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REVIEW ARTICLE

DISTRIBUTION AND TYPES OF THE CUPULES IN ANSHAN HIGH-TECH INDUSTRIAL DEVELOPMENT ZONE

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ABSTRACT

The Anshan High-tech Industrial Development Zone constitutes the epicenter of the Cupules concentration within the Anshan region, boasting a plethora of cupules characterized by diverse and intricate designs, notably including the “plum blossom” motifs, engraved “turtle stones” and intricate grid motifs. Based on the extensive field investigations conducted over successive years, this paper presents an in-depth examination of the geographical, distribution, motifs, classifications, and inspirations behind the Cupules situated within the high-tech industrial development zone.

KEYWORDS

The Anshan High-Tech, Development Zone, The Cupules, Distribution

1. THE OVERVIEW OF THE CUPULES IN ANSHAN HIGH-TECH INDUSTRIAL DEVELOPMENT ZONE

Distribution of the Cupules in the Anshan Area

The primary sites for the Cupules within the Anshan area encompass Haicheng County-level City, Qianshan and Tiedong Districts, the Jade Buddha Mountain Scenic Spot, and the Anshan High-tech Industrial Development Zone. Established in 1991, the Anshan High-tech Industrial Development Zone gained subsequent accreditation in 1992 from the State Council as a national-level high-technology development zone, spanning an area of 32.5 square kilometers and comprising Qianshan, Qishan, Hongling, and Wangyu Streets. Geographically, it borders the Jade Buddha Mountain Scenic Spot to the west, lies in proximity to the Qianshan Scenic Area in the east, abuts against the northern boundary of Liaoyang, and merges seamlessly with Tiedong District in the south. Encircled by mountainous terrain, the region boasts 23 sites of the Cupules scattered across the eastern and western slopes, specifically located in Qilingzi Village, Zhongxinbao Village, and Diaojuntai Park (see Figure 1).

Background Investigation

In 2000, the Anshan City Museum initially grasped the clues of the Cupules within the Anshan area, colloquially referred to at the time as “stone nests.” During the third nationwide cultural relics survey in Anshan City in 2008, the municipal archaeological team unearthed a substantial quantity of the Cupules, which were subsequently documented. Recently, additional Cupules have been identified in the environs of the High-tech Industrial Development Zone. These discoveries underscore the perception that these Cupules constitute invaluable cultural heritage assets within Anshan, thereby necessitating their thorough study and conservation. The majority of these cupules are situated amidst mountainous terrain, perched at the fringes of the designated zone, rendering their boundary demarcation ambiguous and indistinct. To accurately ascertain the dispersion and present condition of these cupules, a comprehensive investigation has been resolved upon for this locale.

Statistical Table of the Cupules Distribution

See Table 1.

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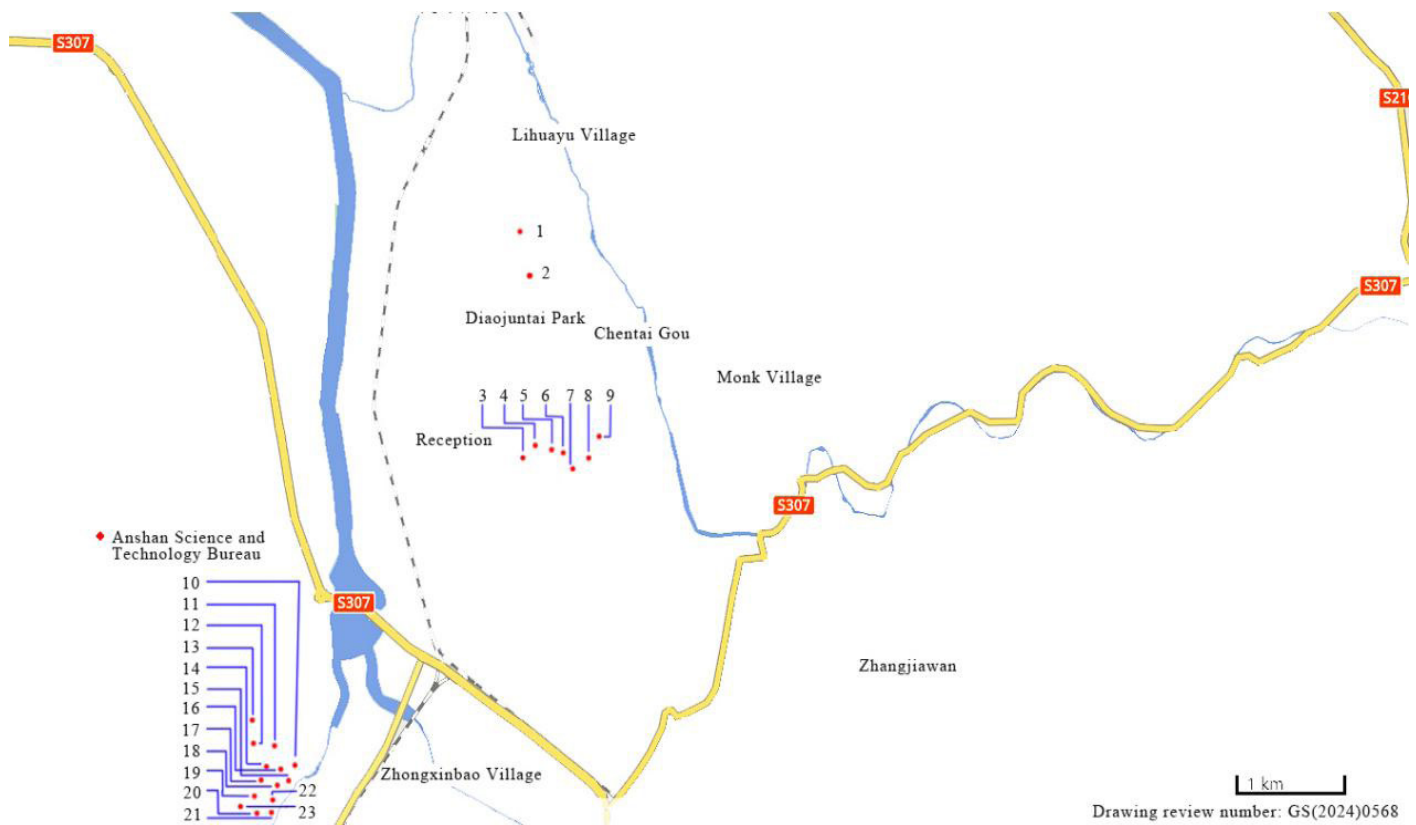


Figure 1: Distribution Diagram of the Cupules in Anshan High-tech Industrial Development Zone (1. Second Site of Diaojuntai Cupules Complex 2. First Site of Diaojuntai Cupules Complex 3. First Site of Qilingzi Cupules Complex 4. The Second Site of Qilingzi Cupules Complex 5. Third Site of Qilingzi Cupules Complex 6. Fourth Site of Qilingzi Cupules Complex 7. Fifth Site of Qilingzi Cupules Complex 8. Sixth Site of Qilingzi Cupules Complex 9. Seventh Site of Qilingzi Cupules Complex 10. First Site of Zhongxinbao Cupules Complex 11. Second Site of Zhongxinbao Cupules Complex 12. Third Site of Zhongxinbao Cupules Complex 13. Fourth Site of Zhongxinbao Cupules Complex 14. Fifth Site of Zhongxinbao Cupules Complex 15. Sixth Site of Zhongxinbao Cupules Complex 16. Seventh Site of Zhongxinbao Cupules Complex 17. Eighth Site of Zhongxinbao Cupules Complex 18. Ninth Site of Zhongxinbao Cupules Complex 19. Tenth Site of Zhongxinbao Cupules Complex 20. Eleventh Site of Zhongxinbao Cupules Complex 21. Twelfth Site of Zhongxinbao Cupules Complex 22. Thirteenth Site of Zhongxinbao Cupules Complex 23. Fourteenth Site of Zhongxinbao Cupules Complex)

2. QILINGZI CUPULES COMPLEX

Qilingzi cupules complex is bordered on its southern perimeter by Qianshan Middle Road, with the Wanshui River, East Ring Road, and the erstwhile Ring Railway demarcating its western flank. Its northwest boundary is delineated by the Diaojuntai Han Tomb motifs, currently the site of the High-tech Zone Laser Industrial Park, while Qilingzi Mountain rises to the east. In total, seven distinct cupule sites are identified. The first to the sixth sites are in one place, situated on a hillside approximately 500 meters to the northeast of the Angang Cattle Shed. The seventh site is positioned an additional 500 meters to the northeast of the sixth site.

