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From Overall Vision Effect to Details of Craftmanship: towards Analysis and Comparison of Two Types of Jade suits from Mancheng Han Tombs and NO.40 Dingxian Han tomb

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Abstract

This article compares and analyzes two types of jade suits, one customized for individuals and made in vassal kingdoms, the other mass-produced and made by artisans of the Eastern Enclosure (东园匠) in the center Han court, from overall vision effect to details of craftmanship, including differences in 1) total number of plaques; 2) details of components; 3) details of plaques whether recycled jade-wares. This study used literature analysis, observation, and contrast to gather samples from Mancheng Han tombs and NO.40 Dingxian Han tomb. Two types of jade suits show distinct different features and making ideas.

- 1 In overall vision effects, contours of customized jade suits show feature close to human body shape and contours of mass-produced jade suits show feature in much more succinct.
- 2 The plaques number correlates with degree of jade-suit contour reflected for human body. Since customized jade-suits owned greater number and smaller average area for plaques, it showed higher degree of reflection for body contour. Opposite characteristics for mass-produced jade-suits.
- 3 Differences in the details of the components suggest whether the jade suits were clear who they serve before made. Components of jade suits customized shows features of individuals. However, components for jade suits of mass-production shows features of compromising for efficiency and overall vision effects in the case of unknown served.

4 Whether plaques made of recycled jade-wares reflect the amount of jade resources available at the production site. Customized jade-suits show traces of recycled jade-wares since limitation of jade resources in vassal kingdoms. None recycled jade-ware used for Mass-productional jade-suits for productional improvement and abundance of jade resource in central Han court.

Keywords

jade suits; vassel kings; Western Han; Zhongshan Kingdom; Mancheng Han Tombs; NO.40 Dingxian Han tombIntroduction

Jade suits are huge jade-wares that thousands of plaques weaved by metal threads or silk tapes (Xia, 1983, p27). Han emperors and aristocrats wore jade suits when died and that was a symbol of status (Lu,1981). The use of jade suits can be traced back to the 400-year period from 200 BCE to 200 CE. Nowadays, there are jade-suit materials were found in nearly 80 Han tombs, but only 8 jade suits were restored completely. Though limit number for complete jade suit, there are several ways of classification for jade suits, each method provides different perspectives. In most cases, the distinction for jade-suit types is based on two ways, the material of threads used in jade-suits and whether or not the jade-suit components cover whole corpses. The method of classifying jade-suits by the material of threads that made of precious metals and silk tapes is used by articles for studies of jade-suit mostly. This method is based on records of the norms for uses of jade-suits of different materials for aristocrats of different ranks in ceremonies and etiquettes section in *the History of the Latter Han Dynasty(Hou Han shu)*, an authoritative record for Eastern Han history ,written largely by Fan Ye in the fifth century A.D, record that: golden-threaded jade suits used by their respective ranks emperors are buried in; "jade suits with silver thread used by vassal-kings, marquis of the first generation, "honorable ladies"(high-ranking imperial concubines), and princesses merit; jade-suits with copper thread used by dowager concubines and sisters of emperor(Kao & Zuosheng, 1983).

Another method of classification based on whether or not components of jade-suit cover whole corpses, distinguishing cases that related to but not be considered belonging to jade-suits. The emergence and development of complete jade-suits using is thought to have been a gradual process (Shi, 2003). Before wide spreading of jade suits in the early Western Han, some components in a jade suit were used individually for burials for a while. For example, jade helmet with mask, gloves, and shoes from the Han tomb at Hongjiadian in Linyi, Shandong Province (Cultural Reclics Group of Linyi area, 1980) and jade masks from Han tomb of Houloushan in Xuzhou, Jiangsu Province (Meng, 2006. Xuzhou Museum et al., 2022) are examples in early Western Han tombs. Jade mask in the mid-Western Han period from the Han tomb at Shuangrushan, Changqing County, Shandong Province. (Department of Archaeology of Shandong University et al.,1997).

In this study, although limited of number of materials, jade suits are divided into two types, one is customized for individuals that made in vassal kingdoms and

taking jade suits from Han tombs of Mancheng as representative samples, another type is the mass-produced that considered made by artisans of the Eastern Enclosure in the center Han court and taking jade suit from NO.40 Han tombs of Dingxian as representative sample. These two types of classifications were proposed by each before. For the first type of jade suit, researchers made suggestion that jade suits made in vassal kingdoms based on jade-suits materials found in Han tombs of Beidongshan, Shizishan, Mancheng and King of Nanyue, etc. for their special styles and traces of recycled jade-wares. (Wei,1987; Xuzhou Museum, 2003; Gu et al., 2010; Luo et al., 2012; Technical office of the Institute of Archaeology,Chinese Academy of Social Sciences,1972) For the second type of jade suit, researchers deemed jade suits made in mass-produced way based on special detail of cutting down a part of component of trousers for shorter in NO.40 Han tomb of Dingxian (Hebei Provincial Museum et al., 1976)There were other studies took jade suits from Han tombs of Mancheng and NO.40 Han tombs of Dingxian to discuss two types of jade suits together in order to support view for the jade-suit made in vassal kingdom and Eastern Enclosure in the center Han court parallely (Zong, 2019; Hamutoglu et al., 2020). However, I consider there will be room for further discussion in this perspective, since Zong ignored the periods of making for the three jade suits that lead inaccurate judgement. Also, though there are studies mentioned two types of jade suits, but few of them put exact samples of them to compare and analyze carefully in details.

