Traditional Master Carpenters' Manuals in Taiwan

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This paper considers four of the extant traditional master carpenter's manuals in Taiwan. The scarcity of examples does not allow the author to piece together a complete historical picture, but the manuals do reflect the diversity of master carpenters knowledge and concerns.

The traditional apprenticeship of carpenters in Taiwan is first outlined. Then the contents of the manuals are briefly described and their key aspects compared in tabular form. The concerns of master carpenters underlying these aspects are identified, including the legitimacy of carpentry, rituals and animism, as well as *fengshui*. Reference is made to the Notebooks of Villard de Honnecourt (ca. 1225-50) by way of comparison with the traditional master carpenter's manuals in Taiwan. Finally, Heidegger's idea of 'dwelling' is used as a way of understanding the mentality of the master carpenters as revealed in the four manuals.

THE TRAINING AND THE ROLE OF A TRADITIONAL MASTER CARPENTER IN TAIWAN

Taiwan - or Formosa after the Portuguese - is an island located opposite the southeast coast of China. Most of the Taiwanese are Han Chinese immigrants from Fujian and Guangdong Province who migrated to the island in the early seventeenth century. They brought with them the southeastern Chinese lifestyle, which forms the basis of traditional Taiwanese culture. Although it has been affected by Western and Japanese influences, and since the Second World War by mainland China, this cultural tradition has become rooted and persistent, maintaining its own strong sense of identity.

The early immigrants brought with them the traditional building methods of southeastern China, where the timber structure with courtyard compound is the major building type, whether for residential, governmental, or religious purposes. The building foreman was a master carpenter, who was entrusted by clients to be in charge of the whole building project. He estimated the budget for the building and set up the work force, which was composed of carpenters, bricklayers, tilers, painters, masons and carvers. What distinguished the master carpenter from other carpenters was not only his design skill in carpentry work but also his knowledge of building ritual and cosmology.

Normally carpentry training took three years and four months to complete. The trainee was accepted in his teens after elementary schooling. As a novitiate, he was first required to do housework for his master like a common servant. This tested his patience and obedience, and

continued for several months or until the arrival of the next newcomer (Hong 1993, p.70). Then he began to learn how to sharpen the various carpenters' tools. This would also last for several months. To be a skillful carpenter he was required to be good at sharpening tools. Some tools are very personal to a carpenter and have even been invented by the carpenter for his own personal use. Then he learned to shave, cut and mortise the components of the timber structure in accordance with marking guidelines provided by the master. He would have made himself familiar with the skill of design and line marking before completing his training. The skill of design involved the taking of favourable measurements, which, together with other aspects of cosmological knowledge, was normally transmitted by a master only to his most favoured apprentices. This transmission was probably done orally and privately; apart from learning by heart, the apprentice would keep a manual that contained the teachings of his master. He would extend this manual with useful abstracts from magician's literary sources or from his practical experiences. Since there was not any formal recognition of qualifications, the difference between a carpenter and a master carpenter was very vague. A more able carpenter had greater opportunities to be in the lead role on building projects, and this person was likely to be a master carpenter. So various master carpenters had different manuals in their possession: some of these documents are simple and straightforward, others complicated.

THE MANUALS

Of the manuals under examination, *the Classic of Luban* and *the Measurement Manual of Luban* were the only ones to be published. Both were attributed to Luban, who was a very able legendary Chinese carpenter of the fifth century B.C. and had long been worshipped as the carpenter's patron saint. There is no evidence that these books were transmitted by Luban. Both were prepared by carpenters and were published in the name of this patron saint. The early edition of the *Classic of Luban* dates to the fifteenth century **(fig.1)**. Since then it has gone through many later editions (Ruitenbeek 1993, pp.117-47) and was evident in the coastal provinces of southeastern China (Anonym 1988, p. 946). The appearance and the date of *the Manual* could not be traced but presumably it was also derived from China. Both were brought to Taiwan by Chinese immigrants or by Chinese carpenters occasionally working on the island.

To extent of use of the two books in Taiwan is difficult to discover, but the facsimile reprint has been in continuous use over many years.

Apart from the two manuals mentioned above, the master carpenters of Taiwan kept their own manuals, which could only be found by research work. The most prominent version of this type is the one owned by Wang, Yishun (1861-1931) from Fujian Province. He was invited to Taiwan in 1904 to build temples and continued this work until 1930. Five of his works on the island were identified and the extant four are all listed as historic monuments in the late twentieth century. His manual was preserved by his descendants and shown to the Taiwanese scholar Yan, Yianing in

1980s (Li 1996, pp.35-36) and was published by the Interior Ministry of Taiwan in 1996.

How many manuals are kept by current master carpenters for use is not clear. But the ones owned by Liu, Tianwang and Liu, Xingbiao in Xinpu area of northern Taiwan can be taken as examples and were obtained by Prof. Xu, Mingfu during research work and affixed to his publication (1991).

The following discussion on master carpenters' manuals in Taiwan will include the above four manuals, which appear in different periods, used by different master carpenters who have different backgrounds.

