

## A STUDY ON THE AESTHETICS OF CALLIGRAPHY OF BRONZE INSCRIPTIONS IN THE PRE-QIN AND JIN DYNASTIES

Um estudo sobre a estética da caligrafia de inscrições em bronze nas dinastias pré-Qin e Jin

[10.29073/heranca.v6i1.772](https://doi.org/10.29073/heranca.v6i1.772)

Receção: 06/26/2023 Aprovação: 08/23/2023 Publicação: 11/09/2023

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### ABSTRACT

As an important era in the development of bronze inscriptions, the pre-Qin period has high research value in calligraphy aesthetics, and provides guidance for the research of inscription aesthetics in China. Firstly, the aesthetics of bronze inscriptions in the pre-Qin and Jin dynasties are analyzed, and the continuous evolution process of bronze inscriptions in the Jin state is studied. Secondly, the corresponding evolution of weapon inscriptions, musical instrument inscriptions, Chinese ritual instrument inscriptions, and the changes in the embellishment of the writing system. Through the display of the culture and art of Jin bronze inscription calligraphy, more people can feel the calligraphy culture of the pre-Qin and Jin inscriptions, as well as inherit and inherit in the study of calligraphy. Finally, the aesthetics of calligraphy of Jin bronze inscriptions are summarized to provide guidance for inheriting Jin culture.

**Keywords:** Pre-Qin; Jin Culture; Bronze Inscriptions; Calligraphy Aesthetics

### RESUMO

Como uma era importante no desenvolvimento de inscrições em bronze, o período pré-Qin tem alto valor de pesquisa em estética de caligrafia, e fornece orientação para a pesquisa de estética de inscrição na China. Primeiramente, a estética das inscrições de bronze nas dinastias pré-Qin e Jin é analisada, e o processo de evolução contínua das inscrições de bronze no estado Jin é estudado. Em segundo lugar, a evolução correspondente das inscrições de armas, inscrições de instrumentos musicais, inscrições de instrumentos rituais chineses e as mudanças no embelezamento do sistema de escrita. Através da exibição da cultura e arte da caligrafia de inscrição em bronze Jin, mais pessoas podem sentir a cultura da caligrafia das inscrições pré-Qin e Jin, bem como herdar e herdar no estudo da caligrafia. Finalmente, a estética da caligrafia das inscrições em bronze Jin são resumidas para fornecer orientação para herdar a cultura Jin.

**Keywords:** Pré-Qin; Cultura Jin; Inscrições Em bronze; Estética da Caligrafia

### 1. INTRODUCTION

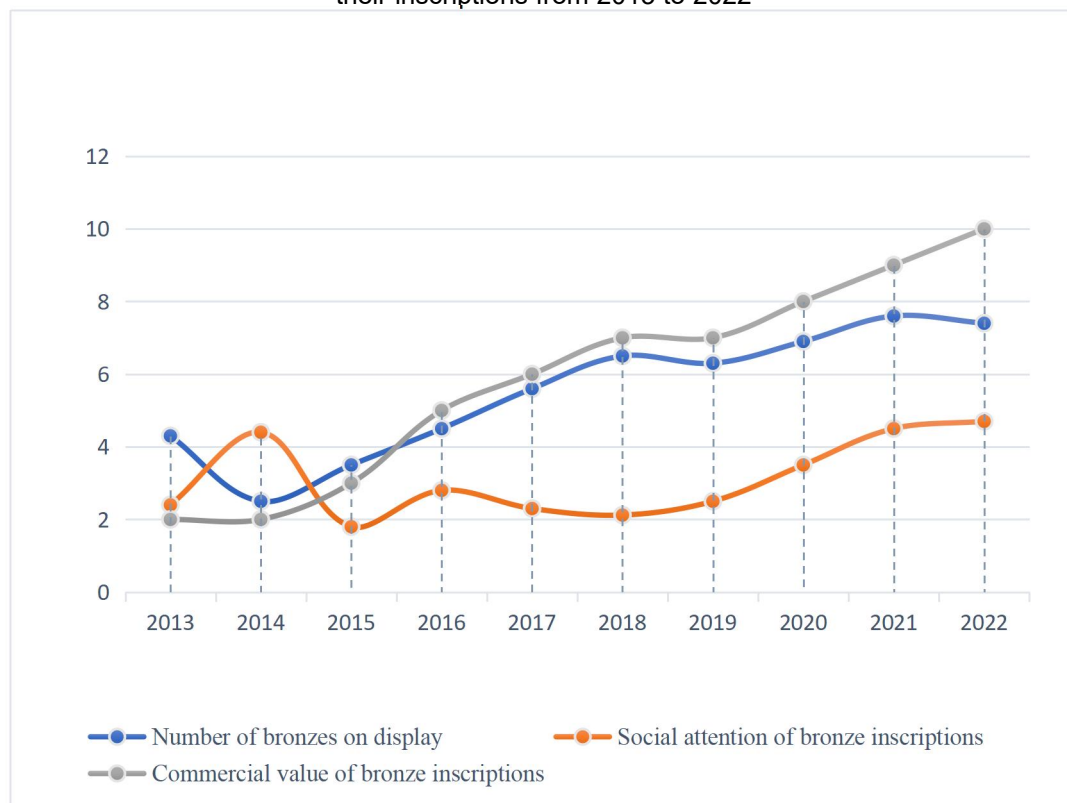
During the pre-Qin period, the Jin dynasty, as one of the important princely dynasties of China, had far-reaching cultural influence. At this historical stage, inscriptions were the main form of writing and disseminating knowledge (Alexander, Ioannis, & Changhong, 2021). The bronze inscriptions