Hence, the purpose of the study is to discuss differences between the two different production ways and the causes for such differences through details on jade and jade craftsmanship of the three jade suits excavated from the Mancheng Han tombs and No. 40 Dingxian Han tomb. To achieve the purpose, in additional to introduce comparison of period they belonged and whole vision effects of three jade suits, this study would like to investigate and analyze the details of production jade craftsmanship on the jade suits, starting from the basic data of the jade-suits published in the excavation reports of these Western Han tombs.

Research Objectives

Jade suits customized for individuals and jade suits of mass-produced had different making ideas and craft details. Macroscopically, the different jade-suit making ideas were based on the difference of backgrounds of the times. On a micro perspective, the details of jade-suit making are adjusted accordingly to different making ideas. Hence, research objectives of this study are as follows.

1. to compare and analyze overall vision effects.
2. to compare and analyze total number of plaques.
3. to compare and analyze details of components.
4. to compare and analyze details of plaques whether made of recycled jade-wares.

Literature Review

In literature review, we will discuss research that considered two types of

jade suits made in vassal kingdoms and workshop of the Eastern Enclosure in the center Han court. The details of jade-suit making considered to have been made within the vassal kingdoms can be roughly sorted into three main categories. Special jade-suit styles. Traces of recycled jade-wares using on the back of plaques. And special materials for plaques and jade suits.

The first category provided basis of jade-suit making that considered to have been made within the vassal kingdoms is special styles of jade suits. Here, only Chu kingdom is taken as a typical representative of jade suit making within the vassal kingdoms. Most of plaques were found in shapes of quadrilateral, triangle, etc., but the plaques in fish-scale shaped excavated from the Han tomb in Beidongshan (Wei, 1987) is unique among all jade-suit materials found so far (Xuzhou Museum, Department of History & Department of Archaeology of Nanjing University, 2003). In addition to delicate quality of the plaques used in jade suit of the Shizishan Han tomb, number of plaques is numerous, up to more than 4,000 pieces. Its number of plaques far exceeds that of the jade suits from M1 and M2 of Mancheng Han tomb and tomb of King of Nanyue Kingdom, being nearly twice as many as the latter three. Both jade suits are thought to been made in workshops of Chu kingdom in the early and mid-Western Han period (The Archaeological Team at Tombs of the Chu Kings, 1998). In addition to two tombs mentioned, other tombs, such as the Han tombs of Guishan (Nanjing Museum, 1985; Xuzhou Museum, 1984) and other tombs of Chu aristocrats (Gong et al., 2012; Xuzhou Museum, 1997; Kahar et al., 2021), have found exquisite jade artifacts, all of which can support the existence of a highly skilled jade workshops in Chu kingdom.

The second category provided basis is traces of recycled jade-wares using on the back of plaques. Examples are jade suits from the Shizishan Han tomb, tomb of king of Nanyue in Guangzhou, and the Mancheng Han tombs. Part of plaques in jade suits interspersed from the tombs of Shizishan and Nanyue King made of recycled jade bi-disc fragments have rough texture. (Guangzhou Cultural Relics Management Committee et al., 1991) (Luo Han et al., 2012) Likewise, plaques in jade suits using recycled jade-wares were also found in the jade suits from the Mancheng Han tombs. Also, semi-ring shape of hand-holders griped by Liu Sheng and Dou Wan were made of recycled jade bi-disc. The restorers believed that the workshops for jade suits from of Mancheng Han tombs had a more detailed division of labor and were able to make jade-wares like bi-disc, huang arc-pendent, cong-tablet, in addition to jade suits. Therefore, traces of recycled jade-wares using on the back of plaques are considered to be important evidences for the existence of a comprehensive workshop that produced variety kinds of jade wares in vassal kingdoms (Karadeniz et al., 2021).

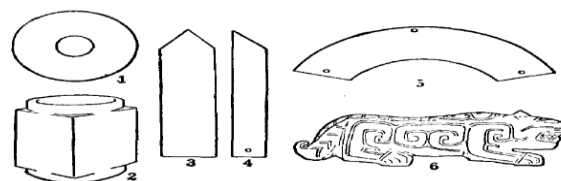


Figure 2- The so-called "Ritual Jade or Six Auspicious" (1) bi-disc; (2)cong-tablet;

(3)gui-tablet,(4)zhang-tablet; (5)huang arc-pendant; (6)hu-(tiger) pendant.

Adapted from *Jade and Silk of Han China*, p21, by Institute of Archaeology, Chinese Academy of Social Sciences, 1983, Kansas, Helen Foresman Spencer Museum of Art, University of Kansas. Copyright [1983] by the Name of Copyright Holder. Reprinted with permission.

The third category provided basis is Special materials for plaques and jade suits. Examples are jade suits from NO.1 Han tomb of Bao'an'shan in Henan province, Han tombs of Nanyue King in Guangzhou (Wen,1991) and tomb of 'Concubine Moshu' in Yangzhou, Jiangsu Province (Yangzhou City Museum,1980) 588 pieces delicately made plaques of green nephrite were excavated from the NO.3 Han tomb at Bao'an'shan, and there are rarely found in Chinese archeology findings (The CPAM of Shangqiu City, Henan Province, Institute of Cultural Relics and Archaeology of Henan Province &The CPAM of Yongcheng, Henan Province, 2001) Also, since jades were precious resources, jade craftsman were making the best use of all jade materials as possible as they can. In the case of insufficient jade material even stone and glazed glasses would be used partially or completely instead of jade to make plaques of jade suits. For instance, part of plaques in jade suit of Nanyue King was made in ordinary stone. (The CPAM of Guangzhou & Technical office of the Institute of Archaeology, CASS,1991) Also, there were more than 600 plaques made in color-glazed and decorated with ornamentations and gold-plated found in tomb of 'Concubine Moshu'and that was never found before. (Yangzhou City Museum,1980) However, it is worth noting that the vast majority of jade suits were made of nephrite that we called jade. Jade suits that not made in nephrite were generally not of high standard and were mostly used by the clans and nobles of the vassal kingdoms. However, plaques made in special and different materials are important evidences of the existence independent workshops for jade-suit making within the vassal kingdoms.

