

Relationship between South China and Vietnam: Technology, Function and Distribution of Jade Stone Ornaments

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Introduction:

The practice of ring ornament making in China began over 5,000 years ago during the early Neolithic period. In Yangshao culture and Longshan culture, in the midstream of the Yellow River, these ring ornaments are made from stone and two varieties of Jade: jadeite and nephrite. Nephrite was the most commonly used, and its value depended more on the quality of artistry involved in the shaping and the carving of it, than on the actual stone itself. Most of the jade used in China prior to the 17th and 18th centuries was nephrite. In this article, “jade” refers to nephrite. Many jades were excavated from various manufacture sites. Here, I will analyze the relationship between various cultures based on the technology and function of the artifacts. I will focus on three elements: stone tools, uncompleted products, and completed products.

1. Jade ring and stone ring craft workshop in Neolithic Age of Central China

1-1 Distribution of ring craft workshop sites

Large amounts of jade ring and stone ring ornament workshop sites from the middle of the Neolithic Age (BC3500) were discovered by many archaeological excavations at Northern and Central China. The excavated artifacts include uncompleted products, stone tools, raw materials, and disc cores. Many scholars focused on the manufacturing technique of these ornaments and tried to explain how the skills had been developed and distributed to wide areas of China. However, many questions regarding the manufacturing techniques still remain. Here in this article, I will discuss the distribution of workshop sites, uncompleted products - especially the discs and disc cores, tools used in each steps in the making process, raw materials, and completed ring ornaments. Based on this analysis, I will try to understand whether the technique had

been changed or not from the Neolithic Age to the Bronze Age. Then I will focus on workshop sites in South China to figure out how the jade ring and stone ring making techniques had been distributed. Finally, I will expand to a larger area to find the connection between Southern China and Northern Vietnam.

In the Chuandao (串 刀) site, located in the Inner Mongolia Province, 45 artifacts had been found in one large pit. The items include uncompleted stone rings and tools that resemble stone hammers and drill tools. Another site called Zhaizi (寨 子) is located near the Chuandao site. From this site, archeologists also found 12 uncompleted stone rings and some tools. Both sites date back to BC 3500 (Cui 1992: 607-614).

The Baijiacun (百家村) site, in the Hebei Province, was excavated in the 1960's, but the archaeology report was published in 2010. According to the report, large amounts of stone ring discs, uncompleted rings, and tools such as hammer stone, drill stone and grind stones had been found (Li, Zhao and Lin 2010: 3-8).

The Beifudi (北 福 地) pre-historic site, located in the Yi County of Hebei Province, is a pre-historic Neolithic village site that had been excavated recently. Chinese archaeologists believe it is one of the most important sites so far. The site, is located on the northern banks of the Yishui River, contains artifacts from around the same time as the two known Neolithic cultures; the Cishan Culture (8000 – 5500 BC) and Xinglongwa Culture (6200 – 5400 BC). These cultures were located on east of the Taihang Mountains, thus filled an archaeological gap between the two Northern Chinese cultures. The total excavated area is more than 1,200 square meters and jade “Jue” (玦), disc cores, and the tools that had been found from this site (Duan 2007: 357).



Fig 1. Distribution of Ring Workshop Sites in Neolithic Period to Bronze Age

The Wenjiatun (文家屯) site in Fushui, Liaoning province had been excavated by Japanese archaeologists in the 1930's, and the artifacts are being displayed in Kyoushuu University, Japan. According to the reports, jade disc cores and stone tools were discovered from here. Meanwhile, jade disc cores were also excavated from another nearby site, Guojiacun(郭家村) site, located in Liaoning province (Kyouto University 2002: 198).

The Yangshao (仰韶) Culture was mainly distributed in Central China. Currently we do not have enough archaeology sites of stone ring workshops, but there are some artifacts from Xipo(西坡) site that showed that the technique used to obtain the disc core from making holes, was to use drills with pipe tools such as bamboo. This was the step in the production of these artifacts (Ma, Li, and Yang 2006: 67-73).

