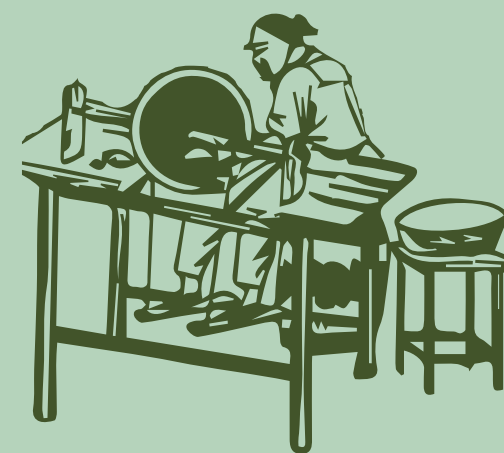


香港非遺項目展覽

玉石工藝之訣竅

The Secrets of Jade Craftsmanship



日期 Exhibition Period

2017.8.15 ——— 9.30

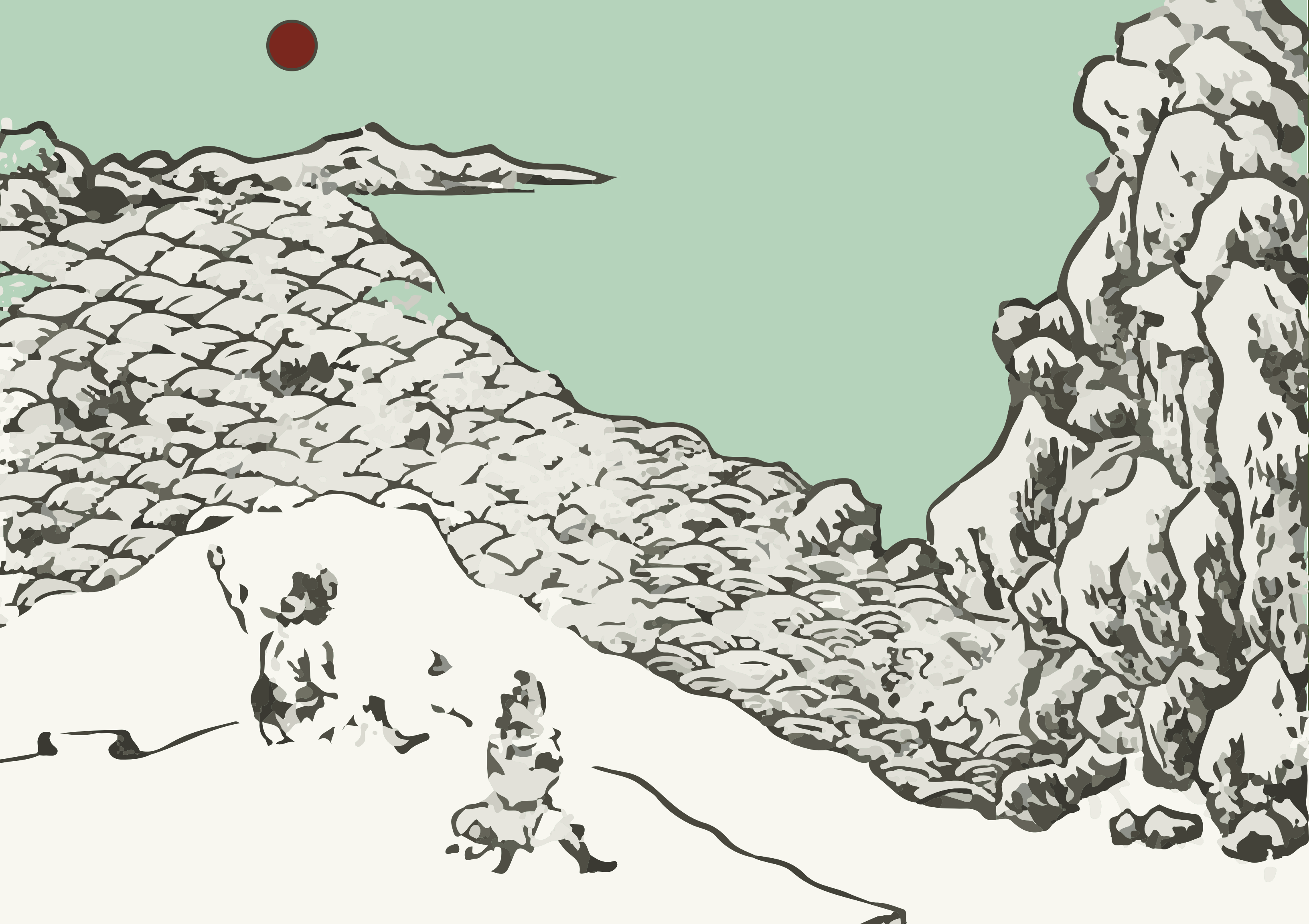
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The Story Begins

In 1968, American and Japanese jewellery traders arrived Hong Kong.

They were here for a mission: cut cost.

For years they had been buying finished or half-finished jade and stone products from Hong Kong traders, and reworked the purchase into jewellery for the markets. They realized that they had to incorporate the working of raw materials into their business, because that would save them both time and costs from sourcing.

So, here they arrived Hong Kong, where they were familiar, successfully buying raw jade back home. In less than five years, however, the same group of traders returned to Hong Kong. Frustrated, they sold the jade stone back to the same group of Chinese traders from whom they bought previously. Advanced machines were no match for cutting and grinding the stone into shapes desired.*

When Mr. Lai Kai-cheung, the chair of the Hong Kong Jewellers' and Goldsmiths' Association, proudly told a journalist this story, he indicated that his predecessors were not unaware of new machinery, but they knew very well that the new device would not be compatible with what they learnt from their ancestral craftsmen.

What, after all, is the secret in jade and stone work? The answer, perhaps to our surprise, is found nowhere but in the stone. The ancient Chinese craftsmen, whose skills may be traced as far back as the Neolithic times, transmitted to us a rich package of knowledge and experience in examining different stone types. However, this set of knowledge, as well as the skills necessary in cutting the stone, had gone unrecorded for millennia, until the modern term intangible cultural heritage was coined and applied to that. This exhibition is dedicated to the craftsmen who made up an important part of our history. We shall begin with a Chinese illustrator, named Li Chengyuan, who left with us the most complete series of jade and stone manufacture. The setting was Beijing.

