre (Figure 35). The contrast of small and large, dark and light provided a continuously interesting experience. It might confuse the visitors' sense of space and time, and encourage one to linger and become reluctant to leave.



0 5 10 15 20 25 30M



Figure 33 Small and dark spaces in Lingering Garden (From Pen, 1986)

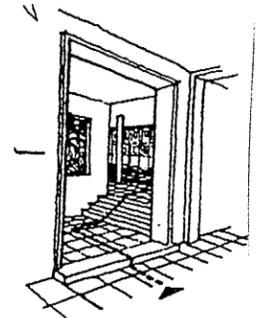
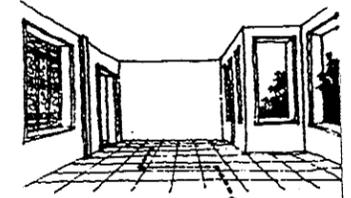
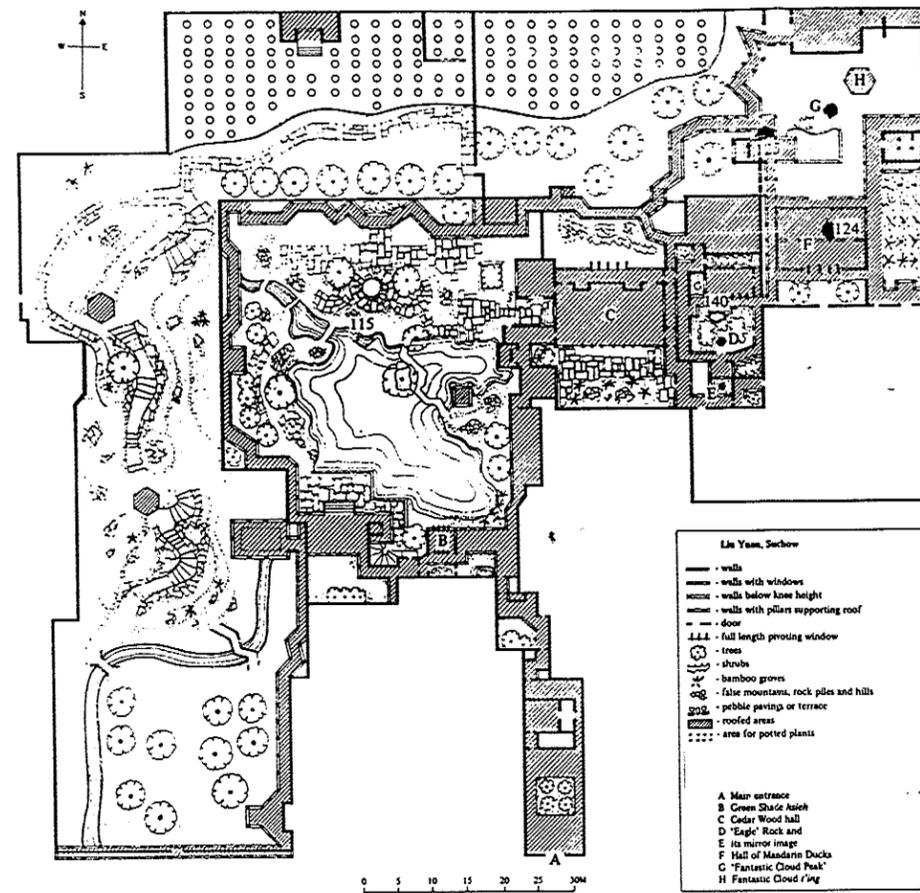


Figure 35 Tight and dark spaces in Lingering Garden

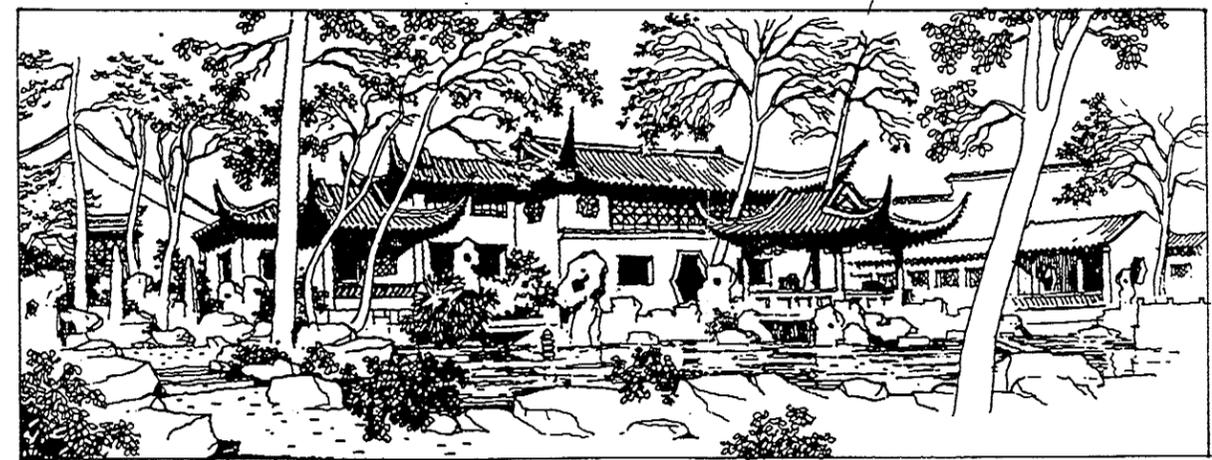


Figure 34 Central view in Lingering Garden (From Pen, 1986)

### 2.3. Contemporary Gardens:

The centuries of garden development in a variety of formal and informal orders makes a great contribution to the visual art of garden design in the east and west. These two approaches to visual order not only accumulate an array of experience, but also deeply affect today's landscape design.

The works of Dan Kiley are cited as examples of formal expression. Dan Kiley regarded the direct, and simple expression of function and site as most potent, therefore, in many cases, he designed the sites by using classical geometrical forms. The spaces in the gardens organized by such elements are dynamically interrelated.

One of the best examples of his work is the design of the Miller House. The house is embraced by garden spaces. The garden is arranged in geometrical patterns on three sides and a free pattern on the west side. The west side is the natural meadow linked with stone terraces and random planted trees. The front of the house on the east side is the double row of honey locust trees parallel to the house. The tree trunks form an alley linking the north space for the use of adults and the south space used by children. The road from the street to the house is canopied by a double row of chestnut trees. Beside the trees, the spaces from the street to the edge of the garden are geometrical beds of lawn. Broken hedges are planted around the edges within the garden to partly conceal the boundary and provide relief and the sense of enclosure. The spaces in the garden are related in a continuous spatial system to indicate connection.

In China, from the 1950's to the present, natural symbolic enclosed gardens still radiate the vigor by following the Chinese tradition while integrating with new concepts and new uses. Such an example is the interior court garden in the White Cloud Hotel in Canton (Figure 38).

Figure 36. The Sculpture in  
Miller House  
(From Brookes, 1984)

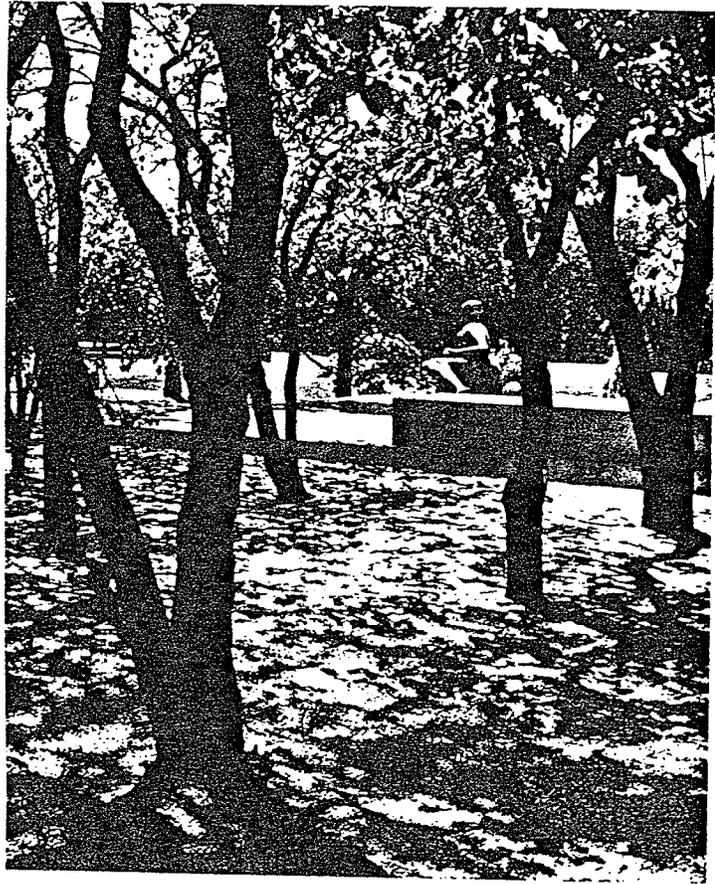
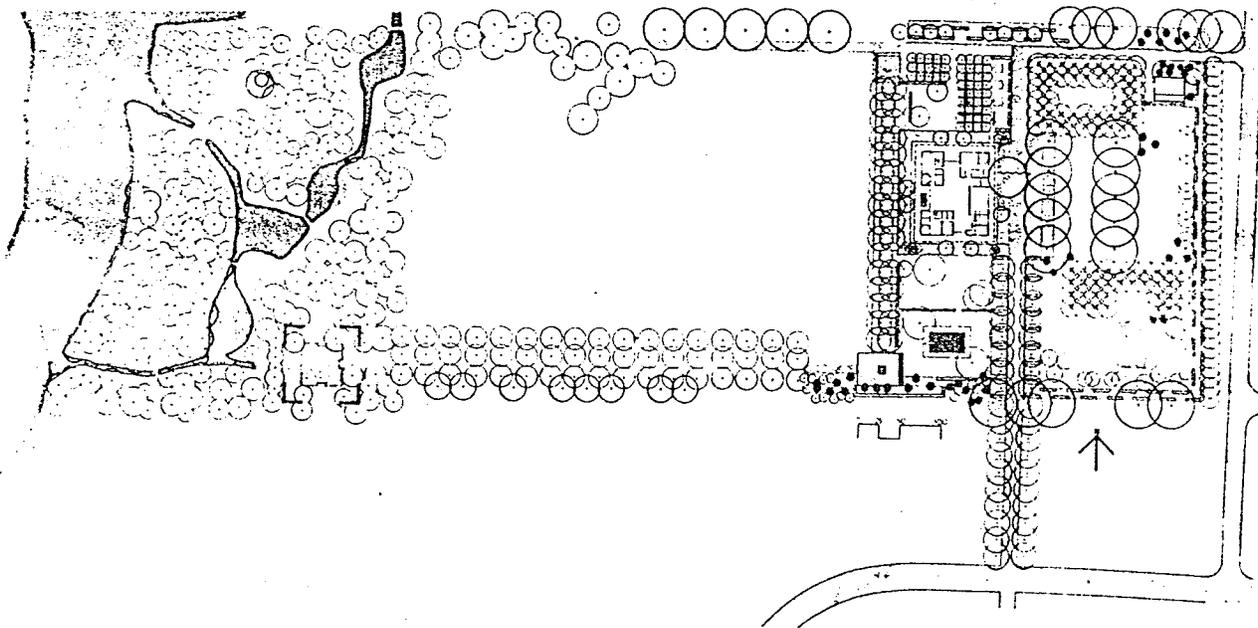


Figure 37. Plan of Miller House  
(From Process Arch.  
No. 34, 1982)



The interior court height is about fifteen meter, and it is designed in an informal order. Water which occupies the largest area of the court plays an important role. It is divided into a series of small parts by bridges and rocks. Some parts are hidden by rocks and columns to provide the sense of “no ending”. A water fall running down from a hill which is erected in rocks becomes a dominant view in the court. A pavilion is situated on the hill to strength this dominant view. The sound generated by the falling adds more interest to the court. The banks of the water which have irregular shapes are constructed by large and small rocks. The trees and the vines form a green belt around the court. The zigzag bridge in the middle of the court increases the distance to pass over the water, and provide different directions to see the court. The views in the court are extended into the surrounding spaces through the columns.

In the west, the “free form” is given equal attention in outdoor visual composition. One of the examples of this style is the Donnell Garden (Figure 39) designed by Thomas Church in 1947. The garden and the main house are separated, with almost no visual connection,

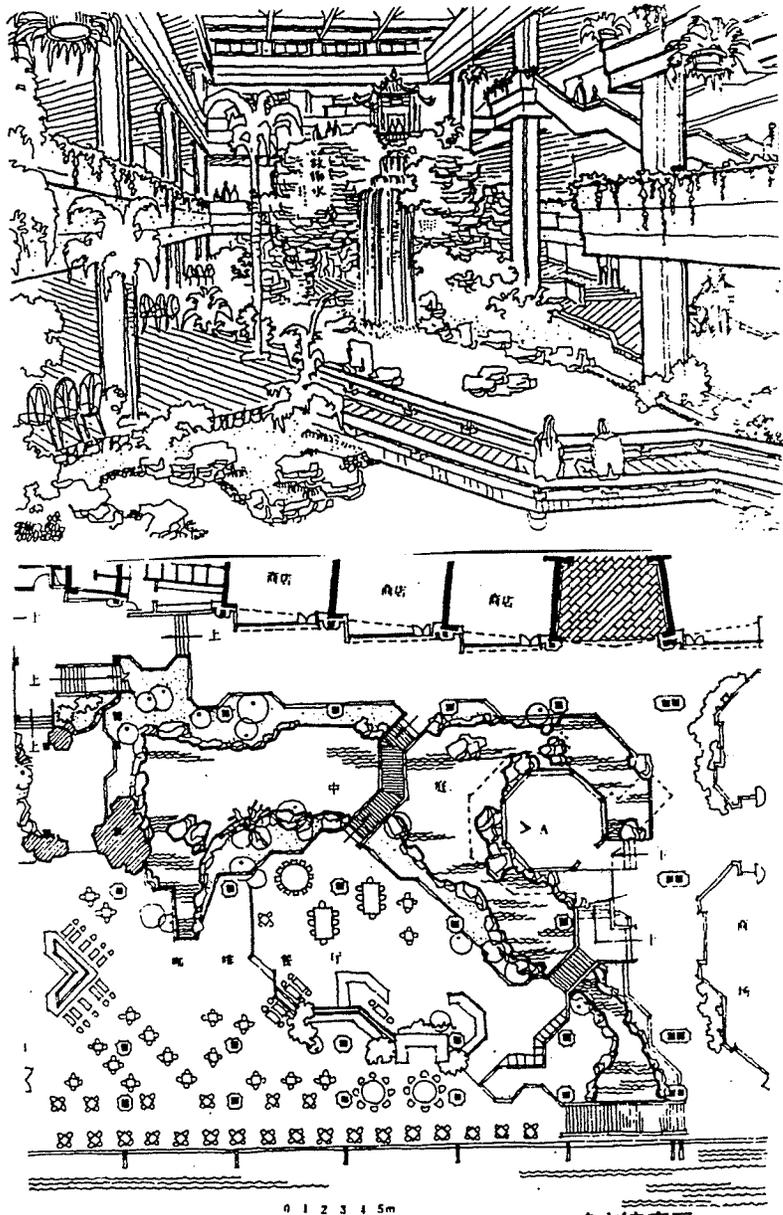


Figure 38. Inner Court in the Hotel of White-Cloud  
(From Du, Li, and Liu, 1986)

but linked by a curved path. The boundary of the garden is defined by both architectural and natural features. Architectural features of the retaining walls, building, together with terrace and decking, establish a series of right angle base lines and planes. The natural features of trees and mounds formulate free curve lines. This suggests an influence from both western formal order and eastern informal order. Church stated that: "all compositions, although free, are built around them...the truth is your garden is never without at least one axis and probably has two or three. The axis becomes visual rather than mechanical and needn't be at right angles to the eye" (Church, 1983, p. 34). The pond, and the plane of the rock sculpture in the centre of the garden are designed in sweeping curve lines (Figure 40). Several trees puncture the decking, which forms an interesting view in the garden. Surrounding trees become frames through which views outside the garden can be appreciated (Figure 41).

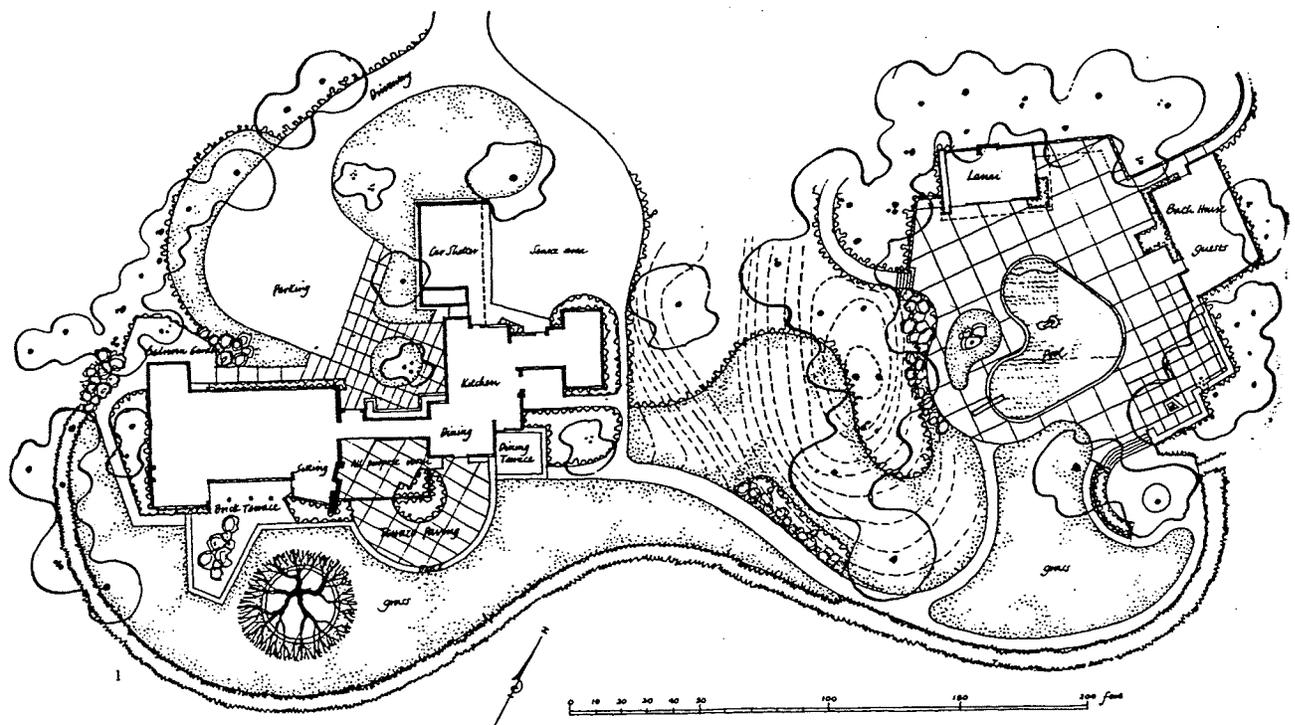


Figure 39. Plan of Donnel Garden (From Church, 1983)

