Research Paper

"Centralized and Popularized" Evolution of the West Lake Space in Northern Song Dynasty and its significance

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ABSTRACT

This paper discusses characteristics of spatial change of Lake Space, and its significance to the entire Space of West Lake against a backdrop of the rise of citizen stratum in Northern Song Dynasty. The evolution of Lake Space is analyzed from two perspectives: physical form and cultural form. Multi-dimensional transformation of physical form enriches the spatial hierarchy, and enables special elements to expand from a previously isolated point to currently-integrated multiple elements with points and lines echoed and imaginary and actual elements combined. Cultural form breaks up the singleness dominated by religious culture, and expands to the coexistence of various cultural elements such as release, seclusion, religion and tourism.

The evolution of Lake Space in Northern Song Dynasty has exerted far-reaching influence on West Lake Space. "Centralized Evolution" of West Lake completed in Northern Song Dynasty, its focus evolved from "mountain space" to "mountain space and lake space", and its space radiation layout from "inward radiation from mountain space" to "outward radiation from lake space". Lake space was no longer just a geometric center of the West Lake, but also become its real core space.

1. Description of Geographical Area

Space of West Lake: the space of West Lake referred herein includes lake space and mountain space. (Fig.1)

Lake space comprises the West Lake waters, surrounding flat grounds and Gushan Island surrounded by waters. (**Fig. 2**)

Mountain space is composed of mountains around the West Lake waters, and is divided into Northern Mountain, Western Mountain and Southern Mountain by its geographical position relative to the West Lake waters. (Fig. 3)

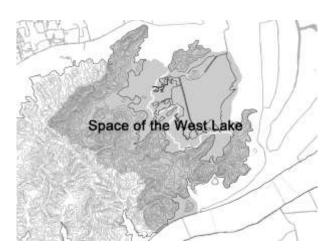


Fig. 1. Space of the West Lake.

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2. Historical Background

2.1 The most prosperous prefecture in Southeast China

Hangzhou was one of the most important economic and trade centers in Northern Song Dynasty. In 1077, the commodity taxes in Bianliang (the capital), Hangzhou, Suzhou and Jiangning Prefecture were 402,379, 173,813, 77,078 and 57,283 Guan (currency unit of Northern Song Dynasty) respectively, and that of downtown Hangzhou was 82173 Guan. (Chart 1)

A lyric titled *Watching the Tidal* written by Liu Yong, a poet of Northern Song Dynasty, reproduces the dense population and prosperity of Hangzhou, as well as the beautiful scenery of West Lake.

In 1057, Mei Zhi served as the Governor of Hangzhou, and the Emperor Renzong wrote him a poem praising Hangzhou as most prosperous prefecture in Southeast China.

2.2 Public participation in tourism

During Northern Song Dynasty, the population of Hangzhou witnessed rapid growth. In the middle Northern Song Dynasty, there were 164,293 local households, and 38,523 migrated households, a total of 202806. At the same time, the total number of households in Suzhou and Jiangning Prefecture were 173,969 and 168,462 respectively. (Liang 2008) (Chart 2). In 1102, the population density of Hangzhou was 30.7 persons/sq. km, higher than 25.8 persons/sq. km of the capital.

The prosperous commodity economy and rapid growth of urban population laid a foundation for the formation of citizen class, and their influences on the space of West Lake as well.

In Song Dynasty, the enthusiasm of the public in tourism was not only reflected in time and space, but also featured by "classless participation" of all citizens. The open city structure can provide spaces suitable for citizens from all classes, who were in turn the primary object of the public urban space officially constructed. A poem titled *About West Lake* perfectly described the dense population of Hangzhou in 1090 in middle Northern Song Dynasty. At that time, all citizens were engaged in the space of West Lake, and West Lake was open for the public regardless of classes. (Mao 2015)

In the middle of Northern Song Dynasty (1090), the number of tourists to West Lake during holiday season already reached tens of thousands of people. (Su 1986) The public widely involved in the space of West Lake.