of the Jin dynasty not only record the social life and ideological concepts of the ancient Jin people. These inscriptions incorporate a strong sense of artistry (Bianchi, 2022), demonstrating the unique understanding of morphological beauty and rhythmic beauty in the pre-Qin period. The aesthetic characteristics of Jin bronze inscription calligraphy are reflected in its rich variability

and unique sense of structure. In the design of the glyph (Bondar, & Lenkova, 2022), there is both a calm and atmospheric square, and a loose and natural elegance; In the layout composition, there is both symmetrical balance and free variation (Bondar, & Lenkova, 2022). This ingenious combination makes the bronze inscriptions of the Jin Dynasty full of vivid rhythm and form a unique aesthetic effect. The aesthetic value of Jin bronze inscription calligraphy also lies in its profound cultural connotation. These inscriptions are not only historical records, but also direct expressions of the thoughts, beliefs and emotions of the people of the Jin dynasty in the pre-Qin period. Through delicate calligraphy lines, they reveal the ancients' deep insight and unique understanding of heaven and earth, life and death, good and evil. In this expression, the vastness and profundity of the human spiritual world can be found. In this study (Chang, J. I., 2022), data on bronze research from 2013 to 2022 were selected for analysis,

mainly including three aspects: the number of exhibitions (Correa Rodriguez, 2022), the degree of attention, and the change of commercial value. Figure 1 shows the number of bronzes and their inscriptions exhibited from 2013 to 2022, the attention and value of the exhibition, as can be seen from Figure 1, 2014 is a watershed in the development and change of bronzes (Dissanayaka, 2022), after 2014, the number of bronze exhibitions and commercial value show an upward trend, while the social attention of bronze inscriptions shows a steady upward trend after 2018. On April 21, 2023, the Shanxi Museum and the Shanxi Institute of Archaeology jointly held a large-scale cultural relics theme exhibition "Six Hundred Years of the Jin Dynasty", which featured a total of 159 exhibits, most of which were bronzes, which further promoted the development of contemporary bronze research, the results of which are shown in Figure 1.

**Figure 1** - Changes in the number of exhibits, attention and commercial value of bronzes and their inscriptions from 2013 to 2022



Jin bronze inscription calligraphy is an artistic field that deserves our in-depth study. It

reflects the aesthetic taste and artistic innovation of the ancient Jin people and

reveals the unique face of Chinese culture in the pre-Qin period. By studying the bronze inscription calligraphy of the Jin Dynasty, we can better understand the development process of traditional Chinese calligraphy art and appreciate the profound charm of ancient Chinese culture. It can also be seen from the bronze inscription calligraphy of the Jin Dynasty that the ancient Jin people respected and attached importance to the art of calligraphy. They see words as carriers of art, focusing on the unity of form and content (Dong, G., Lu, Y., Liu, P., & Li, G., 2022). The Jin bronze inscriptions also demonstrate the ancient Jin people's deep insight into nature and society. Their writings have both a reverence for nature and a deep understanding of social phenomena. This observation and expression imbue their inscriptions with rich connotations and depth. In this regard, the aesthetic value of Jin bronze inscription calligraphy lies in its formal

## 2. THE HISTORICAL BACKGROUND OF THE CALLIGRAPHY OF BRONZE INSCRIPTIONS OF THE JIN KINGDOM

### PHASE I - Weapon inscriptions

The Jin Dynasty period was still a dynasty of frequent wars, so casting weapons was a long-term and essential work. *"The weapons of the Jin Dynasty were mainly made of bronze, and the weapon inscriptions of this period were also developed based on Shang and Zhou"*, and gradually formed the unique weapon inscription style of the Jin Dynasty (Duplancic, 2022). Nowadays, many inscriptions, including Jin weapons, have been unearthed, but the number of inscriptions is relatively small, and most inscriptions are the names of the objects.

After analysis, it was found that the weapons inscriptions of the Jin Dynasty were made in various ways, including casting, engraving, wrong gold and silver, etc. Among them, the inscription of the cast weapon can achieve a relatively regular effect. At the same time, the weapon inscriptions also show a strong decorative character. In contrast, the weapon inscriptions obtained from the engraving are relatively scrawled (Luo, X., & Pines, Y., 2023). The weapon inscriptions of the Jin Dynasty absorb the experience of other

beauty and inner ideological beauty. Through words, they convey the relationship between man and nature, man and society (Qingbo, D., & Barbieri-Low, 2023), and man and self, allowing us to see the life philosophy and values of the ancient Jin people. Therefore, this paper studies the modeling, seal cutting, and layout of bronzes in the pre-Qin and Jin Dynasties. First, collect the inscription data of Jin bronze in the Baoji Museum, such as length, width, height, seal cutting depth of fonts, and fluency of inscription strokes. Secondly, comparing the differences in bronze inscriptions, summed up the characteristics of bronze ware in the Jin Dynasty, and analyzed the reasons for the related characteristics. Finally, it discusses the inheritance of aesthetic characteristics of bronze inscriptions in the Jin Dynasty to promote the development of traditional calligraphy culture.

countries, rarely use melting casting to create weapon inscriptions and mainly engraved models, the strokes are fine but sloppy (Fan, C., 2022), *"The weapon inscriptions drawn by the Jin Dynasty have a small amount of wrong gold and silver, and have a stronger and more ornaments"*, but the weapon inscriptions are mostly owned by nobles and not assembled into the troops on a large scale, so the number is scarce.

