COMPARISON ON THE SOUNDSCAPES OF ITALIAN RENAISSANCE GARDENS AND MING DYNASTY'S CHINESE CLASSICAL GARDENS

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Yanzhen Wu | 14th April 2022

ABSTRACT

The thesis aims to compare the soundscapes of Italian Renaissance gardens and Ming dynasty's Chinese classical gardens and figure out the reasons behind their similarities and differences through historical research on Italy and China. The research methods are case study, image analysis and literature analysis (secondary and primary). The thesis starts with research on general features of Italian Renaissance gardens and Ming dynasty's Chinese classical gardens based on two case studies, the Villa d'Este and the Humble Administrator's Garden. The soundscapes of Italian Renaissance gardens, featured by fountains, apply advanced water technology to make music or imitate other types of sound. Besides, the soundscapes of Ming dynasty's Chinese classical gardens combine natural elements to make various sounds, always with the sound of water as the background. Then, comparisons are made, finding out that the soundscapes in Italian and Chinese gardens have different emphasis on technology and nature but have common stress on water. The historical contexts of Italy and China are studied to find the reasons for their soundscape designs from various perspectives. The different worldviews and cultural contexts play leading roles in soundscape designs, as social factors and political intentions also influence. Symbolization is widely used in the soundscape design in Italian and Chinese gardens, revealing the reasons for some details and elements of the soundscapes.

Author: Yanzhen Wu

Student Number: 5584981

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Tutor: Birgitte Hansen

School: Delft Techonology of University

CONTENT

CHAPTER 1. INTRODUCTION

Visual elements are always extensively considered in architectural design to provide an aesthetic sense for humans. However, as humans experience the surrounding environment through their five senses, auditory elements are as essential as visual ones in atmosphere and space perception. Architects have increasingly valued the importance of sound in recent years. Especially in garden design, the sound is fully utilized to create various soundscapes for a unique atmosphere and better experiences for visitors. I have been to some famous Chinese classical gardens and was impressed by the picturesque scenery with gurgling streams and singing birds, which captured all my senses and dragged me into another world. These experiences raised my interest in both garden design and soundscape design, and I started to wonder if there is any difference or commonality between Chinese gardens and European gardens after I came to TU Delft.

The term 'soundscape', defined as the acoustic environment as perceived by humans in context, is generally believed to have been coined by urban planner Michael Southworth in 1967 and popularized by Canadian composer and naturalist R. Murray Schafer. While most studies about soundscape focus on the city environment, there are much fewer studies on the soundscape of gardens. Although Italian gardens are famous for their soundscape design throughout Europe, and there are many images and literature records, strangely, little research is specifically concentrated on the soundscapes in Italian gardens. In terms of the soundscape of Chinese gardens, most of the studies are about the theory, design methods and constituent elements. In general, there is little current research on comparing the soundscape design of Chinese and Italian gardens or the reason behind these design theories.

This thesis compares the soundscape design between the Ming dynasty's Chinese classical gardens and Italian Renaissance gardens. Both of them had a rich history of soundscape design and were in the same period from the 15th to 17th century, the most prosperous period of Chinese and Italian gardens. The thesis studies the similarities and differences between these two types of gardens. Furthermore, it explores the reasons behind them by studying the historical context of China and Italy, trying to find out how the different historical contexts influenced the soundscape design in Ming Dynasty's Chinese classical gardens and Italian Renaissance gardens.

The primary research method is the case study, combined with image analysis and literature analysis (secondary and primary). Two cases are chosen to represent the soundscape features in Italian and Chinese gardens, respectively, which are Villa d'Este in Tivoli, Italy and Humble Administrator's Garden in Suzhou, China. Both of them, built in the 16th century, were exemplary for their time and are listed as UNESCO World Heritage Sites.

Chapter 2 illustrates the general features of the soundscape design of Italian Renaissance gardens and Ming dynasty's Chinese classical gardens by studying the two chosen cases. The process mainly focuses on image analysis such as plans, section drawings and photography, supported by literature research. In each case study, all the soundscapes' layouts and relationships are pointed out to show an overview of the soundscape design. Then, some representative soundscapes are picked out to illustrate the design in detail. After the analysis above, the features are compared to find out the similarities and differences between the soundscapes in the two gardens and raise further questions for Chapter 3: Why do the soundscape of Italian Renaissance gardens and Chinese classical gardens have different stress on machines and nature? Why do they have a common point on utilizing water? These questions are answered in Chapter 3 by studying the historical context of Italy and China from various perspectives, including philosophy, religion, politics, culture, and society. Finally, in Chapter 4, the conclusion is made to answer the research question, and the reflection and prospects are claimed for further research possibilities.

CHAPTER 2. RESEARCH AND COMPARISON OF FEATURES BETWEEN THE SOUNDSCAPES IN ITALIAN AND CHINESE GARDENS

2.1. Features of the Soundscape of Italian Renaissance Gardens

2.1.1. Introduction to the Italian Renaissance Garden and its Case Villa d'Este

The Italian Renaissance garden, was a new garden style that originated in Florence and Rome in the late 15th century, after which it led the trend of European garden design for a long time. It might be obfuscated with the Baroque garden that emerged from the late Renaissance. They have similar features and are closely connected with each other, and the two terms can sometimes be replaced. It could say that the Baroque garden is an inheritor of the Renaissance garden.

The Villa d'Este, as an iconic Italian Renaissance garden built in the High Renaissance period, epitomizes the general characteristics of Italian Renaissance gardens and can also be considered an early Baroque garden. It was commissioned by Cardinal Ippolito II d'Este and constructed from 1560 in Tivoli, Italy. Its designer, Pirro Ligorio, created a plan utilizing steep terrain and introduced strong geometric forms and water features with the best view from above.