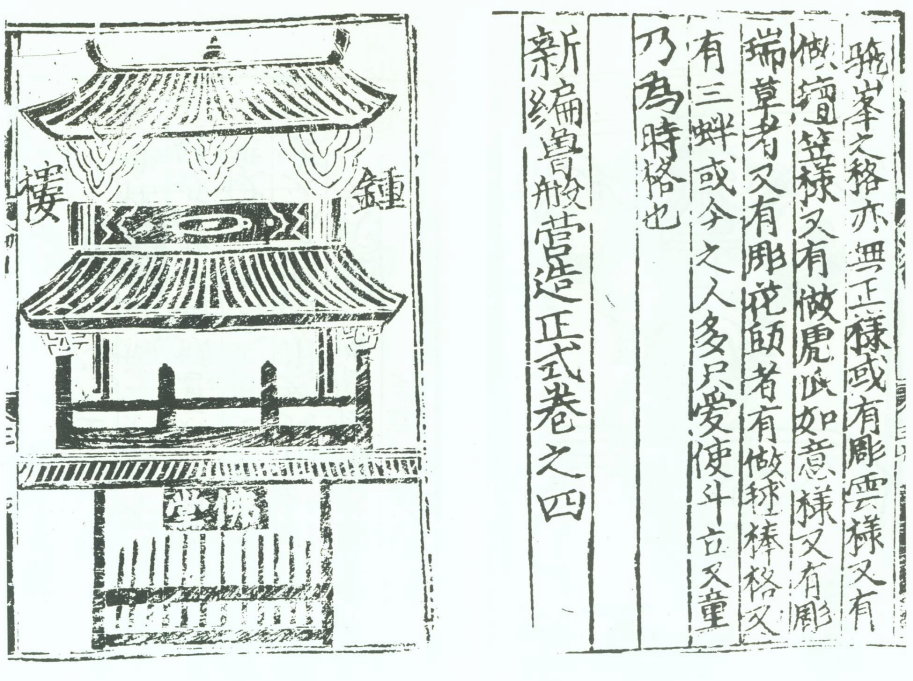

Figure 1. The fifteenth-century version of *the Classic of Luban* (Ruitenbeek 1993)

The Classic of Luban

The Classic of Luban sold in present-day Taiwan is a facsimile reprint of early Qing edition (1644-1911)**(fig.2)**, that probably dates to the late seventeenth century (Ruitenbeek 1993, p.143; Anonym 1988, pp. 945-7). While the early pages have drawings of various wood frames and building types, the document is mainly a biographical sketch of Master Luban. It discusses the time, manner, and directional position to follow during building and includes information on the felling of trees in the mountains, erecting a trestle, starting work on wood, line marking and mortising wood columns, digging soil, leveling foundations, placing plinths and wood frames, erecting wood columns,

hoisting ridgepoles, fixing roof slope, tiling roofs, plastering walls, sewers and paving courtyards. Ritual and prayer were associated with the hoisting of the ridgepole. Following this, it deals with methods for leveling the ground and for drafting a design on a piece of paper. Then, the ruler of Luban, the try square and the number of strides are mentioned and the different systems of measurement in use. Various designs of wood frame with favourable dimensions are next specified. The opening of a building, especially that of the gate or the main door, are the components that attract most attention. For these elements favourable dimensions, monthly favourable days and yearly directional evil currents are given to be followed and/or avoided as necessary. After this the book deals with other minor building types, such as a barn, a horse stable, a cowshed, or a sheep-pen and favourable timings and dimensions are also given. Later on the manual deals with furniture. The last part of the book lists drawings with comments for favourable/unfavourable forms of building and surroundings, for neutralization of evil threats **(fig.3)**, and for malediction or blessing for the clients **(fig.4)**.

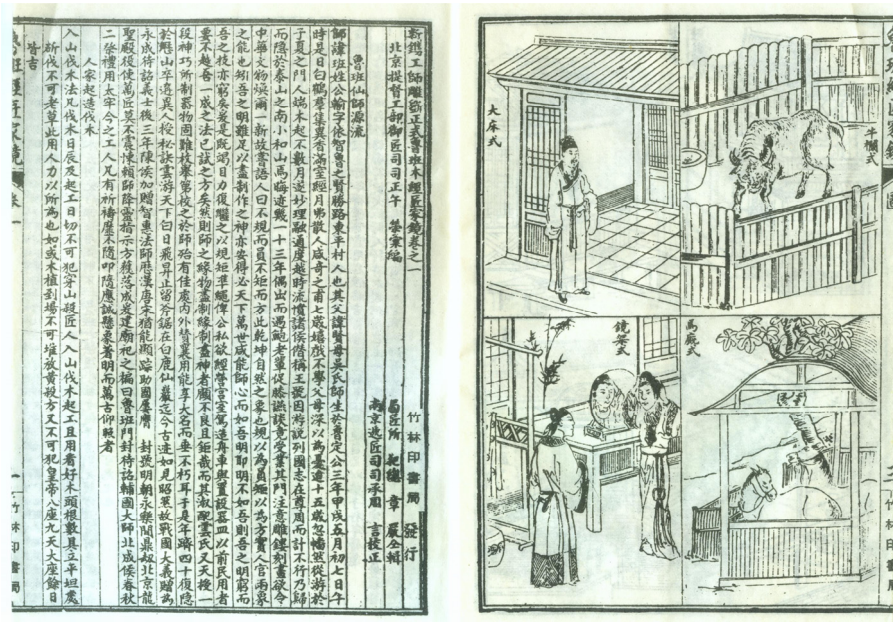

Figure 2. The version of *the Classic of Luban* sold in Taiwan. The pages show the fore page drawings on the right and the biography of Luban on the left (Wu 1987, bk.1)

The Measurement Manual of Luban

Although the name ‘Luban’ appears in the manual’s title, it does not have much in common with *The Classic of Luban*. It is loosely organized and looks more like a random collection of notes. A significant portion of the book deals with beneficial spirits and evil currents on the 24 points of the compass.