The "Hanzhong Sword" inscription is one of the common weapon inscriptions in the bronzes of the Jin Dynasty, and it can be clearly seen that there is a large difference in artistic style compared with ceremonial and musical instrument inscriptions. The difference between the two swords is specifically reflected in the fact that the inscription structure of the Jin Dynasty weapon is dignified and steady. As a typical Jin weapon inscription, the "Hanzhong Sword" does not have too many thickness changes, and the overall style is moderate, which shows a stable dynasty of rhythm as a whole during this period, and it is precious because this stable rhythmic dynasty gives the inscription a static and dignified beauty. The space inside the "an Zhong Sword" inscription presents a strong sense of order (Hazarika, Bora, & Sanathana, 2022), which

is specifically manifested in the uniform distribution of strokes, reasonable spacing, and the existence of an obvious small seal modeling style, which also gives the inscription structure a strong sense of stability. "The dignified and steady inscription of the 'Hanzhong Sword' is fused with the majesty of the bronze sword, and the external shape of the bronze sword and the meaning "of the inscription jointly show its aesthetic value."

The "an Zhong Sword "inscription has a crisp and refreshing aesthetic that allows the simple and rigid lines of the inscription to show. To examine inscription art from an aesthetic level, it is necessary to regard inscription as an artistic symbol ,experience its connotation, and further analyze the connotation of inscription from the perspective of two-dimensional and three-dimensional space simultaneously The "plastic art "of the Jin Dynasty weapon inscription is shaped in two-dimensional and three-dimensional space, which can intuitively show the static artistic image of the inscription, and this artistic image is also called space art, static art (Hoepken & Scholz, 2022),and visual art. It can be seen that the beauty of the Jin Dynasty weapon inscription at the same time two-dimensional and three-

dimensional space art form, manifested explicitly in when the inscription on the weapon is the form of text, at this time, the weapon inscription is the beauty of three-dimensional space, and when the inscription is displayed in the form of rubbings and photos, it represents the beauty of two-dimensional space. The "Hanzhong Sword" inscription, as a weapon inscription, shows the beauty of three-dimensional space, which makes the inscription more three-dimensional compared to the beauty of two-dimensional space in the form of text. The result as shows in Figure 2.

**Figure 2 - Han Zhong Jian**



## **PHASE II - Musical instrument inscriptions**

"Symbal" is a representative instrument of Jin bronze, and the most distinctive feature of the inscription is the graceful line, showing a clear sense of smoothness, and the above problems are due to the thin lines. However, the inscription should pursue a beautiful and smooth visual effect rather than relying on thin lines. In actual use, it is also necessary to pay attention to the direction and angle of the line and grasp the impact on the overall style effect of the glyph as a whole (Jian, X. U., 2022). In terms of glyph performance analysis alone, the "symbol "inscription line is thin, not only does not bring the slightest feeling of softness to the inscription, but further shows the hardness and elasticity of the inscription, giving the inscription a strong sense of beauty, and this is also the fusion effect of the bronze instrument material itself

and the connotation of the inscription, manifesto explicitly in its hardness is the metal texture of the bronze and the crispness of the line, elasticity is the curvature of the instrument shape and the delicate line of the inscription, and the corresponding sense of extension of the stroke also gives the bronze instrument inscription a certain elasticity(Ju-Yeon, 2022).

The "cymbal" inscription has the characteristics of partial structure and stroke oblique posture, and different inclination angles will be used when engraving according to actual use, so that the inscription shows the beauty of oblique. The beauty of inscriptions needs to be skillfully matched with bronzes, and the bronze musical instruments of the Jin Dynasty are mainly calm and dignified as the main style (Kokorina, Vagabov, & Akimova, 2023), the

reason is that the texture and function of the bronze musical instruments lead to the formation of the overall tone, which also forms the exclusive inscription tone of the bronze musical instruments of the Jin Dynasty. The oblique stroke of the inscription will not affect the overall calm and dignified tone, and the use of a large number of strokes to tilt at the same angle will lead to the overall tilt of the inscription (Liu, J. H., He, Y., Ke, W., Hwang, M. C., & Chen, K. Y., 2022). The strokes of the "cymbal" inscription

### PHASE III - Ceremonial inscriptions

*"The 'Standing Bird Foot Barrel Vessel' is a famous bronze ware of the Jin Kingdom, and its inscriptions show a thick and powerful style. Analyzed from the shape of the character",* the inscription has thick and powerful strokes, and its structure spreads outward from the center point, showing an extended form, enhancing the inscription momentum. The main pen of the "tending Bird Foot Barrel" inscription is dominated by thick lines, which give the inscription a very stable structure, and small strokes are also dominated by thick lines to enhance its sense of heaviness (Nikolic, 2022). The structure of the inscription is reasonable on the whole, and the use of thick brushes will not make the glyph have a crowded and clogged feeling. On the contrary, it gives the inscription a thick and heroic atmosphere, and the strength of the inscription stroke makes it have a masculine beauty. There are "solder joints" at the junction of some strokes in the "Standing Bird Foot Barrel" inscription, and this "solder joint" makes the stroke lines thick and aggravated while giving the inscription a sense of heaviness and metallic. Under the action of "solder joints", the stroke movement of the inscription shows a rhythmic change to a certain extent, and this rhythmic change gives the line momentum and form potential energy so that the sense of power of the inscription is enhanced (Oguz-Kirca, 2022). The glyph structure of the "Standing Bird Foot Barrel" inscription is free, and the overall trend extends outward from the center point of the word, and the trend of change in strength is the same, giving the inscription a magnificent appearance. The overall style of Jin bronze inscriptions is stable and solid, giving people

are oblique, but the tilt angle is different, and the strokes of different angles restrict each other, forming a synergy in the contrast of deviation and correction so that the inscription as a whole can show stability (Maia, Alexander, Tatyana, & Elizaveta, 2022). The combination of inclination and momentum of the strokes produces a sense of stability and beauty, giving the inscription a flexible feeling, strengthening the smoothness of the lines, and giving the inscription a beautiful external form.

a static beauty, and this beauty is the overall tone that forms the Jin bronze inscriptions. The glyph size of the "Standing Bird Foot Barrel" inscription is not the same, and even so, there is no sense of contradiction, and the overall harmony is very coordinated, so that the change in the size of the inscription "Standing Bird Man Foot Tube" will change with the overall beauty, and the sense of movement will be significantly enhanced. It can be seen that the change of the Jin bronze inscription "potential" depends on the artistic symbol, and the image change of the inscription as a work of art is also consistent, as shown in Figure 3.