The year was 1906.

*Story interpreted from Overseas Chinese Daily News 1971.4.18.

玉石專家黎啓章談
珠寶玉石展規模大
現時世界翠玉以本港為製作場

(港訊)本港為全世界玉石最大買家，規模宏偉，假貨連城，琳琅滿目。香港珠寶展會已訂於本月廿九日起，一連四天在大堂低座展覽廳舉行。此次展覽會已訂於本月廿九日起，一連四天在大堂低座展覽廳舉行。珠寶展會主辦人黎啓章，參加者約四十家，均為本港著名之珠寶玉石商號及專家。珠寶商主辦，參加者約四十家，均為本港著名之珠寶玉石商號及專家。珠寶商主辦，參加者約四十家，均為本港著名之珠寶玉石商號及專家。

本港珠寶展會，氣派萬千，為遠東所僅見。珠寶商主辦，參加者約四十家，均為本港著名之珠寶玉石商號及專家。珠寶商主辦，參加者約四十家，均為本港著名之珠寶玉石商號及專家。珠寶商主辦，參加者約四十家，均為本港著名之珠寶玉石商號及專家。

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Overseas Chinese Daily News, 1971.4.18.

Rarely are people of Hong Kong aware that jade and stone crafts made up a good foundation for the jewelry industry today. In the 1960s and 1970s, jade trade was often reported in local newspapers. Beginning from around the 1980s, however, ‘jade’ was less often found in mass media, not because it became less popular, but because it was conventionally incorporated into the broad term, jewelry, which covered gold and silver work, jades, precious and semi-precious stone, as well as pearls.

The Abrasive 攻玉

In the lines written adjacent to each drawing, Li Chengyuan described the process of jade manufacture. He remarked that Huolu County 獲鹿縣 in Hebei province 河北省 and its nearby was the area from which jade workers acquired sand for cutting jades. In the picture, the appendices of the jade masters broke the mined rock with a mortar; sieved out the large pieces; and deposited them in water for use. Four sand types were commonly used. Nowadays, however, this preparation process is no longer needed. The stone-cutting sand was all replaced with industrial sand. According to Master Dong, who is now the Head of the Stone-cutting teams in a factory at Lufeng, Guangdong, the workshops in Hangzhou, where he worked as apprentice, were used to preparing the stone-cutting sand as what was shown in Li's drawing.



開沙石



一. 搗沙圖說

攻玉器具雖多，大都不能施其器本性之能力，不過助石沙之能力耳傳云：黑、紅、黃等石沙產於直隸獲鹿縣，雲南等處亦有之。形似甚碎砗子，必須用杵臼搗碎如米糝，再以極細篩子篩之。然後量其沙粗細，漂去漿，將淨沙浸水以適用。

二. 研漿圖說

磨光宜用極細黃沙去漿浸水以適用。

Break the stone 開玉



In a 17th-century text, jade-mining seems mysterious to most Chinese, including the literate. It was perceived to be conducted through astronomical omens.

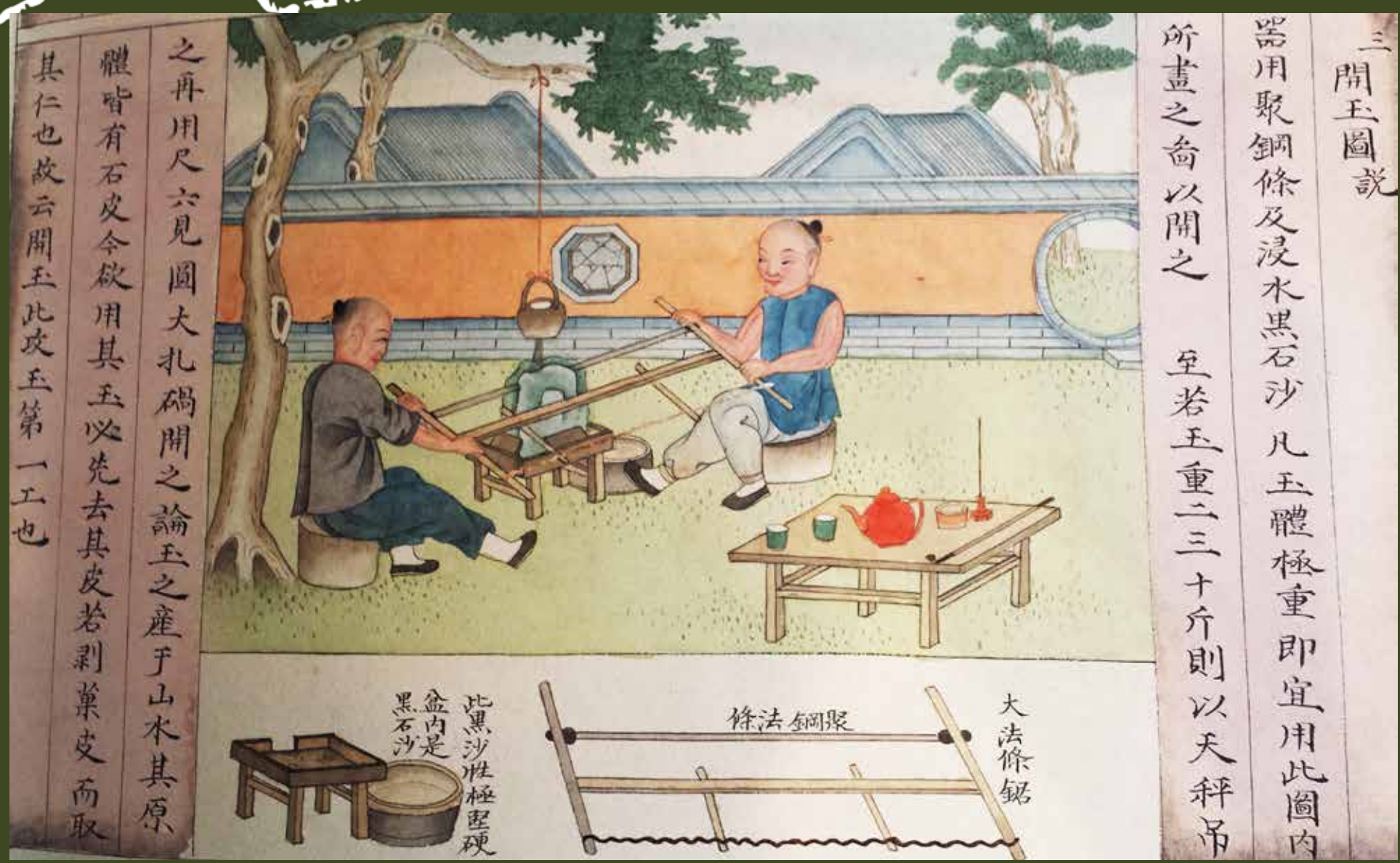
‘Jade’ is found in the core of what looks like a normal stone, which is usually mined in the mountains or the riverbed. Only after the crust is carefully removed can the craftsmen drill for the jade core.