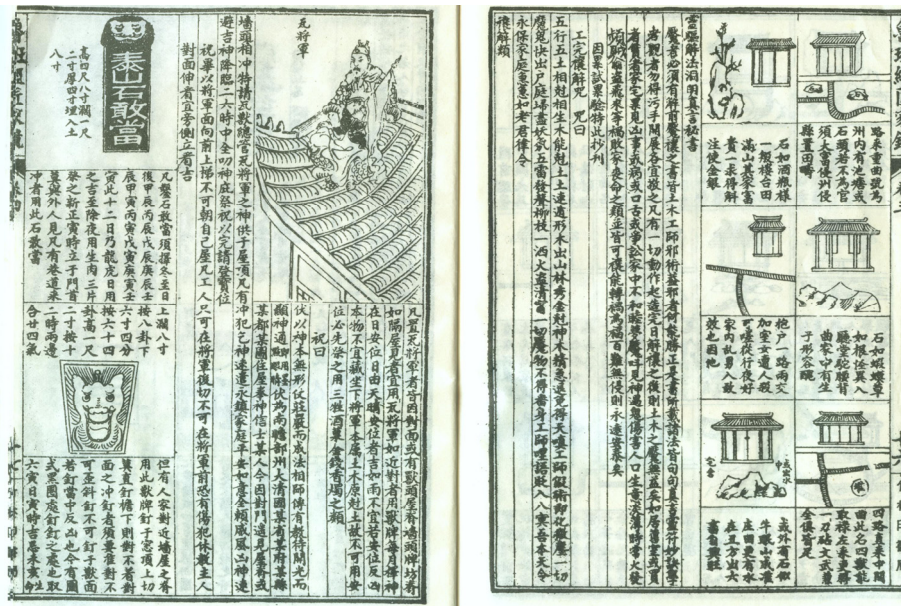

Figure 3. Pages from *the Classic of Luban*, showing the methods for neutralizing evil threats on the left (Wu 1987, bk.4)

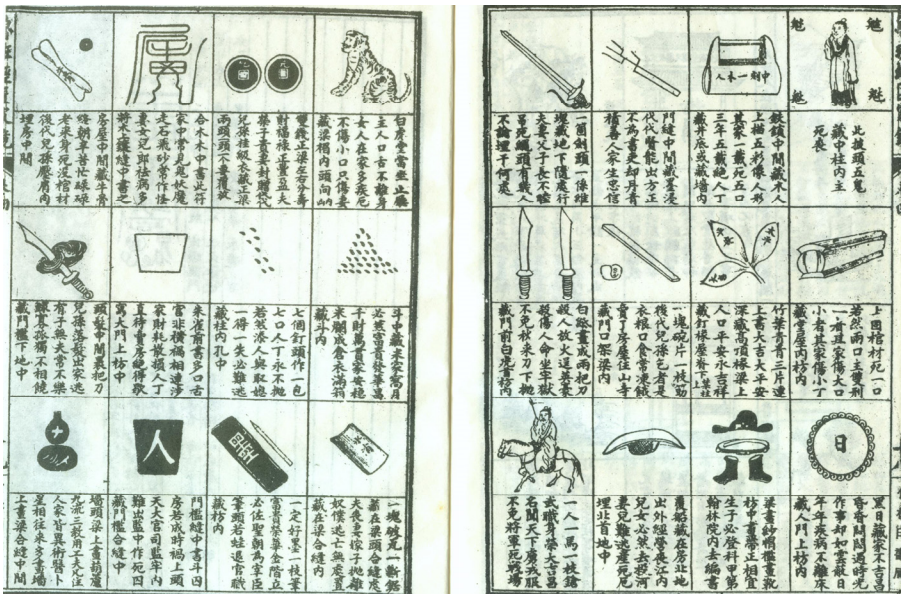

Figure 4. Pages from *the Classic of Luban*, showing the methods for malediction or blessing imposed on the clients (Wu 1987, bk.4)

Beneficial directional positions for orientating the main gate and installing sewers are mentioned and the directional positions of the Yellow Springs are highlighted **(fig.5)**. It then mentions the favourable size and planning of a house or a tomb for each orientation of the 24 compass points. Another significant portion of the book contains a list of esoteric measurements. For each house or tomb orientation of the 24, there are favourable or unfavourable figures in *chi* (Taiwan foot, 1 *chi* = 30 cm) and *cun* (Taiwan inch, 1 *cun* = 3cm) in either horizontal or vertical dimensions in order to decide the height and width of the structure to built. Figures in *chi* were associated with the personified stars of the Big Dipper from a complicated computation with the involvement of the eight Trigrams of *the Book of Changes*, whereas figures in *cun* were associated with the numbers and colours of the Luo River Writing (the magic square of three) (Chiou 1991, pp.286-92). The book also lists the favourable distances measured by the number of strides (1 stride = 4.5 *chi*), which are associated with the 12 Jianchu Deities. Other prayers include that for hoisting the ridgepole, the monthly favourable directions and the order for placing plinths, the *cun* judgments of the ruler of Luban and the try square, the personified nomenclature of the parts of a geomantic compass, the directions of the Yellow Springs, the sewer route, the mutual generation/ destruction relationships of the Five Elements (namely, water, fire, wood, metal and earth), attributes of the 24 Points and the eight Trigrams in terms of the Five Elements, various evil currents of time/ space and of carpentry etc. Compared with *The Classic of Luban, The Measurement Manual of Luban* is more concerned with sacred knowledge rather than with carpentry.

