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# Economy and extravagance in craft culture: the deployment of a grand building code in Chinese construction history

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## ABSTRACT

The grand building code called *Yingzao fashi*, drafted in the twelfth-century Song dynasty, was used as a technical reference guide and assisted previous researchers in analyses of premodern Chinese building structures and construction, yet how the building code entangled with contemporary society, coetaneous challenges and the changing courses of political power deserves a comprehensive investigation. This study applies the research approach of textual analysis to track the vicissitude of the grand building code, examine these contemporary reforming attempts related to the building code, and scrutinise the consequence of the national building code when it was implemented in the later Song dynasty. By tracing the formation, promulgation and implementation of *Yingzao fashi* in premodern China, this paper reveals that the building standards are the product of emerging philosophical theories and the standardisation of practices is the key strategy in the building and construction reforms. It also concludes that the political and power factors would dominantly influence the evolution of the building code and thwart its effectiveness, thus producing a result opposite to its initial intention in practice.

## ARTICLE HISTORY

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## KEYWORDS

Building code; construction history; craft culture; state finance; *Yingzao-fashi*

## 1. Introduction

This paper attempts to reveal the social and political connotations of the classical premodern Chinese buildings code, *Yingzao fashi*, focusing on its sophisticated historical context and diverse stakeholders. Few historical studies examine how building standards aimed at downsizing or rationalising came to be devised and practised in China. Through a comprehensive analysis of the ups and downs of this grand building code in twelfth-century China, involving its intertwined relationship with contemporary society, coetaneous challenges, and the changing courses of political power, this study provides a panorama of the complex interrelationship between building standards, architectural pursuits, economy, political impacts, social reforms, and scholarly ideas. It also shows how heteroglossic factors in the formation and implementation process in building-related practices could deflect building standards away from their original aim, especially when there were dramatic changes in the historical context. This research applies a multidisciplinary perspective that integrates historical study with architectural study and reveals those underlying details and issues that produced the variance in views about buildings through the ages. In doing so, a large amount of historical records are involved, including historical building standards, official documents, financial records, drawings and court edicts. Textual analysis is

the principal research methodology used to examine and interpret specific texts in historical and building documents by analysing their content and underlying meanings.

*Yingzao fashi* is an important book on building standards in Chinese history. Issued by the Song court in 1103 CE, it was a systematic collection of official construction laws, standards, and statutes observed by the imperial construction departments. *Yingzao fashi* aimed to provide builders with authoritative guidelines for precise construction procedures and effective budget management (Glahn 1981; Guo 1998). The document in its text and illustrations listed the typical patterns of structures and building components and elaborated their scale, form, and method of manufacture [Figure 1].

Its status in China could be compared to *De architectura* (the *Ten Books of Architecture*) in the West. In the Northern Song dynasty, though there was no concept of sustainable architecture or green building, the guiding principle of *Yingzao fashi* aligns with today's pursuit of economy and simplicity. Joseph Rykwert calls *Yingzao fashi* "the most important work on architecture and building for imperial China" (Rykwert 2013) (p 98). Echoing the words of Jiren Feng, Rykwert notes *Yingzao fashi*'s treatment by researchers as a handbook for standardised details and measurements, whose cultural value has been largely ignored (Rykwert 2013; Feng 2015). Nancy Steinhardt also calls for a broader view of *Yingzao fashi*,

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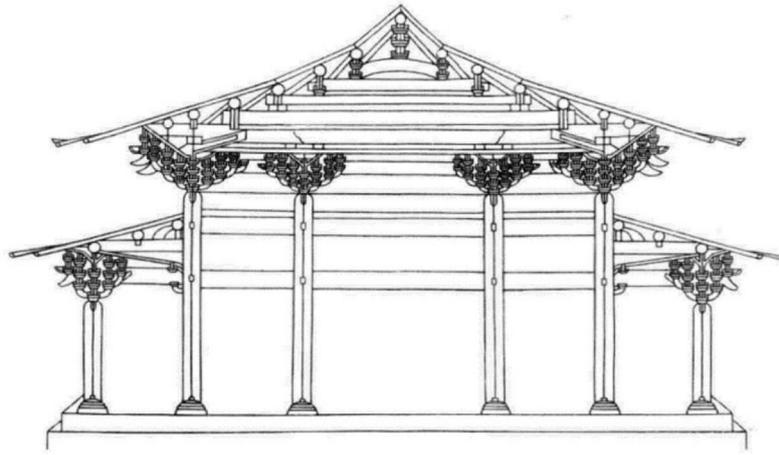


Figure 1. Original illustration in *Yingzao fashi*.

encouraging readers to move beyond its technical nuances and implications (Steinhardt 2014).