This process is the very fundamental step in jade craftsmanship, because it directly determines the size and entirety of the jade for further work. In general, the more ‘jade’ a craftsman is able to drill from the stone, the higher the chance he is able to make greater profit from his products.

For the large jade stone, two people or more were needed to break the crust, as shown in the drawing. Nowadays, the cutting process is replaced with machinery. In case of the extremely rare jade or precious stone, however, the master will use the traditional, manual way to cut the stone, for fear that the machine may destroy the precious core.

圖片自《天工開物》





之再用尺六見圖大扎碼開之論玉之產于山水其原
體皆有石皮今欲用其玉必先去其皮若剝菓皮而取
其仁也故云開玉此攻玉第一工也

三
開玉圖說
器用聚鋼條及浸水黑石沙凡玉體極重即宜用此圖內
所畫之畵以開之 至若玉重二三十斤則以天秤吊

三. 開玉圖說

器用聚鋼條及浸水黑石沙，凡玉體極重，即宜用此圖內所畫之式以開之；
至若玉重二、三十斤，則以天秤吊之，再用尺六見圓大扎碼開之。
論玉之產於山水，其原體皆有石皮。今欲用其玉，必先去其皮，
若剝果皮而取其仁也。故云「開玉」，此攻玉第一工也。

The Master's Bench 萬能機

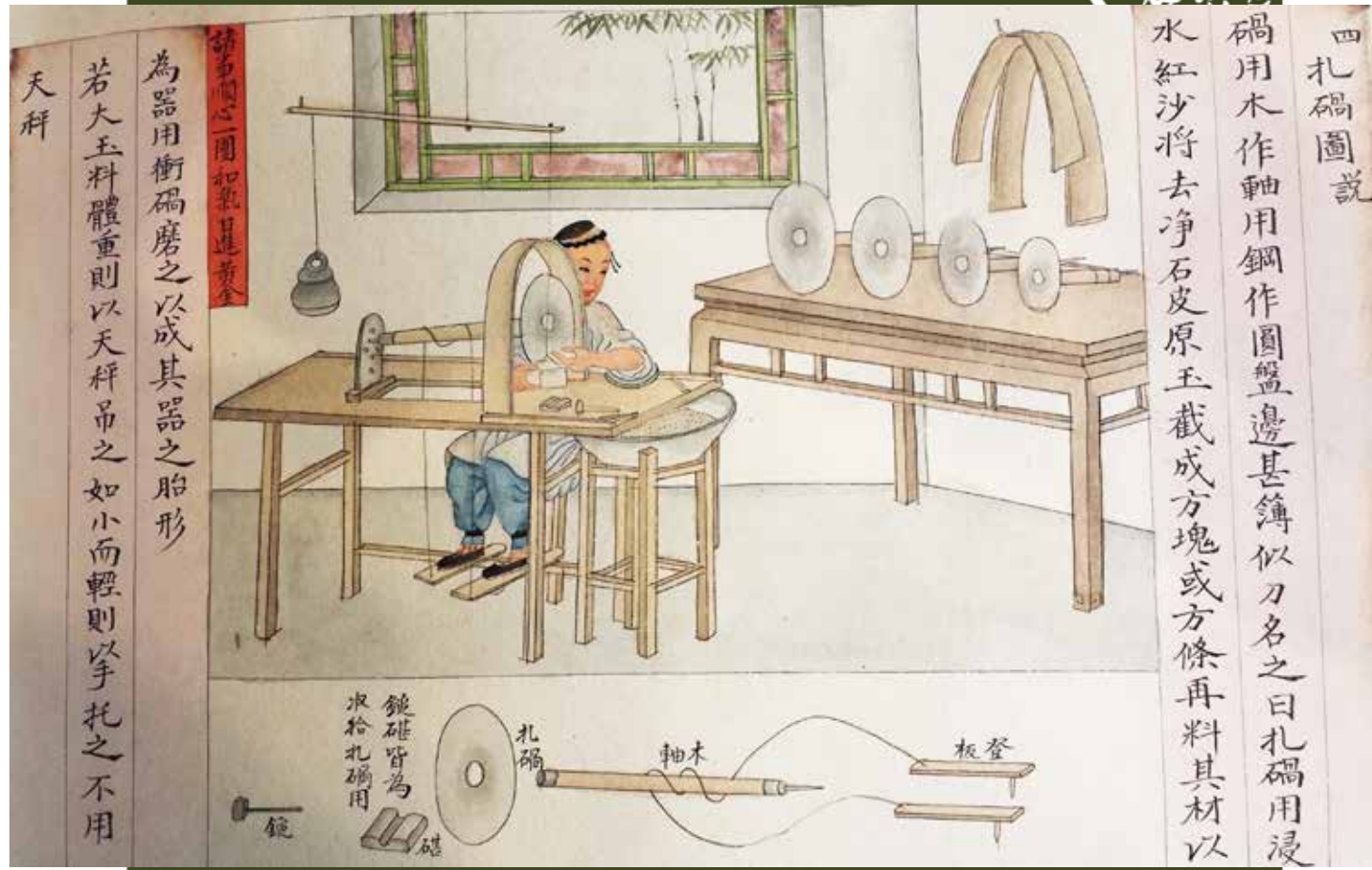
The master had to work at his bench. With metal disks of different sizes, he was able to perform different tasks: cutting, grinding, scraping and polishing. In general, the size of the disk was commensurate with the size of the stone to work on. The idle ones were left on a table on the side, while the one at work was installed on a wooden bar affixed at a metal tablet on the right hand side of the bench. The thin leader strap, which covered the disk, functioned to protect the master from the flying bits and pieces that came out during work. The petals were to control the strength and frequency of the rotation, which was assisted with the weight hung in the air.

