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The Rise, Organization, and Institutional Framework of Factor Markets

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Working for the State: The Chinese Labour Market for Manufacture and Construction, 1000-1900

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This is a report on work in progress from a project that focuses on state administration and self organization of the crafts in the Qing Dynasty (1644-1911).[1]

In Chinese craft historiography, the transition from labour obligations for artisan households to a system of hired labour in the official sector between the fifteenth and seventeenth centuries is generally considered as the most important institutional and legal change. While there can be no doubt about the impact of this reform, we have sought to find out about earlier institutional arrangements as well, and to explore the intra-dynastic transformation processes.

Present-day Chinese historiography most often treats craft production in the service of the state, the "official crafts" as quite distinct from that in the private sector ("civil crafts"). Such an approach implies that the effect of dynastic economic policies was to create "a closed and self-sufficient part of the feudal economy, which was ultimately incompatible with private handicraft industry".[2] We will explore how far this characterization is accurate for the periods covering the dynasties Song (960–1276), Yuan (1279–1368), Ming (1368–1644), and Qing (1644–1911). It is useful to take this long perspective for a later global comparison of the role of the state in pre-industrial economies. However, we will here confine ourselves to China and the question when the official and the civilian sector started to become mutually permeable, so that artisans could find employment in either of them. For this purpose, institutions, sizes of artisan workforce, and grades of coercion will be compared.

[1] The author thanks Jan Luiten van Zanden for first comments and suggestions.
[2] Wang Shixin p. 65

The Song Model

The Song dynasty can be characterized as a major historical turning point in various respects: From now on, the bureaucratic state with an officialdom that was recruited in (theoretically) impartial and equal examinations from among the "sons of the empire" prevailed until the end of the nineteenth century. Major inventions such as the compass, porcelain, and gunpowder were made and printing was developed commercially. The Song were a fully monetized commercial economy in which paper money was issued by the government in order to secure liquidity in the increasing commodity markets. At the same time, copper cash, the small denomination money for everyday use, was cast in amounts that were never again reached in Chinese history.[3] However, in the military field, the Song gradually lost out to Inner Asian invaders. In 1126 the Jurchen tribe from northern Manchuria, which had taken on the dynastic name Jin, conquered the northern part of the Song empire and forced the rulers out of their capital Kaifeng. The Song established another, "preliminary" capital in Hangzhou/Lin'an south of the Yangzi delta and in 1142 officially ceded the northern part of their territory to the Jin. They ruled in the south until their ultimate defeat by the Mongols in 1276.

Kent Deng has formulated a quite negative assessment of the economic and administrative performance of the Song. Since it could not prevent large landholding and unprecedented high rates of tenancy, and had to fund a highly overpaid officialdom and an expensive, but in the last run ineffective, military, it resorted to engaging in and profiting from commercial activities. This trend that had started in the North Song aggravated in the South Song when almost half of the territory and revenue source was lost. However, commercialization was not carried out in a way profitable for the whole or major segments of the population. Migrational shifts, first south, out of the direct reach of the government of the North Song, and in the South Song probably back north to the Jin territory, as well as uprisings in the Southern Song show popular discontent

[3] the peak was 5 million strings of copper cash and 1,4 million strings of iron cash in the Yuanfeng era (1978-1085), cf. Peng Xinwei p. 438, n. 11. The highest production figures reported in the Qing dynasty are around 3,5 million yearly average between 1761 and 1765; cf. Burger p. 392.

about the strong emphasis on the Song style market economy and the breaking away from agrarian traditions.[4]

Assessments of the benefits of commercialization during the Song dynasty may vary,[5] but it is generally affirmed that state involvement in the non-agricultural part of the economy was intense; some historians believe that the state sector by far surpassed the private sector[6] Craft products were bought up by the state at fixed prices. This was the so-called *hemai* 和買 (acquisition by [mutual] agreement) that included a wide product range of textiles, porcelain, lacquer etc.. Moreover, the provinces had the duty to deliver fixed quota of manufactured and other commercial goods to the state as "tribute". State monopolies were handled either directly or through merchant intermediaries[7].

Scope and Size of Official and Private Artisan Labourforce

Artisan labour was allocated by the state in two ways: The craftspeople were either employed (*mujiang* 募匠) on a more long-term, but not necessarily permanent basis; this system was also referred to as *hegu* 和顧 (consensual employment). These persons formed the main force of the state workshops. For more adhoc work, the "obliged [people] from the guilds" (*danghang* 當行) or "artisans on shift" (*fanhang* 番匠) were summoned to fulfill labour duties. The role of the Song guilds is disputed; suffice it say here that they were at least as much an instrument of state control of the artisans and merchants as they were bodies of self-organization.[8] They formed the interface responsible for the supply of government labour from their ranks. Thus, the guilds decided whose turn it was to serve the state in temporary assignments.

There are no historical records that give a systematic overviews of the size of the workforce which the state could command. Since the 1930s, economic historians have

[4] Deng pp. 301-310, 318-320
[5] cf. e.g. John King Fairbank pp. 88-107 „China's Greatest Age: Northern and Southern Song"
[6] Lewin p. 117: „In der gewerblichen Produktion bildeten staatliche Manufakturen den Schwerpunkt, der Staat kontrollierte aber auch den von privaten Manufakturen erzeugten Teil dieser Produktion, dessen Umfang geringer war."
[7] Cf. Deng p. 307 on changing state policies regarding monopolies. Salt, wine, and iron monopolies were committed to merchants when less profitable, but the more profitable monopoly on imported medicines was permanently handled by the state. See also Kaplan, ME 23-4 on monopoly licenses for tea.
[8] Ju Qingyuan, pp. 138-142.

brought forth estimates based on a variety of records; thus, Ju Qingyuan[9] in his 1934 study gives figures of 7,000 to 9,000 artisans in armament manufacture in the central government, 18,000 ironsmiths in one military prefecture, and more than 10,000 workers in government mints (see table 1). However, Ju's calculations only show a fragment of actual employment in government offices. Other historians have complemented the record. Zhu Cishou[10] lists all workshops of the Palace and the Central Government quoted in the "Collected Statutes of the Song"[11]. These are for the North Song the Palace Domestic Service (*nei sisheng* 内侍省) and the Directorate for Imperial Manufactories (*shaofu jian* 少府監). In total, they boast 144 sections and subsections; duplications subtracted – some of them shared their workforce – 105 remain.