The tendency to focus on the technical aspects is natural, given the nature of the contents of *Yingzao fashi*. Shiqiao Li views *Yingzao fashi* as a “uniquely complete record of building construction of the Song dynasty” (Li 2003) (p 471), quite different to the *Ten Books of Architecture*. There is therefore no doubt that the technical information it provided was the centre of attention. In light of further historical studies into this building code, however, we uncover more fascinating stories and new knowledge that derive from its contents and the history beyond the book itself.

Although *Yingzao fashi* was promulgated by the Song imperial government, it took long for it to be recognised by modern scholars. The Song court first issued *Yingzao fashi* in 1103 CE. At that time, it provided a systematic series of official construction laws, standards, and statutes to be observed by the imperial departments of official construction and its builders. In modern times however, the first scholar to notice the value of this book did so in the early twentieth century (Li 2003). As a politician and industrialist, Zhu Qiqian (1872–1964 CE) had an interest in construction and transport. He led a range of construction projects repairing historical buildings and structures.

Once *Yingzao fashi* was published, it attracted the attention of scholars far and wide. Liang Sicheng (1901–1972 CE), considered as the father of Chinese modern architecture, was studying at the University of Pennsylvania in the USA. He received a copy of *Yingzao fashi* sent to him by his father Liang Qichao and felt fascinated by this book. Liang Sicheng devoted himself to annotating this ancient book which, though fascinating, was virtually unintelligible. Over this period, while China experienced wars, civil unrest and political turmoil, Liang was trapped and suffered tremendous difficulties. It was not until a decade or so after Liang

passed away that some of his annotations were published.

Early scholars were interested in annotating the book to achieve a better understanding of the buildings and construction standards of the time. As Liang would comment, *Yingzao fashi* was an important “grammar book” for the rules of traditional Chinese architecture (Liang and Fairbank 1984) (p 14). To study it was similar to studying grammar to learn English. In addition to a number of scholars associated with Liang Sicheng in China in his study of *Yingzao fashi*, scholars the world over were interested in exploring construction and technical standards through *Yingzao fashi*. Else Glahn, a leading scholar of *Yingzao fashi*, served as founding professor in Denmark’s second Institute of East Asian Studies (Steinhardt 2011). In answer to a question of how we could know that public construction was standardised in ancient China, Glahn cited *Yingzao fashi* and used it as a key to explore this chapter of history (Glahn 1981, 1975). Japanese scholar Ito Seizo studied stonework and carving techniques in *Yingzao-fashi*. British scholar Walter Perceval Yetts highlights the drawings contained in *Yingzao fashi* (Yetts 1927). Qinghua Guo draws attention to the timber framework and modular system of *Yingzao fashi* (Guo 1998). Zhang Shiqing focuses especially on the modular system and spatial configuration (Zhang 2004).

In more recent studies, there has been a tendency toward a greater variety of topics. For example, Li Shiqiao casts light on the discovery and dissemination of *Yingzao fashi* in the early twentieth century (Li 2003). Fu Xinian focuses on a textual analysis of *Yingzao fashi* and an investigation into its circulation (Fu 2007). Referencing a large body of ancient literature, Feng Jiren focuses on the source of the terminology used in the *Yingzao-fashi*. He finally concludes that the architectural terms used in *Yingzao fashi* for items such as eave brackets were botanical metaphors (Feng 2015).

Later research shows the large potential in exploring *Yingzao fashi* with a broader vision. However, the examination of the social and political connotations of the building code is still lacking.