The rapid growth of population in Hangzhou made it inevitable and urgent to expand the traffic and tourism

spaces in West Lake area to adapt to new changing requirements.

Evolution of Physical Form of the Lake Space -Multi-dimension

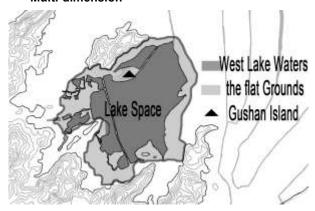


Fig. 2. The Lake space.

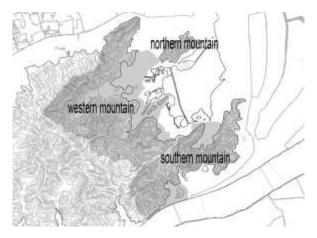


Fig. 3. The mountain Space.

Chart 1. Ten Cities with the Highest Revenue in 1077 (in Guan).

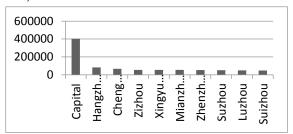
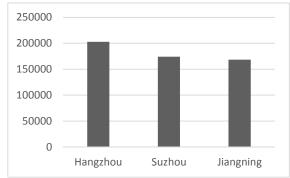


Chart 2. Three Most Populous Cities in Northern Song Dynasty.



In Northern Song Dynasty, the construction of Su Causeway and the Three Towers imposed the greatest influence on a physical form of the space of West Lake. Su Causeway and the Three Towers broke pattern that the artificial space served as the decoration for the natural space before Northern Song Dynasty, and made innovation in reshaping a physical form of West Lake with the artificial space to change into a dominant element of the space of West Lake together with the natural space.

3.1 Reason for Construction - Traffic and Water Conservancy

In 1090, Su Shi wrote a poem titled *For West Lake* and listed out the reasons for dredging the West Lake, "In 1071, I served as the governor of Hangzhou, and the West Lake was silted up only 2/10 to 3/10 then. However, more than 50% of the lake was silted only 16 to 17 years later. People said that in the past ten years the West Lake had silted up rapidly, and it may disappear twenty years later if no measures are taken." The West Lake was rehabilitated to its original scenery after dredging (Su 1986).

The silt dredged out was deposited as a long embankment, the so-called Su Causeway. It is also noted in the poem that "after careful consideration, it the best choice to deposit the silt as an embankment within the lake to connect with the south and north banks, which may not only dredge the silt, but also provide convenience for the pedestrians (**Fig. 4**). Cottonrose and willows were planted after the embankment was completed, creating picturesque landscape, so it also called Su's Causeway (Su 1987)."

After West Lake was dredged, three small towers were built in the lake to mark out the areas in the lake that cannot be reclaimed. It is recorded that "Su Shi strives to dredge the West Lake and build three stone towers, commonly called three foundation towers, in the lake to mark out the range that cannot be reclaimed. It can be seen from the map of the Southern Song Dynasty that three small towers formed a line from south to north." (LI 2014) (Fig. 4)

It is known from the above description that Su Causeway was built to stack the silt dredged from West Lake and connect Northern Mountains with Southern Mountains. Moreover, it also reveals that it is urgent to solve the traffic between North Mountains and South Mountains with the growth of tourists. With the Su Causeway, the only passage connecting the south and north banks of West Lake, tourists may walk on the lake and appreciate beautiful scenery other than taking a boat. With the rise of citizen classes and growth of tourists, the

Su Causeway became a best choice for more tourists, as the boats may satisfy demands of a small group of tourists.