The First Site of Qilingzi Cupules Complex

The GPS coordinates indicate a position at $41^{\circ}6'30''\text{N}$, $123^{\circ}6'4''\text{E}$, with an elevation of 116 meters above sea level. A rock specimen measuring 2.7 meters in length and 1.4 meters in width exhibits a total of 73 pits. There are 5 complexes of plum pits (Figure 2-1, 3-1).

The initial two motifs of plum blossom motifs are situated in the southeastern and central sectors of the rock surface, exhibiting remarkable similarity. Each motif comprises seven pits: a central pit measuring 9 centimeters in diameter and 1 centimeter in depth, encircled by six smaller pits, each 4 centimeters in diameter and 1 centimeter deep. The third aggregation of plum blossom designs is located in the eastern midpoint of the rock, composed of five pits: a central pit measuring 5 centimeters in diameter and 1 centimeter in depth, surrounded by four pits, each 6 centimeters in diameter and 1 centimeter deep. The fourth and fifth assemblies of plum blossom configurations are situated in the northeastern region of the rock, each featuring eight pits: a central pit of 6 centimeters in diameter and 1 centimeter in depth, encircled by seven satellite pits, each 4 centimeters in diameter and 1 centimeter deep.

The remaining 38 pits are dispersed in the vicinity of these plum blossom motif conglomerates, exhibiting a diameter range from a maximum of 6 centimeters and a consistent depth of 1 centimeter, to a minimum diameter of 3 centimeters, also with a depth of 1 centimeter.

The Second Site of Qilingzi Cupules Complex

Approximately 60 meters to the north of the first location, GPS coordinates confirmed a position at $41^{\circ}6'31''\text{N}$, $123^{\circ}6'4''\text{E}$, with an elevation of 119 meters above sea level. A rock resembling a human visage bears features akin to eyes, a nose, and a mouth. Furthermore, a series of uniform grooves are observable on adjacent rocks to the east, with dimensions ranging from a maximum length of approximately 1 meter, a minimum of 0.3 meters, depths varying between 3 centimeters at the deepest and 1 centimeter at the shallowest, and widths spanning from 7 to 5 centimeters respectively (Figure 2-2).

The Third Site of Qilingzi Cupules Complex

Approximately 10 meters to the southeast of the secondary site, GPS coordinates recorded were $41^{\circ}6'30''\text{N}$, $123^{\circ}6'5''\text{E}$, with an elevation of 119 meters. A rock specimen, extending 4.7 meters in length and 2 meters in width, hosts 38 pits, encompassing three distinct plum blossom motif arrangements (Figures 2-3 and 3-2). The initial plum blossom motif ensemble is centrally located on the rock, comprising seven pits: a central pit measuring 4 centimeters in diameter and 1 centimeter in depth, surrounded by six pits, each 2 centimeters in diameter and 1 centimeter deep. The succeeding ensemble is situated in the eastern sector of the rock, featuring six pits: a central pit 5 centimeters in diameter and 1 centimeter deep, encircled by five ancillary pits, each 4 centimeters in diameter and 1 centimeter deep. Lastly, the third arrangement is found in the southern portion of the rock, consisting of five pits: a central pit

Table1: Statistical of the Cupules Distribution

Number	Name	Street	The Village	Sits	Latitude	Longitude	Altitude(m)
1	Qilingzi Cupules Complex	Qianshan street	Qilingzi Village	Location 1	41°6'30"	123°6'4"	116
				Location 2	41°6'31"	123°6'4"	119
				Location 3	41°6'30"	123°6'5"	119
				Location 4	41°6'30"	123°6'5"	119
				Location 5	41°6'29"	123°6'5"	115
				Location 6	41°6'29"	123°6'6"	120
				Location 7	41°6'30"	123°6'16"	180
2	Zhongxinbao Cupules Complex	Qianshan street	Zhongxinbao Village	Location 1	41°5'28"	123°04'37"	104
				Location 2	41°5'28"	123°04'35"	111
				Location 3	41°5'28"	123°04'26"	155
				Location 4	41°5'36"	123°04'26"	145
				Location 5	41°5'18"	123°04'30"	99
				Location 6	41°5'18"	123°04'29"	95
				Location 7	41°5'21"	123°04'30"	96
				Location 8	41°5'14"	123°04'23"	102
				Location 9	41°5'12"	123°04'24"	84
				Location 10	41°4'55"	123°04'14"	139
				Location 11	41°4'55"	123°04'17"	127
				Location 12	41°4'51"	123°04'19"	107
				Location 13	41°4'52"	123°04'15"	111
				Location 14	41°5'12"	123°04'15"	112
3	Diaojuntai Cupules Complex	Qidashan Street	Diaojuntai Park	Location 1	41°7'12"	123°6'12"	136
				Location 2	41°7'19"	123°6'7"	139

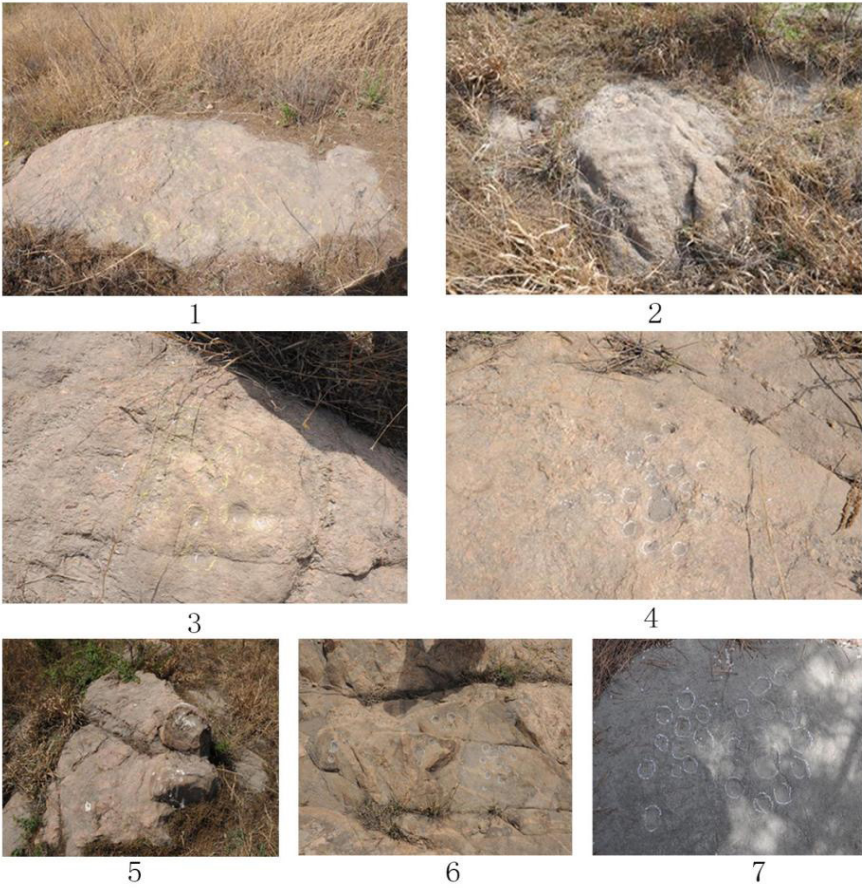


Figure 2: (1. The first site of Qilingzi Cupules Complex 2. The second site of Qilingzi Cupules Complex 3. The third site of Qilingzi Cupules Complex 4. The fourth site of Qilingzi Cupules Complex 5. The fifth site of Qilingzi Cupules Complex 6. The sixth site of Qilingzi Cupules Complex 7. The seventh site of Qilingzi Cupules Complex)