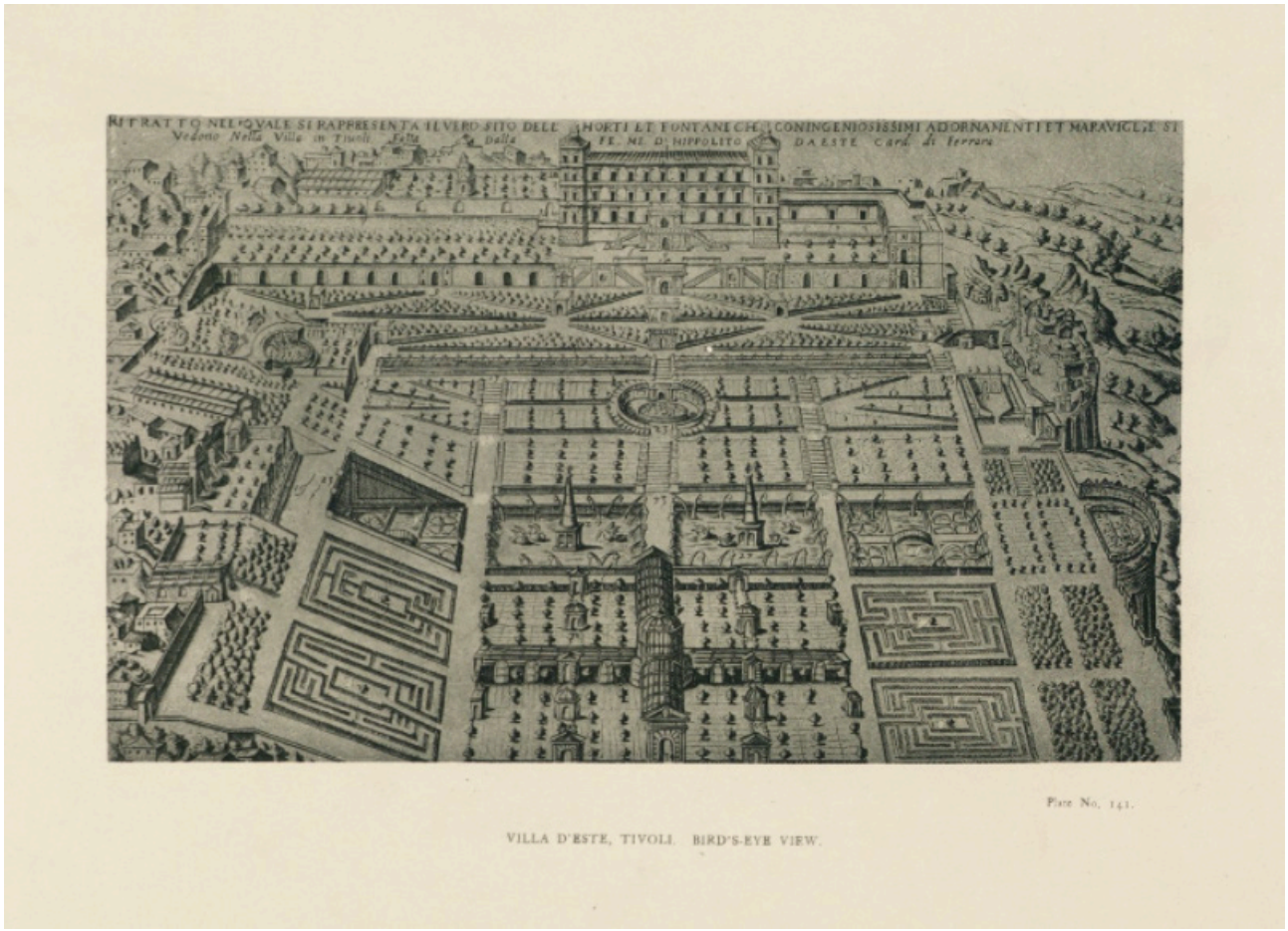

Figure 1. Villa d'Este, Tivoli. Bird's Eye View. (Ligorio, Pirro. 1560-1575)

Although it experienced centuries and had met several abandonment and reconstructions, most of its original appearance was preserved. Now it is still featured by an extraordinary water system including 51 fountains, hundreds of spouts, jets, and over 60 waterfalls, which created a wonderful musical and auditory experience for visitors. Amazingly, this process is entirely forced by gravity without any pow-

er system. From 1563 to 1565, for creating conditions for waterfalls and the flow of water, a large amount of earth was excavated to construct new terraces with six layers and over 45 metres from top to bottom, as shown in Figure 2. The nearby river Aniene was diverted to introduce water for the complicated system of fountains, cascades, pools, water jets and water games. Canals were dug, and over 200 metres of underground pipes were laid to connect the water-based soundscapes. (Barisi, 2004)

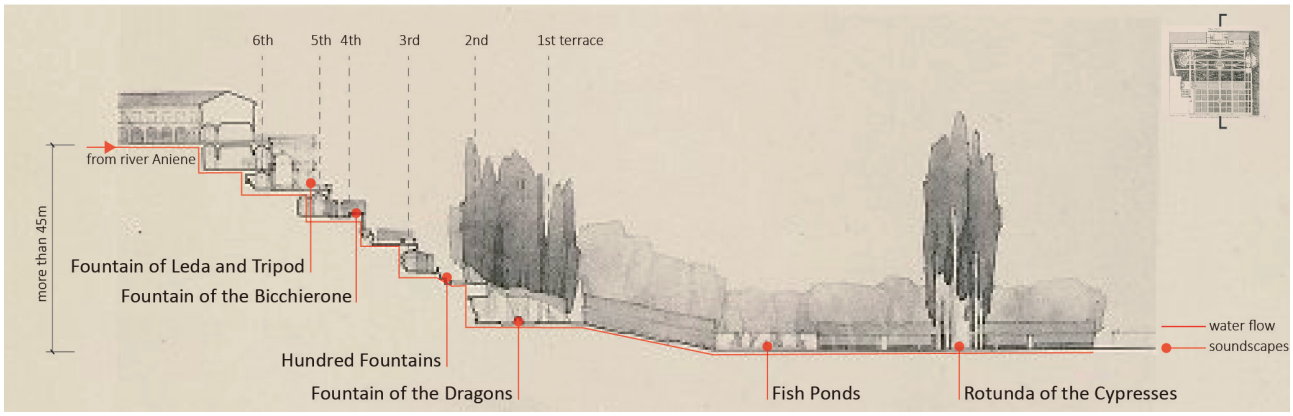

Figure 2. Villa d'Este, Tivoli. Section Analysis.
(Self analysis based on the section from Shepherd, J. C., Jellicoe, G. A. 1925)

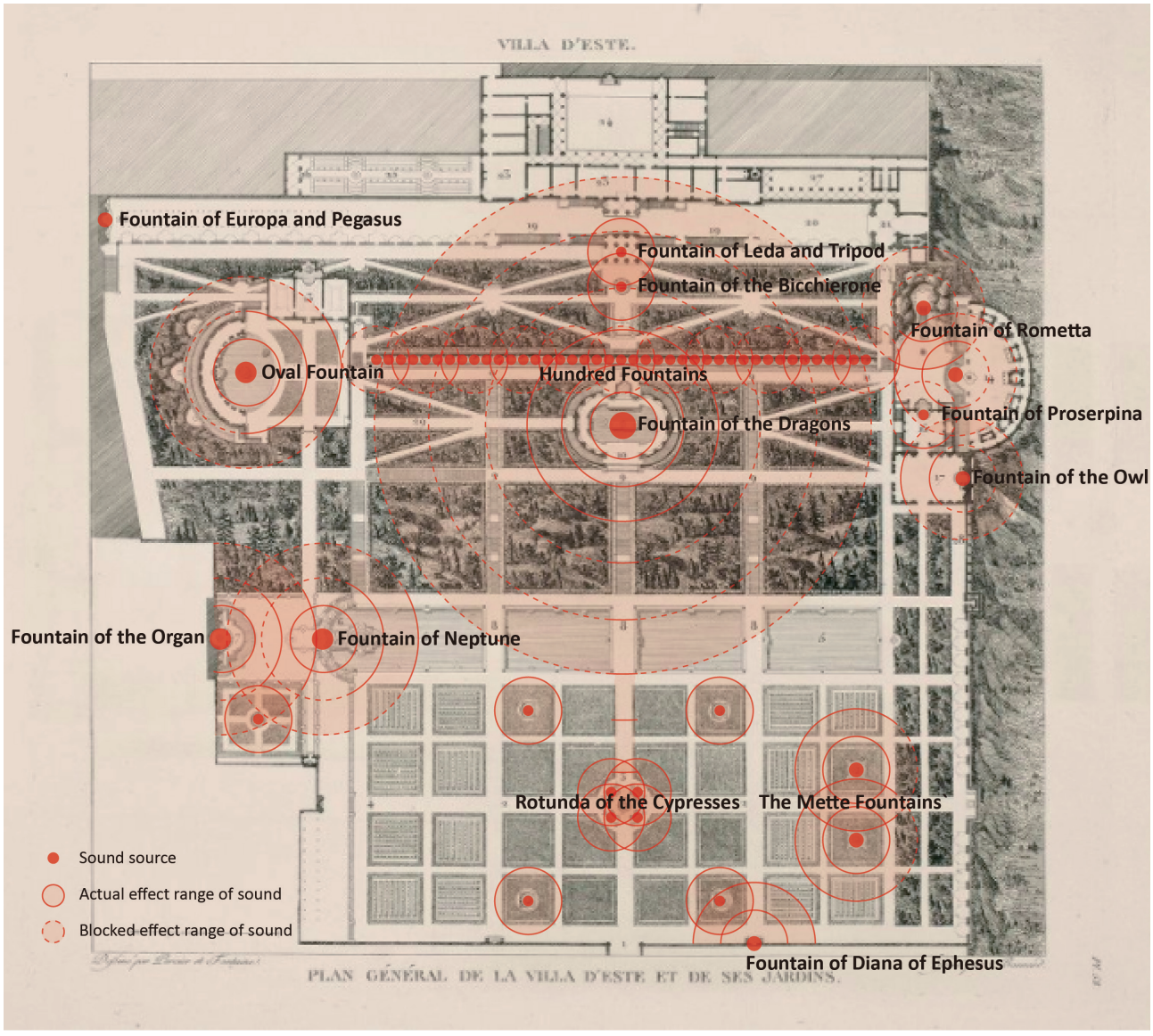

Figure 3. Villa d'Este, Tivoli. Locations and Effect Ranges of the Fountains.
(Self analysis based on general plan from Ligorio, Pirro. 1560-1575)

