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CHINESE GARDENS: SOLUTIONS FOR  
URBAN NATURE DEFECIT

By

Zachary K. Warner

A thesis submitted in partial fulfillment  
of the requirements for the degree

of

MASTER OF LANDSCAPE ARCHITECTURE

In

Landscape Architecture and Environmental Planning

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UTAH STATE UNIVERSITY  
Logan, Utah

2020

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## ABSTRACT

Chinese Gardens: Solutions for  
Urban Nature Deficit

By

Zachary K. Warner, Master of Landscape Architecture  
Utah State University, 2020Major Professor: Benjamin George  
Department: Landscape Architecture and Environmental Planning

Research shows that time spent in nature is good for human health and well-being. However, as the world's population becomes more concentrated in urban areas regular time in nature, especially extended time, is becoming more difficult to have. On the other hand, Chinese gardens can provide one solution to this problem because they have a unique way of providing a naturalistic space within a small area. Despite this fact, there aren't many Chinese style gardens outside of China. Therefore, the objective of this thesis was to identify possible barriers to using Chinese garden design principles and construction techniques, then address them with a number of solutions.

As part of this effort the best literature was consulted including books and journal articles on Chinese garden design, history, and related fields. The information from literature was then compared to both Western practices and current development processes for Chinese gardens in the West to identify

possible barriers. Many of the barriers were found to be related to cost, cultural differences, materials, laws and regulations, and education.

To address these barriers the literature was consulted, and a number of solutions sprung from the history of Chinese gardens as well as current literature. Overall, however, solutions for overcoming barriers to the use of Chinese garden design principles were found to be centered in foundational design objectives and principles. These objectives and principles were found to allow the flexibility needed for Chinese gardens to adapt to local circumstances and conditions. In the end following these ideas and principles will allow professionals to create gardens that are anywhere along a spectrum from fully Chinese in character to fully local in character.

(169 pages)

## PUBLIC ABSTRACT

Chinese Gardens: Solutions for  
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FRONTISPIECE

Most Cherished in this mundane world is a place without traffic;  
Truly in the midst of a city there can be mountain and forest.  
~Wen Zhengming (2006)



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Zachary K. Warner

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## CHAPTER 1

### INTRODUCTION

Studies have shown that nature is beneficial to people's mental and physical health (Cox et. al., 2017; Jones, Twohig-Bennett, 2018; Williams, 2017). These benefits grow exponentially more profound as one spends more time in nature (Cox et.al., 2017; Williams, 2017). For many urban dwellers this extended contact with nature is difficult or impossible to access (Cox et. al., 2018). One major purpose of Chinese garden design is to create a space that mimics nature both in the city and elsewhere (Engel, 1986; Keswick, 2003; Tsu, 1988). This is accomplished by using design principles and techniques uniquely mastered by Chinese garden designers, like rockery construction, borrowed scenery, and several scenery composition techniques. Because of how all the techniques work together, Chinese gardens provide a unique experience of a naturalistic space which isn't easily copied by western parks and gardens. Therefore, Chinese garden design principles could be ideal for providing urban and suburban populations convenient access to naturalistic environments. However, there are only a few gardens that use Chinese garden design principles and construction techniques outside of China. Therefore, the purpose of this study was to identify what barriers exist to the creation of gardens in the Chinese manner in a western context and create a design guide with an example design which helps to address those barriers.

## 1. Background

### **1a. Health Impacts of Nature**

Studies in Japan have shown that time in nature through a practice known as “forest bathing” results in improved health indicators related to reduced stress such as lowered blood pressure and lowered adrenalin levels (Williams, 2017). Similar studies have been conducted in Korea with similar results (Williams, 2017). In the U.S. scientists have been working to show that nature directly influences mental health and the way we think. In a systematic review and meta-analysis of current research done by Twohig-Bennett and Jones (2018) it was shown that time in nature created a number of measurable changes in health indicators such as blood pressure, heart rate, and salivary cortisol. However, there are many different theories behind these studies as to why nature helps people so much. Despite the differences in theory, there have been some studies which have been able to identify certain factors present in nature which, together and individually, help physical and mental health. One such study is the previously mentioned Korean study where investigation was made into how smells from certain tree species, such as Hinoki Cypress, can relax people (Korea Forest Research Institute, 2014). Another study measured the effects of fractal patterns found in nature on the mental state of viewers (Spehar and Taylor, 2013; Taylor and Hagerhall, 2004). Studies have also examined how sound affects people’s psychology where human made noise, such as from cars, makes national parks appear uglier to the listener (Weinzimmer et. Al., 2014) The opposite is also

true as shown in one study where subjects listening to birdsong rated cities as more visually appealing than those without birdsong (Hedblom et. Al., 2014). Williams, in her discussion on sound's effects also notes that wind and water sounds are equally soothing (2017).

Studies later cited by Williams showed how the effects of nature are amplified with extended time spent in nature (2017). For instance, in a study conducted by Strayer and others it was found that extended time in nature altered brain activity in a way which allowed the pre-frontal cortex to rest more than in an urban environment (Trani et. al., 2012; Williams, 2017). This rest for the pre-frontal cortex produces a host of benefits both mentally and physically (Trani et. al., 2012). In the last chapter of her book, Williams cites several facts which apply to the U.S, and many other parts of the world. She notes how in 2008 there were more people living in cities than in rural locations and the number of urban dwellers has continued to increase (2017). Later, she notes how worldwide only 36% of the overall tree canopy remains compared to 50% in 1950(2017). This greatly shows the extent to which we are losing natural spaces. Together, these facts show how, for much of the urban population around the world, opportunities to have extended experiences in nature are difficult to come by.

Furthermore, a study by Cox et al., surveyed 3,000 people in the UK to assess the effects of urbanization and people's ability to access nature defined by specific parameters. As part of their research they also asked questions which would indicate whether someone was oriented towards nature or not. In their

results they found that people in urban environments do indeed have less access to nature and that those who were more nature oriented tended to spend more time in green spaces (2018). Combined with the results of other studies it seems that the rapid urbanization of the world is resulting in a reduced connection and access to natural spaces.

Meanwhile another study performed by Cox et. al. in 2017 looked at the effects of nature dose on health outcomes in urban populations. For this study a number of factors were used to determine how much nature was present in a given neighborhood and how much of it was likely to be experienced by residents. The results of this study showed that those populations which had and experienced more nature in their daily lives had better health outcomes (Cox et. al., 2017). This further suggests that the more time spent in nature, the more the benefit to health.

### **1b. Purpose of Chinese Garden Design**

That the goal of Chinese gardens is to create naturalistic spaces is well documented in the current literature as central to the philosophy behind such gardens. One foundational work which explains this is Keswick's study, "The Chinese Garden: History, Art and Architecture" (2003). Keswick describes the history and development of Chinese Gardens, their elements, and some of the basic principles and ideas behind their design. In his book on Chinese garden design, Engel (1986) titles one section in his chapter on the planning and practice of Chinese gardens "Touching Nature with a Roof Overhead". This can be

interpreted as saying that the goal of Chinese gardens is to provide the user access to nature, but without leaving the comforts of shelter. Tsu further expands this idea in his introduction to his book on Chinese garden design (Tsu, 1988). He best states this when writing in reference to traditional Chinese culture:

Nature is loved and held in highest honor, but this does not mean that objects of nature have to be presented in their original form. The main principle of Chinese painting, also adopted in Chinese garden art, is to depict nature's beauty—not with a naïve imitation of realism but by recreating the essence of nature. The goal is to present nature in a lyrical and artistically succinct manner; that is, naturalness enhanced by artificial effect. (Tsu, 1988, pg. 5)

In talking about the functional aspects of Chinese gardens Tsu notes that, “The original motive for building private gardens seems to have been an admiration for wilderness hampered by unwillingness to forsake the convenience of city life.” He notes that Chinese gardens could be referred to as, “miniature worlds of wilderness in city areas.” (Tsu, 1988, pg. 10) These ideas, motivations, and concepts are deeply rooted in Chinese culture and have developed over the long history of the country. According to Keswick, garden concepts first started to develop sometime around the fourth century BCE (2003). Other notable developments are the incorporation of Daoist thought which eventually produced the “mountains” of Chinese gardens (Keswick, 2003, pgs. 46-50), and philosophical works such as “The peach Blossom Spring” by Tao Yuan Ming which brought the utopian ideal to gardens (Keswick, 2003). In fact, Daoism played a major role in the creation and design of gardens in China over the centuries. It is often noted in the literature that gardens were built as the Daoist counterpoint to the very Confucian main dwelling (Keswick, 2003; Clunas, 1996;

Engel, 1986; Tsu, 1988) Since Daoism is also the Philosophy which has the most to do with nature it also played a large role in the aesthetics of gardens. For example, the idea of the balance of Yin and Yang is manifest throughout the garden by the pairing of opposites such as the softness and changeability of water with the hardness and firmness of stone or following a dimly lit narrow passage to find a wide-open sunny space. (Engel, 1986; Tsu, 1988) Literature also had a major role in garden development such as the piece “The Peach Blossom Spring” by Tao Yuan Ming. In this account a fisherman follows a spring through a peach orchard and a cave to find an unusual group of people. They live in a valley on the other side of the cave and they live an idyllic life where there is no emperor, no wars, no sickness. All the people do is enjoy a simple, carefree life of farming. This story came to symbolize the equivalent of Utopia in China which was a major inspiration for gardeners (Walker, 2013). They strove to create such an ideal existence within the garden space. Keswick also notes that the goal of Chinese gardens was to, “re-create the effect of the totality of nature. . . “(2003, pg. 101).

### **1c. Chinese gardens Vs. Western Parks and Gardens**

There are questions and concerns when considering a Chinese garden as a solution to providing increasingly urban populations with access to naturalistic spaces. For instance, how does one define naturalistic? According to the Cambridge dictionary naturalistic means, “similar to what exists in nature” (n.d.). In the Landscape Visual Character Site Assessment Protocol (Ode et. al., 2008), which is later used to compare Chinese gardens and western parks, naturalness is



defined as the perceived closeness to a preconceived natural state. Within the protocol, naturalness is measured by the proportion of natural vegetation, level of succession, and the shape of edges. This is based on the theory of Restorative Landscapes (Kaplan & Kaplan, 1982, 1989). These two definitions of what could be considered naturalistic seem to be in harmony with the intent of Chinese garden design. It would seem that Chinese gardens would compare favorably vis-a-vis western parks and gardens within the realm of perceived naturalness.

Another concern is the matter of culture and history. It should be clear that the culture of Imperial China, under which all of the famous gardens were created, is very different from what is experienced in the modern Western world. While traditional gardens were constructed by the wealthy social elites of imperial China, most public gardens are constructed by governments and formal agencies. Also, the lifestyle and design traditions engendered by these two cultures are inherently different. Therefore, it is important to question if Chinese gardens could be a good solution for providing urban areas around the world access to nature. It is because of the similarities and differences between the two which makes it a good solution. For instance, many well-known gardens in China are found in historically urban areas so they have many techniques to deal with the challenges of such a location. These techniques could be suitable to use in modern urban centers. The differences also make a case for the use of Chinese gardens in urban areas. For example, because there is much emphasis placed on the architectural element of the gardens, unlike in typical Western gardens, there

is an abundance of shelter which allows the gardens to be enjoyed in all kinds of weather.

However, it is more effective to show the strengths that Chinese gardens possess by conducting a structured comparison between a Western pocket park and a Chinese style garden of a similar size. Table 1 is a table based on the Landscape Visual Character Site Assessment Protocol to compare Athens Square, a pocket park in New York City, with Yipu Yuan, a Chinese garden in Suzhou, which both occupy a little less than an acre (New York City Government, n.d., Unesco, n.d.)

**Table 1**

**Comparison Between a Chinese Garden and a Western Park**

<u>Space</u>	<u>Yipu Yuan</u>	<u>Athens Square</u>
<u>Indicator</u>		
<b>Complexity</b>		
Distribution of Attributes	This area has <u>a large</u> number of landscape elements as well as <u>as more than seven</u> landscape covers	There are a <u>few</u> landscape elements. There are <u>five</u> kinds of landscape cover.
Spatial Organization	Landscape elements are <u>denser in some areas and less dense in others</u> Some of the boundaries are clear while in some places there is more of a blending between areas	Landscape elements are rarely clumped together. <u>Landscape covers are not mixed</u> . There is a clear boundary between landscape elements and covers.
<b>Coherence</b>		
Arrangement of Vegetation and Hardscape	<u>No obvious patterns</u> in a lot of the area, except on paving. However, there is coherence due to repeated materials throughout the	There is <u>a bold pattern</u> covering half of the area.

	area. <u>Vegetation distribution mimics what might be found under natural conditions.</u>	
<b>Disturbance</b>		
Presence of Disturbing Elements	Area fits well with surroundings. Not viewable from the exterior.	Area contrasts with surroundings, but it does suit the location. Completely viewable from exterior.
Visual Impact of Disturbing Elements	few if any impacts	Total area affects outside context
<b>Stewardship</b>		
Level of Abandonment	<u>The vegetation in this area is highly maintained</u>	<u>The vegetation in this area is highly maintained</u>
Condition of Man-made Structures	<u>The buildings are in excellent condition</u>	<u>Man-made structures are in excellent condition</u>
Condition of Hardscape	<u>Excellent condition</u>	<u>Excellent condition</u>
<b>Imageability</b>		
Spectacular, Unique, and Iconic elements	<u>There are well over ten spectacular, iconic, and unique elements in this area. Many, if not all, of the landscape elements hold historic status.</u>	<u>There are seven iconic, spectacular, and unique elements in this area. Structures and other elements do not appear to be historic.</u>
<b>Visual Scale</b>		
Open Area	Has one main area with open views while there are other smaller areas with open views	Large percentage of the area has open views
Obstruction of the View	Lots of vegetation with open to semi-open views	Vegetation partially obstructs views to outside of area.
<b>Naturalness</b>		
naturalness of vegetation	<u>Most vegetation appears to be natural. There are a variety of ages in the plants. No smooth edges in the vegetation.</u>	<u>Low percentage, if any, of natural vegetation. All vegetation appears to be the same age. Many plants are clipped creating smooth edges in the vegetation.</u>
<b>Historicity</b>		
Organization of Landscape Attributes	Vegetation displays a variety of time layers.	Vegetation seems to be the same age
Landscape Elements	There are over ten cultural elements in the area	There are 5 cultural elements
Architectural Elements	All buildings in the area are historic or appear to be so.	Structures do not appear to be historic.
<b>Other Observations</b>		

	<p><u>Aesthetically this area is a mix of contrasts</u> which includes areas of openness along with areas which feel more intimate as well as places that are very busy and places that are very calm. There is a great diversity of textures. Forms, patterns, and lines in the area. Color is used, but it mostly consists of a limited color palette. The effect of this mix creates a harmonious, balanced whole in the area. Experientially, this area feels at once safe and interesting. It is also quiet and tranquil. <u>Though it may possess an exaggerated sense of the natural world, it doesn't come off as entirely artificial either.</u></p>	<p>Aesthetically this area has a feeling of vastness which is aided by the lack of enclosure. <u>It is a fairly uniform, horizontal space.</u> While there may be some variety in the topography of the area, it mostly gives the <u>impression of a fairly level plane.</u> Most of the lines in the area are <u>straight, except in the vegetation.</u> There is also a curved line present in the middle of the area. The colors in the area are generally muted or monochrome which gives the area a harmonious and balanced feel. There are strong patterns which cover half of the area. Experientially, it could be considered to have a safe feeling, but you might need to know the neighborhood. <u>I don't find it to be very stimulating as there isn't much to hold interest.</u> <u>I'm not sure how tranquil it would feel since two sides are open to the adjacent roads. If those get busy it could be very noisy.</u> Overall, it feels very artificial with <u>its straight and geometric lines, clipped lawn, play structure, and trees planted in rows.</u> However, it is a nice park from what I can tell.</p>
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From this table, it appears that Chinese gardens have a lot to offer urban populations because of their differences and the diversity they offer. One major difference is their closer affinity to what can be found in nature. From this information one might be able to conclude that, because of the similarities Chinese gardens have with nature, they can offer more access to the benefits nature provides than what is available in a typical Western style park. So, while a

traditional Western park can be nice in an urban setting, Chinese gardens do seem to make a better use of space when access to nature is desired. There is also a greater diversity found in Chinese gardens when compared to Western parks such as their diversity of possible experiences, textures, forms, land covers, features, and elements. There is so much to see and experience in a Chinese garden each time you visit. By comparison, western parks look rather stale. To further illustrate, many of the world's best urban parks, like Central Park in New York City, have many of the features provided by a Chinese garden. However, Chinese gardens are able to fit those features in significantly smaller spaces. Many Western parks of a similar size, on the other hand, are just some grass and trees and maybe a playground. How is this supposed to give people a feeling of being in nature?

#### **1d. Chinese Gardens Provide Convenient Access to Nature**

One of the best examples of Chinese Gardens providing convenient access to naturalistic spaces for urban dwellers can be found within the mecca of Chinese gardens, Suzhou. During the Ming dynasty there were over 270 gardens in the city of Suzhou alone (Henderson, 2013). Each one of these was able to take the viewer out of the urban context and place them in a far more natural setting. For example, when in the Linger Garden on the western side of old Suzhou one feels as if they are no longer in the city. When in the garden, one might think it is out in the countryside rather than in the middle of a city of over six

million people (Fig. 1). Additionally it is easily accessible by bus, taxi, or foot. While some gardens consist of many acres, these gardens don't have to be large.

A very successful one was designed and built by the artist Ye Fang on an area of ~1/8 acre which is shared by five households. It could be that small gardens attached to townhouses or apartment buildings can easily provide access to naturalistic spaces,

**Figure 1**

*View in the Lingerin Garden*



especially when there aren't parks nearby. There are also a few examples of small historic gardens in Suzhou such as The Mountain Villa of Embracing Beauty and Chang Yuan (Carefree Garden).

However, there is a common perception that Chinese gardens were, and are, always private enclaves where nobody but invited guests are allowed to enter. How could Chinese gardens provide convenient access to nature if such is the case? When looking at historical accounts concerning Chinese gardens, however, it was common for gardens in Luoyang during the late eleventh century to be open to visitors, even if the owner wasn't present. Often many people would go on excursions to famous gardens in the city rather than taking the time to go to the wilderness (Keswick, 2003, pg. 101). In his work on the gardens and garden culture of the Ming dynasty, Clunas (1996) agrees that private gardens were

generally accessible. He also goes further to detail that this practice has a long history going back to the Tang dynasty where a former imperial hunting ground served as a public park starting in the eighth century. There is also the example he gives of the imperial gardens during the Northern Song dynasty being opened to the public annually while the private gardens of Luoyang were open to visitors and not just during festival times (Clunas, 1996). From this evidence, it seems evident that gardens were not, in fact, solely private havens, but rather publicly accessible entities. On that basis it is perfectly acceptable for a Chinese garden in an urban area to be widely accessible as a shared, public space.

### **1e. Small Number of Chinese Gardens in the West**

In her book “The Chinese Garden: Garden Types for Contemporary Landscape Architecture” Rinaldi discusses some basics of Chinese garden design and history. At the end she discusses some newer Chinese gardens built both inside and outside of the cultural context of China and Asia in general. Of the gardens listed only 7 follow historic design precedents (Rinaldi, 2011, pg. 151-157). Of these seven only four are in the U.S. Many other literature sources on Chinese gardens, both newer and older, only list some of the famous historic gardens within China (Fang, 2010; Keswick, 1978). A few additional gardens not noted by Rinaldi exist, but many of these are outside of the U.S. like the one at the Montreal botanical garden, which brings Canada’s grand total to 2. Of the known Chinese gardens, there are four in Germany, one in New Zealand, and an additional one in Snug Harbor botanical garden in New York (the only one in the

U.S. not listed by Rinaldi). There may be others, but these may not be as well-known outside of where they are built and there couldn't be that many more since they are usually well advertised. It is far more common to hear about Japanese gardens with many places around the country having at least one open publicly. According to a map produced by The North American Japanese Garden Association there are at least 49 Japanese gardens in California alone (North American Japanese Garden Association, n.d.). That is more than the total of Chinese Gardens around the world (outside of China).

**Table 2****Chinese Style Gardens Outside of China**

<b>Garden</b>	<b>Location</b>	<b>Observations</b>
Lansu Yuan	Portland, OR, USA	
The Seattle Chinese Garden	Seattle, WA, USA	Currently incomplete
Liu Fang Yuan	San Marino, Ca, USA	
New York Chinese Scholars Garden	Staten Island, NY, USA	
Astor Chinese Garden Court	The Metropolitan Museum, New York City, NY, USA	Consists of one court completely indoors
Dr. Sun Yat Sen Classical Chinese Garden	Vancouver, BC, Canada	
Montreal Botanic Garden Chinese Garden	Montreal, QC, Canada	
Chinesische Garten	Stuttgart, Baden-Wurtemberg, Germany	
Qian Yuan	Ruhr University, Bochum, Germany	Appears to be even smaller than Lansu Yuan
Chinesischer Garten	Berlin Germany	
Der Chinesische Garten	Luisen Park, Mannheim Germany	
Lan Yuan	Dunedin, New Zealand	
Chinese Garden of Friendship	Sydney, NSW, Australia	
Chinese Garden of Serenity	Santa Lucija, Malta	



## 2. Project Objectives

The objectives for this thesis were to identify important barriers to the use of Chinese garden design principles and construction techniques in the western world. Then, after identifying barriers, propose ways to address these barriers in a way which would be applicable to local contexts and conditions.

## 3. Methodology

For this project the author reviewed the best available literature on Chinese garden design and construction. Next, they compared the information presented in the literature to common design and cultural practices in the Western world. Furthermore, they looked at all associated costs and specialists needed to create existing Chinese gardens in the west as a secondary comparison. From these two comparisons they were able to identify some of the most likely barriers to the use of Chinese garden design principles and construction techniques. After identifying these barriers, they addressed them by using the insight gained from earlier comparisons and research. The solutions that emerged from this analysis are included in a design guide. This design guide shows how Chinese garden design and construction principles can be used throughout the Western world by providing a specific theoretical design of a garden in Chicago.

#### 4. Deliverables

The deliverables created for this project include: a literature review, a section where barriers are identified and possible solutions are proposed, and a design guide with an example design and necessary illustrations.

#### 5. Expected Findings

When beginning this project, it was expected that many barriers to the use of Chinese garden design principles and construction techniques were related to issues such as cost, specialization, education, materials, regulations, and differences in needs/culture. It was also expected that solutions to these barriers would be found in the history of Chinese gardens, use of local materials, education efforts, and adaptations to local culture, uses, and regulations.

#### 6. Significance

This project is significant because it provides professionals with another option for bringing nature to urban populations in a way that is accessible to users. It will also help to encourage industry leaders to learn new techniques for design and construction which could be useful in creating more naturalistic living spaces for an increasingly urban population. This way, even though humanity will be living in an increasingly urban setting, people will still be able to have the benefits of regular contact with nature through their urban greenspaces.

## CHAPTER 2

### LITERATURE REVIEW

When it comes to literature that discusses the design and construction of Chinese gardens, the amount of academic journal articles devoted to the subject is low. A majority of these articles deal primarily with a very specific aspect of garden design such as planting or how scenery is framed (Chen et. al., 2014; Zhou & Dong, 2018). While these articles are helpful, they lack in giving the reader a complete picture of garden design due to their small number and limited scope. There are, however, many articles which discuss historical and cultural aspects of Chinese garden design which do give some hints about the design of Chinese gardens in different periods of history including our own. These articles greatly help in understanding the development and culture behind the gardens we see today both inside and outside of China. However, the knowledge they give on garden design is also limited. This is partly due to the fact that many articles about Chinese gardens are in languages other than English, with a majority of them being in Chinese (Fung, 1998).

The most complete sources available in English seem to be a number of books which directly discuss the topic. A couple of these are translations of books on the subject from the late Ming dynasty, while the majority of the books were written in the late 1970's and 1980's. Each one of these books varies in the amount of detail given concerning Chinese garden design and construction, but

none is as complete as would be desired. There are a few books about Chinese garden design written more recently, such as the book by Rinaldi (2011) or the book by Fang (2010). But these books are fairly limited in their usefulness in comparison to some of the earlier works. Therefore, through this literature review, the best available of this literature will be explored to uncover what can be gained through the reading of it.

### 1.Theories and Concepts

According to the literature, Chinese garden design is based on a fairly consistent and regular set of theories and conceptual frameworks. These theories and concepts are firmly rooted in Chinese philosophy and art. One foundational concept to all of these is the unity of humanity and nature (Engel, 1986; Keswick, 2003).

This concept is present throughout the philosophy and art of China and can manifest itself in a variety of ways. In the world of art, it might be manifest by the buildings, bridges, and paths present in a landscape painting (Fig. 2) or in the pot of a painting depicting flowers, insects and birds (Fig. 3). In the world of philosophy, it often manifests itself in efforts to be one with the way, the Dao, the force that goes through all things and orders the universe, the force behind the intimate processes of nature. Or it can be seen in Confucius' injunction to study and learn about plants and the natural world (Métailié, 1998).

Figure 2.

*Solitary Temple Amid Clearing Peaks*

Source:  
<https://www.comuseum.com/painting/masters/i-cheng/a-solitary-temple-amid-clearing-peaks/>

Figure 3.

*Beautiful Scenery for the New Year*

Source:  
<https://www.comuseum.com/painting/flower-painting/auspicious-signs/>

In gardens it is manifest in an effort to create a space which perfectly melds the creations of humanity with nature. It should be an expression of the ideal relationship between humanity and nature (Engel, 1986) This is why architecture is seen as a key component of a Chinese garden (Chen & Yu, 1986; Rinaldi, 2011; Tsu, 1988; Keswick, 2003). It is also why gardens are built to be walked through, explored, and lived in (Engel, 1986; Tsu, 1988, Han, 2012). In a

deeper vein, this relationship between humanity and nature is manifest in how the garden is designed since the garden can become the medium used to express its designers' thoughts, feelings, and emotions (Tsu, 1988).