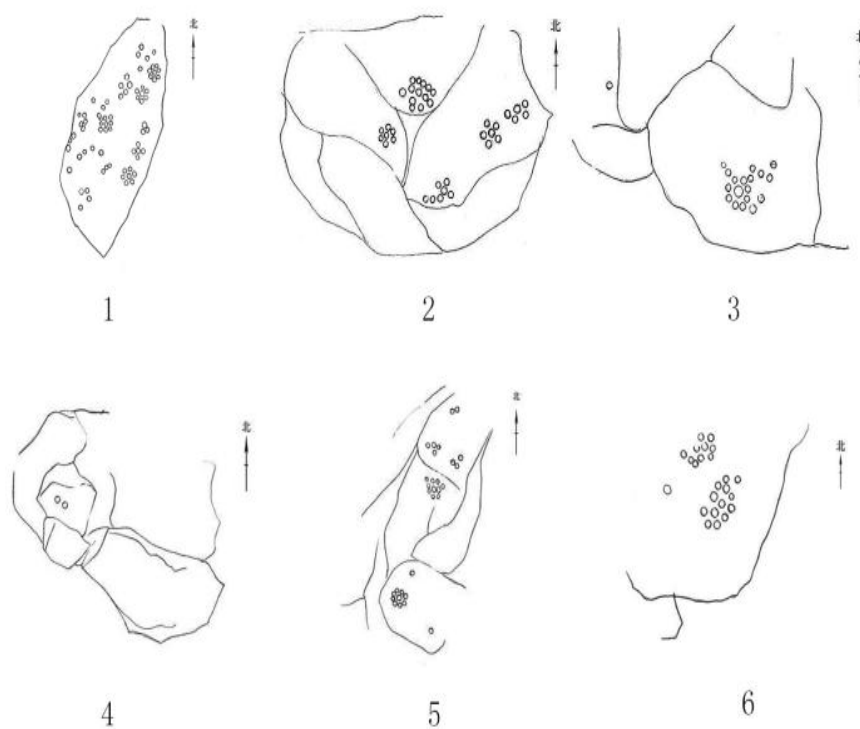


Figure 3: (1. The map of the first site of Qilingzi Cupules Complex 2. The map of the third site of Qilingzi Cupules Complex 3. The map of the fourth site of Qilingzi Cupules Complex 4. The map of the fifth site of Qilingzi Cupules Complex 5. The map of the sixth site of Qilingzi Cupules Complex 6. The map of the seventh site of Qilingzi Cupules Complex)

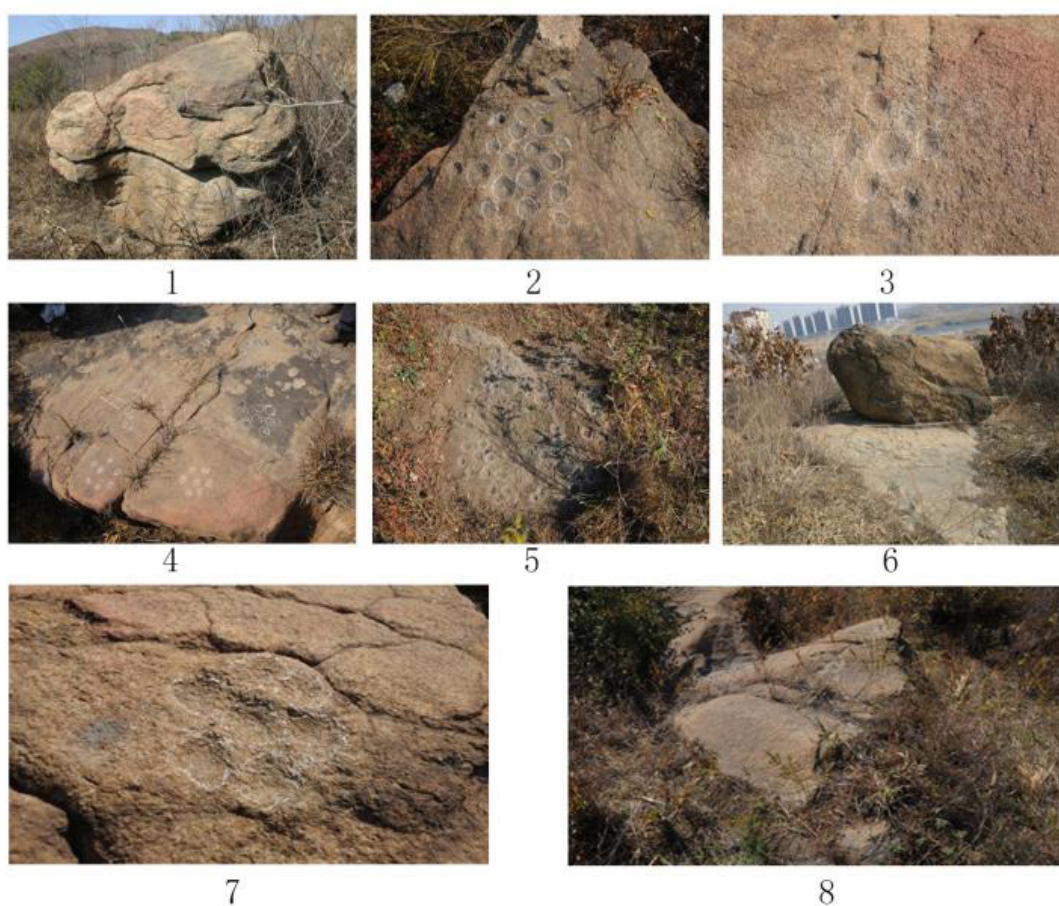


Figure 4: (1-2. Front view and top view of the first site of the Zhongxinbao Cupules Complex 3. Second site of the Zhongxinbao Cupules Complex 4. Third site of the Zhongxinbao Cupules Complex 5. Fourth site of the Zhongxinbao Cupules Complex 6-7. Front view and top view of the fifth site of the Zhongxinbao Cupules Complex 8. Sixth site of the Zhongxinbao Cupules Complex)

of 5 centimeters in diameter and 1 centimeter in depth, accompanied by four adjacent pits, each 4 centimeters in diameter and 1 centimeter deep.

The residual twenty pits likewise assemble into three distinct motifs configurations, each exhibiting irregular morphologies, and are disposed circumjacent to the aforementioned triad of plum blossom motifs, with dimensions varying between a maximal diameter of 6 centimeters and depth of 1 centimeter, to a minimal diameter of 3 centimeters, maintaining a consistent depth of 1 centimeter.