3.2 Spatial levels and interfaces

The lake space is divided into three parts by Su Causeway and Bai Causeway, i.e. banded West Inner Lake in the west, face-shaped Outer Lake in the east, and the North Inner Lake separated by Bai Causeway, making the lake space more multi-dimensional in the Northern Song Dynasty. Three lake spaces possess different spatial characteristics, i.e. small but quiet North Inner Lake, long and secluded West Inner Lake, open and vast Outer Lake, endowing the lake space with a layered sense. At the same time, the arrangement of the Three Towers also changed, which increases the visual focus and landscape interfaces of tourists for the outer lake space, and enriches the spatial levels. (Fig. 5)

The Su Causeway crossing the south and north banks is a vertical linear segmentation that contrasts with Bai Causeway, the horizontal linear segmentation in direction, forming a brand-new pattern. Six single-opening arch bridges properly connect the Su Causeway and unite the east and west sides as a whole, as the boats may also access between both sides through the bridge openings. A dotted line was formed with the Three



Fig. 4. Evolution of Lake Space.

A. Before the Northern Song Dynasty, there were no other things except for Gushan Island and Bai Causeway.

B. From the Northern Song Dynasty to the Yuan Dynasty. There were Su Causeway, and the Three Towers.

C. From the Ming Dynasty to the Qing Dynasty. Three towers were rebuilt in different places.

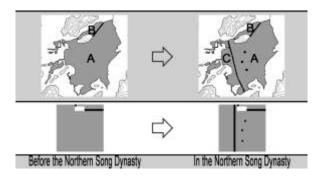


Fig. 5. Evolution of Spatial Division.

A. Outer Lake. B. North Inner Lake. C. West Inner Lake.

Towers as three separate points in the lake, and became the spatial segmentation of the West Lake compared with the physical segmentation formed by the Su Causeway and Bai Causeway, which not only enriches the spatial levels of lake, but also avoid the dull and identical pattern. (Fig. 6)

3.3 Evolution of Scenery Layers on Lake

Prior to Northern Song Dynasty, the original landscape space was mainly dominated by the distance scenery, the close and medium sceneries around Gushan Island and Bai Causeway mostly were in the north of lake space. Based on above, the visual center of lake space deviates from the geometrical center of lake space, resulting unbalanced landscape structure. Su Causeway and the Three Towers added two dimensions of close and medium sceneries to the lake space, formed a more balanced three-dimensional landscape space including all "close, medium and distance scenery". Such innovation not just redesigned the lake landscape structure and enriched the scenery layers of lake space. (Fig. 7, Fig. 8)

Peach and willow trees are planted on Su Causeway with six arch bridges eveny distributed. After cold winter, The peach and willow trees blossom, beautiful and charming. In Southern Song Dynasty, the "Spring Dwan at Su Causeway" ranked the 1st among the Ten Views of West Lake. Chen Congzhou commented the willow trees that willow trees are suitable for decorating the parks and gardens; there are gardens planted with tens of thousands of willow trees, but there are rare in the south of the Yangtze River, as the willow trees should be planted near the water in batch. It is unsuitable for small gardens (Chen 2002). The willow trees planted on the Su Causeway perfectly interprets the beautiful pattern of modern garden, making the Su Causeway another dimension creating "close and medium scenery" in

addition to the segmentation element. (Fig. 9)

3.4 Evolution of View Sites

The Su Causeway is a 2.8 km long boulevard cutting across the south-north lake space, and lined with trees and flowering plants. The Su Causeway became one of the most beautiful places of the lake space. Three towers form beautiful scenery that perfectly integrates the

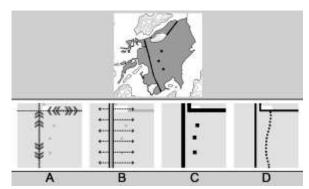


Fig. 6. Evolution of Spatial Interfaces.

- A. Horizontal line and vertical line.
- B. Separated but continuous.
- C. Points and lines.
- D. Soft and hard segmentations.