## 2. Utilitarianism, emerging thoughts and waste challenges

Though seldom studied, the emergence of utilitarianism laid the philosophical foundation to *Yingzao fashi*. In general, Confucianism has served as the dominant philosophical theory in China and been admired as the orthodox philosophy by the imperial court. In the Northern Song dynasty, a trend towards utilitarianism came to light. Hu Yuan (9,931,059 CE) was a prophet for utilitarianist philosophy. He called for noumenon-enlightenment and practical applications. He believed that the ultimate aim should be to produce effective practical outcomes. Li Gou (1009–1059 CE) concludes that people's actions follow their desires, which are for self improvement and the promotion their interests. Although Li Gou saw himself as a "devout follower of Confucius and Mencius", his emphasis upon betterment and self interest was a departure from the traditional philosophy of Confucian or Mencius (Wang 2015). The new focus was on tangible reality. Because the ideas and theories aligned with the thriving world of commerce and business of the time, they obtained increasing recognition in Song society.

Utilitarianism was perceived as different from Neo-Confucianism, which attracted more academic attention. The latter had a lasting impact on Chinese intellectual and cultural society, but the former played a critical role in the Song dynasty, contributing significantly to a series of reforms. Neo-Confucianism usually designates an updated version of Confucian ethics and metaphysics called *Lixue*. The followers of *Lixue* advocated practicing restraint. They believed that their version of Confucian principles could govern one's entire life and that all would fall into place if those principles were firmly followed. Neo-Confucianism focuses on *xing* (naturalness) and *xin* (heart-mind). Through the virtues of *xing* and *xin*, people would be able to achieve optimum human condition. As an ontological concept, *xing* can be understood as naturalness (Cheng 1997). As formulated by Mencius, *xing* emphasises human moral motivation and deals with moral impulses. For example, early Song scholar-official Ouyang Xiu (1007–1072 CE) [Figure 2] proposed that scholars devote their time to issues more pressing than *Xing*. He called for more attention to the more practical problems of society. He believed that focusing on these and seeking solu-



Figure 2. Ouyang Xiu (1007–1072 CE) the portrait saved in The Palace Museum.

tions to them should be the priority for the scholar-officials (Ouyang 2001).

The emergence of these utilitarianist considerations and approaches can be explained by the social context of that time. Similar to today's scarcity of resources and limitation in growth, the Northern Song government envisaged a substantial need to rein in spending. Although it was wealthy, the country was dealing with enormous financial and military challenges. Northern Song neighbored Liao from the north and Western Xia from the west. Northern Song was surrounded by militarily superior countries, especially Western Xia, with whom it was frequently in conflict or at war. Being less militarily advantaged, Northern Song was frequently threatened and embroiled in war reparations. It was thought necessary and urgent to change this situation.

The problem of extravagance turned out to be serious. As a statesman, Song Qi (998–1061 CE) reported to the imperial court and stressed the problems of redundancy and waste. Song identified three areas that created redundancy and waste. Firstly, the government was maintaining large and expanding armies, with much redundant overlapping. Secondly, the bureaucracy was excessive with too many, often underperforming, administrative officials on the payroll. Finally, plagued with problems of redundancy and waste, its financial condition and management were weak. Also of note is that the ever increasing taxation revenue was unable to keep pace with even faster growing expenditure, a financial challenge with no relief in sight (Song 2004). These problems were highlighted in the imperial report by Yu Ce urging change and recounting the extravagance of the imperial lifestyle, the inefficiency of court officials and the suffering of the people (Yu 2004).

The emergence of utilitarianism in the Song dynasty made officials begin to devote their attention to many actual problems in the economic

society and management system, especially waste and extravagance. These concerns led to subsequent economic reforms.

### 3. The need for economic reform

Both a shifting attitude to practical problems and the acknowledgement of a national challenge paved the way for significant reforms. Song utilitarianism came to the fore with Fan Zhongyan's (989–1052 CE) mid-eleventh century reforms and reached its pinnacle with Wang Anshi's (1021–1086 CE) even broader reforms. Fan proposed to improve administrative efficiency in the government and optimise investment. Under the leadership of Fan, a forceful political reform was launched. As it was conducted over the Qingli reign (1041–1048 CE), it was referred to as the Qingli Reform (Goldschmidt 2008). There was a ten point plan grouped into three main objectives in Fan Zhongyan's reforms:

- 1) Improve administrative efficiency in the central government by changing personnel management in ways that reward good officials and weed out incompetents;
- 2) Strengthen local government by improving salaries, investing in agricultural infrastructure and restoring equity in the labour demands made on the entire rural population;
- 3) Create militias and improve defence capabilities at the local level to maintain order, particularly on the frontiers most vulnerable to invasion.