In contrast to jade suit of customized for individuals and made in vassal kingdoms, there were mass-produced jade suits and made by artisans of the Eastern Enclosure in the center Han court. Difference on making leads to different details for two types of jade suits. This knowledge is not unfounded, although the chambers of the Western Han emperor's mausoleums have not yet been excavated and is still unknown what it will it be look like for jade suits worn by the emperors made by the Eastern Enclosure. Fortunately, we can get a glimpse of the mass-produced jade suits made for the purpose of bestowed by emperors through the example that have been found in the burial of vassal king. The only complete jade suit now found that is believed to be bestowed by emperor is the one found in NO.40 Han tomb of Dingxian. (Hebei Provincial Museum et al., 1976) There are examples of the Han emperor bestowed jade suits in *the History of the Former Han Dynasty (Han shu)* and *the History of the Latter Han Dynasty (Hou Han shu)*. Chapters of biography of Huo Guang and Dong Xian in *Han Shu* mentioned persons who were bestowed were powerful ministers and or favored by emperors, also included relatives of emperors on the sides of their mothers or wives in the record.

And none of them belonged to the royal family of Liu. (Shi Rong Zhuan, 2003) Lu Zhaoyin believed that it was ordinary that people belonged to the Liu royal family using jade suits and there was not necessary to record it unless there were special cases of jade suit using. The reason why jade suit from NO.40 Han tomb of Dingxian attracted attention is special details reflected in the excavation report. In the original state of jade suit, there were a pair of short mats made of plaques covering on abdomen that removed from the lower part of the trousers. This special detail, which did not fit the decease, is thought to be one of the mass-produced jade suits made in certain specifications that made for purposes for bestowed by emperors. (Hebei Provincial Museum et al., 1976)

Conceptual Framework

This research is study of comparison and analyzation on jade suits between customized and mass-produced through jade suit details of jade and metal craftsmanship based on overall visual effect of jade suits. The samples of jade suit from NO.1 and NO.2 Han tombs of Mancheng, as representation of customized jade suits, and NO.40 Han tombs of Dingxian, as representation for mass-produced jade suits. The details of conceptual framework are as follows.

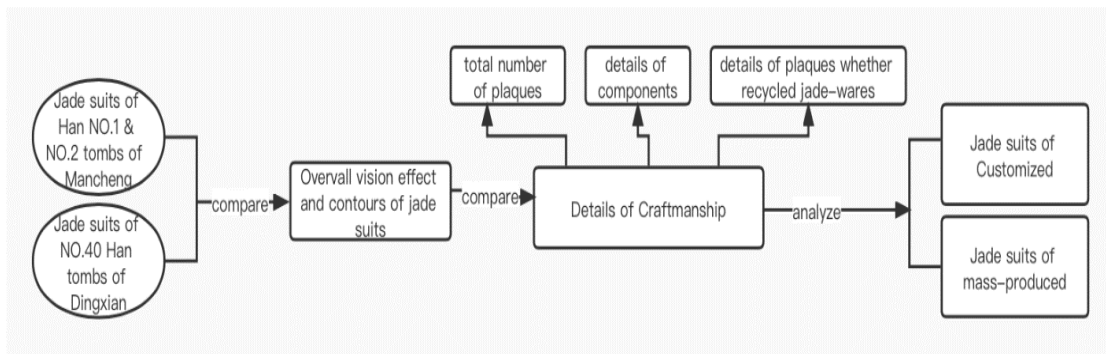


Figure 1 Conceptual Framework

Research Result

1. Overall vision effects of jade suits

One of the most direct ways to compare the two types of jade suits is comparing overall visual effects. Accumulations of differences in data and details lead to strong difference in the overall visual effect of the three jade suits. The following three images from top to bottom are jade suit of Liu Sheng (Figure 2), Dou Wan (figure 3) in NO.1 and NO.2 Han tombs of Mancheng and jade suits of Liu Xiu in NO.40 Han tomb of Dingxian (Figure 4). From the images, we can directly realize the great difference in the overall visual effects between these jade suits, especially the degrees of the outer contours reflecting the curves of the real body.

Compared with Liu Xiu's jade suit, the overall visual effects of Liu Sheng's and Dou Wan's jade suits appears to be more curvaceous and closer to the shape

of the real human body. The ventral and dorsal upper garments of Liu Sheng's jade suit is especially distinctive for its shape of broad chest and bulging abdomen, broad back, contracted waist and bulging hips, presenting highly similar to a real human body. Liu Xiu's jade suit compared to the outer contours of the previous two, on the other hand, lacks variation of curves in appearance, and overall shape appears thinner and stiffer.



Figure 2-(Left) Jade suit of Liu Sheng after restoration. Adapted from *Excavation of Han Tomb at Man-ch'eng (volume 2)*, (plates XIII), by Institute of Archaeology, Chinese Academy of Social Sciences, 1980, Beijing, Cultural Relics Publishing House. Copyright [1980] by the Name of Copyright Holder. Reprinted with permission.