The Fourth Site of Qilingzi Cupules Complex

Approximately 15 meters to the southeast of the third site, GPS coordinates register at 41°6'30"N, 123°6'5"E, with an elevation of 119 meters above sea level. Nineteen pits are observable in a rock specimen measuring 1.3 meters in length and 2.1 meters in width (Figures 2-4 and 3-3). A singular plum blossom motif configuration is identified, comprised of nine pits: a central pit measuring 6 centimeters in diameter and 1 centimeter in depth, encircled by eight pits, each 3 centimeters in diameter and 1 centimeter deep. An additional nine pits are dispersed in the vicinity of this plum blossom motifs, exhibiting a diameter range from 4 centimeters (maximal) to 3 centimeters (minimal), with depths ranging from 3 centimeters (deepest) to 1 centimeter (shallowest). A solitary pit, measuring 5 centimeters in diameter and 1 centimeter in depth, is situated 1.5 meters to the northwest of the aforementioned motifs.

The Fifth Site of Qilingzi Cupules Complex

Approximately 30 meters to the southeast of the fourth site, the GPS coordinates were recorded as 41°6'29"N, 123°6'5"E, with an elevation measured at 115 meters above sea level. On the northeastern protrusion of a rock measuring 2.8 meters in length and 2 meters in width, two pits are visible, each with a diameter of 2 centimeters and a depth of 1 centimeter (Figures 2-5 and 3-4).

The Sixth Site of Qilingzi Cupules Complex

Located approximately 20 meters to the southeast of the fifth site, the GPS coordinates are recorded as 41°6'29"N, 123°6'6"E, with an elevation of 120 meters above sea level. A total of 30 pits are observable across the expanse of the mountainous rock formation. Owing to the extensive dimensions of the rock, its description is bifurcated into two segments (Figures 2-6 and 3-5).

The northern face of the rock exhibits 19 pits, encompassing a distinctive "plum blossom" motif consisting of 8 pits. Central to this motif is a single pit measuring 6 centimeters in diameter and 1 centimeter in depth, encircled by 7 pits that range in diameter from a maximum of 5 centimeters to a minimum of 2 centimeters, all sharing a consistent depth of 1 centimeter. The residual 11 pits are scattered irregularly, featuring diameters that vary from a maximum of 5 centimeters to a minimum of 3 centimeters, each maintaining a depth of 1 centimeter.

The southern face of the rock accommodates 11 pits, situated 1.5 meters in a southerly direction from the northern edge. Among these, a singular plum blossom motif is identified, comprised of nine pits arranged as follows: a central pit measures 7 centimeters in diameter and 2 centimeters in depth, encircled by eight pits with diameters ranging from a maximum of 6 centimeters to a minimum of 3 centimeters, all sharing a uniform depth of 2 centimeters. Additionally, a pair of isolated pits, each 5 centimeters in diameter and 2 centimeters in depth, are positioned symmetrically flanking the plum blossom motifs, with respective distances of 42 centimeters and 24 centimeters from the motifs' outline.

The Seventh Site of Qilingzi Cupules Complex

At a position approximately 500 meters to the northeast of the primary site, on a hill slope, the GPS coordinates were recorded as 41°6'30"N, 123°6'16"E, with an elevation of 180 meters above sea level. Observed within a rock specimen measuring 1.3 meters in length and 0.9 meters in width, there are 24 pits, including two distinct plum blossom motifs, as

illustrated in Figures 2-7 and 3-6. The first plum blossom arrangement encompasses seven pits, characterized by a central pit measuring 4 centimeters in diameter and 1 centimeter in depth, encircled by six pits, each identical in dimension at 4 centimeters in diameter and 1 centimeter in depth. The second plum blossom configuration involves 11 pits, featuring a dual central composition: a larger pit measuring 9 centimeters in diameter and 2 centimeters in depth, alongside a smaller one at 3 centimeters in diameter and 1 centimeter in depth. These are surrounded by nine additional pits, with dimensions ranging from a maximum of 7 centimeters in diameter and 1 centimeter in depth to a minimum of 3 centimeters in diameter and 1 centimeter in depth.

The remaining six pits were dispersed in the vicinity of the dual plum blossom motifs, exhibiting a diameter range from a maximum of 5 centimeters and a consistent depth of 1 centimeter, to a minimum diameter of 3 centimeters, also with a depth of 1 centimeter.

3. ZHONGXINBAO CUPULES COMPLEX

The Zhongxinbao Cupule Complex is systematically categorized into three sections. Section 1 can be reached from Phase 2 of Yuluan Bay, situated on the western mountainside. Section 2 is accessible from the southern orchard of Phase 1 of Yuluan Bay, and proceeds northwest up the mountain, where the fifth and sixth sites are situated around the hillside. Continuing northwards leads to the seventh site, followed by a descent southwards to observe the eighth and ninth sites. Section 3, which includes sites numbered 10 to 14, is situated on the northeastern periphery of the Qianqiu Cemetery.

The First Site of Zhongxinbao Cupules Complex

It is located about 70m up the western hillside of the community, accessible from the main entrance of Phase 2 of Yuluan Bay. The GPS coordinates indicate a position at 41°5'28"N latitude, 123°04'37"E longitude, at an elevation of 104m above sea level. A turtle-shaped stone formation, with its head facing south, is visibly present (Figures 4-1, 4-2, 5-1). Approximately 40cm to the north of the turtle's back, twenty pits are dispersed. Their dimensions vary, with the largest having a diameter of 6cm and a depth of 3cm, and the smallest of a diameter of 3cm and a depth of 0.5cm.

The Second Site of the Zhongxinbao Cupules Complex

It is located 50m west of the first site, with GPS coordinates 41°5'28"N, 123°04'35"E, at 111m above sea level. On the rock formation connected to the mountain massif, 6 pits are collectively arranged into a plum blossom pattern (Figures 4-3 and 5-2). This pattern comprises a central pit measuring 7cm in diameter and 1cm in depth, encircled by 5 pits, with diameters ranging from a maximum of 5 cm to a minimum of 4 cm, all with a depth of 1 cm.

The Third Site of the Zhongxinbao Cupules Complex

It is located approximately 200m west of the second site, with GPS coordinates 41°5'28"N, 123°04'26"E, at 155m above sea level. On a rock measuring 4m in length and 3.5m in width, 31 circular pits are arranged into three distinct plum blossom patterns. Each pattern features a central pit surrounded by six surrounding pits. The description begins from the northernmost end (Figures 4-4 and 5-3).

The first plum blossom pattern features a central pit with a diameter of 5 cm and a depth of 0.5 cm, surrounded by six additional pits, each 4 cm in diameter and 0.5 cm in depth.

The second plum blossom pattern is located 34cm south of the first arrangement. It includes a central pit with a diameter of 3 cm and a depth of 0.1 cm, encircled by six pits, each 3 cm in diameter and 0.1 cm in depth.

The third plum blossom pattern, situated 32cm southwest of the second arrangement, consists of a central pit surrounded by six additional pits, all with a diameter of 2 cm and a depth of 0.1 cm.