2.1.2. General Features and Relationship between the Soundscapes

The soundscapes of the Villa d'Este greatly rely on the complicated water system, constituted mainly by various types of fountains. They are arranged at different height levels and are connected by the water flow, from pouring cascades on the hill to the calm basins at the bottom, which creates a rich auditory experience for the visitors. All of the fountains have their characteristics and themes but complement each other simultaneously. Some of the fountains, such as the Oval Fountain, keep a distance from others to prevent interference. Nevertheless, the sound is mostly used as a guide and link between different fountain themes. (Figure 2, 3)

When the visitors first come to the garden, they start from the lower garden with a group of small rustic fountains, which can be seen as the prologue. Standing on the Rotunda of the Cypresses, people might be attracted by a huge cannon-like sound from the Fountain of the Dragons, which is located in the middle of the garden and has the largest sound effect range among all the soundscapes. The huge sound leads the visitors to step up the terraces following the central axis and go into the climax of the visit (Figure 4). Above the Fountain of the Dragons, the Hundred Fountains, consisting of three hundred spouts fed by three parallel canals, one above the other (Barisi, 2004), form a path with trickling sound between the Oval Fountain and the Fountain of Rometta (Figure 5). After visiting the villa on the top of the hill, visitors might go down through the series of fountains on the right of the upper garden, including the Fountain of Rometta, the Fountain of Proserpina and the Fountain of the Owl. These fountains are closely connected by the indication of sounds, from the galloping waterfall of the Fountain of Rometta to the melodious birdsong of the Fountain of the Owl (Figure 6). When visitors stand in front of one of them, they can also hear the sound from another one and therefore can be promoted to move between different spots. (Figure 3)

Figure 4. Fountain of the Dragons Viewed from Rotunda of the Cypresses. (Shepherd, J. C., Jellicoe, G. A. 1925)

Figure 5. The Hundred Fountains. (Forbes, A. 1902)

Figure 6. Fountain of Rometta. (Johanna, 1568).

2.1.3. Details of the Soundscapes: Utilization of Machinery

1) The Fountain of the Owl: Imitating the Sound of Birds

Although the work of the fountains relies on the power of nature, it does not mean there is no machinery within the system. On the contrary, these fountains are filled with delicate machinery.

For example, the Fountain of the Owl features twenty painted bronze mechanical birds standing on two metal olive branches in the niche with the d'Este symbol of white eagles above. The device starts with each bird singing a different song individually, and then a mechanical white owl occurs, after which all the birds start to chorus. (Barisi, 2004) (Figure 7, 8)

The Fountain of the Owl was built by Giovanni del Duca from 1565 to 1569 and was installed automaton in 1566, designed by French fountain engineer Luc Leclerc, utilizing piped water and air to produce music. (Barisi, 2004) As shown in Figure 9, the sound tube and stylus in the device can be hydrodynamically combined to produce different types of tones, similar to a bird's chirping. At the same time, the action of the hydrodynamic force also drives the rope to make the rods between the bird's mouth and tail move, causing the movement of the bird. The chain reaction results in the scene of the bird's singing. Another attractive design is that the owl, drawn on the top left of Figure 9, will rotate with the movement of the bucket. When it faces the birds on the right, the birds will sing; when it turns its back to the birds, the birds will keep silent. (Feng, 2014)

Figure 7. The Fountain of the Owl (Forbes, A. 1902)

Figure 8. The Fountain of the Owl (Szilas. 2015)

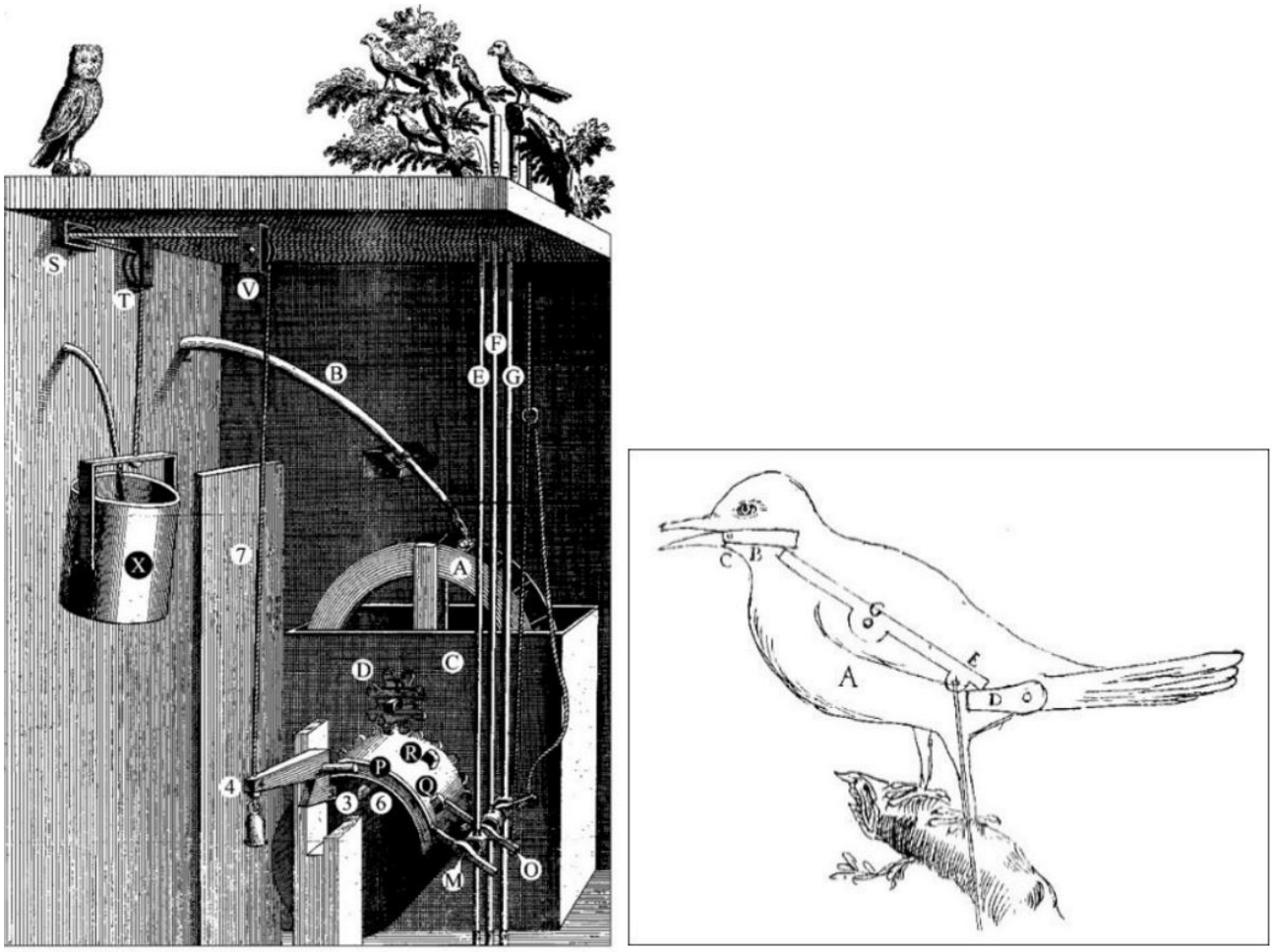

Figure 9. The Mechanical bird Schematic and Detail. (Feng, K. 2014)

2) The Fountain of the Organ: Playing the Sound of Music

The Fountain of the Organ is one of the most famous fountains of Villa d'Este, which was the first one combined with the water organ and was imitated throughout Europe. The fountain itself was made by Luc Leclerc and his nephew Claude Venard in 1566, just after Leclerc's work of the Fountain of the Owl. After the death of Leclerc, the ingenious device of water organ was invented by Venard and installed in 1571, which could play all kinds of music that people wanted to listen to according to the preset musical score. (Barisi, 2004) (Figure 10, 11)

Figure 10. The Fountain of the Organ (Forbes, A. 1902)

Figure 11. The Fountain of the Organ (Dalbéra, P. 2011)

Figure 12 clearly illustrates how the water organ works. The basic principle is that the air, compressed by a large amount of water flow, makes the ingeniously constructed organ pipes emit sound, and the corresponding devices produce different movement forms. The structure of the water organ can be generally attributed to three parts: the vocal system, the air supply system and the control system.