Figure 3-(Middle) Jade suit of Dou Wan after restoration. Adapted from *Excavation of Han Tomb at Man-ch'eng (volume 2)*, (plates CLXVII), by Institute of Archaeology, Chinese Academy of Social Sciences, 1980, Beijing, Cultural Relics Publishing House. Copyright [1980] by the Name of Copyright Holder. Reprinted with permission.

Figure 4- (Right) Jade suit of Liu Xiu after restoration. Adapted from the golden threads jade suits excavated from the No. 40 Han tomb in Ding County, by Hebei Provincial Museum, Department of Cultural Heritage Management, Propaganda Department of the CPC Ding County Committee & Ding County Museum, 1976, *Cultural Relics*, Volume 7, p60. Copyright [1976] by Copyright Holder. Reprinted with permission.

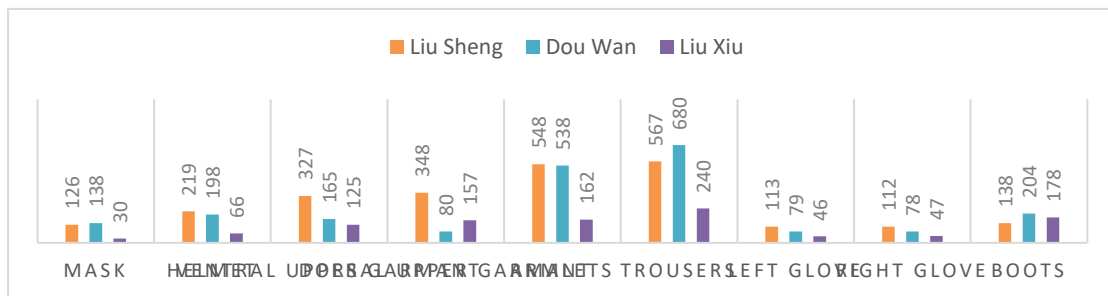
2. Total number of plaques

The total numbers of plaques used in the jade suits of Liu Sheng and Dou Wan are in sharp contrast to that of Liu Xiu. Within a certain range in figures, the difference in the total numbers of jade-suit plaques reflect the differences in the average area of that and more potential information about the two types jade suits reveal.

The variation in total number of plaques within a specific range of statures reflects the variance in average area of plaques in jade suits. The total number of Liu Sheng and Dou Sheng jade suit plaques is 2498 and 2160, respectively. However, the entire number of Liu Xiu's jade suit plaques is only 1,203, which is less than half of the total number of jade suits mentioned before. To avoid the influence of gender disparities, only the jade suits of Liu Sheng and Liu Xiu are used

as examples. The number of plaques, the surface area of the jade suit, and the user's body measurements all have positive correlations. Assuming that two jade suits each used only one sort of plaque in the same area, the taller and stronger the wearer, the larger the surface area of his body, and thus the more plaques are used. In contrast, the shorter the user's stature, the smaller the surface area of the body, and hence the fewer plaques used. However, the difference in stature is limited since the difference in stature between males does not appear to be as great as the difference between adults and infants. Although the difference in jade suit sizes between Liu Sheng and Liu Xiu due to their respective statures is considered, the total number of plaques of the latter is only half that of the former. We can infer that the average areas of plaques in the two jade suits varies due to the difference in the number of plaques. In other words, plaques of Liu Sheng's jade suit have a lower overall area, but plaques of Liu Xiu's jade suit have a bigger overall area.

Table.1 Comparison of qualities for components of jade suits of Liu Sheng, Dou Wan & Liu Xiu



Adapted from Excavation of Han Tomb at Man-ch'eng, by Institute of Archaeology, Chinese Academy of Social Sciences, 1980, p347, Beijing, Cultural Relics Publishing House and the golden threads jade suits excavated from the No. 40 Han tomb in Ding County, 1976, p 366-367, Cultural Relics, 7, 4.

Secondly, the average size of the plaques correlates with the degree to which the shape of the jade suits reflecting the contours of the human body. We could comprehend the visual effect caused by the sizes of the plaques areas by using the original photo and the image after photo mosaic as examples. Images of 1000 pixels and 2000 pixels transformed from the same photo are clearly distinct. Although neither pixelated image can fully restore the original photo's information, the 2000-pixel version will have more accurate information and a clearer image than the 1000 pixel one. Similarly, if the body of the deceased was compared to the original photograph, the jade suit would be the pixelated image. The difference between jade suits with more than 2,000 plaques and 1,000 plaques is analogous to the difference between images in 2,000 pixels and 1,000 pixels. The smaller the average area of plaques utilized in a jade suit and the greater the overall number of plaques employed, the higher degree to which the contours of the human body may be reflected. Conversely, the bigger the average area of plaques utilized in a

jade suit and the smaller the overall number of plaques employed, the lower degree to which the contours of the human body may be reflected. Hence, Liu Sheng's jade suit can better reflect and fit the body's curve since it has more smaller areas plaques. The opposite is also true for Liu Xiu's jade suit.