Lingjiatan (凌家滩) is the archaeological remains

discovered in 1985 and is located in the Tongzha Township of Hanshan County. It covers an area of 1.6 million square meters and dates back to the Neolithic Age, 5,800-5,300 years ago. During the last five excavations since 1987, various ruins were unearthed, ranging from altars, tombs, red pottery clay squares and wells, to settlements. Approximately 2,000 cultural relics, including some 1,100 pieces of jade ware were also unearthed from the site (Tian 1999: 18-29).

The Lingjiatan site is also a famous Neolithic burial site that the jade ornaments had been excavated from. The location of this site is between the Yellow River and Yangtze River. Many jade ring ornaments were reported to the public, as well as numerous production techniques and research results from different areas of researchers. Here, I would like to focus on M20 and M23. These two tombs belong to the third excavation by the Anhui Provincial



Fig 2. Liangjiatan site M20 and M23 (5500-5300BP)

Institution of Archaeology. During the third excavation, they found 29 tombs in total, M20 and M23 are two of them (Fig2). According to the archaeology report, 111 jade disc cores and some raw materials had been found from M20. From M23, they found two disc cores, drill stones, grind stones and stone hammers. Usually uncompleted jade disc cores are found in workshops or residence areas and not in the tombs. Some researchers think these tombs were special tombs and belonged to a high technical expert (Zhang 1999: 14-17). I agree with this opinion. Next, I would like to focus on the quantity of the jade discs, and the type of the disc cores. Fig 2 shows that the discs were not basic discs from raw materials. They were made from basic discs. This is the second disc from the ring ornament making process, and I call this a disc core.

The Liangzhu (良渚) Culture, dates back to 3,310 – 2,250 BC, is located in East China. Well known for its high quality and high number of jade artifacts. The Liangzhu Culture consists of over 100 sites. Within them, 30 have been excavated, all located in the south and east parts of Lake Tai on a peninsula formed by the Yangtze River and Hangzhou Bay.

The jade artifacts from the Liangzhu Culture were very famous. Judging by the high number and outstanding quality of jades found in their tombs, Liangzhu must have placed great value on them. In this site, archeologists excavated the second largest walled city in ancient China. They also found remarkable remains associated with these Neolithic peoples, including palace foundations,

royal tombs and craft workshops. So far the details of the craft workshop are not very clear, but we still have some evidence that we could discuss here (Nakamura 2002: 186-200).

According to the published archaeology reports, there are 5 sites that might be the craft workshop sites in the Liangzhu Culture areas. One is the Mopandun (磨盘墩) site, located in Dantu, of the Jiangsu Province. One jade disc core with other tools and raw materials were excavated from this site. The other 4 sites are Jinsha (金沙) in the Jurong, Jiangsu province, Yangduicun (杨堆村) in Deqing, Fangjiazhou (方家洲) in Tonglu, and Laoheshan (老和山) in Hangzhou of Zhejiang province. The Laoheshan site has one small jade disc core which is displayed in the Zhejiang Museum (Fig 3).

1-2. Jade and stone ring ornaments techniques and tool composition:

The uncompleted ring artifacts are mainly made of stone or jade discs that could be divided into two types: one is made from raw materials which I will call “basic discs” (T1). Another type is made from basic disc by cutting the disc from the middle when drilling the hole for the ring and I will call it “disc core” (T2). These two types of discs exist in the uncompleted ring artifacts. As listed above, there are 9 sites in Central and East China, and the sites can be separated into two groups. The first group includes Chuandao (串刀), Zhaizi (寨子) and Baijiacun (百家村) sites, and from there we only found the first type of disc – the stone disc (T1). The workers were trying to drill







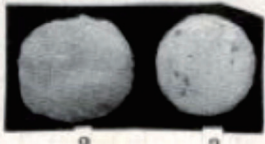











Steps	T1		T2	
	Artifacts	stone tools	Artifacts	stone tools
1	 1	 ChuanDao site	 1	 1
2	 2	 1	 2 3 1-3 FangJiaZhou site	 2
3	 3	 2 1-2 BaiJiaCun site	 XiPo sit LaoHeShan site	 3
4	 4		 by Wuseihong LingJiaTan site	 1-3 LingJiaTan site
5	 5		 Hac sa site	
6	 6 1-6 BaiJiaCun site By [Wenwuchunqiu]		 LingJiaTan site	

Fig 3. Ring Artifacts and Stone Tools from Neolithic Period in China

a hole in the middle of the disc but failed during the making process. The second group contains 6 sites: Fangjiazhou (方家洲), Laoheshan (老和山), Lingjiatan (凌家滩), Beifudi (北福地), Wenjiatun (文家屯) and Guojiacun (郭家村). The artifacts from these sites contain jade disc cores belong to the second type (T2). These two types of discs represented two methods of manufacturing techniques from

Neolithic age of China (Fig3).