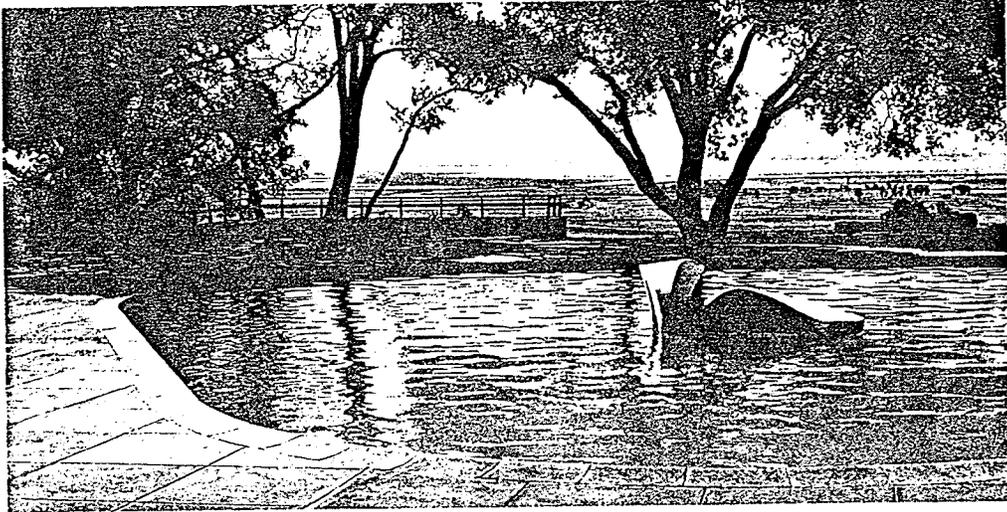


Figure 40. The pond in the Donnell Garden (From Church, 1983)

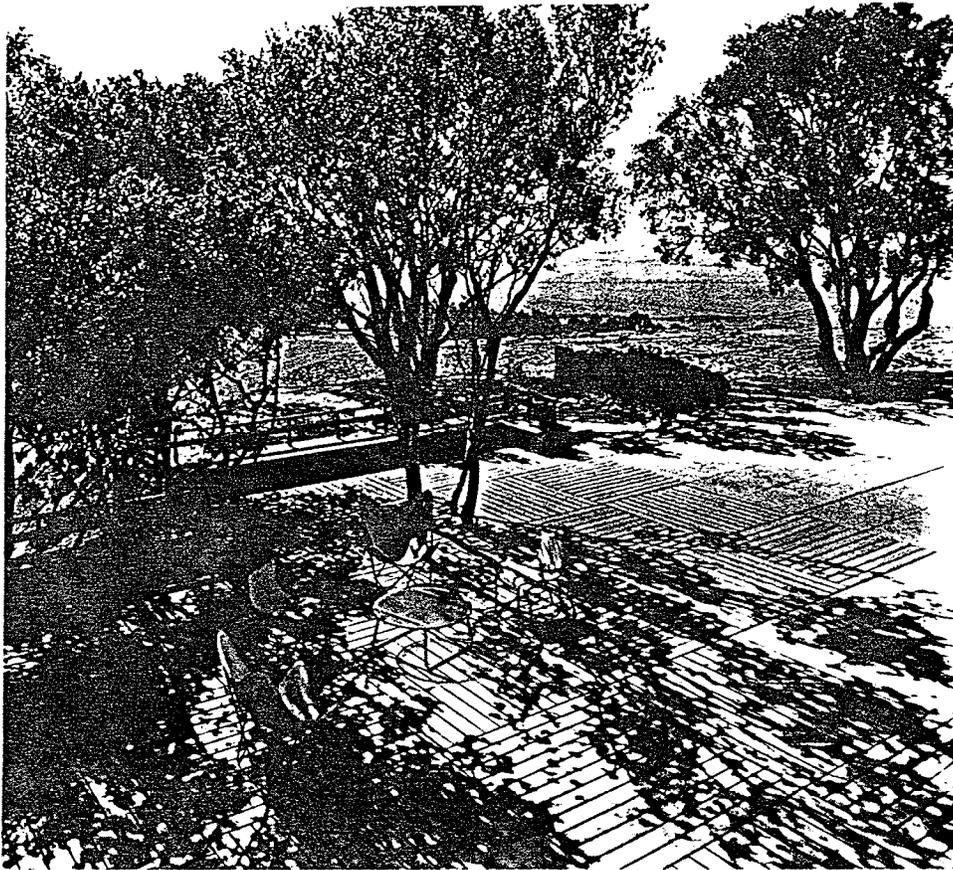


Figure 41. Views outside the Donnell Garden (From Church, 1983)

# Design Principles and Materials

The western formal gardens and eastern informal gardens have been developed over thousands of years. These gardens either are surrounded by architectural features with itself setting in the centre, such as the inner court in Greece, Rome, Islam, and China; or embrace an architecture with the architecture setting in the centre, such as the gardens in Egypt, the Renaissance gardens of Italy and France. A garden may stand free in the landscape rather than adjoining a building.

Although historical compositions have varied in formal and informal order due to the difference in time, place, and man, design principles can be derived from the case studies, and can be used as guidelines for today's or future garden design.

## **3.1. Unity:**

The designer must have a dominant idea which is strong enough to choose the forms and materials, which would make the composition a unified expression through formal or informal order, or the combination of the both. The dominant idea is usually derived from studies of the surrounding environment or the requirement to the need or character of the clients, and is developed through the creative ability of the designers. It rules over the design and makes the forms of each part exist with reference to the whole. The result is that all the parts in the garden are brought together into one unified expression.

### 3.2. Scale and Proportion:

Scale and proportion are important factors in making a design successful. They affect the size of a mass, the width of an avenue, and the height of plantings to give the sense of majesty or of intimacy.

A garden with small size is usually designed in a scale to make the whole garden seem larger. The scale of each part must relate to the rest, and relate to human dimension to be fit for human use.

### 3.3. Boundary:

The boundaries of gardens are defined by architectural and natural features which decide the size and shape of the enclosure. The boundary volumes not only affect the character of spaces within, but also need to be studied as important design components.

In western formal gardens, the boundaries usually are regular shapes and defined by fences, hedges, walls, and the repetition of colonnades of tree trunks (Figure 42). A low fence, or the space between tree trunks allow the views to flow outside. Sometimes high hedges and walls form a full enclosure of the site. They are either designed as a backdrop to set off the spaces within, or hidden to relieve the sense of the enclosure.

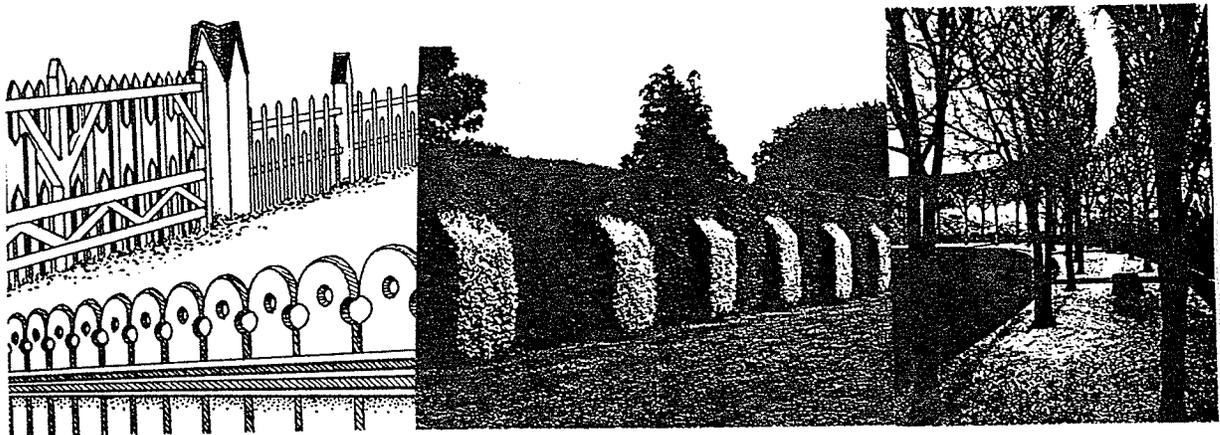


Figure 42. Boundaries defined by fences, hedges, and tree trunks (From Balston, 1986)

In a traditional Chinese garden, the boundaries are usually defined by walls, trees, and mounds. To make the small seem larger, the boundary walls are concealed by zigzag walking galleries, rocks, or plants to suggest more spaces behind these features (Figure 43). “A meandering, colonnaded walking gallery, attached to a wall, often turns away from the wall to be a partially detached free-standing segment; it then turns back to the wall, forming a tiny court serving as a vista to mask the boundary and suggest more spaces beyond what is seen from the distance” (Tue, 1988, p.147) (Figure 44). Trees and mounds are designed in natural pattern to make the boundaries have irregular shapes.



Figure 43. A boundary wall concealed by rocks. (From Pen, 1986)



Figure 44. A boundary wall is masked by a meandering gallery (From Pen, 1986)



### 3.4. Revealing and Concealing:

Concealing is a design strategy to give surprises and raise interest in a garden. Western formal gardens are usually composed to reveal the whole project firstly; then provide the surprise and contrast in detail. Chinese gardens, in contrast, avoid the obvious and emphasize concealing before revealing.

Spatial organization in western formal gardens is perceived immediately while subtle and the unexpected elements will be found in further exploration. At Vaux, three important transversal walks reveal the elements in the gardens as one proceeds down the grand avenues toward the canal screened from the house (Figure 45). Elements of surprise and contrast exist in detail and in the intimate woodland, and are only discovered through more detailed investigation.

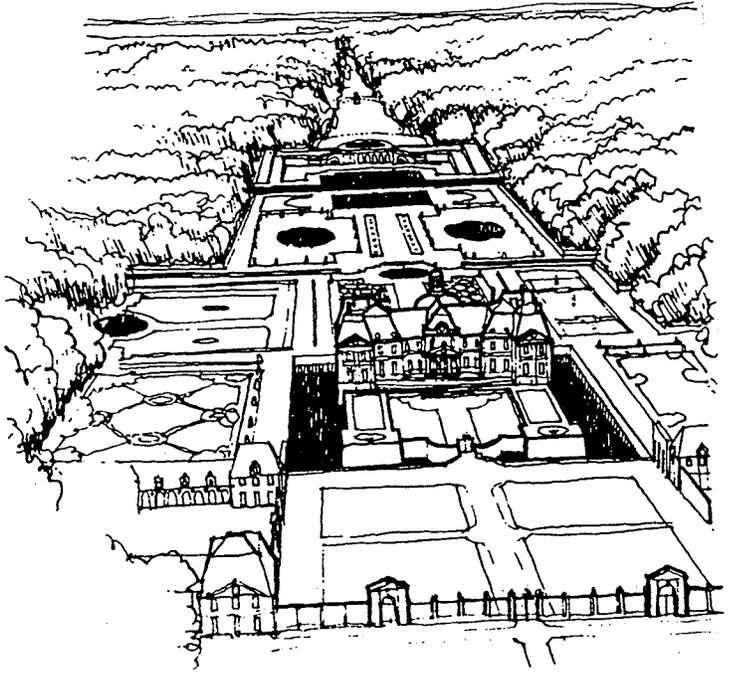


Figure 45. Elements in the Vaux revealed along the dominant axis (From Crome, 1981).

Introversion and tranquility are the main characteristics of Chinese people. These characteristics are reflected in garden art where the gardens are an inner world. There is no point from which the entire garden scene is visible in a glance. A rock or a wall may be placed in front of the entrance to prevent the garden scene from being perceived immediately (Figure 46); a hall or a pavilion is partly hidden by rocks or trees, and is wholly discovered later, much as in the western gardens, in order to add depth to the garden. One must peel back layer after layer of these Chinese garden spaces to reach the central gardens.



Figure 46. Rocks in front of an entrance (From Pen, 1986).

### 3.5. Straight and Curved Forms:

In a western formal garden, the characteristics of the composition are straight walks, long avenues, well-balanced parterres, clipped hedges, even-planted trees or colonnades resulting from the mathematical mind to distinguish man over nature (Figure 47). The spectator is led around parterres and along terraces by the straight paths and so give the opportunities to admire the skill and ingenuity of the gardeners. The resulting composition is an expression of classical symmetrical order.

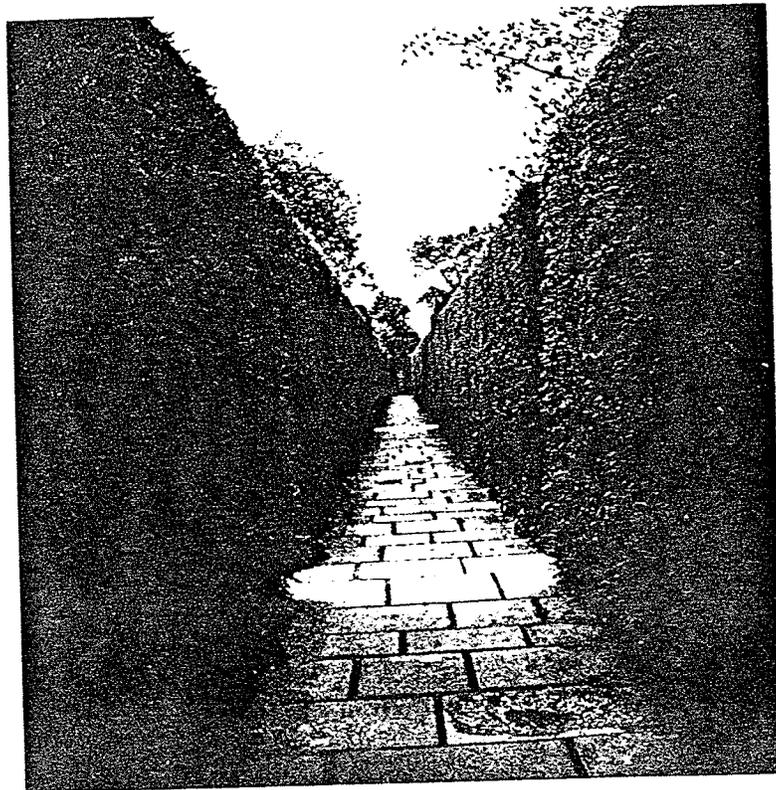


Figure 47. Straight path (From Hicks, 1982)

Chinese garden makers chose to avoid stiff orderlines and geometrical rigidity. Curves and studied irregularity generally characterize the design. The undulating paths, bridges, walking galleries, and winding walls all are arranged with freely curved lines which are imitated from nature (Figure 48). This has a great contribution to the unity between artifacts and natural landscape features. The curved linear features such as path, streams, galleries, and bridges help to foster a sense of spatial depth.

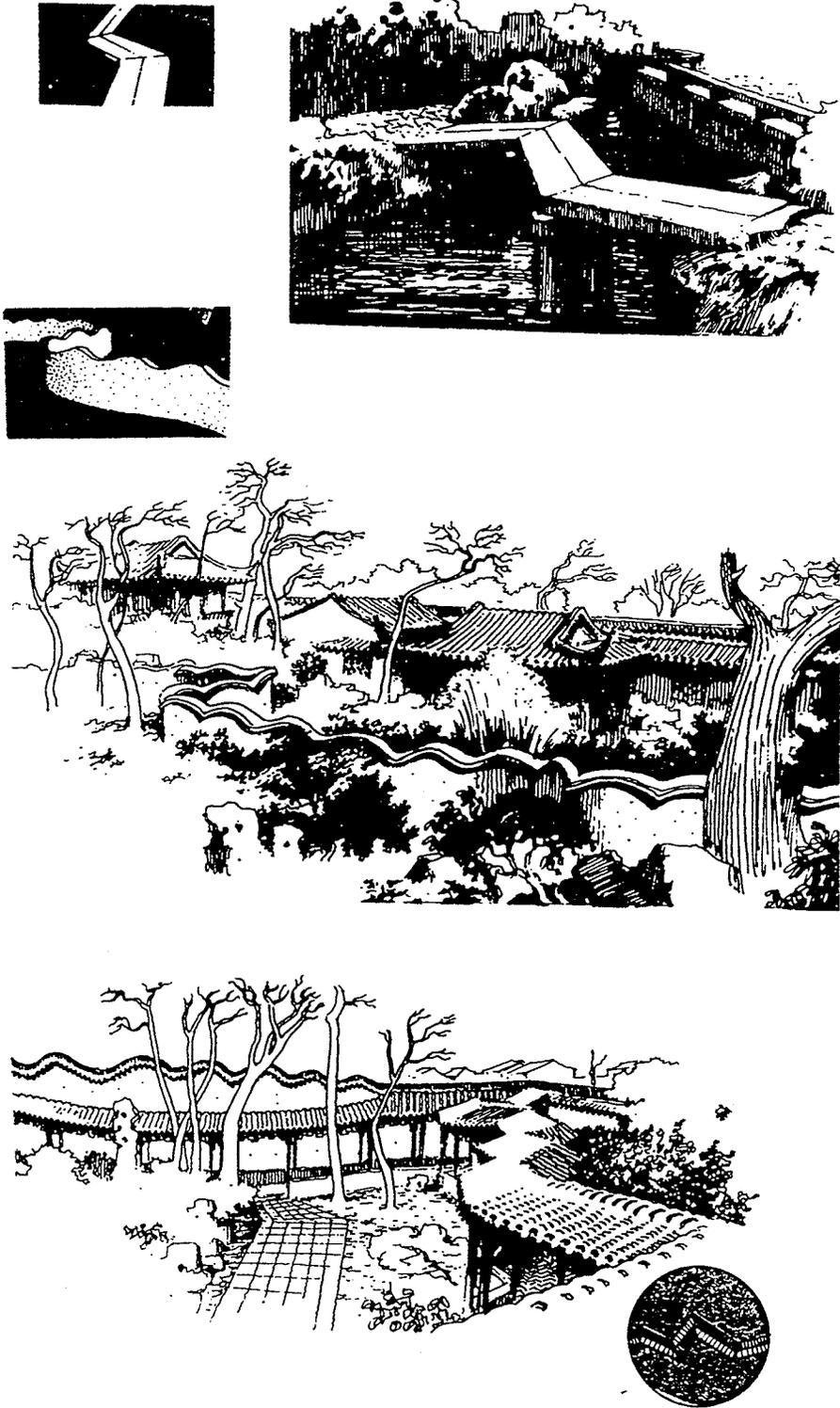


Figure 48. The curved path, bridge, gallery, and wall in Chinese gardens  
(From Pen, 1986)

### 3.6. Vistas:

In the geometrical order of western formal gardens, the sight line is oriented on the centre or on the axis of a space. Thus, a main vista is usually placed on the axis of an open space. Vistas such as sculpture and fountains function as vertical accents to make order apparent, to divide up the spaces, and to force the eye to stop on it. The ornaments or plants are placed to either side of the axis to support the vista. The result is a unified balance and rhythm (Figure 49).