Figure 3 - Standing bird man foot tube



As an artistic symbol, calligraphy is not only expressed on a fixed carrier, but also needs to give the text the momentum of integration



with the environment and the background of the times. For the relatively fixed position of the Jin Dynasty bronze inscription calligraphy

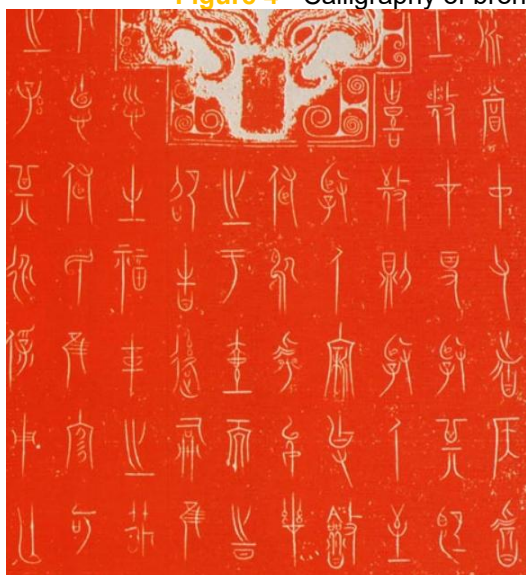
strokes, it shows more of a dynamic beauty, which is the product of the combination of movement and static (Ovadia, 2022).

#### PHASE IV - Writing system decoration

Dotting is a special decorative technique applied in bronze inscriptions, and the corresponding dotting functions are also different in combination with specific use scenarios, some points exist in the form of strokes, and some points exist in the form of pure decorative points, which is the common feature of bronze inscriptions of previous dynasties. In addition, the differences in bronze ornaments from one dynasty to another lie in the number, location, shape, etc. Among them, the dot ornaments of the Western Jin Dynasty are located in the

middle of the bronze inscription strokes, which are mainly round and prominent, and the number is simplified in strong contrast with other line forms, which appear rational and cautious. In the Eastern Jin Dynasty (Ozgul & GÜNAŞDI, 2023), the dot decoration pursued freedom, and there was no strictly prescribed fixed position, and the shape changed with the change of gesture. Compared with the middle-of-the-road ornaments of the Western Jin Dynasty, "the inscriptions of the Eastern Jin Dynasty are freer and rottener, and enhance the mysterious color of the inscriptions to a certain extent", as shown in Figure 4.

Figure 4 - Calligraphy of bronze inscriptions in different periods



Eastern Jin Dynasty



Western Jin Dynasty

### 3. Research and Analysis of Bronze Inscription Calligraphy in the Jin Dynasty

#### PHASE I - Research Methods and Techniques

In this paper, four pre-Qin bronzes exhibited in Baoji Museum are taken as research objects, and the bronzes modeling and seal carving depth are studied. The main research tools are ROV 3D scanner (Guangdong, Dongguan), Kodak 250 camera (Tokyo, Japan), Delixi 200 laser rangefinder (Guangdong, Dongguan), and UT2.3 infrared depth measuring instrument (Guangdong,

Dongguan), and matrix pressure sensor 200(Wuxi, Jiangsu). The main measurement indicators are the depth of inscription engraving, modeling, seal engraving pressure, etc. The measurement process is to first take a 3D scan of the bronze with a ROV 3D scanner and use it for photographic documentation. The width, height, and length of the bronze object are then measured, and the size of the bronze inscription is recorded. Secondly, the measuring instrument was used to measure the depth of the inscription, and the inscription was imitated and written, and the writing pressure was tested. Finally,

the scanning data, modeling style, and seal carving depth were compared to summarize

## PHASE II - Style analysis current situation

### Dignified and Beautiful Style

At this stage, part of the research on the calligraphy of bronze inscriptions of the Jin Dynasty focuses on the analysis of its style. The calligraphy of Jin bronze inscriptions is

the calligraphic aesthetics of the bronze inscriptions.

neatly laid out, eclectic, and perfectly compact. There is no unnecessary white space in the font structure, nor is there a feeling of slackness, and the overall appearance is tightly converged, which is the mainstream style of the current research on the bronze style of the Jin Dynasty, as shown in Figure 5.

Figure 5 - Jin inscription style



The seal carving in Figure 5 is based on the imitation of the inscription of the Jin Kingdom. Although the glyph is messy, the upper and lower, left and right are symmetrical, the

center is the axis, and the distribution is carried out on both sides, and the specific measurement results are shown in Table 1.