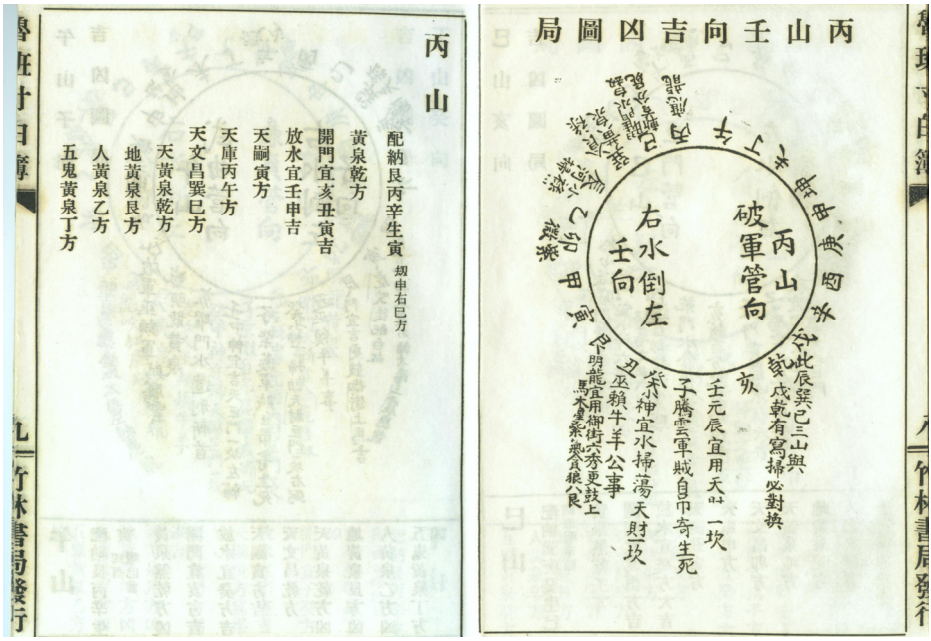

Figure 5. Pages of *the Measurement Manual of Luban* illustrating the layout of the directional beneficial spirits or evil currents on the 24 Points of the compass for the house orientation of *ren*.

Wang's manual

The manual of Wang remained a manuscript and contains much more detailed knowledge of geomancy than the other three. It also contains various drawings made by Wang himself, including those of people, animals and buildings. The drawings of building were records of existent examples from his field trips and one of his designs - the Temple of Confucius in Taipei. The latter comprises a plan and five scale sections as well as an isometric view **(fig.6)**. All the drawings have descriptions and dimensions. Wang's manual loosely echoes *The Classic of Luban* yet covers most aspects of *The Measurement Manual of Luban* (but goes into greater depth). The biography of Luban and the manner of placing the trestle are probably taken from *The Classic of Luban.* The best subdivision of direction, the facing of the main gate, and sewer direction for the 24 categories of building orientation are likely to have been taken from *The Measurement Manual of Luban.* Apart from these, it records talismans for self protection, stopping of termites, digging the soil and stabilizing the dwelling, the ground; the furnace, the main gate, the personified names of the parts of the compass and its usage, the directional positions, the hour, the day and the month of the evil currents of carpentry; the evil currents of the hammer, the axe, Luban, the master, etc.; other spirits or currents of time and space; geomantic literary notes about the physiognomy of the house form; yearly favourable directional positions in the Sexagenary Cycle; illustrations for sewers for each of the 24 categories of building orientation **(fig.7)**. Interestingly Wang even records the Eight Words (birth dates) of his sons and daughters-in-law. Wang must have read geomantic and fortune-telling literature. Besides being a master carpenter, he must have also been a geomancer and a master of time.

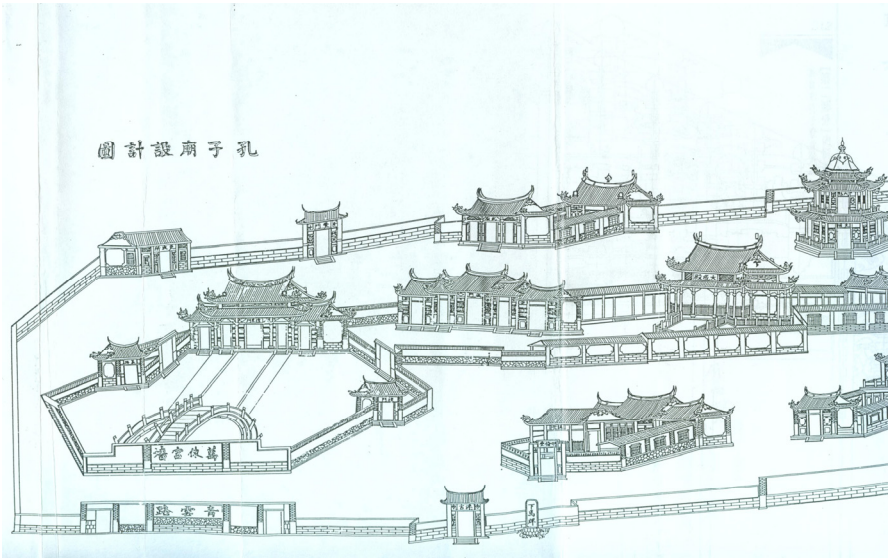

Figure 6. Wang, Yishun's design drawing for the Temple of Confucius in Taipei in his manual (Li 1996, pp.201-2)