Using pixelated photos to compare with plaques is simply a theoretical conclusion; the actual situation necessitates a specific study based on the jade suits of Liu Sheng and Liu Xiu. According to observation, the sizes of the plaques used in jade suits were differed in area according to different components, and this is more visible in plaques on Liu Sheng's jade suit than in Liu Xiu's. In the figure below, the size of Liu Xiu's plaques are relatively evenly distributed among the ventral of the upper garment, the left armlet, the left glove and the trousers. The size of the area of plaques used in Liu Sheng's jade suit varied according to the size of the surface area of different components and shape of the torso. The figures (figure 5 & 6) below present this difference visually. For instance, in different components, plaques used in ventral of the upper garment of Liu Sheng's jade suit having a smaller area than the left and right armlets, and the gloves having a smaller area than the left and right armlets. Furthermore, within the same component, such as the trousers, area sizes of plaques varied from larger to smaller based on the change in shape from thigh to calf.



Figure 5- (Left) Details of plaques of ventral of the upper garment, the left armlet, the left glove and the trousers in jade suit of Liu Xiu. Adapted from Blog Sina, by Retrieved from http://blog.sina.com.cn/s/blog_70711ecc0102w635.html. Copyright [2016] by Sina Blog user 1886461644. Reprinted with permission.

Figure 6- (Right) Details of plaques of ventral of the upper garment, the left armlet, the left glove and the trousers in jade suit of Liu Sheng. Adapted from website of Hebei Museum, by Retrieved from <http://bwy.hbdjdz.com/html/goodInfo.html?id=151>. Copyright by Hebei Museum. Reprinted with permission.

This study took jade suit of Liu Sheng as an example of customized jade suits and jade suit Liu Xiu as an example of mass-produced jade suits. Compared to mass-produced jade suits, the customized type of jade suits tended to use a larger number of plaques in smaller average areas. Smaller plaques could be better differentiated to cope with details of jade suits and imitated the contours of human body according to the characteristics of components. In contrast, mass-produced jade suits tended to use plaques with larger average area and relatively average size, making the degree of imitation of contours to the human body somewhat

weaker. The plaque numbers and average areas indicated the relative degree of refinement in the shape and detailing of the two types of jade suits, which is the fundamental reason for the visual variations between the two types of jade suits.

3. Details of components

The components details disclose whether the two types of jade suits knew who the users were before produced. This following section established the existence of this difference by comparing two groups of details from three jade suits. The first group details compared the genitalia covers of the three jade suits, while the second group compared the upper garments of Liu Sheng and Dou Wan's jade suits, as well as the trousers of Liu Xiu's jade suit.

The genitalia coverings of the three jade suits are the first set of details to be compared. Liu Sheng's genitalia cover was altered by a cong-tube, while Dou Wan's was altered by a gui-tablet. Cong-tubes and gui-tablets were two of ritual jades called six auspicious mentioned in *the Rites of Zhou* before Han period, but cong-tubes were rarely produced and used during the Han period, so this recycled jade-ware was most likely an "antique" produced before the Han Dynasty. Since the usage of recycled cong-tube in Liu Sheng's jade suit is the only examples of jade suits found today, this detail might be seen as a reflection of the customization of jade suits based on the users' characteristics. On the contrary, the genitalia cover of Liu Xiu's jade suit differed from the previous two in that its structure was comparable to that of the other components in his jade suit (Figure 5). The two triangular pieces consisted of plaques that originally covered the crotch beneath the abdomen were removed and placed under Liu Xiu's armpits, reflecting the changes of jade suit due to not fitting figure of the user from its original state to current appearance.

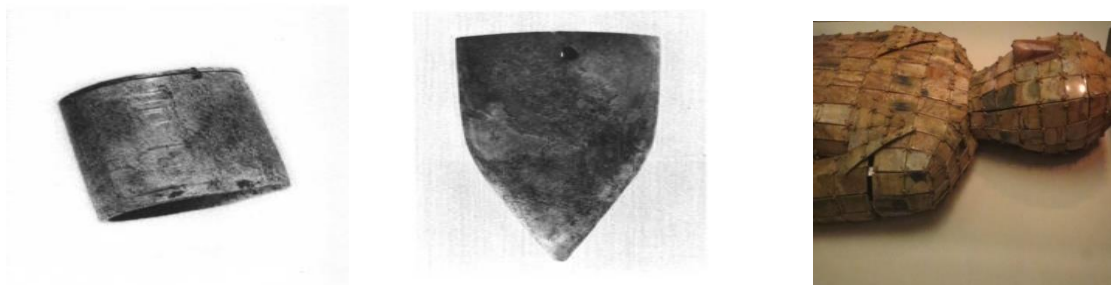


Figure 7- (Left) Genitalia covering made of Cong-tubes of Liu Sheng. Adapted from Excavation of Han Tomb at Man-ch'eng(voloume 2,)(plates CV),by Institute of Archaeology, Chinese Academy of Social Sciences, 1980, Beijing, Cultural Relics Publishing House. Copyright [1980] by the Name of Copyright Holder. Reprinted with permission.

Figure 8- (Middle) Genitalia covering made of gui-tablet of Dou Wan. Adapted from Excavation of Han Tomb at Man-ch'eng(voloume 2,)(plates CCXIII),by Institute of Archaeology, Chinese Academy of Social Sciences, 1980, Beijing,

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Figure 9- (Right) Two triangular pieces consisted of plaques that originally covered the crotch beneath the abdomen. Adapted from Blog Sina, by Retrieved from http://blog.sina.com.cn/s/blog_70711ecc0102w635.html. Copyright [2016] by sina blog user 1886461644. Reprinted with permission.