The institutions subordinate to the Palace Domestic Service were the Manufacture of the Rear palace quarters (*houyuan zaozuo suo* 後苑造作所), the Brewery of the Court of National Granaries (*sinong si du quyuan* 司農寺的都曲院), the Water Mill Office (*shuimo wu* 水磨務), and the Charcoal Yard (*tanchang* 炭廠). The most important Central Government workshops and manufactures that belonged to the Directorate for Imperial Manufactories were the Office for Arts and Crafts (*wensi yuan* 文思院) where ceremonial and ornamental objects for court use were produced; further the silk weaving manufacture Silk Brocade Office (*lingjin yuan* 綾錦院) and the Embroidery Office (*wenxiu yuan* 文繡院)[12]. The numbers of the artisans employed here may have ranged from a few dozen to several hundred, such as in the Silk Brocade Office (600)[13].

On the same level as the Directorate for Imperial Manufactories, and also concerned with craft production, were the Directorate for Construction (*jiangzuo jian* 將作監), the Directorate for Armaments (*junqi jian* 軍器監), and the Directorate of Waterways (*dushui jian* 都水監).

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[9] Ju Qingyuan, pp. 31-32.
[10] Zhu Cishou, pp. 428 ff.
[11] *Song huiyao jigao* 宋會要輯稿 (Editorial draft of the Collected Statutes of the Song), "Zhiguan", chap. 29-1
[12] founded in 1104, 300 artisans, see Kuhn p. 121
[13] Gao Xuan p. 12

After the Jin had conquered North China, the Song established Imperial Manufactures in the Southern capital Hangzhou. Institutions were slightly reshuffled, so that now the Manufactures of the Central Government were all set under the control of the Ministry of Public Works. Zhu Cishou considers the four main sectors of craft production in the capital to have been armament, construction, printing, and production of object for official and court use. He suggests that immediately after the transfer to the South, the size of the manufactures was cut down, but in the course of time they expanded again.[14] State manufactures that were not (only) stationed in the capital were porcelain kilns, iron foundries, mints, armament and gunpowder manufactories, shipyards (especially important in South Song), and paper manufactures.

The non-state sector consisted of private workshops, individual craftspeople, and smaller-scale manufactures as well as manufactures in Buddhist temples. Kuhn identifies, for instance, 21 private versus nine state manufactures for weaving complicated and patterned silk and points out that apart from these, an enormous number of smaller [private] manufactures for plain silk weaves existed[15].

Reference to individual artisans that could be employed adhoc by individual clients are contained in the descriptions of the capitals of the North and the South Song respectively, Kaifeng/Bianliang and Hangzhou/Lin'an.

But due to the fact that some products had to be sold exclusively or in certain production quotas to the government, they did not develop on a greater scale. There are thus no indicators of a transition of the craft production from state domination to preponderance of the private industries as in the subsequent dynasties.

A small-scale "labour market" seems to have existed along and virtually on the spot of a commodity market: In North Song Kaifeng, maintenance workers for houses and roofs could be hired at certain morning markets; bamboo workers had their own shops, but plasterers and masons were hired on the street at short notice[16]. The description of the capital of the South Song, Lin'an has a corresponding paragraph on "hiring

[14] Zhu Cishou, pp. 430
[15] Kuhn p. 379-381
[16] *Dongjing meng Hua lu,* chap. 4, fol. 2b (p. 388), transl. p. 122

people", but focuses more on personnel for service, commercial, and administrative tasks. Tailors and cooks are mentioned, but no builders.[17]

A recent study by Qi Xia comes to a result of 800,000- 1 Mio artisan households in 1068, which in his calculation was 5-7% of all households.[18]

Remuneration

Work in government manufactories was remunerated and thus not "real" corvée labour. However, there is evidence that it was not popular and evaded, if possible.

Reports of corruption point to officials that appropriated the production of the artisans for their own use or disposal as well as random wage cuts by officials, which were especially rampant in the South Song.[19] In this light, the rule that "whoever can double his workload will be especially rewarded"[20] may not have been very attractive.[21] However, there is also some ambivalence in information like this in the late South Song source *Meng liang lu* that states "In the case of work obligations, although this is [the unpopular] 'consensual employment', if the authorities give out cash and rice for it, [and if] that wage is higher than that paid by private employers, then those who are obliged to work gladly will do so."[22]

Song wage data for artisan labour are not systematically presented in government documents, but appear in scattered sources. Two *sheng*[23] of rice or other grain per day plus a money allowance between 10 and 100 cash coins seem to have been a kind of standard wage for low-level handicraft, but also military and service sector occupations. The director of the arms manufacture "Tenthousand perfections" complained in 1166 that the Ministry of Revenue gave out only 55 *sheng* of rice and