In another way, the Chinese garden is a melding of a different kind. While it is a melding of humanity and nature, it is also a consummate melding of the arts, philosophy, and literature (Engel, 1986, pg. 15). Frequently in the literature it is mentioned how garden design and scenery composition is related to the art of traditional landscape painting, or in some cases the art of flower and bird painting (Ji, 2012; Engel, 1986; Clunas, 1996; Keswick, 2003; Chen & Yu, 1986). In some of the books these principles are laid out so that they could be used in garden design, but often the language used made it necessary for interpretation (Chen & Yu, 1986; Engel, 1986; Tsu, 1988). These interpretations will be presented in the design guide.

However, this also led the author to look into literature concerning landscape painting where some basics of composition were found (Wang et. al., 1963). It also led to an investigation into the art of Penjing (Figs.4-7), which is the Chinese ancestor to Japanese bonsai. The word penjing itself generally translates to potted scenery or

Figure 4

*Land and Water Penjing by Zhao*



Source: <http://www.manlungpenjing.org/eng-quest-frame.html>

Figure 5

*Landscape Scale Penjing "A"*

Source: <https://www.flickr.com/photos/35376797@N06/4201964709/>

Figure 6

*Single Tree Penjing*

Source: <https://i.pinimg.com/originals/6b/52/ad/6b52ad4fa1969aa9b195a529c0f54eab.jpg>

scenery in a pot. As such, it includes a wider range of subjects since, in Penjing, one can create whole scenes of landscapes at various scales along with creating a piece featuring an individual tree or small group of trees (Zhao, 2012). In the book by Zhao on the subject Penjing is regarded as an extension of the gardening arts (2012). This

is further hinted at in the book by Tsu where it is suggested that a garden could be considered a life size Penjing, or maybe a collection of life-size Penjing (1988).

At this point, some of the theories and concepts behind Chinese garden design have been discussed. But what about the theories and concepts *used* in Chinese garden design? While many of these can be found in relation to painting and Penjing, some theories and concepts are

**Figure 7**

*Landscape Scale Penjing “B”*



Source: <http://www.91meishi.com/60000/54416.shtml>

unique to garden design. For instance, many tricks are used to help make the limited space of the garden feel bigger. These tricks might include dividing the garden into scenic sections, framing scenery, playing with perspective, using borrowed scenery, and using a winding, curving layout (Chen & Yu, 1986; Engel, 1986; Tsu, 1988, Rinaldi 2011). Some of these techniques even have their own principles and theories that need to be followed to have success with them (Zhou & Dong, 2018).

Another example of principles and theories used in garden design deals with the placement and arrangement of garden elements. Each element needs to be arranged so that everything looks to be an appropriate proportion with everything else. For example, if it was desired to give the impression of soaring,



high cliffs, planting tall trees on the top would be avoided since this could make the cliffs look smaller (Chen & Yu 1986; Ji, 2012).

Considering the bulk of concepts and theories used to create a Chinese garden, what should that look like? When looking at historic gardens in China and the many gardens built so far outside of China, it could seem that a Chinese

**Figure 8**

*Ornate Garden Pavilion*



garden needs to be an incredibly complex and ornate space (Fig 8).

However, when looking at the conceptual qualities a garden should possess, this isn't necessarily the case.

According to the literature a garden should embody simplicity, elegance, refinement, suitability, changeability, mystery, surprise, plainness, tranquility, restraint, naturalness, gracefulness, neatness, modesty, distinctness, and tastefulness (Chen & Yu, 1986; Engel,

1986; Tsu, 1988; Ji, 2012; Wen, 2019). Perhaps these qualities seem foreign to Chinese gardens seen today, especially simplicity, plainness, and naturalness.

Afterall, many Chinese gardens seen today are complex compositions that incorporate massive rockeries with grotesque shapes (Fig. 9), a multitude of complex patterns on the ground and in the architecture, and possibly garish details throughout the architecture featuring carved pictures and scenery.

However, though they might seem timeless, Chinese gardens were not always so garish and complex. A look at their history can provide some much-needed perspective on what a Chinese garden can be.

**Figure 9**

*Recently Built Garden in Chinese Housing Complex*



Source: <http://news.dichan.sina.com.cn/2018/03/16/1216111.html>

## 2. Historic Developments

Much like their counterparts in Europe, Chinese gardens changed and developed over time (Clunas, 1996). While this might not seem a very controversial statement, in years past it could have been. Much early writing up through the 1980's set up the paradigm of a Chinese garden being uniquely other, mystical, and timeless. According to Clunas, this was generally because early writers were operating under the ideas, prejudices, and racism linked to what is

now called Orientalism (1996, pg. 10-13). This firmly entrenched the idea that Chinese gardens, as seen them today, have always been that way through the vast history of China. However, due to the pioneering research done by Clunas and others, that idea is firmly being put to rest. Surely, authors before Clunas did describe the history of the Chinese garden in their writings, but they often do not go into detail about the gardens during those various periods themselves. For instance, one of the most widely read works on Chinese gardens and their history starts the timeline in the far distant Zhou period(Keswick, 2006 pg. 39), but only after entrenching it in the views of westerners who viewed or heard of gardens in China. So, if we are ever to understand what a Chinese garden is and has been, we need to look at it through the view of primary sources (Clunas, 1996). Luckily, researchers like Clunas and others have begun this work. From what can be gathered, based on the latest research, gardens do go back to the Zhou dynasty as they are featured in *The Book of Songs* (Keswick, 2006; Rinaldi, 2011; Fang, 2010) However, these gardens were very different from what we see today. Some of the plants described aren't common to gardens today, and many common to gardens today are not even mentioned. They were also typically large areas used by royalty as hunting grounds and spaces for court rituals (Rinaldi, 2011; Fang, 2010). It wasn't until the Tang dynasty that private gardens became popular areas to be owned by the literati class. These gardens were also different to those of today and the previous period as well. Rocks began to be used at this time, but they were typically rounded boulders chosen for their shape and patterns and arranged singly or in scattered groups (Rinaldi, 2011; Fang, 2010). Today it is

possible to see at least one garden modeled on descriptions and paintings of Tang dynasty gardens (Fig. 10). It is striking to note the similarities it has with contemporary Japanese gardens. However, this makes sense since it was during the period from the Tang through the Song dynasty that China had a major influence over Japan. During this period many aspects of Chinese culture were taken, adopted, and adapted by Japan and can still be seen today (Engel, 1986; Tsu, 1988).

**Figure 10**

Nan Lian Garden, Hong Kong



Source:  
[https://www.hongkongextras.com/nan\\_lian\\_garden.html](https://www.hongkongextras.com/nan_lian_garden.html)

After the Tang Dynasty, one of the great periods in Chinese history, known for its artistic and cultural achievements, is the period generally known as the Song Dynasty which is split into the Northern and Southern Song Dynasties respectively (Fang, 2010). This also resulted in a period

which was great for gardens as well. Older writings and some newer writings focus primarily on the garden of the Northern Song emperor Song Huizong which had multiple rocks studding a man-made landscape of peaks, valleys, rivers, ponds, and waterfalls (Keswick, 2006; Chen & Yu 1986). However, this was also a time where the gardens of the Literati reached full maturity and set the stage for the developments of the Ming and Qing dynasties (Tsu, 1988; Fang, 2010,

Rinaldi, 2011). From what can be gathered gardens of this period fully embodied the theories and concepts discussed in the previous section (Tsu, 1986; Fang, 2010; Rinaldi 2011; Watson, 2004; Xu, 2004). In many ways the aesthetic of these gardens might be summarized in the paintings from the period (Fig. 11 A & B)(Fang, 2010). For example, there was a greater use of more wooden and rustic elements such as thatched roofs, wooden or bamboo fences, and stone lanterns (Tsu, 1988) There are also written descriptions of Song Dynasty gardens which

Figure 11A

*Spring by Liu Songnian*



Source: <https://www.comuseum.com/painting/masters/liu-songnian/#Spring>

Figure 11B

*Section of 'Composing Poetry on a Spring Outing' By Ma Yuan*



Source: [https://www.comuseum.com/wp-content/uploads/2015/02/ma-yuan\\_composing-poetry.jpg](https://www.comuseum.com/wp-content/uploads/2015/02/ma-yuan_composing-poetry.jpg)

served as inspiration for the gardens of Later periods (Fang, 2010; Valder, n.d.). Sometimes diagrams of a historic garden's layout can be created from these records much like the one of Sima Guang's Song Dynasty garden, Du Le Yuan, featured in the appendix of Hardie's translation of Ji Cheng's *Craft of Gardens*. However, without further research it might be difficult to get a clear picture of what these gardens might have been like. One notable effort, however, to recreate these gardens can be found in the world of educational video games. Here a student recreated a Song dynasty painting and made it a three dimensional explorable space (Fig. 12<sup>1</sup>). While it is clear that close attention to detail was used to create the space so it would look like the painting, it appears that textual sources were also consulted to produce details which are not visible in the painting. In some places are spots where the user can select a banner and read a pop-up about an aspect of the painting or design of the space (Fig.13). In one of these pop-ups it notes:

Song Dynasty Paintings reflect some special features of that period's gardens such as the residence implying the character of the

garden, the layout of the architecture being relatively free and unrestricted, Architecture near the water being independent of the other buildings, in building earthen hills Taihu rocks are usually placed independently to be best enjoyed and not piled into mountains, and covered walkways are commonly used to link buildings. Some Song Dynasty paintings will feature gardens from the period or imperial parks, for example Zhang Xian's "Shi Yong Tu" features a corner of Wuxing's Southern garden. Furthermore, you can see some of the special features of Song Dynasty Architecture. Some buildings facades use indoor and outdoor double layered lattice windows. These kinds of windows could be set up or taken down according to the seasons to keep interiors cool in the summer and warm during cold weather. In some paintings you can still see elegant flower beds and fences. <sup>2</sup>

This use of technology to recreate historic garden spaces is an interesting idea that could be used by researchers in multiple ways to explore the aspects of gardens of many historic periods. Potentially it could even give a better idea how gardens looked in different periods.

**Figure 12**

*Screenshot of Videogame Garden*



Figure 13

Screenshot of Information Pop-up

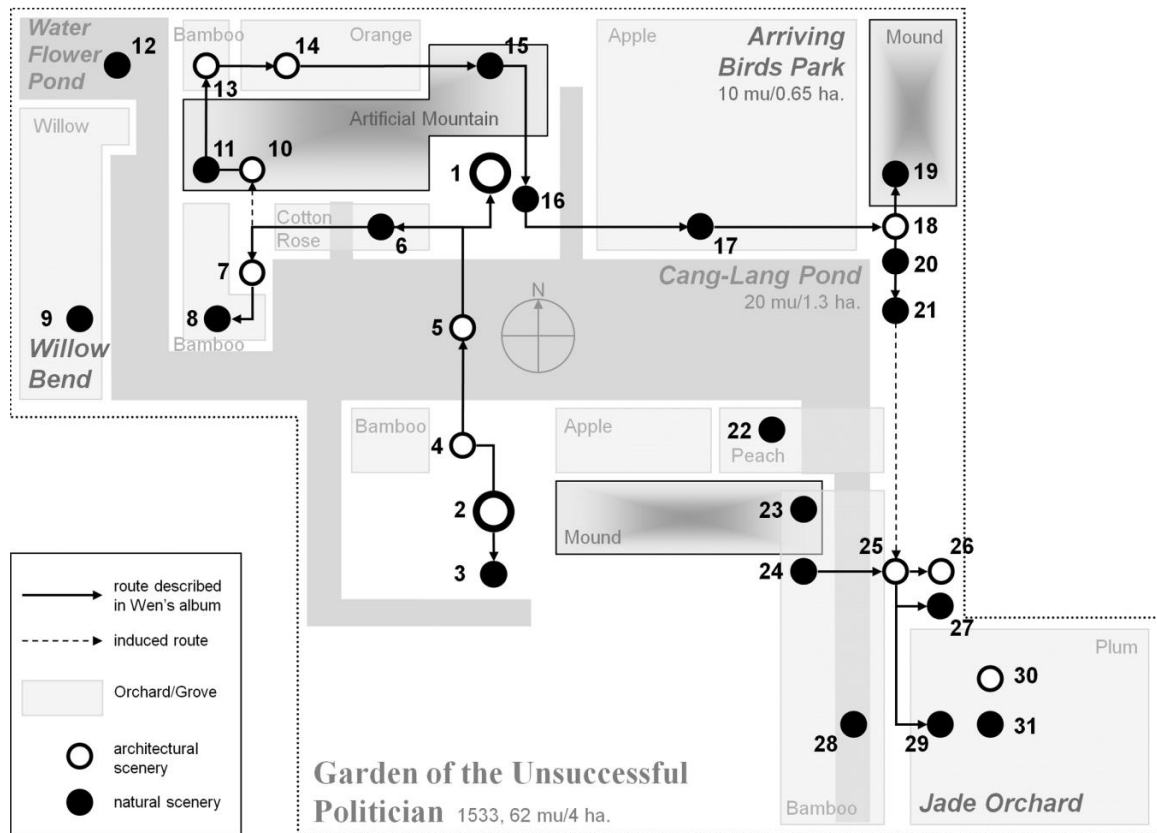


While the Song Dynasty could be considered a highpoint in Chinese garden history, the Ming Dynasty saw major developments which would result in the gardens we see today. This is the focus of Clunas' work *Fruitful Sites: Garden Culture in Ming Dynasty China*. In this volume it is noted how Gardens in the Early Ming had much more similarities with those during the Song Dynasty in that they had a more open layout, fewer buildings, and a variety of useful and productive plants (Clunas, 1996 pg.39). One example of this is seen in the account, paintings and diagram (Fig. 14 ) of the Garden of the Humble Administrator as it was during the early Ming Dynasty which shows a garden vastly different from the garden we see today (Clunas, 1996; Lu, 2011). However, the economy changed so much during the Ming Dynasty that many newly rich traders started to build gardens later in the dynasty which caused some social



Figure 14

Schematic map of the Garden of the Unsuccessful Politician and its thirty-one sceneries as represented in Wen Zheng-Ming's album of 1533. (Lu, 2011, pg. 50)



turbulence since it threatened the social position of the literati. It changed the garden into a mere aesthetic trinket which could be bought and sold. Therefore, the more lavish and extraordinary a display of wealth it could be, the better. Over time this created the more elaborate gardens we see today with their large rockeries and ornate architecture. (Clunas, 1996) In short, the Ming Dynasty was a major turning point and departure from the gardens of previous periods, though evidences of the previous periods still remain (Clunas, 1996).

Today, gardens being currently built and used in China are generally a mystery to the west. There are mentions of some gardens being built recently, both private and public, but much of the information concerning these is from Chinese media outlets such as CCTV, Chinese youtube channels (Fig. 15), and

Figure 15

*Screenshot of garden featured on Chinese Youtube Channel 一条 Yit*



Chinese newspapers (CCTV, 2015; Sina 新浪地产, 2015; 每日头条, 2019; 一条 Yit, 2019). For those who do not speak Chinese this presents a significant barrier to learning about how Chinese gardens are being adapted for modern life in China.

Outside of China there has been a fair amount of press about Chinese gardens, especially when a new one is built or added onto. However, these gardens do raise questions about authenticity. As one article put it, these gardens could not be authentic since adaptations have invariably been made. Plus, the audience they are made for is completely different from the original intended

audience (Brash, 2012). This can create difficulties and boundaries to enjoyment of the gardens since there is symbolism and literary references which a modern audience would be oblivious to without planned for aides such as signs and literature. Otherwise, it is like having someone who doesn't speak Hindi and is unfamiliar with Indian culture watch a Bollywood adaptation of the Ramayana without subtitles. Interesting and possibly beautiful, but baffling. Perhaps future gardens should take a more authentic approach by using the base principles and methods of Chinese garden design and construction rather than focusing mostly on the outward forms.

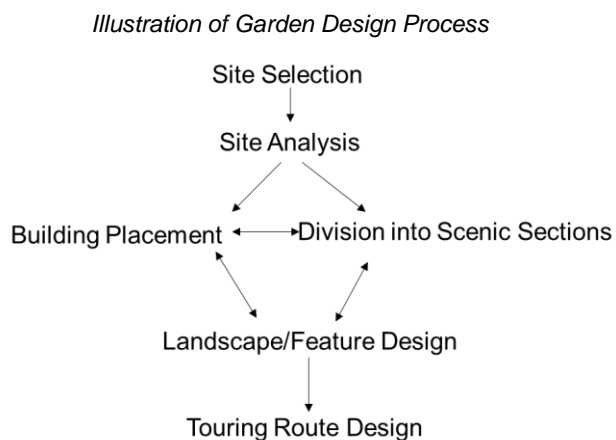
### 3. Process

While, generally, the literature which details the design process for Chinese gardens agrees on the steps needed to design a garden, the order of these steps is not completely agreed upon. The first step is generally going to be site selection as this will determine everything else about the garden (Chen & Yu, 1986; Tsu, 1988; Ji, 2006). This step is usually followed by an in-depth site analysis which not only involves the site itself, but its surroundings as well (Chen & Yu, 1986; Tsu, 1988). From here the order of steps varies by author. Ji says the next step should be to site the buildings in the garden (2006). However, others say that the next step should be the design of natural features or division of the garden into scenic areas (Chen & Yu 1986, Tsu 1988).

No matter the order of the previous steps the last step is generally planning the touring routes for the garden (Chen & Yu, 1986; Tsu, 1988). Each one of these steps has rules and principles that apply to them and stem from principles related to garden design. For example, when dividing the garden into scenic areas, there needs to be one

area which is the dominant area while the others are smaller subordinate ones (Chen & Yu, 1986; Tsu, 1988). This same principle is found in the design of all of the garden elements where one will dominate the subordinate ones.

Figure 16



#### 4. Materials

As far as materials go, the literature is fairly liberal in giving out details on many of the materials used traditionally in Chinese gardens. For one, there are copious amounts of literature which detail the plants used in Chinese gardens. However, the most comprehensive source on plants appears to be by Valder where he has listed, by category, the specific species used in Chinese gardens along with cultural notes and details about their use and history (Valder, 1999). Meanwhile works detailing the design and contents of gardens in historic periods

often detail plants that were particularly featured in a given period(Clunas, 1996; Xu, 2004; Lu, 2011; Wen 2019).

**Figure 17**

*Example of Taihu Rock*



**Figure 18**

*Waterfall Made with Yellow Rocks*



As for other materials used, there is of course quite a bit of information concerning Taihu rocks (fig.17) as well as what are referred to as yellow rocks (黄石) (Fig.18).

On the other hand, there is little information concerning any other types of rocks used in rockeries, though they are mentioned (Chen & Yu, 1986; Engel, 1986; Tsu 1988; Ji, 2006; Fang, 2010; Wen, 2019).

Other mentions of rock tend to be more generally described such as the use of pebbles in paving patterns (Fig. 19) and the use of

**Figure 19**

*Paving Pattern Made with Pebbles*



cut stone in the bases of buildings next to the water (Chen & Yu, 1986; Engel, 1986; Tsu, 1988; Ji 2006; Wen, 2019). Another feature related to rocks is the frequent mention of walls being used in gardens. These could be made of stone, brick, or rammed earth (Chen & yu, 1986; Tsu, 1988; Ji 2006; Wen, 2019). While walls are a ubiquitous feature

throughout China, they are not the only thing mentioned as being used for garden boundaries and divisions. There are also mentions in the historic based literature of fences, hedges, and screens made of many materials including bamboo and wood (Chen & Yu, 1986; Tsu, 1988; Ji, 2006; Jung, 2015).

As for the buildings in gardens, there are some mentions of masonry in connection to them such as roofing and flooring tiles, and solid masonry walls (Chen & Yu, 1986; Engel, 1986; Tsu, 1988; Ji 2006; Wen, 2019). For the rest of

**Figure 20**

*Song Dynasty Style Building in Suzhou City Museum with Thatch Roof, Paper Windows, and Wattle and Daub Walls*



the building, it appears that

wood was the primary

material. In many cases the

wood mentioned is only readily available in Asia (Tsu, 1988;

Henderson, 2013, Lan Su

Chinese Garden, 2020).

Historically windows in the

buildings would have also been

made of a wooden latticework

set in a frame which would then be covered with paper, pieces of translucent shell, or fine cloth. Paper, however, was the preferred material until trade with the west in the late Qing Dynasty brought clear and colored glass as a window material (Ji, 2006; Fang, 2012; Wen, 2019). While tile is the primary roofing material for garden buildings other options could include thatch (Clunas, 1996) (Fig. 20 ).

With this information it appears that, throughout their history, Chinese gardens have used materials locally available to some extent. Of course, some woods such as Nanmu and Rosewood would have to be brought from the southern portions of the country, but they were still relatively locally available. Even plants used in the gardens would have been locally available, even if they weren't native to a certain region of China. In some cases, plants in gardens of later periods weren't even native to China, but due to their inherent qualities they became commonly cultivated, like *Magnolia grandiflora* (Fig. 21) for example (Valder, 1999).

Figure 21

*Magnolia grandiflora*

## 5. Chinese Gardens in the West

Figure 22

View in Lan Su Yuan, Portland Oregon

Source: [https://www.instagram.com/p/B16ey9\\_AqcP/](https://www.instagram.com/p/B16ey9_AqcP/)

After looking at the history, theories, principles and materials of Chinese gardens it is interesting to look at how Chinese gardens have been made outside of China

Figure 23

*View in Liu Fang Yuan at the Huntington, California*



Source: <https://www.huntington.org/chinese-garden>

in recent years. While not all gardens outside of China have documentation concerning their history and creation, there are a few in North America that do, including Liu Fang Yuan of the Huntington in California (Fig. 23-24), Lan Su Yuan in Portland Oregon (Fig. 22), The Garden in Seattle Washington, and The Dr. Sun Yat-sen Classical Chinese Garden in Vancouver Canada (Keswick et. al., 1990; Li, 2009; Hattemer, 2010-2017; Lan Su Chinese Garden, 2020). In each of these gardens there are common patterns to the design and construction of the gardens. Generally, designers, engineers, and contractors work with counterparts in China to create a design for the garden, with designers in China taking the lead. From here a majority of the garden elements, including buildings, are prefabricated in China. Then, when all preparations are complete, the materials and craftsmen are sent from China to build the garden on site. Usually the plants in the garden are locally sourced though since many Chinese garden plant species are cultivated in North America. There is a preference for more mature plant material in any case.



This process to create an “authentic” Chinese garden in the west can be incredibly costly since all the materials and a fair number of workers come

**Figure 24**

*Courtyard in Liu Fang Yuan at the Huntington, California*



Source: <https://www.huntington.org/chinese-garden>

directly from China. Also, among those shipped materials, there has been an extensive use of Taihu stone. The slightly less than one-acre Lan Su Yuan used over 500 tons of this stone alone (Lan Su Chinese Garden, 2020), not to mention the pebbles and cut stone that was also shipped for the project.

There is also the matter of construction of the buildings. Since the garden buildings featured in each of these gardens is in the traditional style you would see in Suzhou, or Sichuan in the case of Seattle, specialist carpenters have to be sent from China to assemble the buildings on site after the timber frames for the buildings are created in China.

The case of needing specialist workers also occurs with other garden elements such as rockery work and the detailed masonry windows (Fig. 25).

**Figure 25**

*Workers from China Constructing Rockery in the Seattle Chinese Garden*



Source: <http://seattlechinesegarden.org/visit/courtyard/>

Further complications can occur when changes need to be made for the garden to comply with local code and regulations. When all this is added up, creating a Chinese garden like the ones mentioned at the beginning of this section can truly be costly.

The Huntington reported that the creation of their 12-acre garden cost around \$54 million (Huntington, 2019). While the garden was created in phases over time and they received many donations, this is still a cost which is out of

reach for many developers and communities. For other gardens of this type, it is reasonable to assume that they also had proportional costs in their creation.

## 6. Opportunities for Research

While there is a reasonable quantity of research and literature concerning the design of Chinese gardens, there are some gaps which provide opportunities for additional research. For instance, there aren't many, if any articles that discuss the creation of gardens in China today. The recently built gardens discussed in English academic literature seem to just be those built outside of China (Brash, 2012). Evidently, there could be more academic research into this topic.

It is also apparent that much that is written exclusively on garden design and aesthetics is dated and might not necessarily reflect findings from more recent literature. There are also some articles which are clearly poorly translated and need to be revised. In this category there is much which can be done. For example, there can be further research into how plants are arranged, or how rockeries are constructed to look like a natural rock formation. There could also be more research into the aesthetics of gardens from previous periods as these gardens could help give practitioners more options as to what a Chinese garden can be.

Beyond these more academically inclined modes of research, there is also some opportunity to use design research methods in the field. For example,

design research methods could be used to further validate the use of Chinese garden design principles and construction techniques outside of China. In all, it appears that there is plenty of opportunity for further research in regard to Chinese gardens within the field of landscape architecture and environmental planning.

## CHAPTER 3

### BARRIERS AND SOLUTIONS

#### 1. Chinese vs. Western Practices

From what is in the literature and what has been discussed so far, there should be some clear differences in how practices in China differ from those in the West. In some of these cases these differences create barriers to the use of Chinese garden design principles and construction techniques. But before we talk

Figure 26

*Unique Geology and Trees of Huang Shan*



about those barriers, it might be productive to first elucidate what some of those differences are.

First, is the most obvious, the difference in culture. This is, of course, also one of the biggest differences because it impacts so much. From the way people view the world to their ideas about aesthetics and their way of thinking, these are all impacted by culture. So, when the goal of a Chinese garden is to recreate natural scenery, what comes to mind for a person born in China and what comes to mind for a westerner can be very different things.

Figure 27

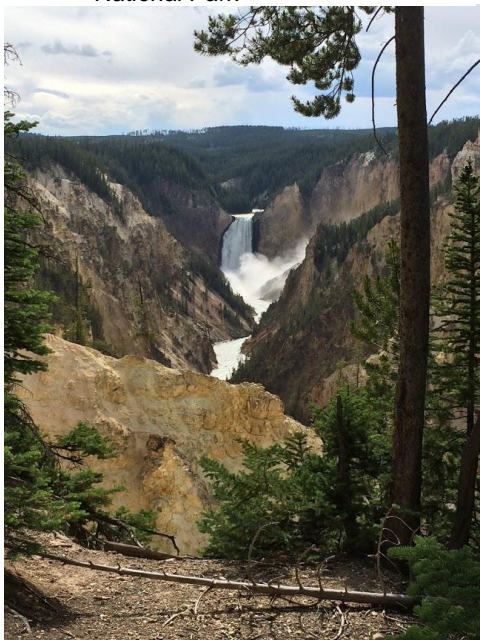
*Unique Karst Landscape in Southern China*



For example, so much of art and ideas about nature in China is influenced by the landscape of China which has some particular features not common in the west such as the shapes of mountains and the shapes that trees might take (Fig.