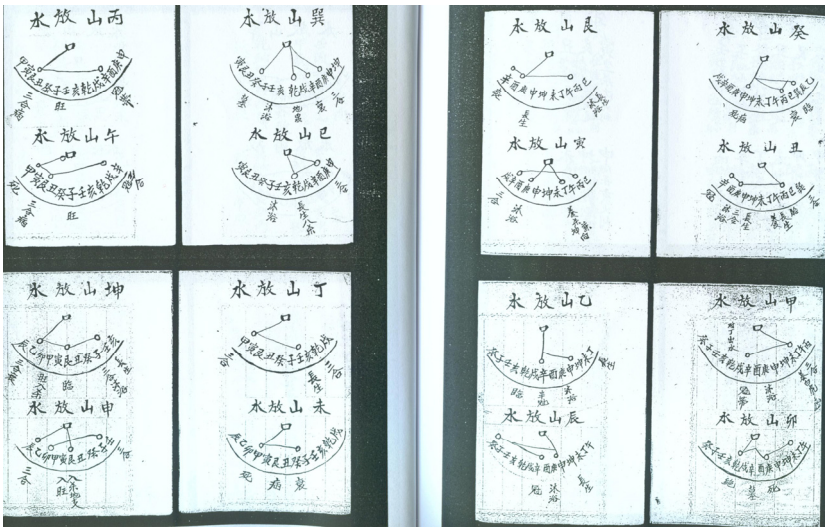

Figure 7. The sewer direction for eight of the 24 categories of building orientation in Wang, Yishun's manual (Li , pp.190-1)

Liu's manuals

Liu's manuals in the Xinpu area is hardly more than a list of favourable or unfavourable measurements in *chi* and *cun* **(fig.8)**. Records of beneficial or evil currents are few and are only mentioned in passing. A simple version of prayer for hoisting the ridgepole is provided. This might indicate that the favourable measurements were crucial to all master carpenters.

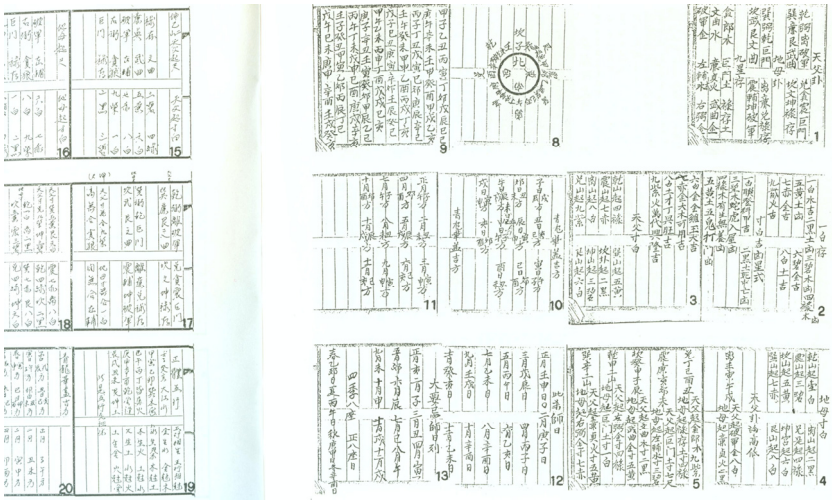

Figure 8. Pages of Liu's manual (Xu 1991, p.167)

THE MASTER CARPENTER'S CONCERNS

A summary of the key aspects of the four manuals is listed in **tables 1-4**. These are related to the profession, tool, manner, measurement, timing, spatiality, physiognomy and personification.

Table 1. Juxtaposition of the key aspects of contents of the four manuals under examination

Key aspects of contents	**Luban C**	**Luban MM**	**Wang**	**Liu**	**Implications**
Dates	since 15th cent.	since 19th cent.	early 20th cent.	late 20th cent.	
Drawings: wood frames	○				
Drawings: building types	○		○		
Biography of Master Luban	○		○		profession
Felling trees: do & don't	○				manner
Felling trees: favourable & unfavourable days	○				timing
Assembling of trestle for start of construction: do	○		□		manner
Start to work wood: favourable / unfavourable days	○				timing
Methods of trestle: various occasions	○				manner
Partial restoration for a building: favourable days	□		□		timing
Line marking on wood columns: favourable / unfavourable days / hours & favourable measurements in *chi* / *cun*	○				timing/ measurement
Stirring of soil and leveling of foundation: favourable / unfavourable days	○				timing
Stirring / collecting soil: favourable / unfavourable directions	○				spatiality
Placement of plinth & wood frames: favourable / unfavourable days	○				timing
Placement of plinth: monthly favourable directions		○	○		timing/spatiality
Erection of wood columns: favourable days	○				timing
Hoisting the ridgepole: favourable days	○				timing
Fixing roof slope: favourable days	○		□		timing
Roof tiling: favourable days	○				timing
Wall plastering: favourable days	○				timing
Sewering: favourable days	○				timing
Paving the courtyard: monthly favourable days	○				timing
Paving the courtyard: do & don't	○				manner
Rite for hoisting the ridgepole: do & don't	○				manner
Prayer for hoisting the ridgepole	○	○		○	
Building size: favourable/ unfavourable number of bays	○				number
Methods for leveling	○				manner
Method to design sketch for a building	○				manner
The ruler of Luban: favourable / unfavourable *cun*	○	○	□		measurement

Table 2. Juxtaposition of the key aspects of contents of the four manuals under examination