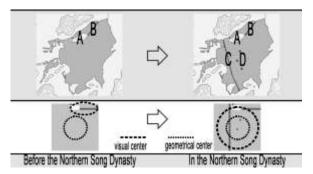


Fig. 7. Evolution of Visual Center of the Lake Space. A. Gushan Island. B. Bai Causeway. C. Su Causeway. D. The Three tower

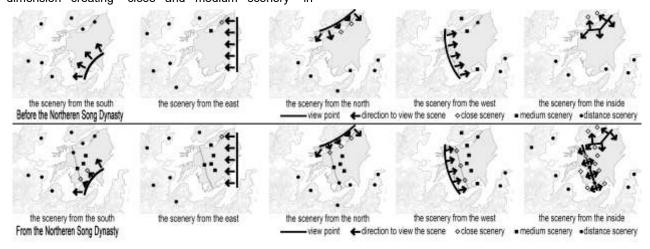


Fig. 8. Evolution of Scenery Layers of the Lake Space.

artificial and natural elements, adding the visual focus and enriching the scenery by reflecting the night moon. Thus, the night, moon, lake and towers are perfectly integrated to create unparalleled scenery, which breaks the boundaries of time and space, and extends the beauty of the lake space from day to night, the range of lake space from the lake to the vast sky, and even the landscape elements to the moon and stars. To later generations, a proverb goes: as for the landscape of the West Lake, it is more beautiful in rainy days than sunny days, but may never go beyond its night scenery. (Wang in the Ming Dynasty)

Before the construction of the Su Causeway and the Three Towers, there was only one landscape level in the lake space, and the distance of view ranged from 2000 to 2600 meters. After the construction of the Su Causeway and the Three Towers, the landscape level has become richer, with close-range, mid-view and vision three landscape levels, and the view distance ranged from 500 to 2600 meters. (**Fig. 10**)

3.5 Evolution of the Space of sightseeing

After the completion of the Su Causeway, tourists may no longer walk around the West Lake, but enter the heart of the lake to experience the perfect integration of artificial space and natural space. The popular places to enjoy the lake were at Hubin, Gushan and Bai Causeway, and the best sites were A, B and C in **Fig 8**. Tourists could stay in the lake space by the Su Causeway from the Northern Song Dynasty, which is not only a scenic place to be seen, but also the best site to enjoy the West Lake. Particularly, six arch bridges are the best sites to enjoy the scenery. (**Fig. 11**)

Six arch bridge at the Su Causeway are used as six view nodes to (1) connect the east and west banks of the lake, provide access to the water and boats, and keep the lake space separated but continuous; (2) serve as six spatial nodes with the ups and downs, form vertical interface of the causeway, break the monotonous and boring pattern of the long linear space; and (3) serve as six higher spaces for tourists to better enjoy the scenery, and attract more tourists to stop at each arch bridge to enjoy the scenery. (Fig. 12)

3.6 Evolution of the West Lake Space's space center

Liu Jiangsun, a scholar in the Yuan Dynasty commented that the West Lake was the place where hermits lived three hundred years ago. Since the Su Causeway was built by Su Shi, the West Lake had become a popular view for the citizens (Wang1984). For normal citizens, the Su Causeway could accommodate more tourists, and make it more convenient to enjoy more beautiful scenery. Therefore, more and more tourists were attracted to the lake space which gradually replaces



Fig. 9. Evolution of Spatial Layers by Peach and Willow Trees Planted on the Su Causeway.

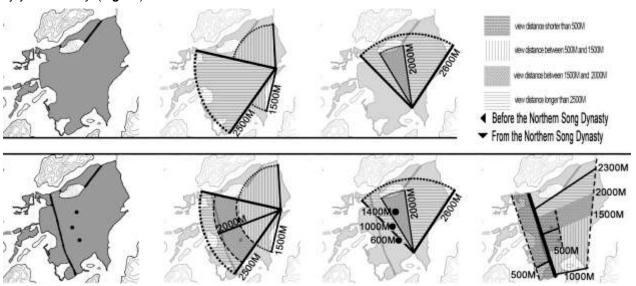


Fig. 10. Evolution of View Distance Level.

Before the Northern Song Dynasty the distance of view ranged from 2000 to 2600 meters. From the Northern Song Dynasty, the view distance had ranged from 500 to 2600 meters.