However, the reforms did not proceed smoothly. As they aroused strong opposition at court, after one year and four months in 1045 CE, Emperor Renzong had to rescind the reform decrees and the reformers fell from power (Zhao 2013).

Although this reversal did not last long, it heralded the substantial reforms that were to follow. After the



**Figure 3.** Wang Anshi (1021–1086 CE) the portrait saved in The Palace Museum.

Qingli Reform, many real needs in the Song government and society at large were left unmet. Later, when Emperor Shenzong ascended to the throne seeking improvements, a far more ambitious reform was implemented to improve efficiency and rationalise expenditure. A legacy of earlier reforms, unresolved issues around redundancy and waste as well as the rise of a new emperor provided the opportunity for a new round of reforms. Then another practitioner of Song utilitarianism, Wang Anshi (1021–1086 CE) [Figure 3] came to power. Seeking to strengthen the country while reducing government waste, Wang implemented broad-ranging new policies during his years as Chief Councillor (1069–1076 CE). They had a significant impact on later Song society.

One core element of this reform targeted state finances, currency and trade. Wang first devised a new way to manage the imperial procurement system. He proposed paying cash for labour instead of imposing the traditional levies on labour services to supply the needs of the local government. He proposed that landholdings be surveyed to adjust the basic agrarian tax rates essential to government revenue. His proposals also extended to increasing the minting of copper coins and recognising the place of the craft and trade guilds, thus improving the management of imperial trade. Moreover, he established a plan to lend farmers funds for planting, which could be paid back at harvest time that same year. All of those measures were designed to reduce waste, eliminate tax evasion and improve efficiency.

As a continuation of Qingli Reform, Wang Anshi's Reform aimed to, to a larger extent, improve the economic and military power of the Empire and had a significant impact on later premodern China. For the field of construction, Wang Anshi's Reform was significant in establishing state building standards along with a department to deal with buildings and construction, as explained below.

## 4. Reforms and strategies for building and construction

### 4.1. Administrative reform and a focus on building and construction

As it is today, it was realised then that building and construction were areas generating large volumes of consumption and expenditure. Therefore, rather than share the administration of building and construction with other industries, the choice was made to establish an independent department specialised in building and construction.

Before this administrative reform, in the early Song period, the central government body responsible for the organisation and management of official construction was *Xiuzao-an* (Construction Bureau). It

was one of the five sub-branches of *Hubu* (Ministry of Revenue) which, together with *Yantie* (Ministry of Salt and Iron) and *Duozi* (Ministry of Allocation and Supply) formed the peak imperial management organ of finance, *Sansi* (Three Ministries). The three ministries with their sub-branches were in charge of various fields of imperial finance such as revenue, trade, deployment of military supplies, civilian goods distribution, official construction, animal husbandry, allocation of agricultural products and cargo transport. In addition to its role in official construction in the capital city, *Xiuzao-an* was also responsible for the construction of regional government offices, barracks and public facilities like bridges. The Department of Engineering Works of the Department of State Affairs and its subordinate body, *Jiangzuo-jian*, were still operating at that time but retained no actual authority. The regional government also had a specific office *Xiuzao-si* (Construction Office) in charge of local official construction projects.

This style of organisational system for official construction led to severe corruption and waste in the early Song dynasty construction process. *Xiuzao-an* was essentially a subsidiary body of the imperial organ of finance. Its function was more focused on the economics of construction, the cost of labour and materials, than on providing professional technical support for official construction. Documentary records reveal that frequently the design of construction works would be modified during the construction process, resulting in a huge waste of materials (Xu, 1957). *Xiuzao-an* also proved unable to inspect and verify the quality of the construction works based on sound construction techniques. In this environment, construction officials often preferred to overestimate the budget of construction projects. Then, on completion, they could take credit for the savings and seek rewards from governments for controlling waste in the area of building and construction.

As a result of Wang's reforms, the building and construction department underwent its administrative restructure in the Yuanfeng Reform of 1080 CE. Although Wang had resigned from his position as Chief Councillor, Emperor Shenzong, as supreme authority, continued to lead this administrative reform.