Key aspects of contents	**Luban C**	**Luban MM**	**Wang**	**Liu**	**Implications**
Dates	since 15th cent.	since 19th cent.	early 20th cent.	late 20th cent.	
The try square: favourable / unfavourable *cun*	○	○	○	○	measurement
Distance measurement: favourable/ unfavourable strides	○				measurement
Leveling the ground & placing plinths	○				manner
Various designs of wood frame: width / height / favourable *cun*	○				measurement
Gate/ door construction: do & don't	○				manner
Gate / door: measurements	○				measurement
Gate / door: monthly favourable days	○				timing
Gate / door: monthly days or yearly directions of evil currents	○				timing
Bright door stars: monthly favourable days	○				timing
Various minor building types (barns, stables etc): Do & don't / designs & measurements / favourable days	○				manner/Timing/ measurement
Various furniture designs & measurements	○				measurement
Drawings for favourable/ unfavourable building forms and surroundings	○				physiognomy
Judgments for favourable/ unfavourable building forms	○	□	○		physiognomy
Taboos of the building form (related to water, wind, *yin yang*)			○		physiognomy
Favourable geomantic surroundings for a building			○		physiognomy
Building forms associated by the Five Elements			○		physiognomy
Drawings and devices for neutralization of evil threats to a building and its owner	○				
Drawings and devices for malediction or blessing imposed on the clients	○				
Talismans	□		○		
The geomantic compass	□		○		tool
Personified nomenclature for the parts of the geomantic compass		○	○		tool
Yellow Springs (of heaven, earth, man, and the Five Ghosts)	□	○			spatiality
The sewering route	□	○	○		spatiality
The sewering route for each of the 24 Orientations			○		spatiality
The 24 (directional) Points		○	○		spatiality

Table 3. Juxtaposition of the key aspects of contents of the four manuals under examination

Key aspects of contents	**Luban C**	**Luban MM**	**Wang**	**Liu**	**Implications**
Dates	since 15th cent.	since 19th cent.	early 20th cent.	late 20th cent.	
Favourable / unfavourable directions for each of the 24 Orientations		○			spatiality
The planning for a house for each of the 24 Orientations		○			spatiality/ measurement
The planning for a tomb for each of the 24 Orientations		○			spatiality/ measurement
The mutual generation / destruction relationships of the Five Elements		○		○	
Attributes of the 24 Points in terms of the Five Elements		○	○		
Numbers of the Yellow River Chart		○			
Numbers / colours of the Luo River Writing	○	○	○	○	
Directions for placing the earth deity Fude		○			spatiality
The eight Trigrams		○	○		
Attributes of the eight Trigrams in terms of the Five Elements		○			
The list of favourable horizontal / vertical *cun* for each of the 24 Orientations (associated with the numbers and colours of the Luo River Writing)		○	○	○	measurement/ spatiality
The list of favourable horizontal / vertical *chi* for each of the 24 Orientations (associated with the stars of the Big Dipper)		○	○	○	measurement// spatiality
The numeration / nomenclature of month from year and hour from day		○	○	○	timing
The days / directions of the Eight Emperor's Seats		○		○	timing/spatiality
Attributes of the 24 Points in terms of the Five Tones		○			spatiality
The beneficial / non-beneficial Nine Stars		○			
Favourable / unfavourable strides (associated with the 12 Jianchu Deities)		○			measurement
Various beneficial deities of time / space	○	○	○	○	timing/spatiality
Various evil currents of time / space	○	○	○		timing/spatiality
Various evil currents of carpentry (hammer, axe, Luban, the master, trestle)	○	○	○	○	profession
Male / female fates			□		timing

Table 4. Juxtaposition of the key aspects of contents of the four manuals under examination

Key aspects of contents	Luban C	Luban MM	Wang	Liu	Implications
Dates	since 15th cent.	since 19th cent.	early 20th cent.	late 20th cent.	
Tomb / coffin making: favourable days			□		timing
Personified nomenclature for the Trigrams / the Five Elements / hours/ the 28 Constellations			○		personification

(Luban C: *The Classic of Luban*; Luban MM: *The Measurement Manual of Luban*; Wang: Wang's Manual; Liu: Liu's Manuals; ○: much mentioned; □: little mentioned; *chi*: Taiwan foot; *cun*: Taiwan inch)

They are overwhelmingly cosmological and ritualistic. It should be noted that none of the 4 manuals cover all the above aspects and there is little commonality in aspects covered. Each manual therefore appears to have its own focus. This might reflect the diversity of background among master carpenters. The compiler of *The Classic of Luban* was probably someone with an official position working at the Imperial Bureau of Work. The user (owner) of *The Measurement Manual of Luban* would be both a house and a tomb builder. Wang was famous and he knew much more about Chinese geomancy and fortune telling than the others. The master carpenters in the Xinpu area were local workers.

The legitimacy of carpentry and social struggle

In the manuals the legends of Luban are traced, a special ruler was named after Luban for deciding favourable measurements and on the occasion of hoisting the ridgepole, Luban was invoked and invited to witness the procedure. Several Luban temples still exist in Taiwan and the worship of this patron saint of carpentry continues, though the traditional building trade has gradually yielded to modern construction systems influenced by Japan.

Master carpenters tended to protect the privileges of the profession. In ancient China carpenters were categorized into the so-called one hundred kinds of craftsmanship, whose social status was relatively low. Although not always the case in traditional Taiwan, master carpenters kept privileges and interests within a small circle by keeping the secret knowledge of carpentry private and transmitting it to a select few only. Taoist priests and other magicians were normally required to swear not to reveal the secret knowledge of carpentry to outsiders, otherwise they would face serious punishment. The other way for a master carpenter to gain self-esteem was to practice both magic and carpentry. As *The Classic of Luban* shows, a carpenter could hide a token on the top of a ridgepole in a building in order to bewitch the client, particularly if he was insulted during the building work. Alternatively a token could be a blessing for a client who had shown hospitality and appreciation. Although there was no evidence of these practices other than that recorded in *The*

Classic of Luban, rumours suggest they did take place in actuality. To ensure that it was what the client deserved, the book advises the carpenter to choose the exact measure he first noticed at the time he opened it (Wu 1987, p.18a). In fact this advice was more like an excuse for self-redemption from evil conduct. For fear of malediction, the client would try to be kind to the master carpenter and treat him like a honourable guest during construction.

