CONSTRUCTING A CATHEDRAL. NOTES ON THE CONSTRUCTION MANAGEMENT OF SIENA CATHEDRAL

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Abstract
Alongside the cathedrals in Pisa and Florence, Siena Cathedral Holy Mary, Our Lady of the Assumption, belongs to the major building projects in medieval Tuscany. Even though there are few sources and records of its early construction history, since 1226/27 the building itself and the organization of the construction process can clearly be inferred from the city’s oldest accounts. Documented are, amongst others, the number and tasks of the building’s craftsmen and their wages, the quantity and quality of building materials delivered and their provenance within the territory of Siena, the infrastructural measurements of the city to develop woods and quarries for the building and its effort towards efficient building management. Mainly the city’s many different attempts to control costs and building quality – not surprising in a merchant city like Siena – offer interesting examples of “trial and error” techniques in medieval times, as well as the fast growing field of duties of the leading architects within the city seems to be of more than historical interest.

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INTRODUCTION

A bishops church in Siena, a *domus Senate ecclesie*, was mentioned first on October 14, 833 (Pasqui 1899, no. 27), in May 913 the cathedral was named first *sedis Beate Marie* (ed. Cecchini 1931, vol. 1, no. 35; cf. Lusini 1911, p. 8.). The earliest reference of a bishop however was already on November 19, 465 (Schneider 1911, p. LXXXIII). Apart from the church we may imagine in addition a baptistery, a bishop’s court and some buildings for the canons too. A cathedral workshop for the construction and maintenance of those buildings was first mentioned on April 21, 1190, when the bishop, the canons and the *opera ecclesie* stipulated who was responsible for the church’s treasure and relics, who had to pay for the ceremonies and how the income revenue of the three most important altars would be divided: E.g. the income of the St Ansanus altare was divided equally, except the wax offerings from villages and castles (ed. Ghignoli 1994, no. 91; Moscadelli 1995, no. 1), while the *opera* did not receive any income from both the altars of St Mary and St Savinus. Wax offerings, a common symbol of submission in medieval times, were an important financial source for the *opera*. On December 19, 1178, the counts of Frosini complied to the commune of Siena promising to offer a ten pound wax candle annually to the *maioris ecclesie civitatis Senarum* (Schneider 1911, no. 286; Cecchini 1931, no. 17); on September 11, 1193, the canons of Paurano promised an annual wax offering of twelve *libbre* for the city’s protection (Cecchini 1931, no. 21; cf. no. 109). The *Liber census et reddituum communis Senensis* of 1222 contains a long list of wax offerings of subordinated localities, usually to be given on Assumption Day (Butzek 2006, p. 10).

Figure 1: Siena, Cathedral Holy Mary, Our Lady of the Assumption, view from south-west (Haas/von Winterfeld 1999, vol. 3.1.2, fig. II)
SOURCES AND OBSERVATIONS ON THE CONSTRUCTION MANAGEMENT

1226/27

The strengthening of the Italian communes during the Middle Ages – already in 1168 the Sienese bishop fled the city due to a conflict with the citizens (Butzek 2006, p. 5) – obviously also influenced the public works. In Siena the commune started to co-finance the cathedral workshop. As a consequence its organization, assignment and tasks changed (cf. Giorgi/Moscadelli 2001; cf. Giorgi/Moscadelli 2005, in particular chap. V.3, VI.3). Just in the oldest remaining biccherne, the city’s accounts, the commune regularly paid from April 1226 four magistri Opere Sancte Marie, most probably stone masons, and a blacksmith. From May 1226 payments for black and white marble, used for the sheeting of the cathedral’s brickworks are noted, and in June 100 bushel lime were delivered secundum formam Constituti, most likely an older obligation. As recipients of all payments Castaldus und Riccardus, operariis Sancte Marie, were named (Biccherna, vol. 1, p. 15, 18, 21, 26–27, 33, 40–41, 44, 51, 59, 76, 81, 93, 96; cf. Pietramellara 1980, p. 63); in another document Castaldus was identified as pizzicaiolus, a merchant (Giorgi/Moscadelli 2005, p. 436 note 2). Until 1257 the cathedral workshop was generally headed by a dual leadership of one pizzicaiolus and one marmorarius.