The core of the vocal system is the organ pipes. All the sound pipes are arranged in rows and columns from long to short, thick to thin, so the whole set of sound pipes can play various scales as needed, resulting in various timbre changes. The air supply system mainly includes a wind box and a blower providing sufficient airflow for the water organ. When the keyboard is pressed, the airflow of the sound tube flows out, thereby producing vibration sound. The control system is composed of a waterwheel, an operating table and connection parts. The operating table can be further divided into tone wheels, keyboards and switches. The waterwheel is driven by water flowing from the inlet pipe above it, causing the tone wheel and keyboard to run automatically and periodically. The function of the tone wheel is to read the musical score and play the keyboard instead of the human. The stylus needles in different lengths on the surface of the tone wheel are made according to the preset musical score. Each tonewheel can only play one score. By changing the tone wheel, the water organ can achieve the purpose of playing different music. (Feng, 2014)

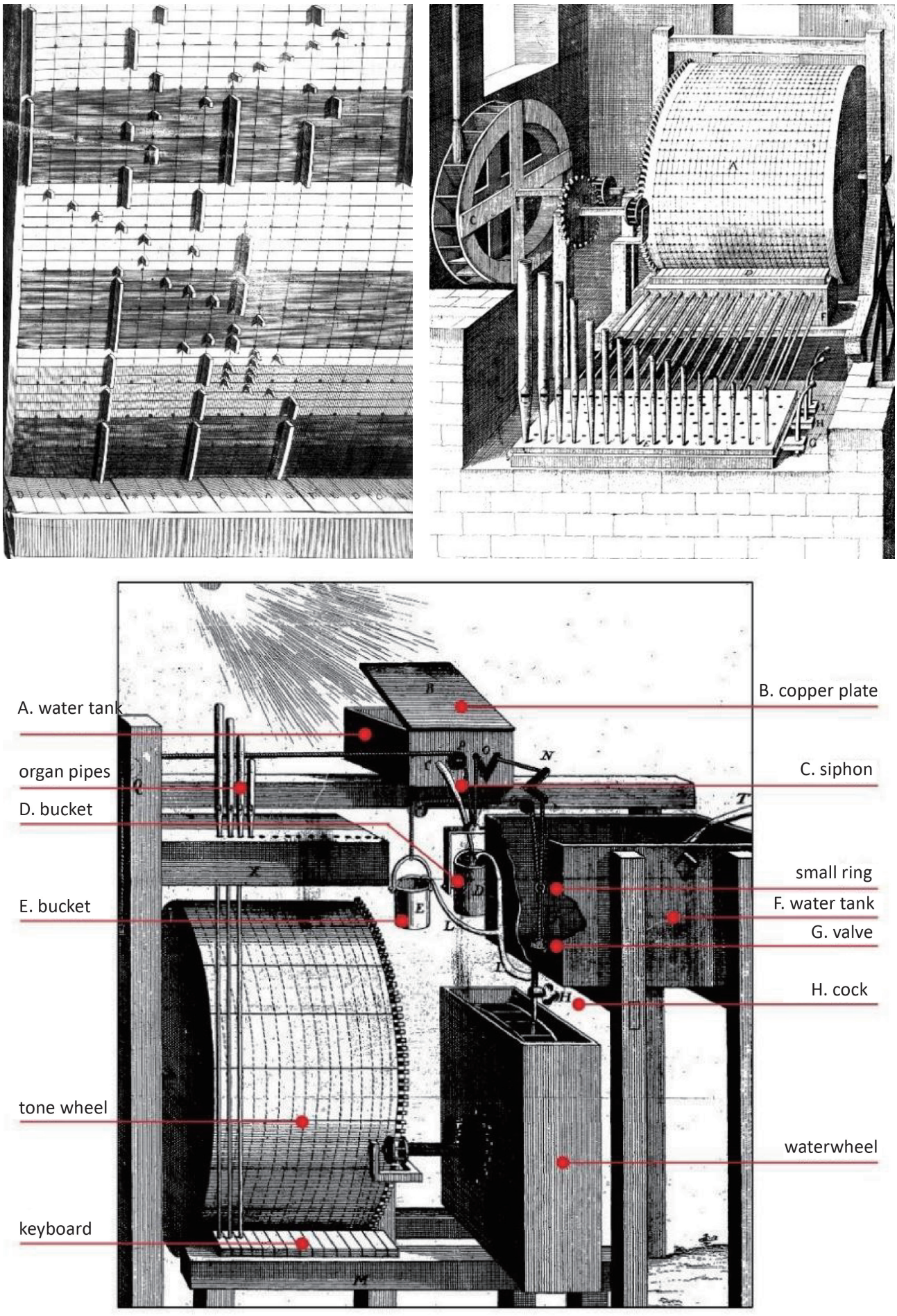

Figure 12. The Mechanical bird Schematic and Detail. (Self translated on drawing from Feng, K. 2014)

3) The Fountain of the Dragons: Imitating the Sound of Cannon

Except for playing music and imitation of bird singing, the fountains can be also used to imitate the sound of gun or cannon, such as the Fountain of the Dragons. The French philosopher Michel de Montaigne used to visit Villa d'Este in 1580. He described, 'There is a real organ, which plays real music, though always the same tune, and this is effected by the means of water, which, falling in a large body, and with a sudden descent, into a round, arched cave, strikes upon the air in it, and compels it to make its exit through the pipes of the organ, which are thus supplied with wind... ...By the same machinery they imitate the sound of trumpets... ... In one place, you hear a roaring sound, like artillery. In another, you are startled with the sharper discharge of gun-shots; both of these sounds being also produced by water, which falls into hollow places, and ejects the air.' (Montaigne, 1774). Apparently, the Fountain of the Dragons, along with other fountains built after the fountain of the Organ, adopted a similar technology to the water organ. Different amount of water functioned on different parts of the mechanism, producing various sound effects. (Figure 13, 14)

Figure 13. Fountain of the Dragons Viewed from the bottom (Forbes, A. 1902)

Figure 14. Fountain of the Dragons Viewed from the stairs (Shepherd, J. C., Jellicoe, G. A. 1925)

2.1.4. Conclusion

In general, the soundscapes in the Villa d'Este have an essential element of water, mainly manifested in the form of fountains. The fountains always apply delicate machinery and advanced water technology to make all kinds of sounds. They can be divided into four types: music players, imitation of the sound of animals, imitation of the sound of objects, and ordinary fountains (the sound of water itself). These features can be applied to other Italian Renaissance gardens. For instance, the Teatro delle Acque (Water Theater) in Villa Aldobrandini has various water organs playing wonderful music and water games imitating the sound of birds, wind and even thunder.

2.2. Features of the Soundscape in Ming dynasty's Chinese Classical Gardens

2.2.1. Introduction to the Chinese Classical gardens and its Case Humble Administrator's Garden

The Chinese classical garden is a landscape garden style with a long history of over three thousand years, whose essential features are continuously inherited and do not change a lot over time. To better compare with the Italian Renaissance garden, this thesis studies the Ming dynasty's Chinese classical garden in the same period as the Italian garden style.

One of the most representative Ming dynasty's Chinese classical gardens is the Humble Administrator's Garden located in Suzhou, China, which also has a theme of water as Villa d'Este. It was owned and designed by Wang Xianchen, a former government official who went back to his hometown and built his own house with a garden in 1509. (Tang, 2010) The site was away from the urban area and originally a part of a temple, with many pools and surrounded by forest. Wang utilized the original landscapes and redivided the water area into different parts by reconstructing islands with hills and rocks.

As shown in Figure 15, the general layout of the garden is organic and imitates the natural shore of lakes. When the wind blows, the waves slowly beat the lake stones and yellow stones stacked on the revetment, making different sounds for visitors. The view shown in the picture is the result of several reformations by later owners. The original design by Wang was much simpler and closer to the natural environment with much fewer buildings. According to the Diary of Wang's Humble Administrator's Garden (1533), written by Wang's friend Wen Zhengming, the garden only had 'one hall, one building, and six pavilions' (堂一，楼一，为亭六). Fortunately, the prominent soundscapes were designed by Wang, as marked in Figure 16.

2.2.2. General Features and Relationship between the Soundscapes

The soundscapes in Chinese classical gardens are usually combined with buildings, such as the pavilions in the Humble Administrator's Garden, where people sit and enjoy various sounds from the surrounding environment. As Xiting Mountain View (Yuan Dynasty, 1271-1368), inscribed by Zhang Xuan, says, 'Infinite scenery of rivers and mountains, all gathered in one pavilion.' (江山无限景，都聚一亭中), the pavilion plays a role in gathering surrounding sounds in one place.