Table 1 - Measurements of inscriptions

Measure what	Up → down	Left → Right	1/4	Bottom left → top right
Length (cm)	2.23±0.12	1.42±0.03	0.32±0.01	0.62±0.32
Angle (°)	11.22±0.32	10.35±0.32	10.75±0.66	5.32±0.02
Depth (mm)	2.32±0.01	2.03±0.02	1.95±0.01	1.85±0.04

As can be seen from Table 1, the measurement results of the inscription show that the length of the upper and lower parts is 2~3cm, and the left and right lengths are 1~2cm, and it is symmetrical at 45°. Regarding the changing angle of the font, the font change is about 10°, and the angle error is less than 1°. The depth of seal carving is between 2~3mm and lightly deeper. On the whole, the seal carving effect of the inscription is higher, the length and width meet the aesthetic requirements, and the width of 1/4 is 0.32cm, which is close to the golden section line. In addition, the depth of the inscription is 2mm, the overall is shallow, but the inscription is clear, indicating that in

the process of engraving, the inscription's direction and angelate considered to increase the wear resistance of the inscription.

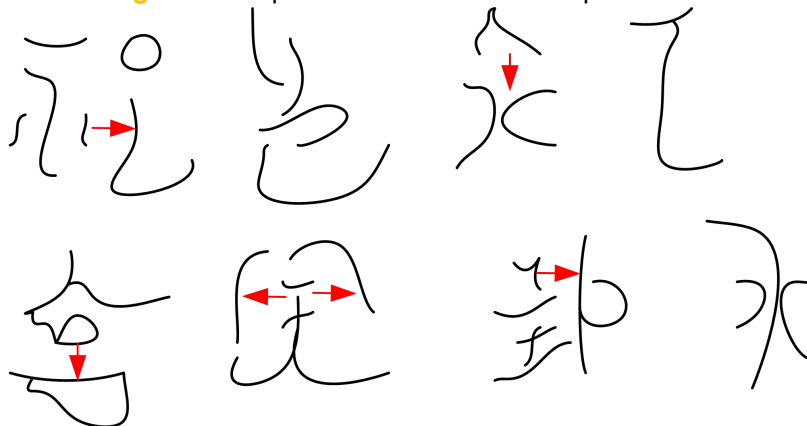
### The Middle Wind Between Dignified and Loose

Duan dignified Xiu Mei is the mainstream style of Jin Dynasty bronze inscription calligraphy, and due to the different inclination angles of line fonts, there is a style between Duan Dignified Xiu Mei style and Shuang style in the inscription. Relatively speaking, the style is relatively niche, the overall dignified and rigorous, the size of the local paragraph text is consistent and square,

and the distance between words and lines is balanced and orderly. However, bronze inscription, as a niche style, is not very

characteristic of decorative beauty, as shown in Figure 6.

**Figure 6 - Gaps in the structure of inscription seals**

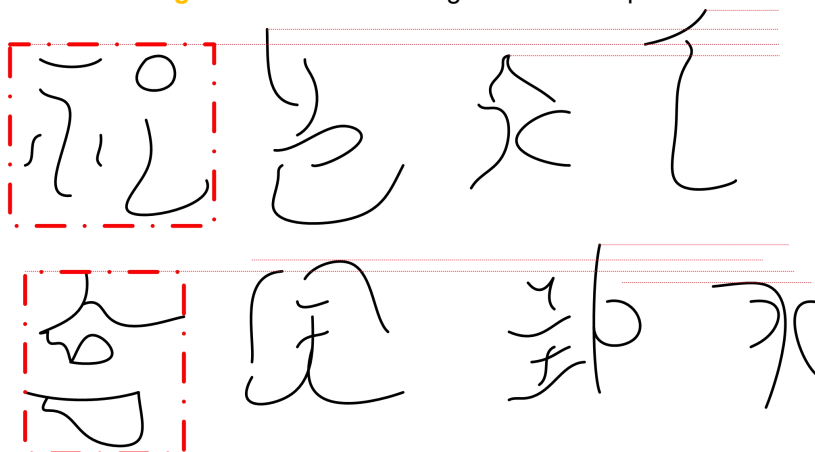


As can be seen from the red arrow in Figure 6, the font structure of the text seal is loose, and there is a gap between the upper and lower structures, the left and right structures. The measurement results show that the gap at the location of the red arrow is 0.23cm, indicating that the overall structure of the inscription is neat, and the gap in the middle is consistent. It can be seen from this that the inscription of the Jin Kingdom follows a strict chapter to ensure the neatness and symmetry of the font.

#### The Loose Style

At this stage, it has been found that some of the characters in the bronze inscription calligraphy of the Jin Dynasty show a free and sloppy loose style, which is loose and has thin lines, which is in step with the overall rhythm of the Jin Dynasty inscription calligraphy. However, the irregular blanks of the Jin bronzes give the inscription a sense of freedom and movement as a whole, showing a loose style, as shown in Figure 7..

**Figure 7 - The vertex height of the inscription**



As can be seen from the height measurement of the inscription in Figure 7, there is a deviation in the height of the inscription in the same line, which is not a gradual increase or a gradual decrease but a random change in height. Based on the vertices of each inscription, the horizontal

measurement was carried out, and it was found that the height of different inscriptions was sometimes high and sometimes low, and there was no unified rule. Therefore, the Jin inscriptions are relatively loose in structure, and there is no unified standard for the font's height.



### PHASE III - Current status of font difference analysis

#### Stroke Depth of Inscription

The inscriptions of the Jin Dynasty follow the typical inscriptions of Zhongshan Dynasty during the Warring Dynastys period, and the inscriptions on the bronze plates, gold and silver bubbles, sacred beasts, and

Zhongshan Houyu will indicate the text of the caster, that is, the typical casting inscriptions. However, during the Jin Dynasty (Ozkan 2022), the weight of artifacts was usually marked using supplementary engravings, and the inscriptions on the Mega Domain Map would be accompanied by the wrong silver script (Figure 8).