The modern version does not deviate much from the traditional bench. The petals are mechanical, leather strip replaced with a metal cover, dust removed through electric pump, light added to help the master with his sight, and a box hid underneath the bench to collect used sand and water.

The master has to pay as much attention in cutting or polishing as his predecessors. A similar set of metal disks is prepared for handling stone of various sizes. And each master knows how to clear his machine and replace used disks.



Photo taken at Chang Fa Jade Company 長發玉器行. The owner of this bench is Master Lee Fu Wai 李虎威先生.



四 扎碼圖說

碼用木作軸用鋼作圓盤邊甚簿似刀名之曰扎碼用浸水紅沙將去淨石皮原玉截成方塊或方條再料其材以

為器用衝碼磨之以成其器之胎形
若大玉料體重則以天秤吊之如小而輕則以手托之不用

四. 扎石局圖說

碼，用木作軸，用鋼作圓盤，邊甚簿似刀，名之曰扎碼。用浸水紅沙將去淨石皮，原玉截成方塊或方條，再料其材以為器用。衝碼磨之，以成其器之胎形。

若大玉料體重，則以天秤吊之；如小而輕，則以手托之，不用天秤。



五 衝碼圖說

碼用四五分或二三分厚鋼圈圈內橫以厚竹板再以紫膠接在木軸頭上用浸水淨紅沙以衝削其方條玉之棱角

故名衝碼玉之棱角既去器形既成玉體膚上尚有小坳沙痕則宜磨碼以磨之木碼膠碼皮碼以光亮之

五. 衝石局圖說

碼用四、五分或二、三分厚鋼圈。圈內橫以厚竹板再以紫膠接在木軸頭上用浸水淨紅沙以衝削其方條玉之棱角故名衝碼。玉之棱既去器形成玉體，膚上尚有小坳沙痕，則宜磨碼以磨之，木碼、膠碼、皮碼以光亮之。

The Disk (*Guo*) 石罨

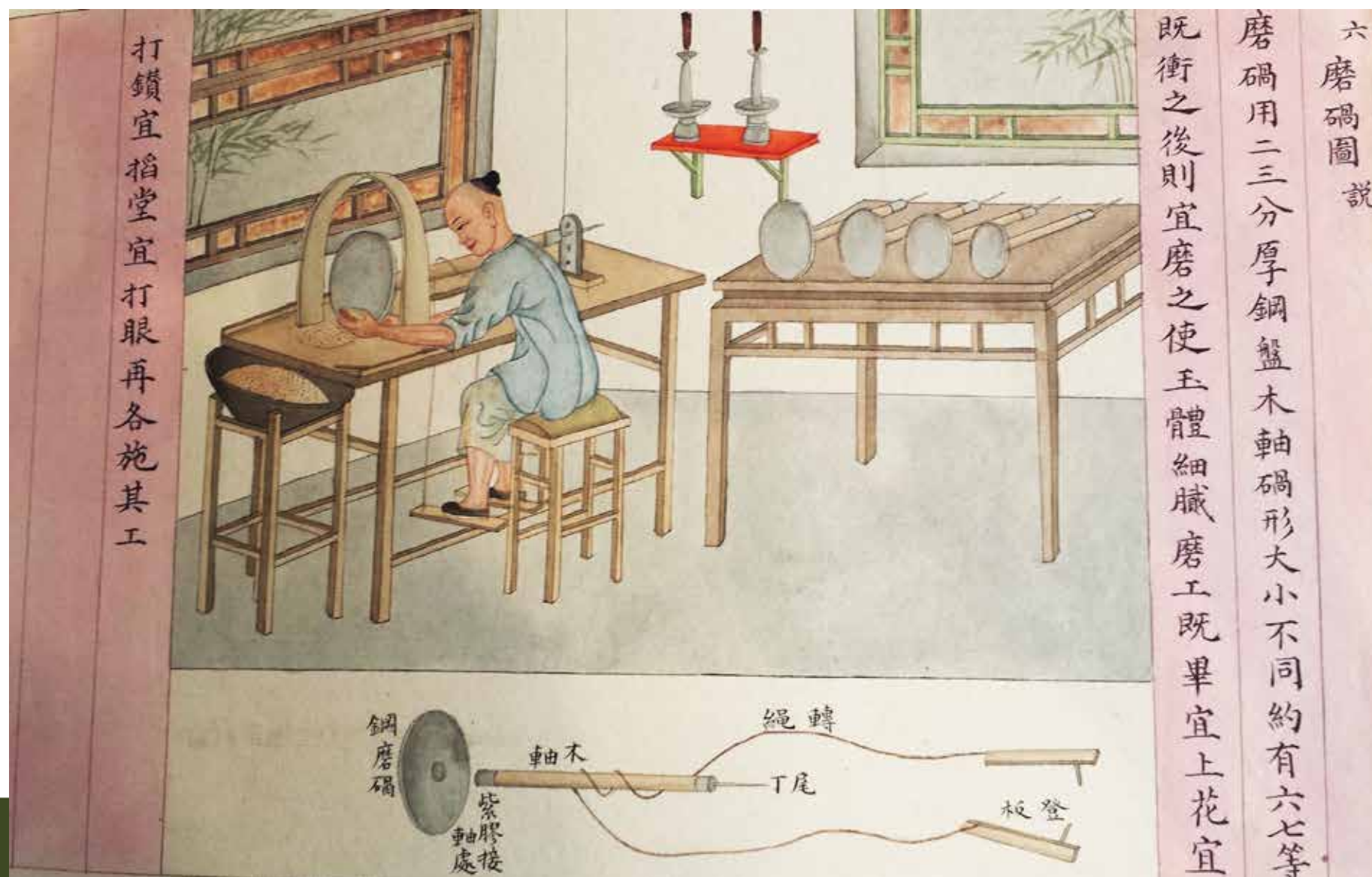
「罨」 (*Guo*) was the disk on the master's bench. It also referred to the half-worked stone. This drawing shows the last stage of the stone preparation process; then the *guo* is ready for being processed into desired objects. This last stage is important, because the master has to decide what the stone is suitable for making slabs, figurines, pendants, beads, or other accessories. He cannot acquire this 'reading' skill from texts; but can only do so through personal or shared experiences. In general, the products are expected to carry as few impurities as possible, because this determines the range of the sale prices. If the impurities cannot be removed, a skillful craftsman may conceal or incorporate them into the form of the product. If a hidden vein is not recognized at this stage and the *guo* is sent for production of an object that it does not fit, the entire *guo* is likely to be wasted; so is the prior preparation work.