In the Humble Administrator's Garden, each soundscape is designed based on themes around the central pavilion, using natural elements like plants, rocks, and even rain and wind. These sounds made by nature are usually very soft, due to which the soundscapes have to keep a distance from each other to prevent disturbing and therefore are dispersed over the area (Figure 16). Besides, the participation of the natural elements causes the randomness of these soundscapes, which means the sounds vary every moment and can always bring fresh feelings to visitors.

Figure 15. Humble Administrator's Garden, Suzhou. Bird's Eye View. (Song. 2015)

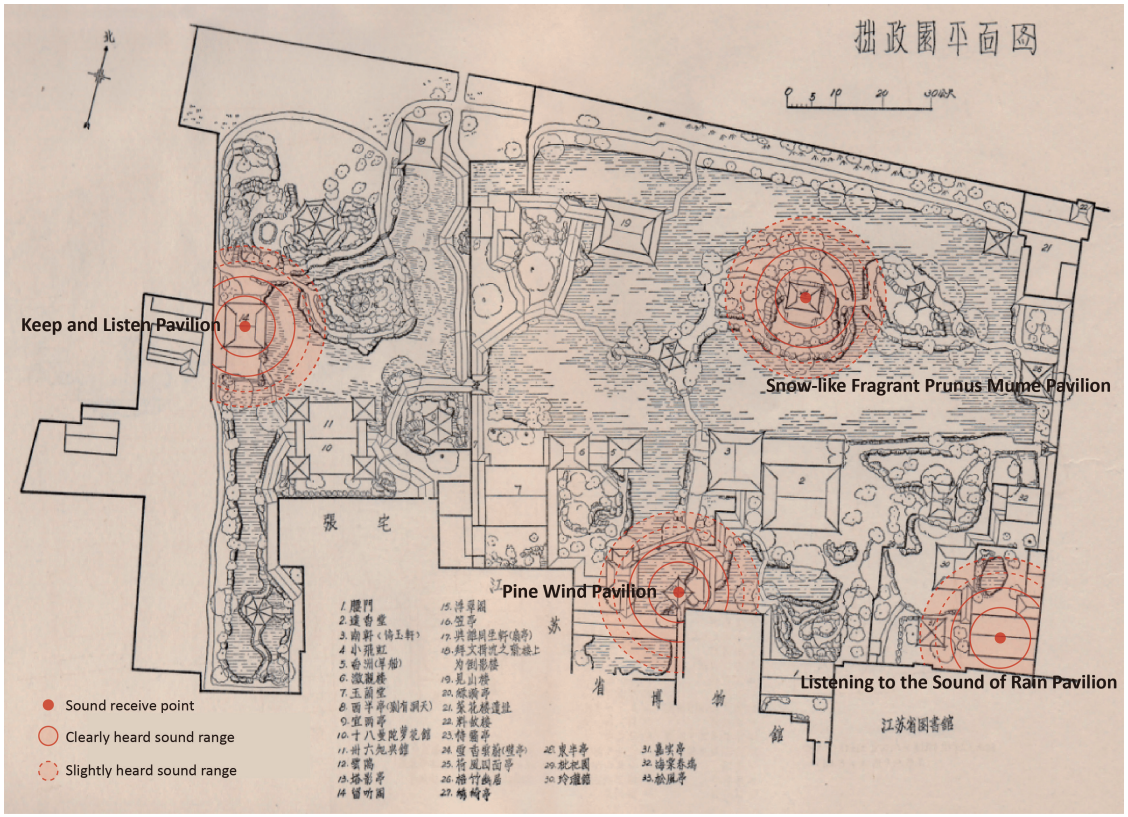

Figure 16. Humble Administrator's Garden, Suzhou. Locations and Ranges of the Soundscapes. (Self analysis based on the plan from Chen C. 1956)

2.2.3. Details of the Soundscapes: Utilization of Natural Elements

1) Listening to the Sound of Rain Pavilion: the Sound of Rain

Rain plays a vital role in forming the soundscapes in Humble Administrator's Garden among all of the natural elements. The Listening to the Sound of Rain Pavilion is a typical soundscape utilizing rain sound. The pavilion is surrounded by various plants such as bamboos, hydrangea, and Musa basjoo, all of which are frequently planted in Chinese classical gardens. On rainy days, the rain drops on different types of plants and makes different sounds, combined with the sound of rain dropping into the pool in front of the pavilion. Also, the sound changes with the speed and size of the raindrops, raising different emotions in the listeners, therefore creating a unique artistic conception of the rain. (Figure 17, 18, 19)

Figure 17. Listening to the Sound of Rain Pavilion. View from inside. (Ming. 2008)

Figure 18. Listening to the Sound of Rain Pavilion. Detail. (Tao. 2019)

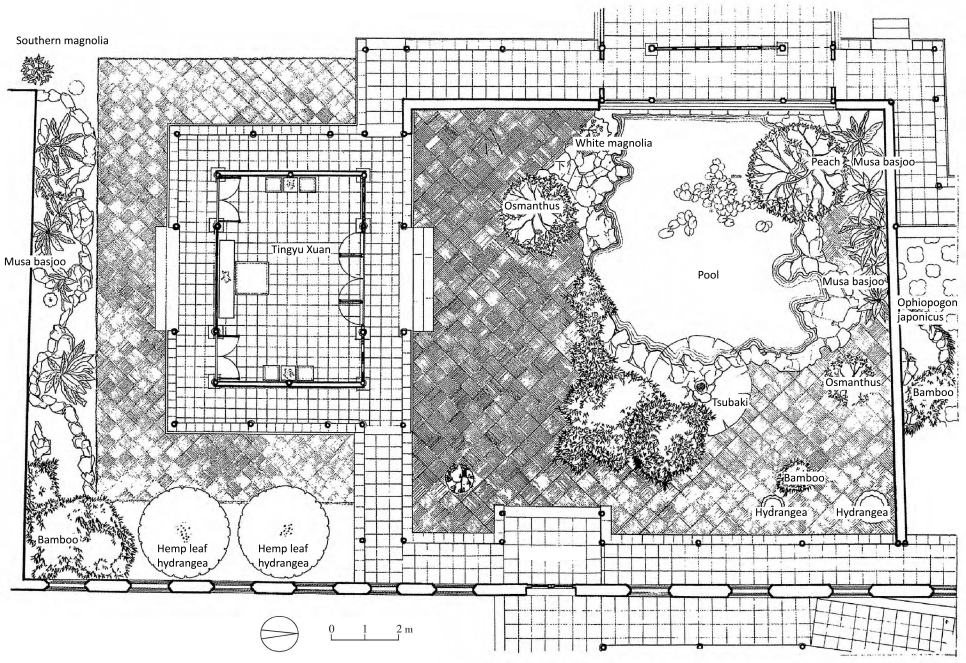

Figure 19. Plan of the Listening to the Sound of Rain Pavilion. (Self translated on the drawing from Liu, X. Pan, G. 2007.)

2) Pine Wind Pavilion: the Sound of Wind

Another characteristic soundscape is the Pine Wind Pavilion, which features the sound of the wind. It is located south of the garden, half standing on the water. The pine leaves dance with the wind and makes a rustling sound when the wind blows through, with layers of ripples on the lake. (Figure 20, 21)

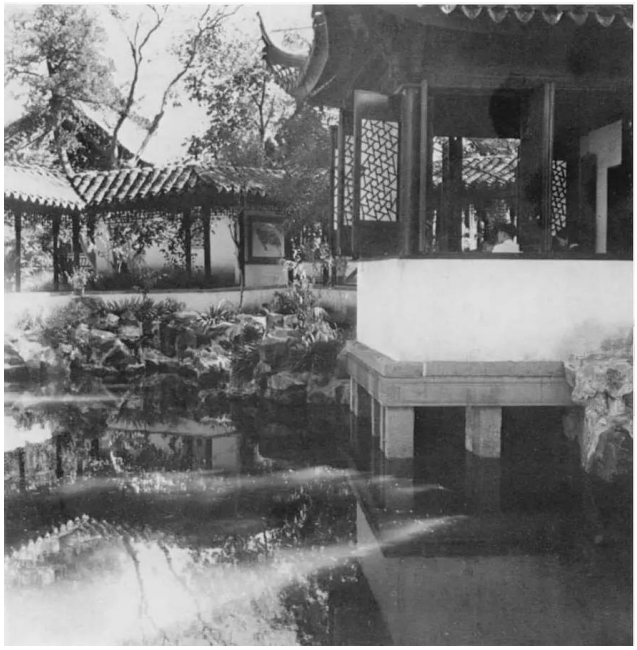


Figure 20, 21. Pine Wind Pavilion. (Chen C. 1956)