Located 30cm north of the third complex of the plum blossom pattern, there is an incomplete checkerboard pattern with a remaining length of

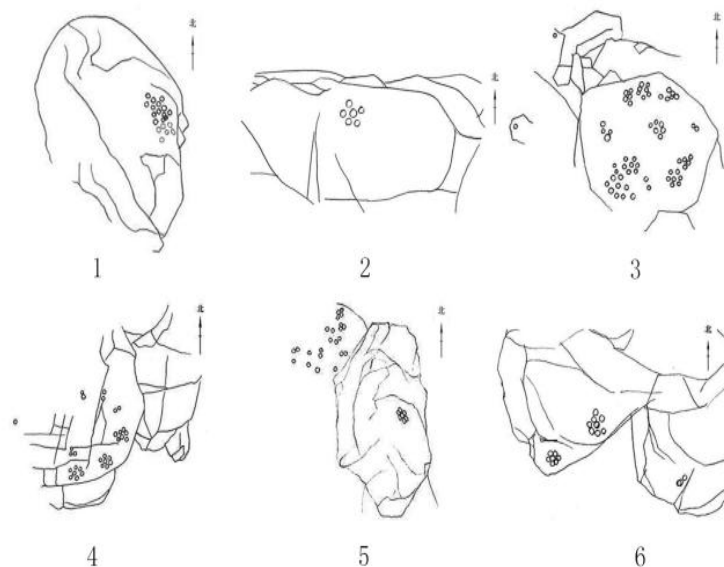


Figure 5: (1. Map of the first site of the Zhongxinbao Cupules Complex 2. Map of the second site of the Zhongxinbao Cupules Complex 3. Map of the third site of the Zhongxinbao Cupules Complex 4. Map of the fourth site of the Zhongxinbao Cupules Complex 5. Map of the fifth site of the Zhongxinbao Cupules Complex 6. Map of the sixth site of the Zhongxinbao Cupules Complex)

27cm and a residual width of 23cm. The ten remaining pits are unevenly distributed, with diameters ranging from a maximum of 6 cm to a minimum of 2 cm, all having a consistent depth of 0.5 cm.

The Fourth Site of the Zhongxinbao Cupules Complex

It is located approximately 150 meters north of the third site, with GPS coordinates 41°5'36"N, 123°04'26"E, at 145m above sea level. 64 pits are arranged into three groups of distinct plum blossom patterns across irregular rock formations (Figures 4-5 and 5-5). The first and the second groups are similar, each featuring a central pit with a diameter of 3 cm and a depth of 1 cm, encircled by six additional pits with diameters ranging from 6 cm to 2 cm, all with a depth of 1 cm. In contrast, the third group consists of a central pit measuring 5cm in diameter and 0.5cm in depth, encircled by six pits, each 4cm in diameter and 0.5cm deep.

The remaining 43 pits are irregularly and sporadically dispersed. A solitary pit, 4cm in diameter and 0.5cm in depth is located on the eastern periphery of the patterns, 150cm away. Another single pit, 3 cm in diameter and 0.5 cm deep, is situated 152 cm north of this pit.

The Fifth Site of the Zhongxinbao Cupules Complex

It is situated in the southwest of Yuluan Bay's Phase 1, approximately 200m westward from the southwest corner of the community's perimeter wall, with the GPS coordinates 41°5'18"N, 123°04'30"E, at an elevation of 99m above sea level. A turtle-shaped stone, measuring 1.8m in length, 1.2m in width, and 0.8m in height, bears a configuration of 7 pits, collectively assembling plum blossom patterns (Figures 4-6, 4-7, 5-5). This pattern consists of a central orifice, 5cm in diameter and 0.5cm deep, encircled by six additional pits, each uniformly 4cm in diameter and 0.5cm in depth. Below the turtle-shaped stone resides a rock surface featuring 23 pits, exhibiting a diameter range from a maximum of 6cm and a depth of 1cm to a minimum diameter of 2cm and a depth of 0.5cm.

The Sixth Site of the Zhongxinbao Cupules Complex

It is situated approximately 30m southwest of the first site, with the GPS coordinates 41°5'18"N, 123°04'29"E, at 95m above sea level. A rock, 2m in length, 1.2m in width, and approximately 0.5m in height, bears evidence of three groups of distinct pit arrangements, cumulatively comprising 17 pits (Figures 4-8, 5-6).

The southernmost group is a plum blossom pattern, consisting of seven circular pits together: a central pit with 6cm in diameter and 0.5cm in depth, encircled by six additional pits with diameters ranging from 5cm

to 4cm, all maintaining a depth of 0.5cm. Located 37cm northward of the first group, the second group consists of eight circular pits, distributed irregularly; each pit measures 7cm in diameter and 0.5cm in depth. Located 192cm southeastward of the two groups, a pair of pits is visible: one larger pit with a diameter of 6 cm and a depth of 0.5 cm, and a smaller pit, measuring 4 cm in diameter and 0.5 cm deep.

The Seventh Site of the Zhongxinbao Cupules Complex

It is located approximately 80m north of the fifth site, with the GPS coordinates 41°5'21"N, 123°04'30"E, at 96m above sea level. On a rock resembling a turtle looking up at the blue sky, measuring 2.4m wide from east to west and 3.7m long from north to south (Figures 6-1 and 6-2), there is a plum blossom pattern consisting of seven pits, each with a diameter of 4 cm and a depth of 0.2 cm.

The Eighth Site of the Zhongxinbao Cupules Complex

It is located approximately 800m southwest of the sixth site, with GPS coordinates 41°5'14"N, 123°04'23"E, at 102m above sea level. A distinctive square-patterned arrangement is documented in Figure 6-3, characterized by the presence of six circular pits dispersed across its southern periphery. These pits exhibit a diameter variability ranging from a maximum of 4cm to a minimum of 2cm, all maintaining a consistent depth of 0.5cm.

The Ninth Site of the Zhongxinbao Cupules Complex

It is located approximately 80m southeast of the eighth place, with GPS coordinates 41°5'12"N, 123°04'24"E, at 84m above sea level. On a rock surface measuring roughly 0.6m in length and 0.4m in width, a plum blossom pattern configuration of seven pits is observed (Figure 6-4), consisting of a central pit, 5cm in diameter and 1cm deep, surrounded by six pits, each 4cm in diameter and 0.5cm deep.

The Tenth Site of the Zhongxinbao Cupules Complex

It is located northeastern periphery of the Qianqiu Cemetery, with GPS coordinates 41°4'55"N, 123°04'14"E, at 139m above sea level. Four rocks are superimposed to form a configuration resembling "turtle camel stones" (Figures 6-5, 6-6, 7-1). The basal rock measures 1 meter in length, 0.4m in width, and 0.4m in height, and accommodates 28 pits situated on its upper right section. These pits exhibit a scattered distribution with diameters ranging from a maximum of 5cm and a depth of 1cm to a minimum of 2cm, maintaining a consistent depth of 1cm.

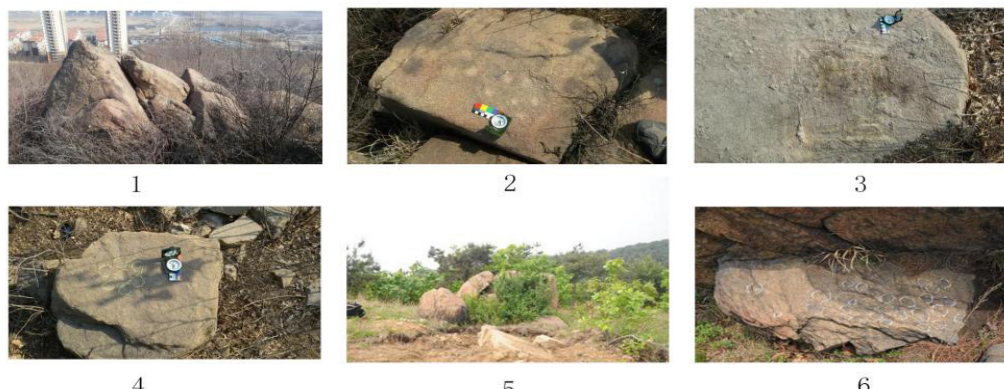


Figure 6: (1-2. Seventh Site of the Zhongxinbao Cupules Complex 3. Eighth Site of the Zhongxinbao Cupules Complex 4. Ninth Site of the Zhongxinbao Cupules Complex 5-6 Front view and top view of the tenth site of the Zhongxinbao Cupules Complex)

The Eleventh Site of the Zhongxinbao Cupules Complex

It is located approximately 50m east of the tenth site, with GPS coordinates 41°4'55"N latitude, 123°04'17"E longitude, at 127m above sea level. A congregation of rocks is documented in Figures 7-2 and 8-1, wherein a distinct arrangement of four pits, each measuring 6cm in diameter and 1cm in depth, is observed on a rock face that stands 1.6m in height and spans 0.4m in width.

