

AKTEN DER GESELLSCHAFT FÜR GRIECHISCHE  
UND HELLENISTISCHE RECHTSGESCHICHTE

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AKTEN DER GESELLSCHAFT FÜR GRIECHISCHE  
UND HELLENISTISCHE RECHTSGESCHICHTE

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herausgegeben von  
Kaja Harter-Uibopuu  
Werner Riess



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# INHALT

Vorwort .....	IX
Das Recht Athens	
David D. Phillips (Los Angeles, CA) <i>Moicheia</i> and the Unity of Greek Law .....	3
Laura Pepe (Mailand) <i>Μοιχεία</i> , Unity, and Uniqueness of Greek Law: Response to David D. Phillips .....	29
Emiliano J. Buis (Buenos Aires) The Physicality of Justice in Aristophanes' <i>Wasps</i> : Bodies, Objects and the Material Staging of Athenian Law .....	41
Werner Riess (Hamburg) Attische Richter zwischen <i>rule of law</i> und Egoismus: Das Zeugnis der Komödie und der Fluchtafeln. Antwort auf Emiliano Buis .....	71
Michael Gagarin (Austin, Texas) The Function of Witnesses in Athenian Law Courts .....	81
Eva Cantarella (Milan) The Legality Principle in Athenian Law: Response to Michael Gagarin .....	99
Nikolaos Papazarkadas (Berkeley) Courts, Magistrates and Allotment Procedures: A New Inscribed Kleroterion from Hellenistic Athens .....	105
Adele C. Scafuro (Providence) A New Inscribed Kleroterion from Hellenistic Athens: Response to Nikolaos Papazarkadas .....	125
Cristina Carusi (Parma) The Recruitment and Remuneration of Construction Workers in Classical Athens .....	131

Öffentliches Recht und Administration  
in den griechischen Poleis

Winfried Schmitz (Bonn) Die Rhetren des Lykurg und die Entstehung des spartanischen Kosmos .....	155
Martin Dreher (Magdeburg) Die Gesetze Lykurgs und die spartanischen Parthenier. Antwort auf Winfried Schmitz .....	175
Emily Mackil (Berkeley) Confiscation, Exile, and Return: The Property Problem and its Legal Solutions .....	185
Maria S. Youni (Komotini) Property, Law and Politics: Response to Emily Mackil .....	213
Michele Faraguna (Mailand) Magistrates' Accountability and Epigraphic Documents: the Case of Accounts and Inventories .....	229
Georgy Kantor (Oxford) Inventories and Official Responsibility: Response to Michele Faraguna .....	255
Ilias Arnaoutoglou (Athen) Resurrecting democracy? Law and Institutions in Early Antigonid Athens (307-301 BC) .....	263
Thomas Kruse (Wien) Not just a Return to the patrios politeia – Or How to Turn Ten into Twelve: Response to Ilias Arnaoutoglou .....	283
Pierre Fröhlich (Bordeaux) Les prytanes d'Iasos, l' <i>épitropos</i> et la question du remplacement des magistrats en poste dans les cités hellénistiques .....	289
Athina Dimopoulou (Athen) Appointing a Replacement while in Office in Iasos: Different Approaches to Different Needs: Response to Pierre Fröhlich .....	329
Eva Jakab (Budapest) Law and Identity. Considerations about Citizenship and Succession in Provincial Practice .....	335
Bernhard Palme (Wien) Griechische Rechtsgeschäfte für römische Bürger. Antwort auf Eva Jakab .....	359

Kaja Harter-Uibopuu (Hamburg)	
Die diatheke des Epikrates aus Nakrason. Ein Beitrag zur Verwaltung privater <i>donationes sub modo</i> .....	367
Andreas Victor Walser (Zürich)	
Menschen und Götter – Zu den Rechtsgrundlagen griechischer Stiftungen. Antwort auf Kaja Harter-Uibopuu .....	403
Sklaverei und Freilassungen	
Paulin Ismard (Paris)	
Renting Slaves in Classical Athens: Anatomy of a Legal Form .....	419
Philipp Scheibelreiter (Wien)	
Die μίσθωσις des Theodotos (Lys. 3). Zugleich ein Beitrag zur Terminologie des „Verdingungsvertrages“ im griechischen Recht. Antwort auf Pauline Ismard .....	437
Lene Rubinstein (London)	
Penalties in Delphic <i>paramone</i> Clauses: A Gender Perspective .....	455
Rachel Zelnick-Abramovitz (Tel Aviv)	
Women and Children in Delphic <i>paramone</i> -clauses: Response to Lene Rubinstein .....	481
Edward E. Cohen (Philadelphia, PA)	
Legal Context of Paramonê Provisions: Response to Lene Rubinstein .....	489
Gerhard Thür (Wien)	
The <i>dediticii</i> in <i>P.Giss.</i> 40 I 7–9 .....	501
Patrick Sanger (Münster)	
Das Problem der „Schutzklausel“ in <i>P.Giss.</i> I 40 Kol. I, 8–9. Antwort auf Gerhard Thür .....	517
Index locorum .....	525
Teilnehmerinnen und Teilnehmer .....	535



CRISTINA CARUSI (PARMA)

## THE RECRUITMENT AND REMUNERATION OF CONSTRUCTION WORKERS IN CLASSICAL ATHENS

*Abstract:* In Classical Athens, there was not a preference for hiring workers directly rather than contracting out work for the completion of public building projects. In reality, a close analysis of the epigraphic evidence reveals that several systems of labor recruitment and remuneration, including business partnerships, coexisted and overlapped, with public officials taking advantage of all available legal instruments to deal with the fragmented and complex structure of the labor market.

