

The Relevance of "Kaogong Ji" to the Cultivation of Craftsmanship Spirit and Professional Ethics Among Contemporary Vocational College Students

Zhiying Chen

School of Marxism, Shanghai Publishing and Printing College, Shanghai, China
Email: czyyzb@163.com

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Abstract

Kaogong Ji is a pre-Qin dynasty Chinese classic that documents six major categories of ancient handicraft technical standards. Embedded within it are philosophical wisdoms such as equality, innovation, and creativity, which offer significant inspiration for fostering modern craftsmanship spirit and professional ethics.

Keywords

Kaogong Ji; craftsmanship spirit; professional ethics

1. Introduction

Kaogong Ji (The Artificers' Record) is one of ancient China's earliest technical treatises on industrial manufacturing, focusing on the classification of handicraft professions. It systematically documents the technical standards, scientific knowledge, and production philosophies of the pre-Qin period (before 221 BCE). With approximately 7,100 characters, it stands as a crucial text in both ancient Chinese technology and socio-political thought.

Originally part of Zhou Li (Rites of Zhou), Kaogong Ji was appended to the missing "Winter Offices" (Dongguan) section by Liu De, a son of Emperor Jing of Han, who was renowned for his dedication to preserving classical culture. His inclusion of Kaogong Ji was not merely as a technical manual but as a ritual text—Zhou Li (also called Zhou Guan) outlines the bureaucratic structure of the Zhou dynasty, defining the roles of officials in state governance and reflecting the era's pursuit of a ritually ordered society.

By examining the status and function of craftsmen (gong) through the lens of ritual (Li),

we gain insight into their socio-political value in ancient governance. This perspective helps clarify how contemporary vocational education should cultivate craftsmanship spirit (gongjiang jingshen) and professional ethics among students.

2. Main Content and Research Status of Kaogongji

Kaogongji primarily introduces the technical specifications of ancient Chinese official handicrafts, covering diverse fields such as metalworking, woodworking, leatherworking, ceramics, and dyeing. It details the production processes and technological improvements of various industrial products, incorporating knowledge from natural sciences including mathematics, physics, and biology.

The text classifies handicrafts into six major categories with 30 trades, encompassing all aspects of production and daily life, of which 25 survive (6 are lost). The specific classifications are as follows:

- Woodworking (Gongmu zhi gong): Includes 7 trades such as Lunren (wheel/vehicle makers) and Jiangren (architects), focusing on the production of vehicles, palaces, and agricultural tools.
- Metalworking (Gongjin zhi gong): Comprises 6 trades like Zhushi (knife makers) and Fushi (bell casters), detailing bronze alloy ratios and casting techniques for weapons and ritual vessels.
- Leatherworking (Gongpi zhi gong): Features 5 trades including Hanren (armor makers) and Baoren (tanners), describing leather processing and protective equipment production.
- Dyeing (Shese zhi gong): Includes 5 trades such as Huagui (painters/dyers) and Zhongshi (feather dyers), focusing on silk refining, dyeing techniques, and color standards.
- Jewellery (Guamo zhi gong): Contains 5 trades like Yuren (jade craftsmen) and Qingshi (chime stone makers), covering jade carving and musical instrument production.
- Pottery (Bozhi zhi gong): Survives with 2 trades—Taoren (potters) and Fangren (steam cooker makers)—explaining pottery shaping and firing techniques.

In the process of elaborating technical specifications, the book integrates natural science knowledge, reflecting the ancients' pursuit of science. For example, the calculation of wheel spacing and the measurement of architectural scales embody the application of mathematical and mechanical knowledge. Adjusting the thickness of chimes to control their pitch demonstrates mastery of acoustic principles, while the refinement of various craft materials reflects achievements in biological understanding. The aesthetic beauty of the crafts further represents a pursuit of aesthetics. Modern scholars have devoted significant effort to researching these aspects of the Kaogongji.

A search in CNKI (China National Knowledge Infrastructure) using "Kaogongji" as the keyword yields 761 documents, with the highest number of publications in 2007 and 2020.