[17] *Meng liang lu* chap. 19, p. 169; transl. vol. 3, pp. 309-312
[18] *Zhongguo jingji tongshi. Songdai jingji juan* 中国经济通史。宋代经济卷, by Qi Xia 漆侠. Jingji ribao chubanshe 1999, quoted in Gao Xuan, p. 14. Ji Ruxun p. 190 estimates that roughly 1 Mio artisans stood in the service of the state
[19] Zhu Cishou p. 432
[20] Zhu Cishou p. 432, quote from *Jinshi cuibian* 金石萃編, chap. 14 "宣仁後山陵採石記"
[21] Note, however, the positive connotation that Guo Daiheng p. 169 attaches to this phrase: The possibility of an efficiency wage, under fair conditions, was different from the Qing system, were surpassing of work quota was not favoured or remunerated.
[22] *Mengliang lu*, chap. 13, p. 105 "tuanhang" (Guilds and associations): 然雖差役，如官司和顧，支給錢米，反勝于民間雇倩工錢，而顧役之輩，則歡樂也, cf. the Japanese translation in *Meng liang lu/Mu ryô roku* vol. 2, p. 262: おかみの御用といっても、もし役司が雇い扱いにして銭や米を支払ってくれると、かえって民間の賃金よりよいため、工役の面々はよろこんで出かけてくる。
[23] one *sheng*= 836 ml, cf. Wilkinson p. 238

48 *sheng* of wheat per person per month plus a daily food allowance of 100 cash for the workers, and that this was not enough[24]. Another example for wage citation is from c. 1078: Daily wages for building walls and forts are given with 2 *sheng* to 2.5 *sheng* of rice and 10 cash for salt vegetables.[25] Another source quotes wages in a brewery: 300 copper cash per day for masters and 250 for unskilled helpers, with the option of a bonus for good quality wine for the master.[26] Compare the wages for officials cited by Kent Deng for 1063-1077, ranging from 300,000 to 400,000 cash per month for the Prime Minister to 12,000-22,000 cash per month for County Magistrates.[27]

In sum, for the Song little change over time in the basic labour institutions can be discerned; although immediately after the transition to the South government manufactories were smaller, they were enlarged to their former scale. From the known sources, the labour market conditions seem to have been flexible, the public and private sector were not made impermeable by laws or regulations.

The Yuan Model

At the outset the Mongol way of recruiting artisans for the service of the state was very different from the Song. In a sense artisans were specially favoured by the Mongol elite in all their conquered territories. As Frederick Mote has pointed out, "The management of artisans under the Yüan dynasty system reflected the place of artisans in Mongolian society before their conquest of any sedentary people."[28] Few skilled artisans existed at all, and these were held in high regard. Therefore the Mongols also showed most interest for artisans in the conquered regions: For those who specialized in armament production as well as for those who produced luxury goods. Mote concludes, "Thus the Mongols were in the habit of classing artisans as

[24] *Songshi* (Dynastic history of the Song), chap. 194, http://www.sinica.edu.tw/~tdbproj/handy1/
[25] *Xu zizhi tongjian* (Mirror for assistance in administration, sequel, long version) 續資治通鑑長編, chap. 343 (*Siku quanshu* full text database)
[26] cited in Gao Xuan, taken from "Regulations and precedents on brewing in the government breweries in town" (*Zaicheng jiuwu zaojiu zeli* 在城酒務造酒則例), p.12

[27] Deng p. 302
[28] Mote p. 654

prize booty even before they entered China"[29] Artisans were spared from massacres in cities, taken to Mongolia and presented to Mongolian nobles as personal servants.[30] The famous dictum concerning this time is „spare only the craftspeople" (*wei jiang de mian* 維匠得免)[31]. The dynastic history of the Yuan reports that after the conquest of the Jin dynasty in 1234, in 1235 720,000 civilian artisans/or ordinary households and artisan households were captured in present Shandong, Hebei, and Shanxi.[32] The term "captives" is being debated in the literature time and again. In an early study on artisans in the Yuan dynasty, Ju Qingyuan refuted the view that these were actually slaves, and holds that designations such as "captives" or "captive slaves" (*touxia* 投下, *qukou* 軀口) were "merely linguistic habits of the historians" were but linguistic but However, Zhu Cishou holds that the Mongols in the eleventh and twelfth century had entered the slave-holding period of their historical development and therefore treated these artisans as captive slaves.[33] At any rate, declaring oneself to be an artisan may often have been a survival strategy. In a eulogy on an Han official in the service of the Mongols, Wang Dezhen 王德真, it is related how he in 1232 after the siege of the Southern capital [of the Jin, i.e. Kaifeng] as overseer of the artisans of Dexiang and Yanjing, was ordered to assemble the artisans from there to take them north. "He was ordered by the emperor to assemble all artisans, and in one day there were several thousands who answered to his summons. At that time there was a famine and people

[29] Mote p. 655
[30] See Oshima p. 72, quoting from A.J. Boyle, *The History of the World-Conqueror by 'Ala-ad-Din 'Ata-Malik Juwaini, translated from the text of Mirza Muhammad Qazvini*, for the attack on Khorazum. Juwaini mentions 100,000 artisans that were saved. When Chingis Khan conquered Samarkand in 1220, 30,000 artisans are said to have been taken to Mongolia; see Hu Xiaopeng, "Yuandai de xiguan jianghu", p. 77.
[31] *Yuanshi* chap. 163 biography of Zhang Xiongfei 張雄飛, "國［元］兵屠許，維匠得免" (The soldiers were allowed to commit a massacre, and only the craftspeople were spared); Liu Yin 劉因, *Jingxiu ji* 靜修集 chap. 21, 武遂楊翁遺事，"保州屠城，維匠得免" (In the massacre at Baozhou, only the craftspeople were spared); *Yuanshi* chap. 119, biography of Muqali (Muhuali 木華黎), "除工匠優令［伶］外悉屠之," transl. Oshima p. 72: „[In the year 1216] Muqali ordered: ‚Be sure to keep the rebels [in Dongping] alive and not to punish them.' Later, however, all of them were killed with the exception of craftsmen and actors."
[32] *Yuanshi* chap. 123, biography of Kökö Buqa (Kuokuobuhua 闊闊不花), http://www.sinica.edu.tw/~tdbproj/handy1/ (3023) 歲丙申，太宗命五部將分鎮中原，闊闊不花鎮益都、濟南，按察兒鎮平陽、太原，孛羅鎮真定，肖乃台鎮大名，怯烈台鎮東平，括其民匠，得七十二萬戶，以三千戶賜五部將．闊闊不花得分戶六百，立官治其賦，得薦置長吏，歲從官給其所得五戶絲，以疾卒官．Cf. Oshima p. 73 who considers 民 (ordinary [households]) and 匠 (artisan [households]) to be two separate categories, while Chinese authors such as Gao Rongsheng hold that the 720,000 were only artisan households.
[33] Chü Ch'ing-yüan, p. 235/236, Zhu Cishou p. 554 ff.