*Keywords:* public building, building contracts, construction workers, craftsmen's workshops, business partnerships

The goal of this article is to ascertain through which legal instruments Athenian magistrates of the Classical Age recruited and remunerated construction workers for the completion of public building projects. By construction workers, I mean several types of skilled, specialized craftsmen, not only stonemasons, but also carpenters, metalworkers, brick makers, sculptors, painters, and so on. Contrary to the traditional viewpoint, I intend to show that in Athens there was not a preference for hiring workers directly rather than contracting out work. In reality, several systems of labor recruitment and remuneration coexisted, intersected, and overlapped in both the fifth and fourth centuries as a consequence of the fragmented and complex structure of the Athenian labor market.<sup>1</sup>

1. Our knowledge of building contracts in the ancient Greek World is based on the evidence provided by epigraphic documents, mostly building specifications, contracts, and accounts, coming from different cities and sanctuaries – the most important ones being Athens, Epidaurus, Tegea, Delos, Delphi, and Lebadeia – and dated from the fifth to the second centuries. This evidence shows that building contracts were binding and formal agreements between two parties – in this case,

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<sup>1</sup> This article is a preliminary and concise version of several arguments discussed in my in-progress book on public building and the Athenian democracy. I am grateful to the organizers of the 2020 Symposium conference, Kaja Harter-Uibopuu and Werner Rieß, for the opportunity to present this text in front of the expert audience gathered in Hamburg and to all the participants for their valuable feedback. Naturally, I take full responsibility for the final version. All dates are BC unless otherwise stated.

public officials and private contractors – in which the specifications for the contracted-out job, and the terms and conditions according to which said job was to be completed, were set forth. The types of provisions usually included in building contracts throughout the Greek world are strikingly similar to each other. The most common of these provisions concerned the method of payment (usually in installments, including an advance payment), the appointment of guarantors by the contractor, a precise deadline for the completion of the works, and the possible enforcement of fines for delayed, incomplete, or poorly executed jobs.<sup>2</sup> The similarity of these provisions must not be considered the result of the application of a general form of contract shared by all Greek cities, but, more likely, the result of similar solutions devised by different cities to answer the same needs – solutions that probably developed and grew closer over time through contact and exchange between city-states.<sup>3</sup>

In her work on temple builders at Epidaurus, dated to the 1960s, Alison Burford argues that the contracting out of building works as opposed to the direct hiring of workers developed primarily in remote places such as Delphi, Epidaurus, and Delos, where the lack of locally available skilled workers and building materials was a serious obstacle to the completion of large-scale building projects. In such situations, the use of building contracts developed as the most convenient and efficient device to attract skilled labor with the promise of long-term jobs and, at the same time, to ensure that jobs were adequately completed according to the requirements of public officials. By contrast, in fifth-century Athens, where the ambitious projects of the Periclean age and the lively economy attracted per se a large number of skilled workers, the use of building contracts was unnecessary and sporadic. Thus, public officials would hire craftsmen directly and pay them through a daily rate system or a piecework system. This practice resulted in an extreme fragmentation of building projects, usually split in many small portions assigned to many different workers. Only later, in the fourth century, magistrates tended more and more to recruit and remunerate construction workers through the legal instrument of building contracts, or, in other words, to contract out entire building projects, or large portions of them, through public auctions.<sup>4</sup>

More recently, in his study of craftsmen employed by Greek sanctuaries of the Classical and Hellenistic Age, Christophe Feyel observes that jobs assigned to contractors were usually more complex and expensive or more quality-oriented than jobs assigned to craftsmen paid through a daily rate system or a piecework system.

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<sup>2</sup> For a thorough analysis of the content of building contracts and discussion of the available evidence, see Beauchet 1897, 209-220; Davis 1937, 114-120; Burford 1969, 91-109. See also Maier 1961, 17-18. On the framework agreement for public building contracts from Tegea (*RO* 60), see Thür 1984. For Athenian building specifications, see Carusi 2006 and 2010.

<sup>3</sup> See Davis 1937, 110-114; Burford 1969, 88-90.

<sup>4</sup> See Burford 1969, 109-113.