Apart from those direct payments, the commune offered annually on Assumption Day a wax candle with the extraordinary weight of 100 pounds, initially in November 1227 (Biccherna, vol. 1, p. 68). Furthermore the opera received testamentary donations, e.g. 20 soldi on December 4, 1196 (ed. Ghignoli 1994, no. 101), on August 5, 1238, three lire from the Sienese merchant Federico Rimpretto que debeant expendi in laborerio dexte ecclesie (Sanesi 1897, p. 126), and on November 7, 1246, a certain Alessius q. Guilielmii committed the hospital S Maria della Scala to deliver annually twelve staia grain from his legacy to the cathedral workshop until the building was completed (from Butzek 2006, p. 12).

Along with its regular payments the commune tried more and more to come into control of the cathedral workshop. Already in June 1257 five citizens were committed to supervising the cathedral’s construction (Biccherna, vol. 17, p. 189), and in December 1258 five (other?) citizens were paid ad revidendum Hopus Sancte Marie (Biccherna, vol. 20, p. 153). Indeed in 1260 the

Figure 1: Siena. Income of the cathedral workshop between 1290 and 1356 (Giorgi/Moscadelli 2005, p. 388 pl. 3)
city’s Consiglio Generale confirmed the appointment of the new operaio frate Melano, formerly exclusively a bishop’s right (Giorgi/Moscadelli 2001, p. 494 note 9).

On November 16, 1259, the Consiglio Generale appointed a committee composed of three sapientes viri of each of the three terzi – the city’s quarters – to discuss together with the operaio frate Melano the interior of the chorus (from Butzek 2006, p. 15; ed. Giorgi (et al.) 2006, no. 16). Some months later, on February 11, 1260, the commune appointed again nine citizens to oversee the construction progress (from Butzek 2006, p. 16; ed. Milanesi 1854–1856, vol. 1, no. 4; ed. Giorgi (et al.) 2006, no. 20, 21). On February, 20, this committee instructed the operaio to vault the bay close to the church’s back walls, enlarge the portal ex parte ecclesie sancti Desiderii and build a flight of steps in front (from Butzek 2006, p. 16; ed. Milanesi 1854, no. 5; Giorgi (et al.) 2006, no. 23; cf. Lusini 1911, p. 58 note 23; Pietramellara 1980, p. 54). One may wonder whether frate Melano was eventually not considered the appropriate person for this job or whether the commune tried to win recognition against the bishop; the document remains silent. Again, on May 31, 1260, the same committee instructed the unfortunate frate Melano to vault some more bays in the chorus and close to the altare St Bartholomew (from Butzek 2006, p. 16; ed. Milanesi 1854, no. 6; Pietramellara 1980, p. 54 f., no. 6; Giorgi (et al.) 2006, no. 24).

The constantly growing influence of the commune also becomes apparent with a series of additional tasks that would follow. In September 1249 master Giovanni dell’Opera di S. Maria twice examines a mill at the river Merse and receives ten soldi from the commune (Biccherna, vol. 9, p. 99b); in March 1250 he was commissioned again to counsel with three other masters a city’s building committee at their inspection of the city’s water wells (Bargagli Petrucci 1906, vol. 2, p. 99–103). In September 1253 the commune pays the masters Giovanni and Rosso from the opera and 73 other stone masons for razing the castle of Frosini (Biccherna, vol. 14, p. 100d–101a), and in May 1260 it pays master Grazia de opera Sancte Marie and additional masters, qui iverunt ad dissipandum muros de Montemasso, all together ten lire (from Butzek 2006, p. 16).