According to historical records, there were ten offices in the *Jiangzuo-jian* performing different functions (Ma 2011) and covering all the procedures over the lifecycle of a construction project for both buildings and structures:

*Xiunei-si* (Office of Palace Repair): This office took responsibility for royal constructions such as the building and repairing of palaces and royal temples.

- (1) *Dongxi-bazuo* (East and West Eight Workshops): There were eight workshops tasked with the construction and repair of civil infrastructure and public facilities in the capital city.

- (2) *Zhumu-wu* (Bamboo and Timber Office): This office was responsible for receiving and storing the bamboo and timber materials collected from other sites and used for official construction in the capital city.
- (3) *Shicai-chang* (Material Processing Office): This office oversaw the processing of raw construction materials and the production of prefabricated components for timber structures.
- (4) *Maijuan-chang* (Straw Office): This office was in charge of storing the straw used to make mortar.
- (5) *Yaowu* (Kiln Office): This office ran the production of the bricks, tiles, and pottery used in construction.
- (6) *Danfen-chang* (Painting Powder Office): This office was tasked with the making of pigments used for the painting and rendering of buildings.
- (7) *Zuofang-wuliaoku* (Storage of Workshop Material): This place was used to store various construction materials for long-term use.
- (8) *Tuicai-chang* (Recycle Office): Rejected timber materials were collected in this office. Some would be recycled and reused in construction, while others would be used as firewood.
- (9) *Lianbo-chang* (Curtain and Screen Office): This office was in charge of making bamboo curtains and reed screens.

This building and construction-related strategy proved effective in achieving the twin goals of economising and minimising. The change to the central government's construction institution from *Xiuzao-an* into *Jiangzuo-jian* accomplished much more than just streamlining organisations and downsizing staff. More importantly, *Jiangzuo-jian* would now be attached to the imperial top engineering department, the Department of Engineering Works of the Department of State Affairs. Because of this administrative relationship, in the new system, the staff of *Jiangzuo-jian* had more expertise in the area of building and construction. *Jiangzuo-jian* could offer more professional technical support to official construction projects and officials in *Jiangzuo-jian* were required to gain higher professional qualifications and greater skills. The author of the main building standards manual *Yingzao fashi* was an example of this. In 1091 twenty-first years after *Jiangzuo-jian* was reestablished, Li Jie moved in and started his career as a construction official (Li, 2007). The re-establishment of *Jiangzuo-jian* laid a foundation for the formation of *Yingzao fashi*.

#### 4.2. The formation of building standards

Further to the administrative structure reforms in building and construction, it was the new building

standards that attracted the Song era Utilitarianists' attention. Ouyang Xiu, the proponent of Song Utilitarianism who was mentioned earlier, stressed the importance for humanity to focus on tangible problems and questioned the urgency of dealing with *xing* (naturality). Ouyang paid special attention to building and construction, although he had a literary background. He had high regard for craftspeople and building standards. Yu Hao (965–986 CE) produced a building manual called *Mujing* (Timberwork Manual) that paved the way for *Yingzao fashi*. Yu, as a designer of building and construction projects, qualified as a *Duliaojiang* (Artisan of Material Management). Although Yu was not an official, his works and contributions were highly admired by utilitarianist officials. Ouyang commented that Yu was a supreme craftsman (Ouyang, 2006).

Ouyang commented on Yu's proficiency and his skill at meeting challenges in construction projects. For instance, the tower Yu built for the Kaibao Temple was the highest in the capital city region. People questioned why the tower was built leaning towards the northwest. Yu explained that, as the surrounding land was flat and usually windy, he had deliberately leaned the structure to counter the dominant northwest wind (Ouyang, 2006).

Similar anecdotes concerning Yu and the *Mujing* building manual were also related by Shen Kuo (1031–1095 CE), a prominent scholar-official who was passionate about science and technology, in his influential book *Mengxi bitan* (Mengxi's Essays) (Shen 2020). Though no original copy of Yu's *Timberwork Manual* has survived, fortunately parts of it were documented in *Mengxi bitan*. Shen also notes that the field of

building, construction and civil engineering of the time was in a sorry state. The *Timberwork Manual* was being used less frequently. There was a lack of attention to detail (Shen 2020). Better building practices and standards were needed. Subsequently, Yu's *Timberwork Manual* would deeply influence the forthcoming *Yingzao fashi* and provide a very good reference point for it.