Figure 28

*Grand Canyon, Yellowstone National Park*



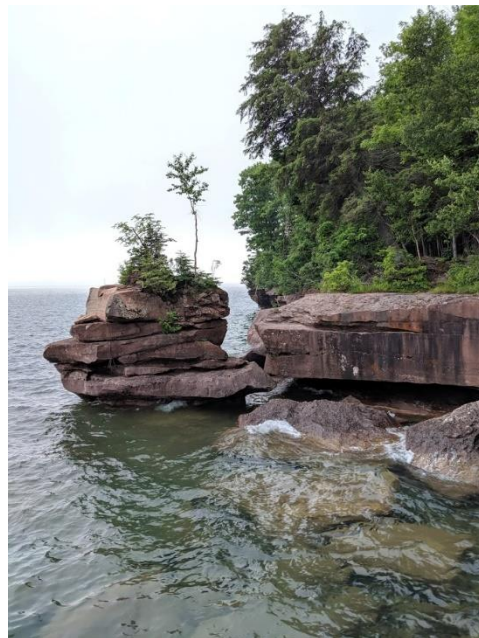
26-27). Of course, there are some landscapes in the western world which could reasonably compare to landscapes in China, but they still aren't quite the same. In the same vein though, so much of what Americans think about nature is influenced by local landscapes, especially national and state parks (Fig. 28-29) and wilderness recreation areas. Therefore, if the goal is to recreate

natural scenery in a garden, then those differing viewpoints need to be accounted for.

There are also some big differences in how Chinese and western landscapes are constructed. While in the west there is a tendency to make everything fairly level, within reason (Fig. 30), in a Chinese garden the opposite is true. The terrain is made to vary considerably, much like it does in nature

**Figure 29**

*Apostle Islands, Wisconsin*



**Figure 30**

*Example of Typical American Residential Landscape*



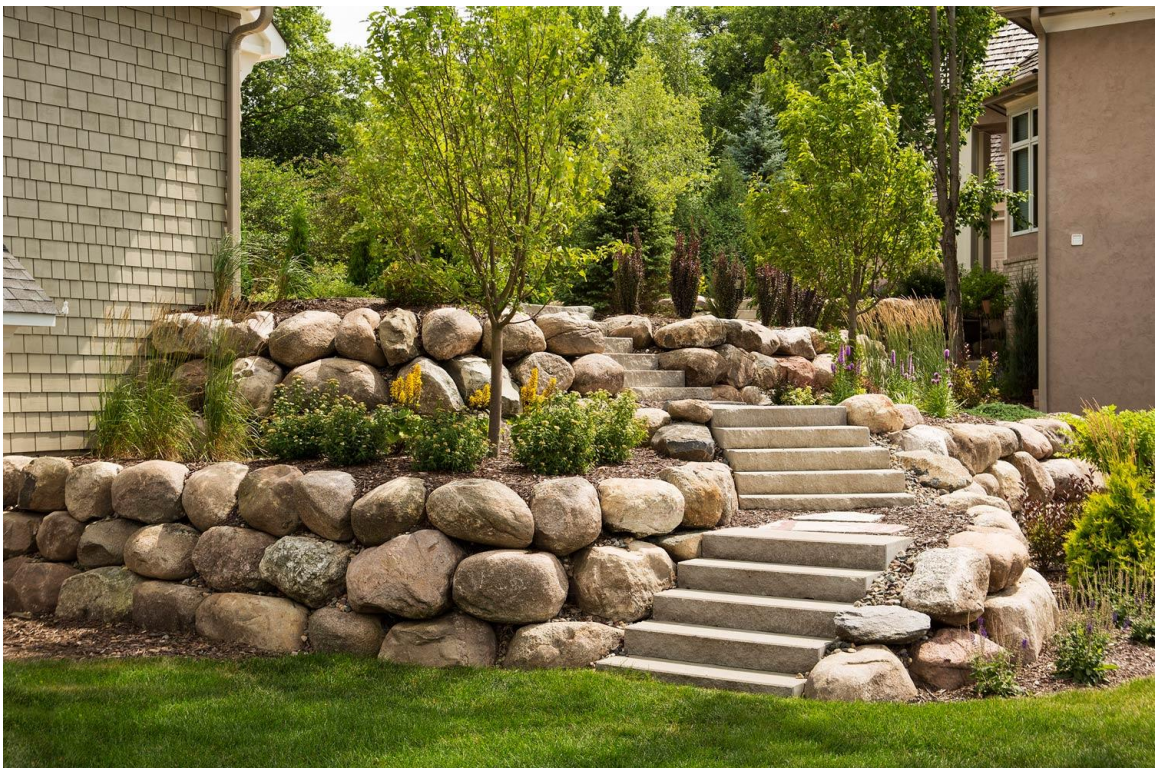
Source: <https://www.republictitle.com/tax-information-for-new-homeowners/>

(Ji, 2012). Rarely would you see a hill being built in a western landscape today purely for aesthetic purposes.

Another great example is how rocks are used and what rocks are used. Generally, in the west, there is a tendency to just sprinkle rocks into a design as a decorative element. The type of rocks used for this might have some interesting shapes or colors, but not much more character than that. When rocks are used to build retaining walls, they tend to be fairly regular and rounded in shape and they are stacked like you would stack bricks in a wall (Fig. 31).

**Figure 31**

*Typical Western Boulder Retaining Wall*



Source: <https://southviewdesign.com/landscaping/retaining-walls/boulder-walls>

Meanwhile, rocks in a Chinese garden are seen as an essential element which forms the skeleton of the garden. They are used everywhere. When rocks



are used to firm up embankments or create flower beds, they aren't just lined up. Rather they are carefully placed and selected to create the impression of natural rock formations (Chen & Yu, 1986; Engel, 1986; Tsu, 1988 ). Of course, some attempts are more convincing than others, but the intent is always there.

There is also a difference in the relationship between gardens and buildings between the West and China. In the West, gardens are seen as separate spaces that are meant to complement the buildings. In some cases, there is a

**Figure 32**

*Typical Western Garden Gazebo*



Source: <https://gardenspath.com/gear/outdoor-furniture/best-diy-gazebo-kits/>

closer relationship between the interiors of the buildings and the gardens, but they are still seen as separate. The architecture you typically see in Western landscapes is a gazebo or picnic shelter (Fig. 32), maybe a green house. And these buildings usually exist merely for decorative or purely functional purposes. Meanwhile, in a Chinese garden, the buildings are seen as part of the garden with their interiors being part of the garden space (Chen & Yu, 1986; Engel, 1986; Tsu, 1988; Wang, 1998). The buildings in the garden exist to complement the landscape rather than the other way around. They aren't just decorative, however, they also are functional. They allow people to inhabit the garden and enjoy it no matter the weather (Chen & Yu, 1986; Tsu, 1988).

The last major differences between landscape practices in the West and in Chinese gardens is how plants are treated and how plants are grown. In the west

it is common to clip, shear, and prune plants into rigid, formal shapes. If this isn't the case, at least grass is mown into the perfect lawn and shrubs and trees are pruned so their foliage is as thick as possible.

Meanwhile, in a Chinese

garden, plants are allowed to

grow into more natural shapes (Tsu, 1988)(Fig. 32). Their growth is kept in check by pruning, but it is less obvious. They are also pruned so that they have a more open character which highlights the lines of trunks, shoots, and branches and creates the look of a wild plant (Chen & Yu, 1986; Tsu 1988).

When it comes to planting design, in the West it is common to mass flowering plants together to create large flower beds full of color and contrasts in

*Typical Western Planting*



Source: <http://www.daviddomoney.com/cheap-ways-to-design-a-herbaceous-border-flower-bed/>

**Figure 33**

*Typical Planting in a Chinese Garden*



texture (Fig. 34). Often this means having multiple species in one area blooming at the same time and changing with the seasons.

Flowering shrubs are often planted in groups or singly. The same often goes for flowering trees.

Meanwhile, in a Chinese garden,

**Figure 35**

*Courtyard Planting in Master of Nets Garden*



while flowers are used more plentifully than in the gardens of Japan, there is a preference for subtlety and restraint (Engel, 1986; Valder, 1999). For example, in one area there might be just one species blooming (Fig. 35) during a particular season. Or there might be two species blooming, but one is a shrub and the other is an herbaceous perennial. Also, there is special attention paid to planting plants that produce noticeable fragrance, even if the blooms aren't very flashy (Valder, 1999). However, there is a lot of effort put into

creating contrast within plantings using the foliage of the various plants so that a variety of textures and colors are present (Figs. 35-36). Going back to culture, there is also a great emphasis put on using plants with symbolic value in the Chinese garden. In the West, symbolism of plants is rarely a concern.

Clearly this discussion on the differences between practices in the West and in Chinese gardens has been able to show that there are some differences which need to be considered when adapting Chinese garden design principles and construction methods. While some of these differences do create barriers, they also provide opportunities and avenues for

**Figure 36**

Typical Groundcover Planting in a Chinese Garden



innovation in the design and construction of naturalistic spaces. However, what might be the biggest barriers landscape architects are likely to face when doing this?

## 2. Possible Barriers

**Figure 37**

*Alchornea davidii* in Spring



Source: <https://www.pepiniere-brochetlanvin.com/vente-arbustes-terrains-calcaires/1985-Alchornea-davidii.html#.WR3lyVS-ihA>

**Figure 38**

*Pinus tabuliformis*



Source: <https://www.wikidata.org/wiki/Q1073968>

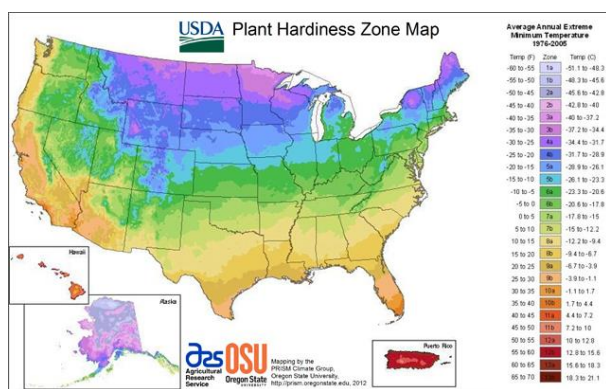
One of the biggest barriers, which was hinted at in the last chapter, is cost. The Chinese gardens constructed in the West so far are quite cost prohibitive. From the cost of materials being shipped from China, to the cost of construction and maintenance, Chinese gardens can be quite the expensive endeavor. There is a reason why it was more common for the wealthy to have gardens like the ones we see today. Seeing how so much in the United states revolves around money, this could be the most important barrier to overcome.

A related barrier is in the matter of garden materials. So many materials used in a Chinese garden like the ones

currently built in the West can only be found in China. For example, Taihu rocks are only found in select places in China and would have to be shipped from there in order to be used elsewhere. It might also be impossible to find the tiles used in the floors and roofs of Chinese buildings from a domestic source, not to mention the wood varieties used. In another light, some plants commonly used in Chinese

Figure 39

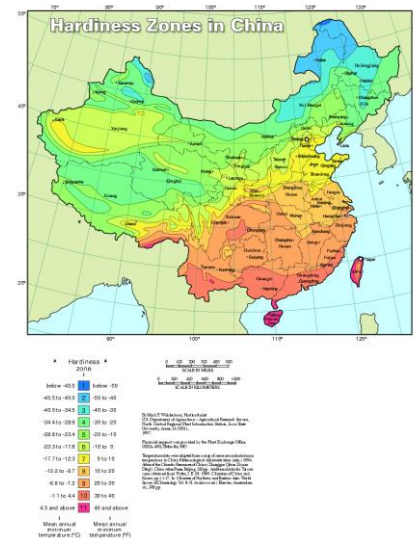
U.S. USDA Hardiness Zones Map



Source: <https://planthardiness.ars.usda.gov/PHZMWeb/>

Figure 40

USDA Hardiness Zones in China



Source: <https://www.richters.com/show.cgi?page=Zones/China.html>

gardens are invasive in areas of the US such as Paulownia and Japanese honeysuckle. Many that probably wouldn't be invasive, however, might be unavailable from US nurseries even though they have excellent qualities such as the Chinese Red Pine (*Pinus tabuliformis*) (Fig. 38)

and Mountain Hemp (*Alchornea davidii*) (Fig. 37).

There is also possibly a barrier of climate, depending on location. There are many places in North America where temperatures get far colder than they do in a large portion of China. This is easily determined by comparing hardiness zone maps for the United States and China (Figs. 39-40). It is also reflected in the plants that are traditional in a Chinese garden like the

flowering plum (*Prunus mume*) or camellias and gardenias. Many of these plants will not survive well when temperatures go below freezing. However, there are places where these plants can thrive like the Southeastern part of the country. Climate can also affect the needs and requirements of buildings and building materials in a garden. Buildings in colder areas might need to be heated and more enclosed and be made of more durable materials.

Another likely barrier could come in the form of laws, codes, and regulations. In some places, there are rules about how many, and what kind, of accessory buildings are allowed on a site. If someone was trying to make a Chinese style garden in one of these places there could be a lot of red tape to deal with before construction could begin, if at all. There might also be regulations concerning the aesthetics of an area which could limit what is possible on a property. However, there luckily are examples of what can be done with this particular type of barrier. For example, adjustments were needed in the design and construction of both Liu Fang Yuan at the Huntington and Lan Su Yuan in Portland. In Liu Fang Yuan, steel structures were made to look like timber-framed structures and railings on bridges were raised to comply with local building code (Li, 2009). In Lan Su Yuan, similar adjustments were made to comply with local codes (Hinshaw, 2003). Therefore, these gardens could be used as precedents to follow in similar cases.

Related to this barrier, is the barriers created by the differences in culture between China and the Western world. A purely Chinese garden, while enjoyable and interesting, might also be viewed as a foreign artifact in the Western

landscape, an exhibit of Chinese identity (Brash, 2012). So how can the differences in culture be addressed to create a space that feels authentic to the country it's located in? How might the differences in culture be addressed to create something more suitable to the melting pot that is the United States? Or could it be desirable to take a variety of approaches to Chinese style gardens in the United States?

Lastly, there is the barrier of education about Chinese garden design principles and construction techniques. This might be at least partly evident from the literature review. However, it needs to be addressed. As might have been noticed, some of the more detailed books on the subject are from the 1980's and aren't generally known to the profession. Even when you do have the books and educational resources available there are some serious gaps when it comes to construction techniques and planting design. For example, none of the literature reviewed gave as detailed a treatment on rockery construction as is needed for successful and safe design and construction of rockery features. Even if such detail exists in literature somewhere, anyone would be hard pressed to find a contractor or designer in the United States that could do the job. It's also incredibly difficult to find detailed literature on traditional Chinese timber framing beyond the usual discussion on the bracket structure used to support roofs on larger buildings. Therefore, if someone wanted to learn how to construct Chinese style garden buildings, they might be forced to make compromises.

### 3. Solutions

With each barrier to the use of Chinese garden design principles and construction techniques a number of solutions can be thought of to overcome the barriers. In some cases, the solution might be fairly simple and relatively easy. But some situations might require more complicated or difficult solutions. Overall it largely will depend on the local conditions, needs, and desires of a particular garden and its location.

When it comes to overcoming the barriers of cost and materials in creating a Chinese style garden, one of the easiest parts of the solution would be to use locally available materials. This might mean using materials you can get in different places of the country that can be inexpensively shipped, or it could mean using materials that are locally produced. From an environmental point of view, it might be preferable to use what is locally produced. A second part of this solution would be to limit the amount of rock used. If the budget allows for more stone, then use more. Otherwise it might be best to limit the amount of stone used in the garden. How this could be done will be discussed further in the design guide.

When it comes to the barriers presented by climates, the solution is to build what would work in local conditions and use plant material that can survive best in the location of the garden. One way this might manifest in a design is a preference for native plants over exotics. It might also mean changing how water is used in the garden, such as might be necessary for gardens in the southwestern states. Or it could mean having buildings in gardens that remain mostly closed-in



for portions of the year to accommodate human comfort in more extreme environments.

The barrier of laws and regulations might be the most difficult one to overcome when trying to build a Chinese style garden. It might require compromises in design. Or it could simply mean getting a property zoned differently or put in a PUD. This would mean that the property being used for the garden would be zoned to allow for the features of a Chinese style garden such as multiple buildings, large ponds, bridges, high walls, etc. However, a generalized solution is difficult to come up with since laws and regulations differ from city to city and from state to state.

While the barrier of laws and regulations might be the most difficult barrier to overcome, the barrier of differences in culture might be the more interesting to overcome. It's interesting because a solution could come in many different forms. One way it might manifest is in a very Chinese garden made from local materials to reflect a local identity where there is a population of people of Chinese descent. On the other hand, it could manifest in a garden that uses all of the principles, theories, and elements of a Chinese garden, but completely reflects local landscapes and culture. A solution could manifest in either of those ways, or in a multitude of ways which would be somewhere in between. Overall, the solution used in a particular garden should reflect what is needed locally while sticking to basic principles, theories, and elements, even if the result doesn't look Chinese at all.

The last barrier of education about Chinese garden design principles and construction techniques could be very important and impactful to overcome. This is partly because one solution could be to have designers and craftsmen from China come to centers in the U.S. and teach short courses on a number of topics covering the design and construction of Chinese gardens. A precedent program could be found in efforts made by the Japanese garden in Portland Oregon to set up what they call the “International Japanese Garden Training Center”.

At the training center, gardeners and craftsmen from Japan host workshops sponsored by the Portland Japanese Garden, near the Japanese garden, on various points of Japanese garden design and construction. A similar program could be set up at a Chinese garden somewhere. Not only would this make information about Chinese garden design and construction more accessible, it could also be a useful tool to foster relationships between the U.S. and China.

Another effort could be in the written word. Surely, this thesis can help in some way, but there is more that could be done. New books could be written. Journal articles could be translated. Some articles in English could be made more available. No matter what is done, it should be done to help get the word out about Chinese gardens and their possible benefits for everyone.

As was discussed at the beginning of this section, many of the solutions to barriers to the use of Chinese garden design principles and construction techniques depend on local conditions, needs, and desires. This suggests a more flexible approach in the use of principles and techniques related to Chinese

garden design and construction is required so that any garden can fit into its local context. However, for such a flexible approach to be useable and effective there needs to be a solid foundation of principles, theories, and techniques which are versatile enough that they can be applied in a multitude of situations. Therefore, creating such a foundation will be a major focus of the design guide.

## CHAPTER 4

### DESIGN GUIDE

So Far, the literature on Chinese garden design has been reviewed, and possible barriers and solutions have been described. Therefore, this design guide will teach how to design a Chinese style garden and overcome the identified barriers. As an illustrative device an example design of a theoretical garden in Chicago is included. The main intent of this guide is to, as comprehensively as possible, present the information from the literature on Chinese garden design and construction.

At the same time, there is also an intent to describe strategies and methods to overcome the barriers identified in the previous chapter. Some of these solutions will require using approaches from more distant periods in the history of Chinese garden development, while others will use approaches from more recent periods, including the present. Overall this use of multiple, but related, approaches should allow for the greatest flexibility while sticking to foundational principles and objectives.

#### 1. Objectives and Principles

The design of a Chinese style garden is a comprehensive exercise in design. This is because every element in the garden, from the elements of the landscape to the architecture and interiors is considered part of the same space. The

elements that make a traditional Chinese style garden are rocks, water, plants, architecture, and literature or poetry. Each element is interconnected. As such, each needs to be designed so that it is in harmony with the others while providing its own unique contribution to the atmosphere of the garden. One analogy commonly used to describe this relationship is that the garden is like a human body. The rocks form the bones of the garden while the water is the blood and the plants are the flesh and clothing. Architecture serves to counterbalance and complement the natural scenery and show the relationship of humanity with nature. Meanwhile, literature and poetry help to establish a poetic, artistic atmosphere for the garden. Therefore, there are a number of objectives and principles for Chinese garden design that enable the integration of the various garden elements into a cohesive whole.

### **1a. Objectives**

The objectives of any Chinese style garden design can be classified into two categories. The first category, the functional objectives, includes the overarching objective of creating a naturalistic space that is viewable, explorable, and habitable. Underneath this overarching objective for a garden are other objectives which could be included in the same category. One of these is to express the ideal relationship between nature and humanity where humanity is not separate, but part of nature. Along with this objective there is the objective to provide, within the space of the garden, everything found in nature such as lakes, rivers, streams,

hills, forests, mountains, etc. as well as a feeling of vastness. Meanwhile a garden should be fairly low maintenance, function like nature, and use local materials.

The second category of objectives includes the design objectives for the garden which are either aesthetically or experientially focused. Within the aesthetic realm of design objectives, Chinese style gardens should be simple, modest, restrained, graceful, tasteful, and elegant while expressing the essence, spirit, and mood of wild natural scenery. Chinese style gardens should also be sensitive to their location and context. They should not overwhelm any nearby natural scenery, but they should reflect their context. Lastly, there should be a sense of harmony throughout the garden where no one thing stands out too much from the rest.

Within the experientially focused design objectives are objectives that concern the experience of visitors or residents of the garden. First, the garden needs to stimulate all of the senses as much as possible. This might mean including plants with scented blooms and/or edible fruit. It could also mean including features because of their tactual texture, visual interest, or the sounds they produce under various conditions of weather. As part of this objective to stimulate the senses, the garden should also highlight the seasons and the passage of time through its selection of plants and materials as well as the arrangement of elements. Elements should take advantage of the changes in light over a day and the other changes brought on by weather. There should also be a balance between the two major modes of viewing a Chinese style garden which are the static and mobile viewing modes. To achieve this balance one mode

should be more dominant than the other depending on the size of the garden. Mobile viewing should be more dominant in a large garden while the opposite would be true for smaller gardens. Lastly there should be creativity behind the garden design which produces a degree of surprise and discovery within the garden experience.

### **1b. Principles**

In the literature it is noted that there are no patterns to copy for garden design, only principles to be followed. This is useful as it allows for a great amount of flexibility in how a garden might be designed. Therefore, it is important for any garden designer to be familiar with the principles behind garden and scenery design (Table 3). This will allow for the greatest flexibility, versatility and freedom within the design process.

The foundational principles for the design of garden landscapes are encompassed in three approaches which developed overtime and are sometimes mixed within a garden for different effects. The first approach is the full-scale recreation of natural landscape features in full. This approach usually requires a lot of land. Therefore, it is usually only incorporated in imperial gardens or gardens of a similar size. The second approach involves recreating full landscapes in miniature. However, these are not physically explorable, so they are better used for distant viewing in new gardens. For example, a miniature landscape could be used to provide the experience of viewing distant mountains within a limited space. The last method involves recreating sections of a full-scale

landscape and combining them in a way to recreate the experience of a larger space. It might be possible that many gardens after the Song dynasty took this approach.

The other foundational principles used in each of these landscape design approaches include the distinction between primary and secondary elements, the division into scenic sections, the use of contrast to create rhythm, the use of visually layering spaces to create greater depth, and theme. One of the more important of these principles is the distinction of primary from secondary features. Primary features should be the largest, most dominant features within a given scene. This principle is found in all areas of garden design. It even takes part in the layout of the garden as a whole. Traditionally this would manifest in a layout with a central primary area, usually a pond and hill, surrounded by secondary areas. This main area is where a main hall for the garden would be located.

Division is also an important foundational principle of Chinese garden design. Under this principle a garden is divided into various themed scenic sections that have a sequential order that creates a kind of narrative. Rinaldi (2011) refers to it as a “garden in episodes”. This division does a number of things for the garden. For one, it helps the garden to feel bigger as sections are usually separated from each other in some way such as through the use of walls, fences, plants, or artificial hills. Usually the various scenic sections in a garden are able to be glimpsed from other sections of the garden, but you should never be able to see the entire garden in a single glance. Secondly, the various sections are usually



of a contrasting nature which helps provide the variety of an experience in nature while creating rhythm as one tours the garden. In fact, the use of contrast is an important principle of its own in Chinese garden design.

There is also a division present in the composition of garden scenery where the goal is to create visual layers of space which creates a sense of depth

Figure 41

*Creation of Layered Views in Plan View*

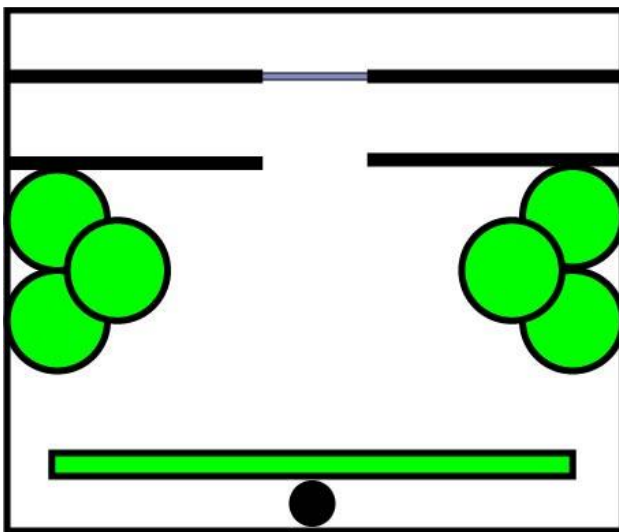
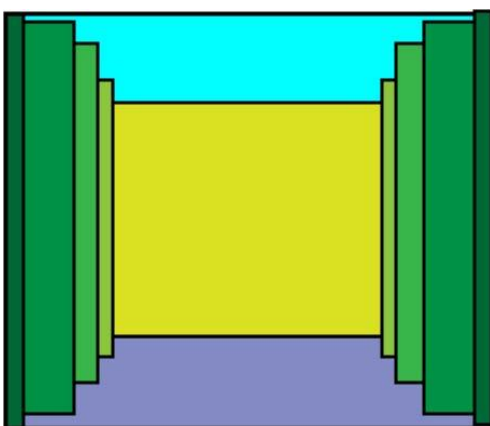


Figure 42

*Depth Created on a Stage*



(Fig. 41). One way this can be done is by using openings and columns of walls and buildings to frame scenery. What is especially effective is when these frames are layered through space so that one scene is framed in another, which in turn is framed in another and so on. The same concept can be used with plants where gaps through trees

might frame a scene while those trees are part of another scene framed by columns and low growing plants in the foreground. One way you could think of it is in terms of traditional theatrical scenery where layers of scenery elements create greater depth on stage (Fig.42).