### 1262

The oldest remaining Sienese statute from 1262 contains many regulations concerning the construction of the cathedral as well as the financing and organization of the opera. Both the commune and the bishop were involved. The operaio was bound under oath to consign the complete income of the opera to three men, elected by the bishop together with the consuls of both the mercanzie and the Governo dei Ventiquattro, who were responsible for the finances of the opera and had to report to the commune after their term of three months. Furthermore, every January the podestà had to decide together with the consuls of the mercanzie and the Governo dei Ventiquattro, how many masters and operai were employed and how much they were paid. Also in January the Consiglio Generale had to appoint supervisors to control the cathedral workshops finance and direction (Siena, statute of 1262, I, 6, 7, 13; ed. Zdekauer 1897, p. 27 f.).

The statute of 1262 confirms the commune’s annual wax offerings on Assumption Day. Furthermore the commune obligated itself to fund the opera ten masters, who had to operate year-round for the cathedral’s construction and could not assume further work without permission of the podestà (statute of 1262, I, 2; ed. Zdekauer 1897, p. 26). Every citizen owning a pack animal had to transport marble pieces twice a year. But this regulation should come into effect only if the bishop grants a one year indulgence to the contributor for each transport – again, the commune and the bishop remained together for the cathedral’s construction (statute of 1262, I, 11, 12, 17; ed. Zdekauer 1897, p. 28, 30; Moscadelli 1995, no. 3, 7, 8; Giorgi (et al.) 2006, no. 29).
In particular, the sourcing of materials is documented (fig. 2). On January 29, 1270, the operaio frate Melano bought a property with a vineyard, a kiln (perhaps for the production of bricks) and two houses (from Butzek 2006, p. 20), and on November 17, 1278, the operaio Villa purchased a property in S Quirico a Tonni (from Butzek 2006, p. 23; ed. Giorgi (et al.) 2006, no. 53). These operations mark only the beginning of a long series of purchases and rentals in this area, all of them dedicated to assuring the commune’s needed stone quarries (cf. Butzek 2006, p. 24): On November 15, 1292, the operaio Clarus rents a stone quarry on the Piano di Lepre (from Butzek 2006, p. 27 f., cf. ibid. p. 31, 32, 36, 37, 41, for similar contracts). At Gerfalco, famous for its rosa marble, the opera rents on June 25, 1293, a stone quarry (from Butzek 2006, p. 28; ed. Giorgi (et al.) 2006, no. 69), and on April 4, 1310, a stone quarry in padule de Palacziis comitatus Senarum was rented (from Butzek 2006, p. 33; ed. Giorgi (et al.) 2006, no. 106).

Moreover, the opera was consulted to act for the commune’s projects. In April 1275, the operaio was committed to the restoration of the Palazzo della Dogana (from Butzek 2006, p. 22; ed. Giorgi (et al.) 2006, no. 45), and in June he receives a payment for the construction of the sepulcher and the chapel for the blessed Ambrogio Sansedoni (from Butzek 2006, p. 26). Additionally, in 1291 the city’s wells were viewed by the cathedral workshop’s masters (Bargagli Petrucci 1906, vol. 2, p. 145), and on August 13, 1293, potential improvements on a well in the Valdimontone quarter were discussed (ibid. p. 150). Finally, on April 3, 1331, master Camaino and five more stone masons were paid for planning a new town wall (from Butzek 2006, p. 42).

Following those sources, the cathedral workshop was not only an institution for the construction of the cathedral, but a construction company for Siena which was controlled and partly financed by the commune, but had to gain its own financial resources. The operaio was an execu-
tive employee sometimes with the duties of a town master mason (cf. Butzek 2006, p. 22). E.g. on May 7, 1271, the Consilio Generale appoints frate Melano again as factorem, ordinatorem et operarium Opere seu Operis Sancte Marie maioris ecclesie senensis. As administrator and legal representative of the opera he is allowed to collect debts, cede rights, close contracts, take out loans and to buy and sell properties. In all those cases the Consiglio Generale accords him generalem et liberam administrationem (from Butzek 2006, p. 21; ed. Giorgi (et al.) 2006, no. 40) – the bishop is no longer involved.