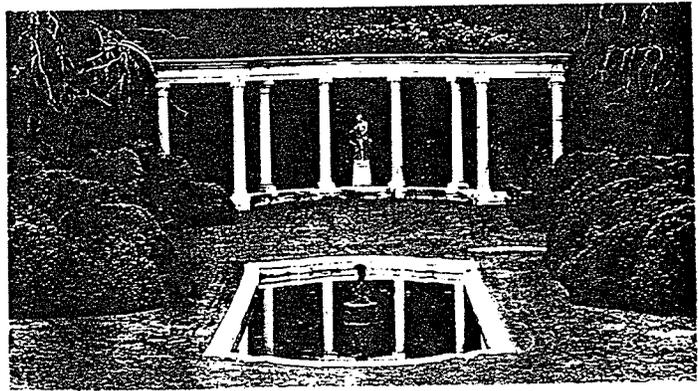


Figure 49. A vista placed along axis  
(From Balston, 1986).

In Chinese gardens, vistas are arranged in different directions along the crooked and curved paths. The observes' sight lines are directed along the vistas which are skillfully arranged at turning points of the paths (Figure 50). The surrounding of a vista has good views to be enjoyed.

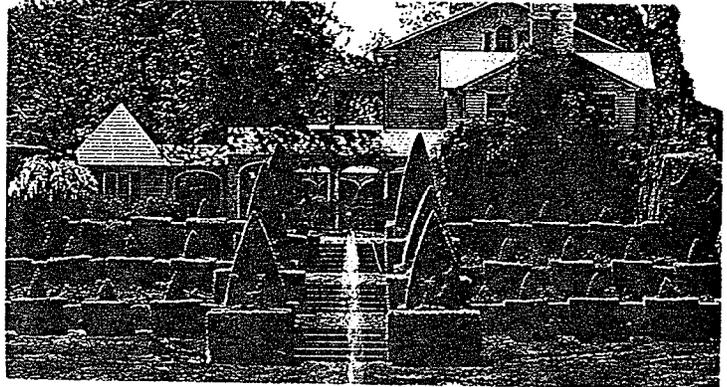


Figure 50. A vista located at a turning point of the path (From Pen, 1986)

### 3.7. Spational Division and Transition:

Open space and solid mass formulate the pattern of a garden. The solids divide the land into a series of spaces to add richness and depth to the garden.

A formal western garden is divided into a series of spaces by clipped hedges, straight walls, colonnades and tree trunks (Figure 51). The links between spaces are reached by low vertical features, gaps between hedges, tree trunks, and openings in walls.



These spaces are designed with grand patterns as parterres, knots, terraces, fountains, or pavement. The patterns of elements in different spaces are interlaced and overlaid. This not only gives the garden a unity, but a quality of movement. At Vaux, the cross axes interlace with progressive depth into the framework of the woods. The progression from space to space follows a straight line and is exciting.



Figure 51. Space separated by hedges, steps and trees (From Balston, 1986).

Foreshortening of the perspective is achieved by increasing the distance between each of the longitudinal divisions formed by the cross walks.

A Chinese garden is divided into a series of spaces by winding walls, and zigzag colonnaded galleries. The separated spaces satisfy various functional needs in viewing, studying, friends meeting, and family gathering. The spaces may have different themes in secluded court, water court, hill court, and the combination of all. They increase viewing pleasure by contrast

of dark and light, large and small, open and enclosure. Walls with fanciful windows or doors, and galleries with openings mark distance, but do not block garden views. These different shaped windows, doors, and openings add layers to the garden and express depth and continuity of garden space by their accumulated effect. They provide fascinating “framers” (Figure 52). One or more of these framers will allow controlled glimpses of what lies beyond. The treatment of the confined courtyard divided into yet smaller spaces by means of screens and walls creates the effect of much more space than there actually is.

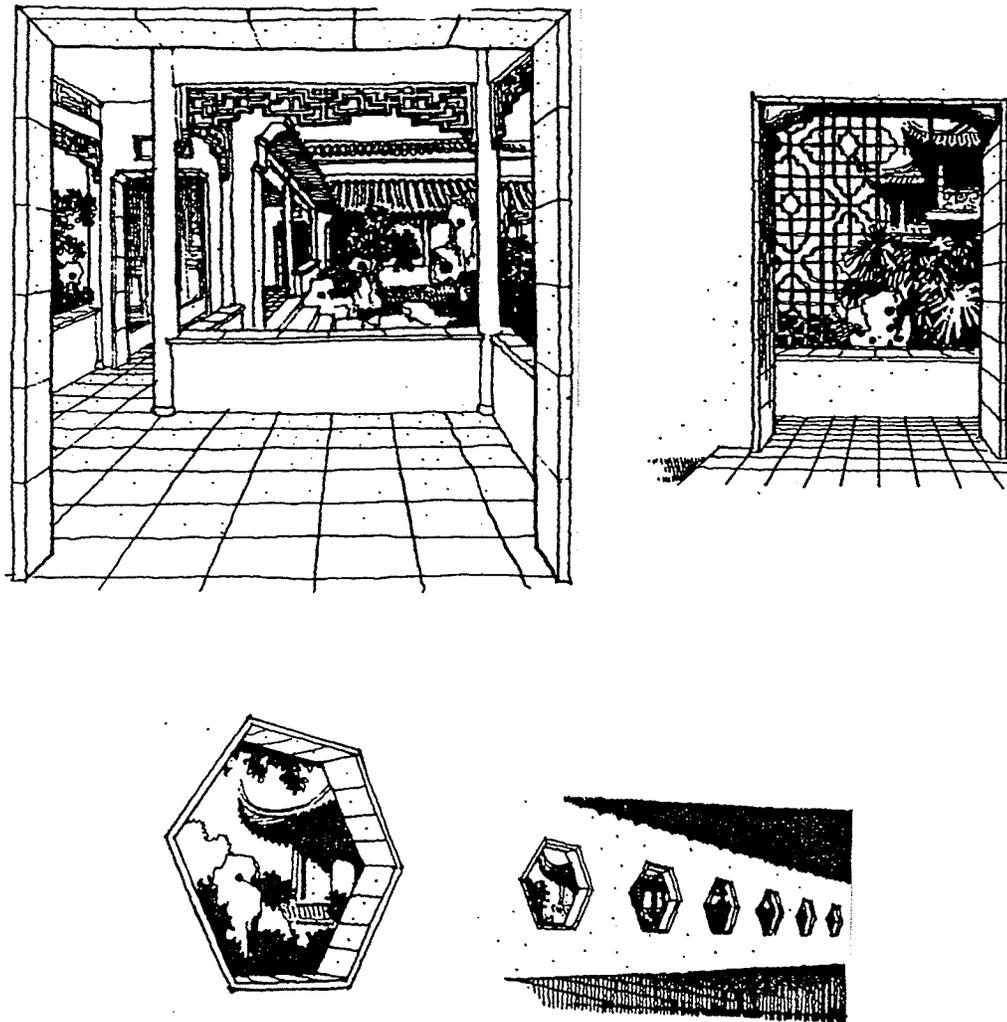


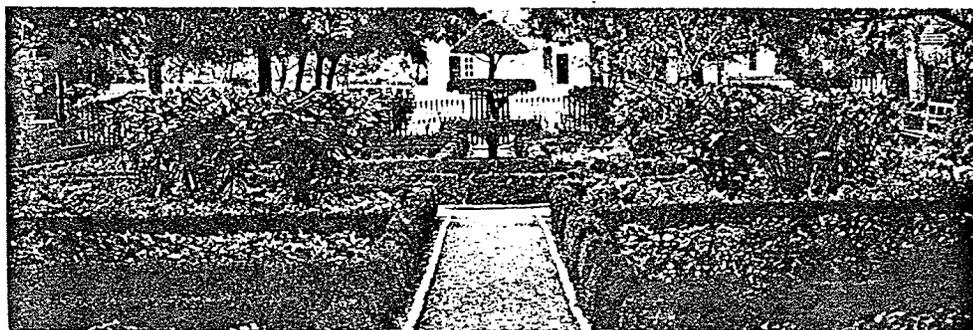
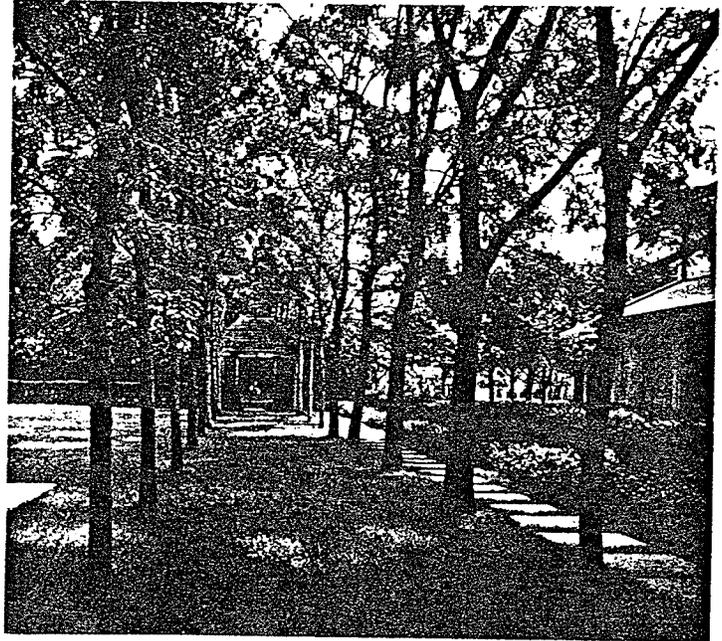
Figure 52. Window and door framers (From Pen, 1986).

### 3.8. Direction:

Divided spaces may achieve a psychological effect that dramatically intensifies the artistic presentation and inspires the viewer's curiosity for further discovery. To reach these divided spaces, direction is needed to guide people in finding the scenes beyond.

In a western formal garden, a straight path, the double row of the hedges, trees, or ornaments in repetition formulate a long, narrow and straight space which acts as the preparation for the scenes to come. A statue at the end of the space enhances the guiding function (Figure 53).

Figure 53. Straight path and statue act as guiding devices (From Brookes, 1984)



In a Chinese garden, paths, steps, bridges, streams and walls are arranged in a curved manner and function as guiding devices (Figure 54). A curved, or an angle line in plants or structural materials may lead the eye in the directions the designers choose. The disposition of vistas along or away from the routes serves as a direct or indirect guiding device (Figure 55). The disposition of a long, narrow, and zigzag walking gallery also functions as a transition and guiding space to lead people from one scene to another (Figure 56). It can work in opposition to the scene beyond, or it can enhance the scene by anticipation.



Figure 54. Curved path and wall act as guiding device (From Pen, 1986).



Figure 55. A vista along a path serves as a guiding device (From Pen, 1986).

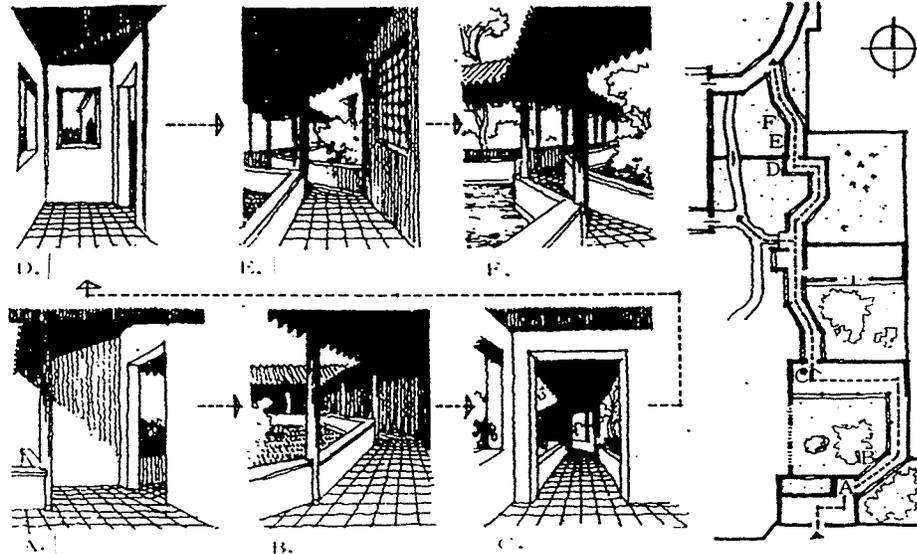


Figure 56. A zigzag gallery functions as a guiding device (From Pen, 1986).

### 3.9. Spaciousness:

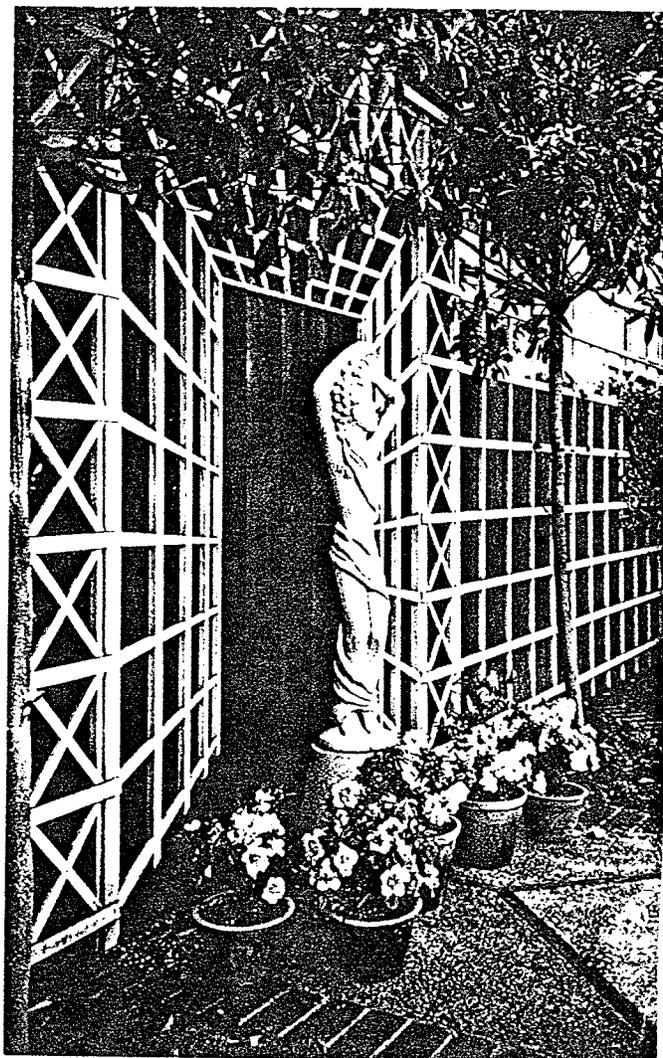
Perspective gives a sense of relative scale which can fool the eye and make a garden seem larger than its real dimension. In a western formal garden, the perspective of the straight path disappearing into the distance may make its terminal vista seem farther without increasing the length of the path (Figure 57). False scale and false perspective are also employed to create the

Figure 57. A straight path makes its terminal vista seem farther (From Balston, 1986).

illusion of a much more extensive area (Figure 58). One example is that the width of a path becomes narrower and narrower along its length.



Figure 58. False perspective  
(From Church, 1983).



In a traditional Chinese garden, a curved line creates an asymmetric plan not only to please the eye but also to create a new dimension for the garden. The curved paths prolong the distance between two points and divide the elements such as a stream into segments, which makes the garden have a more complex and complicated viewing (Figure 60). A view seems farther when it is seen through several “framers” (Figure 59).



Figure 59. A view is seen through several frames (From Pen, 1986)

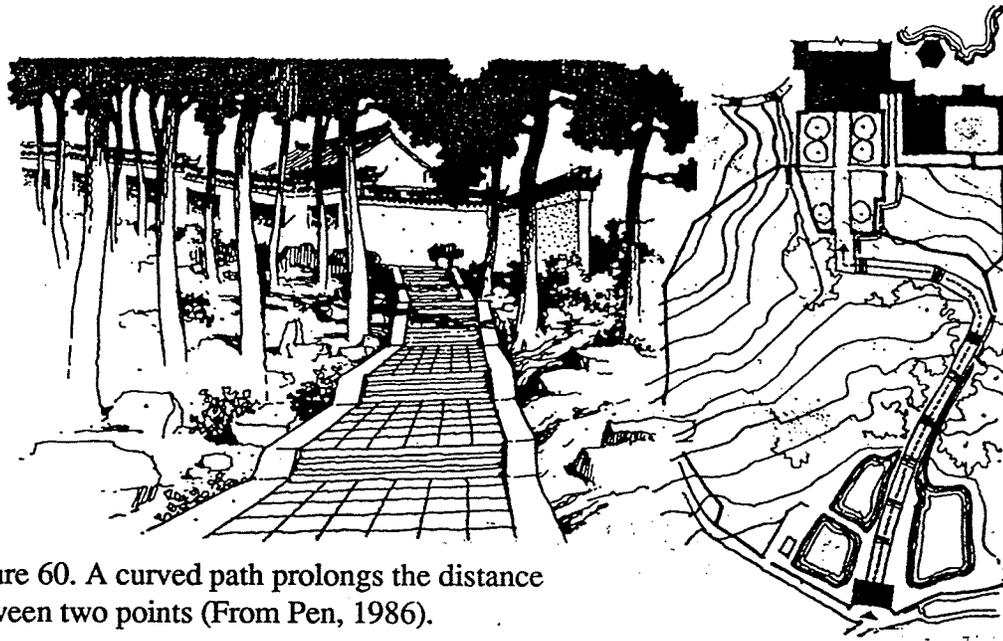


Figure 60. A curved path prolongs the distance between two points (From Pen, 1986).

Scenery borrowing from the outside landscape is another technique to make a garden seem larger. Outside features give a sense that the garden extends toward them. This would create an impression of great spaciousness than actually exists within the boundaries of a garden.

Italian and French Renaissance gardens tend to lead the eye along the axis of the garden to a point of infinity along the horizon and to integrate with features outside the garden. Villa Lante links the garden with the village below. The village seems but one more architectural feature of the garden.

In Chinese gardens, the streams, lakes, or pagodas outside the gardens are often incorporated into the garden scenes in an attractive way. The pagoda on the Jade Spring Hills is introduced into the garden setting of the Summer Palace by viewing it from a pavilion in the garden (Figure 61).

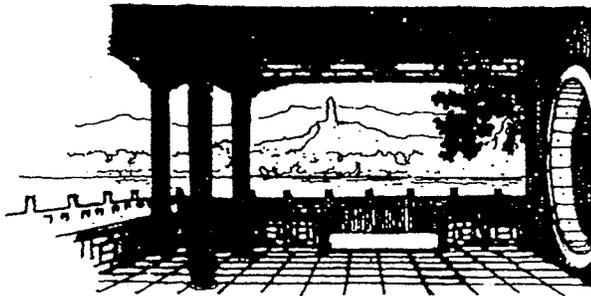


Figure 61. A pagoda is a borrowing object in the Summer Palace (From Pen, 1986).

### 3.10. Landform:

Landform is often incorporated into garden designs to provide opportunities to view down and up, to foreshorten or lengthen the visual distance, and to conceal the vistas to create surprise.