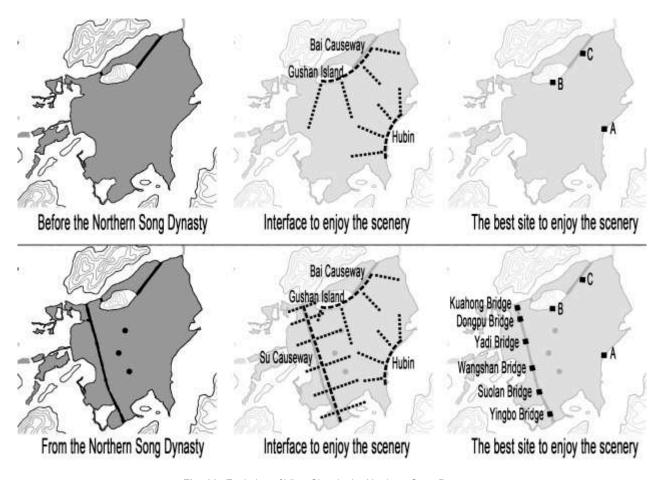


Fig. 11. Evolution of View Sites in the Northern Song Dynasty.

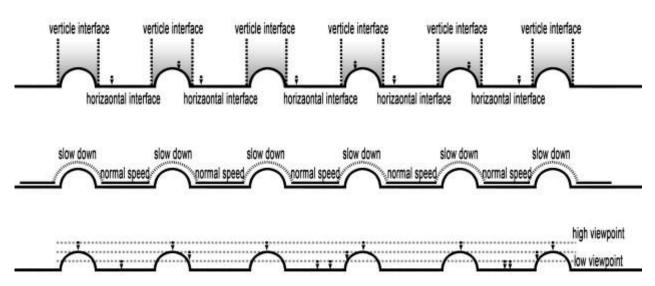
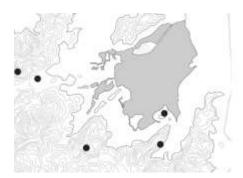


Fig. 12. Variety Brought by Six Arch Bridges in Interfaces, Rhythm and Viewpoint Height

the space formed by mountains and becomes the preferred places for the tourists to enjoy scenery.

The Su Causeway topped Ten Views of the West Lake with its beautiful scenery, and Three Pools Mirroring the Moon also became one of them. As the tourist flow

and space changed with the construction of the Su Causeway, the lake space was further developed. To the Southern Song Dynasty, seven out of Ten Views of the West Lake were in the lake space, and only 3 of them were in the mountain space. However, before the



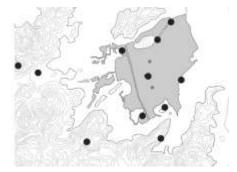


Fig. 13. the evolution of the scene barycenter of the West Lake.

Table 1. Evolution of Release Pool.

Age	Remarks
220-420A.D.	Appeared
420-589A.D.	An auxiliary facility to the Buddhist temple
766-835A.D.	A place of social education
960-1127A.D.	More like gardens
1020A.D.	The whole West Lake became a release pool.
1127-1279A.D.	The size of the release activities in the West Lake was the
	largest in the country.

Northern Song Dynasty, the preferred scenic spots for tourists were mountains and Qiantang River Tidal. Thus, in Northern Song Dynasty, the landscape of West Lake was dominated by the lake space. (**Fig. 13**)

4. Evolution of Cultural Pattern of the Lake Space - Diversified

4.1 Release life culture - universal love

It is recorded in a volume with an essay of Emperor Liangwu that: in the Wei and Jin Dynasties (220-420 A.D.), the release pool appeared with the introduction of Buddhism. In the Northern and Southern Dynasties (420-589 A.D.), it was an affiliated facility of the Buddhist temple to promote Buddhism. (Zhao 2012) In the Middle Tang Dynasty (766-835 A.D.), it was a place for social education. (Dong 1990) As Yan Zhenqing recorded in his works that release pool is used for reflecting the kindness and humanity of the emperor.