The operaio acting independently can be demonstrated even previously. In September 1259, the operaio frate Vernaccio ordered new choir stalls (from Butzek 2006, p. 15; ed. Giorgi (et al.) 2006, no. 15); in January 1263 the operaio frate Melano borrowed 260 lire for the lead of the cupola’s roof covering (from Butzek 2006, p. 18; ed. Giorgi (et al.) 2006, no. 30) and in September 1265 the operaio frate Melano and Nicola Pisano closed a contract for a new pulpit (from Butzek 2006, p. 18 f.; ed. Giorgi (et al.) 2006, no. 35).

1274

The statute of 1274, whose regulations partly went back to 1186 (cf. ASS 1951, p. 63–64), shows marginal variations of the control procedures (from Butzek 2006, p. 22, ed. Giorgi (et al.) 2006, no. 44 [2] [4]). For increased funding the opera would receive all wax candles offered for the feast of S Bonifatius as well as those offered on the eve of the feast of St Mary.

But the statute also shows some problems of the commune concerning the opera. A record from May 1296 claims to appoint an operaio able to read and write – the present one does not have both abilities, which is a serious disadvantage (from Butzek 2006, p. 28; ed. Bacci 1944, p. 42; Moscadelli 1995, no. 10). In 1299 the Consiglio Generale critiqued that a married operaio with wife and children would be ill suited rather than an operaio living year-round in the cathedral workshop (from Butzek 2006, p. 30; ed. Giorgi (et al.) 2006, no. 77).

1287

Within the first statute of the Governo dei Nove, the cathedral, the bishop’s see, the canonica and the hospital S Maria were placed under the protection of the commune (from Butzek 2006, p. 25 f.). All citizens between 18 and 70 years, except the poor and the sick, were pledged to an annual wax offering in favor of the opera (ed. Giorgi (et al.) 2006, no. 59a [4]).

1308

On April 29, 1308, the Consiglio Generale confirms a reform of the cathedral workshop’s organization. Henceforth the operaio is no longer allowed to begin a new project without the approval of his counselors, his capudmagistri and at least six of the stone masons. Of those counselors, at least two-thirds of them must meet weekly or biweekly with the operaio to discuss the cathedral workshop’s affairs. Furthermore, the opera must deposit the respectable sum of 1000 lire at the commune to ensure funding of the cathedral.

In May 1319 the Governo dei Nove decides the rules for the counselors, their election and their duties. Every year in June and December six competent and honest men, two of each terzi, should be appointed, twice a month they should meet with the operaio – if not, they should be punished by 25 lire. After their term, they should not be reelected for two years (from Butzek 2006, p. 36; ed. Giorgi (et al.) 2006, no. 119 [3]; cf. Moscadelli 1995, no. 14).

Increasingly the communal committees were completed by external experts. On February 17, 1322, two masters from Siena and three from Florence were asked by the operaio Bindoccius.
Latini Uberti de Rossis and the Governo dei Nove to judge the cathedral’s freshly started constructs – which were keenly critiqued (from Butzek 2006, p. 37 f.; ed. Milanesi 1854, no. 34, 35; Giorgi (et al.) 2006, no. 121, 122).

In November 1328 the opera was forced by the commune to construct both the churches S Basilio and S Luca in Siena, and to finance those projects with 500 of the 600 lire it received from the commune (from Butzek 2006, p. 41 f.). A document from 1337 tells us that the operaio is now responsible as well for the fonte branda (from Butzek 2006, p. 48).

1337

The statute of 1337 starts with the traditional declaration that the cathedral is protected by the commune. Concerning its organization, the opera should be featured with an operaio, a clerk, a guardian and six advisors (from Butzek 2006, p. 47).

On August 23, 1339, the Consiglio Generale decided in magna concordia to realize the project of the Duomo Nuovo – a momentous decision (from Butzek 2006, p. 50; ed. Milanesi 1854, no. 49; Giorgi (et al.) 2006, no. 132; cf. Lusini 1911, p. 159 f., 175).