**Figure 8 -** Mao Gongding inscription

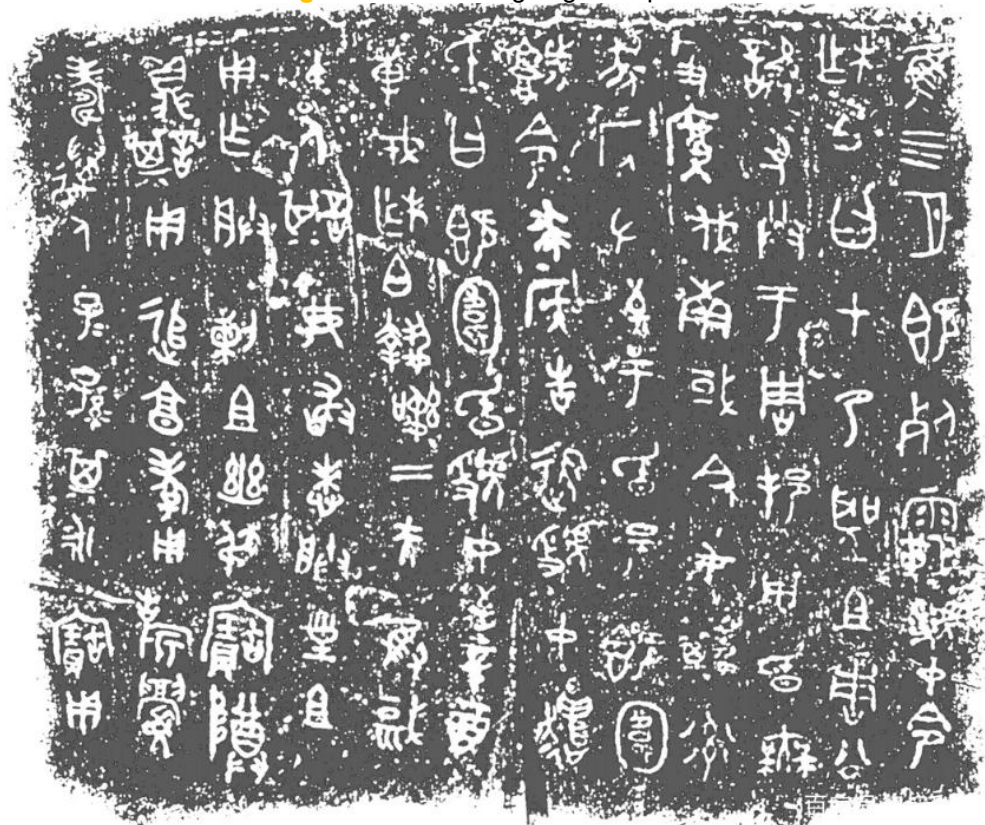


Figure 8 is the rubbing of Mao Gongding's inscription, and combined with Delixi 200 laser rangefinder to measure the depth of

Mao Gongding's seal engraving, the results are shown in Table 2.

**Table 2 -** The average depth of the inscription of Mao Gongding

Type	Average Depth	Start Endpoint	End Endpoint	Middle
dot	1.82±0.02	1.14±0.04	1.23±0.02	1.85±0.04
Horizontal, vertical	1.72±0.03	1.16±0.02	1.33±0.01	1.95±0.02
Folded hooks	2.12±0.04	1.03±0.02	1.65±0.02	2.01±0.01
Leave, press	3.52±0.02	1.09±0.06	1.42±0.07	1.82±0.02

It can be seen from Table 2 that the depth of the seal engraving of Mao Gongding's inscription shows that the beginning and end ends are shallow, the middle point is deep, and the average depth is deeper, leave,

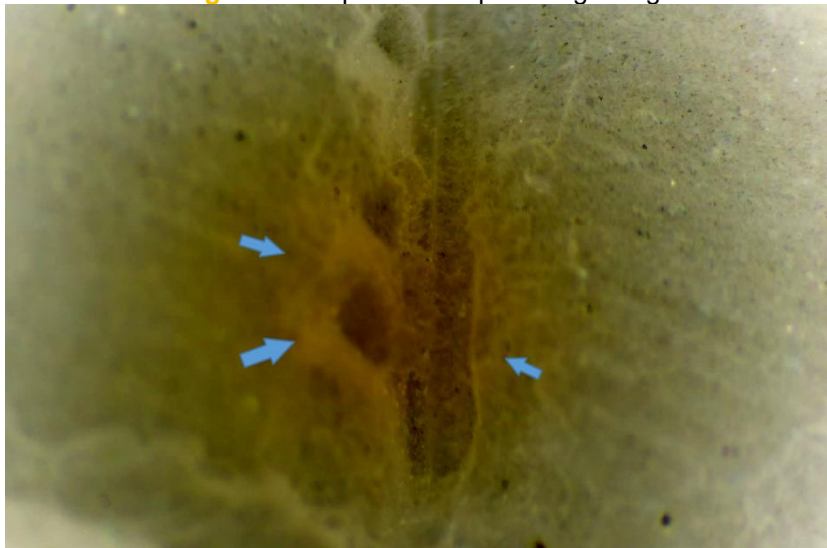
press is deeper, followed by the fold hook. In addition, the seal carving form of each point is relatively unified, which further confirms the standardization of the bronze inscriptions of the Jin Dynasty.