A western formal garden usually deal with land form by arranging the ramps, steps, or terraces at right angles to the contours. The edges of the ramps, steps, and terraces usually are neat and ordered (Figure 62).

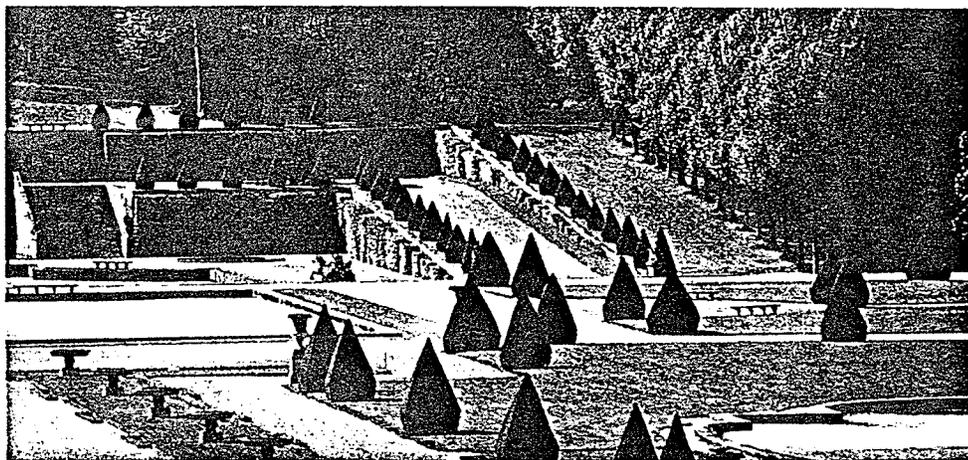
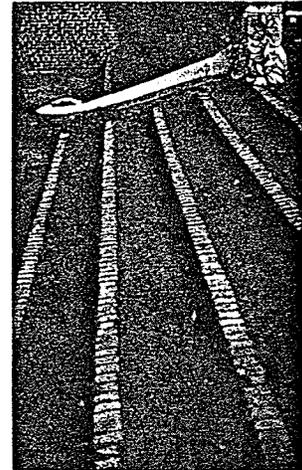


Figure 62. Landform is changed through ramps, terraces, or steps (From Brookes, 1984).

To have an undulating land form, Chinese private gardens usually erect rocks as mountains to form undulating ground (Figure 63). Touring routes undulate vertically by means of steps and rolling ramps allowing views from different heights, and from different directions. In a Chinese garden, the edges may be constructed in rock to give a sense of wildness and unite with the rock mountains.



Figure 63. Rocks erected as mountain to form undulating landform (From Pen, 1986).

### 3.11. Plants:

In western formal gardens, plant material is used as one of the major components, and it is manipulated in opposition with the natural order. Parterres and mazes are used as geometrical patterns on the ground (Figure 64). Clipped hedges are one of the most important structures in the gardens. Trimmed trees are used as living sculptures through topiary (Figure 65). A single

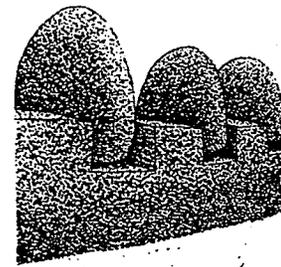


Figure 64. Plant maze; Figure 65. Trimmed trees and hedges (From Balston, 1986).

tree may be positioned in the centre of a space to represent importance. Groups of trees are planted in lines or in geometrical shapes by following the principles of repetition and rhythm (Figure 66). The parterres have a major effect on western formal garden design. The delicate, symmetrical patterns unite the small geometric compartments into an overall plan, filling the spaces of the landscape. Hedges can be used as boundaries, avenues, internal divisions, low as well as hill walls, framed for features such as sculpture.

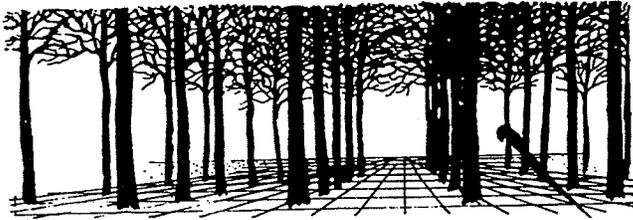


Figure 66.  
Regularly-planted  
trees (From Pen,  
1986).

Plants in Chinese gardens are designed by following natural orders. Compositions avoid central position, a single tree is located in a corner of a tiny court to provide the idea of a natural scene. A single tree is selected by its unique posture, and is treated as a living sculpture (Figure 67). A group of trees which consists of several species rather than one are planted in an uneven density (Figure 68). They may act as objects to balance a pavilion, or as backdrop to set off buildings, or as structural materials to strength the sense of the enclosure (Figure 69). The variations of seasonal change, sounds creating when wind and rain beat on leaves, and fragrance providing by the bloom of flowers or fruits are important factors to be considered in the design.



Figure 67. A single tree at the corner of a court (From Pen, 1986).



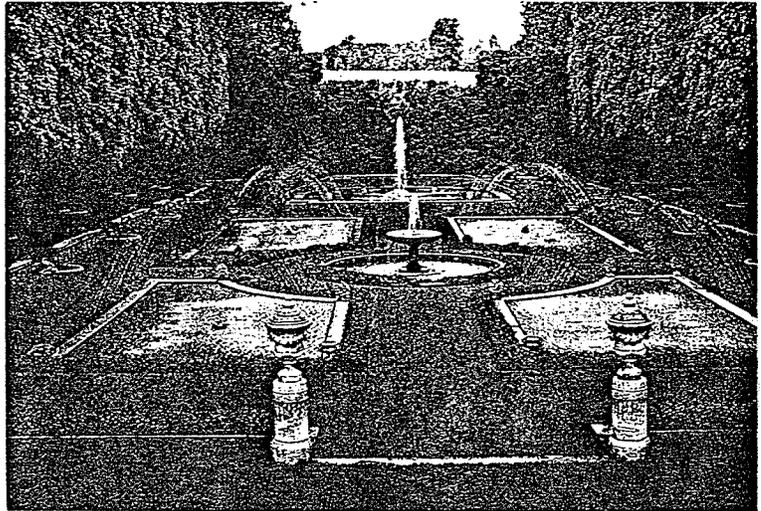
Figure 68. Random planted trees (From Pen, 1986).



Figure 69. Tree trunks strength the sense of enclosure (From Pen, 1986).

### 3.12. Water:

Water exerts an immense fascination and is used in all the great gardens in the world in one form or another. The reflection of still water brings the brightness of sky down the ground to expand space. Flowing water brings movement to the garden. It reflects light with such rapidity that although



the form of a cascade or jet is always the same, in detail it is always different. The water draws attention to itself as no other features can, and it is enhanced by sound and touch.



Water can be used in a great variety of ways. In western formal gardens, water is restricted in geometrically shaped pools, canals, or fountains (Figure 70). These force the water to do things against its own nature.



Figure 70. Pond and Fountain  
(From Balston, 1986)

In Chinese gardens, water is explored not only for its physical beauty, but more importantly to provide balance to the mass of the mountain landscape, and so to present the totality of nature in perfect harmony. The softness of water and the hardness of mountain respond to the complementary aspects of Yin and Yang. Water is designed in all kinds of irregular shapes to reflect the natural springs, water falls, and ponds (Figure 71 & 72).



Figure 71. Natural stream  
(From Balston, 1984).

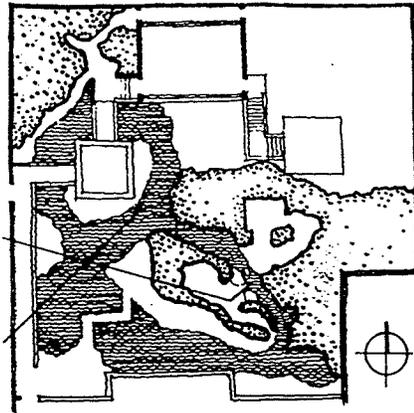


Figure 72. Pond and stream in irregular shapes  
(From Pen, 1986).

### 3.13. Stone:

Stone in western formal gardens is used as a structural element. It is cut into geometrical forms to construct stairs, columns, or terraces (Figure 73).

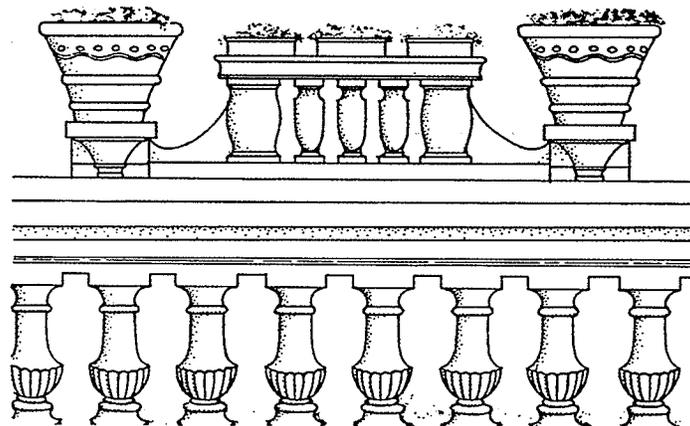


Figure 73. Stone are used as construction material (From Balston, 1984).

In Chinese private gardens, grotesque and grey, tortuous and massive rocks dominate the scenery. Large rocks are brought in to suggest mountains or sculpture (Figure 74 & 75), and the small varied rocks make up the intricately composed paths, or water banks (figure 76).

The general appearance of these rock compositions might not precisely resemble real mountains, but it would be sufficiently artistic for the viewing pleasure and realistic enough to provide the image of touring through an extensive range of mountains.

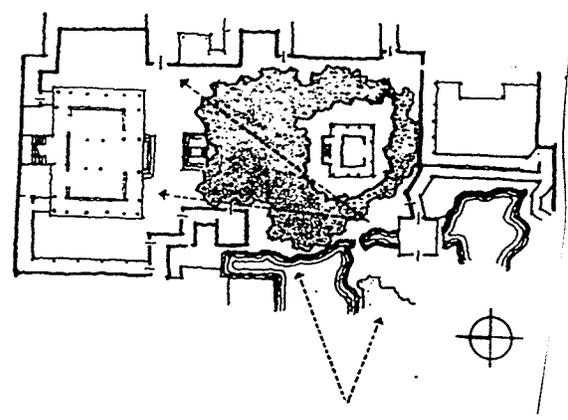


Figure 74. Rock mountain;  
Figure 75. Rock sculpture  
(From Pen, 1986).

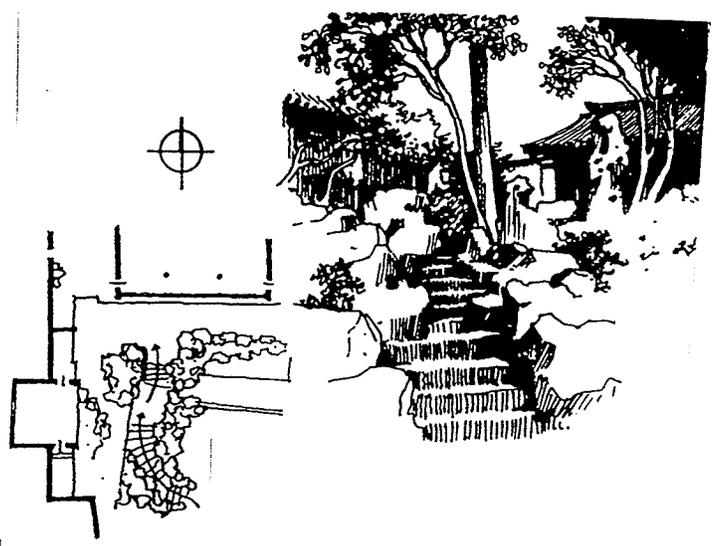
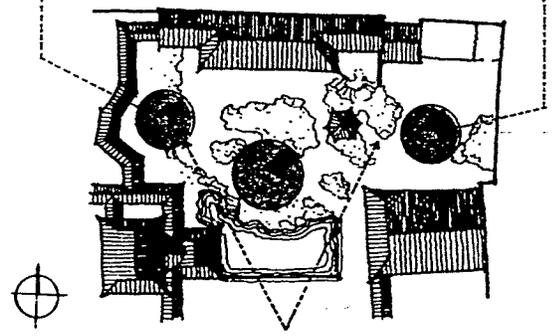


Figure 76. Rocks are used to be path edge and water banks  
(From Pen, 1986).

# 4

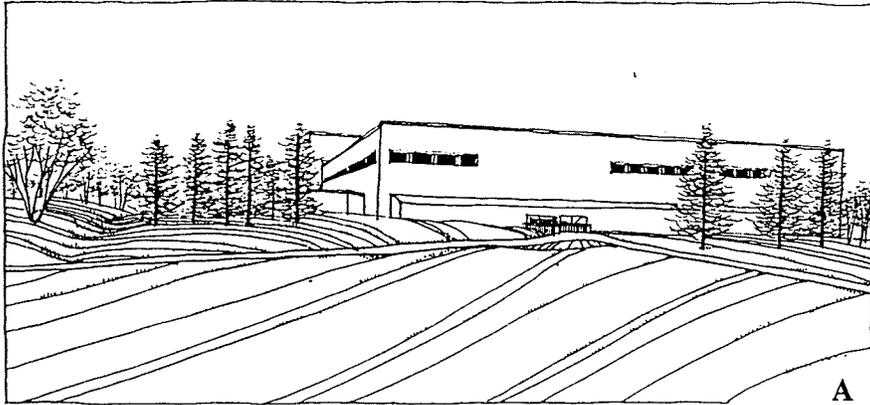
## Application Site Specific

### 4. 1. Study Site:

The study site is the open space located adjacent to St. John's College on the campus of the University of Manitoba. The site is open on the south to a parking lot, and enclosed on other three sides by the academic buildings, and the Residence which is used by the students and staffs in St. John's College.



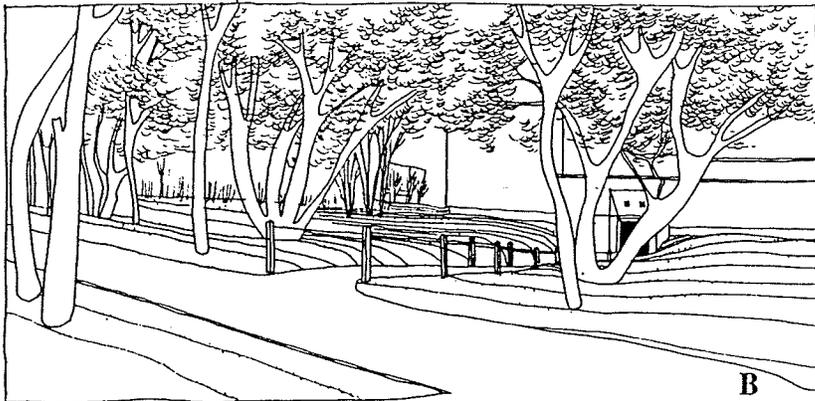
## STUDY SITE 2



**A. MAIN ENTRANCE AND DOMINANT OPEN SPACE IN THE SITE**

- THE CURVED PATH, RANDOM PLANTED TREES, AND THE UNDULATING LANDFORM BESIDE THE BUILDING PROVIDE AN ATTRACTIVE VIEW.

A



**B. SIDE-ENTRANCE**

- RAMP GOES DOWN ABOUT 1.5 METRES TO THE SIDE-ENTRANCE FROM THE PATHWAY.

**C. COURT GARDEN**

- IT IS ENCLOSED ON THREE SIDES BY A BUILDING.
- IT IS AN IMPORTANT SPACE TO BE VIEWED FROM THE BUILDINGS.
- THE LAND NEAR THE CLASSROOM BUILDING IS ABOUT 1.5 METRES LOWER THAN THE PATHWAY.

B



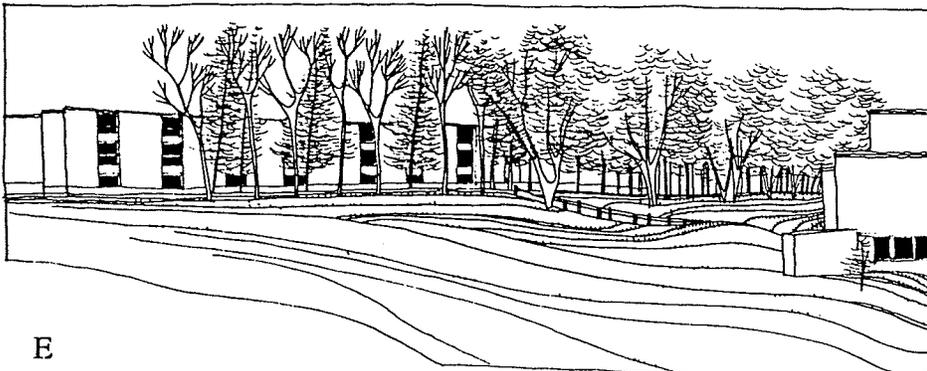
C



D

**D. PATHWAY**

- A STRAIGHT PATHWAY GOES THROUGH THE SITE.
- THE DENSE TREES ON EACH SIDE OF THE PATH FORM A GREEN TUNNEL.