Initially aimed at economising and minimising, the great building standards project kept to its guidelines, but the process was not smooth. Although the ambition for the standards was admirable, it was drafted in an unstable period when the reform process was encountering difficulties. The first compilation of *Yingzao fashi* took nearly twenty years to complete, from 1072 to 1091 CE. Over these years, Wang Anshi and his reform policies were experiencing considerable resistance. The reform policies were in full force when Wang was Chief Councillor, from 1069 to 1074 CE. Then he was challenged by his political opponents and removed from his post. In 1075 CE, emperor Shenzong reinstated Wang to his previous position, so he tried again to promote his policies. One year later, strong resistance from an opposition faction made him resign. His policies would then be gradually eroded until 1085 CE, the year of the emperor's death. This being the case, the governments showed little interest in the compilation of the first edition of *Yingzao-fashi*. Although it was completed in 1091 CE, it was not promulgated right away. The official explanation offered by Li Jie appears in his preface to *Yingzao-fashi*: "It lacked details on the strict restrictions placed on the use of materials and labour, and there were no detailed regulations in force to prevent speculation and waste" (Li, 2007) [Figure 4]. Despite this, the

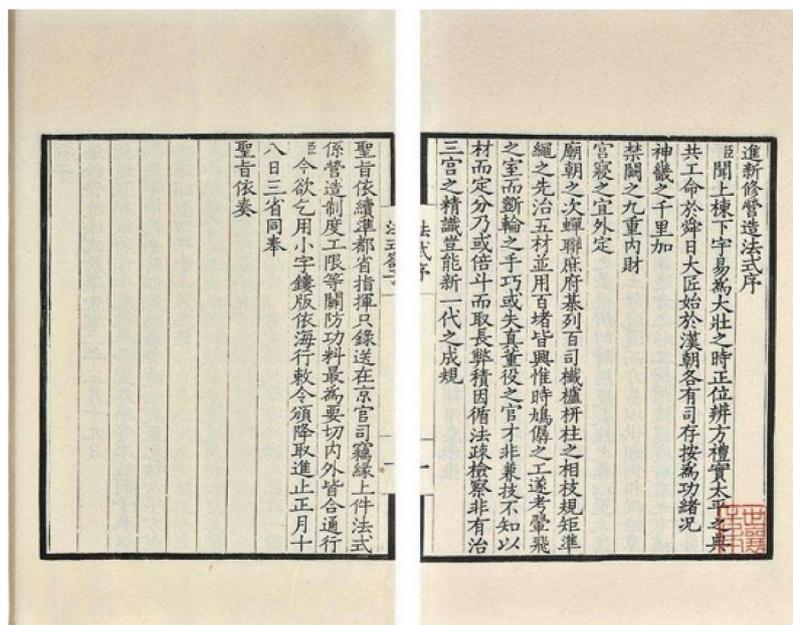


Figure 4. The preface to *Yingzao fashi*.

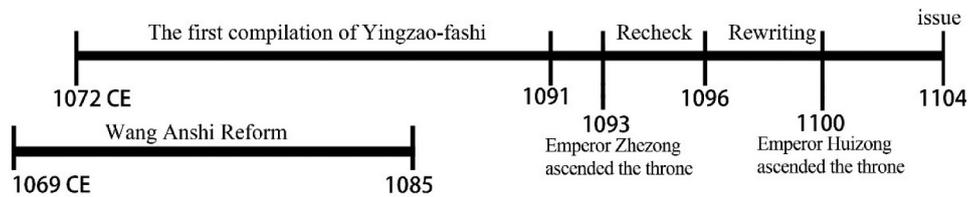


Figure 5. Timeline diagram of Wang Anshi Reform and the compilation of *Yingzao fashi*.

postponed promulgation signalled that a revolutionary building standard related to a much broader context and involving multiple stakeholders would ultimately be recognised. Although it seems that the lengthy delay was caused by the defects in the building standard and the fortunes of the reforms were tied to the vicissitudes encountered by *Yingzao fashi*, this correlation demonstrated revolutionary building standards could not be expected to succeed without stakeholder support from a number of quarters.