• Method one uses the following processes(T1):

1. Use stone saw to cut raw material into thin flat shape;
2. Use stone hammer to make the thin flat stone into round shape;
3. Use grind stone tool to polish round disc to form ring ornament shape;

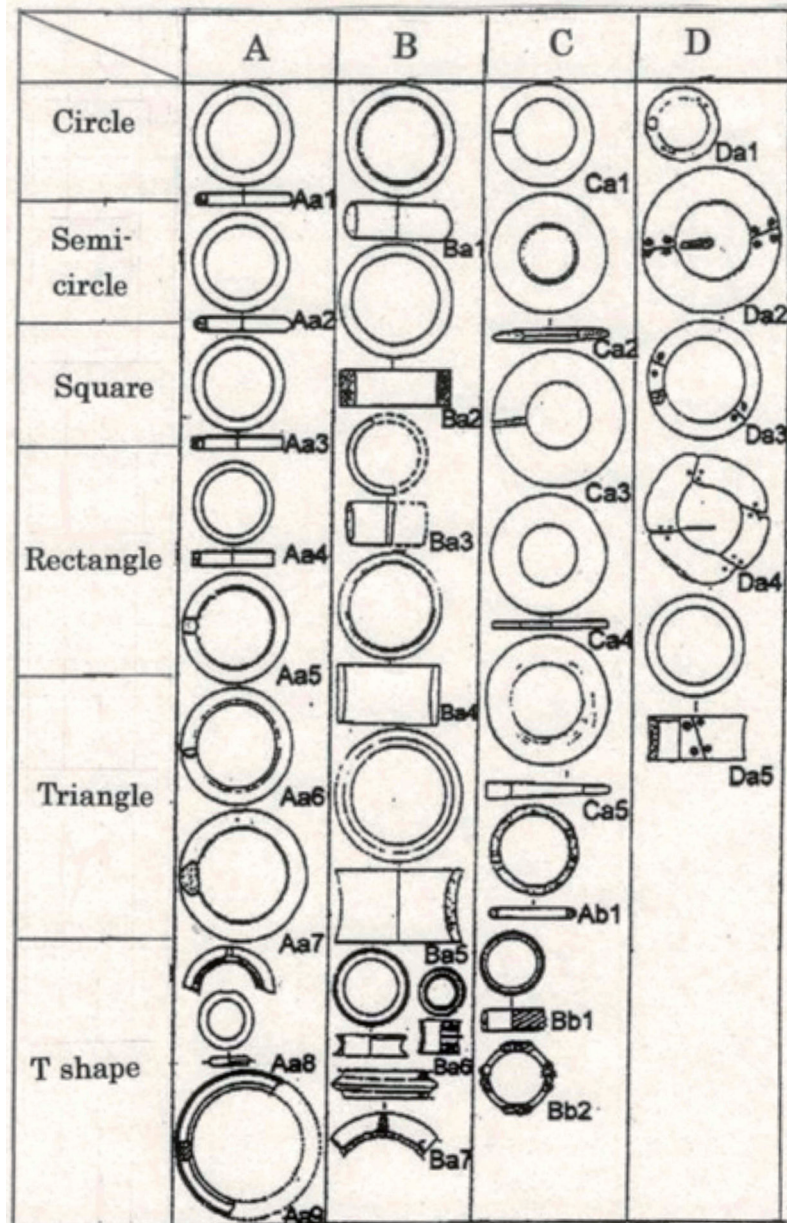


Fig 4. Classification of Ring Artifacts

4. Use interior grind stone tool to grind the hole from middle of disc slowly;
5. Use exterior grind stone tool to prepare and get ring ornament in shape;
6. Finally, polish the whole ring for completion.

In the process for this type, we cannot get any disc core from the round stone because workers used the drilling technique to make the hole not the pipe tools.