Theme is also foundational to each garden design. There should generally be an overall theme to the garden which ties the themes of the scenic sections together. Perhaps a general theme for a garden is an outing to the mountains, or the scent of flowers. These themes would unite the themes of each scenic section into a whole. Possible section themes could include waterfalls, streams, seasonal plants, mountain scenery, still water, a gorge, a wilderness retreat, forests, etc. These themes are all vital to the success of a garden design.

Beyond the foundational principles of Chinese garden design, there are also several principles which help to serve the purposes of the foundational principles as accessories. Many of these principles have their roots in traditional Chinese painting practices, but there are also some which are particular to Chinese gardens.

Principles with roots in traditional Chinese painting include complementarity, gathering and spreading, crookedness, scale, proportion, and balance. With complementarity the goal is to pair things which enhance and bring out the best in each other. In many ways this is related to the principle of contrast, but it is different. For example, a red rose complements its green leaves making them appear greener, and the leaves make the rose appear redder. Thus, there is complementarity between the two elements of a rose. On the other hand, there may be contrast between rough and smooth surfaces, but that doesn't mean that the smooth surface seems smoother because of the rough surface adjacent to it. However, both are important principles of Chinese garden design and there should be as much of each as possible.

The principle of gathering and spreading was a difficult concept to interpret from the literature. But it appears to be suggesting that elements should not be evenly spaced. They should be dense in some places while sparse and spread out in other places. The intent is to create a layout and design which feels solid, while not being crowded.

The principle of crookedness generally refers to the avoidance of straight lines in Chinese garden design. This is one of the reasons why paths are usually winding and twisting while some bridges zigzag across the water. It also means that streams and shorelines of ponds should be sinuous, wandering, and meandering in nature. It can also apply to plants like trees which are hardly allowed to grow in a perfectly straight line. However, there are some exceptions where straight lines are used to create engaging scenery, but they are exceptions. This emphasis on crookedness can help make the garden feel bigger by increasing the possible views in the garden and increasing travel time in the garden.

Scale, proportion, and balance are also integral to Chinese garden design. Balance generally means that no individual element in a scene or design overwhelms anything else. For instance, there wouldn't generally be a large towering building in the middle of a garden. But it also refers to the asymmetrical balance found in garden scenery, garden layout, and landscape paintings. Scale and proportion are what ensure this balance is maintained.

Scale and proportion are important in creating a sense of greater space. Since things that are further away or higher up are smaller, smaller elements with finer textures should be placed in locations which make them seem high up or far

away. For example, tall, large trees are not planted on top of a hill or mountain that is intended to feel tall and lofty. Such trees would only make the hill or mountain seem shorter. However, smaller and shorter trees, and trees planted behind it might help it feel loftier.

The principles which are unique to gardens include focal points, conceal and reveal, suitability, changeability, and borrowed scenery. Focal points are an important part of garden design as each scenic section should have at least one. Usually, it's best to have multiple focal points in a scenic section, unless it is very small. Once focal points in the scenic sections are determined then there needs to be a decision of where these focal points will be viewed from. Will they be viewed from a larger building, or will they be viewed from a small pavilion? The answer depends largely on context. In the end they should be placed for greatest aesthetic affect. Such as positioning a main mountain peak off center when viewed from a main hall.

Conceal and reveal is a common principle used to create poetry and drama within the garden. It can also be used to create endless changes in the scenery with every step of the visitor. For example, you might go around a corner to discover a small group of flowers in a mountain gulley only to disappear in a few steps and be followed by a cave or view of a waterfall you couldn't see before. Or when crossing a zig zag bridge the view you get at each turn happens to be different.

Suitability is a very important principle in Chinese garden design as it will determine if the garden is successful in meeting its objectives or not. When a

building or scenic feature are placed in locations that are not suitable to them, this can create a feeling of awkwardness in the design. However, what is suitable for a particular feature can be subjective to the desired effect in a scene. For example, a building next to a waterfall might not be suitable because of its size, but that same building could be a suitable focal point elsewhere.

Changeability can refer to how the garden scenery changes as you explore the garden, but it can also mean that a scene, when viewed from a distance can look drastically different, when you get there, from what you expected. At the same time, it highly contrasts with the scene you left. This helps the space feel bigger in the garden due to the contrast created by changeability and the variety it provides. This helps to create the sense of discovery and surprise that is so important to garden design.

Lastly, the principle of borrowed scenery is also useful in creating a feeling of greater space in the garden, while also helping create the garden's atmosphere. To do this there needs to be attractive features that can be viewed from the garden site. It might be only viewed from elevated positions in the garden, or it might be a feature seen from the main path. The barrier in front of a borrowed scene outside the garden should be concealed behind vegetation so that the scene appears to be in the garden. Also, borrow scenery within the garden since this helps to tie the garden together and increase the feeling of vastness. However, it is important to note that unattractive features should be screened from view in some way. For example, you could use vegetation or tall buildings to block unpleasant or distracting views.

Table 3

Table of Chinese garden design principles

<b>Foundational Principles</b>	<b>Objectives Met</b>
Have the garden divided into themed sequential sections that create story and rhythm	Make the garden explorable, make the garden feel bigger, provide everything in nature, provide surprise and discovery, balance modes of viewing
Make sure there is high amounts of contrast	Make the garden feel bigger, provide surprise and discovery, balance modes of viewing
Distinguish between what is primary and what is secondary	Have a sense of harmony, maintain restraint, be sensitive to location and context
Create visually layered spaces	Make the garden feel bigger, provide surprise and discovery
Recreate landscapes in full scale, in miniature, or sectionally	Provide everything in nature, make the garden viewable, make the garden explorable, male the garden livable, make the garden feel bigger
<b>Accessory Principles</b>	
<b>Principles from Painting</b>	
Complementarity	Create harmony, embody elegance, be sensitive to location and context, express the ideal relationship between humanity and nature
Gathering and Spreading	Express natural, wild scenery, create harmony
Crookedness	Make the garden feel bigger, express natural scenery, provide surprise and discovery, balance the modes of viewing
Scale	Make the garden feel bigger, create harmony, provide everything in nature
Proportion	Make the garden feel bigger, create harmony
Balance	Create harmony
<b>Principles Unique to Gardens</b>	
Have Focal Points	Make the garden viewable
Conceal and Reveal	Provide surprise and discovery
Suitability	Create harmony
Changeability	Emphasize the passage of time, make the garden feel bigger
Borrowed Scenery	Make the garden feel bigger, express natural scenery, Provide everything in nature

## 2. Process

The design of a Chinese style garden, while artistic in nature, does generally follow an identifiable process with six individual steps. The first two steps in the design process mirror the process generally used in the West for landscape architecture design. However, due to the highly integrated nature of a Chinese garden design, the latter steps can take a more interactive, cyclical process where changes made in one step could affect other parts of the design. For example, if there was a change made concerning where buildings would be placed in the garden, this could affect the placement of scenery as well as the design of the touring routes. This would require the designer to go back or forward to different steps in the process so that the garden can be a harmonious whole. Or when dividing the scenic areas of the garden and designing the landscape features the designer might need to take consideration of the buildings that will be in the garden and their design. Overall, the design of each element depends on the design of the others to such a degree that every detail needs to be thought through to produce the best results. For example, in designing the garden in Chicago, the placement of the buildings really had a large effect on the design of the garden scenery where moving one building meant others would need to be moved along with some scenic sections.

### **2a. Site Selection**

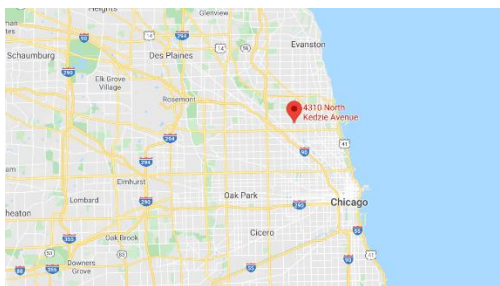
When choosing a site for a garden, the literature often describes a range of preference with countryside sites being more preferred and urban sites being least preferred. However, a majority of the gardens you can see today are in urban areas. Even in history there are many records of urban gardens being made since they could provide benefits related to reclusion in nature, while keeping the owners close to the conveniences of city living. Therefore, a garden in an urban setting, or even a suburban setting, should be perfectly capable of creating a naturalistic space.

On the other hand, there needs to be care taken into consideration of where a garden will be built as it will affect many of the steps later on in the design process. Of course, landscape architects generally don't get to make decisions on site location. Often this is already made by the client. But if possible, it would be very beneficial for the landscape architect to be a consultant in the site selection process.

For the garden design in Chicago a number of sites, and site types were

**Figure 43**

*Context of Chicago Garden Site*



Source:

<https://www.google.com/maps/place/4310+N+Kedzie+Ave,+Chicago,+IL+60618/@41.8603564,-87.7802488,10.68z/data=!4m5!3m4!1s0x880fcded95b72ca7:0x40c5180e3e2f789f!8m2!3d41.9598476!4d-87.7085636>

considered. For example, one option could be to redevelop an existing park, or part of an existing park, into a Chinese style garden. However, due to a lack of knowledge and information on the current degree of use for local parks, it was determined that it would be better to select a currently vacant site. To make the



selection, the real estate tool, Zillow, was used to find potential garden sites. As a part of this search the option for vacant land was chosen along with a filter for sites at a size from a quarter of an acre to one acre.

As each potential site was considered, the particular location and its inherent features were considered. Effort was taken to try to select a site that either had mature trees on site or visible from the site. There was also consideration of how the garden would be impacted by its surroundings. For instance, if a site was near a considerably busy road, it would be passed over for sites in residential areas or on side roads.

How the garden would impact the community was also considered. Therefore, sites in areas with high crime would be passed over for ones in safer areas of the city due to the possibility of a less used garden attracting criminal activity and vice versa. The garden should be a place where people go often to socialize and enjoy nature. It should feel peaceful and safe. If a site is selected in a high crime area measures need to be taken to assure that the intended use and atmosphere are protected. In the end, a half-acre site situated between a minor commercial district and a fairly dense residential area in the North Center neighborhood of Chicago was chosen for the garden (Fig. 43).

## **2b. Analysis**

When it comes to the step of analysis, there is much which is shared between Chinese garden design and Landscape Architecture in the West.

However, there are some areas of analysis which are especially important when designing a Chinese style garden. First off, everything about the site's physical characteristics needs to be known. Therefore, the designer should know the general terrain and soil composition on the site, the relationship of the site to the sun and moon at different times of the day and year, the USDA hardiness zone of the site, possible existing microclimates on site, existing vegetation (especially trees) on site, and any laws, zones, and regulations pertaining to the site.

Designers should also be familiar with what is visible from the site. Are there some nice mature trees visible from the site? What about landscape features like lakes, mountains, hills, and rivers, can you see any of those? You will want to borrow those kinds of views. On the other hand, you also want to be aware of anything viewable from the garden which needs to be blocked from view like ugly buildings, electricity and telephone poles and wires, busy roads, and anything else that might not suit a naturalistic atmosphere. Lastly, you want to be aware of what can be heard from the garden site so that man-made noises like cars and construction noises can be minimized.

When it comes to the Chicago garden site there were some limitations on what analysis could be done since all of it had to be done remotely. However, there was quite a bit of information that could be found through online resources. For example, using Google Maps or Google Earth, the author was able to view the site and its surroundings to make some basic observations.

First of all, one side of the site faces a busier road lined with local businesses. Therefore, steps were needed to minimize car noise. Consequentially

walls surround most sides of the garden. However, the road is relatively less busy than others in the city, so noise isn't as big of a concern as it could be. It was also observed that the residential lots on the other side of the site have a good number of mature trees in their yards. So, it might be a good idea to use those to have a borrowed view that creates the impression of a larger garden or forest beyond the garden boundaries. From satellite imagery you can see that there are multistory buildings to the north and south of the site. However, there is open road to the east and tall trees to the west. So, it would be good to emphasize the light from the morning sun coming from the east and any shadows that could be made.

Other information about the site was able to be gained through simple internet searches. For example, the author was able to find zoning information and codes and regulations from the city of Chicago. It seems that codes and regulations wouldn't be a problem on this site as there are few limits on the number of buildings allowed and types of construction. However, the site would need to be rezoned from its current business zoning to the assembly category which covers gardens, amusement parks, museums, arcades, etc. The Author was also able to find that the garden site is in a small pocket of USDA hardiness zone 6a which covers much of Chicago. This information will largely inform our selection of any non-native plants for the garden as well as how buildings and other features need to be designed to handle winter weather.

From this process of site analysis, designers will be able to get enough information to create an effective garden design which brings nature to whatever setting it is in. Just keep in mind the objectives and principles of a Chinese style

garden as well as the need for harmonization between the garden and its surroundings. If the site analysis is carried out correctly, the rest of the design process should be fairly straight forward.

### **2c. Division into Scenic Areas**

Before you divide the garden site into its scenic areas you need to make some key decisions about the design. It would be best to work with the client to make these decisions as they will affect the final design. First you need to decide on the cultural approach you will take with the garden design. For this you generally want to take one of three approaches.

The first approach is a purely Chinese approach where the goal is to recreate what you might find in a garden in China. You might use mostly locally available materials, but the plants will all have Chinese origins and rocks will be as similar as possible to those available in China. This approach could be suitable in an area with a high population of ethnically Chinese people.

The second approach is a more mixed approach where some elements of Chinese culture and design would be used, but they would be blended with local landscapes and traditions. There could be many interpretations of this approach varying from the more obvious to the more subtle. Therefore, this approach could be suitable in a variety of contexts. For the Chicago garden this will be the approach used for demonstration purposes since it might be the hardest to understand how to do.

The last approach is a fully local approach. Here you would use completely local materials, culture, and landscapes to create and design the garden. This approach tends to be the most flexible and versatile. It also would result in a garden that doesn't necessarily look Chinese at all. So, if the author was using this approach in Chicago, they would base the landscape design on scenic areas in Illinois, all the plants would be native, and the architecture would reflect historic examples in the area.

Once the approach is decided the overall theme for the garden as well as the themes for the various scenic areas need to be decided. The overall theme for the garden can be more conceptual and poetic since it is meant to unite the various scenic areas together. The overall theme could even be a summary of the experience that is trying to be created in the garden. For the Chicago garden the main theme will be a visit to a state park or recreation area. However, some other themes might include a highlight feature of the garden like its fall leaves or spring blooming trees, or it could be the feeling created by the garden.

**Figure 44**

*Chicago Garden Scenic Sections*

The themes for the scenic areas usually take the form of their main feature or the activity that is done there. Some common themes include hill and pond, streams, borrowed scenery, cliffs, gorges, rivers, blooming flowers, waterfalls,

fruit trees, bamboo

groves, forest,

mountain peaks,

listening to the wind

or rain, watching fish

and ravines. For the

Chicago garden the

scenic section themes

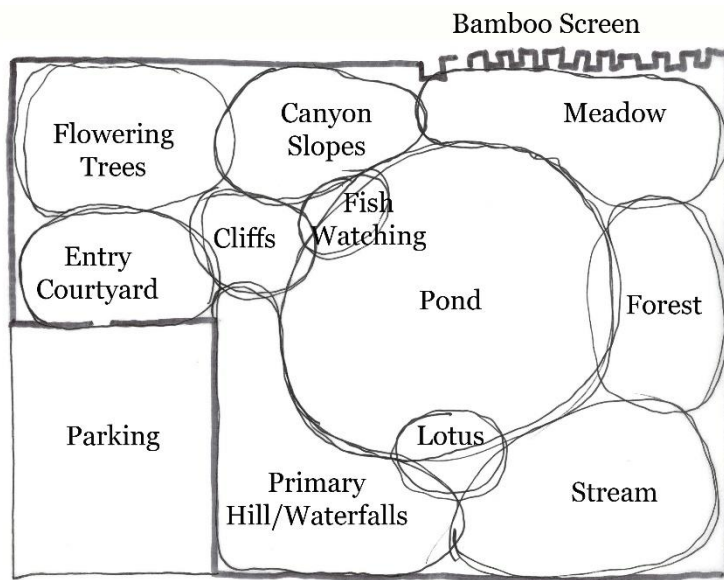
will be hill and pond,

native lotus flowers,

fruiting and flowering

trees, cliffs, waterfalls, forest, meadow, watching fish, canyon slopes, and a stream (Fig. 44 ).

Once you have chosen the overall theme for the garden as well as the themes for scenic areas to include you are ready to divide the site into scenic sections. Traditionally the hill and pond scene is the primary scenic area that forms the center of the garden and the other, secondary scenes are arranged around it. Often this arrangement helps the garden to feel larger as the pond is able to reflect surrounding scenery as well as the sky. This will be how the Chicago garden is arranged. However, it might be necessary to make a meadow



with a stream or some other scenic section the primary scene if budget, regulations, or location make a pond unfeasible. This is an important consideration as the primary scenic area needs to be the largest.

Once the primary scenic area is located, secondary scenic areas need to be arranged around the primary area in a way that makes sense narratively. For example, you would want to have a sunny open meadow followed by shady forest to create contrast and rhythm. You don't want to put a ravine section, forest, and bamboo grove scenery one after the other since this might make the garden feel too crowded. There needs to be a rhythm and logic to the order scenic sections are put in. Otherwise the garden might not create the desired affect of touring a natural space.

## **2d. Design of Landscape Features**

Once the garden is divided into its scenic sections and those sections are put in order, it is time for the design of the garden landscape. At this point the designer should know the general size and number of the buildings that will be incorporated in the design. This can be determined by discussion with the client about the desired features and functions of the garden. So, while the designer will be designing all of the landscape features at this point in the design process, they will want to keep in mind the buildings and their potential placement.

Generally, there should be an unevenness and asymmetry to the garden landscape that is in harmony with nature. There should also be a winding and layered layout to it all, as has been previously discussed. However, there are

many particular details concerning the design of each landscape feature. Therefore, a following section will describe in detail how to design each individual feature that might be in a Chinese style garden.

## **2e. Placement of Buildings**

Once the design for the landscape features is done the designer can start to make some final decisions about where buildings will go. The main hall, since it is the center for social activity in the garden, should be placed somewhere in the primary scenic area. It is common to have one side of the main hall face the main waterbody of the primary scenic area. Traditionally it was also common to have the main hall face south, but this wasn't seen as absolutely essential. However, no matter where you decide to place any building, it should be in a suitable spot that makes sense and serves a purpose. For example, if a designer is putting a small pavilion on top of an artificial hill or mountain, they should place it below the peak since this will help preserve the hills feeling of loftiness when viewed from a distance. Also, when placing a pavilion in such a situation (in an elevated place) there should be some sort of view to take advantage of when there, otherwise there isn't any practical reason for it being there. Buildings for more quiet contemplation or small group gatherings should be placed in more secluded spots. The same goes for bathrooms. Hopefully these tips help give a better understanding on suitable locations of buildings in a Chinese style garden.

## **2f. Touring Route Design**



The very last step needed to take in Chinese style garden design is to layout the touring routes. Yes, there should be several routes to explore within the garden. However, once again, the designer needs to distinguish between what is primary and what is secondary. Generally, the main touring route is easily traversable by all populations and age groups and allows the visitor to see the main scenic sections of the garden. Secondary touring routes often consist of optional side trips that can include more difficult to follow pathways such as a narrow twisting trail up a steep slope or a crossing of a stream involving steppingstones. Secondary routes might also be simply narrower paths that lead to more secluded areas from the main loop. Generally, pathways will be winding and meandering just like streams and trails in nature. This increases the time it takes to go along them which helps create a feeling of greater space. But, due to the amount and variety of scenery along the path, the time it takes to tour the garden won't be an annoyance. Instead it will be a pleasant trip, much like driving along a scenic byway. It might take longer, but the view makes it worth it. Paths might, however, go through a courtyard that could act as a connecting node for several paths. This could give the garden a gathering point. Overall though, if the designer did a good enough job in creating the scenic areas and other previous steps in the design process, the design of the touring routes should be fairly straight forward while giving the user a variety of experiences that create the mental impression of going through a far larger landscape.

### 3. Feature Design and Construction

Much of the success of a Chinese style garden also depends on the design of its features. When well designed and integrated, the features of a garden can create a space that replicates the experience of being in wild nature with its wide variety of scenic beauty. However, there is more to successful feature design than just beauty. Features need to also be safe, functional, and long lasting if they are to be successful. Therefore, attention needs to be paid to the details of each feature's design to ensure the garden is a beautiful, safe, and functional space that can be enjoyed over a significant length of time. In this section these design details are organized according to their corresponding garden element; these being earth, water, plants, and architecture.

### **3a. Earth**

Earth and rock serve as the bones, or main structural element and foundation of a Chinese style garden. As such, it should twist, turn, and undulate just like it does in natural landscapes and traditional landscape paintings. While its form can be fluid and poetic and sometimes rugged and dramatic, it should also exude a sense of strength and stability.

#### **3a1. Design and Construction of Mountains and Hills**

Artificial hills and mountains are one of the distinguishing features of a Chinese style garden. They are meant to distill the essence of natural mountain scenery in an artistic way. Therefore, special care should be taken in their design so that they are beautiful and functional. The functions that hills and mountains

play in the garden include separating scenic areas, acting as transitions between scenic areas, and creating backgrounds for garden views. Among the different ways you could separate garden scenic areas, the hill or mountain is one of the more natural methods.

When you design a hill or mountain you will want to know every possible detail about it. This involves selecting rock, and making sketches (in plan view, elevation, and section). This is especially important when a hill or mountain will be incorporating a lot of rockery, like that used to make cliffs, ravines, waterfalls, and caves, since its construction needs to be structurally sound.

**Figure 45**

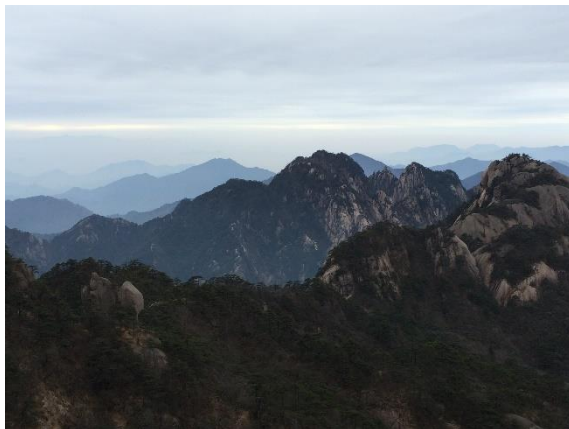
*Peaks in Patagonia, Argentina*



Source:  
<https://www.independent.co.uk/travel/americas/patagonia-travellers-guide-9860753.html>

There are, generally, three types of artificial hill or mountain. While a garden might have just one type, it is possible for there to be different types of hills and mountains within the same garden. The first type is one made completely of soil. This type generally works best in very large gardens since they require a large base to be built to any significant height. Plus, smaller hills of soil can become less interesting over time due to the processes of weathering. However, when you use the soil from excavating a pond or lake to build them, they can be very cost effective.

Figure 46

*Rounded Peaks in Huang Shan*

The second type is a hill or mountain made with a mixture of soil and stone. The ratios of stone to soil in this type can vary since a hill could just have outcrops of stone scattered on its surface, or it can use a large amount of stone to hold in the earth at more extreme slopes. There could even be a part of the hill that is mostly made with

stone while the opposite side is made of soil. Of course, hills that use less stone can be cheaper to build, but ones with more stone can be more dramatic. Among the different types of hills and mountains, this type, using a mix of stone and soil, might appear the most natural since they can have as much stone as is desired while having enough space and soil for plantings. Also, from what historical

Figure 47

*Peak in Appalachian Range, Maryland*

literature was reviewed, it seems that artificial hills of the Song Dynasty through to the middle of the Ming Dynasty could have been mostly of this type.

Source:  
<http://chamspage.blogspot.com/2007/03/annapolis-rocks-black-rocks-at-maryland.html>

The final type of hill or mountain is made completely of stone. These can be the costliest to build, depending on their size. However, they also have the ability to be the smallest, thus making them well suited to small spaces. Since this type is made completely of rock, they can be designed to be either free standing or up against a wall. It could be very possible to build a rather dramatic cliff

Figure 48

*General Elevation of an Undercut Mountain*



Figure 49

*Bryce Canyon Hoodoos, Utah*



Source: <https://www.backpacker.com/stories/natural-wonders-tallest-hoodoo-largest-gators-lost-maples>

and/or waterfall with this type of artificial hill or mountain. Historically, these were not popular until the late Ming through the Qing dynasties.

With the three types of artificial hill and

mountains in mind there are

five general shapes or forms

that they can take. These forms

consist of the vertically inclined,

the rounded, the layered, the

undercut, and the hoodoo type.

The vertically inclined type

looks like the dramatic peaks

often found in younger mountain ranges like in the Alps or the mountains of

Patagonia (Fig. 45). In the literature this type is described as an upward pointing

sword shape. The rounded type mimics the rounded gentle shapes of mountains

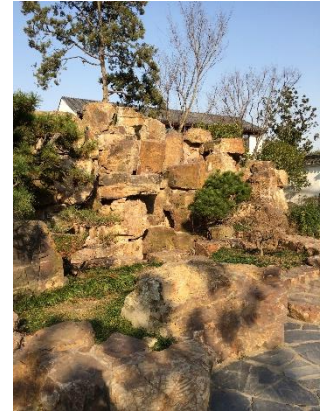
worn down by glaciers (Fig. 46). The layered type mimics older mountains that

are mainly composed of soil with occasional exposures of their layers of rock (Fig.

47). To create this type, you would want to focus on using stone slabs with strong horizontal graining to increase the feeling of natural layers of rock. The undercut type mimics the form where one side slopes up naturally while the opposite side consists of a cliff with a strong overhang (Fig. 48). Lastly, the hoodoo type mimics much of the formations one might see in the American southwest where the upper part of rocks is wider than the lower parts, thus creating overhangs on opposite sides (Fig. 49).