The Twelfth Site of the Zhongxinbao Cupules Complex

It is located approximately 100m southeast of the eleventh site, with GPS coordinates 41°4'51"N, 123°04'19"E, at 107m above sea level. A contiguous expanse of rock, integrated with the mountain, bears three groups of distinct patterns.

The first group comprising 32 pits is situated at the western extremity of the area, with GPS coordinates 41°04'51"N, 123°04'19"E, at 107m above sea level (Figures 7-3, 8-2). A solitary pit, measuring 8cm in diameter and reaching 2cm in depth, is evident on the eastern side of the rock. Adjacent to the west of this solitary pit, at a distance of 40cm, reside 12 pits, exhibiting varying dimensions. A distinct arrangement of seven pits forms a plum blossom pattern, with one central pit measuring 5cm in diameter and 1cm in depth, surrounded by six others whose diameters range from a maximum of 5cm (also 1cm deep) to a minimum of 2cm and a depth of 1cm. The left five pits are dispersed near the plum blossom

pattern. Located 40cm northwestward from the pattern, there are 4 pits, among which 3 pits on the left measure uniformly 4cm in diameter and 2cm in depth, while a single pit on the right measures 3cm in diameter and 1cm in depth. A further 22cm to their northwest, an additional pattern of 8 pits is identified, including a central pit 6cm in diameter and 2cm deep, encircled by six pits with diameters ranging from a maximum of 5cm and 1cm in depth to a minimum of 3cm, both at a depth of 1cm. On the northern side of this plum blossom pattern, at 43cm, there is a solitary pit measuring 3cm in diameter and 1cm in depth. Lastly, situated 30cm to the west of this plum blossom arrangement, another similar pattern is present, also composed of 7 pits: a central pit measuring 5cm in diameter and 1cm in depth, accompanied by 6 peripheral pits with diameters ranging from a maximum of 7cm and 1cm in depth to a minimum of 4cm, all maintaining a depth of 1cm.

The second group is positioned 1.2m eastward of the initial set, manifesting on a rock formation approximately 10m in length and 3m in width, hosting 26 pits. A plum blossom configuration is documented (Figures 7-4 and 8-3), comprising nine pits: a central pit measuring 7cm in diameter and 2cm in depth, encircled by eight pits, each 4cm in diameter and 2cm deep. The residual 16 pits exhibit a scattered, irregular distribution around the plum blossom patterns, with dimensions varying up to a maximum diameter of 7cm and a consistent depth of 2cm. Furthermore, a singular pit, measuring 4cm in diameter and reaching 1cm in depth, is situated 61cm west of the patterns.

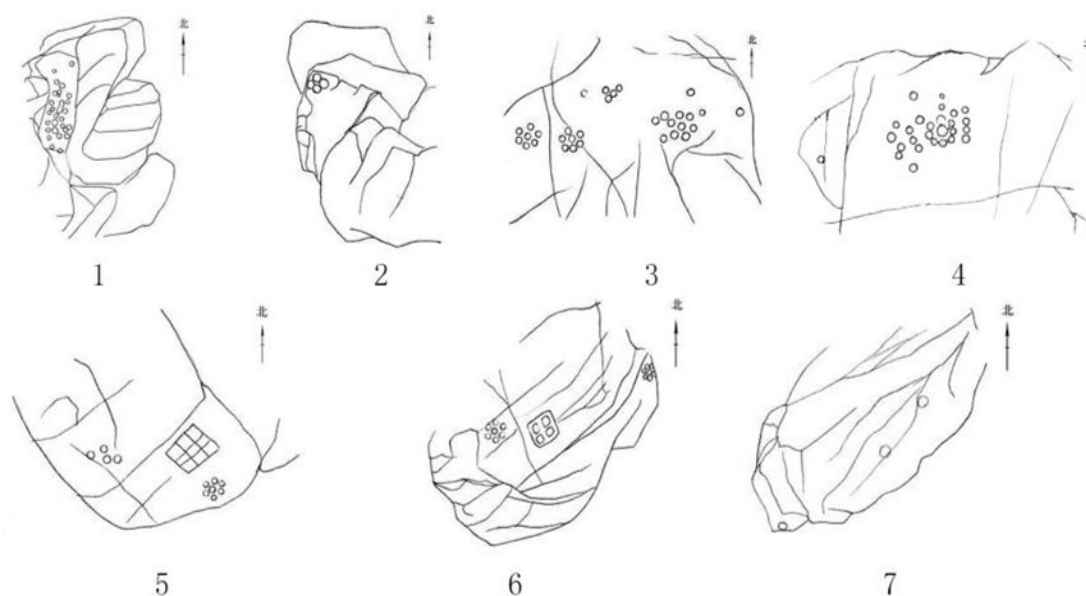


Figure 7: (1. Map of the tenth site of the Zhongxinbao Cupules Complex 2. Map of the eleventh site of the Zhongxinbao Cupules Complex 3. Map of the first complex at the twelfth site of the Zhongxinbao Cupules Complex 4. Map of the second complex at the twelfth site of the Zhongxinbao Cupules Complex 5. Map of the third complex at the twelfth site of the Zhongxinbao Cupules Complex 6. Map of the thirteenth site of the Zhongxinbao Cupules Complex 7. Map of the fourteenth site of the Zhongxinbao Cupules Complex)