By now the opera used every possibility for funding. In June 1339 it earned for the cathedral’s extension a total of 1046 lire, 16 soldi and 3 denari by selling wood, bricks and iron from the houses demolished (from Butzek, p. 50). Aside from that, the wax offerings were still the most important contribution for funding. In 1339/40 the camerlengo earns 200 lire and 6 denari alone from the wax drops in the drop off plates of the St Mary’s altar (from Butzek, p. 48), and in June 1361 he earned 53 lire and 18 soldi from twelve candles contributed (from Butzek, p. 67). In 1367 the bowmen’s association obligates itself to an annual wax offer of one pound per capita to be offered on the feast of S Sebastian (sic!) (from Butzek, p. 73; ed. Giorgi (et al.) 2006, no. 153). Similar obligations were enacted by the stone masons in 1368 (from Butzek 2006, p. 74; ed. Milanesi 1854, no. 68; cf. Lusini 1911, p. 206, 240 note 21) and in 1386 with the shoemaker’s guild (from Butzek 2006, p. 90 f.; ed. Fehm 1986, no. 25a). On April 13, 1389, some citizens made a request to the city council that every citizen should offer, in addition to the offerings on Assumption Day, a certain quantity of wax due to the opera not even being able to afford to repair the bell tower (from Butzek 2006, p. 96; ed. Milanesi 1856, attachment no. 8; Giorgi (et al.) 2006, no. 199).

In 1343 the Governo dei Nove and the consuls of the mercanzia rule that from the candidates for the operaio, whoever gets the most votes should be considered the new operaio – for the first time we notice a real and true election. The term is one year (from Butzek 2006, p. 55 note 689).

Again, the opera is shown commitment by additional tasks. In 1344 the Governo dei Nove decides that its annual grant of 600 lire should be used not only for the cathedral, but for the enlargement of S Niccolò in Petriolo, for the restoration of the local parish house and for some repairs at S Basilio in Siena (from Butzek 2006, p. 54).

In 1348, two out of three citizens in Siena died of the Black Death.

On July 27, 1352, the Consiglio Generale decided that the operaio getting the most votes must accept his elected position; previously two men had declined (from Butzek 2006, p. 57).

In 1357 the commune asks, in view of massive constructive problems of the Duomo Nuovo, for a series of experts, Sienese and external, amongst others the Florentine master Benci di Cione and the capomaestro of Florentine cathedral Francesco Talenti, totaling at least nine different experts (from Butzek 2006, p. 61 f.; ed. Milanesi 1854, no. 56, 57; Giorgi (et al.) 2006, no. 140, 141; cf. Lusini 1911, p. 180 ff., 202; Giorgi/Moscadelli 2005, p. 100 f. note 244). In June 1357 the commune decided to raze those parts of the cathedral looming to collapse (from Butzek 2006, p. 62; ed. Milanesi 1854, no. 58; Giorgi (et al.) 2006, no. 142; cf. Lusini 1911, p. 187 note 62).
CONCLUSION

With this decision and the completion of the new chorus in 1370, Siena Cathedral reached its final form, which has not changed substantially to this day. However, the cathedral workshop acts more and more as the city’s construction company: Starting from December 30, 1361, the operaio would care as well for the Cappella del Campo (from Butzek 2006, p. 68; ed. Giorgi (et al.) 2006, no. 144), and from 1369 onwards the opera was obliged to give annually 100 fiorini d’oro for its construction (from Butzek 2006, p. 74; ed. Milanesi 1854, no. 69; Giorgi (et al.) 2006, no. 159; cf. Lusini 1911, p. 243 note 41). Concerning the cathedral, the principal task of the opera changed to overseeing the building’s maintenance, a task which today’s Opera della Metropolitana di Siena still fulfills.

In the written sources, the development of the cathedral workshop going from a bishop’s institution, to the city’s own construction company with a lot more tasks than solely the construction of the cathedral becomes wholly apparent; a process which took place against the backdrop of the city’s liberation from the bishop’s rule. The city took possession of the cathedral’s construction, a symbol of the bishop’s power, and completed it as a civic cathedral for its own self-manifestation.

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