Ge shi qi gong (各施其工), which are the last four written characters of the inscription, literary means each is applied with the due set of work. They refer to the different work choices represented in the following leaves. The value of the craftsmanship is hinged on the masters' experiences in identifying the texture, colours, level of purity, and veins of the stone. Such knowledge is the determining factor that enable the crafts to persist.



They are example waste *Guo*. Veins were unnoticed when the stone was sent to be worked into a stone vessel. The grinding cannot be completed because the veins will eventually cause the vessel to break. The waste will either be discarded or re-worked into objects of much small sizes.

Waste stone jars (Left: Obsidian; Right: Aventurine)



六. 磨石局圖說

磨礪用二、三分厚鋼盤。木軸、礪形大小不同，約有六、七等。
既衝之後礪則宜磨之，使玉體細膩。

磨工既畢，宜上花、宜打鑽、宜插堂、宜打眼、再各施其工。

The Grinding 琢玉

Before the industrial age, the stone can only be shaped manually, little by little. As for the process of hollowing, the master employed a curved sheet of metal to do the scraping, supplemented with further polish by using a driller with a curved end under the help of water soaked with stone-cutting sand. In the modern times, the tools have been replaced by electric drillers. But the masters have to work with the help of water similarly. There is also an air plumb to remove the dust caused from work.



七. 搯堂圖說

搯堂者，去其中而空之之謂也。
凡玉器之宜有空堂者，應先鋼捲筒之搯其堂。
工完，玉之中心必留玉槌一根，
則遂用小錘擊鋼鑿以振截之。

此玉作內頭等最巧之技也。
至若玉器口小而堂宜大者，
則再用扁錐頭有彎者，就浸水細石沙以搯其堂。



八. 上花圖說

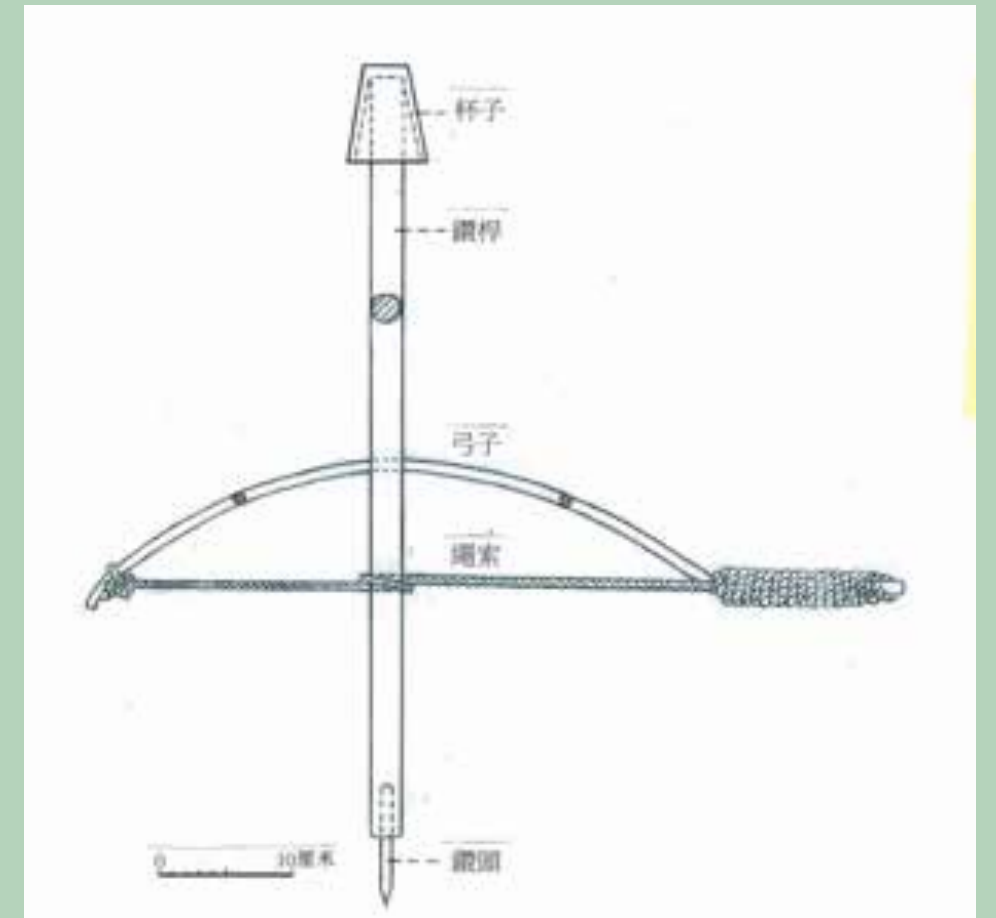
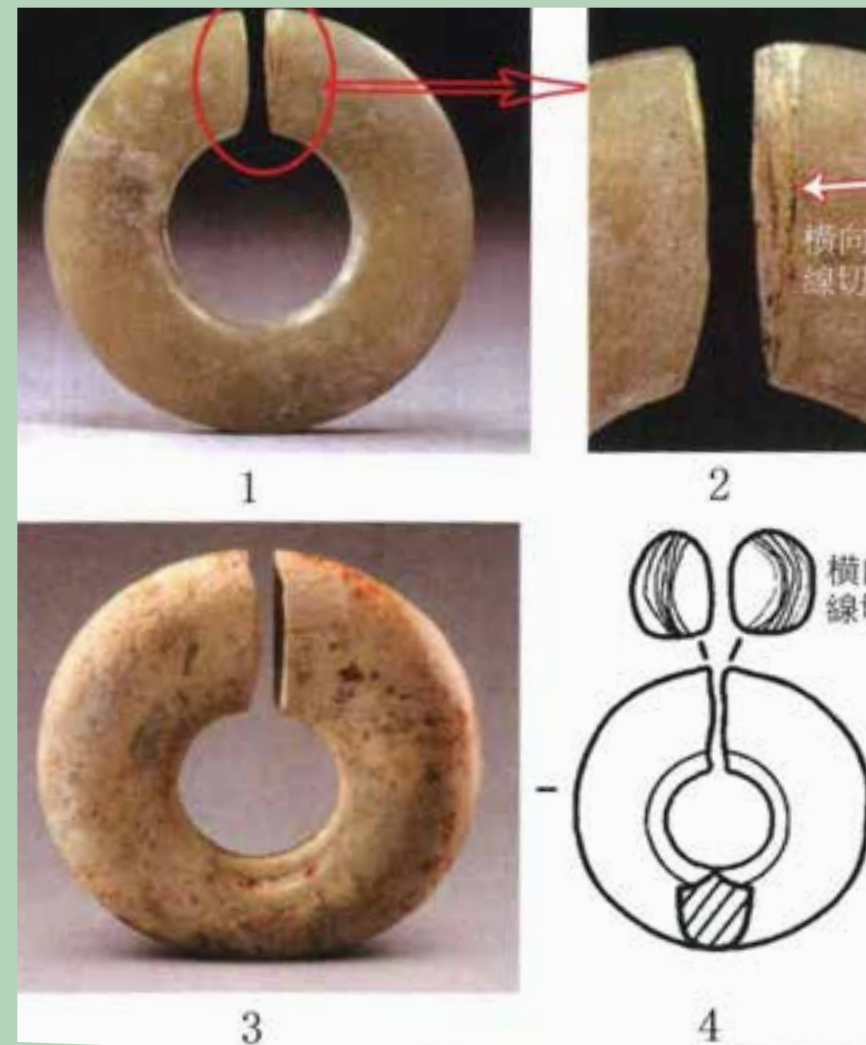
按玉作上花具，皆用小圓鋼盤。
盤邊甚簿似刀，名之曰丁子，
全形似圓帽丁子，故名之。