The second group of details are not comparisons for same part between three jade suits, but it can still be provided evidence of different making ideas for two types of jade suits. Here we compare and analyze their respective production concepts by two details, ventral and dorsal upper garments of Liu Sheng's and Dou Wan's jade suits, and part of Liu Xiu's trousers removed and unfolded to be a pair of short curtains.

By comparing the features of the ventral and dorsal upper garments of Liu Sheng and Dou Wan's jade suits, three elements were revealed: the two jade suits were not created uniformly using the same template. First, materials of thread. Liu Sheng's upper garment was entirely connected by gold threads, whereas Dou Wan's upper garment was connected by silk tapes. Second, plaque polishing. The plaques edges of Liu Sheng's jade suit were well polished, however the plaques used in Dou Wan's jade suit were simply polished on the surface, without processing back and edges, preserving marks of fractures, missing corners, and sawing. The margins of Dou Wan's upper garment were wrapped in silk tapes, which served as a good embellishment for the rough polished plaques and concealed processing traces. Third, arrangements of plaques. Plaques on Liu Sheng's jade suit's ventral and dorsal upper garments were symmetrical, with plaques positioned horizontally and vertically. In contrast, the plaques on Dou Wan's jade suit's ventral top garments varied in shape and size, and the plaques were symmetrical, with horizontal rows. The dorsal upper garment, on the other hand, was simply placed horizontally in rows. Though the variances stated above may be attributable to immature craftsmanship or differences in gender and status, they indicated that two jade suits were not built according to a same template, but independently based on the characteristics of their owners.

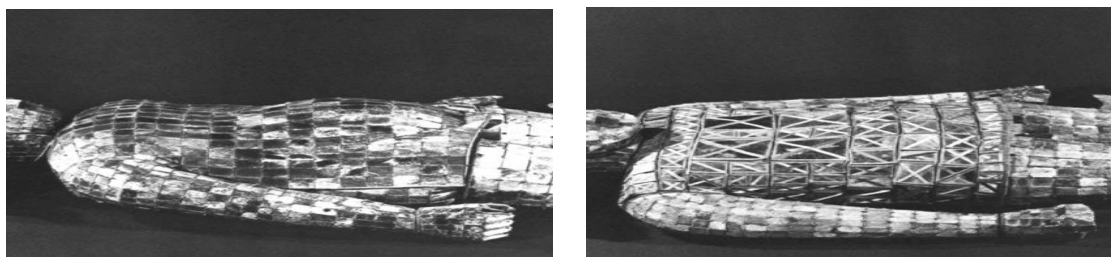


Figure 10- (Left) Details of ventral of the upper garment in jade suit of Liu Sheng. Adapted from *Excavation of Han Tomb at Man-ch'eng*(volume 2),(plates XIII),by Institute of Archaeology, Chinese Academy of Social Sciences, 1980, Beijing, Cultural Relics Publishing House. Copyright [1980] by the Name of Copyright

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Figure 11- (Right) Details of ventral of the upper garment in jade suit of Dou Wan. Adapted from Excavation of Han Tomb at Man-ch'eng(voloume 2),(plates CLXVII),by Institute of Archaeology, Chinese Academy of Social Sciences, 1980, Beijing, Cultural Relics Publishing House. Copyright [1980] by the Name of Copyright Holder. Reprinted with permission.

Liu Xiu's jade suit showed features of mass-production. In addition to the aforementioned changes of position for the triangular pieces originally used on the genitalia cover, the trousers of Liu Xiu's jade suit had also been changed. Overly long part of the trousers was removed and unfolded as a pair of short curtains covering on abdomen, that changes also based on unsuitability of original state of jade suit and stature of user. The details of these alterations revealed important information that there was room for modification in Liu Xiu's jade suit in its original state. The authors of the NO.40 Dingxian Han tomb excavation report suggested that the detail of the truncated trousers could be a strong corroboration of the inference that special jade suits in specific specifications were made by artisans from the Eastern Enclosure of the central Han court for the needs of emperor bestowing. (Hebei Provincial Museum et al., 1976) This view is reasonable. According to the intricate procedure and extended manufacturing cycle of jade suits, future users of the jade suits were unknown for jade-suit producers since the jade-suits must be completed before the emperors bestowed. To deal with the uncertainty of unknown users for jade-suits, the artisans produced the jade suits in a uniform "template" of a greater and longer space for future modification, which was undeniably a reasonable and efficient method.

Thus, the details of Liu Sheng's, Dou's and Liu Xiu's jade suits presented two opposing production ideas respectively, customization and mass-production, based on the premise of whether or not jade-suits users were known. The features of the customized jade suits showed characteristics of the different users, such as genitalia covers and upper garments for Liu Sheng and Dou Wan, based on the premise that the users were clear. Furthermore, in the situation of unknown users, mass-production jade suits sought a balance between manufacturing efficiency and overall effects for jade suits and modified details in Liu Xiu's jade suit showed possibility of existing of a template for mass-production.