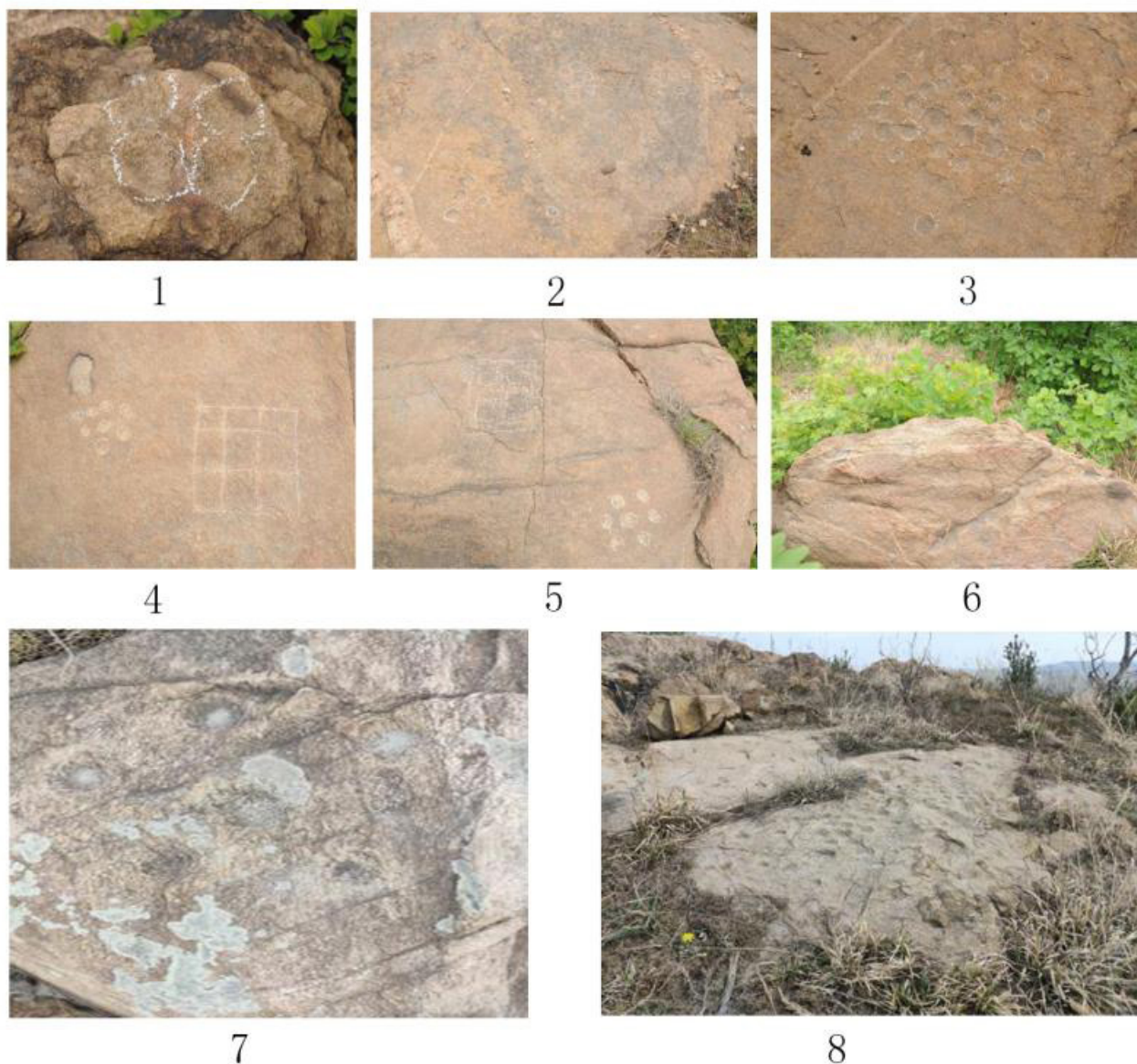


Figure 8: (1. The Eleventh Site of the Zhongxinbao Cupules Complex 2. The Overlooking View of the First Complex at the Twelfth Site of the Zhongxinbao Cupules Complex 3. The Overlooking View of the Second Complex at the Twelfth Site of the Zhongxinbao Cupules Complex 4. The Overlooking View of the Third Complex at the Twelfth Site of the Zhongxinbao Cupules Complex 5. The Thirteenth Site of the Zhongxinbao Cupules Complex 6. The Fourteenth Site of the Zhongxinbao Cupules Complex 7. The First Site of Diaojuntai Cupules Complex 8. The Second Site of Diaojuntai Cupules Complex)

The third group, located 20 meters east of the second group, comprises 11 pits and a singular grid pattern (Figures 7-5 and 8-4). On the most easterly outcrop, a total of 11 pits were identified. This arrangement features a central pit surrounded by six others, forming a plum blossom pattern, each pit measuring 2cm in diameter and 1cm in depth. Located 18cm to the northwest is a square pattern composed of a 3x3 grid of squares. Westward, 34cm from the grid patterns, lies four circular pits, each uniformly measuring 2cm in diameter and 1cm in depth.

The Thirteenth Site of the Zhongxinbao Cupules Complex

Approximately 1,000 meters south of the twelfth site, the place is geographically positioned at GPS coordinates 41°4'52"N, 123°04'15"E, with an elevation of 111 meters above sea level. Fourteen individual pits were documented on a rock surface measuring approximately 3 meters in length and 2 meters in width, collectively forming three distinct motifs, and illustrated the sequential arrangement of these features from west to east (Figures 7-6 and 8-5).

The first complex of motifs is situated on the western extremity, consisting of seven pits, which collectively assemble into plum

blossom motifs. Central to this design resides a single pit, measuring 5 centimeters in diameter and extending 1 centimeter in depth, encircled by six additional pits, each with a diameter of 4 centimeters and sharing the same depth of 1 centimeter.

The second complex of motifs is located 35 centimeters east of the first complex, characterized by rectangular composite motifs with external dimensions measuring 30 centimeters in length and 25 centimeters in width. Internally, the motifs accommodate four smaller rectangular elements arranged in a symmetrical bipartite configuration with two elements per row, separated by rows 4 centimeters apart. Each of these minor rectangles possesses dimensions of 10 centimeters by 8 centimeters, while the vertical interval between the rows is measured at 4 centimeters.

The third complex of motifs is situated 215 centimeters to the northeast of the second complex. It encompasses a configuration of seven pits arranged in the likeness of a plum blossom, with a central pit measuring 4 centimeters in diameter and 1 centimeter in depth, encircled by six pits, each 2 centimeters in diameter and 1 centimeter deep.

The Fourteenth Site of the Zhongxinbao Cupules Complex

Approximately 15 meters north of the thirteenth site, the place is geographically positioned at GPS coordinates 41°05'12"N, 123°04'15"E, with an elevation of 112 meters above sea level. Three pits were identified within a rock formation, measuring roughly 2 meters in length and 1.5 meters in width. These pits exhibit a maximum diameter of 10 centimeters, a depth of 2 centimeters, and a minimum diameter of 8 centimeters with a depth of 3 centimeters. The spatial distribution of these three pits exhibits distances of 20 centimeters and 60 centimeters from northeast to southwest sequentially (Figures 7-7 and 8-6).

4. THE DIAOJUNTAI CUPULES COMPLEX

The Diaojuntai Cupules Complex is situated on the northwest mountain of Diaojuntai Park, specifically on the northeastern mountain of the eastern campus of the High-tech Zone Institute of Science and Technology, with the school's western boundary abutting Spectrum Road, leading to the High-tech Zone Laser Industrial Park, and bordered by the Nansha River. Eastward of the cupules, one finds the Chentai Drainage Ditch, Baijiafen Drainage Ditch, and the Sha River. The western vicinity is home to the Diaojuntai Han Dynasty Tombs Complex, whereas the eastern side faces the Angang Mining Area. The Cupules site is encircled by numerous (pending examination) rock accumulation mounds, totaling in the hundreds, and encompasses the location of two distinct cupules.

The First Site of Diaojuntai Cupules Complex

GPS coordinates indicate a position at 41°07'12"N, 123°06'12"E, with an elevation of 136 meters above sea level. The rock art is situated on the southeastern slope of a mountain range. Seven pits are observed in the northeastern part of a rock measuring 1.8 meters in length and 2.1 meters in width, arranged as a plum blossom motif (Figure 8-7). The central pit is the most prominent, boasting a diameter of 5 centimeters and a depth of 4 centimeters, surrounded by six lesser pits, each with a maximum diameter of 4 centimeters and a depth of 3 centimeters.

The Second Site of Diaojuntai Cupules Complex

GPS coordinates are recorded as 41°07'19"N, 123°06'07"E, with an elevation of 139 meters above sea level. The rock arts are situated atop the mountain, illuminated by the morning sunlight. A rock surface measuring 3.1 meters in length and 1.6 meters in width bears 43 pits. These are demarcated by natural divisions of white stone, with 18 pits situated on the eastern section and 25 on the western (Figure 8-8). Among these, the central pit located on the eastern side is the most substantial, measuring 8 centimeters in diameter and 5 centimeters in depth, while the remaining pits range in diameter from 4 to 7 centimeters and depths of 3 to 4 centimeters.

5. CUPULE CATEGORIES

From this investigation, we have provisionally ascertained that the typology of the cupules within this region exhibits a substantial presence of irregular distributions (based on our present understanding) and manifests three salient characteristics.