were starved to the point that they ate each other. He fed them with his own provisions and thus saved innumerable lives. He led these artisans northward, and when they had reached Taiyuan, he tested their skills. Many of them had joined the crowd for fear of death, and in reality were not skilled; but he didn't blame them, spoke to them with warm words and showed them the methods of the crafts. After some time they all became good workers."[34] The dynastic history of the Yuan (*Yuanshi*) mentions that more artisans were summoned to the north after the Mongols had conquered the South Song:

Yuanshi 167	1275	Summoned Jiangnan artisans: among these highly skilled:	300,000 100,000
Yuanshi 167	1279	Craftspeople from Liang Huai (present Jiangsu) for producing „Moslem catapults" (mangonels)	600
Yuanshi 10, 14	1287	More people summoned from Jiangnan[35]	

Zhu Cishou sees three phases of the use of artisans by the Yuan dynasty: In the first, they were forced to serve as slaves; in the second, they were registered as regular and permanent "official craftspeople"; in the third, the system of "official craftspeople" changed to shorter, random labour shifts.[36] He argues that initially, the artisans that were relocated deported had nothing but their bare lives, stood at the mercy of their keepers, had no personal freedom, and no fixed remuneration, but often suffered hunger and starvation[37]. In the second phase, the artisan were registered. They worked

[34] Hu Zhiyu, *Zishan da quan ji*, chap. 16, p. 1196-283, "Dexing Yanjing Taiyuan renjiang daluheqi Wang gong shendao bei" (Epitaph for Mr. Wang, director of the artisans in Dexing, Yanjing, and Taiyuan). For a similar account in Baozhou (present-day Baoding in Hebei), cf. Ch'ü Ching-yüan p. 235.
[35] *Yuanshi* chap. 167, „Biography of Zhang Hui" 張惠傳
[36] Zhu Cishou p. 556 ff.
[37] Zhu Cishou p. 556/557. Another episode in Mr. Wang's epitaph narrates how he in 1217, on a hunt at Tula river with the emperor, was approached by a craftspeople and their overseer who complained that they were starving, and that 17 to 18 deaths had already occurred. He speedily reported to the emperor who consented to give them the meat the game they had killed, thus again saving countless lives.

under extremely severe control in the state manufactories and had little personal freedom, for instance, no freedom of marriage, and inheritance of the trade was obligatory. However, guidelines for their remuneration were set up in 1291, and they were allowed to produce and sell outside their obligations to the state. In the third phase, the government resorted more than it did before to summon "workers" for adhoc obligations. It is a perceptible change that while in the early phases the concerned artisans were referred to as "master-artisan" *jiang* 匠, the designation "worker" *gong* 工 dominates later.[38]

Registration and Size of Official Labourforce

Many studies are devoted to the registration process and the census categories that pertained to the artisans. The registration of artisans was conducted in 1252. The documents are no longer extant. In the dynastic history of the Yuan as well as other contemporary sources, mention is made of "official artisan households", "civilian [i. e. private] artisan households", and "military artisan households". Apart from these biggest categories, other classifications, such as "salt making households", "tea producing", iron smelting", "mining" and "gold panning" occur as well.

The appended table 2 shows a collection of references to greater numbers of artisans. These figures, as well as the registration process and categories, have been researched in detail, but opinions are still divided how to interpret especially reference to bigger numbers. Apart from culling and complementing single references, calculatory methods, such as multiplying the officials in charge of artisans with the number of artisans subordinate to them. This has been carried out by Ch'ü Ching-yuan, who arrives at a figure of 300,000 official artisan households for 1272, excluding military artisan households, but including 10,000 mangonel-makers. [39] More recent calculations tend to take a broader perspective. Hu Xiaopeng has brought forth statistics that include, on basis of sample analyses from regional gazetteers,[40] military, salt making, wine and vinegar producing, and mining households. His result is more than one million households, 7% of the households in 1290. The biggest estimate

[38] Zhu Cishou p. 559; Gao Rongsheng p. 124, Hu Xiaopeng p. 66/67
[39] Chü Ch'ing-yuan pp. 243-245
[40] Hu Xiaopeng p. 79

brought forth by Gao Rongsheng includes all figures from historiography and arrives at 2 million households of official, private, and military artisans and (unskilled) workers. If one household is calculated to have five members, this amounts to 10 million artisans and workers for the late thirteenth century.