**Figure 50**

*Blocky Peak in Garden, Tiger Hill, Suzhou*



**Figure 51**

*Chinese Rockery Waterfall*

Along with each of these general forms a hill or mountain can take, there are accompanying shapes the primary and secondary peaks might take. Generally, the main peak is consistent with the general form of the hill or mountain while secondary peaks can take a number of shapes including the vertical, the blocky, the reaching, the single and the double types, and the multiple type. The vertical type goes well with the vertically inclined mountain since it echoes the shapes found throughout the mountain and main peak. The blocky type helps provide a firm and stable feeling since it is composed of thick blocks of stone laid out in a natural form (Fig. 50). This type is generally used with the vertically inclined and the undercut types of mountains and peaks.



Source: <https://kknews.cc/zh-my/design/qg4a9ab.html>

The reaching type is very striking with arms

of stone stretching out like severely weathered rock (Fig. 51). The single and double types refer to the number of secondary peaks in the mountain. In a single type the secondary peak should be  $\frac{1}{2}$  to  $\frac{3}{5}$  the height of the main peak. The double type has two secondary peaks that are unequal in height. The multiple type, like the single and double types, refers to the number of secondary peaks. Generally, with this type there are three or more secondary peaks that are not set in rows and are of varying heights and distances from one another.

Now that the general methods of construction and the general forms of artificial hills and mountains have been discussed, the specifics will be covered. When designing an artificial hill or mountain, the designer should make sure it has as many features as possible in order to replicate a variety of natural scenery. For example, efforts should be made to include a number of features found in natural hills and mountains like cliffs, gorges, ravines, waterfalls and streams, and caves or tunnels. They should also mimic what is found in local scenery so that it will blend in and be suitable for any borrowed scenery.

When creating a single mountain that will stand alone, have it slope up gently from the foothills until reaching the midpoint where the top half will be created in accord with local landscapes. When creating mountain ranges, however, have the lower sloping part extend beyond the midpoint. Such mountain ranges should be on the tall side while single mountains should be more on the low side.

No matter the type of mountain being designed make sure certain aspects are included. For one, make sure that there are a multitude of levels and

elevations present in the design . Secondly, the various ridges and peaks should echo one another. There should be some similarity between the ridges and peaks while still including a variety of forms. The composition should lead the viewer to look around. Next make sure there are no even or continuously flat surfaces on the mountain. Instead try to make the outline tortuous and curving with parts that stick out and others that go inward. Very little of the mountain should be at any kind of constant level. Lastly, make sure all parts are proportionate and harmonious with each other.

Mountains and hills should also be able to give an impression of depth and height. To achieve this, the techniques used in traditional landscape painting are employed. The most useful techniques are centered in creating feelings of height, depth, and distance. A feeling of height is created when lower peaks are placed in front of higher peaks. This feeling of height might be enhanced if something like vegetation, or a waterfall is seen between the higher and lower peaks. A feeling of depth is created by layering via an interlocking of two mountains or hills. Lastly a feeling of distance is created with winding elevations and paths.

There are also many technical aspects to the construction of artificial hills and mountains. In fact, traditionally there are craftsmen who specialize in the construction of the rockery elements of hills and mountains. However, while there could be more research done on their construction, there is enough information in the literature to get a general idea of how rockery is to be constructed.



To start, there needs to be solid foundations for the rockery elements as they will be made with natural stones of a decent size. Once there are good foundations in place for the design, stack the stones with the largest and most sturdy ones at the bottom and use gradually smaller stones as the elevation increases. It is recommended that stones smaller than eight inches (20 cm) should be used less frequently for the majority of the rock work. Such small stones should be used generally as filler between the larger stones. The size of stones for the majority of the rockery construction should be 14 inches (35 cm) or more in diameter.

To keep the stones together use mortar or grout that has been colored to match the rock. The seams between the rocks should be very tight so that there is minimum evidence of their construction. It is especially important to hide seams when building with Taihu like rocks. However, when building with rocks like the yellow stone rocks, the seams can be emphasized by cutting into the grout. This can create shadows and lines in the rockery that look like natural cracks. Planting pockets between stones can give a wilder and more natural look to the rockery when they are filled with plants that like cramped and dry conditions in the wild. Small ferns could even be planted if the rockery is part of a waterfall.

Figure 52

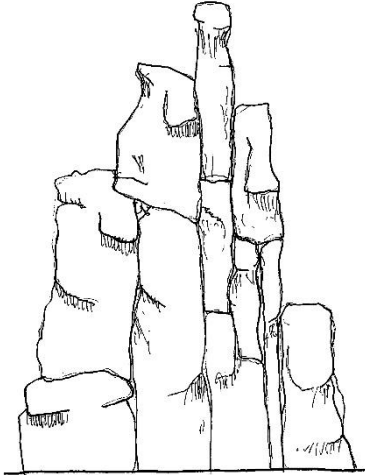
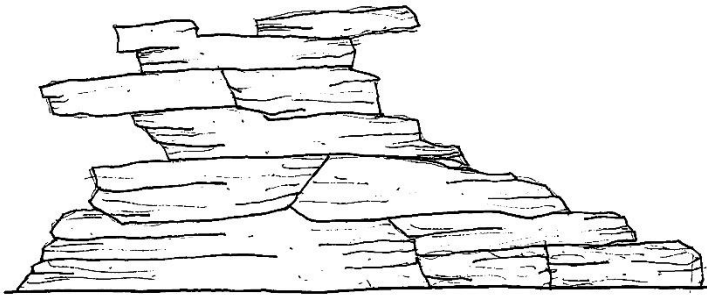
*Piling Method 1*

Figure 53

*Piling Method 2*

With the basics of rockery construction in mind, there are also many different methods to go about piling rockery. Each method produces a different visual effect. Generally, these methods fit into two camps. The first is where rocks are stacked with their long axis perpendicular to gravity (Fig. 52). The second is the opposite where the long axis of the rocks is parallel to the force of gravity (Fig. 53). For safety the center of gravity for any of the rocks

should be pointing

towards the interior of the hill or mountain. This way rocks won't fall down over the course of time.

However, it should always be kept in mind that the

goal of rockery construction is to produce a natural looking formation.

Figure 54

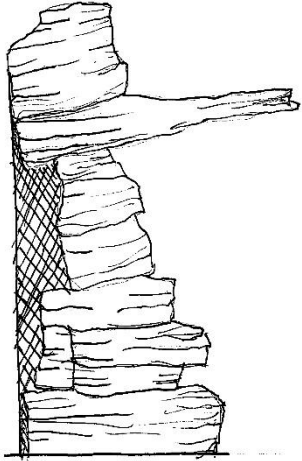
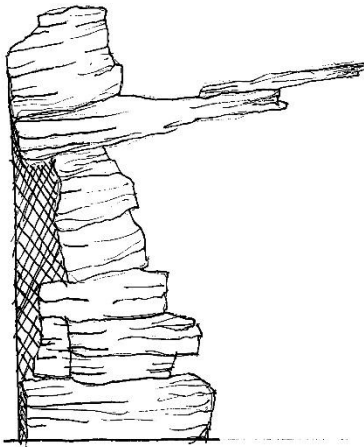
*Reaching Out Method*

Figure 55

*Floating Method*

There are 10 methods used in the piling of garden rockery. These methods include the reaching out, floating, seeing through, spanning, linking, hanging, drooping, arching, blocking, and pointing up methods. The reaching out method is used to create a variety of effects where an overhang is desired. For this method a somewhat wedge-shaped stone with horizontal grain and good shape should be used. In placing the stone, have the thicker end going into the

hill and the thinner end sticking out from the rock face at an upward pointing angle. The main goal is for the rock's center of gravity to be pointing towards the hill for stability. Once the rock is placed put a heavier rock on top of the end in the hill to secure it in place (Fig. 54). The floating method is when a stone similar to the one used in the reaching out method is used and placed on a stone placed with the reaching out method to give an impression that the

stone is floating in space (Fig. 55).

The seeing through method is more of a design objective where the viewer can see through a gap or hole to scenery beyond. The spanning method, however, concerns the choice of rock for capping the peak of a hill or mountain. This rock

should harmonize with the others and have a shape that reaches up and out at an angle.

**Figure 56**

*Linking Method Waterfalls*



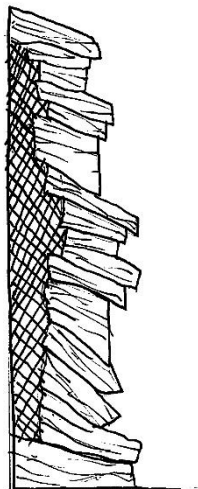
Source:  
<http://www.6tuba.com/img/cb2b9d6cdb9c9dcbdc0d3f4b.html>

The linking method has the potential to create some of the most striking rockery. It is created by placing stone slabs of uneven thicknesses in ring like structures, one on top of the other. However, they should not be placed to create a smooth surface like a cylinder.

Instead, place them so that a jagged edge is created with some stones sticking out and others sinking in. When waterfalls and weathered plantings are part of such rockeries, beautiful scenery

**Figure 57**

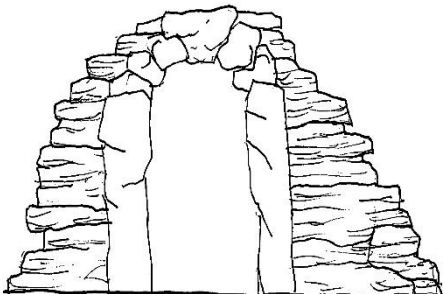
*Drooping Method Section*



can be constructed (Fig. 56).

The hanging and drooping methods are both related and complementary to the linking method. With the hanging method, a similar procedure is followed, but the stones are in a vertical orientation. Care should be taken in the cementing and placing of the stones to assure stability. This method can create stunning waterfalls and streams. The drooping method is just like the linking method, but the rocks are placed so that they angle downward or droop (Fig. 57).

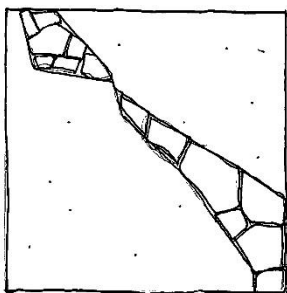
Figure 58

*Arching Method*

The arching method is used to create arches and natural looking bridges in rockeries and generally follows the principles of a keystone arch (Fig. 58). These are particularly interesting when they span water.

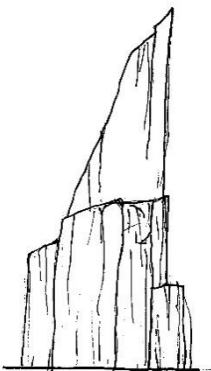
The blocking method is where smaller rocks are used to stabilize larger ones. There should be

Figure 59

*Blocking Method*

crevices between them, and they should give an impression of simplicity and lightness (Fig. 59). Lastly the pointing up method is where a pointier rock is placed on a peak with the smaller end pointing up so that the bigger end acts as a stable base (Fig. 60).

Figure 60

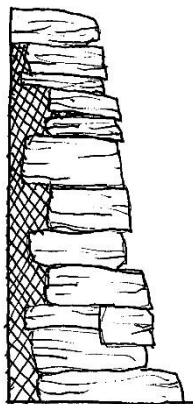
*Pointing Up Method*

There are also some special considerations when constructing individual features on the hill or mountain.

For example, when building cliffs, there needs to be an absolutely solid foundation and the cliff should slope slightly inward so it can hold up the soil or mass behind it. This is done by very gradually placing the stones further into the hill as you go up (Fig. 61).

### 3a2. Display of Individual Rocks

There are also ways to think about how displays of individual rocks or groups of rocks are laid out. With individual rocks, the shape is much more important. The more interest and texture a rock has, the more suited it is to

**Figure 61***Method of  
Piling Cliffs*

singular or group display. Rock displays can serve a number of uses such as marking turning points, creating flower beds, decorating banks, or creating steps and stairways. These types of displays can either be a single rock, a concentrated group of rocks, or a scattered group of rocks. No matter the type, these displays tend to be the most affordable way of incorporating stone in the garden.

When displaying a single rock, its shape and texture are paramount. It should look almost like a piece of art even though its shape and textures are natural. The placement of a single rock for display should show consideration of the properties of harmony and contrast it will create within a given scene.

A concentrated group display of rocks involves 2-10 rocks being placed close together so that they only allow a small amount of space for plants. There shouldn't be any evenness or symmetry to the group composition. Instead it should be uneven and irregular.

Scattered groups of rocks should be carefully composed of small groups of rocks and singular stones scattered throughout a garden scene. These should be placed so that they look like they have been placed by natural forces. This type of display is commonly used along shorelines, under trees, along and in streams, at the foot of hills, and on slopes and the sides of pathways. The key is to keep the aesthetic objective of the scene in mind and place the rocks in harmony with the topography.

### 3a3. Design of Paths and Paving

Paths and paving can be made of a variety of materials and can have a large variety of patterns. Paths should generally have a meandering, curving layout that follows the topography of the garden. The width of paths can also vary depending on intended uses and effects. For example, a path can gradually narrow as it goes away from the view to create a sense that the path is longer or paths on hills can be narrow and give the impression of a wild trail.

When designing pathways going up and along the tops of mountains and hills it is common for the paths to be edged with rockery on both sides. This can help ensure greater safety but in the case of a soil hill, it helps the path feel more integrated with the hill. The height of the rocks lining the path edges should vary and can be generally higher or lower, depending on context.

Stairways on mountains and hills should be made of the same stone that's used on the hill so that it seems all part of the same formation. The goal is that they should look like rustic steps carved into the rock. The dimensions of the steps should vary from step to step but should be around a six-inch rise and 16 inch run so that they aren't hazardous.

### **3b. Water**

As the lifeblood of the garden, water is one of the most dynamic elements that can provide a number of uses and effects. For example, ponds can make a space feel larger with their reflective surfaces and open views. Because of their reflective surfaces, ponds actually can also serve to unify the garden since the

nearby scenery is reflected on its surface. Ponds can also offer opportunities for recreation such as fishing and swimming or, when large enough, the use of small watercraft.

**Figure 62**

*Ribbon  
Shaped  
Pond*

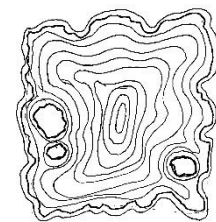


Waterfalls and streams provide the beautiful sights and sounds of moving water which enrich natural scenery. Altogether these different water features, waterfalls, streams, and ponds, help to create a serene atmosphere. Beyond their aesthetic effects, water features can also serve to moderate garden temperatures as a pond takes in heat during the day and releases it at night. When accessible to visitors, water features can also provide inviting coolness during the heat of summer. On that note, water should be able to be enjoyed from afar and close up. People should be able to access the water in at least some spots.

To serve all of the functions expected of water features, some basic principles should be observed. Foremost, make sure that there is a curving and meandering line to shorelines and banks so that not all of a feature, other than a waterfall, can be seen from one spot. This helps to create a greater feeling of spaciousness. Spaciousness can also be created by dividing the surface of the water with plants, rocks, islands, or bridges. Bridges are especially helpful since they can make the water on either side appear to spread further when viewed from afar. Buildings and rocks which extend over the water's edge can also be used to make it seem like the water keeps flowing into imaginary parts of the garden.

**Figure 63**

*Rounded  
Square  
Pond*

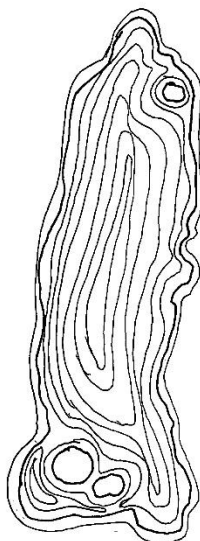




### 3b1. Design of Ponds

**Figure 64**

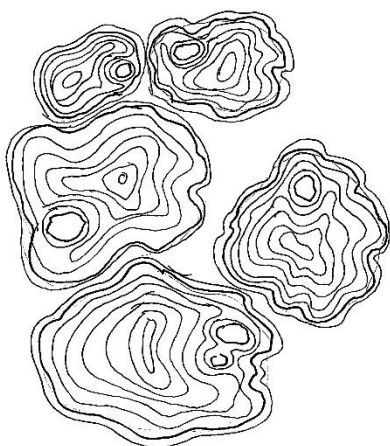
*Narrow  
Shaped  
Pond*



When it comes to the design of ponds, there are 4 shapes commonly seen. These shapes include ribbon, rounded square, narrow, and grouped shapes. Ribbon shaped ponds are well named since they are narrow ponds that twist and turn through the landscape like a ribbon waving in the air (Fig. 62). Rounded square ponds are generally square in shape but are made to appear rounder by placing buildings and other features at their corners (Fig. 63). Narrow shaped ponds are long, narrow, and almost straight. Bridges are often placed at their ends or narrow spots to make them feel bigger (Fig. 64). Lastly, grouped

**Figure 65**

*Grouped Ponds*



ponds are made up of a number of ponds closely placed together which are separated by bridges or dikes. The goal with this type of pond is to make it feel like there is one large pond through the hiding of divisions and manipulation of possible views (Fig. 65).

Beyond the shape of the pond there are also other factors which need to be considered. For one, make sure that the pond has a variety of depths which can serve different functions. For

example, there should be shallow areas for growing marginal plants like lotus or irises and deeper spots for the overwintering of fish.

**Figure 66**

*Shoreline Hidden with Plants*



Secondly, choose the type of banks the pond will have. This will largely depend on budget and the size of the pond. There are three types of banks which include completely stone banks, part stone part soil banks, and completely soil banks. As with mountains and hills, the less stone you use the lower the

expense. However, care should be taken in designing the banks of a pond as it is considered the most difficult thing in garden design. With all stone banks make sure each stone is in harmony with the ones next to it while creating a variety of forms along the shore. For banks that are partially made of stone, make sure the rock formations are not evenly spaced, remember gathering and spreading. Lastly, with all soil banks it can be a good idea to make the transition from land to water invisible through the use of plants whenever there won't be direct access to the water (Fig. 66).

Next make sure to incorporate well- placed islands into your pond or lake. They can range in size from a large rock to a sizable space with a building on it. They can also take different shapes such as a gently sloped hill or a rugged mountainous island. In any case typically don't place islands in the center of the pond. Rather, locate them along the edges or off center. It could be interesting to

link a group of islands to the shore and each other via a number of bridges. On the other hand, some islands could be only accessible by boat, or not accessible at all.

There are also several ways to incorporate the pond with other garden features. For example, there can be a cave that can be only accessed by boat or there can be a waterfall plunging straight into the surface of a pond. The options are virtually limitless. Either way, when incorporating the pond with other features the garden is more of a cohesive whole.

Lastly, build the pond so that it can last a significant amount of time. This is because a lot of work goes into the creation of the shorelines and their adjacent plantings. Plus, water levels need to be maintained close to the pond edge to preserve aesthetic effects, such as reflections, and prevent the pond from looking like a well. Also, it is common for hills and mountains to rise from part of the shore. If materials that only last a few decades before they fail are used, this carefully created scenery would need to be destroyed to fix problems. Of course, in some areas this isn't as much of a concern because a hole can be dug, and it will naturally hold water with minimal effort. However, in areas where some sort of lining is needed for a pond to hold water, the best possible options will probably be a clay/ engineered soil lining or concrete as these are the longest lasting materials. The commonly used types of plastic and rubber liners will not work since at best they will only last 30 years. In comparison, clay, engineered soil, or concrete can last hundreds of years, if not indefinitely.

### 3b2. Design of Waterfalls

**Figure 67**

*Splashing Type Waterfall*



Source: <https://uncoveringpa.com/hinkston-run-falls-johnstown-pennsylvania>

**Figure 68**

*Linear Falls*



Source: <http://aspiringwild.com/massacre-falls/>

Waterfalls are a wonderful element for adding movement and sound to the garden. They can also add a sense of mystery when they can be heard, but not seen immediately. Waterfalls can also be useful in masking sounds in busier urban areas. However, care should be taken that

they don't overwhelm the atmosphere of the garden.

Waterfalls can take a number of shapes, but they generally fall into one of four categories, though they could combine several categories into one. The four categories are falling straight down, linear, zigzagging, and

stepped waterfalls. In the falling straight down category you have waterfalls that generally fall down in a straight line. There are several types of waterfalls in this category such as the column shaped where the water falls in a long, narrow, turbulent ribbon that lands on rocky ground or when the falls are split by rocks midway they are known as a splashing type of waterfall (Fig. 67). The linear category consists of waterfalls that are temporary in nature because they appear in rainy weather. Generally, this means that water is channeled off roofs and the

**Figure 69***Zig Zag Waterfall*

Source:  
<https://www.picuki.com/media/2241979601633010570>

peaks of hills and mountains to the mouth of a waterfall where the water falls in a narrow strand like a string of pearls (Fig. 68). This type of waterfall could be useful in drier regions of the country where the use of recirculating water features is limited. The zig zag waterfall category consists of waterfalls where the water goes down a steep slope in a zigzag shape (Fig. 69). Often this zigzag will weave through rocks and

vegetation to create a wilderness scene. The

stepped type of waterfall is where the water falls

in a more staircase like shape. However, the steps should be of uneven and varying heights (Fig. 70).

Once a waterfall is designed the pool it falls into needs to be designed and the plantings chosen. For the pool there can be a variety of treatments including having the pool be shallow or deep and having the waterfall land on rocks or into the water surface. Each decision can make a different effect. If the pool is large enough to have some degree of undisturbed water surface it is recommended to have nice stones lining the bottom of the pool and possibly some small fish.

As for plants, the plants chosen should be appropriate for the type of scene and waterfall. When plants partially obscure the view of the waterfall when viewed from a distance it can make the waterfall feel more natural. Small water loving plants can also be planted near where the water is flowing and along the banks of the pool to enhance the scene.

**Figure 70**

*Stepped Waterfall*



Source: <https://martechtoday.com/4-reasons-demand-unit-waterfall-perfect-abm-199859>

### 3b3. Design of Streams

When it comes to designing streams in a Chinese garden, typically they should meander through the garden landscape and provide a variety of experiences along their courses. For example, a stream might be flowing swiftly in one section and then slowly in the next. There can even be a variety of waterfalls along its course. Providing this kind of variety can help make the garden feel larger since there is a greater diversity of experiences.

In the construction of streams, line the bed with stones and/or sand. Large rocks can be placed so that they split the stream and create sound and large rocks can be placed in bends of the stream to help protect the banks from erosion. When a stream flows into a pond it can be split into a sandy delta possibly crossed by a series of bridges. Overall the construction of streams should follow the patterns seen in nature.

### **3c. Plants**

Since plants serve as the flesh and clothing of the garden, they can provide a variety of effects in the garden. One of the important things the plantings in the garden should do is give a sense of the season and the passage of time. Plants are also vital in the soundscape of the garden as they create sound in different types of weather and provide food and shelter for the many non-human residents of the garden.

Beyond these aesthetic considerations, historically, garden plants also served useful functions for providing raw materials in manufacturing and food for the garden owner and his family. Therefore, it is possible to incorporate community vegetable gardens and/or orchards into public Chinese style gardens.

#### **3c1. Plants on Land**

Plantings found on land should be able to reproduce a variety of natural scenes within the garden. There are several approaches to how this can and could be done. While some of these methods do originate in the literature on Chinese garden design and penjing, there also some methods created more recently which could prove useful in accomplishing the aims of a Chinese style garden.

The first method is rooted in the tradition of Chinese landscape painting. In this method a variety of effects can be accomplished, depending on what is desired. For example, there can be large mass plantings of a single species, or a mix of species where one is more dominant. A variety of plants can also be combined to create specific seasonal displays in different areas of the garden.

Figure 71A

Two Groups of Four

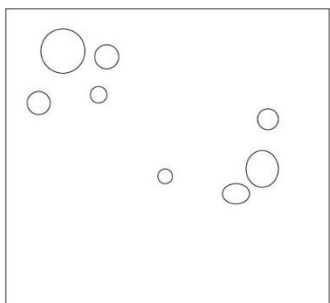


Figure 71B

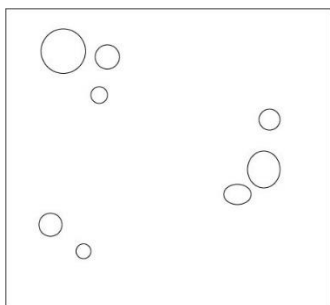
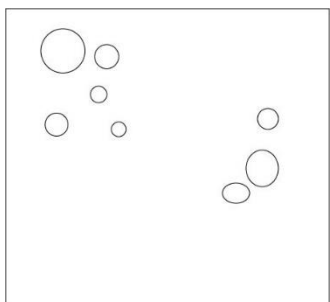
Two Groups of Three  
One Group of Two

Figure 71C

A Group of Five and  
a Group of Three

However, the main goal should be to create a harmonious variety of textures and colors throughout the garden.

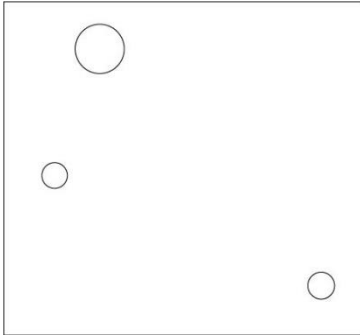
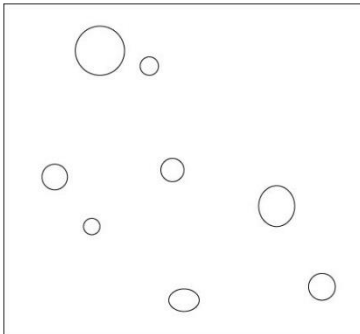
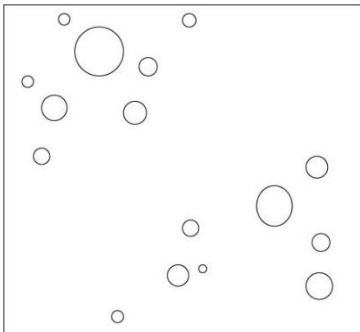
In designing with flowering plants, try not to have too many species blooming at once in one area. Instead try to have three or less species blooming at one time in one area while making sure something is providing interest at all times of the year. This might mean that there are flowers in spring through fall, with a focus on leaves in the fall while focusing on evergreens and berries in winter. If some inspiration is needed, there are some traditional combinations of plants used in gardens that

are often found together in paintings that also have symbolic significance in a Chinese style garden. For example, a combination known as “the three friends of winter” is often found in paintings and gardens and consists of pine, bamboo, and flowering plum (*Prunus mume*). Each one of these plants signifies traditional

Confucian virtues such as resilience, perseverance, flexibility, integrity, and strength in difficult times.