4. Whether plaques made of recycled jade-wares

Whether plaques made of recycled jade-wares reflect the amount of jade resources available at the production site. There are patterns of jade bidiscs on the back of some plaques from Liu Sheng's and Dou's jade suits. (Institute of Archaeology, Chinese Academy of Social Sciences, 1980). In contrast, the plaques from Liu Xiu's jade suit did not show any traces of using of recycled jades. (Hebei Provincial Museum et al., 1976)

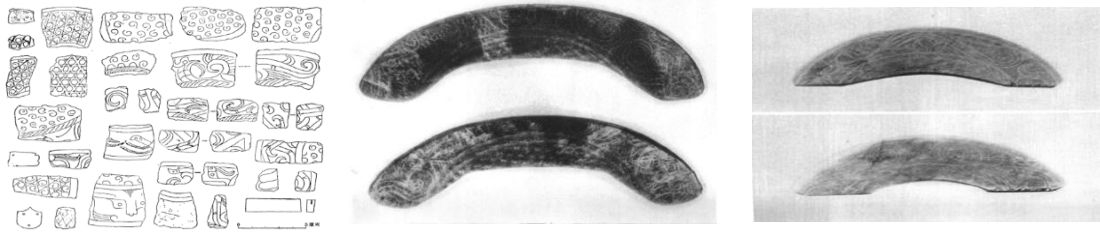


Figure 10- (Left) Details of back of left trouser in jade suit of Nanyue King Zhao Mo shows traces of recycled jades using, *Nanyue King's Tomb of the Western Han*, 1991, p365. Beijing, Cultural Relics Publishing House, Copyright [1980] by the Name of Copyright Holder. Reprinted with permission.

Figure 10- (Right) Huang-arc shape jade hand holders of Liu Sheng show original patterns of discarded jade bi-discs. Adapted from *Excavation of Han Tomb at Man-ch'eng* (volume 2), (plates CV), by Institute of Archaeology, Chinese Academy of Social Sciences, 1980, Beijing, Cultural Relics Publishing House. Copyright [1980] by the Name of Copyright Holder. Reprinted with permission.

Figure 10- (Right) Huang-arc shape jade hand holders of Dou Wan shows original patterns of discarded jade bi-discs. Adapted from *Excavation of Han Tomb at Man-ch'eng* (volume 2), (plates CCXIII), by Institute of Archaeology, Chinese Academy of Social Sciences, 1980, Beijing, Cultural Relics Publishing House. Copyright [1980] by the Name of Copyright Holder. Reprinted with permission.

The use of recycled jades in the manufacture of jade suits demonstrated the shortage of jade resources in vassal states before the mid-Emperor Wu period. Even in powerful vassal states, skilled artisans had to make extensive use of jade material in order to create complete jade suits for vassal kings. Jade suits of Liu Sheng and Dou Sheng were made from discarded jade bi-discs and jade huang-arcs, which were initially in larger size, and were recycled and cut into smaller pieces for making plaques. In addition to the Mancheng Han tomb, traces of the using recycled jades were also found in the jade suits of Nanyue king in similar period (Guangzhou Cultural Relics Management Committee et al., 1991). Details on the using of recycled jades revealed two points. Firstly, there was a certain degree of loss of jade material during the production of jade-wares. Secondly, there might be detailed division of labor in the jade making workshops in Zhongshan kingdom during Liu Sheng's time. (Institute of Archaeology, Chinese Academy of Social Sciences, 1980)

On the other hand, it appeared that the jade resource utilized to make the mass-produced jade suits made by the Eastern Enclosure was much more plentiful. Liu Xiu's jade suits made in last stage of Zhongshan kingdom did not reveal any evidence of the use of recycled jades, and even the extra part of the trousers was cut off to make a pair of short curtains (Hebei Provincial Museum et al., 1976). Thus, from this perspective, Liu Xiu's jade suits were more likely to be one of the mass-produced jade suits made by the Eastern Enclosure instigated by emperors

rather than in workshop of vassal state. Due to two reasons, abundance of jade resources and advancements in manufacturing techniques, caused backs of Liu Xiu's jade suits' plaques did not include any traces of recycled jades.

The first reason was abundance of jade resources. Domestically, in early period, Western Han implemented a parallel system of Fengjian (Feudalism in China, enfeoffment and establishment) and commandery-county in order to stabilize the regime. However, for the purpose of centralization, through policies were established by successive emperors to divide, dismantle and weaken the vassal state, a large amount of land regained gradually. (Dong, 2002; Gao, 2014). Centralization made resources included jades that originally belonged to the vassal states constantly inclined to the central Han court in the middle and late Western Han. In other words, that also meant jade suits made under emperors instigated did not need to be made with recycled jades since abundance of jade resources. Internationally, in comparison to the middle of Emperor Wu's reign, Western Han had a steadier jade resource at the time of Liu Xiu's death thanks to conquests and trade along the Silk Road at the time of Liu Sheng and Dou's deaths (Kao & Zuosheng, 1983). In summary, the two previously mentioned factors allowed for the complete elimination of recycled jades from the mass-produced jade suits bestowed from emperors to vassal kings.

The second reason is that the loss of jade materials has been reduced to a lesser and more manageable level as a result of advancements in mass-producing jade suits. To meet the needs for mass production., Liu Xiu's jade suit demonstrated characteristics of strong intentions of designed and planned including uniform of color tone, delicate polishing, more importantly, basically symmetry for arrangement of plaques in ventral and dorsal upper suits of jade suit. In contrast, in other three jade suits that made in the similar period, only plaques arrangement in Liu Sheng's ventral and dorsal upper suits jade suit were basically symmetrical. Although arrangements of plaques in ventral upper suits of Dou Wan's jade suit was basically symmetrical, plaques arrangement in her dorsal upper suits showed no center line and symmetry and only arranged in horizontal rows. Plaques arrangement in most components of Zhao Mo's jade suit were not basically symmetry. For examples, plaques of the mask in different sizes were arranged together according to the shape of the face, and there are almost no two plaques of same area and shape in mask. Additionally, the quantity of plaques used in the left and right trouser—226 in the left and 388 in the right—was substantially different.