3) Snow-like Fragrant Prunus Mume Pavilion: the Sound of Animals

In addition to rain and wind, the sound of animals is also an essential element of the soundscapes. Compared with the imitation of the sound of animals in Italian Renaissance gardens, Chinese classical gardens tend to use the original sound made by animals directly. The Snow-like Fragrant Prunus Mume Pavilion is located in a forest on the island in the middle of the garden. The richness of trees reduces the noise from visitors and highlights the sound of cicadas and birds inhabiting the forest. (Figure 22, 23)

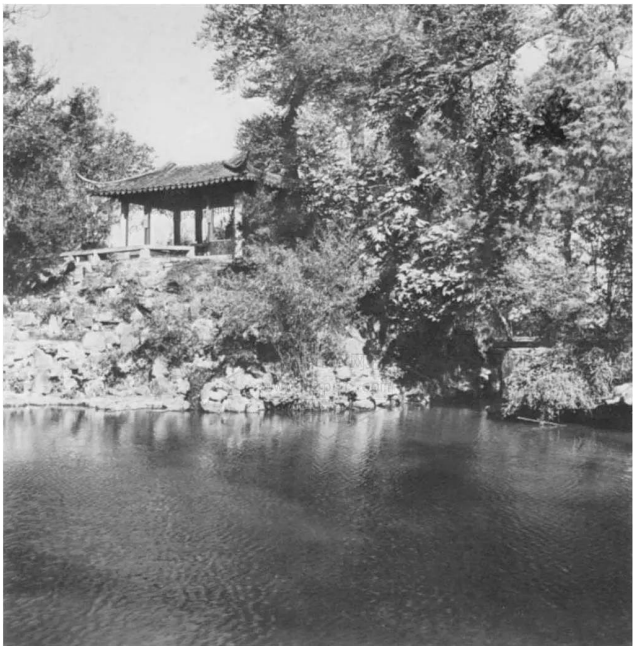


Figure 22, 23. Snow-like Fragrant Prunus Mume Pavilion. (Chen C. 1956)

2.2.4. Conclusion

In general, water is considered the fundamental element of the soundscapes in the Humble Administrator's Garden. In addition to the sound itself, water can be integrated with any other landscape, making various sounds, such as rain dropping on the plants and waves beating on the stones. The sound of water is indicated anywhere in the garden and is the background and base of all sounds. Besides, the other natural elements can also be combined to make sounds, such as wind crossing the pine trees in the Pine Wind Pavilion. It can say that all the natural elements are seen as instruments for making different natural music in the garden.

These features can be seen in other Chinese classical gardens. One of the famous soundscapes in the Jingming Garden (1506) in Beijing is featured the sound of wind crossing the bamboos, with the slight sound of ripples from the lake beside as background.

2.3. Similarities and Differences Between the Soundscapes of Italian and Chinese Gardens

The Italian Renaissance gardens and the Ming dynasty's Chinese classical gardens both consider water an essential element in their soundscape design. The soundscapes in Italian gardens are represented by fountains supplied by a complicated water system, and the ones in Chinese gardens are supported by various forms of water.

However, their application of water and other soundscape characteristics varies a lot. One of the most noticeable differences is that the Italians prefer to design mechanical water devices to produce music or imitate the sound of nature, objects and animals. In contrast, the Chinese tend to utilize water and other elements in natural forms or combine them to produce different sounds of nature.

Another interesting point is about the relationship between the soundscapes and the visitors. On the one hand, the visitors to Italian gardens listen to the sound coming from the fountains when standing around them. On the other hand, the ones in Chinese gardens listen to the sound coming from the outside when standing within the pavilions. This means that while the fountains in Italian gardens are sound points actively making sounds, the pavilions in Chinese gardens are receive points passively perceiving sounds (Figure 24).

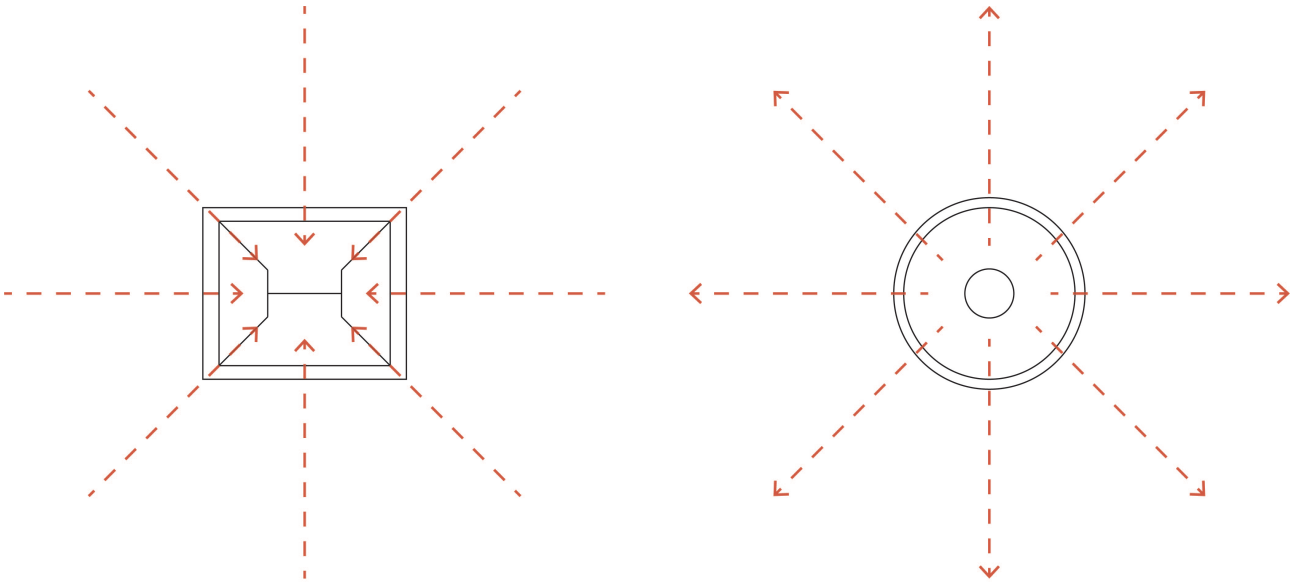

Figure 24. Comparison between the soundscape in Humble Administrator's Garden and Villa d'Este. (Self made)

The comparison raises further questions: Why do the soundscapes of Italian Renaissance gardens and Ming dynasty's Chinese classical gardens have a common point of utilizing water? Why do they have different stress on technology and nature? The next chapter will try to find the answers to these questions through research on the historical contexts of Italy and China from various perspectives.

CHAPTER 3. HISTORICAL CONTEXTS BEHIND THE SIMILARITIES AND DIFFERENCES

3.1. Cultural Background: Italian Renaissance versus Chinese Philosophy

3.1.1. Italian Renaissance: Admiration and Revival of Ancient Rome

The Renaissance was seen as an important thought reform from the 14th to 17th century, originated in Florence, Italy. At that time, people admired the classical culture of ancient Rome and wanted to revive the ideas, art, and architecture from antiquity. For this purpose, people diligently studied the papers and materials remaining from ancient Rome and tried to emulate and surpass its achievement. The Italian Renaissance gardens, like the Renaissance architecture and art, emerged from the rediscovery of classical Roman models.