或用小鋼碼，名為軋碼。
此等具可以隨意改作大小，以方便適用為度。
凡玉器無論大小方圓，外面應用花樣者，
皆用此等具磨衝以上花。



The Bow Drills 弓鑽

Of all images in this series, bow drills may not easily find a modern relative. They were replaced by electric drillers. The bow drills created abrasive force through the actions of pulling back and forth, hence leaving an uneven, striated surface on the jade or stone. This workmanship trace marked the major difference between ancient and modern jades.



Illustrations adopted from Tang Chung (ed.),
Prehistoric Rotary Technology
(Macau: Civic and Municipal Affairs Bureau of
MSAR, 2014), p. 71 and 214)



九. 打鑽圖說

是玉器宜作透花者，則先用金鋼鑽打透花眼，名為打鑽。然後再以彎弓鋸就細石沙順花以搜之。透花工畢，再施上花磨亮之工則器成。

十. 透花圖說

凡玉片宜作透花者，先以鋼鑽將玉片鑽透圓孔後，以彎弓絢鋼絲一條，用時則解鋼絲一頭，隨將絲頭穿過玉孔，復結好絲頭於弓頭上。然後用浸水沙順花樣以搜之。如木作彎鋸搜花一樣。圖內桌上有豎木、桌拿子或橫木桌，拿以穩住玉器。





Beads Trade

Beads are highly desired. They are basic elements of most jewelry. Beads assume an important category of production today. The beads that we now find in places as common as the fashion chain stores were mostly produced in China. It would be erroneous to assume that low labour cost was the main reason.

Indeed, the production of beads requires careful reading and ranking of the stone. Before the beads were worked under the mechanical driller, or in the past the bow drills, the masters ought to do some grouping of the stone according to their clarity. If there are ‘secrets’ to be found in jade and stone craftsmanship, the amount of time and attention taken to study the stone is the most precious thing preserved. And this supports the flourishing jewelry industry in China today.