• Method two(T2):

It follows the first and second step as technique one, but from step three, there are big changes. The workers used special tools such as pipes which could be made of bamboo, a hard

small drill with wheel control by hands, etc. This technique not only gets the hole but also keeps the core taken from the hole and be used again. Because the raw materials were not easy to get, this type of core was mostly jade.

Here we should pay attention to one important thing -- the tools used in these two methods. As I mentioned above, these two methods represented two different techniques, this means different tools should have been used. However, according to the artifacts we found from all excavated sites, the tools were the same (refer to Fig 2). How did the workers use the same tools in two methods? Scholars have different opinions. I am not the expert in this area, but I

believe there must have been some reasons and more facts behind it that needs further research.

1-3. classified the types of ring ornament in Neolithic period:

There are four types of Ring Ornaments (only bracelets) in the Neolithic age of China based on its sectional view (Fig 4).

Type A was a basic and common ring that existed in all of the Neolithic Age to the Bronze Age periods and in a wide range of areas. According to its sectional view, the basic section of A is square, but based on the details of the shape; type A can be further divided into 9 different sub-types of sections, including the T shaped section.

Type B was the second most popular type in Neolithic and was more common in the Bronze Age. The basic section of B is a tall rectangle, and can also be further classified into 7 smaller types based on their section details, including the T shaped section.

Type C was more popular in the Western, Central and Eastern parts of China, and sometimes they can be used as etiquette for the higher class of the social stratum, especially in the Qijia Culture, Liangzhu Culture and Bronze Age such as Yinxu, the capital of the late Shang Dynasty. This type of bracelet has wide section, and was not suitable to wear on arm.

Type D only had narrow distribution areas, which was limited to West and Central China. It was often found in the Taosi Culture, Qijia Culture and the Dawenkou Culture. The feature of this type is that two or three parts were put together inside the hole of the ring and not well formed in a circle. But you can separate them in pieces and use in different ways such as a pendant with a semi-annular shape.

2. Jade Stone ring craft workshop in late Neolithic and Bronze Age of China

2-1. Distribution of ring craft workshop sites

According to the published archaeology reports, more ring ornament craft workshop sites from the Bronze Age have been found more in South China than Central China. However, in Central of China at the early Bronze Age, state formation started from the Erlitou (二里头) Culture. The

Erlitou site in the Luoyang, Henan province, archaeologists found a large number of excellent jade artifacts and turquoise craft workshops in a closed area.

The Sanxingdui (三星堆) site in the Chengdu, Sichuan province is one of the most famous early Bronze Age site in South-West China. Excavated in 1970s, archeologists discovered large number of jade artifacts and bronze masks. These unique artifacts attracted great interested of scholars. But here I will focus on jade craft workshop that had been found in north of the site. We cannot certainly say there was a craft workshop, because it is only a big pit with large number of uncompleted jade products and grind tools, and looks like it was just storage for craft workshop (Chen 1992: 45-49).

So far, we have found more ring craft workshops dating from late Neolithic to early Bronze Age with concentrated distribute in South China.

According to Tang Chung's research, in Pearl River delta, 33 ring craft workshops had been found, or confirmed. Fig.1 shows the location of the sites. Here I will focus on four sites which were excavated and all of them are large scaled craft workshop (Tang Chung 1994, 1998: 215-218, 243-245).

The Hac Sa (黑沙) site in Macau, excavated in the 1990s, is a rock and crystal workshop site located on the Coloane Island of Macau. From Hac Sa site, some chip stone tools have been found, this type of stone usually be used by stone ring manufacturing as disc cores (Tang 2013: 337).

The Baojingwan (宝镜湾) site in the Zhuhai, Guangdong province, has been excavated during 1997-2000. This is a multi-culture accumulation site that dated from the Neolithic Age to the Bronze Age. From the Neolithic Age, they have found 204 stone rings, 91 disc cores, 42 discs, 17 crystal rings, and 5 crystal discs. These stone ring workshop dated from the late Neolithic period to the early Bronze Age (Guangdong Archaeology Institute and Zhuhai Museum: 2004).