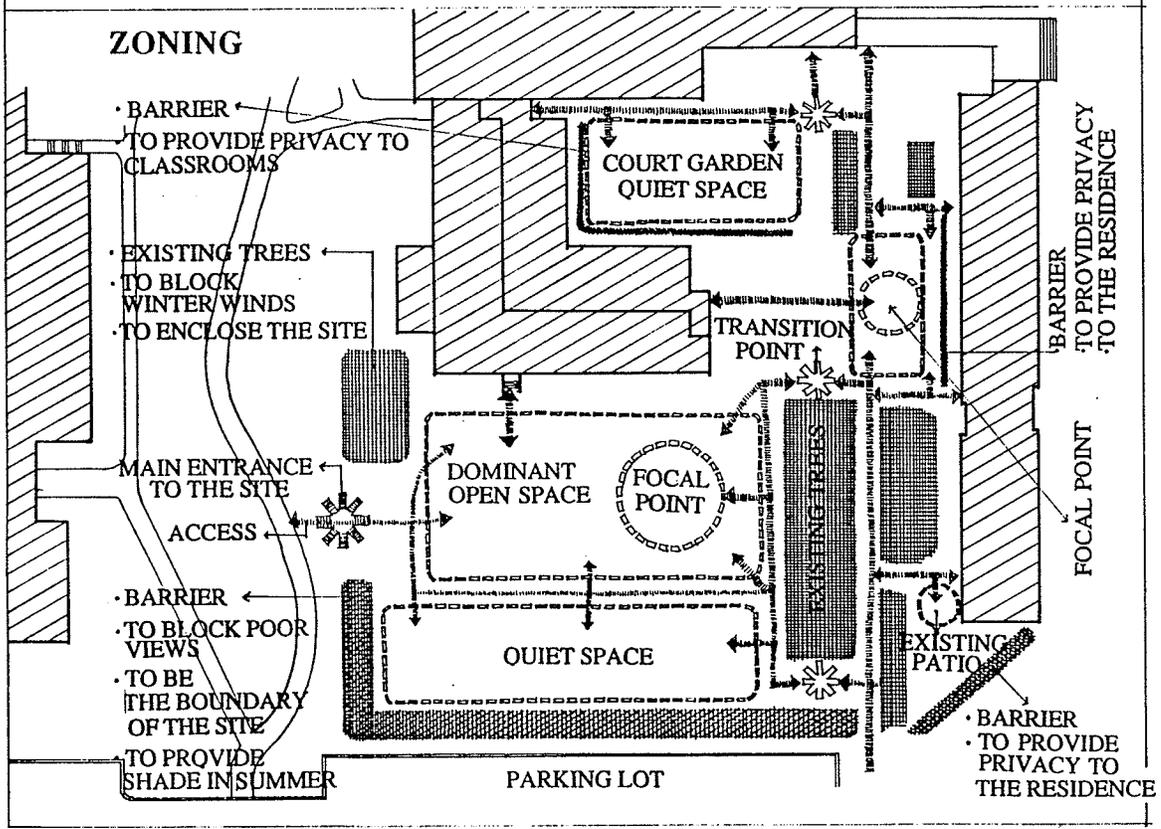
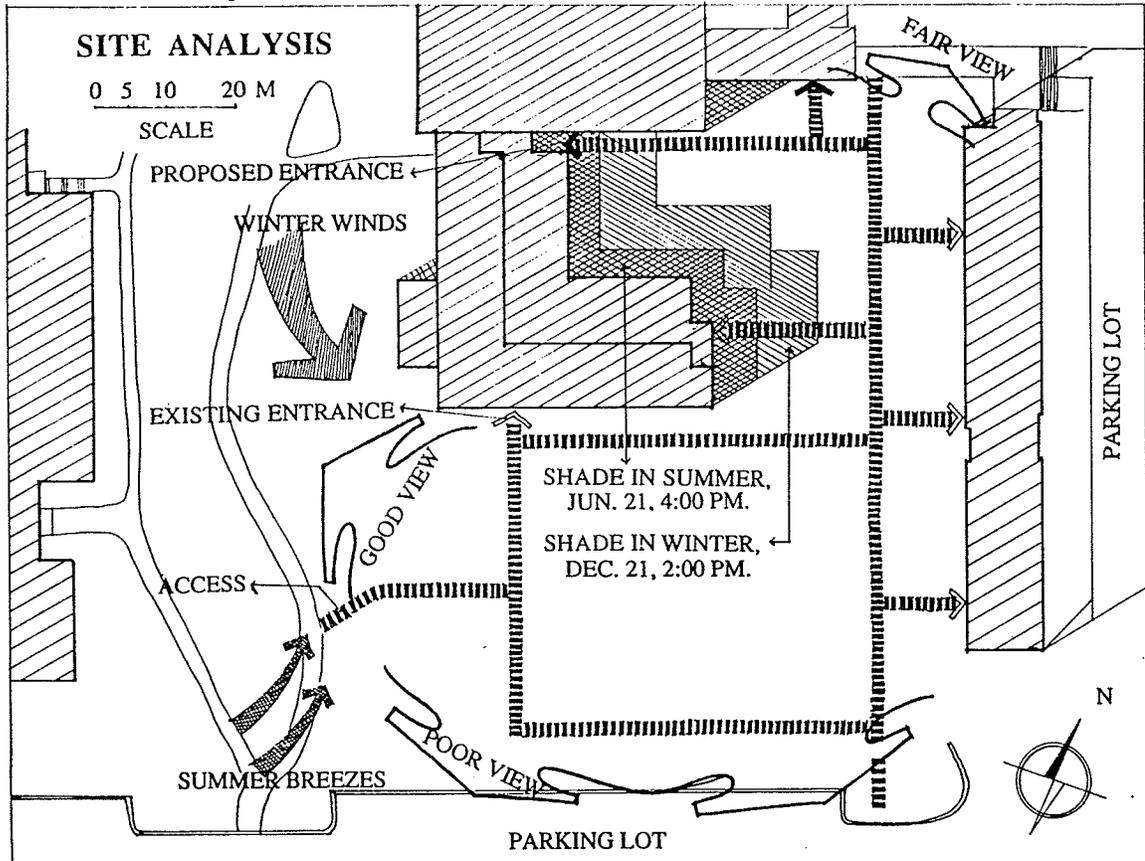


E

**E. RESIDENCE**

- IT ENCLOSES THE SITE IN THE DIRECTION OF NORTHEAST.

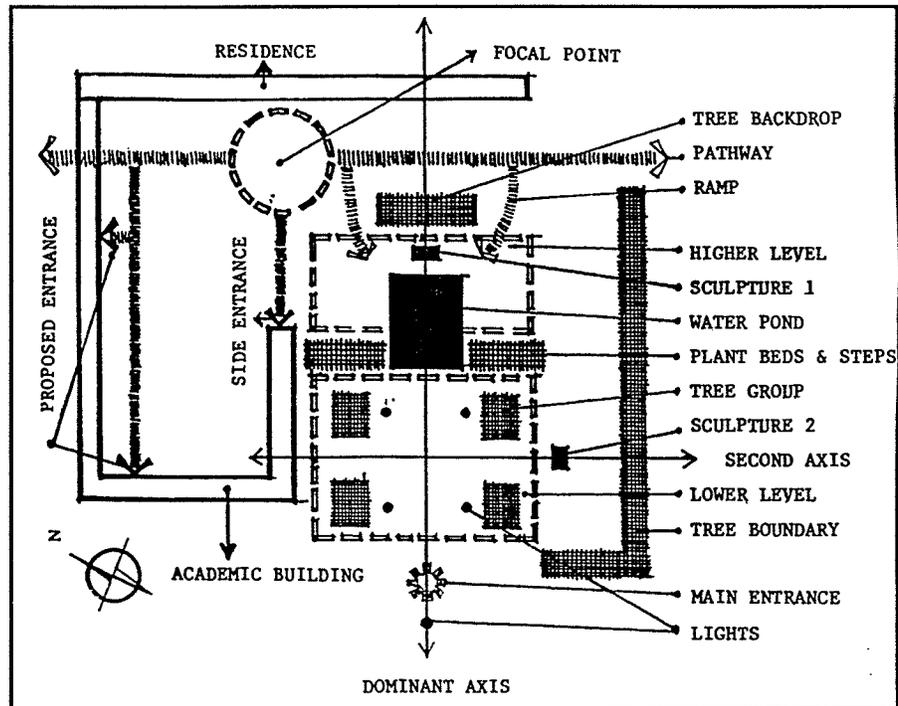
## 4.2. Site Analysis:



### 4.3. Design Proposal I: Formal Order:

To express the philosophy that man dominant or is superior to nature, design proposal I is made in geometrical patterns according to the principles of formal gardens. The objectives of the design is to create the site as an environment which is contrast with, or independent of nature to show man's power and influence in the world.

The dominant open area is in front of the academic building. It is controlled by two axes. The dominant axis runs from the light located at the main entrance of the site, and ends at a sculpture. Objects in this area are arranged symmetrically along the axis and can be viewed



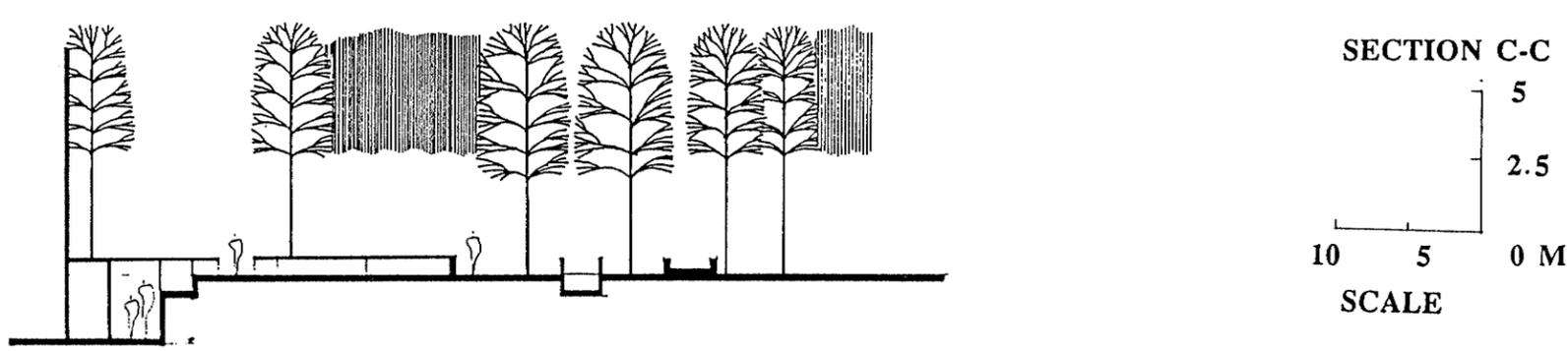
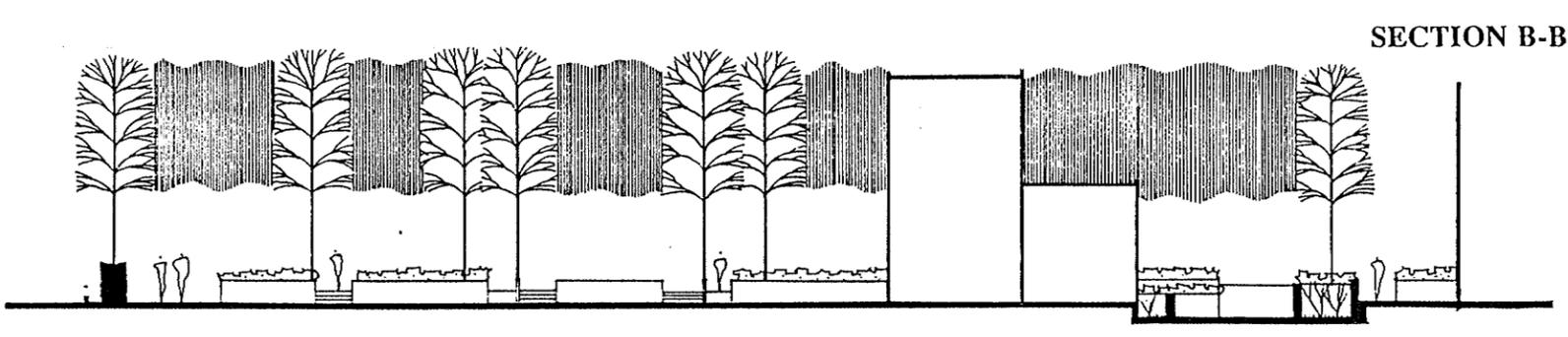
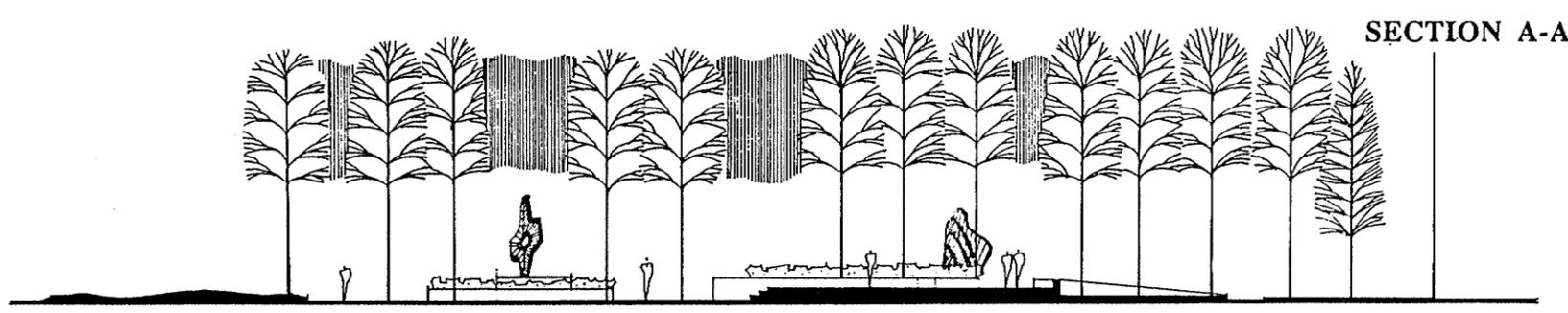
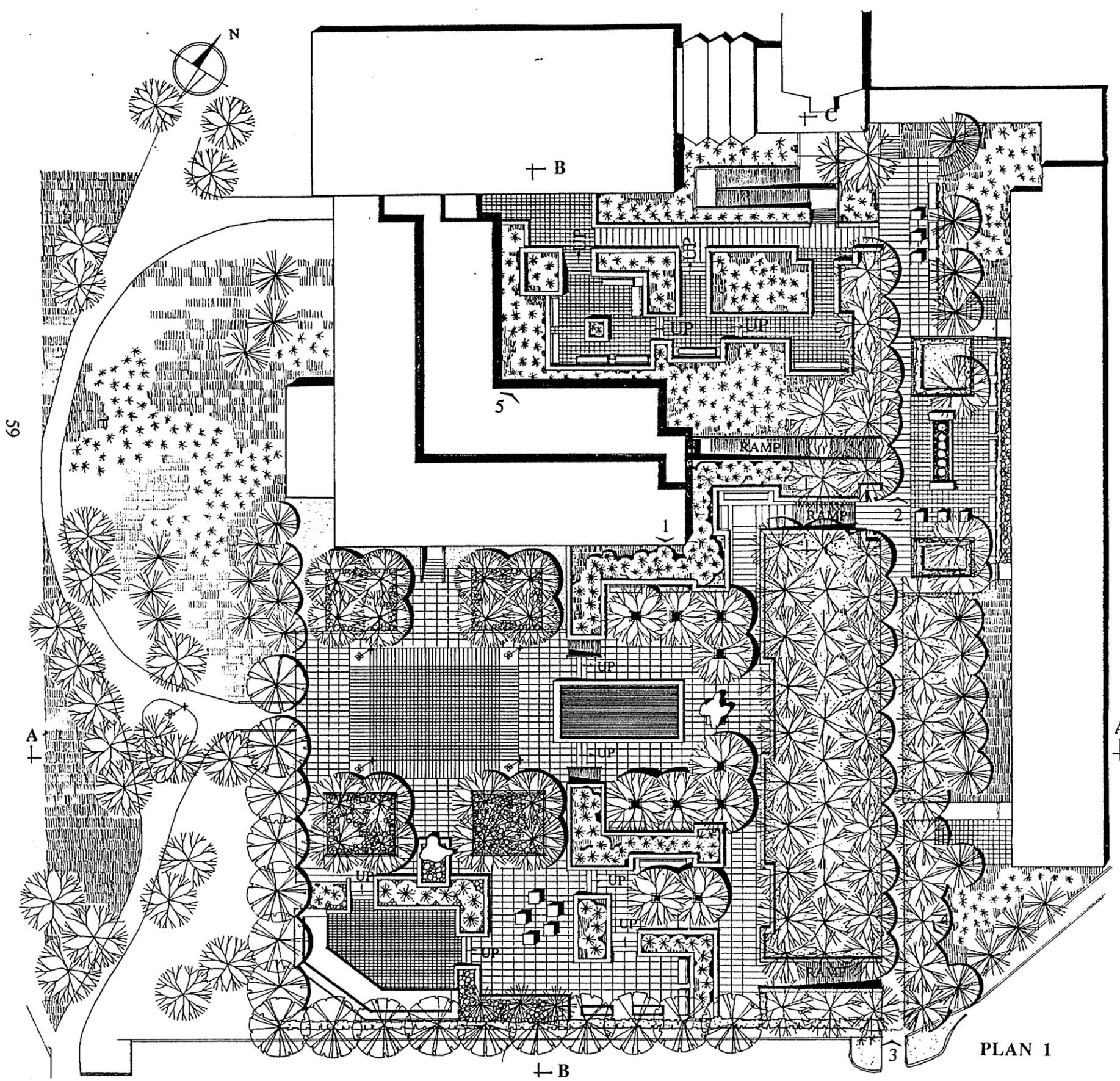
STRUCTURAL PLAN 1

wholly in a glance. Steps and plant beds divide the area into two spaces. The lower level space is organized by four groups of trees. Each of the tree group has four trees, and is located at four corners of the space. Lights and pavement patterns strength the sense of axis and symmetry. The pond and the sculpture are major objects in the higher level space. The still water which is restricted in the rectangular pond reflected the images of the surroundings. The sculpture is located at the end of the main axis with three rows of existing trees as its backdrop. Trees are also planted to either side of the axis to support the sculpture. The second axis goes from the entrance of the building to a statue through the four groups of trees. The trees form an alley to the sculpture, and provide protection to the spaces behind. These spaces are utilized as intimate sitting places. The edge of the site is bounded with hedge segments which are planted with trees. This boundary encloses the site, and blocks the poor view in the parking

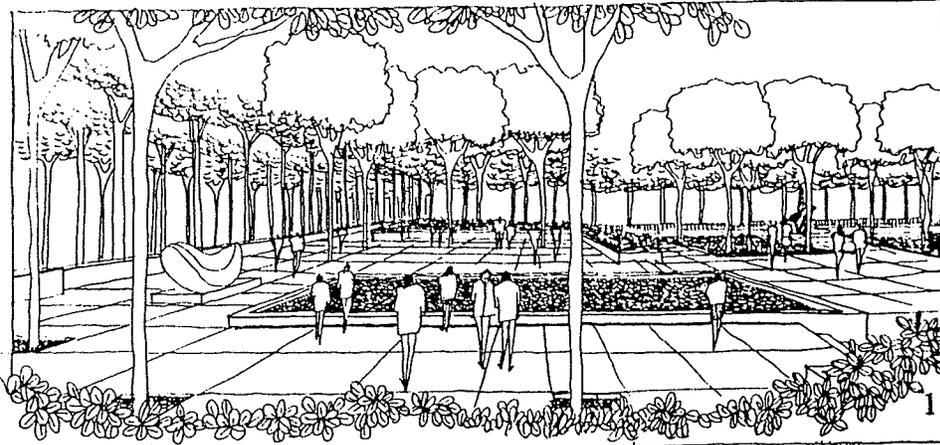
lot. Summer breezes can be introduced into the site through the broken spaces between the hedge segments.

The dominant area is linked with the pathway by two ramps. The pathway is planted with trees on both sides. By entering the pathway, the experience is like going through a dense green tunnel. The intersection between the path and the side entrance of the building is designed as a sitting space to break the sense of long path. The linear fountains act as a focal point to attract people to stop, and to enjoy.

The court area surrounded by the building in three directions is designed as a quiet space. Geometrically ordered objects provide a nice view for people to see through the windows from the academic buildings, and offer pleasant spaces for people to linger around. Two proposed entrances to enter the buildings allow people to use this area more conveniently.