The release pools became more and more popular in the North Song Dynasty. Compared with that in the Tang Dynasty, the release pool in the Northern Song Dynasty (960-1127 A.D.) were more like gardens with its continuous evolution. The release pool became larger with the relevant buildings set for sightseeing. (Mao 2015)

In 1020, Wang Qinruo, the governor of Hangzhou, submitted a proposal to take the whole West Lake as a release pool, and to prevent fishing and catching to pray for the Emperor, which was then approved by the Emperor. (Zeng 2006) Since then, the West Lake became a huge release pool that cultivates the long-

standing release life culture. Among the five reasons for dredging the West Lake listed by Su Shi in his poem titled "For West Lake", the first reason is that all fishes and other living things in the West Lake will die if the West Lake, a release pool, is silted up. To the Southern Song Dynasty (1127-1279A.D.), the common citizens had been widely involved in the release activities. The Southern Song Dynasty witnessed the largest size of release activities, and even over 10,000 persons joined the activities, especially on the Buddha's birthday. (Ji 1986) (Table 1) It is written by Zhou Mi in Volume 3 About Buddha in his Tales of the Old Capital that numerous citizens will go to the West Lake to release the captive animals on April 8 in lunar calendar, birth day of the Buddha.

In the Northern Song Dynasty, the West Lake release activity evolved as a tour activity that integrates with the official release activity, and the feudal official took delight in the active participation of the citizens and built the West Lake a huge release pool for leisure and recreation of citizens.

Thus, the lake space was evolved as the core place for sightseeing and landscape rapidly.

4.2 Seclusion culture-Gushan island

The seclusion culture ushered in its peak in the Northern Song Dynasty. The people in the Song Dynasty, especially the scholars and officials in the Northern Song Dynasty, respected the hermits and their life style. (Huo 2010) In the Tang Dynasty, Gushan was described as "Penglai Palace in the Middle of Water." (Bai 2005) Far away from the urban space, Gushan was in line with the spiritual needs of the hermits for living space.

In the Northern Song Dynasty, Gushan became the typical space of hermit culture transformed by Lin Bu (967-1028), a litterateur knowing well hundreds of schools of thought and lived in seclusion in Gushan for twenty years. Lin Bu integrated the scholar's aesthetic ideas with the natural elements, like plants and spring water, for transformation of the cultural connotation of landscape. Under the management of Lin Bu, Gushan became a famous scenic spot of plum blossoms known to the country, and he planted pines and bamboos that form beautiful scenery with the plum blossoms. Meanwhile, he dug springs and wells, and named "Tea Well", "Medicine Spring", "Stone Basin Spring", bringing Gushan more cultural connotations. It is thought by Dong Sigao in the Song Dynasty that the mountains are the best places for hermits, while it is thought by Zhang Ding in the Ming Dynasty that Gushan provides Lin Bu with great chance and Lin Bu endows Gushan with vitality.

Isolated mountain space, coupled with the culture elements added by Lin Bu, made Gushan the representative of seclusion culture in the Northern Song Dynasty.

4.3 Religious culture - contnuity

"The Buddhism becomes more and more popular in China after it was introduced, especially in southern China". Hangzhou was even known as "Southeastern Buddhism Land". The Song Dynasty witnessed the prosperity of the Buddhism in Hangzhou, with numerous temples built and eminent monks gathered (Liu 2014). In the Northern Song Dynasty, due to the strict restriction of the temple construction policy, there were few new temples in Hangzhou, but there mainly inherited Buddhism cultures from the Tang and Five Dynasties and laid the foundation for the development of Buddhism in the Southern Song dynasty.

The West Lake gathered the greatest number of Buddhist temples in Hangzhou, where laid a total of two hundred and eighty-nine temples. (Yao 2007) Pan Lang, a poet in the Northern Song Dynasty, said in his tunes that: I still remember Qiantang (Hangzhou) with about three hundred temples in the landscape, which perfectly indicates the number of temples then.