1) Purpose of Gardens

There were many descriptions of ancient Roman gardens in the encyclopedic Naturalis Historia by Pliny the Elder, the letters of Pliny the Younger, and the Metamorphoses of the Roman poet Ovid. In the letters of Pliny the Younger, he described the life in his villa garden at Laurentum: “a good life and a genuine one, which is happy and honourable, more rewarding than any ‘business’ can be. You should take the first opportunity to leave the din, the futile bustle and useless occupations of the city and devote yourself to literature or to leisure.” Pliny saw the garden as a place to think, relax, and escape from the busy urban life. He claimed that the purpose of a garden was ‘otium’, which means seclusion, serenity or relaxation. The first Renaissance text to include garden design was De re aedificatoria (On the Art of Building), written by the famous architect and artist Leon Battista Alberti (1404–1472) based on the study of Roman materials. He described what a garden should look like and how it should be used and argued that the garden was a sanctuary from the confusion of the outside world. (Attlee, 2006; Toman, Bednorz, 1998)

2) Reason and Science

Furthermore, Pliny the Younger mentioned the features of ornamental parterres, fountains, and trees, bushes trimmed to geometric shapes, and shaded paths bordered with hedges, all of which became essential elements of Italian Renaissance gardens. (De Groote & Schroeder, 1997) The Roman theories of geometry, mathematics, astronomy, and geography promoted the formation of reason and science in the Renaissance period.

Geometry, one of the manifestations of the pursuit of reason, was seen as a reflection of a divine and cosmic order. Many studies tried to find geometric patterns in nature and recreate the codified order in all fields, including garden design. (Hamilton Gardens, 2022) The Cortile del Belvedere in Rome was one of the first gardens in Renaissance adopting these geometric principles. It was finished in 1565 by Pirro Ligorio, the same designer of the garden of Villa d’Este, and was a model for later gardens.

3) Water and Water Technology

The great importance attached to water and fountains of Renaissance gardens also originated from ancient Rome. Water was important in Roman culture, and Romans had a large demand of water. Vitruvius considered that “all things depend upon the power of water” and believed that water supplied “an infinite number of practical needs”. (Vitruvius, 1960) Eleven aqueducts were constructed to supply the complex water systems, including fountains, baths, latrines and more, and Romans “relished the pleasure of water” in their baths and ornamental fountains. (Van Deman, 1934; Bruun, 1991; Rogers, 2018) All water flow was based on gravity. Slopes and hillocks must be overcome by bridges, viaducts, tunnels or siphons. (Wilson, 2008)

Apparently, the sophisticated water technology used in Renaissance gardens was inherited from ancient Rome. The garden designer of the Villa d’Este, Pirro Ligorio, was an expert on Roman antiques and had a rich knowledge of aqueduct engineering. (Coffin, 2004) The complicated water system he designed, mentioned in chapter II.i, strictly followed the features and principles of the Roman water system. Furthermore, Italian engineer Agostino Ramelli was known for his book of engineering designs Le diverse et artificiose machine del Capitano Agostino Ramelli (1588), which clearly illustrated 110 kinds of water-raising machines and made a great contribution to the water transportation in gardens.

4) Symbolization

In Italian Renaissance gardens, the symbolization method was widely used to show the admiration of ancient Rome. For instance, in Villa d’Este, a symbolic story was formed by the Oval Fountain, the Hundred Fountains, and the Fountain of Rometta. The Oval Fountain symbolized the Tiburtin Mountains, the origin of the water of the Tiber River. The water ran through the aqueducts in the valley, represented by the Hundred Fountains, and finally arrived at the gates of Rome, the Fountain of Rometta. The entire Roman city was miniaturized in the Fountain of Rometta. The tiny city included gates, arches, and even small marble statues, with a giant statue of Rome Victorious in the centre. The architecture at the back portion of the fountain was divided into seven sections, representing Rome’s seven hills and their monuments. (Barisi, 2004)

In general, the admiration of ancient Rome resulted in the emergence of Italian Renaissance gardens and their emphasis on water and technology. The design of the soundscapes extensively referred to the features of ancient Rome.

3.1.2. Chinese Philosophy: the Thought of 'Tian Ren He Yi'

In terms of Chinese classical gardens, the feature that stressed water and nature resulted from the most influential Chinese philosophy spirit, 'Tian Ren He Yi' (天人合一), that is, the unity of humans and nature. Literally, 'Tian' (天) means the world, and 'Ren' (人) means the human. 'Tian Ren He Yi' is basically discussing the relationship between the world and humans.

1) Connotation and Interpretation of 'Tian Ren He Yi'

The interpretation of 'Tian' changed over time. Before 1046 BC, 'Tian' represented the gods. In order to consolidate the kingship, the rulers began to create stories that only the emperor had the power of contacting the gods and that they were the messenger of the gods. This concept was broken in the Spring and Autumn Period (770 BC- 476 BC). Chinese philosopher Laozi proposed 'Tao' (道) to explain the origin and movement of the natural things in the world instead of saying that the gods created the world. He connected 'Tian' with nature and believed there was no mystery. "Tao gives birth to one, one gives birth to two, two gives birth to three, and three gives rise to all things." (道生一，一生二，二生三，三生万物.) It claims that 'Tao' is the origin of all things and is the principle of how things exist and develop. It is the thought of cosmogony from an objective perspective.

The other two significant concepts of Taoism are 'Tian Tao' (天道) and 'Ren Tao' (人道), which means the way of development of nature and humans, respectively. Taoism advocates that 'Ren Tao' should respect and conform to 'Tian Tao'. (Yao, 2011) According to Tao Te Ching (道德经), one of the most significant treatises of Taoism written by Laozi, many people act unnaturally and upset the natural balance of 'Tao' due to restrictions by rules and etiquette, so humans need to abandon worldly desire, return to their natural state, and feel the spiritual sublimation in nature. Therefore, Taoism advocates a calm state called 'Wu Wei' (无为), literally 'non-action' or 'not acting'. It respects simplicity and natural beauty and rejects any artificial or unnatural change. In the Warring States Period (476 BC- 221 BC), philosopher Zhuangzi inherited and developed Laozi's Taoist philosophy spirit, encouraging people to go to seclusion to retain their natural state, understand and follow the laws of nature's development, and finally achieve the unity with nature.

In the same period, Confucianism represented by Confucius and Mencius proposed another interpretation of 'Tian Ren He Yi' from the perspective of humans. "The reason why the world generated all natural things is to nourish humans." (天地之生万物也, 以养人.) "Take the beauty of nature to nourish humans' body." (取天地之美以养其身.) (Dong, 179 BC- 104 BC) It stressed the importance of humans and brought the status of humans as the same as nature. The unity of nature and humans means they need to be in harmony and find a balance.

2) Purpose of Gardens

Under the influence of 'Tian Ren He Yi' philosophy in Taoist and Confucianism, the ancients were enthusiastic about pursuing spiritual dependence on nature and seeking detachment from worldly desire. In the poem Back to Country Life 1, Chinese poet and literati Tao Yuanming wrote, "I've loathed the madding crowd since I was a boy, while hills and mountains have filled me with joy. By mistake I sought mundane careers, and got entrapped in them for thirty years... So I reclaim the land in southern fields, to suit my bent for reaping farm land yields... When I escape from bitter strife with men, I live a free and easy life again." (少无适俗韵, 性本爱丘山. 误入尘网中, 一去三十年... 开荒南野际, 守拙归田园... 久在樊笼里, 复得返自然.) (Wang, 1998) The experience of Tao was pursued by many

literati, and visiting all the fascinating natural landscapes was the dream of their whole life. However, people could not travel worldwide at that time, so they arranged landscapes in the gardens to imitate a natural environment. In this way, they could realize their ideal of seclusive life and obtain fun and spiritual support from nature. (Yao, 2011)

3) Water and its Connotation

Water has a special meaning in Chinese philosophy. Confucius attached human virtues to water and believed it has a noble character. Laozi considered water as the most similar thing to 'Tao' (道) among all visible things and thought the state, form and movement of water reveal the nature of 'Tao'. Water can be everywhere and everything. It can be rain, snow, fog, clouds, or nectar. It has the feature of tolerance and is the origin of all things. It falls to the earth to nourish all things without asking for anything in return. (Xu, 2013) Through the medium of water, Laozi built a bridge between 'Tao' and physical objects in nature. By proposing that "people need to be as kind as water" (上善若水), he claimed his thought that the behaviours of humans need to follow the way of nature.

As a result, nature was greatly admired in Chinese history, and natural elements were widely used in the soundscape design of Chinese classical gardens. Also, water, as the thing that best reflects the idea of 'Tian Ren He Yi', was utilized to be the base and support of other natural elements. The sound of any form of water, such as streams, rivers, and rains, became an indispensable component of the soundscape design in Chinese classical gardens.