## PERSPECTIVES

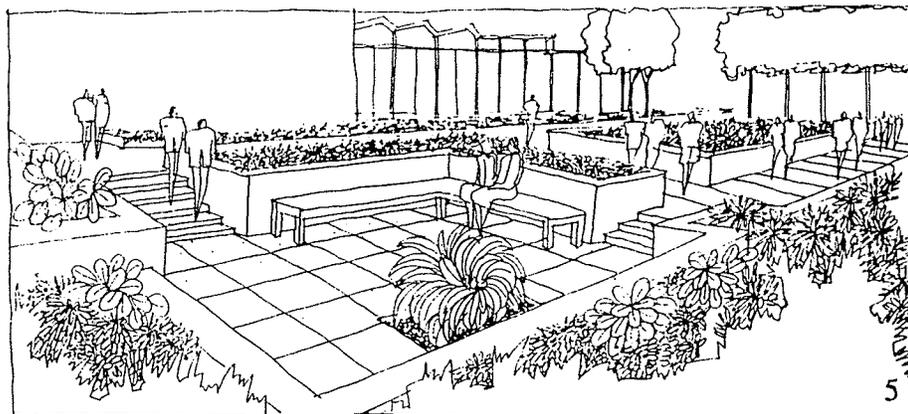
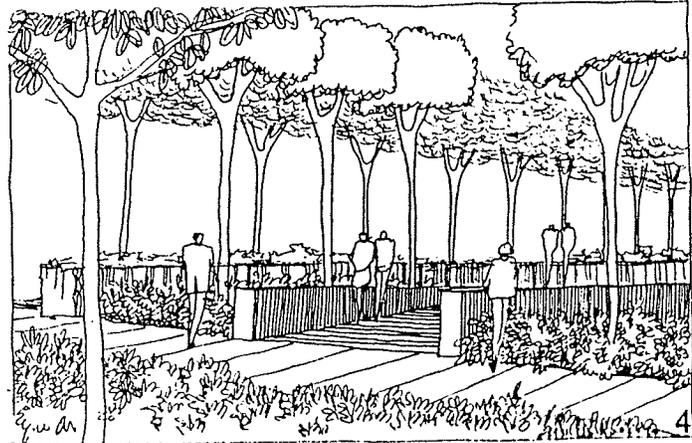
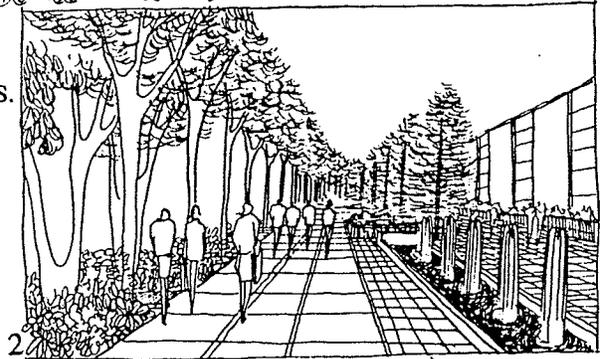


1  
1  
WATER IS RESTRICTED IN A RECTANGULAR POND.  
A SCULPTURE IS PLACED AT THE END OF THE MAIN AXIS.  
THE DENSE TREES ARE A BACKDROP FOR THE SCULPTURE.  
STEPS DIVIDE THE AREA INTO HIGHER AND LOWER SPACES.

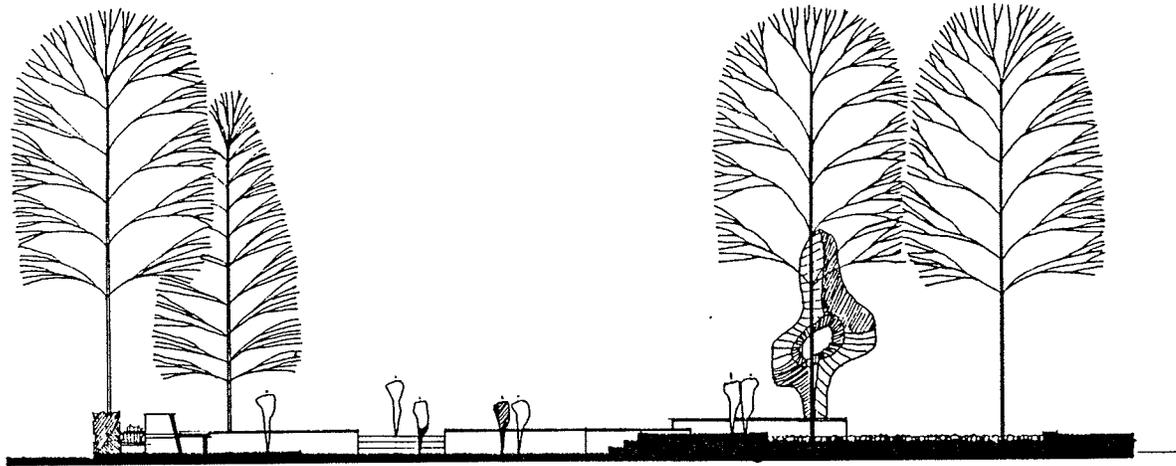
2. THE SPACE IN THE INTERSECTION IS DESIGNED AS A SITTING AREA.  
A LINE OF FOUNTAINS ACTS AS A FOCAL POINT WHICH BREAKS THE LONG PATH INTO TWO PARTS.

3. THE STRAIGHT PATH GOES THROUGH THE SITE FROM SOUTHEAST TO NORTHWEST.  
THE DENSE TREES ON EACH SIDE OF THE PATH EMPHASIZE DIRECTION, AND PROVIDE SHADE.

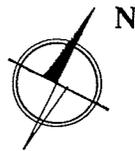
4. THE TRANSITION SPACE BETWEEN PATHWAY AND DOMINANT AREA.  
LANDFORM IS CHANGED BY THE RAMP.  
THE BOUNDARY OF THE SITE IS DEFINED BY STRAIGHT HEDGE SEGMENTS AND A ROW OF TREES WHICH BLOCK THE POOR VIEW OF THE PARKING LOT.



5. THE INTIMATE SPACES IN THE COURT GARDEN. LANDFORM CHANGES THROUGH STEPS.  
THE PLANT BEDS WITH GEOMETRICAL SHAPES DIVIDE THE COURT INTO SMALL SPACES.

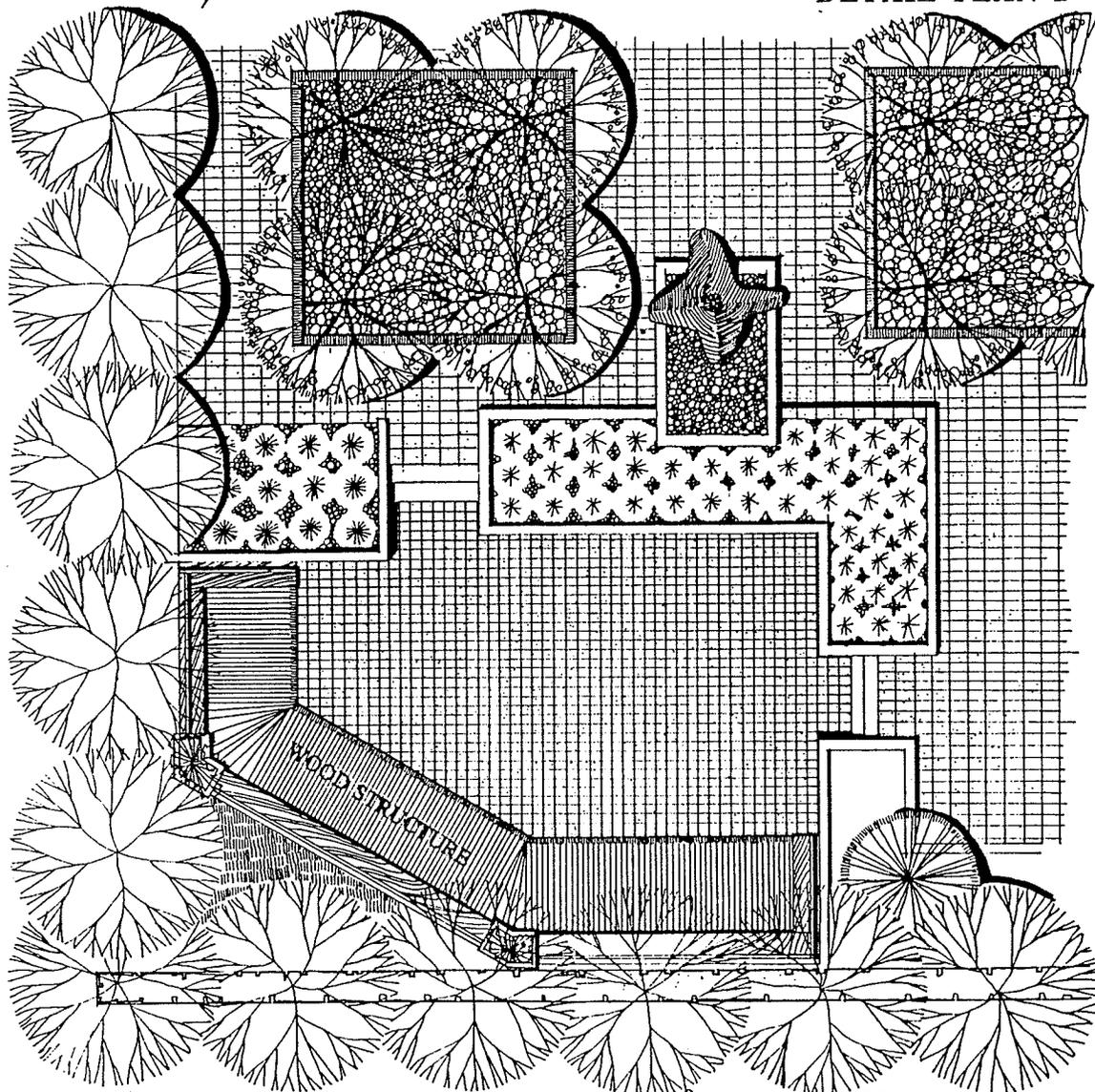


SECTION A-A



— A

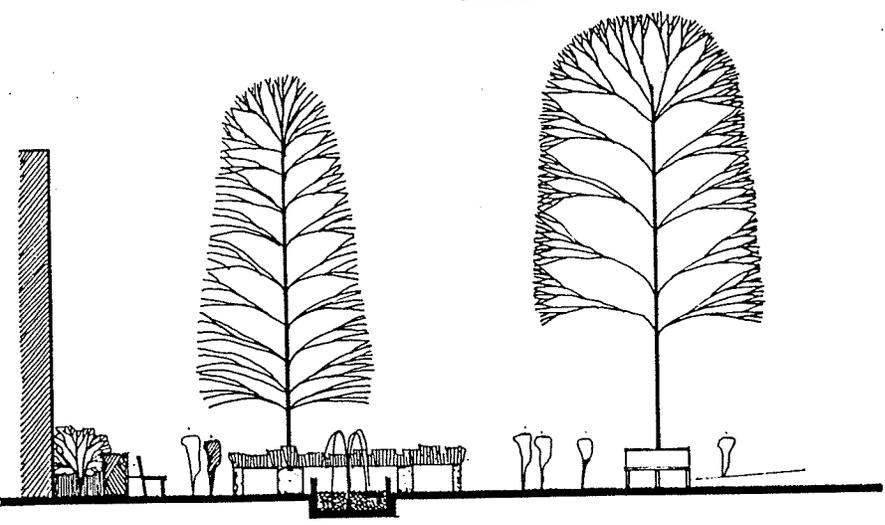
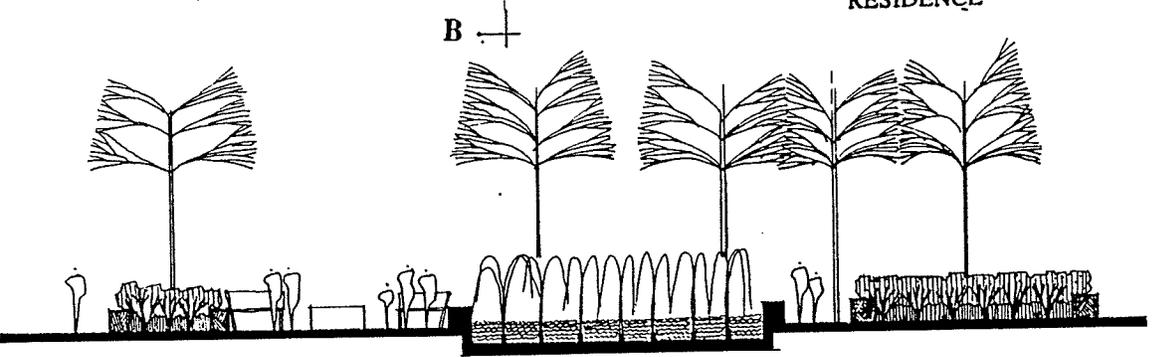
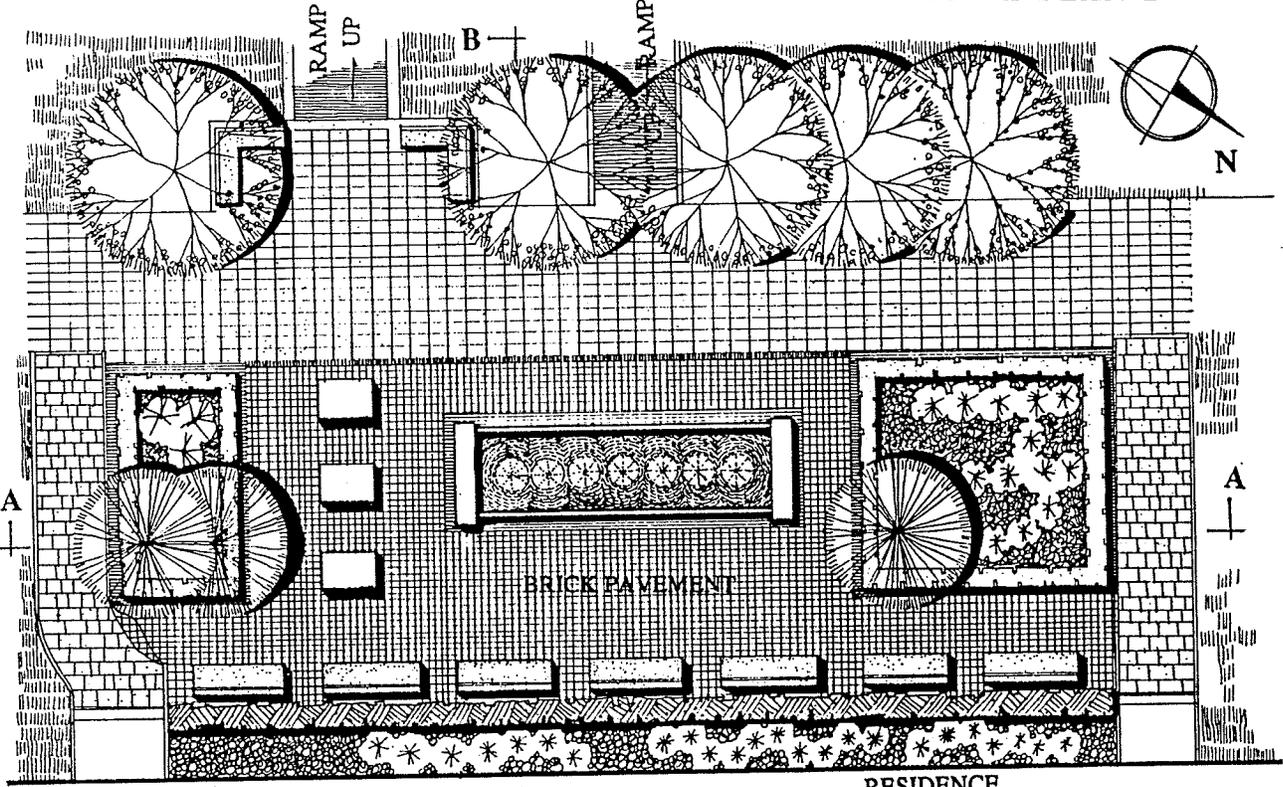
DETAIL PLAN 2



— A

0 5M SCALE

DETAIL PLAN 1



SECTION A-A

SECTION B-B

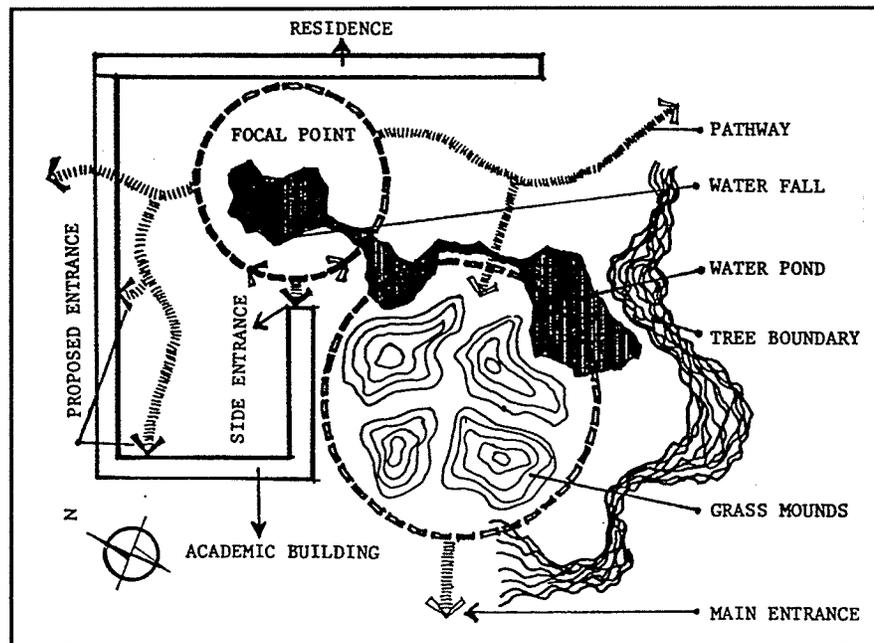
0 5 M

SCALE

#### 4.4. Design Proposal II: Informal Order:

Although it has a similar zoning and function with design proposal I, this proposal (design II) is arranged in an irregular order according to the principles of informal gardens. The purpose of the design is to show the beauty of the nature in a man-made garden, and create the site as an environment which is a miniature natural world in order to express the philosophy that man is not separate from but part of nature; man loves nature; man and nature have an intimate relationship.