Most of these studies explore the text from the perspectives of science, technology, and aesthetics, published in journals related to art and technology, decoration, urban planning, fine arts, cultural heritage, and natural sciences. Fewer studies focus on the Kaogongji from the perspective of ritual studies. Some scholars have also touched on its ethical ideas through discussions of craftsmen assessment systems, the concept of "moderation in craftsmanship," and the relationship between human ethics and material utility. For instance, As Guan Ruixin et al. explored the humanistic thought in Zhou Rites-Kaogong Ji, their study primarily elucidates the ethical dimensions of human relationships embedded in ancient artifact design from a perspective of moral philosophy. in Zhou Li-Kaogongji, primarily elaborating on the ethical characteristics of ancient artifacts from an ethical perspective [Xu Ying's master's thesis]. Zhang Daoyi, in his article "Three Propositions on Design in the Kaogongji," addresses craftsmen's social responsibility and ethics [Zhang Daoyi, "Three Propositions on Design in the Kaogongji"]. These works indicate that research on the Kaogongji is shifting from an emphasis on its natural scientific value to explorations of its humanistic significance.

3. The Reflection of Craftsmen's Professional Quality in the "Zongxu" (General Preface) of Kaogongji

The "Zongxu" (General Preface) of Kaogongji serves as the opening and pivotal section of the text. It primarily addresses the social status and value of craftsmen and their work, emphasizing that an outstanding craftsman must possess not only superb skills but also high moral and professional qualities to become a "social master craftsman" (liangong).

3.1. The Status of "Baigong" (Craftsmen)

The "Zongxu" of Kaogongji opens with the statement, "The state has six occupations, and 'Baigong' (craftsmen) are one of them." It identifies six fundamental social roles:

- Wanggong (rulers) "sit and discuss the Dao," focusing on governing principles;
- Shidafu (scholar-officials) "act and implement," executing the rulers' policies;
- Baigong "refine the five materials to produce tools for the people," crafting utensils based on material properties;
- Shanglü (merchants) "circulate rare goods from all regions" to meet needs;
- Nongfu (farmers) "toil to cultivate land and accumulate grain";
- Fugong (women) "weave silk and hemp into clothing."

By including craftsmen as one of the six core occupations, the text reflects a societal view of equality among rulers, officials, farmers, merchants, and artisans—emphasizing division of labor rather than rigid hierarchy. Further elevating their status, it states, "All craftsmen's works are creations of sages," equating artisans' contributions to those of revered wisdom figures and affirming their social value.

3.2. Dimensions of 工匠精神 (Craftsmanship Spirit)

Kaogongji defines a craftsman as follows: "The wise create objects; the skillful inherit and preserve them through generations—this is called 'Gong' (craftsman)." It categorizes craftsmen into roles that collectively form three core dimensions of ancient craftsmanship spirit:

- Innovation/Creation: The wisest craftsmen not only master production but also invent new tools or techniques to meet human needs, such as specialized artisans like "Gongren" (bow makers).
- Execution: Skilled craftsmen, though less innovative, excel at translating the wise's inventions into practical, reproducible processes.
- Inheritance: Those who may lack innovation or masterful skill but clearly articulate and pass down techniques are equally recognized as craftsmen.

3.3. "Liangong" (Exemplary Craftsmen) and the Pursuit of Excellence

To become an exemplary "Liangong" and create refined, functional objects, mere creativity and skill are insufficient. The text asserts: "Heaven provides seasons, earth offers qi (energy), materials possess beauty, and craftsmen exhibit skill—only by combining these four can excellence be achieved." Thus, exemplary craftsmen must harmonize:

- Timing (Tianyou shi): Adapting to seasonal rhythms (e.g., wood's moisture content varies with rainy/dry seasons, affecting 木器 quality).
- Geography (Diyong qi): Considering environmental influences on materials (e.g., "Oranges turn bitter when planted north of the Huai River"), which impacts both material properties and product usability.
- Superior Materials (Caiyou mei) and Masterful Skill (Gongyou qiao): Selecting optimal materials and refining techniques.

In 2016, "craftsmanship spirit" was officially inscribed in China's government work report, advocating for "cultivating the spirit of 精益求精 (relentless pursuit of excellence), enhancing product variety, quality, and branding." The emphasis on excellence, innovation, and dedication aligns with the qualities of "Baigong" outlined in Kaogongji's "Zongxu," making the text both a methodological and directional guide for nurturing modern craftsmen.