3.2. Attached Social and Political Meanings

Interestingly, although Italian and Chinese gardens' original purpose was seclusion and detachment from society, they were both attached to social and political meanings over time.

3.2.1. Italian Renaissance Gardens

1) Social Attribute: Place for Social Affairs

While Pliny the Younger described the garden as a place for being alone and away from public life, many people in Renaissance used their gardens for meetings, parties, and social affairs. For example, Ippolito often had meetings with the leading poets, artists and philosophers. (Barisi, 2004) The inheritor of the Villa Medici, Lorenzo de' Medici, also made the garden a meeting place and social area. (Attlee, 2006) The amazing waterscapes with fountains and water playgrounds brought enjoyment to visitors and created a pleasant atmosphere.

2) Political Indication: Wealth, Power and Status

In addition, due to the expansive construction and maintenance costs, the garden gradually indicated someone's wealth and status. In the early Renaissance period, the Medici used gardens as a form of political theatre, presenting their power, wisdom and glory. Magnificent gardens came to be perceived as a princely virtue, and all the architects, artists, scholars and poets were commissioned to create grand images for their powerful patrons. (Attlee, 2006) The gardens were designed as a form of symbolization. They usually had the owner's signature and showed the owner's guidance, morality, and economic ability. For example, the statue of the central fountain in Villa di Castello described a myth about Hercules defeating Antaeus, which alluded to the triumph of the garden's owner, Cosimo de' Medici. (Barisi, 2004)

A similar method was used in the Villa d'Este to show Ippolito's political intention. One of the frescoes on the ceiling of the Hall of Moses showed Moses striking a rock with his rod and bringing forth water for the people of Israel, which represented Ippolito bringing water to the villa gardens by constructing channels through the rock. (Patterson, 1981) By showing his status and achievement through gardens, Ippolito could be more competitive when running for the Pope. He was five times a candidate for Pope during his life but was never selected. Every time he failed, he spent more money and effort on expanding his villa garden. (Attlee, 2006) He spent more than five thousand scudi preparing for the visit of Pope Gregory XIII in the summer of 1572. The top floors of the villa were redecorated, and the Fountain of the Dragons was redesigned. The fountain was used to illustrate the theme of war and combat against evil, with statues of Hercules killing the dragon Ladon, the god of War Mars, Perseus, and gladiators. Ippolito altered the dragon with one hundred heads to four dragons, the family emblem of the Pope, to show the Pope's supreme status. (Barisi, 2004)

3.2.2. Ming Dynasty's Chinese Classical Gardens

1) Social Attribute: Social Evaluation Criteria

In ancient China, closing to nature or seclusion was usually connected with noble characters and virtues and therefore influenced ones' social status. No matter high officials, recluses, or people in suc-

cess or failure, all took pleasure in visiting natural landscapes. If a person had no experience in visiting famous natural scenery, he would not be admitted as a literati or celebrity. Therefore, many recluses were appreciated by the ruler and were asked for advice about political issues. One of the most famous 'political recluses' was Tao Hongjing, a Chinese alchemist, astronomer, calligrapher, military general, musician, physician, pharmacologist, and writer. He was very prestigious and often advised on the country's crucial issues, known as 'the grand chancellor living in the mountains'. (Wang, 1984)

2) Political Indication: Expression of Frustration and Ambition

In the Ming Dynasty (1368-1644), seclusion was not allowed due to the great demand for capable politicians, resulting in fewer 'traditional recluses', which means they abandoned their worldly desires and lived altogether in a detached lifestyle. Most people went to seclusion due to the frustration of their political careers and were still willing to be successful in politics, such as Wang Xiancheng, the owner and designer of the Humble Administrator's Garden. After Wang found that his political opinion differed from the ruler's and could not achieve his ambitions, he decided to go into seclusion and return to his natural state. (Tang, 2010) The name of the Humble Administrator's Garden was cited from An Idle Life written by Pan Yue, "I enjoy a carefree life by planting trees and building my own house... I irrigate my garden and grow vegetables for me to eat... This is the way of ruling for an unsuccessful politician." (筑室种树, 逍遥自得... 灌园鬻蔬, 供朝夕之膳... 此亦拙者之为政也.) (Yao, 2011) Wang had similar failure political experiences with Pan and had no choice than turning himself to nature.

Wang greatly admired the achievement of Tao Hongjing. The Pine Wind Pavilion (The Pine Wind Pavilion) was designed based on the historical record in The History of Southern Dynasties about Tao: "He especially loved pine wind and planted many pines in his garden. Every time he heard the sound of wind crossing through the pines, he got delighted." (特爱松风, 庭院皆植松, 每闻其响, 欣然为乐.) (Tang, 2010) By imitating the interest and experience of Tao Hongjing, Wang expressed his willingness to be a successful person like him. Besides, the soundscape of Listening to the Sound of Rain Pavilion (Listening to the Sound of Rain Pavilion) presented Wang's frustration about not being appreciated. In Chinese literary works, the rain and Musa basjoo is often connected to loneliness and sadness. "The deep courtyard locks the loneliness and dusk, with the sound of rain dropping on the Musa basjoo." (深院锁黄昏, 阵阵芭蕉雨) (Tang, 2009). The ways of symbolization and metaphor are widely used in the soundscape design of Chinese classical gardens.

3.3. Conclusion

Elementally, the different worldviews and cultural backgrounds decided on different emphasis on technology and nature in Italian Renaissance gardens and Ming dynasty's Chinese classical gardens. Italian's utilization of technology was led by the admiration of reason and science coming from ancient Rome, while the Chinese's pursuit of nature resulted from the philosophical spirit of 'Tian Ren He Yi'. As a common element of both designs, water had different meanings in their worldviews and culture, which resulted in the different applications in the soundscapes of Italian and Chinese gardens. Besides, the soundscape designs were influenced by social and political factors in that period, which was manifestations of social expectations and personal wills. Furthermore, symbolization methods were shown in the details and the choices of specific elements in the soundscape design of both the two types of gardens to express imagery, an opinion, or a feeling.

CHAPTER 4. CONCLUSION

The thesis has figured out the general features of the soundscapes in Italian Renaissance gardens and Ming dynasty's Chinese classical gardens through research on the features, layout, and details of the soundscapes in two cases, the Villa d'Este and the Humble Administrator's Garden, respectively. The soundscapes of Italian Renaissance gardens, featured by fountains, apply advanced water technology to make music or imitate other types of sound. Besides, the soundscapes of Ming dynasty's Chinese classical gardens combine natural elements to make various sounds, always with the sound of water as the background. Comparisons have been made between these features, finding out that the soundscapes in Italian and Chinese gardens have different emphasis on technology and nature but have common stress on water.

The reasons behind the differences and similarities have been discovered by looking into the historical context of Italy and China from cultural, social, and political perspectives. The experiences and intentions of the relevant individuals (clients, designers) have also been considered in this process. The different worldviews and cultural contexts play leading roles in soundscape designs, as social factors and political intentions also influence them. Symbolization is widely used in the soundscape design in both Italian and Chinese gardens, revealing the reasons for some details and elements of the soundscapes.

Due to some objective factors, I could not physically investigate the two chosen gardens, and all of the references and materials were gained online, which might cause a limit on the thesis. Besides, the materials in Italian were difficult for me to read and thus, some information might be missed. The original information about Ming dynasty's Chinese classical gardens is partly missing, resulting in difficulties in historical research. Therefore, I suggest that further study could be explored in the following aspects.

1) Original Italian materials can be researched to gain more primary sources of the soundscapes in Italian Renaissance gardens.

2) On-site investigation can be made to collect more current information and feelings about the atmosphere created by the soundscapes.

3) Physical tests and sound records on the soundscapes can be made to study better how they work and cooperate in physics.

Whether garden design or architecture design, it would be difficult for us to fully understand the ideas behind them without learning their historical context. After all, most buildings and design methods have their limitations of time. They emerged from history and remained in it, and they are logically self-consistent in their context. At the same time, architectural ideas can reveal much about the time. This inter-inclusive relationship makes architecture and history inseparable.

Furthermore, it is crucial for architects to reflect and conclude from the past, which might provide experiences and revelations for future architecture design. We can get inspiration from ideas and design methods in the past and learn from failures and mistakes. Last but not least, when we learn from history, we should analyze from as many perspectives as possible and value facts and clues to obtain a more objective and truthful view.

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