In front of the addition of the academic building, there are several undulated grass mounds which symbolize natural hills. They divide the area into a series of intimate spaces which are used as sitting or lingering places. The undulated grass mounds block the



STRUCTURAL PLAN 2

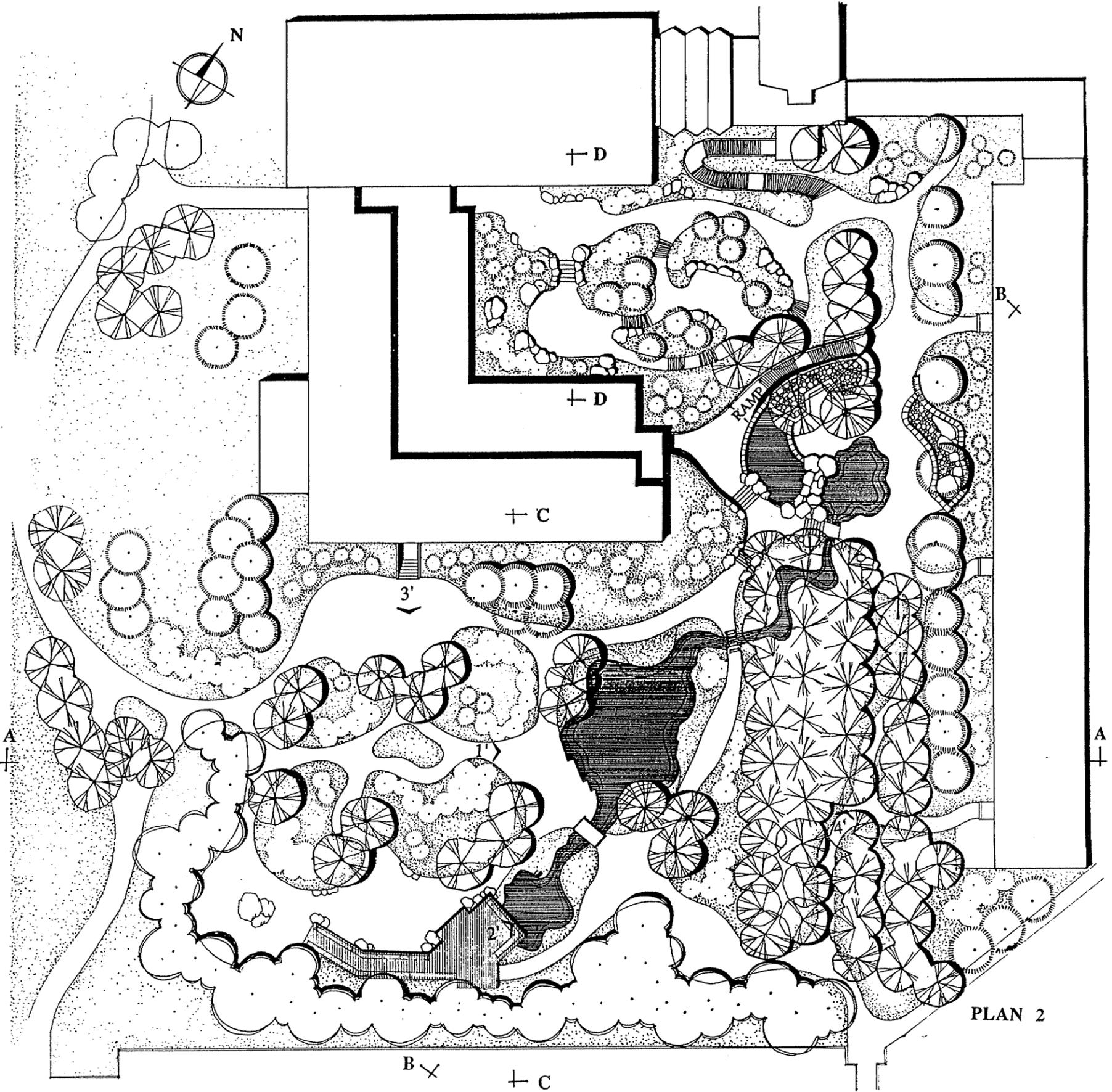
eyes from seeing the whole site in a glance, which may arouse people's curiosity to go forward to pursue more details of the garden. Their curved edges formulate curved paths which prolong the length between two spaces. This may make the space seem larger than the actual size. The open boundary of the site is enclosed by a band of random planted trees and dense shrubs which can block the poor view in the parking lot, and define the site as an enclosed garden.

Water plays an important role in the site. The water is connected as a whole body by a bridge and stone plates. The shapes of the water are irregularly arranged to symbolize the image of

natural streams and ponds. It ends as a waterfall in front of the side entrance of the building to offer pleasure. Although the size of the water is much smaller than is often found in nature, it illustrates the scene in nature.

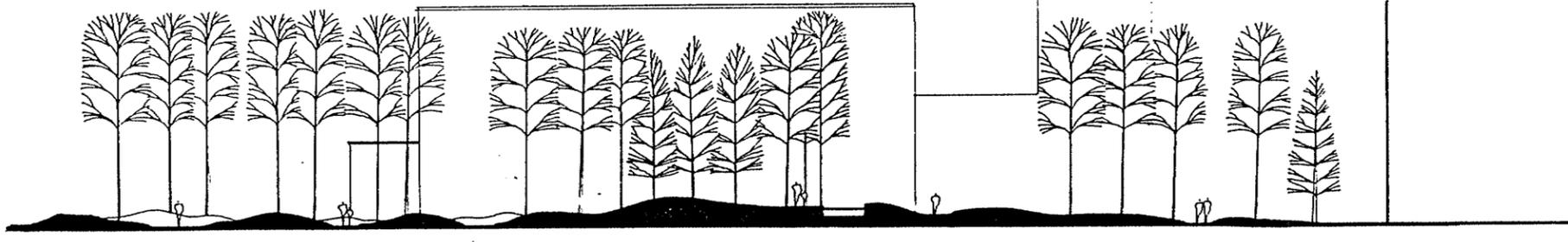
The pathway is designed as a curved pattern to avoid the straight line in the site. The side entrance is designed as two curved paths rather than one straight ramp. These two paths embrace a space which is used for resting and stopping. Standing or sitting at this space, one can appreciate the view of waterfall, and enjoy the splash sound of waterfall.

The court garden is designed as a quiet space. The curvilinear ordered spaces are properly arranged to harmonize with the overall design. Rocks which act as sculptures are located at turning points of the paths to be seen in different angles when one goes through the curved paths. Two proposed entrances to the building provide more convenience for people to go outside, and take a break by being with nature.

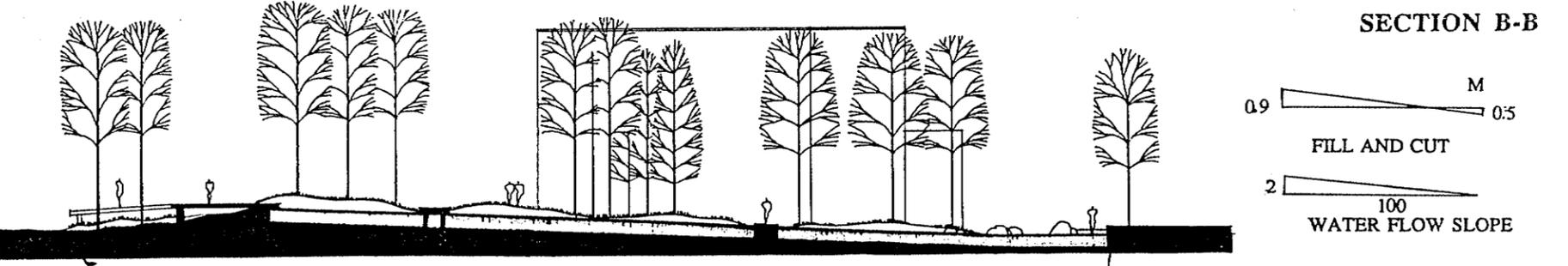


PLAN 2

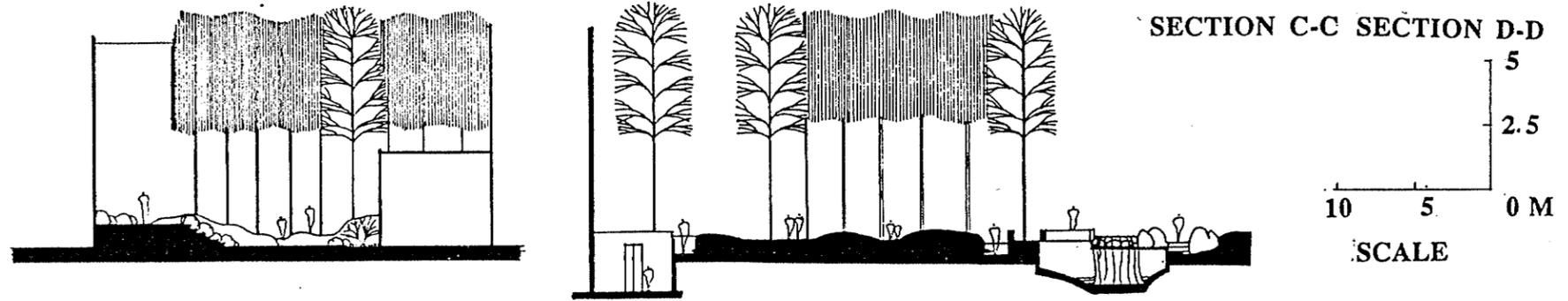
SECTION A-A



SECTION B-B

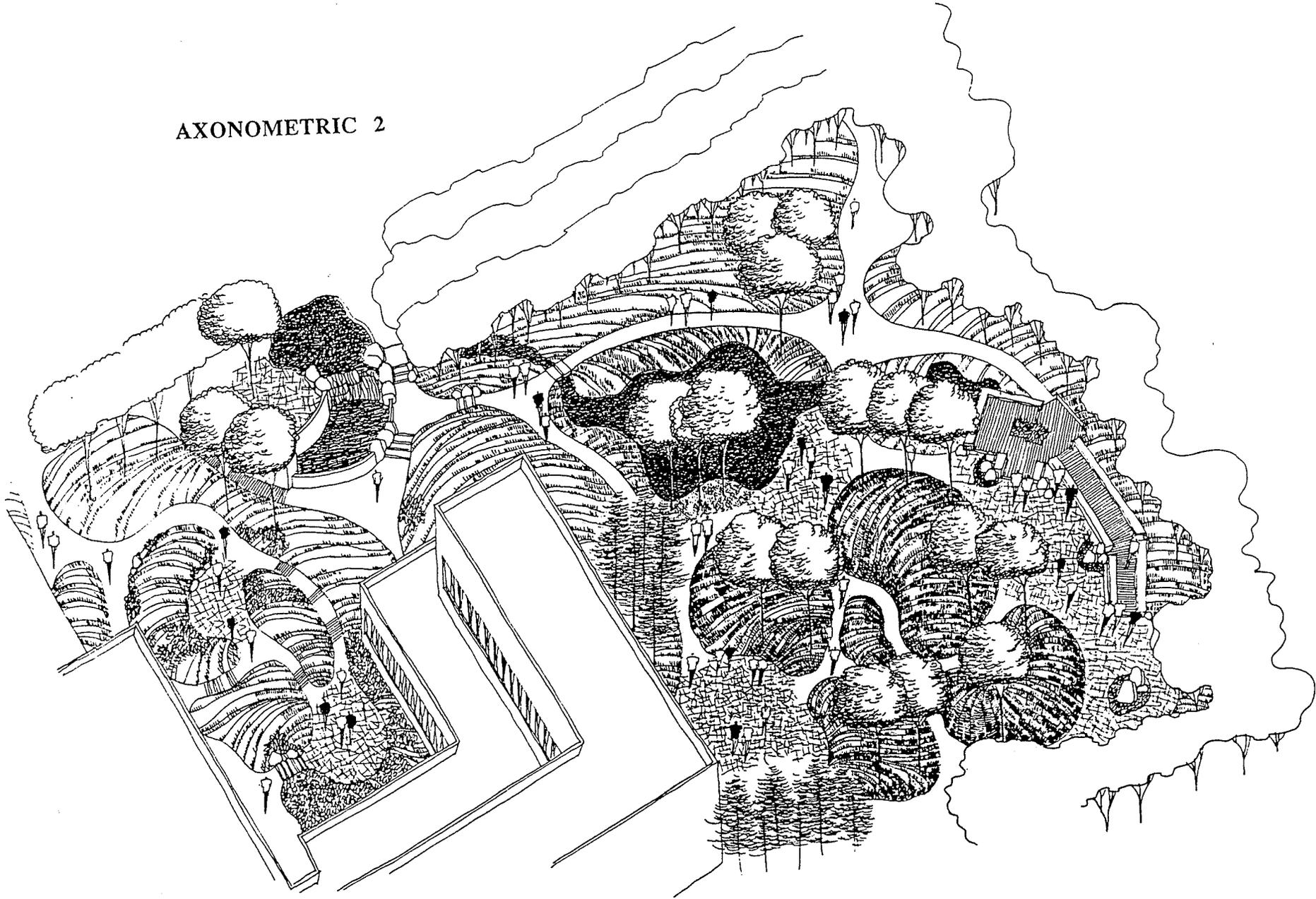


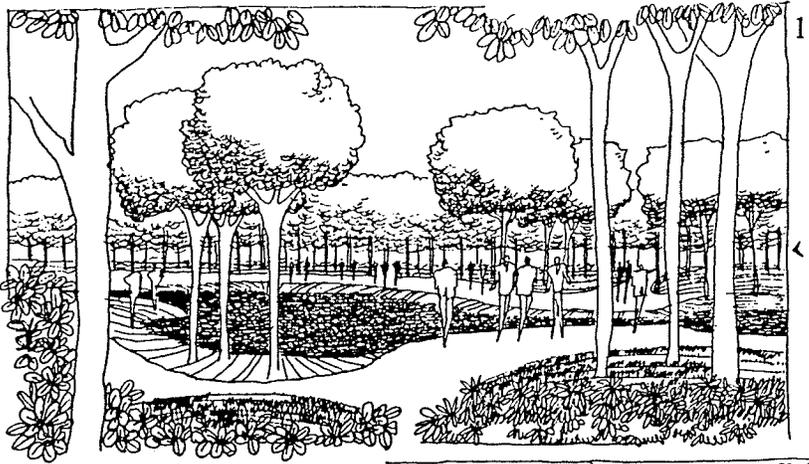
SECTION C-C SECTION D-D



AXONOMETRIC 2

67





**PERSPECTIVES**

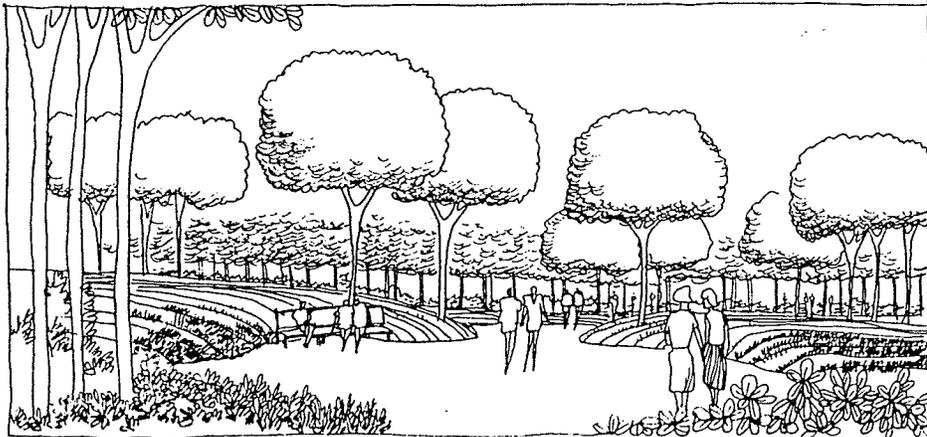
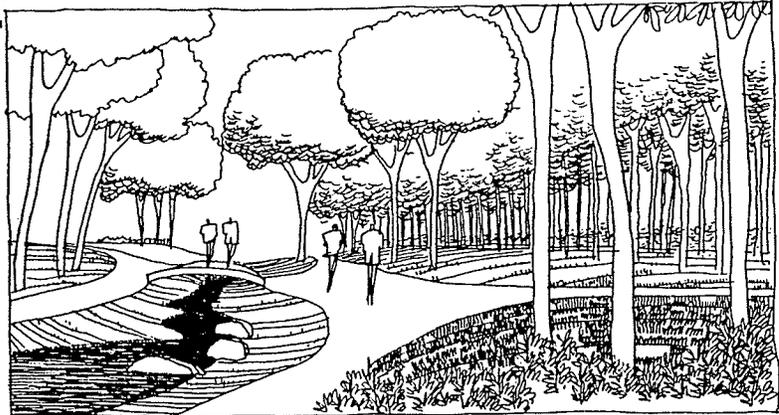
2

◀ WATER IS DESIGNED IN AN IRREGULAR SHAPE TO SYMBOLIZE A NATURAL POND.

THE POND IS A FOCAL POINT TO ATTRACT PEOPLE TO LINGER AROUND

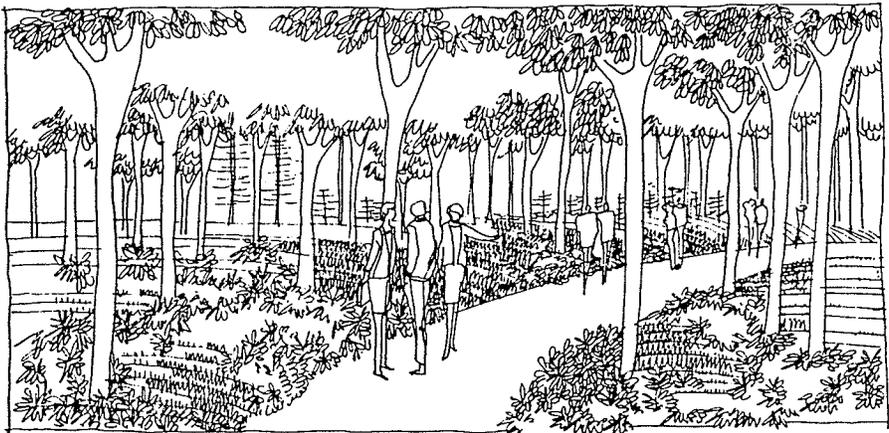
▶ A SMALL ARCH BRIDGE CROSSES A CURVED LINEAR STREAM TO ADD INTEREST TO THE SITE.