Special attention should be paid in the placement of trees in the garden so that picturesque scenery can be created. There are several methods in going about this. In a method following after landscape painting, trees are either



**Figure 72A***Base Triangle***Figure 72B***Full Composition***Figure 73***Two Sections*

placed singly or in groups. When placed in groups, one tree should be the largest and most dominant tree while the others should be smaller and of varying heights. The groups should consist of two to five trees. When more than five trees are being used, like in a forest planting, the trees should be arranged in smaller individual groups to form a larger grouping.

For example, if you were using eight trees, you could arrange them in two groups of four (Fig. 71A), two groups of three and a group of two (Fig. 71B), or a group of five and a group of three (Fig. 71C). It is generally easier to get more natural looking groupings with groups of uneven numbers. In any case, the goal should be to create groupings with interesting outlines and an interlinked structure.

The method to place trees based on penjing is similar to the one just described, but it has some specific differences. One of the chief differences is that trees are placed in groupings based off of scalene triangles. Generally, you would start the arrangement

with the creation of your base scalene triangle (Fig. 72A) then place the rest of your trees in scalene triangles built off of that main triangle (Fig. 72B). It is also noted that in large compositions that can be split into separate sections, each

section should have its own dominant tree, while still being subordinate to the main dominant tree of the composition (Fig. 73).

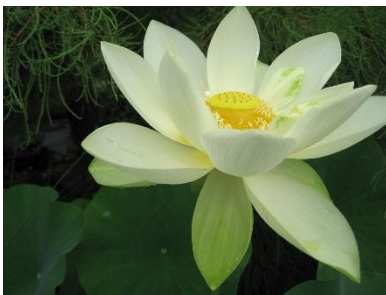
Lastly, more recent methods which might be worth looking into are the ones detailed in several books about naturalistic planting design. These books have multiple authors, each with their own approach. However, generally the aim of these approaches is to create natural looking and ecologically functional plantings. It's possible these could be wholly or partially incorporated into Chinese style gardens by using traditional methods to plant more structural elements like trees and shrubs and using the newer methods for the design of the herbaceous plantings. A list of these books can be found in appendix A.

### 3c2. Plants in Water

When it comes to the plants used in the water of Chinese style gardens, the palette is much more limited than what is used on land. Traditionally, lotus,

Figure 74

*Nelumbo lutea*



Source:  
<https://www.mellowmarshfarm.com/plant/Nelumbo-lutea>

some reeds, water chestnut, pickerel, and waterlilies

are used. However, it could be interesting to

incorporate more native species into the mix. In

many cases, there is a native species that

corresponds to a Chinese species, for example there

is a native lotus species (*Nelumbo lutea*, Fig.

74) that is very similar to the one native to

Asia (*Nelumbo nucifera*, Fig. 75).

Also, care should be taken that more aggressively spreading species, like lotus, cattails, and reeds are controlled so they don't take over the whole pond.

Figure 75

*Nelumbo nucifera*



Source: <https://gardenlakes.net/lotus-plant/>

divided more often.

Make sure there is some open water to create dramatic reflections. This can be done by creating underwater flower beds out of stone or plastic that plants can't escape. The only other practical option would be to keep such plants in pots on the bottom of the pond or lake, but they would have to periodically be

### 3d. Architecture

In a Chinese style garden, architecture is meant to complement the natural scenery and be an integrated part of the garden. As such, there should be a fluidity between indoor and outdoor spaces with very little, if any, separation between the two. To create this effect it is important that, no matter the style, garden architecture has a flexibility in the placement of doors and windows as well as a flexibility of function. It should provide shelter from the elements while also being able to be open to the elements. In other words, the buildings should be able to convert to open pavilions if they are enclosed. These concepts suggest that the design of garden architecture should rely on a skeletal structure made from a timber or metal frame. This way, since none of the walls are structural, there can be full freedom to open buildings up in any way desired. For example, a

building that's completely enclosed by windows and doors in the winter can be transformed into an open pavilion in warmer weather merely by opening or removing windows and doors. Such a structure can also best mimic the design qualities of traditional Chinese garden architecture, even if it doesn't have a Chinese appearance.

Meanwhile, there are a variety of types of buildings, each with their own names, which are typically used in Chinese gardens. Some of these buildings are differentiated by design and use while others are only differentiated by use. In this guide the focus will be on those building types which can be differentiated by design over use.

### 3d1. Main Hall

As the main hall is the center of activity in the garden, it should be one of the largest and most formal buildings. In a contemporary North American context, like in the Chicago design, this might mean the main hall of the garden is where larger groups can hold events like family reunions, farmers markets, and community parties. If the garden is attached to some form of residence however, it would be best for the residence to act as the main hall of the garden.

### 3d2. Pavilions

Pavilion floor plans can come in a great variety of shapes and sizes ranging from squares and circles, to octagons and flower shapes. It could be said that the greatest amount of creativity can be used in the design of garden pavilions. As their Chinese name suggests(亭, ting, a homophone for the word meaning to

stop), these buildings are places for people to stop and rest in the garden while enjoying the garden scenery. They can be sighted in a number of places including the shores of a pond or lake, in the middle of a flowery meadow, in a bamboo grove or a forest, or on a slope. Pavilions adjacent to water can take a number of forms including one which looks like a boat projecting out into the water which is meant to give the feeling of sailing on a boat.

### 3d3. Covered Walkways

Figure 76

*Double Sided Walkway, Vancouver Canada*



Covered walkways generally serve two purposes. One is to provide a sheltered connection between the various garden buildings. The second function is to serve as a dividing element between garden scenic sections. Generally, they are meandering and zigzagging in design.

They also tend to follow the contour of the landscape. Thus, they slope up and down hill while being low when next to or going over water. When situated next to a wall they can create small courtyards where they turn away from the wall then turn back. These are excellent for small displays of rocks and plants. They can also have a variety of design features. For example, they can have more than one level and/or they can have a wall that runs down their middle with openings

in it, thus creating a double-sided walkway that leaks views of the separate sections on either side (Fig. 76).

#### 3d4. Study/Library

A study or library in a garden generally is a place for reading and housing books. It could be a great place to have a small informal community library. As such it should be sited so that it is in a more secluded location. It might even be a good idea for it to be placed so that visitors don't really even notice it is there until they discover it.

#### 3d5. Bathrooms

Bathrooms, like libraries and studies, should be located in more secluded parts of the garden. Unlike the other buildings it should be more permanently enclosed. It might be even a good idea to give the bathroom building its own entry courtyard to further separate it from the main part of the garden.

#### 3d6. Multi-story Buildings

Buildings of multiple stories in gardens can be rarer in some areas of China. However, when used they are usually placed along the border of the garden so they can block unwelcome views while not being too dominating a presence.

#### 3d7. Interiors

Since buildings are considered a part of the garden space, so are their interiors. Therefore, garden building interiors should be harmonious with their exterior surroundings and be furnished for their intended uses. Each element of the building interior should harmonize with the building as well as the other elements within the building (Wang, 1998). In many historical gardens, furniture was made custom for the particular building it was going to be in. However, this

Figure 77

*Garden Building Interior*



level of detail might be too costly for a garden serving as a community park. Overall, the interiors of buildings should be simple, elegant, and harmonious (Fig. 77).

### 3d8. Stages

Stages were incorporated into the designs of late Ming and Qing dynasty gardens to allow the performance of Chinese opera and music within the garden. Often these were sighted facing water to provide natural sound amplification. In a modern western context this feature could be included to provide space for local

performing groups. If carefully designed, it could also serve other functions when not being used for performances such as a pavilion or gathering space.

### 3d9. Courtyards

**Figure 78**

*Ceramic Rendition of Stone Table and Stools in a Pavilion*



Courtyards are one of the basic units of Chinese garden design. The simplest way they are formed is with surrounding walls. However, courtyards can be created in many different ways such as having one or more buildings acting as bordering walls, using covered walkways instead of walls, or even using

rockery and plantings to form a courtyard. Courtyards can also produce a variety of effects ranging from small, secluded, and intimate to large, open, and sunny. The effective use of courtyards can be a great aid to the division of scenic areas and the creation of layered scenery.

### 3d10. Outdoor Seating and Tables



Outdoor seating and tables can take a variety of forms and use a number of materials. The most common materials used include stone, ceramic, wood, and bamboo with stone being the most used. Stone seating and tables can take a variety of forms. One form is of a fairly basic round stone table surrounded by four stone stools (Fig.78 ). However, stone seating and tables can also take on natural forms which blend with the natural scenery of the garden. For example, a table or bench can take the form of a flat topped, rugged boulder while seating

**Figure 79**

*Natural Stone Furniture Outside Building*



takes the shape of smaller boulders (Fig. 79). Ceramic forms of seating are usually in the well-known Chinese garden stool shape often used today in contemporary interiors and exteriors as side tables or seating (Fig. 80). As for wood and bamboo furniture, it is not usually placed permanently in outdoor settings. Rather it

is brought outdoors to serve a particular function then stored indoors when not in use outside.

### 3d11. Walls and Barriers

Figure 80

*Ceramic Stool*

Source:  
[https://www.wayfair.com/Safavieh--Ceramic-Garden-Stool-ACS4513A-L295-K-FV34201.html?refid=GX112603343763-FV34201&device=c&ptid=265158525240&network=g&targetid=pla-265158525240&channel=GooglePLA&ireid=43166884&fdid=1817&qclid=CjwKCAjw7-P1BRA2EiwAXoPWA5EelhnKc0a2xlycrA7ATbtWqS20jnkXqfrD2g0dmFrtfPm4xWlqQh0CBaQQAvD\\_BwE](https://www.wayfair.com/Safavieh--Ceramic-Garden-Stool-ACS4513A-L295-K-FV34201.html?refid=GX112603343763-FV34201&device=c&ptid=265158525240&network=g&targetid=pla-265158525240&channel=GooglePLA&ireid=43166884&fdid=1817&qclid=CjwKCAjw7-P1BRA2EiwAXoPWA5EelhnKc0a2xlycrA7ATbtWqS20jnkXqfrD2g0dmFrtfPm4xWlqQh0CBaQQAvD_BwE)

Walls and barriers are critical to the design of any Chinese style garden. The most commonly used form of barrier in gardens is the wall. In gardens around the Suzhou area these walls are usually whitewashed and help bring out the colors of other garden materials. However, walls are not the only way to create barriers for a garden. From literature on historical Chinese garden design it is clear that hedges, wood and bamboo fences, and bamboo screens can also be used. Hedges should be less formal than western equivalents. The plants used should be allowed to take more natural forms and shapes. Meanwhile fences, whether of bamboo or wood can use a wide variety of designs. For gardens taking a more Chinese or Asian aesthetic it could be useful to look at fences

used in Japanese gardens as they generally do resemble those found in paintings, but feel free to be more playful with the shapes and outlines of the fences.

What is called a bamboo screen can also be a wonderful way to provide barriers in and outside garden boundaries. What they actually are is free standing, bamboo lattice trellises. The lattice can have climbing plants growing on it or be left plain. These screens can be used to surround whole boundaries or sections can be used to block specific views or create backgrounds. The lattice is usually in the shape of square boxes that are either widely or more narrowly

spaced (Fig. 81). A screen can also be single layered or double layered depending on the thickness of barrier that's desired.

For the Chicago garden a mix of barriers is used with walls surrounding the east, north, and south sides. The west side is half a wall and half a bamboo screen covered in climbing plants. This will allow for an easy borrowing of the view of mature trees to the west of the garden site.

**Figure 81**

*Bamboo Screen in Painting*



Source: <https://hiddenarchitecture.net/the-garden-of-the-inept-administrator/>

### 3d12. Gates, Doorways, and Windows

Gates, doorways, and windows can be some of the most playful and creative elements of Chinese garden design. Main gates usually are formed of double doors made of solid wood. However, you can use woven bamboo or sticks to form a gate to create a more rustic feeling. Either way you want the main gate

**Figure 82**

*Hexagon Shaped Window*



to set the mood for the garden and provide a space for transition from the outside world to the garden.

Other gates and doorways can take a variety of decorative shapes from round, or octagon shapes, to arches, or flower, fruit, and leaf shapes (Fig. 82). Of course, the most commonly used is

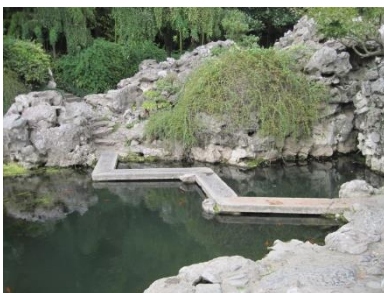
Figure 83

*Moon Gate*

Figure 84

*Line of Tracery Windows*

Figure 85

*Low Bridge Over Water*

the round moon gate (Fig. 83). The creative shapes for gates can also make for interesting windows in walls. As for windows, they can either be completely open holes or they can be filled with delicate tracery that can take many patterns both geometric and curvilinear (Fig. 84).

### 3d13. Bridges

Bridges also can take a variety of shapes and are usually made of wood or stone, but the design used, often is determined by the placement of the bridge. To cross more narrow waterways or ravines usually a flat bridge is used. If crossing water this type of bridge is usually placed low so that it feels like you are walking on the water when crossing it (Fig. 85). A low bridge over water can also help to make a hill, mountain, or waterfall seem taller.

When crossing broader expanses of water arched designs are more common. These can consist of many arches (Fig. 86), a single arch (Fig. 87), a form that takes the shape of an upside down “v” (Fig. 88)

or one that looks like half a hexagon (Fig 89). Another type of bridge used to

**Figure 86**

*Multi-Arched Bridge*



Source:  
<https://www.visiontimes.com/2018/04/30/beijing-summer-palaces-seventeen-arch-bridge.html>

cross wide expanses is the flat zigzag bridge (Fig. 90). Like other flat bridges this type of bridge is usually placed close to the water surface. However, since it has so many turns it offers the opportunity to give the user unique views at every turn.

**Figure 87**

*Arched Bridge*



**Figure 89**

*Half Hexagon Form Bridge*



Source:  
<http://www.cnarts.net/cweb/Exhibition/show/nspj/work.asp?nid=64985&page=4&kind=%C4%CF%CA%AF%C6%A4%D3%9B>

**Figure 88**

*"V" Bridge*



**Figure 90**

*Zig Zag Bridge*



#### 4. Materials

The materials used in a Chinese style garden can be the most distinctive part of the entire garden. For example, while Japanese gardens have many similarities with Chinese gardens, one of the big distinguishing characteristics is the materials that are used. The same can go for Chinese style gardens that are meant to echo native landscapes. The materials always play a big part in the feeling and atmosphere of the garden. The goal, however, is always to create the essence of nature and a harmonious space.

For the construction of buildings, masonry, stone, and wood are the favored materials in many Chinese gardens we see today. There is also a great preference for stone in the construction of paths, bridges, hills, and mountains. However, this amount of masonry can make Chinese style gardens of the sort typically seen today very expensive. Therefore, it might be good to look at historical precedent from periods before the late Ming dynasty for other options.

From the literature reviewed a number of materials beyond the masonry heavy style seen today are possible. For example, many buildings in gardens used to be timber framed structures with wattle and daub walls and thatched roofs. Even in the early Ming dynasty some buildings within the imperial gardens were like this because they lent a rustic air to the garden (Clunas, 1996). Some paintings also give evidence for wood shingled roofs. Also, before the Qing dynasty, all windows in China were made of a wood lattice frame faced with paper, cloth, or translucent pieces of shell; they would have looked more like the

traditional windows of Japan and Korea than the clear glass filled ones we see today.

However, no matter the materials used, the main aim should be for the

**Figure 91**

*Artificial Thatch Roof*



Source: <https://endureedthatch.com/overview.html>

materials used in the garden construction to be either naturally derived or resemble those that are so that they harmonize with the garden. For example, if thatch was desired for the roof of a building in a garden. This could be a problem due to its expense, fire potential, or lack of durability. However, it

is possible to find many manmade substitutes which meet modern durability and safety standards while being fairly affordable (Fig. 91). Therefore, a modern artificial thatch is an effective substitute.

When it comes to the choice of plants for a garden the possible selection is large and varies by region. There is even an entire book devoted to the subject (Valder, 1999). So, it might not be the best use of time to fully list all the possible plants you could use in a Chinese style garden. However, there are some general patterns. For one include spring flowering trees to highlight the spring season. There are many species in this category that are native to China as well as North America. The same goes for trees with good fall color for autumn interest. Maples can be an excellent choice.

Also make sure to include a variety of evergreen plants like pines, yews, or junipers so that there is some green around throughout the year. It is also a good

idea to include something that has a strong vertical, linear quality that grows in groves. Traditionally this spot is filled by bamboo, however it could be filled with tall skinny trees like birches, or aspens. In general, though, there should be a preference for woody plants over herbaceous plants in the garden since they provide excellent structure throughout the year.

Also aim to have something blooming at every time of year. Of course, in some of the coldest climates this isn't really possible. In that case focus on having plants that provide winter interest through their bark or fruits like redbud dogwood (*Cornus sericea*) or winterberry (*Ilex verticillata*). Also try to pick plants that have interesting or picturesque shapes when they reach maturity like Scotch Pine (*Pinus Sylvestris*), Eastern White Pine (*Pinus strobus*), Harry Lauders Walking stick (*Corylus avalea 'contorta'*), etc. As for flowering plants, there should be a preference for plants that are less showy, unless they are spring blooming. This is because many gardens are based off of the monochromatic paintings favored by literati. Beyond that it helps to give a more natural feeling to the garden as you don't always see large splashes of color when viewing flowers from a distance in nature. It's even better if the subtle blooms give off a distinct fragrance.

## 5. Example Design

For this design, the goal was to provide an example of what using the above design guide to design a Chinese style garden could look like. All elements



were designed by the author, except for the buildings which were taken from online plans for timber-frame structures (Timberframe Headquarters, n.d.). Though some adjustments would need to be made to allow for functions needed in the garden. For one there would need to be railings that can also function as seating like in traditional Chinese buildings. There would also be an addition of suitable windows and doors. Below the design you will find a planting plan and materials palette. For pictures of the plants used, see appendix B for the plant palette. The garden site is 125 X 175 Feet ~1/2 acre in size. Scale for all plans and drawings, except for buildings is 1"=20'.

Figure 92

Base Design Without Trees- Scale 1:20

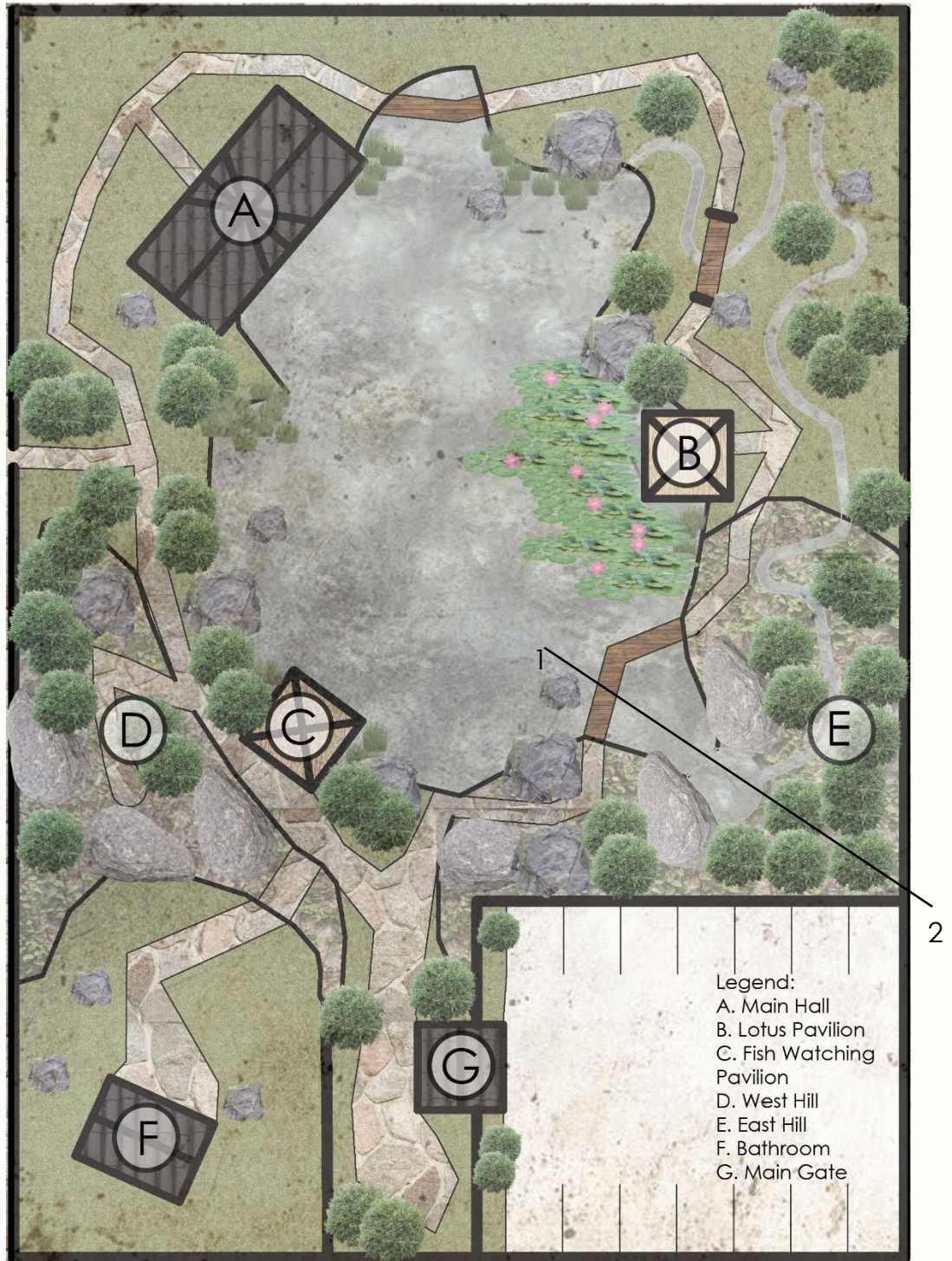


Figure 93

Base Design with Trees- Scale 1:20

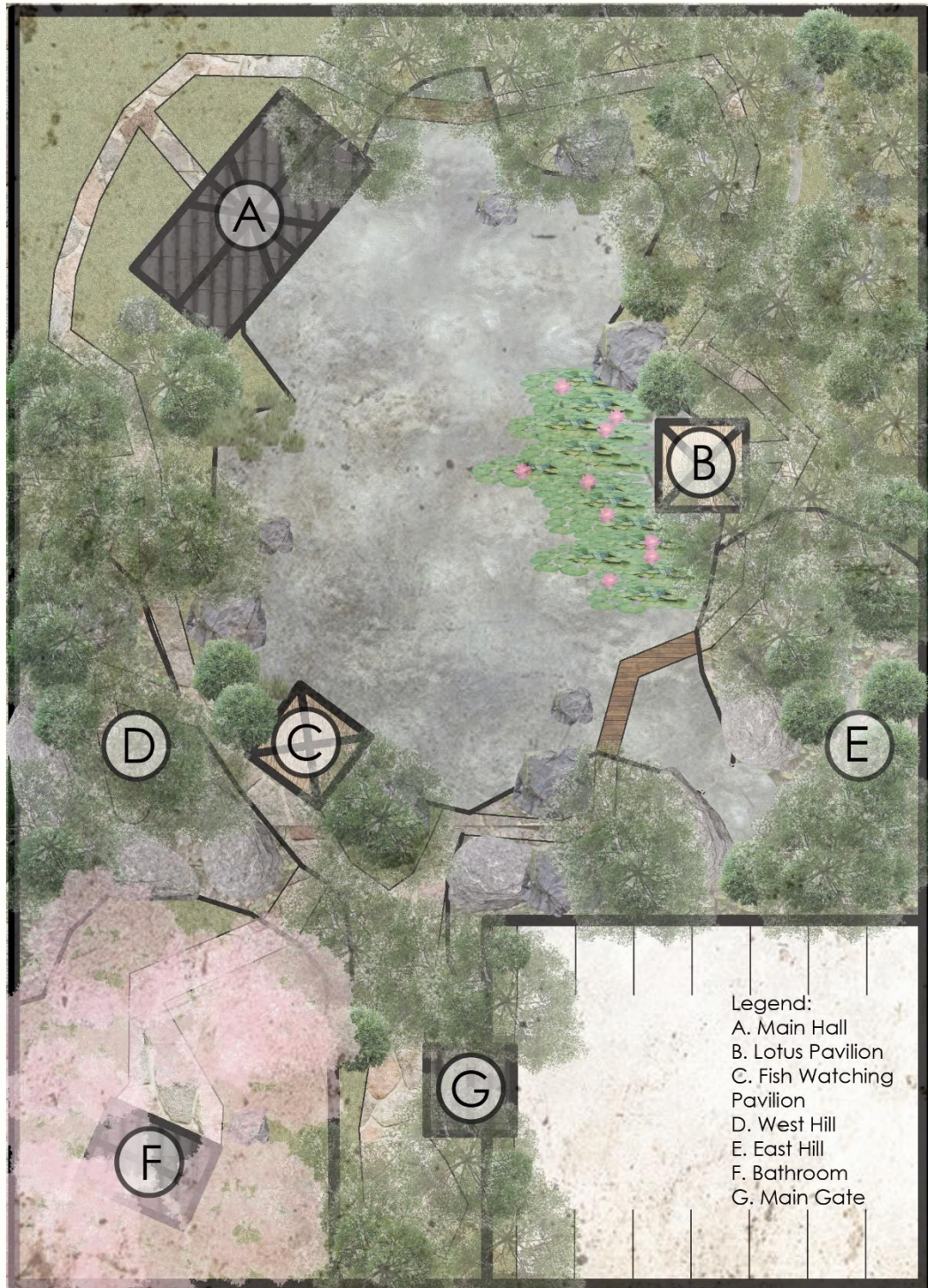


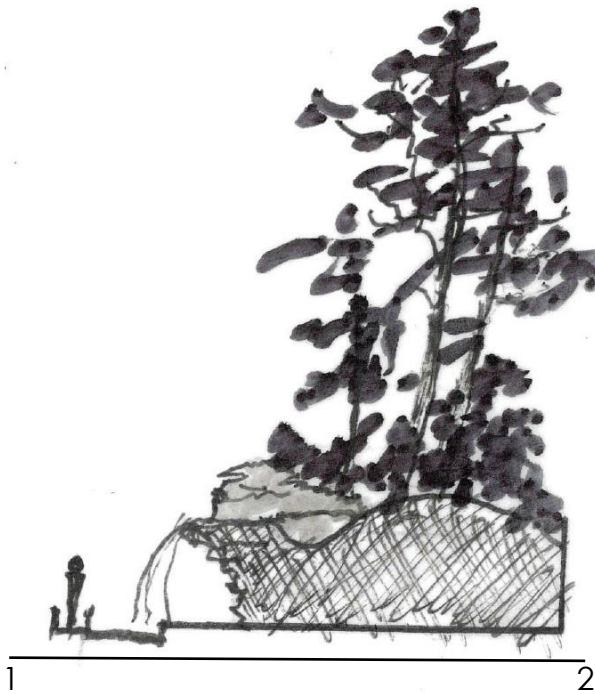
Figure 94

*Main Elevation of East Hill, Facing Main Hall*



Figure 95

*Section Detail of East Hill Waterfall*



## 6. Additional Hints and Tips

Hopefully this design guide has been a thorough guide to the design and construction of a Chinese style garden. For more ideas, inspiration, and information it is encouraged to read through the works referenced in earlier parts of this thesis. It would

also be a good idea to study existing Chinese gardens, Chinese landscape painting, and natural landscapes before working on a new design. Some

resources are listed in appendix A which include resources for information as well as materials