The Yonglang (涌浪) site, located in Xinjie of Hong Kong, was excavated in the 1990s. From this site stone rings and uncompleted rings, discs, disc cores and stone tools were found. This stone ring workshop dated to late

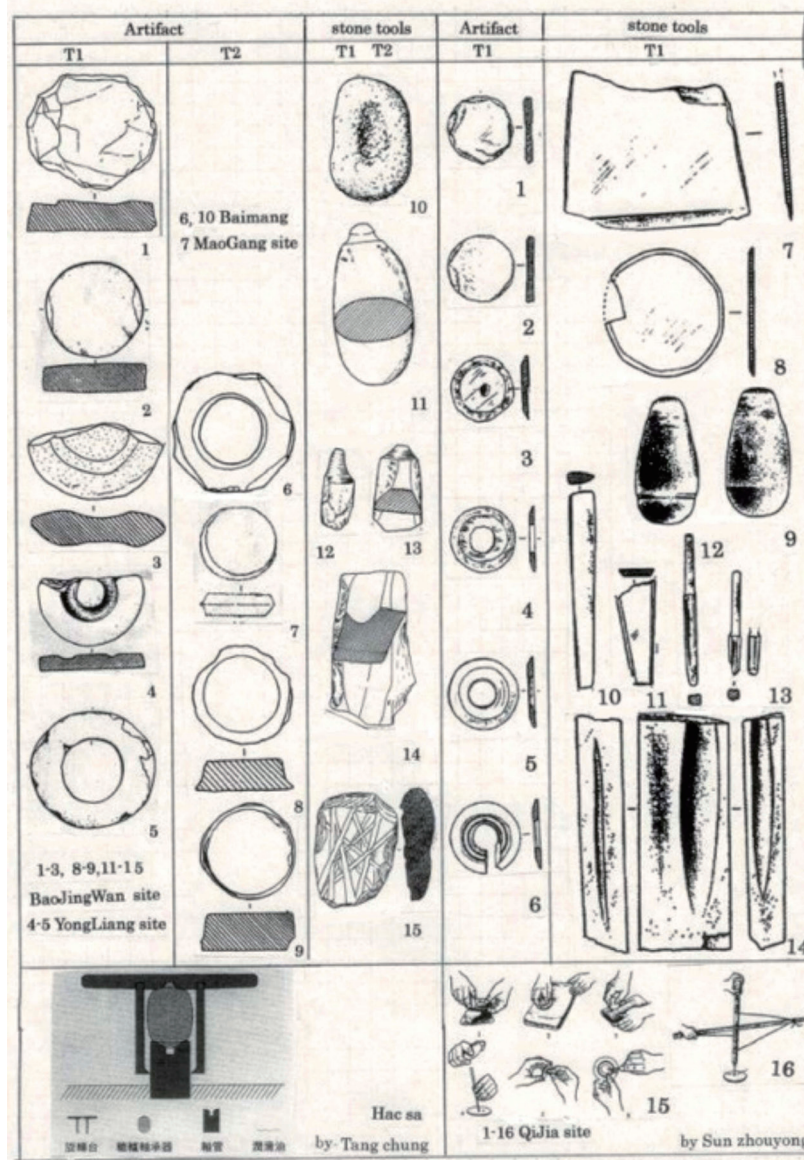


Fig 5. Ring Artifacts and Stone Tools from Late Neolithic to Bronze Age in China

Neolithic period (Hong Kong 1997: 35-53).

The Baimang (白芒) site in Dayu, Hong Kong was also excavated in the 1990s. According to a report, the excavated artifacts can be divided into two periods, which are late Neolithic and late Bronze Age. From the late Neolithic period, there was only a small workshop and a few artifacts. From the late Bronze Age, ring craft workshops became big and 170 discs, 228 disc cores, 64 earring products and many tools were found. The First period dated back to 3,750 BP and the second period dates back to 2,840 BP, same time as West Zhou period (Tang, Shang and Huang 1997: 54-63).

The Zhouyuan (周原) site in the Fufeng, Shaanxi province was the capital of West Zhou, from there a large

stone and jade earrings(玦 Jue) workshop has been found. According to the archaeology report, it is called the Qijia (齐家) workshop. So far, 42 pits have been excavated from multiple workshops which belong to 4 areas. This shows how large the craft workshop was. It started from the early West Zhou period to late West Zhou period. There were 871 uncompleted products in total, and 1,163 various tools. More raw materials have been found as well (Sun 2010: 335-359).