### The Variation of the Depth of the Inscription Strokes

The bronze inscription calligraphy of the Jin Kingdom is mainly based on inscriptions, which is also the mainstream of bronze inscription calligraphy in the Jin Dynasty. The reason why Jin bronzes use a large number of inscriptions is because the method appeared relatively early, the history is long, the most typical is the oracle bone inscription, with the continuous progress of science and technology, the application range of inscriptions is also more extensive, the function is also richer, from the Warring

Dynastys period began to be applied to bronze inscriptions, Manifested as a direct function of memory and a certain decorative effect, some bronze inscriptions are records of historical development, and the content of bronze inscriptions in the Jin Dynasty began to develop from spartan chronicles to small-scale propaganda as a way to record important wills. The inscription is loose and free, the overall layout is more arbitrary, and personalized strokes will appear, and the corresponding strokes will also cause uneven stroke thickness due to the change of the uniformity of the surface of the bronze, showing different depths (Figure 9).

**Figure 9** - Depth of inscription engraving



Through electron microscope testing, it was found that the depth of the inscription was shallow → deep → shallow. The lines in Figure 9 are dull in the center and shallow on both sides, indicating that the center of the

inscription is the deepest. It can be seen that the bronzes of the Jin Kingdom paid more attention to strength, which also indirectly explained the standardization of bronze seal carving in the Jin Dynasty.

### PHASE IV - The direction of the inscription

The seal carving of bronzes of the Jin Dynasty also attaches great importance to the direction of seal carving so as to show different seal carving arts, which are mainly divided into horizontal, vertical and mixed directions, and the specific content is as follows.

#### Longitudinal

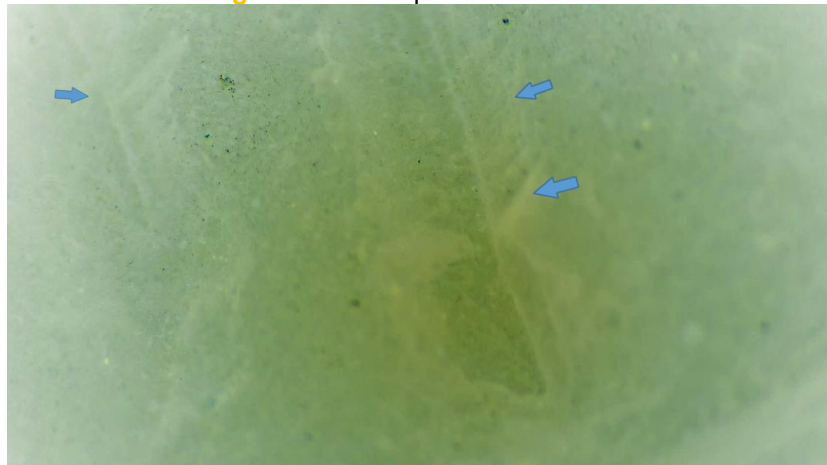
For the bronze inscription calligraphy of the Jin Dynasty and the Warring Dynastys Period,

it is found that the bronze inscription calligraphy of the Jin Kingdom follows the characteristics of the Warring Dynastys Period in the direction of seal carving, which is reflected explicitly in the elongation and beauty of the inscriptions, making it more beautiful as a whole. How to express the style of inscription calligraphy needs to be studied in the direction of its seal carving. According to some sources, the length-to-width ratio of the Jin Dynasty bronze inscriptions was about 2:3:1 (Škrabal, 2022), and the ratio was close to the natural golden ratio, which made the text more compact,

revealing the beauty of rigidity and the text as a whole showed a sense of vertical fluctuation, tightness, and balanced distribution. The 2:3:1 ratio inscription is

studied, and it is found that the direction of the seal engraving presents longitudinal characteristics, and the specific results are shown in Figure 10.

Figure 10 - Inscription at 2:3:1 scale



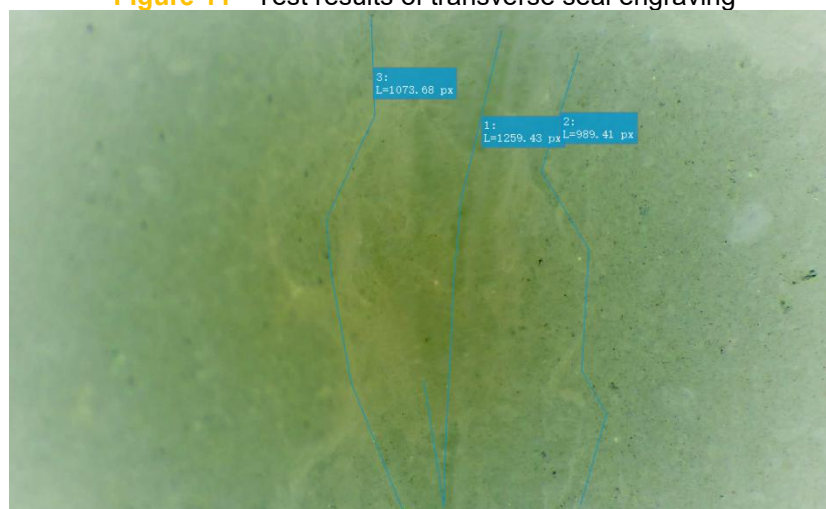
Through microscopic observation, the inscription of the 2:3:1 ratio mainly adopts longitudinal seal carving, and the seal carving method is more stable and can engrave complex inscriptions, such as skimming, folding hooks, etc., and the effect of seal carving is more beautiful.

#### Transverse

Some inscriptions need to be written quickly, so the horizontal seal carving method is used, and this method mainly uses the golden ratio of 1:1. From the beginning of the Shang and

Zhou dynasties to the middle and late Warring Dynastys period, the big seal began to advance to the small seal, and the main seal carving technique was horizontal seal carving (Stanley-Price, 2022), and the strokes showed a trend of square and straightening. In the Jin Dynasty, the way of writing began to be simple and fast, and the development of black copper lettering calligraphy brought opportunities and the thickness of the inscription was uneven, mainly using the horizontal seal carving method, and the test results are shown in Figure 11.