Figure 96

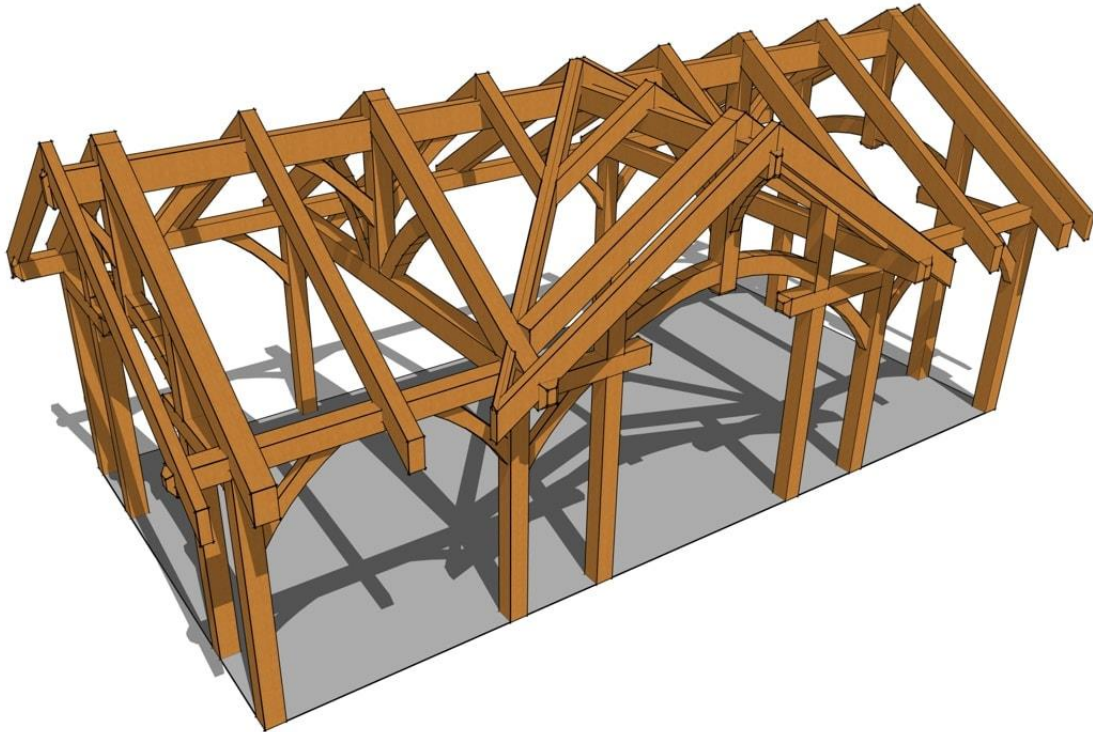
*West Hill Elevation*



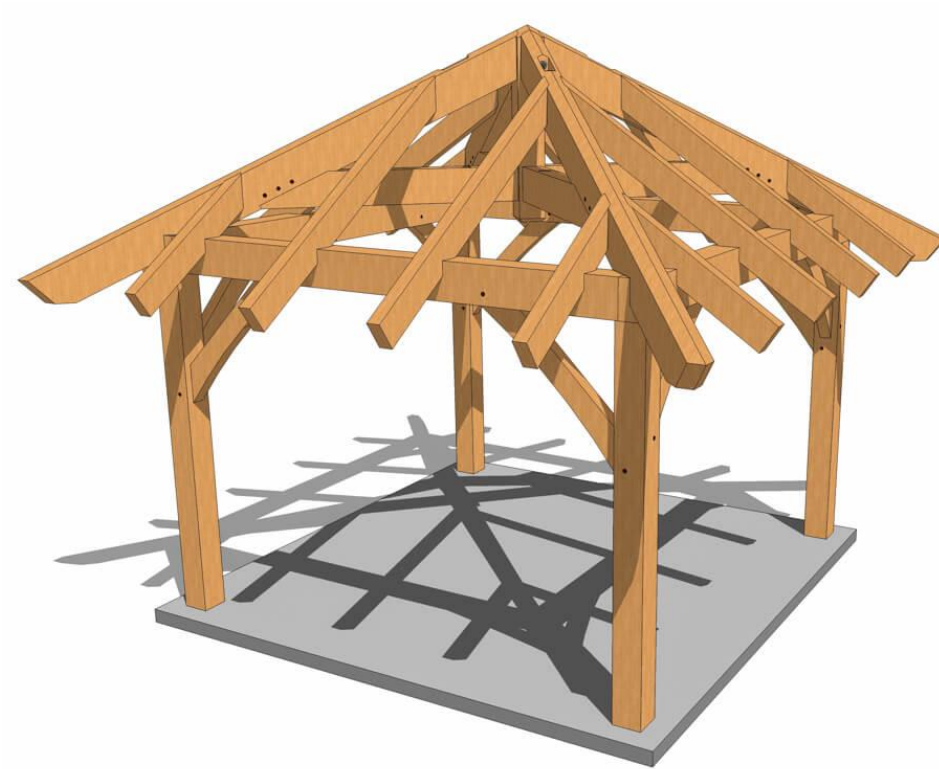
Figure 97

*West Hill Back Elevation*



**Figure 98***Main Hall Timber Frame*

Source: <https://timberframehq.com/16x32-timber-frame-pavilion/>

**Figure 99***Pavilion Timber Frame*

Source: <https://timberframehq.com/12x12-gazebo-plans/>

**Figure 100***Main Gate and Bathroom Timber Frame*

Source: <https://timberframehq.com/12x16-timber-frame-king-post-plan/>

Figure 101

*Tree Planting Plan*

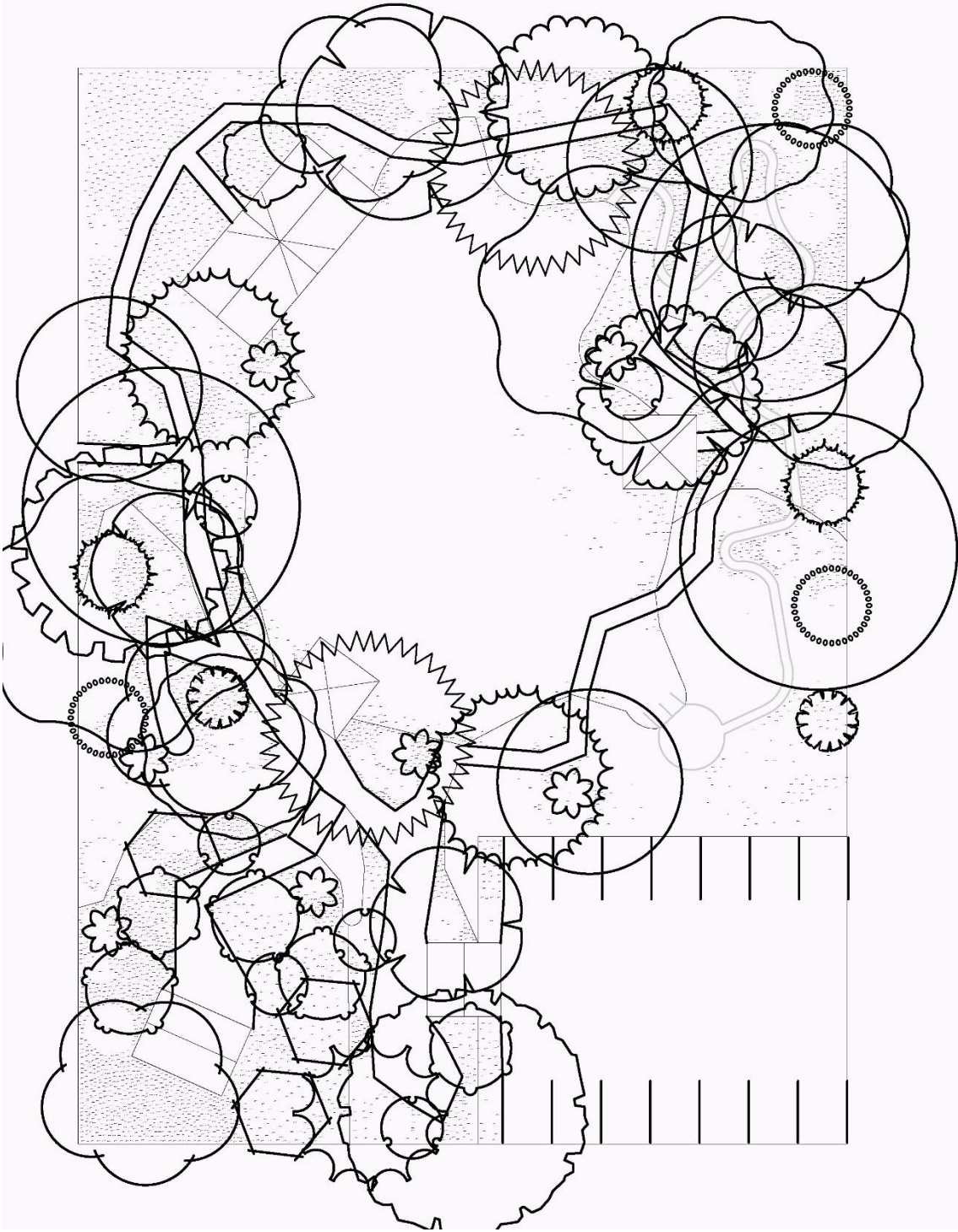




Figure 102

Planting Plan

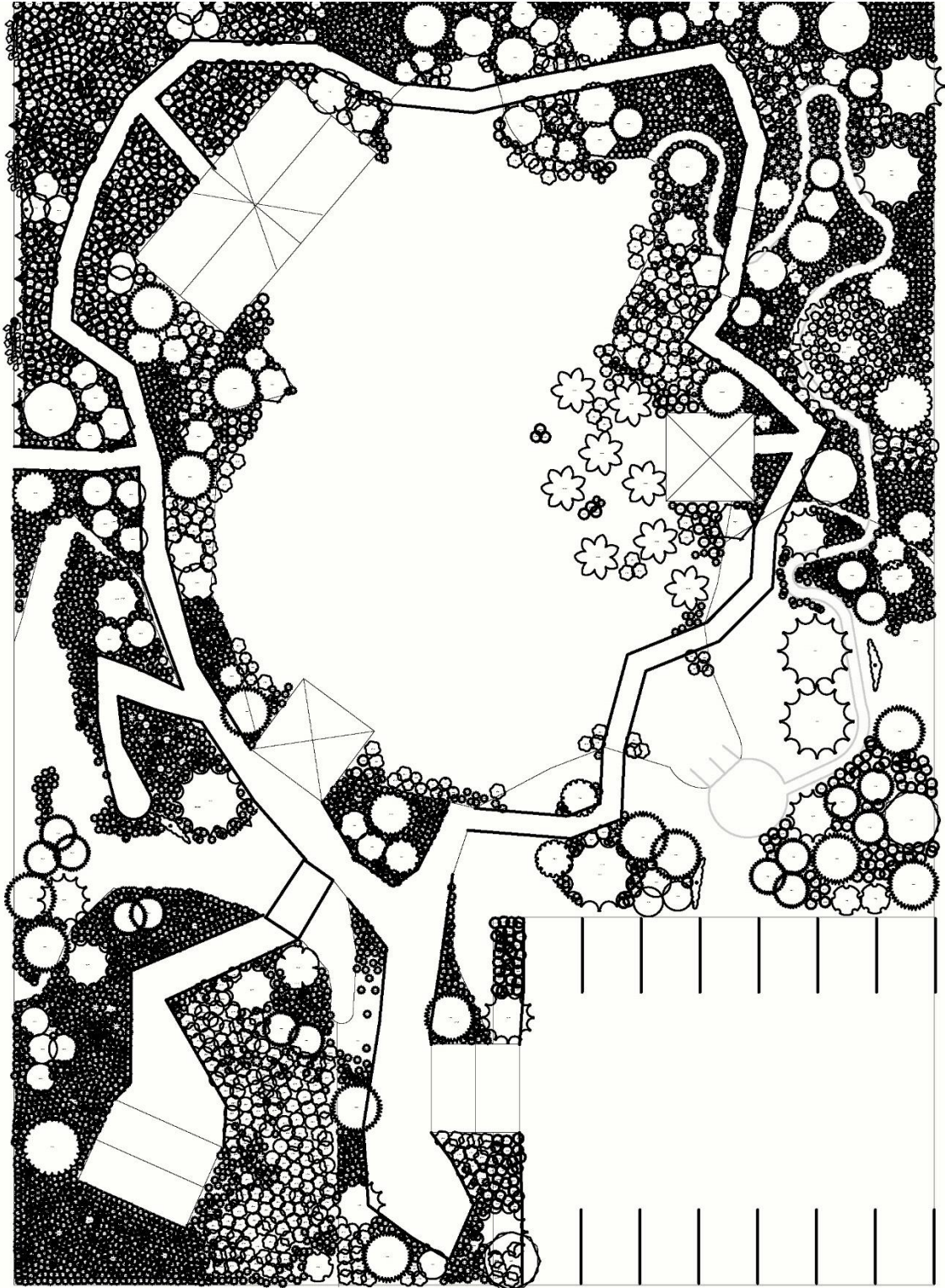


Figure 103

Plant Schedule



































PLANT SCHEDULE							
TREES	CODE	BOTANICAL NAME	COMMON NAME	SIZE	QTY	DETAIL	REMARKS
	ACE RBR	Acer rubrum	Red Maple	...	3		
	ACE SUG	Acer saccharum	Sugar Maple	...	3		
	AES OHI	Aesculus glabra	Ohio Buckeye	...	1		
	AME LAE	Amelanchier laevis	Allegheny Serviceberry	...	4		
	ARA ELA	Aralia elata	Japanese Angelica Tree	...	7		
	CAT SPE	Catalpa speciosa	Northern Catalpa	...	1		
	CER JAP	Cercidiphyllum japonicum	Katsura Tree	...	1		
	CER CAN	Cercis canadensis	Eastern Redbud	...	4		
	CLA KEN	Cladonia kentuckea	American Yellowwood	...	2		
	DIO VR	Diospyros virginiana	Common Persimmon	...	1		
	ILE AME	Ilex opaca	American Holly	...	3		
	MAL HAL	Malus halliana	Hill Crab Apple	...	3		
	PIN BUN	Pinus bungeana	Lacebark Pine	...	1		
	PIN STR	Pinus strobus	White Pine	...	2		
	PIN SYL	Pinus sylvestris	Scotch Pine	...	2		
	PRU PEG	Prunus mume 'Peggy Clarke'	Peggy Clarke Japanese Flowering Apricot	...	3		
	PRU GRP	Prunus persica 'Gepepwest' TM	Peppermint Flowering Peach	...	3		
	PRU TRI	Prunus triloba	Flowering Plum	...	6		
	RHU GLA	Rhus glabra	Smooth Sumac	...	2		
	THU OCC	Thuja occidentalis	American Arborvitae	...	3		
	TIL LIN	Tilia americana	American Linden	...	1		
	ULM LAC	Ulmus parvifolia	Chinese Lacebark Elm	...	3		
SHRUBS	CODE	BOTANICAL NAME	COMMON NAME	SIZE	QTY	DETAIL	REMARKS
	ACO COL	Aconitum columbianum	Columbian Monkshood	...	4		
	ACO SWE	Acorus calamus	Sweet Flag	...	53		
	ACO GRM	Acorus gramineus	Sweet Flag	...	103		
	ALL CER	Allium oeruum	Nodding Wild Onion	...	6		
	ANE JNO	Anemone hupehensis 'Prince Henry'	Prince Henry Anemone	...	4		
	ARI TRI	Arisaema triphyllum	Jack-in-the-Pulpit	...	4		
	ASA CAN	Asarum canadense	Canadian Wild Ginger	...	86		
	ATH FIL	Athyrium filix-femina	Common Lady Fern	...	116		
	BER CAN	Berberis canadica	Barberry	...	22		
	BLE STR	Bletilla striata	Chinese Ground Orchid	...	49		
	GAM RAD	Campsis radicans	Trumpet Creeper Vine	...	3		
	CAR SED	Carex pensylvanica	Pennsylvania Sedge	...	4,103		
	CAR SPR	Carex sprengei	Sprengel's Sedge	...	695		
	CEL SCA	Celastrus scandens	American Bittersweet	...	5		







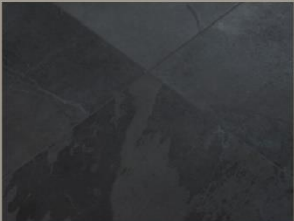

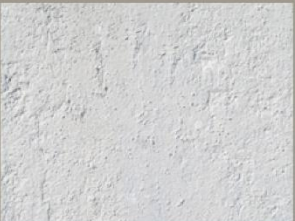


Figure 103

Plant Schedule

	CHA SPE	Chaenomeles speciosa	Flowering Quince	...	9
	CLE VIR	Clematis virginiana	Virgins Bower	...	9
	CLE ALN	Clematis integrifolia	Summersweet Clematis	...	8
	COR PAL	Coreopsis palmata	Stiff Tickseed	...	10
	COR RES	Cornus sericea	Red Twig Dogwood	...	5
	COT DIV	Cotoneaster divaricatus	Spreading Cotoaster	...	15
	COT HOR	Cotoneaster horizontalis	Rock Cotoaster	...	3
	DES CAN	Desmodium canadense	Showy Tick Trefoil	...	8
	DIC SPE	Dicentra spectabilis	Bleeding Heart	...	6
	DOD MEA	Dodecatheon meadia	Shooting Star	...	8
	ECH PUR	Echinacea purpurea	Coneflower	...	9
	ELE PUN	Elaeagnus pungens	Thorny Elagnus	...	6
	EUP PER	Eupatorium perfoliatum	Common Boneset	...	8
	FRA VIR	Fragaria virginiana	Virginia Strawberry	...	5
	GER MAC	Geranium maculatum	Spotted Geranium	...	22
	HAM MOL	Hammamelis mollis	Chinese Witch Hazel	...	1
	HIB MIL	Hibiscus militaris	Halberd-leaf Rose Mallow	...	3
	HOS PL4	Hosta plantaginea	Fragrant Plants in Lily	...	29
	ILE WD	Ilex verticillata	Winterberry	...	5
	IND DEC	Indigofera decora	Chinese Indigo	...	20
	IRI SHR	Iris virginica shrevei	Shave's Iris	...	40
	JAS NUD	Jasminum nudiflorum	Winter Jasmine	...	3
	KER JAP	Kerria japonica	Japanese Kerria	...	8
	LON FRA	Lonicera fragrantissima	Winter Honeysuckle	...	3
	MER VIR	Mertensia virginica	Virginia Bluebells	...	14
	MIT TWO	Mitella diphylla	Two-leaf Miterwort	...	7
	NEL LUT	Nelumbo lutea	American Lotus	...	8
	OSM ROT	Osmanthus heterophyllus 'Rotundifolius'	Round Holly-Leaf Osmanthus	...	4
	PAR QUI	Parthenocissus quinquefolia	Virginia Creeper	...	4
	PHL PIL	Phlox pilosa	Downy Phlox	...	18
	POD PEL	Podophyllum peltatum	Mayapple	...	20
	POL OD2	Polygonatum odoratum	Solomon's Seal	...	90
	RAN ACR	Ranunculus acris	Tall Buttercup	...	15
	ROS PAS	Rosa carolina	Carolina Rose	...	2
	RUB IDA	Rubus idaeus	Raspberry	...	6
	RUE HUM	Ruellia humilis	Wild Petunia	...	12
	SAG SUB	Sagina subulata	Irish Moss	...	277
	SAG AUR	Sagina subulata 'Aurea'	Scotch Moss	...	72
	SAG LAN	Sagittaria latifolia	Lance-Leafed Arrowhead	...	32
	SIL WIL	Silene caroliniana	Wild Pink	...	11
	TRA OHI	Tradescantia ohioensis	Ohio Spiderwort	...	6
	TRI REP	Trifolium repens	White Clover	...	24
	VIO SOR	Viola sororia	Woolly Blue Violet	...	58
	VIT RIP	Vitis riparia	Riverbank Grape	...	2

Figure 104

Materials Palette

<p><b>Weathered Limestone Boulders</b></p> 	<p><b>Flagstone Paving</b></p> 	<p><b>River Rocks and Gravel</b></p> 
<p>Source: <a href="https://stonecenterofindiana.com/stone-brick/weathered-limestone-boulders-ledgestone/">https://stonecenterofindiana.com/stone-brick/weathered-limestone-boulders-ledgestone/</a></p>	<p>Source: <a href="https://www.ecooutdoorusa.com/products/natural-stone-flooring/flagstone/porphyry/">https://www.ecooutdoorusa.com/products/natural-stone-flooring/flagstone/porphyry/</a></p>	<p>Source: <a href="https://stonecenterofindiana.com/stone-brick/tennessee-river-slicks-river-rock/">https://stonecenterofindiana.com/stone-brick/tennessee-river-slicks-river-rock/</a></p>
<p><b>Hand Hewn Timbers</b></p> 	<p><b>Charcoal Barrel Tile Roofing</b></p> 	<p><b>Faux Thatch Roofing</b></p> 
<p>Source: <a href="https://www.boardwalkhardwood.com/reclaimed-beams-timbers/copy-of-hand-hewn-beams-2-sided">https://www.boardwalkhardwood.com/reclaimed-beams-timbers/copy-of-hand-hewn-beams-2-sided</a></p>	<p><a href="https://ludowici.com/gallery_study/hotel-hershey/">https://ludowici.com/gallery_study/hotel-hershey/</a></p>	<p>Source: <a href="https://endureedthatch.com/overview.html">https://endureedthatch.com/overview.html</a></p>
<p><b>Slate Tile Flooring</b></p> 	<p><b>Rustic Decking</b></p> 	<p><b>White Plaster Walls</b></p> 
<p>Source: <a href="https://www.homedepot.com/p/MSI-Hampshire-16-in-x-16-in-Gauged-Slate-Floor-and-Wall-Tile-8-9-sq-ft-case-SHAM1616/202508364">https://www.homedepot.com/p/MSI-Hampshire-16-in-x-16-in-Gauged-Slate-Floor-and-Wall-Tile-8-9-sq-ft-case-SHAM1616/202508364</a></p>	<p><a href="https://carrollswolesale.com.au/mill-board-composite-decking/">https://carrollswolesale.com.au/mill-board-composite-decking/</a></p>	<p>Source: <a href="https://www.123rf.com/photo_80486850_white-plaster-wall-texture-empty-bright-plaster-background.html">https://www.123rf.com/photo_80486850_white-plaster-wall-texture-empty-bright-plaster-background.html</a></p>
<p><b>Cut Stone Blocks</b></p> 	<p><b>Reed Matting</b></p> 	<p><b>Laminated Shoji Paper for Lanterns</b></p> 
<p>Source: <a href="https://landscapesupplier-stoooomba.com.au/products/pebbles-stones/48-sandstone">https://landscapesupplier-stoooomba.com.au/products/pebbles-stones/48-sandstone</a></p>	<p><a href="https://www.123rf.com/photo_102169258_surface-of-reed-mats-pattern-background-detail-of-woven-mat.html">https://www.123rf.com/photo_102169258_surface-of-reed-mats-pattern-background-detail-of-woven-mat.html</a></p>	<p>Source: <a href="https://www.eshoji.com/p/laminated-shoji-paper-0-3mm-craft-washi-flax.html">https://www.eshoji.com/p/laminated-shoji-paper-0-3mm-craft-washi-flax.html</a></p>

## **CHAPTER 5**

### **Conclusions**

With the growing need for nature as humanity urbanizes, Chinese garden design and construction concepts offer a solution for bringing nature to our urban centers. These solutions are unique in that they stem from the differences and similarities between traditional Chinese views and ideals with those of the West. At the same time, these differences can make the adoption of Chinese garden design and construction concepts difficult in the West. However, these difficulties and barriers can be overcome by creatively adapting Chinese garden concepts to a Western context. Some of these adaptations even stem from historic precedent found in gardens throughout China's long history. All of these adaptations and solutions have been thoroughly explored and discussed in the design guide and example design. However, it was found that all of these solutions highly depended on a foundation of basic objectives and principles that would apply to virtually any situation.

The core objectives of a Chinese style garden were found to be creating a naturalistic space that is explorable, viewable, and livable. Other objectives include expressing the ideal relationship between humanity and nature, feeling vast in a limited space, providing everything in nature, being low maintenance, expressing the essence of wild natural scenery, being simple and elegant, stimulating all the senses, and highlighting the seasons and the passage of time.