2-2. Techniques and stone tool composition in Bronze Age

Fig.5 shows some types of stone tools which were

excavated from craft workshop sites from Bronze Age, and the examples represented the manufacture process. The left part are the late Neolithic to Bronze Age from South China, and right part are all artifacts excavated from Zhouyuan Qijia site of West Zhou period in Central China. Comparing the tools in different periods and locations, we cannot see more differences between them. This means that from the early Neolithic to the Bronze Age, from Northern and Central China to Southern China, there were no big changes of ring craft making technique between the periods and locations. They were using almost the same stone tools for ring ornaments making. However, depending on the locations, the raw materials are different. So far the research results show that local craft workshops were usually located nearby raw material sources and we do not have enough evidence to judge whether the raw materials were transferred from one place to another. Therefore, in the Bronze Age, we also have two types of making techniques as early Neolithic and the middle Neolithic Age, not only the making process technique, but also the stone tools. Although there are different opinions between scholars, I have judged objectivity based on the artifacts.

3. The functions of ring ornaments from craft workshops

3-1. specialized workshops as an Jue(玦) manufactory in Bronze Age

Ring ornaments can be divided into two large groups: one is “Jue” (玦), and can be worn as earrings, and another is “Huan” (环), which can be worn as bracelets and finger rings. Fig.1 shows the distribution map of 43 workshop sites. According to the artifacts from these 43 sites, in the early and middle Neolithic Age, almost all workshops produced both types of Jue (earring) and Huan (bracelet). Only 5 stone workshops had no Jue (earring). However in the Bronze Age, especially during late Bronze Age, we found some workshops that only made one type of ring ornaments. Some examples of the workshops include BaiMang in Hong Kong, Baojingwan in Zhuhai, and Qijia in Shaanxi Fufeng. All these places produced mainly Jue (earrings) from stone, jade or crystals, and only a few bracelet products. This means that the craft workshop began

to Specialized their products. This is a big change from the Neolithic Age as it tells us that craft workshops are now probably used not only for community use, but also for trade or exchange purpose between different locations as industrialization.

3-2.the connection with T section bracelet between China and Vietnam

The T section bracelets have appeared in Central China from the middle Neolithic Age, but until the early Bronze Age they were not very popular. However, starting early Bronze Age, T section bracelets with jade Jue (玦) and Zhang (璋) had been found from Nobel burials or ritual ruins, a special ritual symbolic object. So far we have been found from Erlitou in Henan province, Sanxingdui in Sichuan, Tengxian Qianzhangda in Shandong and Xingandayangzhou in the Jiangxi Province, and even in Yinxu, the late Shang capital in Henan Province. We also found T section bracelets inside a bronze veal as treasure in Ningxiang, Hunan Province. Zhang (璋) have appeared in Central China from the late Neolithic period, and was popular in the Erlitou culture period to the Shang dynasty.

We have found several Jue (玦) workshops at Central and South China, such as Qijia in Shanxi, Baimang in Hong Kong, Baojingwa in Zhuhai and HacSa in Macau. So far we have not yet found enough of this kind of T section bracelets from workshops in the same period and same place. Only the Yonglang site has found T section bracelets.

The Phung Nguyen site, which belong to the the Phung Nguyen Culture in north of Vietnam, is one of the ring craft workshops, and lasted between B.C.2,000-1,000. After Phung Nguyen Culture, Dong Dau, Go Mun Culture happened between B.C.1,000-500, and then the Dong Son Culture followed and lasted between B.C.500-A.D.100. As Dr. Yoshida have mentioned in his article, three of these cultures chronologically correspond to the late Neolithic period to the Bronze Age. 16 sites were excavated as ring workshops in north areas of Vietnam (Yoshida 2012). According to Dr. Ha Van Tan’s article in the late 1980s, the Phung Nguyen site was excavated many times and 540 bracelets, 189 stone tools, 18 Jue (玦) and 2 jade zhang (璋) were found. Among the 540 bracelets, three types of section

shapes were discovered: semi-circle, triangle, and the T shape, but we do not know the percentage of each type (Ha van tan and Tang 1988: 11-16 and 1994: 215-218).