Remuneration

Together with the census registration, a remunerative system was laid out. Two texts refer to these. The official Wang Hui (1227-1304) states that in two artisans' offices, people were normally paid four *dou* (40 *sheng*[41]) rice per month and half a *jin*[42] of salt, but some were complaining that they had only received 2.5 *dou* and no salt.[43] In 1288, the following regulations were set: „Men and women above fifteen count as big persons, those between five and fourteen as small persons, for children under five no provisions are given. For every household, no more than four persons [are counted], and if there are less than four persons, the actual number of persons is considered. The regularly registered person receives three *dou* of rice every month, and half a *jin* of salt. Family members receive 2.5 dou for big persons and 1.5 for small persons. Serfs (*qukou* 驅口) receive 1.5 *dou* for big persons and 0.75 for small persons."[44]

Interface of Official and and Private Employment

All studies suggest that it was possible for government artisans to work for their own profit aside from their duties to the government.[45] Gao Rongsheng quotes a gazetteer that gives very low production quotas for the silk weaving and dyeing offices in the vicinity of present-day Nanjing. The total quotas divided by the registered artisan households result in a workload of 1.5 bolts of silk weaves and 3.8 *jin* of floss silk (?慌絲).

Comparing the private and the state sector, Hu Xiaopeng concludes that it must have left a certain space for the small private enterprises that the state produced for its own needs

[41] one *sheng*= 836 ml, cf. Wilkinson p. 238
[42] one *jin* = 633 gr, cf. Wilkinson p. 238
[43] Wang Hui, chap. 89, fol. 18a/b.
[44] *Tongzhi tiaoge* chap. 13, p. 387f. "Regulations and precedents on provisions for work" ("Gongliang zeli" 工糧則例), p. 390 "Precedents on big and small persons" ("Da xiao kou li") 大小口例
[45] Ch'ü Ching-yuan p. 243, Gao Rongsheng p.126,

in the state and military artisan offices. In the early Yuan, the sources suggest that if "civilian artisans" (*minjiang*) from private workshops were summoned to work obligations, this was done according to fixed rules. However, in the later phase of the Yuan, and the course of the decline of the state artisan offices, adhoc requisitions of labour increased.

The case of the first emperor of the Ming, Zhu Yuanzhang (1328-1398), can illustrate the deficiencies of the registration system and the hardships it could bring to the artisan households.[46] His grandfather had been registered as gold-panning household. The family could not produce the yearly amount of gold which they were obliged to present to the government. Neither could they change their household status and the obligations linked to it. They had to take to tenant farming in order to buy the gold on the market, but without sufficient income eventually had to flee to evade their obligations and suffer exploitation of landlords who took them in as sharecroppers. Frederick Mote therefore blames Zhu for adhering to this inflexible system after he had founded the Ming dynasty.

The Ming Model

The Ming system of artisan registration was not as diffuse as that of the Yuan, but had only four classes: official, commoner, military and artisan. It was first laid down in 1386 and foresaw that all registered artisans had to render service for three months every two years. The specific hardship of this system lay in the fact that this work was unpaid and that most service was required at the capital, so that artisans who lived in remote areas had to take long journeys upon themselves to fulfill their obligations. Two reforms were therefore made in 1393 and 1454. In 1393, 62 craft branches were singled out for which service had to be rendered in 5- to 1-year shifts. Carpenters and tailors, for instance, were supposed to come every five years, while paperhangers, embroiderers, bow-makers, and printers had to take yearly turns. In 1454 this was once again changed to uniform four-year shifts. For the registered artisans that lived near the capital ("resident artisans"), other conditions applied: Since the Yongle era (1403-1424), they had to serve ten days every month. At first, the artisans were expected in the capital Nanjing. After the relocation of the capital to Beijing (post-1403), artisans from North and Middle China

[46] This case has been pointed out by Frederick Mote, p. 655/656.

were registered for service in Beijing, while those from the South and Southwest were expected in Nanjing. The numbers of the registered artisans are given in Table 4.

Remuneration of Resident Artisans and Substitution of Work Service by Tax Payments

The service of this group was paid with rice provisions of generally three *dou* per month, with an additional food allowance for days actually worked.[47] Since the Zhengtong era (1436-1449), extra provisions of one *jin* of salt are mentioned. We find no reference to monetary wages in the "Statutes of the Ming", but according to Zhu Cishou on special occasions, such as imperial enthronement, artisans received gratifications of one to two silver tael.

However, for obvious reasons both types of registration and work obligation proved unpractical. In the course of the swiftly expanding market economy, the practice of labour service as a sort of tax payment in kind became obsolete.[48] Starting in 1485, artisans were given the option to pay tax rather than work for the state. The artisans from the south were supposed to pay 900 cash, those from the north 600 cash per person and month[49]. In 1503 this was changed to a payment of 1.8 tael per shift or 450 cash per year, and from 1562 it was expressly forbidden to render labour service rather than to pay tax.[50] This does not mean that the state did not employ any more artisans, but that the work was now paid in money and food provisions. The 1615 compilation "What should be known about the factories and storehouses of the Ministry of Public Works", has detailed information on the activities and craft branches under official supervision, as well as some wage data, mostly for administrators, but also for artisans, and eventually the tax income by the artisan shift tax from the provinces.[51]

The Qing Model

[47] Zhu Cishou p. 648
[48] Cf. Wang Shixin pp. 65-80
[49] of their work obligation, supposedly, but this is not specified. *Da Ming huidian* chap. 189, fol. 5b.
[50] *Da Ming huidian* chap. 189, fol. 8a.
[51] E.g. *Gongbu changku xuzhi*, chap. 3, fol. 1 ff., „Yearly rules for money and provisions " 年例錢糧, 1.5 tael per month for a printer.

The Qing dynasty did not resume official corvée duties for artisans, and the special artisan tax of the Ming was abolished in the second year of the Qing dynasty. After a transitional phase between 1658 and 1681, when it was re-established, it was abolished for good and the artisans were included as ordinary households in the land tax register. This meant that their occupation was no longer hereditary by legal obligation.