Rituals and animism

Some parts of the manuals are concerned with rituals. For instance, they more-or-less record the order for laying the plinth. The eight plinths corresponding to the eight directions (the four cardinal plus the four corner) were most important and should be laid (in the first place) with the four cardinals after the four corners. This is reminiscent of the Luo River Writing, where the four corners are regarded as the four limbs of the tortoise. The four 'limbs' should be established in order to ensure the stability of the dwelling (Chiou 1991, pp.292-3). Besides, as shown in *the Measurement Manual of Luban*, the building base was associated with a dragon and the four corners were separately named after the dragon's stomach, back, head and feet. Alternately, each corner position should be the stomach, the back, the head, or the feet, in different months of the year (Chiou 1991, p.293).

However, the most ritualistic stage was hoisting the ridgepole, the top member of the wood frame of a building and the final member to be assembled. The completion of this stage meant that the main body of the building had been established and was therefore crucial and was accordingly accompanied by a special ceremony. The manuals do not deal with the performance, but a vivid description by Ye, Dejun in 1929 about building folklore in Huai'an of China says:

> The erection of the wood frame and the hoisting of the ridgepole were normally held on the same day, which was decided by hemerology. The former was done first and the latter was left until the right moment. After the erection of wood frames, the ridgepole was lifted high and made ready. Three diamond pieces of red paper, altogether bearing the three auspicious words: blessing, rank, and longevity, were glued to the ridgepole. When the right moment arrived, two carpenters would climb up along the erected columns to the top of the wood frame, one on the right of the central bay, the other on the left, bringing with them cakes and coins. The two carpenters pretended to hold the ridgepole with two pieces of cloth, one of purple colour and the other of green. Two tillers stood underneath the ridgepole. A third tiler held a burning bark and waved to the above, the below, and the four cardinal directions to cleanse the ritual space (to expel the evil spirits). In the mean time, he uttered auspicious sentences. Then, it was the turn of the tiler on the left hand side to utter auspicious sentences, and then the one on the right. Immediate after this, the two carpenters altogether pulled up the ridgepole and tossed it into its rightful place. In the meantime, the left carpenter uttered auspicious sentences and then the right one. Soon after, the two carpenters threw cakes and

> coins downward and firecrackers were set off. After hoisting the ridgepole, a table was set at the center of the building under construction, on which cakes and three cooked sacrifices (cock, fish and pig-head) were prepared; incenses and candles were lit. The householder would give three kowtows to heaven.
>
> (Translated by Chiou 1991, pp.295-6)

On the worship table (as recorded in *the Classic of Luban)* the incense-fire of Puan, said to be the teacher of Luban (Ruitenbeek 1993, p.164), was posited to preside over this ritual, with monetary notes of five colours, fragrant flowers, lamps, candles, three sacrifices, fruit and wine. The master carpenter (or the householder) would act as the officiate. The carpentry tools, such as the steelyard, the wood scale, the try square, and the line-marker, as well as the geomancer's compass, were tied to the rice tub and altogether put on the table (Wu 1987, pp.2b-3a).

The incense stick was a medium for the worshipper to communicate with the supernatural. According to the prayer for hoisting the ridgepole recorded in *the Classic of Luban,* the officiate stuck five pieces of incense in the golden tripod to invoke the duty talisman envoys, asking them to deliver the incense message to invite the deities (Ruitenbeek 1993, 165; Wu 1987, pp.2b-3a) to temporarily leave their lodges and visit the house under construction. The officiate expressed his humbleness and sincerity by offering three rounds of wine libation and the hope that they will generously endow the household with their blessings. After the libations, as the prayer went on, the officiate made a twofold wish: that after the ridgepole was hoisted, the household would obtain great auspiciousness of every kind; secondly, the artisans would finish the work with skill and efficiency (Chiou 1991, p.299).

The contents of the prayer depicted popular cosmology. Apart from the gods directly related to the building (i.e. the gods of furnace, door, well and Luban), the deities listed in the invocation were mainly associated with the major dimensions of time and space in Chinese cosmology: the Ten Directions, the Five Directions, the twelve zodiac palaces, the four seasons. Imbued with animism, these were deified (Chiou 1991, p.299).

It appears the carpenters believed the supernatural was present everywhere – a form of animism. If a carpenter performed correctly, he would be able to attract the blessing of beneficial spirits and avoid the threat of evil currents for both himself and his clients. Carpenters hoped or were expected to work at the right time, in the right directional position and in the right manner so as to ensure a building was properly erected with suitable dimensions and was orientated correctly in its surroundings. The right time was the hour, day, month, or year when beneficial spirits or currents were on duty. Similarly the right directional position involved the carpenter piling timbers or placing a trestle that attracted beneficial spirits or currents and avoided evil ones. The right manner meant working methods or performance exempt from taboos, which included Luban, the great

geomancer Yang, Yunsong (active ca. the tenth century), soil, axe, hammer, chopping block, trestle, and many others.