Among the many principles essential to Chinese garden design dividing the garden into scenic sections, using contrast, distinguishing between primary and secondary, visually layering spaces, using theme, and recreating landscapes in full scale, miniature, and sectionally were found to be foundational. Other principles such as complementarity, gathering and spreading, scale, focal points, and borrowed scenery were found to be accessory principles to foundational ones.

Following the principles and concepts discussed in this thesis will obviously have many implications which can not be completely discussed within one thesis alone. For example, if Chinese style gardens were more common in urban, and even suburban, areas there could be vast ecological implications. For one, such gardens might be able to provide important habitat for animal species, many of which are losing habitat to urbanization. On the other hand, if not done carefully and in tune with a given location, Chinese style gardens could possibly cause ecological harm. For example, the creation of large water bodies in desert areas could harm local river systems by diverting water from them like with what has been done to the Colorado River.

Another implication of the research presented in this thesis is that there still is a lot of research to be done concerning the design and construction of Chinese gardens in varying times and places. Clearly, the Chinese garden as it is often portrayed in the West is not all a Chinese style garden has been or can be. Therefore, there needs to be more research, that is universally accessible, on the aesthetics, design, and construction of Chinese gardens and their structures

throughout history. An interesting method that could be used in this research could involve the studying of the design of such spaces as presented in Chinese period dramas. While such spaces might be inaccurate, they do help provide a greater range of ideas on what a Chinese style garden could look like.

There also needs to be research done concerning the construction of particular features in Chinese gardens such as rockeries and buildings so that craftsmen outside of China can be instructed in these methods. Overall these efforts in research on Chinese style garden design and construction should help overcome the barrier created by a lack of knowledge. It should also allow for the greater use of Chinese garden principles and concepts in the West to the benefit of the urban populace.

## References

- Brash, C. (2012). Classical Chinese gardens in twenty-first century America: Cultivating the past. *ASIANetwork Exchange: A Journal for Asian Studies in the Liberal Arts*, 19(1), 17-29. doi: 10.16995/ane.18.
- Cambridge Dictionary. (n.d.) *Meaning of naturalistic in English*.  
<https://dictionary.cambridge.org/us/dictionary/english/naturalistic>.
- CCTV. (2015, June). 园林/Chinese Garden: 长城之内是花园. [Documentary Series]. Youtube.  
[https://www.youtube.com/watch?v=tDUOXprl\\_ho&list=PLcbp\\_l1voMBpt9ssKIrTeb03maU1VwJRT&index=5&t=os](https://www.youtube.com/watch?v=tDUOXprl_ho&list=PLcbp_l1voMBpt9ssKIrTeb03maU1VwJRT&index=5&t=os).
- Chen, L.F., & Yu, S.L. (1986). *The garden art of China*. Portland, Oregon: Timber Press.
- Chen, X.G., Lin, H., & Luo, Y.P. (2014). Thinking on the artistic conception creation of plant landscaping design in Chinese style garden. *Agricultural Science and Technology*, 15(12), 2178-2182.
- Chiu, S., & Chuang, L. (2016). Aesthetics of Chinese garden architecture-Using the Lin Ben Yuan family mansion and garden in Banqiao, Taiwan as an example. *2016 International Conference on Applied System Innovation (ICASI)*.
- Clunas, C. (1996). *Fruitful sites: Garden culture in Ming Dynasty China*. London: Reaktion Books LTD.
- Cox, D. T. C., Shanahan, D. F., Hudson, H. L., Fuller, R. A., & Gaston, K. J.



- (2018). The impact of urbanization on nature dose and the implications for human health. *Landscape and Urban Planning*, 179, 72–80. <https://doi.org/10.1016/j.landurbplan.2018.07.013>
- Cox, D. T. C., Shanahan, D. F., Hudson, H. L., Plummer, K. E., Siriwardena, G. M., Fuller, R. A., ... Gaston, K. J. (2017). Doses of neighborhood nature: The benefits for mental health of living with nature. *BioScience*. doi: 10.1093/biosci/biw173
- Engel, D. (1986). *Creating a Chinese garden*. Croom Helm: London.
- Fang, X. (2010). *The great gardens of China: History, concepts, techniques*. New York: Monacelli Press.
- Fung, S. (1998). Guide to secondary sources on Chinese gardens. *Studies in the History of Gardens & Designed Landscapes*, 18(3), 269-286. Doi: 10.1080/14601176.1998.10435551
- Han, C. (2012). The aesthetics of wandering in the Chinese literati garden. *Studies in the History of Gardens & Designed Landscapes*, 32(4), 297-301. doi: 10.1080/09668136.2012.721995
- Hattemer, L. (Ed.). (2010-2017). *Seattle Chinese Garden 西华园 Stories and Photos about people coming together to build a Chinese garden on a hilltop in Seattle*. <http://blog.seattlechinesegarden.org/>.
- Hedblom, M., Heyman, E., Antonsson, H., & Gunnarsson, B. (2014). Bird song diversity influences young people's appreciation of urban

landscapes. *Urban Forestry & Urban Greening*, 13(3), 469-474.

doi:10.1016/j.ufug.2014.04.002

Henderson, R. (2013) *The gardens of Suzhou*. Philadelphia: University of Pennsylvania Press

Hinshaw, M. (2003, Jan.) Secret Garden in the City: A Classical Chinese Garden Uplifts Portland's Chinatown. *Landscape Architecture Magazine*.

Huntington. (2019, Aug. 13). *News release - Grand opening of Chinese garden expansion, including new pavilions, art gallery, and café, on track for May 2020*. The Huntington: Library, Art Museum, and Botanical Gardens. <https://www.huntington.org/news/chinese-garden-expansion>.

Ji, C. (2012). *The craft of gardens*. (A. Hardie Trans.). New York, New York: Better Link Press. (Original work published 1631-1634)

Jung, W.J. (2015). Changes in the uses and meanings of the bamboo screen (zhuping: 竹屏) in traditional Chinese gardens. *Studies in the History of Gardens & Designed Landscapes*, 35(1), 71-89. doi: 10.1080/14601176.2014.942111.

Keswick, M., Oberlander, J., & Wai, J. (1990). *In a Chinese garden: The art & architecture of the Dr. Sun Yat-Sen classical Chinese garden*. The Dr. Sun Yat-Sen Garden Society.

Keswick, M., Hardie, A., & Jenks, C. (2003). *The Chinese garden: History, art and architecture*. London: Frances Lincoln.

Korea Forest Research Institute. (2014). The forest and human health

*Issues in Korean Forest Policy and Research.*

Lan Su Chinese Garden. (2020). FAQ. <https://lansugarden.org/faq>.

Li, T.J. (Ed.). (2009). *Another world lies beyond: Creating Liu Fang Yuan, the Huntington's Chinese garden*. Henry E. Huntington Library and Art Gallery.

Lu, A. (2011). Deciphering the reclusive landscape: A study of Wen Zheng-Ming's 1533 album of the Garden of the Unsuccessful Politician. *Studies in the History of Gardens & Designed Landscapes*, 31(1), 40-59. doi: 10.1080/14601176.2010.520459

Métailié, G. (1998). Some hints on "scholar gardens" and plants in traditional China. *Studies in the History of Gardens & Designed Landscapes*, 18(3), 248-256. doi: 10.1080/14601176.1998.10435549.

New York City Government. (n.d.). *List of parks by total acreage*. [https://www1.nyc.gov/assets/buildings/pdf/dpr\\_park\\_list.pdf](https://www1.nyc.gov/assets/buildings/pdf/dpr_park_list.pdf).

North American Japanese Garden Association. (n.d.). *North American Japanese garden finder*. <https://najga.org/garden-finder/>.

Rinaldi, B. M. (2011). *The Chinese garden: Garden types for contemporary Landscape Architecture*. Basel, Switzerland: Birkhäuser.

Spehar, B., & Taylor, R. P. (2013). Fractals in art and nature: Why do we like them? *Human Vision and Electronic Imaging XVIII*. doi:10.1117/12.2012076

Sina 新浪地产. (2015, March 20). 紫御华府打造北方豪宅 "第一园林" .

<http://news.dichan.sina.com.cn/2015/03/20/1333380.html>.

Taylor, R. P., Spehar, B., Donkelaar, P. V., & Hagerhall, C. M. (2011).

Perceptual and Physiological Responses to Jackson Pollocks Fractals. *Frontiers in Human Neuroscience*, 5.

doi:10.3389/fnhum.2011.00060

Timberframe Headquarters. (n.d.). Timber Frame Plans. Timberframe HQ.

<https://timberframehq.com/timber-frame-plans/>

Trani, A., Miller, A. E., Watson, J., & Strayer, D. (2012). What cognitive

processes benefit by interacting with nature? *PsycEXTRA Dataset*.

doi:10.1037/e685842012-116

Tsu, F. Y. (1988). *Landscape design in Chinese gardens*. New York, NY:

McGraw-Hill.

Twohig-Bennett, C., & Jones, A. (2018). The health benefits of the great

outdoors: A systematic review and meta-analysis of greenspace exposure and health outcomes. *Environmental Research*, 166, 628–637. doi:

10.1016/j.envres.2018.06.030

Unesco. (n.d.). *Classical gardens of Suzhou*.

[https://whc.unesco.org/en/list/813/multiple=1&unique\\_number=961](https://whc.unesco.org/en/list/813/multiple=1&unique_number=961)

Valder, P. (1999). *The garden plants of China*. Portland, Oregon: Timber Press.

Valder, P. (n.d.) Gardens in China, then and now.

Walker, N. R. (2013). Reforming the way: The palace and the village in Daoist

paradise. *Utopian Studies*, 24(1), 7-22.

Watson, P. (2004). Famous gardens of Luoyang, by Li Gefei. *Studies in the*

*History of Gardens & Designed Landscapes*, 24(1), 38-54. doi:

10.1080/14601176.2004.10435311

Wang, K., Wang, S., & Wang, N. (1963). *The Mustard Seed Garden manual of painting*. (M.M. Sze Trans. Edit.). Princeton, New Jersey: Princeton University Press. (Original work published 1679-1888).

Wang, Y. (1998). Interior display and its relation to exterior spaces in traditional Chinese gardens. *Studies in the History of Gardens & Designed Landscapes*, 18(3), 232-247. doi: 10.1080/14601176.1998.10435548

Weinzimmer, D., Newman, P., Taff, D., Benfield, J., Lynch, E., & Bell, P. (2014). Human responses to simulated motorized noise in national parks. *Leisure Sciences*, 36(3), 251-267. doi:10.1080/01490400.2014.888022

Wen, Z.H. (2019). *Treatise on Superfluous Things*. (T. Blishen Trans.). New York, New York: Better Link Press. (Original work published 1615-1620).

Wen, Z.M. (2006). Cottage style hall in The Humble Administrators Garden. (C. Wu, Trans.). Portland, Oregon: Press-22. (Original work published 1533). In Wu, C. (2006). *Listen to the fragrance – Literary inscriptions in Lan Su Yuan the Portland classical Chinese garden*. Portland, Oregon: Press-22.

Williams, F. (2018). *The nature fix: Why nature makes us happier, healthier, and more creative*. New York, NY: W.W. Norton & Company.

Wu, W. (2004) The life of a seventeenth-century Chinese Garden designer: "The biography of Zhang Nanyuan," by Wu Weiye (1609-1671). (A. Hardie

Trans.). *Garden History*, 32(1), 137-140. doi: 10.2307/1587318 (Original work published 17<sup>th</sup> century).

Xu, Y. (2004). Boundaries, centres and peripheries in Chinese gardens: A case of Suzhou in the eleventh century. *Studies in the History of Gardens & Designed Landscapes*, 24(1), 21-37. doi:

10.1080/14601176.2004.10435310

Zhao, S. (2017). Aural landscape as an intangible heritage in Chinese classical gardens. *Studies in the History of Gardens & Designed Landscapes*, 37(3), 242-249. doi: 10.1080/14601176.2016.1268770.

Zhao, Q.Q. (2012). *Penjing: The Chinese art of Bonsai*. New York, New York: Better Link Press.

Zhou, H., & Dong S.Y. (2018). Composition techniques of enframed scenery in classical gardens. *Journal of Landscape Research*, 10(3), 55-60. doi: 10.16785/j.issn 1943-989x.2018.3.012.

一条 Yit. (2019, July 25). 他造出 700 m<sup>2</sup> 園林之家，像古人一樣生活 He Builds a 700 m<sup>2</sup> Garden Home and Lives like Ancient People [video]. Youtube.

[https://www.youtube.com/watch?v=SkgykPL92Yc&list=PLcbp\\_l1voMBpt9ssKIrTeb03maU1VwJRT&index=18&t=os](https://www.youtube.com/watch?v=SkgykPL92Yc&list=PLcbp_l1voMBpt9ssKIrTeb03maU1VwJRT&index=18&t=os).

每日头条. (2019, Aug. 8). 北京有个地方叫榆园. [https://kknews.cc/zh-](https://kknews.cc/zh-my/travel/5r29r52.html)

[my/travel/5r29r52.html](https://kknews.cc/zh-my/travel/5r29r52.html).

APPENDICES

## APPENDIX A

### Chinese Materials Sources

Roof Tiles: <http://www.sfrooftile.com/>

Taihu Boulders:

[http://www.zifandiaosu.com/en/products\\_grid.asp?id=123&pid=26](http://www.zifandiaosu.com/en/products_grid.asp?id=123&pid=26)

### Construction Materials

Japanese Style Tile Roofing: <https://www.mca-tile.com/oriental-japanese/>

Western Style Tile Roofing: <https://ludowici.com/>

Artificial Thatch Roofing: <https://endureedthatch.com/>

Pole Timbers: <https://www.americanpoleandtimber.com/>

Tile: <https://www.bedrosians.com/en/>, <https://tilebar.com/>

### Online Plant Nurseries

<https://www.treepeony.com/>

<https://www.monrovia.com/>

<https://tenmilecreeknursery.com/>

<https://www.forestfarm.com/>

<https://www.naturehills.com/>



<https://peonyparadise.com/>

<https://camforest.com/>

<http://bamboogarden.com/>

<https://www.plantdelights.com/#>

<https://www.highcountrygardens.com/>

<https://www.stepables.com/>

#### Online Native Plant Nurseries

<https://www.mellowmarshfarm.com/>

<https://www.americanmeadows.com/>

<https://www.prairienursery.com/>

<https://greatbasinseeds.com/wordpress/>

<https://graniteseed.com/>

<https://www.aquascapesunlimited.com/>

#### Information Resources

Online Resources:

<https://www.wildflower.org/>

<https://thegrowingseason.wordpress.com/2014/03/28/plantings-of-the-classic-chinese-garden-i/>

<http://www.stevesnedeker.com/550/portlad-chinese-garden-part-1.html>

<http://www.puchen.org/gardens/Chinesegarden/plant.html>

<https://landscapearchitect.com/landscape-articles/liu-fang-yuan-garden-of-flowing-fragrance-ema-chinese-gem-ancient-landscape-art-comes-to-southern-californiaem>

<https://lansugarden.org/>

<https://www.huntington.org/chinese-garden>

<https://www.arcgis.com/apps/MapJournal/index.html?appid=b4efd072e35e468f8dd224e9e0c85be1>

<https://www.comuseum.com/>

#### Books:

Dunnet, N. (2019). *Naturalistic Planting Design*. Filbert Press.

Rainer, T., West, C. (2015). *Planting in a Post-Wild World*. Timber Press:  
Portland, Oregon.

Robinson, W., Darke, R. (2009). *The Wild Garden*. Timber Press: Portland,  
Oregon

Oudolf, P., Gerritsen, H. (2019). *Planting the Natural Garden*. Timber Press.

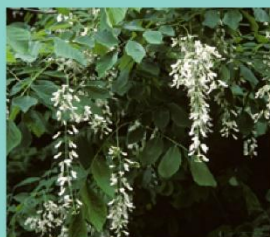
Yoshikawa, I. (2001). *Building Bamboo Fences*. Japan Publications Trading.

APPENDIX B

Illustrated Plant Palette for  
Chicago Garden



## Trees

*Acer rubrum**Acer saccharum**Aesculus glabra**Amelanchier laevis**Aralia elata**Catalpa speciosa**Cercidiphyllum japonicum**Cercis canadensis**Cladrastis kentukea**Diospyros virginiana**Ilex opaca**Malus halliana**Pinus bungeana**Pinus strobus**Pinus sylvestris**Prunus mume*  
'Peggy Clarke'

## Image Sources:

<https://store.devilmountainnursery.com/inet/storefront/store.php?mode=showproductdetail&product=17736>, <https://www.vdberk.com/trees/pinus-sylvestris/>, <https://www.flickr.com/photos/jsjgeology/39411252702>, <http://shop.bluerivernursery.com/evergreens/pinus-bungeana/>, <https://davesgarden.com/guides/pf/showimage/213866/#b>, <https://www.fona.org/american-holly/>, <https://www.gardenia.net/plant/diospyros-virginiana>, <https://greatplainsnursery.com/product/american-yellowwood-2/>, <https://www.gardenia.net/plant/cercis-canadensis-eastern-redbud>, <http://shop.bluerivernursery.com/plants/shade-trees/cercidiphyllum-japonicum/>, <https://gobotany.nativeplanttrust.org/species/catalpa/speciosa/>, [https://commons.wikimedia.org/wiki/File:Aralia\\_elata\\_\(Japanischer\\_Angelikabaum\)-1.JPG](https://commons.wikimedia.org/wiki/File:Aralia_elata_(Japanischer_Angelikabaum)-1.JPG), <https://longislandnatives.com/products/amelanchier-laevis-service-berry>, [https://www.wildflower.org/plants/result.php?id\\_plant=AE-GL](https://www.wildflower.org/plants/result.php?id_plant=AE-GL), <https://garden.org/plants/view/663612/Sugar-Maple-Acer-saccharum-Caddo/>, <https://longislandnatives.com/products/acer-rubrum-red-maple>

## Trees Cont.

*Prunus persica**Prunus triloba**Rhus glabra**Thuja occidentalis**Tilia americana**Ulmus parvifolia*

## Shrubs

*Berberis candidula**Chaenomeles speciosa**Clethra alnifolia**Cornus sericea**Cotoneaster divaricatus**Cotoneaster horizontalis**Elaeagnus pungens**Hamamelis mollis*

## Image Sources:

<https://www.talbotnurseryandpoultry.com/Peppermint-Flowering-Peach-Tree-Prunus-persica-Dou-p/07-8-r.htm>, <https://www.connonnurseries.com/plant/Prunus-triloba-var-multiplex>, <https://gobotany.nativeplanttrust.org/species/rhus/glabra/>, <http://www.kollar-nursery.com/thuja-occidentalis-emerald-green-o>, <https://www.mortonarb.org/trees-plants/tree-plant-descriptions/american-basswood>, <https://moonnurseries.com/product/ulmus-parvifolia-allee/>, <https://www.quackinggrassnursery.com/plant/Berberis-candidula>, <https://www.gardenia.net/plant/chaenomeles-speciosa-moerloosei-japanese-quince>, <https://www.monticelloshop.org/sweetpepper-bush-summersweet-clethra-alnifolia/>, <http://nativeplantspnw.com/red-twig-dogwood-cornus-sericea/>, <https://www.mortonarb.org/trees-plants/tree-plant-descriptions/spreading-cotoneaster>, <https://www.monrovia.com/plant-catalog/plants/2540/prostrate-rock-cotoneaster/>, <https://landscapeplants.oregonstate.edu/plants/elaegnus-pungens>, <https://www.gardenia.net/plant/hamamelis-mollis-early-bright-chinese-witch-hazel>

## Shrubs Cont.

*Ilex verticillata**Indigofera decora**Jasminum nudiflorum**Kerria japonica**Lonicera fragrantissima**Osmanthus heterophyllus**Rosa carolina**Rubus idaeus**Campsis radicans**Celastrus scandens*

## Vines

*Clematis virginiana**Parthenocissus quinquefolia**Vitis riparia*

## Image Sources:

<https://longislandnatives.com/products/ilex-verticillata-winterberry>, <https://www.monrovia.com/plant-catalog/plants/3574/chinese-indigo/>, <https://en.paperblog.com/plant-of-the-week-jasminum-nudiflorum-86522/>, <https://plantsam.com/kerria-japonica-pleniflora/>, <https://www.gardenia.net/plant/lonicera-fragrantissima-sweetest-honeysuckle>, <https://www.forestryimages.org/browse/detail.cfm?imgnum=1610486>, <https://www.prairiemoon.com/rosa-carolina-pasture-rose-prairie-moon-nursery.html>, <https://herbsandremedies.club/medicinal-plants/medicinal-use-of-raspberry-rubus-idaeus-rosaceae/>, <https://plantsam.com/campsis-radicans-cv/>, [https://www.wildflower.org/gallery/result.php?id\\_image=33711](https://www.wildflower.org/gallery/result.php?id_image=33711), <https://gobotany.nativeplanttrust.org/species/clematis/virginiana/>, [https://en.wikipedia.org/wiki/Parthenocissus\\_quinquefolia](https://en.wikipedia.org/wiki/Parthenocissus_quinquefolia), <https://gobotany.nativeplanttrust.org/species/vitis/riparia/>

## Herbaceous Plants &amp; Groundcovers



*Aconitum  
columbianum*



*Acorus calamus*



*Acorus gramineus*



*Allium cernuum*



*Anemone  
hupehensis*



*Arisaema  
triphyllum*



*Asarum canadense*



*Athyrium filix-  
femina*



*Bletilla striata*



*Carex pensylvanica*



*Carex sprengeii*



*Coreopsis palmata*



*Desmodium  
canadense*



*Dicentra spectabilis*



*Dodecatheon  
meadia*



*Echinacea  
purpurea*

## Image Sources:

<http://swbiodiversity.org/seinet/taxa/index.php?taxon=817&taxauthid=1>, <https://www.discoverlife.org/20/q?search=Acorus+calamus>, <http://hoffmannursery.com/plants/details/acorus-gramineus-minimus-aureus>, <https://www.sevenoaksnativenursery.com/native-plants/perennials-and-bulbs/allium-cernuum/>, <https://stonehousenursery.com/plant/anemone-hupehensis-prince-henry/>, [http://midwestnaturalist.com/arisaema\\_triphyllum.html](http://midwestnaturalist.com/arisaema_triphyllum.html), <https://www.midwestgroundcovers.com/plant/Asarum-canadense>, <https://www.gardenia.net/plant/athyrium-filix-femina-lady-fern>, <https://www.gardenia.net/plant/bletilla-striata-hardy-orchid>, <https://sugarcreekgardens.com/carex-pensylvanica-pennsylvania-sedge/>, <https://www.prairienursery.com/long-beaked-sedge-carex-sprengelii.html>, <https://www.prairiemoon.com/coreopsis-palmata-prairie-coreopsis-prairie-moon-nursery.html>, [https://www.canr.msu.edu/nativeplants/plant\\_facts/showy\\_tick\\_trefoil](https://www.canr.msu.edu/nativeplants/plant_facts/showy_tick_trefoil), <https://www.greenandvibrant.com/bleeding-heart-plant>, <https://www.heritageflowerfarm.com/product/dodecatheon-meadia-pink-shooting-star-z-4-8-ephemeral/>, <https://www.whiteflowerfarm.com/28501-product.html>



## Herbaceous Plants and Groundcovers Cont.



*Eupatorium  
perfoliatum*



*Fragaria  
virginiana*



*Geranium  
maculatum*



*Hibiscus militaris*



*Hosta plantaginea*



*Iris virginica  
shrevei*



*Mertensia virginica*



*Mitella diphylla*



*Nelumbo lutea*



*Phlox pilosa*



*Podophyllum  
peltatum*



*Polygonatum  
odoratum*



*Ranunculus acris*



*Ruellia humilis*



*Sagina subulata*



*Sagina subulata  
'Aurea'*

## Image Sources:

[https://en.wikipedia.org/wiki/Eupatorium\\_perfoliatum](https://en.wikipedia.org/wiki/Eupatorium_perfoliatum), <https://www.possibilityplace.com/our-plants/fragaria-virginiana>, <https://mountainnativeplants.com/products/geranium-maculatum-wild-geranium>, [https://www.flickr.com/photos/janet\\_powell/264373272](https://www.flickr.com/photos/janet_powell/264373272), [https://species.wikimedia.org/wiki/Hosta\\_plantaginea](https://species.wikimedia.org/wiki/Hosta_plantaginea), <https://www.midwestgroundcovers.com/plant/Iris-virginica-var-shrevei-NGN>, <https://www.northreeknurseries.com/plantName/Mertensia-virginica->, <https://www.minnesotawildflowers.info/flower/two-leaf-miterwort>, <https://www.discoverlife.org/mp/20q?search=Nelumbo+lutea&mobile=close&wep=0>, <https://www.gardenia.net/plant/phlox-pilosa>, <https://nu-trawiki.org/podophyllum-peltatum/>, <https://davisla.wordpress.com/2011/05/02/plant-of-the-week-polygonatum-odoratum/>, [https://www.illinoiswildflowers.info/weeds/plants/tall\\_buttercup.html](https://www.illinoiswildflowers.info/weeds/plants/tall_buttercup.html), [http://www.illinoiswildflowers.info/prairie/plants/hw\\_petuniah.htm](http://www.illinoiswildflowers.info/prairie/plants/hw_petuniah.htm), <https://www.growingcolors.com/plant/Sagina-subulata>, <https://www.midwestgroundcovers.com/plant/Sagina-subulata-Aurea>

## Herbaceous Plants and Groundcovers Cont.

*Sagittaria latifolia**Silene caroliniana**Tradescantia  
ohiensis**Trifolium repens**Viola sororia*

Image Sources:

<https://www.prairiemoon.com/sagittaria-latifolia-common-arrowhead-prairie-moon-nursery.html>, <https://www.gardenia.net/plant/silene-caroliniana>, <https://www.gardenia.net/plant/tradescantia-ohiensis>, <https://www.mygardenlife.com/plant-library/1943/trifolium-repens>,

## End Notes

1- Credit: Chen Si-Yu, Source:

[https://store.steampowered.com/app/1114720/ Landscapes of the Four Seasons/](https://store.steampowered.com/app/1114720/Landscapes_of_the_Four_Seasons/)

2- All translations are made by the author unless otherwise noted