Scope and Size of the Official Workforce

Artisan labour in the service of the state was recruited for permanent as well as temporary positions and remunerated in cash and sometimes with additional food allowances. From its beginnings, the number of the Qing manufactories was more modest than that during the preceding dynasties. Their product range, however, was not narrow. The main branches were silk weaving, porcelain production, cash casting, armament and gunpowder production, shipbuilding, and the production of arts and crafts for imperial or official use, and construction of state and court buildings. In the silk weaving sector, four manufactories remained, while in the Ming there were 24. In the Nanjing manufactory, the weavers used 600 altogether. Not a great number compared to the aggregate 30,000 looms in private Nanjing weaving manufactures. The situation with porcelain production and shipbuilding is similar. The Ming had 16 shipyards, the Qing only four. Porcelain production in the imperial kiln Jingdezhen was negligible in numbers: only one kiln was government-operated by ca. 300 permanent artisans; the number of temporarily employed workers is not clear. But ca. 100,000 artisans worked in this enormous production center for private employers.
The trend during all of the Qing dynasty was a constant shrinking of government manufactories.
Some of the artisans in the palace workshops were Manchu bondservants. It has been pointed out by Kenneth Pomeranz that by the eighteenth century most Manchu bannermen could probably no longer afford to keep slaves, although they were entitled to do so.[52] However, in the palace workshops bondservants still worked in higher or lower craft, administrative, or guarding functions. They were not slaves in

[52] Pomeranz p. 82

the sense that their work was not paid, but their positions were hereditary, and they were registered in the banners. [53]

Table 5 shows the figures for the workforce in the government and palace workshops in Beijing.

Remuneration

Some irony lies in the fact that the period with the least government involvement in craft production is the best documented one. Systematic and direct wage documentation is not so common, but normative sources give a fairly clear picture of wages paid e.g. public construction. Jan Luiten's presentation will introduce several of the government wage regulations.

Interface of Official and and Private Employment

As is evident from the fact that no registration was foreseen in the Qing system, the labour market must have been the most permeable of all the periods under consideration. That is not to say that no obligations existed at all. In the Suzhou weaving offices for examples, but also in most other government manufactories, permanent artisans had to deliver their work quotas, for instance of woven fabrics. If they could not or would not fulfill their obligations, they had to find substitutes.

Conclusion

As we have seen, the four dynastic administrations discussed all had their distinctive approach for allocating craft labour. The Song did not register craftspeople as such. Artisans were hired in permanent positions or worked for shorter shifts in palace or government manufactories. In the latter case, guilds arranged the shifts of the respective craftspeople. Work for the state was remunerated in food rations and cash.

The Yuan used a complex system of registration in various household categories with "official artisans", "civilian artisans", "military artisans" and several other specific

[53] Cf. Rawski p. 167: Slaves (*aha*) worked in the fields while bondservants (*booi*) were engaged in domestic service.

occupations. Slavery or bound labour seems to have existed at least during the initial phases. Later artisans had more personal freedom. The artisan status was hereditary. Work was remunerated in food provisions.

The Ming registered the artisan households in a less complex way than the Yuan. An elaborate system of work shifts, mainly at the capital, was tried out and changed several times. This type of shift labour was unpaid. Resident artisans in the capital worked in more frequent shifts of ten days per month and were paid with food allowances. A hundred years after the system was initiated, it was gradually substituted by tax payment.

In the Qing artisan households were not registered, except for a short time in the beginning. Artisans were hired and paid mainly monetary wages, and sometimes received food allowances.

The size of the artisan workforce in the Song is estimated between 800,000 and 1 million; for the Yuan, estimates range between one and two million. The Ming registered between 289,000 and 240,000 artisans that were obliged to do corvee labour or pay an artisan tax in the later phases of the dynasty. The Qing artisan workforce at the capital was about 10,000: together with manufactures, mines, ironworks and shipyards in the provinces, their numbers can be estimated at max. 50,000 (see table 7 for an estimate of the workforce exclusive of mines and ironworks).

Population data for the periods in question, vague and disputed as they may be, might offer a partial explanation of some of the institutional changes. From one set of population statistics, the IIASA data collection, we see a decline from the South Song to the Yuan, and again at the end of the Ming. A decline in population may result either in greater coercion or, as in the case of Europe after the Black Death, in rising wages. Declining population figures may have been one factor for the higher coercion – or at least the attempt of all-inclusive coverage of artisan workforce by registration – in the early Yuan. De-registration in the early Qing may be an instance of the contrary measures taken in a similar situation.

What can this bird's eye view on the artisans in the service of the state tell us? It clearly shows the retreat of the state from direct organizational involvement in craft production in the course of a millennium until Western technology was imported and adapted in the

reform movements after the Taiping rebellion.[54] The sequence of decreasing government involvement outlined above raises several questions: How should we assess the respective importance of political and economic factors for this retreat? How do the craft occupations carried out in agricultural side-business, and by professional private workshops and enterprises relate to those in the service of the state? And eventually: If the labour market is understood as "an arena where those who are in need of labour and those who can supply the labour come together"[55], is it appropriate to speak of "markets" even for those periods when the governments in need of labour did not wait until the artisans supplied it of their own volition? And which part did these regulated markets have in global perspective?

As historical GDP calculations for China look further into the past in the way started by Chang Chung-li and eloborated by Feuerwerker[56], some answers to these questions may be expected.