Figure 11 - Test results of transverse seal engraving





As can be seen from Figure 11, the length of the transverse seal carving is 1073mm, 12.59mm, 9.89mm. The seal carving method used is the horizontal seal carving. It can be seen from this that the inscriptions carved by the Jin Kingdom are mainly transverse in the short distance, and the seal carving speed is faster.

Irregular Direction

The shape of the bronze inscription calligraphy text is different, The mature calligrapher is more accessible and irregular to the inscription. Hence, the direction of the seal carving is the mixed seal carving direction, so that the inscription calligraphy is free to sort, the size is uneven, the direction of the text is different, the strokes are incredibly flowing, but the overall inscription display gives people a sense of beauty. The test results are shown in Figure 12.

**Figure 12 - Mixed seal engraving method**



As can be seen from the contents of Figure 12, in the strokes of 7.75mm, 2.51mm and 1.82mm, the seal engraving direction is horizontal and longitudinal. Some of the longitudinal seal carvings even present a

certain angle. It can be seen that the seal carving method of the Jin Dynasty is more mature, showing an accessible and diverse effect.

#### **4. Inheritance of calligraphy of bronze inscriptions of the Jin Dynasty**

##### **Display Function of Culture and Art**

Modern research believes there are high aesthetic attainments in the bronze inscription calligraphy of the Jin Dynasty, which is reflected in the theoretical construction has a wider range of applications. In the inheritance of Jin bronze inscription calligraphy, bronze inscription calligraphy gives full play to its cultural and artistic display function, which is an effective way of displaying calligraphy. In the museum display, bronze inscription calligraphy belongs to an important part, which not only shows the beauty of bronze objects but also includes the beauty of words, the museum display, and the promotion and inheritance

culture of bronze inscriptions in the Jin Dynasty. As a cultural heritage of mankind, bronze inscriptions of the Jin Dynasty let people understand the development process of human history and feel the civilization and wisdom of mankind through bronze inscriptions. Jin bronze inscriptions are a symbol of the history and civilization inheritance of the Jin Dynasty, and through the study of bronze inscriptions, we can understand the history, culture and aesthetic pursuit of the Jin Dynasty at a deeper level. Therefore, the bronze inscriptions of the Jin Dynasty are the medium and channel of the "dialogue between the Jin Dynasty" and the present, as well as calligraphy inscriptions.

##### **Calligraphy Professional Teaching Function**

Another way to inherit the bronze inscription calligraphy of the Jin Dynasty is to fully absorb the advantages of the Jin inscription calligraphy to carry out teaching, and through teaching, the inscription calligraphy can be inherited and developed. As an important representative of ancient calligraphy, Jin bronze inscription calligraphy has an important position and role in the history of calligraphy art, and its external expression and cultural connotation can be borrowed from today's calligraphy teaching. In the teaching of calligraphy theory plays the role of the external form of Jin Guo Ming calligraphy, in the history of calligraphy, it figuratively said that Jin Guo bronze inscription has coordinates in calligraphy teaching, specifically manifested as guiding learners to fully and deeply understand the evolution of ancient calligraphy, and the connotation inheritance of Jin Guo Ming calligraphy is mainly concentrated in calligraphy aesthetics, because the text form shown by Jin Guo bronze inscription calligraphy has a distinct personality style, so it has become an important part of calligraphy aesthetics, and this is also an important entry point in calligraphy teaching. The use of teaching to inherit the calligraphy of the Jin inscriptions should focus on the connotation and appearance of the bronze inscriptions of the Jin Dynasty. The function of Jin bronze inscriptions in teaching calligraphy is not only at the theoretical level,

## 5. CONCLUSION

Jin bronze inscription calligraphy is an important part of the art of Chinese calligraphy. Its unique aesthetic characteristics and profound cultural connotations reveal the richness and far-reaching nature of traditional Chinese culture

but also at the creative level. Jin Guo inscription calligraphy by combining with bronze to form a coexisting art form, giving bronze inscription calligraphy an extremely significant sense of craftsmanship beauty needs to be reflected through craftsmanship and be able to be transformed onto paper beyond the bronze carrier. In the teaching of calligraphy, Jin bronze inscriptions can be used as a model for copying, fully demonstrating their aesthetic form, transferring bronze inscriptions to paper, and highlighting the brushwork skills and many artistic links they cover. However, due to the transformation of the carrier, the corresponding beauty form requirements will be different from the dynasty of bronze inscriptions, which is reflected in the fact that calligraphy on paper attaches great importance to brushwork, requiring skilled brushwork to present specific line expressions. The beauty of Jin bronze inscriptions lies in jumping out of the limitations of brushwork, which is also its personality and characteristics. Therefore, it is necessary to pay attention to the accurate use of brushwork when creating and fully displaying the aesthetic elements to ensure that the creation on paper and inscription calligraphy maintain the same tone in the external form and connotation to realize the inheritance of the bronze inscription calligraphy of the Jin Dynasty.

for us. Through the study and understanding of Jin bronze inscription calligraphy, we can have a deeper understanding of ancient Chinese culture, better appreciate the charm of Chinese calligraphy art, and provide valuable resources for studying and inheriting bronze inscription calligraphy.

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## PROCEDIMENTOS ÉTICOS

**Conflito de interesses:** Nada a declarar. **Financiamento:** Nada a declarar. **Revisão por pares:** Dupla revisão anônima por pares.



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