The Trang Kenh site, located at the Ang Rong Mountain in north of Vietnam, is another one of the biggest ring craft workshops. According to the chronological age of C14 measured by the Australian National University, it dates back to about 3,340-3,005BP, and belongs to the Bronze Age. This site excavation started in 1960s and lasted until 1990s. According to the excavation in 1996, they have found 277 bracelets including T section types, 11 Jue (玦), 35 beans, 2 finger rings, 223 drill tools, 500 grind tools, 6,318 stone saws and several hammer stones. According to Dr. Tang Chung's research results, the Trang Kenh site used three system techniques to make rings (Tang 1997: 243-245).

The first one is a large type of ritual jade products, including Zhang (璋) and Ge (戈). The stone saw was mainly used to cut raw material into thin pieces.

The second is bracelet-likely ring, this is the main product of this site, they use drill techniques to cut bracelet holes and use the disc cores for second use to make small sized rings.

Third are stone tools and beans products.

Looking at the size of the site, which is about 10 thousand square meter, and the completed workshop system, we can guess that this site might had been one of the specialized manufacture in the Bronze Age, and the technique continued with the Phung Nguyen Culture in the same location.

As Fig.1 shows above, in South China, many ring craft workshops from the late Neolithic to the Bronze Age were found, but the main products from the craft workshops were not bracelets (环), it was Jue (玦). Of course, archaeological evidences always have limited information for research and we all need to wait for the new discovery. But from the current excavation materials, we can focus on the craft workshop functions, and it can help us getting some clue on what kind of connection was there between South China and Vietnam. In here I just want remind that maybe we should pay attention to what kind of products were made in the workshops, the function of the rings, as

well as the technical skills. Especially in the Bronze Age, workshops had specialization and the product functions became more important.

Compared to the Jue (玦) workshop distribution in central and Southern China, North Vietnam had mainly bracelets workshops; this is an interesting distribution way for both workshops in the Bronze Age between South China and North Vietnam. Of course, we are still not sure what kind of connection there was between these two areas. To research this topic, we have to know the actual chronological data for each workshop sites and how the production of the materials occurred, as well as the techniques in both areas.

Conclusion:

In this article, I have collected the archaeology sites with the workshops which have uncompleted products, raw materials, stone tools and ring artifacts from north China to South China. I also analyzed the composition of the stone tools and the techniques used for the manufacture procedures that many scholars have researched already. Now I would like to bring my analysis to a conclusion as below:

Techniques: in the Neolithic period, North and Central China workshops have used techniques that can be classified into two types as shown in Fig.2: T1 and T2 type. However, depending on the special quality of the raw materials such as stone or jade, workers decided to use one or both of them. Usually, they use T1 for stone raw materials that can be seen in the Baijiacun and Chuandao sites, and used T2 for jade raw material, because when use T2 technique, workers can get disc core and take disc core for second use, this technique helped to avoid wasting the jade materials, which was very important in that time. When the period changed to the late Neolithic period and Bronze Age, how have the technique transformed? Usually, techniques should have improved by the next period, but I have no evidence to prove this because not only the technique, but also the type of stone tools had no big differences between the Neolithic and Bronze Age. Also I will emphasize that technique have strong connection with special quality of the raw materials and the function of products.

Functions and distribution: By "function", I mean

workshop function. So far most of the scholars are concentrated in the detailed technique analysis, ring products or technique transformation between regions and regional diffusions. But ring workshop sites show that they have different functions with products in different regions in same period or between. Especially in the late Neolithic to the Bronze Age in south, we have found about 30 workshop sites, but almost all of them are Jue (玦) products manufactories, and less bracelet manufactories had been found in both North and South China. Instead of ring workshop sites, both bracelets and Jue (玦) artifacts from tombs and ritual burials in the same period were found in large amount, especially the T section bracelet. The Phung Nguyen site and the Trang Kenh site can be represented as the ring workshops of Vietnams from late Neolithic to Bronze Age. Their main product was bracelet, which was opposite from South China. The distribution of workshop sites shows us the different functions of the workshops between South China and Vietnam in the late Neolithic period to the Bronze Age. How the interpretation of this should be is the next topic, and we need more chronological data and details of many kinds of information from workshop artifacts and technique analysis results.

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