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[54] Starting with the founding of the Jiangnan arsenal, one of the greatest contemporary arsenals worldwide, iu 1865.
[55] http://makingcareersense.org/INTROS/Intro.htm
[56] see Feuerwerker p. 16

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Table 1: Artisans and workers in state workshops, manufactures, and mines, based on Ju Qingyuan, pp. 31-32

Time	Institution	Workforce	Specialization	Source
Jingkang reign, 1126-1127	Imperial Arsenal, Armament production sites, Military Artisans of a Myriad Perfections (Yuqian junqi suo, Junqi jian, Wanquan junjiang)	3,700	Military artisans	*Gujin tushu jicheng*, "Rongzheng dian", chap. 266
	Imperial arsenal, Eastern and Western Workshops (Yuqian junqi suo, Dong xi zuofang)	5,000	Military artisans; construction workers?	*Gujin tushu jicheng*, "Rongzheng dian", chap. 266
c. late 12th/early 13th century	Wanquan zhihui (Myriad perfections command)	5,700	Military artisans	Lou Yao (1137-1213) *Gongkui ji,* chap. 62
	Military workshops in the provinces	1,000	Military artisans	Lou Yao (1137-1213) *Gongkui ji,* chap. 62
1334 (retrospection to late 13th century)	Paper manufacture for paper money	1,200	Paper makers	*Meng liang lu* chap. 9 (p. 72/transl. vol. 2 p. 94)
South Song?	Shu jinyuan Brocade manufacture in Sichuan (Chengdu)	500	Military artisans/weavers	Tao Zongyi, *Shu jinpu*, preface
13th century	Zhanchun, Tieqian jian (Iron and lead workshop)	300 each day	iron and copper smelters	Zhang Shinan, *Youhuan jiwen,* chap. 2
Yuanfeng 1 (1078)	Iron foundries at Xuzhou	36 foundries,	iron smelters	*Su Dongpo ji*, chap. 14

		100 workers each		
?	Coloured metal mining at Shaozhou	10,000	miners (and smelters?)	*Jinshi cuibian xu*, chap. 14
early 13th century	Iron foundry	500	iron smelters and casters	Yue, Ke (1183-1234). *Ting shi* chap. 6
12th century	Ironsmiths in one Military prefecture (*jun)*	18,000	Arms manufacturers: ironsmiths	Zhu Xi (1130-1200), *Zhuzi daquan ji*

Table 2: Artisans and workers in state workshops, manufactures, and mines, based on Yang Zihui, pp. 813 ff.

Yang Zihui p. 815			
Source	Time	Artisans	Figures
Yuanshi 167	1276	籍江南民為工匠 Registration of Jiangnan population: 300,000 ordinary craft households	300,000 工匠 (workers and artisans)
Xu Zizhi tongjian 186 „Song ji“	1284	Among the 300,000 craft households in Jiangnan, 190,000 should be re-registered as ordinary households (*minhu*), because they had no specific skills	110,000 工匠 (workers and artisans)
Yuanshi 15 (Shizu benji)	1288	Gansu and Shaanxi military colony land for 1,500 artisans	1,500 工匠 (workers and artisans)
Xu Zizhi tongjian 196 „Yuan ji“	1310	For building the Wutai si 五台寺, 1,400 artisans and 3,500 soldiers were recruited	1,400 工匠 (workers and artisans)
p. 816			
Yuanshi 123	1236	*minjiang*	720,000 民匠 (civilian artisans)
Yuanshi 90		4 kilns at Dadu, 300 artisans and labourers for production of glazed tiles	300 匠夫 (artisans and (unskilled) workers)
Yuanshi 90	1261	*Xiunei si* (Palace Maintenance Office) 140 offices, 450 *renjiang* (ordinary artisans) for construction	450 人匠 (civilian artisans)

	1271-1284	Number of craftspeople in *Xiunei si* enlarged	1,272 工匠 (workers and artisans)
	1267/1274	*Caishi ju* (Quarries?)	2,000+ 夫 (unskilled workers)
Yuanshi 89	1284	Daming dyeing and weaving office	1,540 人匠 (civilian artisans)
Yuan wenlei 426 "Zazhu"		鳩天下之工，聚之京師，分類置向，以考其程度，而給之食，復其戶使得以專于其藝 The artisans in the empire were inspected, they were assembled in the capital and categorized, and their skills were tested and they were given food and they were registered according to their specializations.	
Yuanshi 120		Child/juvenile artisans, male and female, were recruited and sent to Hongzhou 弘周（今河北陽原縣）. Thus, there were 300 silk weavers in Hongzhou and 300 wool weavers in Bianliang/Kaifeng	300+ 戶 (households) 300+ 戶 (households)
Yuanshi 89		Dadu and Jizhou: 600+ hunters and artisans	打捕戶及民匠 600+ (artisans and worker households)
Yuanshi 90		Diying si: Construction of palaces for princes	700 工匠 (artisans and workers)
Yuanshi 90		Rhinoceros horn and ivory craftshops	150 匠戶 (artisan households)
Yuanshi 90		Foresters of Dadu	163 夫匠 (unskilled workers and artisans)
Yuanshi 90		*Dianpi ju* 甸皮句 (Office for hides)	30+匠 (artisans)
Yuanshi 89		Baoding weaving and dyeing office	101 戶匠 (artisan households)
Yuanshi 89		Suilu zhuse minjiang zongguan fu	1,525 戶民匠 (civilian artisan households)
Yuanshi 89		Dadu minjiang	202 民匠 (civilian artisans)
Yuanshi 89		Zhuozhou chengjin ju renjiang	102 戶人匠

		Brocade weavers in Zhuozhou	(civilian artisan households)

Table 3 Work obligation shifts of builders according to the 1393 regulations, after Klaas Ruitenbeek p. 17 and *Da Ming huidian* chap. 189, fol. 1a-5a

Craft branch		Registered persons	Interval
Carpenters	木匠	33,928	five years
Sawyers	鋸匠	9,679	four years
Tilers and bricklayers	瓦匠	7,590	four years
Painters and lacquerers	油漆匠	5,137	four years
Earth pounders	土工匠	1,376	three years
Scaffolders	搭材匠	1,112	three years
Stone masons	石匠	6,017	two years