4. The Value of Kaogongji in Cultivating the Craftsman Spirit among Vocational College Students

Hao Yucheng, a member of the National Intelligent Manufacturing Expert Committee, noted regarding the value of Kaogongji: "How far we can see into the past determines how far we can go into the future." Achieving modern "great power craftsmen" (daguo gongjiang) requires inheriting ancient wisdom. As a model of ancient technological systems that "embodies Dao through tools" and transmits the wisdom of "sages," Kaogongji provides crucial spiritual and practical guidance for nurturing vocational college students.

4.1. The Spirit of Equality

Kaogongji advocates vocational equality, listing "Baigong" (craftsmen) alongside rulers, officials, merchants, farmers, and women as one of the six essential state occupations—each with distinct roles but equal social value. Similarly, General Secretary Xi Jinping has emphasized in major reports the need to "practice socialist core values, promote the spirit of labor, model workers, and craftsmanship," and to "respect labor, knowledge, talent, and creation," inherently affirming the dignity of craftsmen's labor and the equality of all workers.

In contemporary society, resurgent feudal hierarchical biases—manifested explicitly or implicitly in economy, education, culture, and the workplace—exert subtle negative influences on students. To cultivate future craftsmen and achieve national prosperity, it is critical to instill the belief that "labor is honorable" and "all workers are equal": officials, entrepreneurs, craftsmen, and farmers differ only in division of labor, not social status. Overcoming such hierarchical prejudices requires sustained societal effort.

4.2. The Spirit of Collaboration

The "Zongxu" defines craftsmen as a collective: "The wise create objects; the skillful inherit and preserve them through generations—this is called 'Gong'." It identifies three roles within craftsmanship: innovators (wise creators of techniques), executors (skilled producers), and inheritors (guardians of traditions). Since the 18th National Congress, China has advanced from advocating "mass entrepreneurship and innovation" to "innovation, entrepreneurship, and creation," highlighting innovation's growing national importance. Concurrently, the state emphasizes the craftsmanship spirit of "dedication, precision, meticulousness, and pursuit of excellence," all essential for vocational student development.

Kaogongji's framework reveals that craftsmanship thrives on teamwork: members contribute distinct strengths to form a cohesive unit. Students must similarly assess their abilities, plan careers, and leverage their strengths to realize personal value within collaborative environments.

4.3. The Spirit of "Liangong" (Exemplary Craftsmanship)

Beyond defining craftsmanship, Kaogongji elevates the ideal of "Liangong"—exemplary craftsmen driven by the pursuit of excellence. As General Secretary Xi noted at the National Model Workers Congress, the craftsmanship spirit inherently embodies "the pursuit of excellence." To achieve this, Kaogongji stresses harmonizing "mastery of skill" with "awareness of seasons, geography, and superior materials."

Pan Tianbo, in *Kaogongji and the Core Genes of Chinese Craftsmanship Spirit*, summarizes this as the "spirit of harmony" (shanhe jingshen)—a philosophical stance or ecological consciousness in Chinese craftsmanship, reflecting holistic cosmic episte-

mology and the essence of 工匠 behavior. This spirit embodies Chinese philosophical ideas like "unity of man and nature" (tianren heyi), "adapting to local conditions," and "tailoring to materials."

Many students, lacking social experience and interest in liberal arts, often neglect such philosophical knowledge. Educators must emphasize its importance: understanding these ideas is indispensable for becoming "Liangong"—the "great power craftsmen" of the future.

5. Conclusion

Kaogongji is a classic of ancient China, serving not only as a model record of handicraft technology but also as an original source of the craftsmanship spirit. The "Zongxu"'s discussion of craftsmen's social status and the practical logic of "creating objects—inheriting traditions—serving utility" embody the spirit of innovation,精益求精 (relentless pursuit of excellence), and dedication to perfection.

The great rejuvenation of the Chinese nation relies on modern industrial development and the leadership of "great power craftsmen" (daguo gongjiang). The craftsmanship spirit in Kaogongji provides spiritual nourishment for cultivating modern craftsmen. Higher vocational colleges must adopt a "dialogue between ancient and modern" perspective, translating its spiritual ideals into the core competitiveness of modern vocational education systems to foster high-quality technical talents capable of supporting high-quality economic development.

Some college students exhibit tendencies such as "valuing skills over culture" and "seeking quick results while lacking patience," which contradict the craftsmanship spirit. These issues require attention in the cultivation of vocational college students moving forward.

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