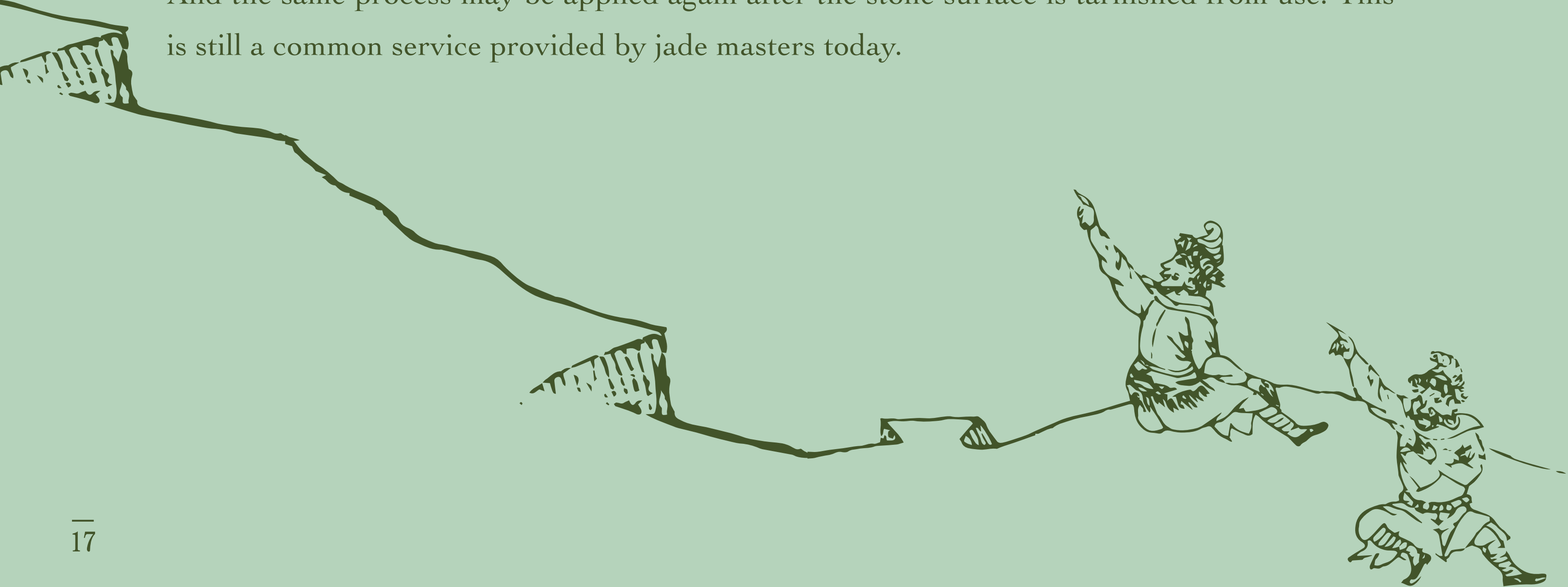


十一. 打眼圖說

凡小玉器如烟壺、班指、烟袋嘴，手不能扶挈者，皆用七、八寸高大竹筒一個，內注清水。水上按木板數塊，其形不一，或有孔、或有槽窩，皆像玉器形。臨作工時，則將玉器按在板孔中或槽窩內，再以左手心握小鐵盅，按扣金鋼鑽之，丁尾用右手拉綑弓助金鋼鑽以打眼。

The Polish 亮玉

The last stages of work are burnish and polish. The shapes of the jades or stone are finalized. Modern masters may apply the burnishing powder—green in colour to add to the smoothness of the stone surface. Similar to their predecessors, they complete the process with the use of rolling discs cased in leather or wood. The fabrication will bring out the shininess of the stone. And the same process may be applied again after the stone surface is tarnished from use. This is still a common service provided by jade masters today.



十二. 木石局圖說

鋼碓磨畢，玉體雖平淨，然尚欠光亮，即用木碓及浸水黃寶料或用各色沙漿以磨之。

若小件玉器不能用木碓磨之，或有甚細密花樣者，皆不可用木碓磨之，則以乾葫蘆片作小碓以磨之。



十三. 皮石局圖說

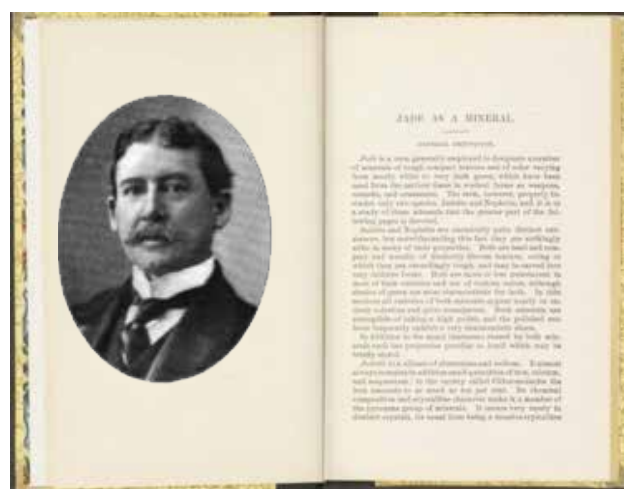
此係皮碓磨亮上光之圖也。碓係牛皮為之包於木碓之上，納以麻繩大者，尺餘見圖。小則二、三寸不等，皆用沁水寶料磨之。皮碓上光後，則玉體光亮溫潤，使鑒家愛之無窮，至此則琢磨工畢矣。



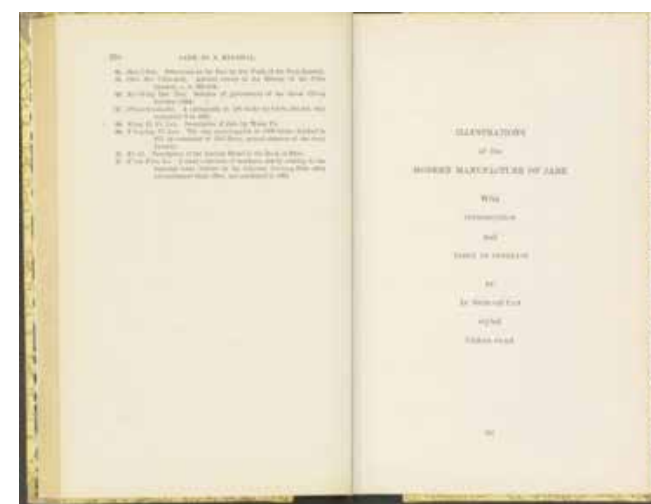
Appendix: Illustrations of the Manufacture of Jade 玉作圖

Li Chengyuan 李澄淵 (active 1880—1900) was an artist, who may have spent most time in Beijing. His clients included esteemed gentlemen and scholars. The German ambassador, Max von Brandt (1835—1920), hired Li to copy a set of pictures of the ceramics in the dismembered collection of Xiang Yuanbian (1525—1590). Li did a decent job and presented the ceramics in such a stylized way that pleased the German client and that his contemporaries.

This first set of drawings connected Li with Stephen Wootton Bushell (1844—1908), an eminent English clinical doctor who travelled widely in China, renowned to have deciphered some lost languages: Tangut and Tibetan. Bushell had extensive interests in Chinese arts, and made himself an obvious candidate when Herber Bishop (1840—1902), an American collector, was looking for someone to complete a catalogue for his collection of Chinese jades. In a two-volume catalogue, Bushell decided to include the translated text, *Yu shuo* 玉說, by Tang Rongzuo 唐榮祚, and commission Li Chengyuan to produce an album, which recorded the manufacture of jades in a traditional workshop. The original album was donated to the Metropolitan Museum in Chicago along with the Bishop collection of jades. About 100 copies of the catalogues were printed, and collected by different libraries and museums. The twelve leafs shown here are copies of the original work by Li Chengyuan.



Heber Bishop



Stephen W. Bushell



English translations of illustration of the Manufacture of Jade

1) POUNDING THE SAND.

There are many kinds of tools used in working jade, but they do the work not by their own strength, but by the help of the stone sand. I am informed that the black, red, and yellow sands employed all come from Huo-lu Hsien, in the province of Chihli, and that some is also brought from the province of Yunnan. It comes in pieces like the small anthracite coal used by blacksmiths, and requires to be pounded with pestle and mortar to the size of broken rice. This is then passed through a very fine sieve, washed to separate impurities, and then when water is added it is fit for use.

2) GRINDING THE SAND.