After a long postponement, Wang Anshi's policies were re-enacted when emperor Zhezong, who supported the reforms, took the reins of government upon his coming of age in 1093 CE. *Yingzao fashi* gained importance as a result of the change of political regime and was finally decreed in 1104 CE as the imperial construction standard by the successor to Zhezong, emperor Huizong [Figure 5].

## 5. Extravagance under the guise of thrift

After experiencing an eventful gestation, *Yingzao fashi* was finally recognised and promulgated as the state building standard, but the entire political climate had changed. Emperor Huizong [Figure 6] was probably more of an artist than a capable leader. Huizong

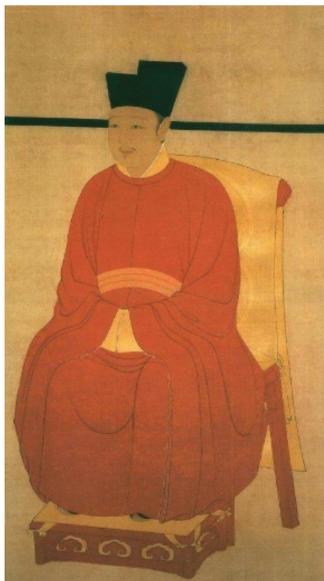


Figure 6. Emperor Huizong (1082–1135) the portrait saved in The Palace Museum.

himself was an accomplished painter and calligrapher. He played a significant role in setting the Song painting style and had a great interest in grand buildings and structures (Ebrey and Bickford 2006). Huizong and his government showed a tendency towards idealism and universalism, with a vision for an ordered cosmos. This was quite different to the ethos of the previous period when Wang Anshi and Shenzong, focused on practical problems, took unprecedented steps to implement new policies. Huizong, on the other hand, sought to retain the legacy of preceding emperors (Chaffee 2006). Although the contents and application of *Yingzao fashi* were essentially closely related to the earlier reforms, there was a fundamental difference in historical context. When the reforms were in full swing, the new standardised building code was welcomed. When the will to reform weakened or was even suppressed, the drafting and implementation of *Yingzao fashi* slowed down. This correlation reflected the strong impetus for thrift behind this building code and the popularity of the concept. This point is also highlighted by the author of *Yingzao fashi* (Li, 2007). However, when it was finally promulgated by the imperial government and used as a guide for buildings and construction, especially for official projects, the Northern Song dynasty was in its last stages. Just twenty-three years after the building standards' publication, the government had already come to an end.

The dominant figures in the reforms varied. During the reign of Huizong, Cai Jing (1047–1126 CE) played an important role as a powerful minister dominating the imperial court. During the Wang period, Cai Jing's brother Cai Bian (1048–1117) was the right-hand man to Wang who unwaveringly supported the reforms. Wang had high regard for Cai Bian and gave him his daughter's hand in marriage. Because of this relationship, Cai Jing also joined the reformers.

The progress of the reforms was not smooth, so Cai Bian had a chequered political career. By contrast, Cai Jing had a knack for surviving and even thriving in the conflict between the proponents and opponents of the reform. Cai Jing's approach to power may be criticised as wavering and uncommitted or, on the contrary, as crafty and manipulative (Chaffee 2006; Levine 2009). This controversial view of Cai Jing may be influenced by the historical context surrounding his biography (Hartman 2006), but he contrasted greatly with the major figure of the earlier era. This contrast is

evident not only in his attitude to reform but in his view towards life. Wang Anshi was famous for his rectitude and thrift, even donating his own house to be a temple. On the contrary, Jing led an extremely extravagant lifestyle (Chen, 2015).

Emperor Huizong's taste for art was further encouraged by Cai. With Cai's strong support, the imperial fondness for expenditure became an affordable burden. Cai's ability to collect precious rocks, curios, artworks and gardens impressed Huizong. Furthermore, Cai excelled at calligraphy, a talent that also caught Huizong's attention. Another fascination that both Huizong and Cai shared was exquisite buildings and structures.