Catering to the evolution of the trend of times, the temples in the Northern Song Dynasty began to gather from the mountains to the lake space, surrounding the West Lake. In 1021, Wang Sui, the governor of Hangzhou, said in his works "Release Pool" that there were more than 100 temples around the West Lake with beautiful scenery. In the Northern Song Dynasty, numerous temples distributed in the lake space and

mountain space, becoming the physical carrier that inherits the religious culture of the West Lake.

4.4 Tourism culture-sightseeing of scholars to tour of common citizens

The West Lake in Tang Dynasty was still a natural landscape. Tourists were mainly local officials who visit the temples in the mountain. "Poets visiting Hangzhou are mainly hermits pursing tranquility, retreated monks, and some local officials". (Du 2004) To the Northern Song Dynasty, the form of tour changed from scholar's personal tour in the Sui and Tang dynasties to the tour of common citizens. The rise of citizens in the Northern Song Dynasty made the spatial space of the West Lake publicized and popularized. A poem goes: "beautiful scenery of the West Lake attracts the tourists to Hangzhou at any time". The tour of the West Lake had broken through the regular tour time such as the spring, the autumn and the major festivals, and had become an important part of the daily life of the people in Hangzhou. The number of tourists in the lake space was far more than that in the mountain areas. (Mao 2015)

Moreover, in Northern Song Dynasty, the spatial

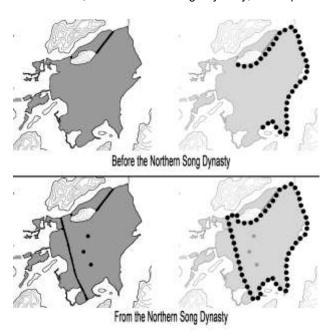


Fig. 14. the evolution of Pedestrian route in the lake space. Before the Northern Song Dynasty, the route was dead end, and from the Northern Song Dynasty, the route was a loop.

space of the West Lake changed from the single-point tour line into a loop for common citizens represented by the Su Causeway connecting the south and north mountains, which satisfies the demands of the public for sightseeing and further make the space of the West Lake, especially the lake space, publicized and popularized. (Fig. 14)

Since then, the lake space of the West Lake was not only the geometric center of the mountains, but also became the most popular tourism center. With the Northern Song Dynasty as the time boundary, the tourism pattern of the West Lake transformed from the previously mountain sightseeing into lake tour. The quiet and tranquil mountains are suitable for small group with two or three members, while the open and vast lake space is more suitable for common citizens. The transformation from mountains to waters also perfectly represents the change of the tour pattern of the West Lake under the backdrop of the rise of common citizens.

5. Conclusion

The social basis for the evolution of the space of West Lake was the rise of common citizens, while the material basis was the construction of the Su Causeway and the Three Towers.

The evolution of the West Lake Space in the Northern Song Dynasty is summarized as follows:

- 1. The evolution of participants: the classes participating in the transformation changed from the scholars to all social classes, and the number of participants grew rapidly, accelerating the evolution of the transport space and tour space of the West Lake.
- 2. The evolution of physical form: the emergence of the Su Causeway and the Three Towers endowed the lake space with more features, enriched the spatial interfaces, formed different landscape levels, redesigned the landscape layers and reconstructed the tour modes on the lake, laying foundation for such artificial spaces as Mid-Lake Pavilion, Lesser Yingzhou and Release Pool.
- 3. The evolution of cultural pattern: The cultural form of the lake space breaks up the singleness dominated by the religious culture, and expands to the coexistence of various cultural elements such as release, seclusion, religion and tourism.

Those evolutions refer to a significant that: The West Lake had finished its centralized evolution in the Northern Song Dynasty, i.e. its focus evolved from "mountain space" to "mountain space and lake space". The lake space was no longer just the geometric center of the West Lake, but also become its real core space.

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