The yellow sand used for the polishing wheel requires to be ground down very finely and evenly, after which it is washed and mixed with water, ready for use.

3) SAWING OPEN THE CRUDE JADE.

The tool used is a two-handled steel saw, kept moist with black sand mixed with water. If it be a very large, heavy block of jade, it is sawn open, as illustrated in the picture, If the block of jade be only 20 or 30 catties in weight, it is suspended on a steelyard, and sawn open with a large plate-saw 20 inches in diameter. The jade is found in nature generally enveloped in stone, and to get at the jade this skin must first be stripped off, just as a fruit is peeled to get at the kernel. This is the first process in working jade.

4) THE SLICING SAW.

This saw is mounted on a wooden axle, and consists of a round plate of steel with an edge as sharp as that of a knife. It is called the slicing saw, and is moistened with red sand mixed with water to saw up the jade, from which the envelop has been stripped into square or oblong slabs, of a size corresponding to the object to be made, ready to be fashioned by the shaping wheel. If the piece of jade be large and heavy it is suspended on the end of a steelyard, as in the picture; if it be small and light it is held in the hand, the steelyard not being required.

5) THE SHAPING WHEEL.

These wheels are rings of steel from half an inch down to two or three lines in thickness. The axis of the ring is mounted with a thick slab of bamboo, with a depression in the centre, into which the wooden axle-rod is struck with red glue. This wheel is used to remove the sharp edges and corners from the square or oblong piece of jade, hence its name of shaping wheel. When the edges have been thus removed, the object is shaped, but the jade is still rough and uneven, so that it requires the grinding wheel to smooth it, and the wooden wheel, glue wheel, and leather wheel to give it a final bright polish.

6) THE GRINDING WHEEL.

The grinding wheels are steel plates two or three lines in thickness, turned on a wooden axle. These grinding wheels are of six or seven different sizes. They are used to grind the piece that has been fashioned by the shaping wheel, till the surface is uniformly smooth. When this work is finished the piece is ready to have ornamental designs carved upon it, to be bored with the diamond, to be hollowed out or pierced, whenever such work is required.

7) HOLLOWING THE INTERIOR.

By hollowing the interior is meant 'removing the core.' Whenever a hollow space has to be left inside the jade object, it must be first bored with the round steel cylindrical borer, which, after the boring is finished, leaves a round core inside. This core has to be dug out with a steel chisel struck by a small hammer. If the mouth of the jade object is to be left small and the chamber larger, flat steel gimlets, like corkscrews, and used to hollow out still more the interior of the piece.

English translations of illustration of the Manufacture of Jade

8) CARVING ORNAMENTAL DESIGNS.

When the jade has to be decorated with ornamental designs the tools used are of two kinds. The first are small round plates of steel, with sharp edges like knives, called nails (*ting-tzul*), because they are somewhat like round-headed nails in shape. The others are small steel plates with thicker edges, called *ya t'o*. These tools are made of many different sizes and shapes, according to the fancy of the workman, and according to the nature of the work required. All jade objects, of square or round form, of large or small size, which are to be ornamented outside with different designs, must have the patterns carved with these tools.

9) THE DIAMOND BORER.

When the jade object has to be carved in openwork (*à jour*), holes must first be pierced with the diamond, following the pattern of the design. This work is called diamond-boring, and only after it is done can the wire bow-saw be introduced and worked round the outline of the pattern. The pieces carved in openwork and decorated with ornamental designs have still to be polished to finish them off.

10) OPENWORK CARVING.

When a slab of jade has to be carved in openwork it must be pierced with round holes by the diamond borer and afterwards sawn with a steel wire stretched on a bow. When this is used, one end of the wire is first loosened, so that the wire may be passed through one of the holes, after which it is fastened again to the end of the bow. It is then moistened with sand and water, and the jade sawn out following the outline of the pattern. An upright piece of wood is fixed in the table, or a horizontal piece nailed on, with a vise attached, to grasp the jade object firmly.

11) PIERCING HOLES.

Small objects, such as snuff-bottles, thumb-rings, mouth-pieces of tobacco pipes, and the like, which cannot be held in the hand, are placed in a large bamboo cylinder about nine inches high, filled with clear water, on which float pieces of wood pierced with holes or hollowed into nests, corresponding in size to that of the jade articles. The jade having been fixed in one of these cavities, the left hand of the workman is left free to press the diamond borer with a little iron cup held in the palm, while his right hand wields the bow which pierces the holes.

12) THE WOODEN POLISHING WHEEL.

When the grinding wheel has done its work, although the surface of the jade is smooth and uniform, yet it has no bright gloss, and the wooden wheel must be used, with yellow diamond dust or with a paste made of one of the coloured sands, to give it a polish. If the jade article is too small to be polished on the wooden wheel, or if the pattern of the design is very small and complicated, so that the wooden wheel cannot be used, then a small wheel is made of a piece of dry gourd-skin to polish it.

13) THE LEATHER POLISHING WHEEL.

This is a picture of the leather wheels which give the bright polish. These wheels are made of four or five layers of ox leather sewn together by hempen cord. They vary in size from over a foot in diameter down to two or three inches, and are all used with a paste made of the 'precious-stone dust' mixed with water for polishing the jade. After it has been polished on the leather wheel, the jade acquires a bright glossy surface of warm, uniform colour; such as is most highly appreciated by cultured collectors. This is the finishing touch of artistic work in jade, and completes the cycle of work.

Bishop, Herber R. Investigations and Studies in Jade. Rahway: The Mershon Company Press, 1900.



Title	The Secrets of Jade Craftsmanship 玉石工藝之訣竅
Place	CUHK Main Library
Dates	2017.8.15 – 9.30
Curator	Professor Celine Lai, Faculty of Arts (BA Programme in Cultural Management)
Designer	Jacintha Chan
Publisher	The So Mood Studio
Curatorial Team	Daphne So Joyce Tsoi Vivian Yuen LF Li Anne Chan Kelvin Wong
Sponsors	Faculty of Arts (BA Programme in Cultural Management) Library, CUHK Lord Wilson Heritage Trust
Acknowledgement	Fai Po Gem & Jewellery Limited 輝寶珠寶有限公司 如豐琢玉工坊 Chang Fa Jade Company 長發玉器行