Table 4: Registered state artisans, after Zhu Cishou pp. 643 ff. and *Da Ming huidian* chap. 189

Source	Time	Artisans	Figures (persons)
Ming huidian chap. 189, fol. 1b	1393	**Total**	**232,089**
		Registered shift obligation artisans	129,983
Zhengtong shilu chap. 153	1454	**Total**	**289,000+**
		Labour obligations for Nanjing	58,000
		Labour obligations for Beijing	182,000
		Net	**240,000**
Ming huidian chap. 198, fol. 8a	1562	Tax obligations for Beijing	142,486
Ming huidian chap. 208		Tax obligations for Nanjing	59,695
		+ missing obligations for Nanjing	20,000-30,000 (estimated)
		Total	**222,181-232,181**

Table 5: Workforce in Qing dynasty government workshops in Beijing.
Sources: *Qinding Da Qing huidian shili*, 1899 ed., various chapters; *Gongbu zeli*, *Qinding zongguan neiwufu xianxing zeli*

	1660 - 1680	1681 - 1700	1701 - 1720	1721 - 1740	1741 - 1760	1761 - 1780	1781 - 1800	1801 - 1820	1821 - 1840	1841 - 1860	1861 - 1880
Imperial Household											

Department *neiwu fu* 内務府											
Office of Palace Construction *yingzao si* 營造司	732							655			
Workshop at the Hall for Nourishing the Heart *Yangxin dian zaoban chu* 養心殿造辦處		285								233	
Storage Office *guangchu si* 廣儲司	1460			1026				971		936 男 1190 女	
Printing Office at the Hall of Military Glory *Wuying dian xiushu chu* 武英殿修書處										84	
Court of Imperial Armaments *wubei yuan* 武備院	2253									1582	
Weaving and Dyeing Office in the Capital *jingnei zhiran ju* 京內織染局	825				162					closed 1843	
Ministry of Public Works ***gongbu*** 工部											
Bureau of Construction *yingshan si* 營繕司				85	53		44				
Manufacturing Storehouse *zhizao ku* 製造庫									385		
Metropolitan Mint „Well of Fortune“ *baoyuan ju* 寶源局					c.1000						
Gunpowder Office *huoyao ju* 火藥局											3000 soldiers
Ministry of Revenue *hubu* 戶部											
Metropolitan Mint „Fountain of Fortune“ *baoquan ju* 寶泉局					c.2000						
Commander-Gen. of the Eight Banners ***baqi dutong*** 八旗都統											
Armory/in conjunction with *wu-*			3000								

bei yuan											
TOTAL for ca. 1800: 14,280											

Table 6: Peking Resident Artisan Positions in 1567, based on *Ming huidian* chap. 189 and Sun Jian p. 185

Institution		Overseers of artisans/officials	Military and civilian artisans/persons
Directorate of Ceremonial	司禮監	433	1383
Directorate of Palace Eunuchs	内官監	480	1883
Directorate of Imperial Regalia	司設監	33	1437
Directorate of Imperial Accoutrements[57]	御用監	40	2755
Directorate for Credentials[58]	印綬監		19
Directorate of Imperial Apparel	尚衣監	42	654
Directorate of the Imperial Horses	御馬監	11	305
Palace Weaving and Dyeing Office	内織染局		1343
Silversmith Office	銀作局	23	166
Palace Armory	兵仗局	6	1781
Cap and Hat Office	巾帽局		498
Sewing Office	針工局	1	359
Paper Office	寶鈔司		624
Silver Storehouse	司銀庫		15
Storehouse Administration	内承運庫		359
Palace Granary[59]	供應庫	4	259
Firewood Office[60]	惜薪司		18
Condiments Service[61]	酒醋麵局		169

[57] Hucker, Charles O., *A Dictionary of Official Titles in Imperial China*. Stanford: Stanford University Press 1985. No 8213: responsible for preparing fine wood and ivory object for the Emperor's use and for presenting memorials for imperial attention that were submitted by the officialdom
[58] Hucker 7994: in cooperation with the Directorate of Palace Seals (*shangbao jian*) managed the seals and tallies with which the imperial documents were authenticated
[59] *Gugong cidian* p. 131
[60] *Gugong cidian* p. 131

Military Kitchen in the Directorate of Palace Delicacies	尚膳監軍廚		693
Total		1,073	14,740

Table 7: Estimate of Artisans in Government Manufactories outside Peking, 18th century

Source	Institution/Craft branch	Date	Persons
Zhu Cishou p. 789 (based on *Qing huidian*, chap. 1190)	Jiangning zhizaoju (Nanking Weaving and Dyeing Office)/weavers	1745	1,780
	dyers and silk reelers		777
Zhu Cishou p. 792	Suzhou zhizaoju (Suzhou Weaving and Dyeing Office)/weavers	1745	1,932
	designers and others		243
	Hangzhou zhizaoju (Hangzhou Weaving and Dyeing Office)/weavers		1,800
	dyers and silk reelers		530
Zhu Cishou p. 790	Jingdezhen Imperial Porcelain Kiln/porcelain manufacturers		300 permanent artisans; together with various assisting functions ca. 1,000?
Burger pp. 377-391	26 Government mints for copper cash in the provinces/copper casters		at an average of 100 workers per mint: 2,600
Zhu Cishou p. 787	Government shipyards at Fuzhou, Zhangzhou, Quanzhou, Taiwan		at an average of 400 artisans and workers (figures from biggest Ming shipyard): 1,600
TOTAL			12,262

[61] Hucker 1319: prepared sauces and other condiments for palace use