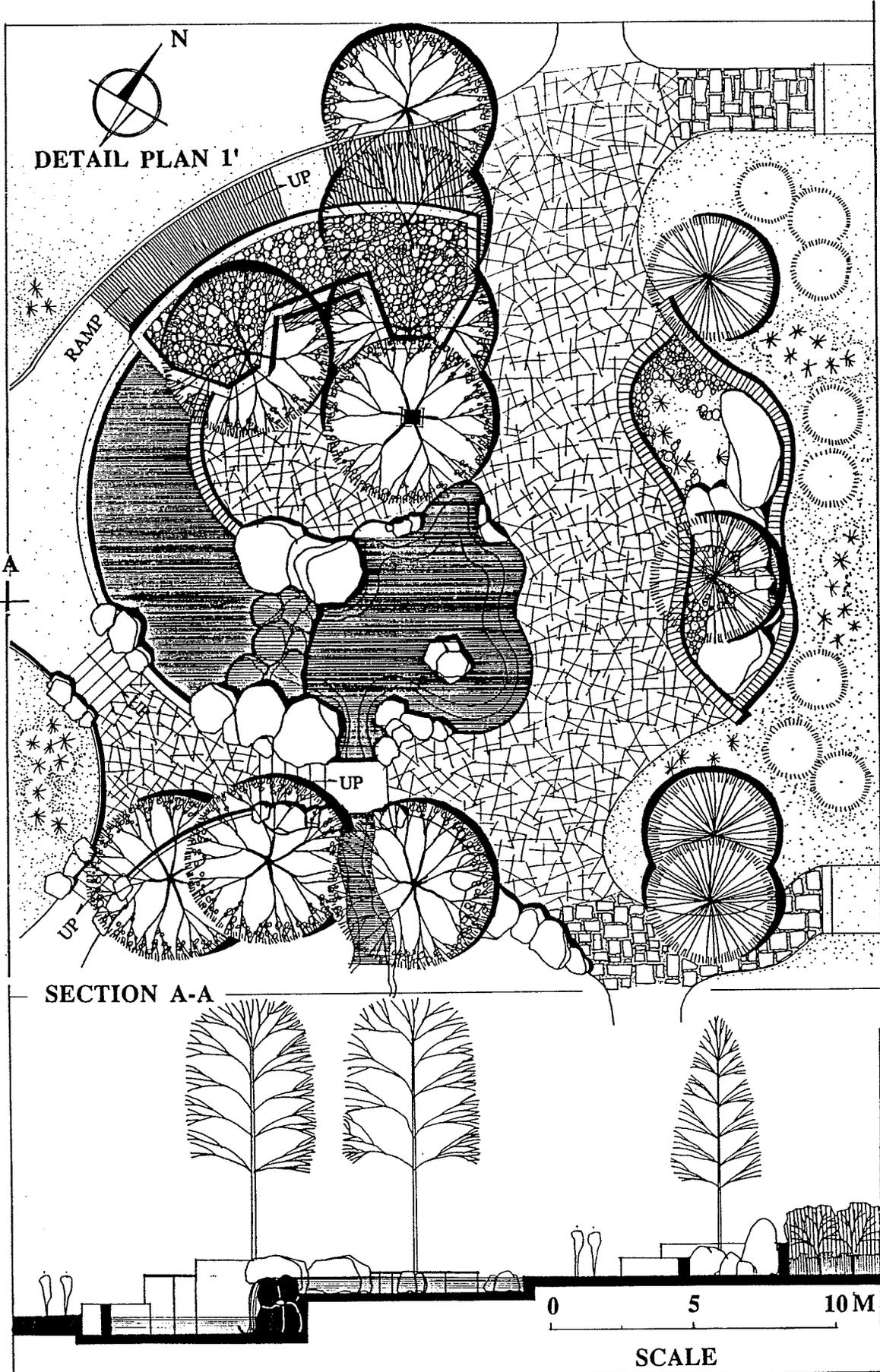
THE UNDULATING PATHS ACT AS GUIDING DEVICES TO DIRECT PEOPLE TO GO INTO DIFFERENT SPACES.

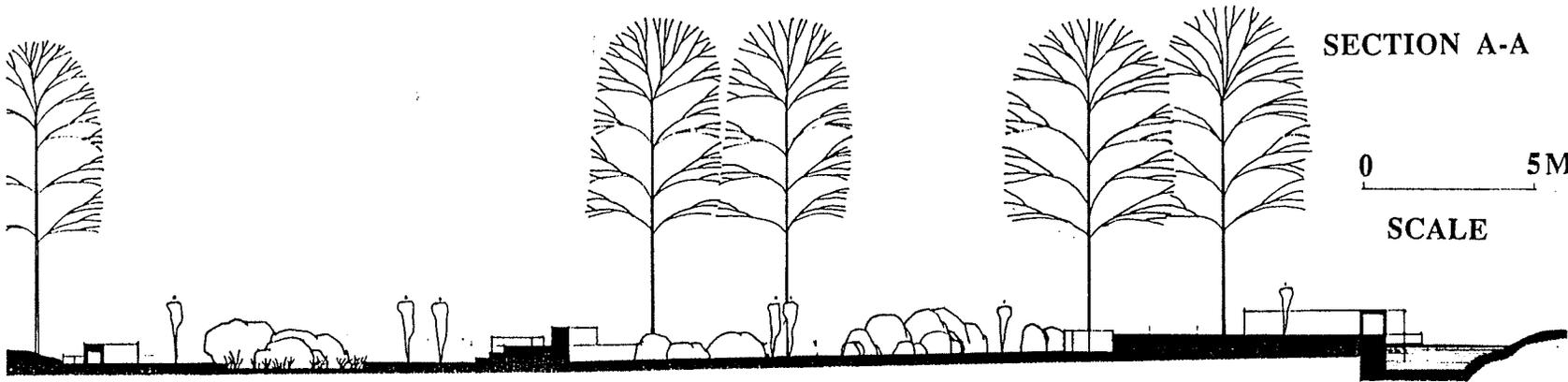


THE PATHWAY IS DESIGNED AS A FREE CURVED LINE.

▲  
 · BERMS ARE ERECTED TO FORM AN UNDULATING LANDSCAPE.  
 · THE UNDULATING LANDFORM AND SHRUBS PREVENT THE SITE FROM BEING PERCEIVED IN TOTAL IMMEDIATELY.  
 · THE UNDULATING LANDFORM DIVIDES THE SITE INTO A SERIES OF INTIMATE SPACES.





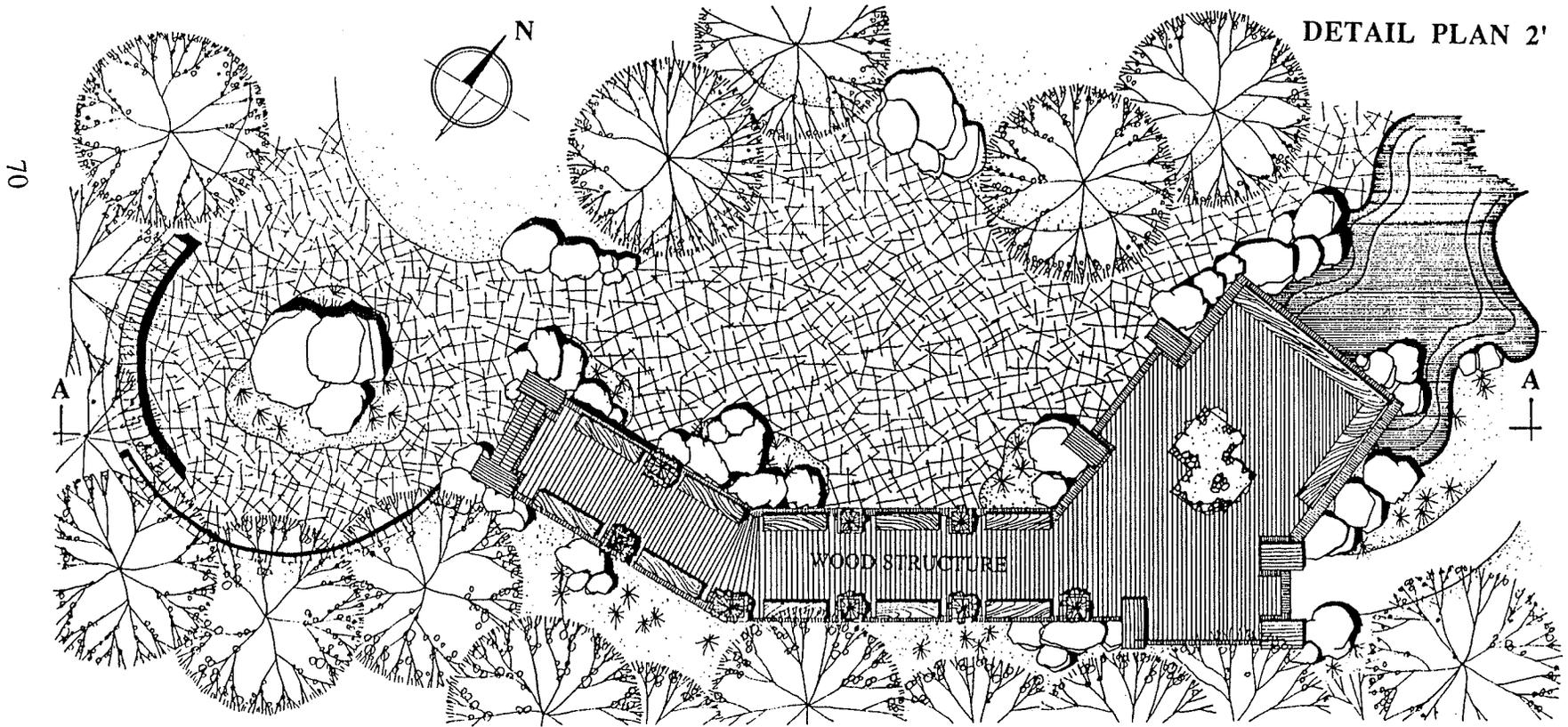


SECTION A-A

0 5M

SCALE

DETAIL PLAN 2'



70

WOOD STRUCTURE

## Summary

Western formal gardens and eastern informal gardens are developed through specific historic conditions in time, places, and men. Considering man is the centre of the universe, and man should dominate the world, western formal gardens are created with geometrical order which came from the development of geometrical and mathematical models. With the organizations opposite to the image of nature, one feels satisfied and finds tranquility that he can conquer nature. While, believing man and nature are friends; man and nature need to live together harmoniously, eastern informal gardens are created with the images imitated from nature. Mountains, streams, and valleys are transferred to man's living environment by an artistic design techniques. Man in the eastern world finds pleasure and happiness from that he can not only enjoy nature in the real mountains and rivers, but also stay with nature in his everyday life.

These two distinguished styles give a deep inspiration to contemporary garden designs. The beauty of geometry, and the beauty of nature are integrated into urban spaces with variety of ways to enhance man's living environment.

The characteristics of western formal gardens and eastern informal gardens are clearly shown in the design guidelines which are generated from the background and case studies with the techniques of comparison.

It is based on the design guidelines, two design proposals are made in the study site located in St. John's College at the University of Manitoba. Two plans are organized in two styles: geometrical formal style, and natural informal style. These two styles would give people different impressions in both physical using and psychological feelings.

Although it seems that any site may be designed in these two forms, or a form which is the combination of the both, there are still a lot of limitations, therefore, it is necessary to consider the requirement of the clients, the surrounding environments, and the functional purpose of the site to decide a proper style for the design.

## BIBLIOGRAPHY:

- Adams, William Howard, *Atget's Gardens*, Duobooks Inc., New York, 1979. *The French Garden, 1500 - 1800*, George Braziller, New York, 1979.
- Arnold, Henry F., *Trees in Urban Design*, Van Nostrand Reinhold Company, 1980.
- Ashihara, Yoshinobu, *The Aesthetic Townscape*, The MIT Press, Cambridge, Massachusetts, 1983.
- Balston, Michael, *The Well-Furnished Garden*, Simon and Schuster, New York, 1986.
- Blaser, Werner, *Courtyard Houses in China*, Albert Gomm Birkhauser Verlag Bassal, 1979.
- The Book of the Exhibition at the Victoria and Albert Museum, The Garden - A Celebration of One Thousands Years of British Gardening.* 1979.
- Brookes, John, *Garden Design - History, Principles, Elements, and Practice*, Simon and Schuster, New York, 1984.
- Brookes, John, *Garden of Paradise - The History and Design of the Great Islamic Gardens*, New Amsterdam, New York, 1987.
- Brown, Jane, *The English Garden in Our Time - From Gertrude Jekyll to Geoffrey Jellicoe*, Antique Collectors' Club, 1984.
- Chatfield, Judith, *A Tour of Italian Gardens*, Rizzoli, New York, 1988.
- Chiu, Milton M, *The Tao of Chinese Religion*, Lanham, New York, London, 1984.
- Church, Thomas D., *Gardens are for People*, McGraw-Hill Book Company, New York, 1983.
- Coats, Peter, *The House and Garden Book of Beautiful Gardens Around the World*, Weidenfeld and Nicolson London, 1985.
- Cowell, F.R., *The Garden as a Fine Art - From Aniquity to Modern Times*, Houghton Mifflin Company Boston, 1978.
- Crowe, Sylvla, *Garden Design*, Packard Publishing Limited in Association with Thomas Gibson Publishing Limited, 1981.
- Du, Yu-jian, Li, N-shang, and Liu, Guan-ping, *Design of Garden Buildings*, China Building Industry Press, Beijing, 1986.
- Ferguson, J., *Chinese Painting*, University of Chicago Press, Chicago, 1927.
- Eckbo, Garrett, *Landscape For Living*, F.W. Dodge Corporation, 1950. *The Art of Home Landscaping*, New York, 1964. *Urban Landscape Design*, McGran-Hill Book Co., New York, 1964.
- Evans, Hazel, *The Patio Garden*, Penguin Books, 1985.
- Froncek, Thomas, *Arts of China*, Horizon Magazine, American Heritage Publishing Co., Inc., New York. 1969.
- Geousset, R., *Chinese Art and Culture*, Orion Press, New York, 1959.
- Hibbert, Christopher, *Rome - The Biography of a City*, Viking, 1985.
- Hicks, David, *Garden Design*, Routledge and Kegan Paul, London, 1982.

- The Horizon Book of the Arts of China, American Heritage Publishing Co., Inc., New York. 1969.
- Inoue, Mitsuo, Space In Japanese Architecture, 1985.
- Jashemski, Wilhelmina F., The Gardens of Pompeii, Herculaneum and the Villas Destroyed by Vesuvius, Caratzas, Brothers, Publishers, New Rochelle, New York, 1979.
- Jellicoe, Geoffrey and Susan, The Landscape of Man - Shaping the Environment from Prehistory to the Present Day, Thames and Hudson LTD., London, 1987.
- Kassler, Elizabeth B., Modern Gardens and the Landscape, The Museum of Modern Art, New York, 1984.
- Keswick, Maggie, The Chinese Garden - History, Art and Architecture, Rizzoli International Publications, Inc., New York, 1978.
- Kiley, Dan, My Design Process, Process Architecture, No. 34, 1982.
- Laurie, Michael, An Introduction to Landscape Architecture, American Elsevier, New York, 1976.
- Lebold, John, and Cohen, Jeromre Alan, China Today and Her Ancient Treasures, Published by Harry N. Abrams Incorporated, New York. 1980
- Lesnikowski, Wojciech G., Rationalism and Romaniticism in Architecture, McGraw-Hill Book Con., 1982.
- Li, Yong-Shu, Cathay's Idea - Design Theory of Chinese Classical Architecture, Hong Kong, 1984.
- L'orange, Hans Peter, The Roman Empire: Art Forms and Civic Life, Rizzoli, New York, 1985.
- Malt, Harold Lewos, Furnishing the City, McGraw-Hill Book Company, 1970.
- Masson, Georgina, Italian Gardens, Antique Collectors' Club, 1987.
- Meng, Zhao Zhen, The Theory and Method of the Chinese Garden Art, Press of Beijing Forestry University, 1985.
- Morris, Edwin T., The Gardens of China, Charles Scribner's Sons, New York, 1983.
- Moynihan, Elizabeth B., Paradise as a Garden in Persia and Mughal India, George Braziller, Inc., New York, 1979.
- Needham, J., Science and Civilization in China, Cambridge University Press, Volumes in Series Appearing Since 1954.
- Newton, Norman T., Design on the Land - The Development of Landscape Architecture, The Belknap Press of Harvard University Press, Cambridge, Massachusetts, and London, England, 1971.
- Oaks, Dumbarton, Ancient Roman Gardens, Trustees for Harvard University, Washington, D.C., 1981.
- Pen, Yi-Gang, Analysis of Chinese Classic Garden, Chinese Architectural Press, 1986.
- Pereirre, Anita, and Van Zuylen, Gabrielle, Garden of France, Harmony Books, New York, 1983.
- Plumb, J.H., The Horizon Book of the Renaissance, American Heritage Publishing Co., Inc., New York, 1961.

- Pollitt, J.J., *The Art of Rome, C.753 BC - 337 AD*, Prentice-Hall INC., Englewood Cliffs, New Jersey, 1966.
- Process Architecture, No. 4, 1978, No. 34, 1982.
- Qiao, Yun, Sun, Dazhang, Fu, Xinian, Yang, Gusheng, Yin, Wen, Yan, Kam. *Ancient Chinese Architecture*, Joint Publishing Company, Hong Kong, China Building Industry Press, Beijing.
- Root, James B., *Fundamentals of Landscaping and Site Planning*, The Avi Publishing Company, Inc., Westport, Connecticut, 1985.
- Rubenstein, Harvey M., *A Guide to Site and Environmental Planning*, A Wiley Interscience Publication, John Wiley and Sons, New York, 1980.
- Saville, Dinaa, *Walled Gardens - Their Planting and Design*, B.T. Batsford LTD, London, 1982.
- Simonds, John Ormsbee, *Landscape Architecture - A Manual of Site Planning and Design*, McGraw-Hill Book Company, 1983.
- Shigemori, Kanto, *The Japanese Courtyard Garden - Landscape for Small Space*, Weatherhill, New York, 1981.
- Sleinhardt, Nancy Shatzman, *Chinese Traditional Architecture*, China Institute in America, China House Gallery, 1984.
- Staff of China Pictorial, Beijing, *China Scenes*. People's Art Publishing, Beijing, 1980.
- Stevens, David, *Small Gardens and Backyards*, Stoddart Publishing Co., Toronto, 1987.
- Sullivan, Michael, *The Art of China*, University of California Press, 1977.
- Strong, Roy, *The Renaissance Garden in England*, Thomas and Hudson Ltd., London, 1979.
- Thacker, Christopher, *The History of Gardens*, University of California Press, Berkeley and Los Angeles, California. 1979.
- Thomsen, Charlie, *Home Landscape Design For the Prairie Provinces*, University of Manitoba, 1980.
- Tong, Jun, *The Garden Records in Southern China*, Beijing Architectural Industry Press, 1984.
- Tsu, Frances Ya-Shing, *Landscape Design in Chinese Gardens*, McGraw-Hill Book Company, 1988.
- Ven, Cornelis Van de, *Space in Architecture - The Evolution of a New Idea in the Theory and History of the Modern Movements*, Van Gorcum Assen, The Netherlands, 1980.
- Verey, Rosemary, *Classic Garden Design - How to Adapt and Recreate Garden Features of the Past*, Condon and Weed, Inc., New York, 1984.
- Wang, Ju-Yuang. *Study of Domestic Garden in Qing Dynasty. The History of Chinese Landscape Architecture*, Beijing Forestry University Press, Beijing.
- Wang, Yi-gong, *The National Characteristic of Courtyard Space in China*.
- Waley, A., *The Way and Its Power (Translation of the Tao-te Ching of Lao Tze)*, George Allen and Unwin, London, 1935.

- Walmsley, Anthony, *Made Landscape from Prehistory to the Present*, Falcon Press, Philadelphia, 1975.
- Woodbridge, Kenneth, *Princely Gardens - The Origion and Development of the French Formal Style*, Thomas and Hudson, 1986.
- Yalouris, Nicholas, *Classical Greece: The Acanthus History of Sculpture*, Graphic Society, New York, 1960.
- Yang, Hongxun, *The Classical Gardens of China - History and Design Techniques*, Van Nostrand Reinhold Company Inc., 1982.
- Yap, Yong, and Cotterell, Arthur, *The Early Civilization of China*, Weidenfeld and Nicolson, London, 1975.
- Zhang, Jiaji, Luo, Xiaowei, *The Chinese Conception of Space*, Spazio Societa, 9-1986.
- Zhong, Baihua, etc., *The Artistic Views in Chinese Gardens*, Ziangxu People's Press, 1985.