Cai also devised a series of elaborate excuses to support the expenditure. Cai wanted Huizong's reign to be viewed as a golden age without precedent (Tuo 2004). Consequently, all things including buildings and structures needed to reach certain standards to match the country's prosperity, so grand construction projects were undertaken. Palaces were built or upgraded to a grandiose standard (Bi 2004; Chen 1985). Splendid buildings and structures were constructed using precious materials gathered from all around the country. The scale of the construction projects of the period can be assessed by the number of workers they mobilised. The construction of one hall on a project supervised by Cai, called for more than ten thousand workers on site every day (Tuo 2004). Five influential officials were put in charge of the construction of *Yanfu* Palace. Each wanted to excel by producing impressive buildings, structures and landscape features, so no effort was spared in providing extravagant details and superb effects (Chen 1985) (p 502). Another instance of this tendency is *Genyue*, a grand imperial garden. This garden not only housed exquisite buildings and structures, but also precious rocks, plants and animals (Chen 1985).

In addition to the palaces, there was major construction of temples and other infrastructure. Huizong was a pious follower of Daoism, so numerous Daoist temples and structures were built. Also, records show that in 1103 CE, the same year as *Yingzao fashi* issued, every county was instructed to build a Chongning Temple (Tuo 2004) (vol. 19). The "Provision Bureau" was especially charged with collecting stones, rocks, plants and animals. Additionally, a "Flower and Rock Network" was tasked with the procurement and transport of these valuable items to the capital city. All of these constructions, far surpassing previous Song official buildings in both size and scale, were conducted under the guidance of the building standards enacted.

There seems to be some contradiction between the initial aim of *Yingzao fashi* and its results once promulgated. In its earlier stages at least, the calls for thrift and restraint were based on an observation of real problems and focused on the urgent changes needed in

the area of buildings and construction. At length however, it seems that the drive for economy and moderation was not always welcomed. Huizong had pursued the reform mainly for the sake of honouring the legacies of his predecessors. With the change in ministerial focus and priorities, the comprehensive official standardised building manual became more of a means to legitimise the streamlining of new projects. Efficiency would be improved with standardised material use procedures, labour arrangements and cost controls, but the number of new projects became unmanageable. In the end, the expenditure on buildings and construction added a severe burden to a country already under pressure from aggressive neighbours and inappropriate taxation.

## 6. Results and discussion

The connotation and potency of the grand building code, *Yingzao fashi*, deserve a scrutinization against an entangled context of emerging philosophical ideas, challenges, and the changing pattern of coetaneous political power and society. At face value, the grand building code serving as the national building standard of the Song dynasty, was mainly concerned with building technology. Thanks to the feature of this building standard, its comprehensive illustrations and attached drawings are appealing to readers. Consequently, this historical record is generally used to retrace structural details and construction standards through history.

This study, however, provides a panorama of how the notions of economy, thrift and restraint were formulated, incorporated into standards and finally implemented. The historical importance of *Yingzao fashi* is explored against a broad context. To reveal the social and political connotations of *Yingzao fashi*, this study delved into the vicissitudes encountered by the code over its creation, promulgation and enactment. This long and complex exercise reveals how a plethora of factors and forces influenced the direction this initiative would take.

The shift in the attitude of coetaneous society and the attention gained in literary circles further amplified the call for economy, thrift and restraint widely with the support of emerging philosophical ideas and social reforms. Building construction was identified as an area that provides solutions to practical problems and serves a political agenda. The idea was translated into attempts at reform. Wang Anshi's Reform specifically re-established the state department *Jiangzuo-jian* to deal with buildings and construction. The imperial construction code *Yingzao fashi* was independently launched by the department, while the compilation of the law had been greatly influenced by the ups and downs of Wang Anshi's reform policies and took a long time. In the

end, this great code was issued in the reign of Emperor Huizong and resulted in a large number of new imperial construction projects. Although the delivered directives remained consistent with the initial intention, they produced the opposite result in practice. The severe burden these projects caused to the state largely led to the fall of the empire.

## 7. Conclusion

Having chronicled and analysed the events related to *Yingzao fashi*, this paper suggests first that the building standards are the product of emerging philosophical theories and political opinions that shifted attitudes at the time. The corresponding doctrine and theories inspired a change in focus and contributed to the reforms that followed. Secondly, the response from politicians to the call for thrift and nation-building prompted further actions. A change in bureaucratic structures and the standardisation of practices were the key strategies in the building and construction reforms. Thirdly, the political turmoil and the conflicting priorities of powerful figures able to influence the practical implementation of standardisation somehow led to counterproductive results. Accordingly, these factors and forces would influence the building standards' application and thwart their effectiveness.

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