Plum blossom shape. The Qilingzi Cupules Complex features 13 plum blossom motifs at the first, third, fourth, sixth, and seventh sites. The Zhongxinbao Cupules Complex contains 18 plum blossom motifs distributed across the second, third, fourth, fifth, sixth, seventh, ninth, twelfth, and thirteenth sites. The Diaojuntai Cupules Complex has a single plum blossom motif at the first site. Altogether, these complexes encompass a total of thirty-two plum blossom motifs.

On the turtle type stone. Within the Zhongxinbao Cupules assemblage, the cupules have been identified on turtle-shaped stones at four distinct localities: the first, fifth, seventh, and tenth sites.

Grid motifs. There are four complexes of the third, eighth, twelfth and thirteenth sites of cupules in Zhongxinbao Village.

These three attributes are potentially linked to totem worship, ethnic

propagation, religious rituals, and sacrificial ceremonies, among others, warranting further in-depth investigation.

6. UNDERSTANDING THE CONNOTATIONS OF THE CUPULE MOTIFS

The ancients created cupules to convey and record information. Thus, cupules are also referred to as "history carved in stone." The Anshan region and similar sites domestically and internationally feature numerous and highly abstract cupule patterns. The question "What does each pattern represent?" has piqued the curiosity of many. Through interpreting the cupule patterns, this article offers the following insights into their meanings:

Related to Primitive Witchcraft, Religion, or Sacrifice

In ancient times, the living environment was exceedingly challenging, and people had limited capabilities to alter nature using rudimentary tools, rendering them seemingly insignificant amidst sudden natural calamities. For survival, they believed that supernatural forces could help them fulfill their wishes, hoping to use this power to change the status quo. Consequently, the emergence of primordial witchcraft and nascent religions facilitated communication with these transcendent spiritual entities. It is plausible that these cupules served as a mode of communication during that epoch. Sacrifice was a traditional ritual practice among ancient populations aimed at soliciting divine blessings and mitigating disasters, embodying acts of divine veneration, seeking divine favor, and honoring ancestors. They believed the human soul could exist without the body, and sacrifices were the creatures of this soul concept. These cupules probably represented the images of gods in the sacrificial venues at that time.

Related to Female Reproduction Worship and Prayer for Reproduction

In searching for human origins, ancient societies harbored a profound reverence for feminine fertility, particularly emphasizing the generative aspects of the female anatomy. Soviet researcher Okladnikova postulated in *The Rock Arts of the Pacific Coast of North America and Siberia* that cupules enhanced fertility across both regions, interpreting small pits as representations of female genitalia, thereby symbolizing fecundity. Currently, among the Native Americans in California, women still pray on mountaintops before giving birth, often creating cupules as part of this tradition. These pits symbolize the maternal figure responsible for birthing offspring, imbued with the significance of reproductive veneration, marking the onset and genesis of human existence and life cycle. The core significance resides in the concept of "mother and fetus reunifying with the origin," embodying the idea of human "regenerative cycles," thereby mirroring the ancestral reverence for procreation.

Related to the Worship of the Sun

The sun, a vital celestial entity, imparts light and warmth to Earth, fosters the proliferation of life, and imbues all existence with boundless vitality. Ancient civilizations also have a long tradition of worshipping the sun, as noted by Guo Moruo, who, referencing oracular inscriptions from the Yin ruins, remarked: "The Yin populace observed rituals at the sun's rise and set...their daily existence encapsulated in ceaseless solar adoration." Numerous clans and tribes within our nation have adopted the sun as their totemic symbol, exemplified by the title 'Hao' of Shaohao, signifying the sun's centrality in their daily existence. In *Draft History of China*, Guo Moruo elucidated that the 'simultaneous ascension of the ten suns' metaphorically signifies the concurrent coronation of chieftains from ten clans or tribes as kings.' *Great Wilds of the South* within *Classic of Mountains and Seas* also chronicles Xi He birthing ten suns, further illustrating this motif. Scholars of folklore and ancient mythology contend that this narrative signifies Xi and his family multiplied ten tribes that worshipped the sun. Some researchers interpret plum blossom pits as emblematic of primitive tribes, intrinsically linked to the sun's vitality, embodying the authentic essence of ancient Chinese solar veneration.

Related to the Stars

There is a record in *The Book of Changes - The Biography of Rhetoric* that FuXi was the world's king in ancient times. He looked into the sky, observed celestial phenomena, and looked around the earth to understand its underlying rules. The ancients, captivated by the allure of the cosmos, anthropomorphized celestial realms as divine abodes, weaving enigmatic narratives of divine world-making. Human societies, situated amidst the unpredictability of nature, experienced both divine benevolence and wrath, leading to an inescapable sentiment of awe, reverence, and, ultimately, worship. Notably, the Jiangjunya rock arts in Lianyungang feature numerous celestial-themed motifs, with three of them showcased in the Ancient Observatory of the Beijing Planetarium as China's earliest known astronomical artifacts. In the southeastern part of Miss Cave on Liu Zhizhou Mountain in Haizhou, a sizable collection of star-shaped motifs (now unfortunately destroyed) existed. One particular cupule featured a cross with arms measuring fifty centimeters in length; intriguingly, each of the cross's three terminals had circular engravings resembling the bowls of the Big Dipper, with the terminal engraving suggesting the Dipper's handle, oriented towards the west. In Miss Cave of Liu Zhizhou Mountain in Haizhou, four quadrants are engraved with 1, 2, 3, and 5 clusters of round pits. Some people believe these resemble the shape of *Hetu* and *Luoshu*, representing the ancient astronomical theory of "One gives birth to two, two gives birth to three, three gives birth to all things" and "five stars among them". These cupules stand as vestiges of our protohistoric ancestors, who, driven by a celestial worship ethos, meticulously documented their observations of the heavens.

Related to the origin of numbers or words

Scholar Guo Moruo suggested that the Oracle script represents an advanced stage in the development of writing systems, following a preceding period of approximately 2,000 to 3,000 years during which symbolic representation underwent significant evolution. Given their organic nature, knotted records, or *jiězhī*, are susceptible to decay and destruction by fire. Consequently, it is plausible that during a transitional era in antiquity, humans gradually shifted to utilizing pits as mnemonic devices instead of knots, inventing numerous distinct pit configurations to represent various objects and concepts. Many of the excavated pit motifs exhibit deliberate arrangements, suggesting a probable connection to the early stages of numerical systems or the inception of written language.

Others

Several hypotheses exist regarding the significance of the cupules, including their roles as primitive written contracts, rudimentary maps, geographical indicators, territorial demarcations, calendrical tools, and even precursors to games. Despite these divergent viewpoints, cupules

have served as a medium through which ancient people conveyed their thoughts and emotions over the course of millennia. These cupules function as cultural artifacts that provide insights into reconstructing past scenarios and embody an artistic dimension that reflects the aesthetic sensibilities and creative prowess of their creators.

7. INSPIRATIONS

1. By utilizing satellite imagery, GPS coordinates, and photographic documentation of the cupules, we have precisely determined the geographical locations and motif contents of the cupules. Additionally, we have clarified their territorial affiliations.

2. The abundance and variety of cupules in this region necessitates thorough investigation into their meanings and symbolism, highlighting the need for in-depth scholarly exploration.

3. The cupules in this region can be categorized into two classes: portable and non-portable. Many of the city's cupules are located in remote mountainous areas, posing significant conservation challenges. For portable cupules, it is recommended to relocate them to specialized institutions for preservation, while creating replicas for on-site exhibition with concise explanatory notes. For non-portable Cupules, it is imperative to promptly assign responsibility and implement protective measures to safeguard these invaluable cultural assets.

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