The plaques in Liu Xiu's jade suit also offered crucial hints regarding the advancement of the manufacture process. Plaques of Liu Xiu's jade suits were more evenly sized than those of Liu Sheng and Dou Wan because they were produced in lesser quantities and had similar measurements. Therefore, Liu Xiu's plaques had a lesser possibility of error during manufacturing, which reduced the consumption of jade materials and improved production efficiency while also generating a visual distinction between Liu Xiu's jade suits and those of Liu Sheng and Dou Wan. Since Liu Xiu intended to pursue the overall effect and production efficiency of mass-produced jade suits, the simplicity of his jade suits came about as a result of their design and planning for mass production.

Discussions and conclusion

Based on a comparison of the overall visual effects and details of the production processes of jade suits excavated from three tombs of the same lineage of vassal kings in the Zhongshan kingdom during the Western Han period, this study analyzed the differences in production concepts and methods of jade suits. as unique ritual jade-ware in Han dynasties with a powerful symbolic connotation of power, its differences in the production concepts and manners of jade suits mirrored changes in the relationship between the central government and the vassal regimes in the Western Han.

According to previous analysis and comparison of the overall visual effect, gaps in the number of plaques, details of components, and whether recycled jades were used, it can be reasonably inferred that the function of making jade suits returned to the central government from the vassal states during Emperor Xuan's reign (July 74 B.C.-49 B.C.). Many scholars believed that vassal kingdoms owned their jade-making workshops for making jade suits in the vassal kingdoms of Zhongshan, Chu, Liang, and Nanyue during the early and middle period of Western Han dynasty, (Technical office of the Institute of Archaeology, Chinese Academy of Social Sciences,1972; The Archaeological Team at Tombs of the Chu Kings, 1998; Xuzhou Museum, 2003; The CPAM of Shangqiu City, Henan Province, Institute of Cultural Relics and Archaeology of Henan Province, The CPAM of Yongcheng, Henan Province, 2001; The CPAM of Guangzhou, Technical office of the Institute of Archaeology,CASS,1991) However, Liu Xiu's jade suit was distinguished from others that were considered made for individuals before the middle period of Emperor Wu, for thinner and stiffer contour and details of smaller number of plaques, components that were flexible for different statures, and not using recycled jades demonstrated a strong tendency of mass-production.

These differences in details indicated different production concepts and methods between three jade suits. Han dynasty emperors firmly believed in close blood relations helped for their regime maintenance, and the rise and fall of vassal kingdoms were directly related to the blood relations between vassal kings and emperors. (Gao, 2014) Since Liu Sheng had close blood relationships with Emperor Jing and Emperor Wu, Zhongshan kingdom had a high political and economic statuses during Liu Sheng's period. From the jade suits materials that had been found, jade making workshop in Zhongshan Kingdom was able to make jade suit for its the kings and queens. Liu Xiu, the sixth generation and last Zhongshan King, who has distant blood relationships with Emperor Wu's successors, Emperor Zhao and Emperor Xuan. Consider overall effect and craftsmanship details of Liu Xiu's jade suit, it was more likely to be one of mass-produced products that made for vassal kings from vassal kingdoms by the East Garden craftsmen under emperor's mandate. At the same time, at the end of the period,Zhongshan kingdom was no longer capable of making jade suits for its vassal kings. From perspective jade suit making, differences of jade suit making between Liu Sheng's, Dou Wan's and Liu

Xiu's can be evidences for change of jade suits from customized for individuals that made in workshop in vassal kingdoms to mass-produced made by artisans from the Eastern Enclosure. This difference also showed that there was no unified and stable production method for jade suits making in the whole country, at least in the middle period of reign of Emperor Wu when Liu Sheng and Dou Wan died, although workshops had detailed division of labor and independent and mature techniques within vassal kingdoms.

From a more macroscopic perspective, philosophy and production methods changing of jade suits making from customized for individuals to mass-produced in was consistent with the political and economic situation in which the kings and their vassal states declined in power after Emperor Wu and could no longer contend with the central government. At the same time, rules of jade suit using for vassal kings might differed from early and middle period in reign of Emperor Wu, not as before, and vassal kings worn in jade suit after their deaths were not a deservedly right due to their status as vassals (Department of Archaeology of Shandong University et al.,1997), but as a reward for vassal kings from emperors for their loyalty.

From ordinaries to emperors in Han dynasty, there was a custom and consensus for elaborate funeral, people believed that death was a continuation of life (Yü, 1964). In Bao Pu Zi, compiled and noted by Ge Hong (283 A.D.-363 A.D.), a famous Taoist, he said: "Jade plugging the nine orifices can keep the dead from decay." Due to its rareness and was considered as an object collection of vital essences according to documentary source, jade suit was believed that capable for helping deceased to resist death and decay of bodies (Xia, 1983, p31), hence wearing jade suit for vassal kings should be a privilege. Common feature of punishment from emperors to vassal kings who tried to subvert the regime was that deprived the privilege of wearing jade suits when died. The punishment was not only kind of humiliation and denial to vassal kings, but also deprived them of their privilege for resisting death and decay of bodies, also it acted as a warning and deterrent for other vassal kings. In other words, the use of jade suits was a means for control over the vassal kings through spiritual and moral dimensions for the Western Han emperors to secure centralization and regime. The change in production and use of Liu Sheng's, Dou Wan's, and Liu Xiu's two types of jade suits corresponded to the return of jade suit production from vassal states to the central government against the background of rising centralization, which also reflected changes in relations and status between vassal states and the central government.

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