Furthermore, the stars of the Big Dipper, the eight Trigrams, the 12 hours, the Five Element, the 28 Constellations, and the parts of the geomantic compass are personified with human names. Often they were rich in significant origins. For example, the Big Dipper and the 12 directional positions acted as a clock in nature and helped the ancient Chinese to fix seasons and calendar. This was crucial to agricultural activities. Accordingly, the stars of the Big Dipper were believed to delegate the Polar Star to preside over the welfare of human beings. They were deified and worshipped by the sixth century. From as early as 120 BC, the 12 Jianchu Deities were believed to preside over the 12 directional positions where the handle of the Big Dipper pointed to every month.

Geomancy

As for the building compound, its site plan, form, and dimensions were governed by geomantic principles. The site plan was often considered in accordance to the space framework of the eight Trigrams or the 24 Points. Each of the Trigrams or the directional Points was associated with the attributes of *yin yang* and one of the Five Elements. The harmonic relationships of *yin yang* or the mutual generation/destruction relationships of the Five Elements were often applied to the judgment of the 24 Points (favourable or not to a set orientation). In this regard, the geomantic compass was instrumental. Also, the ideal environmental configuration was considered in terms of the so-called Four Subjects in geomancy, namely, the mountain range terminating at the back of the building compound (or the tomb), the protecting hills on the right and left hand sides and in front of it, the water flows embracing it, and the focus spot of vital energy at the end of mountain range. The hierarchical and harmonic relationships of the four were fundamental to consideration of the ideal environmental configuration.

The building form was conceived in many ways. Size was conceived in terms of purlin number viewed from the section or bay number from the front elevation. Building shape was associated with the attributes of the Five Elements. Its configuration was regarded as favourable if the wood frames were well balanced (or in symmetry) and the components were flawless. Compounds within grouped buildings should be in harmony with one another in terms of their size, height, brightness, width, and depth. These arrangements are found in the notes taken by Wang:

> Whether large or small, high or low, the buildings of a compound are graded. Which building of the compound, the guest or the host, is in front is ethically decided. Whether high or low, wide or narrow, it accords with the format. Whether shallow or deep, bright or dark, it acclaims propriety. If the building is too high, the vital energy would disperse. If too low, the vital energy would swell up. If too wide, it would not be embraced by the earth. If too narrow, it would not contain the vital energy. If too shallow, the vital energy inside would be

> short and superficial. If too deep, the vital energy inside would get hurt. If too bright, it would be too masculine to grow. If too dark, it would be too feminine to achieve. Therefore, the mountain ranges should be rising and thick, and the earth is expected to pile up with layers, so as to convey the vital energy. The bright plains (in front of the focus spot of vital energy or in front of the compound) are preferably a bit deep so as to collect the water from four directions, which is to keep the vital energy. The front, the back, the right and left hand sides of the building compound should not lack, so as to solidify the vital energy. The protective wing buildings should avoid wood stars (which mean too straight and long), neither should they be high in front but low at the back, nor should they lack on the right or left hand side. The end of the ridge should not appear threatening to the building proper. The main gate should not be curved outwards. The buildings on the right or left hand side should not be higher than the main. Nor should they turn back imposing on the main. The back row of protective building should not be too high and threatening to the main. The wind should be warded off. The water flow should wind its way and embrace the compound.
>
> (Li 1996, p.160 (translated by Chiou))

Such a detailed narration on the formal arrangements of the building compound was based on the framework of the Four Subjects and is best explained by a belief in *fengshui* among the master carpenters.

CONCLUSION

In European medieval building practice there are few extant technical manuals perhaps because they were "not meant for general circulation, but only for the teaching of the initiated. Lodges were enjoined not to divulge trade secrets to outsiders" (Kostof 1977, p.89). Of those that exist the most prominent is the notebook of Villard de Honnecourt. Whether Villard was a master builder or merely a drawing collector is still in dispute (Kostof 1977, p.89; Moffett 2003, p.263), but his notebook contained practical and technical building knowledge that:

> includes a wide range of observations: geometry problems and their solutions; timber roof trusses; sculpture and carved ornament; nature sketches; church plans; sketches of details from cathedrals at Laon, Chartres, and Reims; machines and devices; and such esoteric information such as how to tame a lion. 〔…〕 Villard intended his collection to be used by others. He identifies geometry as the basis of drawing, claims to present advice on masonry and carpentry, and asks that readers remember him and pray for his soul.
>
> (Moffett 2003, pp.262-3)

The manuals in Taiwan were much later than Villard's notebook. Nevertheless, they equally belong to the traditional phase of both societies, and therefore comparisons are valid. Compared to

Villard's notebook, the traditional master carpenters' manuals in Taiwan do not deal with geometry or techniques in carpentry but rather contain more esoteric information. The carpenters were very concerned with relating to heaven, earth, the supernatural and other people when working. Heidegger's idea of dwelling is instructive in understanding the mentality underlying these manuals. He states:

> To dwell, to be set at peace, means to remain at peace within the free, the preserve, the free sphere that safeguards each thing in its nature. The fundamental character of dwelling is this sparing and preserving. It pervades dwelling in its whole range. That range reveals itself to us as soon as we reflect that human being consists in dwelling, and indeed, dwelling in the sense of the stay of mortals on the earth.
>
> But "on the earth" already means "under the sky". Both of these also mean "remaining before the divinities" and include a "belonging to men's being with one another." By a primal oneness the four – earth and sky, divinities and mortals – belong together in one".
>
> (Heidegger 1975, p.149)

If the master carpenter performed correctly, the "thing" built would "preserve" welfare and "spare" evil threats for both himself and his client. Because "the four belong together in one", he was inherently driven to be in tune with heaven, earth, and the supernatural while at work. Despite their geographic separation the carpenters in China and Taiwan expressed in practical terms the philosophical thoughts of Heidegger.

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