In his opinion, since craftsmen were extremely mobile and most sanctuaries could not offer constant employment, magistrates used building contracts as a means to attract and keep hold of the most qualified and dependable craftsmen with the promise of substantial and long-term jobs. Unlike Burford, Feyel does not evoke any historical evolution of the use of building contracts. Yet, he implies that in Athens the need to resort to building contracts was less compelling than in other areas of the Greek world and, when occurring, was usually motivated by the size and complexity of the jobs to be performed.<sup>5</sup>

In my opinion, both these reconstructions must be revised, since the Athenian epigraphic evidence reveals a far more complex picture than a simple dichotomy between directly hired workers and contractors, including a further possibility, i.e. business partnerships, which so far have been only marginally considered by the scholarly community.

2. First and foremost, it is important to stress that in Athens building contracts, despite marked by a different terminology, are attested at least since the second half of the fifth century. As is well known, in most of the Greek world, the action of private individuals undertaking building works, usually called ἐργώναι, was indicated by the verb ἐργώνεω, the consensus among scholars being that the sale-related terminology (ὠνή i.e. “sale”) developed from the practice of awarding public contracts through auctions.<sup>6</sup> By contrast, in Athens the actions of public officials awarding building works and of private individuals undertaking them were indicated respectively by the active and middle voices of the verb μισθόω and its compounds. Accordingly, individuals undertaking building works were called μισθωταί or μισθωσάμενοι.<sup>7</sup> The reason for this terminological preference remains elusive. However, it is essential to clarify that nothing in the available sources supports the idea that the Athenian terminology concealed an original propensity for hiring workers directly rather than contracting out building projects, as the link with the lexical sphere of μισθός/μίσθωσις (“hire/lease”) would seem to imply.<sup>8</sup> In reality, the first occurrence of both the noun μισθωτής and the active voice of the verb

<sup>5</sup> See Feyel 2006, 441-457, 485-510.

<sup>6</sup> See, e.g., at Tegea, *RO* 60, l. 2; at Troizen, *IG* IV 823, l. 52; at Epidauros, *IG* IV<sup>2</sup>.1.103, l. 12 (Prignitz, *Bauurkunden von Epidauros*, nr. II, l. 144); at Lebadeia, *IG* VII 3074, l. 6-7; at Delphi, *CID* II 79A, l. 23; at Delos, *IG* XI.2.144, l. 24, and *I.Délos* 502, l. 5. When the non-Attic terminology departs from the idea of “sale”, it never opts for the idea of “hire/lease” but instead for ἐργολαβεῖν, literally “work undertaking” (see, e.g., *IG* IV<sup>2</sup>.1.100, l. 4; *IG* XI.2.161, l. 45). For the idea that the “sale” terminology developed from the practice of awarding public contracts through public auctions, see Thür 1984, 506 n. 98.

<sup>7</sup> See references in n. 13 below.

<sup>8</sup> This is the opinion of Remo Martini (1997a and 1997b). His (implicit) line of reasoning seems to be that when the city of Athens shifted from hiring workers directly to contracting out work, the terminology remained somewhat linked to the old practice.

μισθῶω in contexts related to public building projects show clearly that these terms were used to indicate a contractor and the contracting out of building works respectively.

In the Erechtheum accounts dated to 408/7 (*IG I<sup>3</sup> 476*), during the sixth prytany, the encaustic painter Dionysodoros, called μισθωτής, received 30 dr. for painting the molding on the inner epistyle at 5 ob. per foot, having appointed Herakleides of Oa as guarantor (l. 46-54). Then, in the eighth prytany, he received 44 dr. 1 ob. as balance payment for painting a total surface of 113 feet, “in addition to what he had received before” (l. 270-280).<sup>9</sup> Since the cost of painting the 113-foot surface amounted to 94 dr. 1 ob., and in the two recorded payments Dionysodoros received 74 dr. 1 ob., we reckon that he was paid in installments, with at least two advance payments following the progress of the work and the final balance when the job was completed. It is highly probable that the second installment of 20 dr. was paid in the seventh prytany (and registered in a section now lost in a lacuna). Both the appointment of guarantors and payment in installments are typical features of building contracts. This means that Dionysodoros was performing his job within the legal framework of an agreement in every respect analogous to a building contract.

In the decree of the Athenian people providing for the construction of gates, a *neos*, and a stone altar in the sanctuary of Athena Nike (*IG I<sup>3</sup> 35*), dated probably to the 440s, the *poletai*, i.e. the “public vendors”, were ordered to award works (ἀπομισθῶσαι) within a specific deadline (l. 8-9). Similarly, a coeval decree (*IG I<sup>3</sup> 45*) ordered the *poletai* to award works (ἀπομισθῶσαι) for the erection of a palisade on the acropolis as rapidly as possible (l. 10-14).<sup>10</sup> Since in both cases the grammatical subject of the verb ἀπομισθῶσαι is the “public vendors”, this means that also in Athens, despite a different terminology, this transaction – i.e. the

<sup>9</sup> *IG I<sup>3</sup> 476*, l. 46-54: ηενκλαυαῖς, τὸ κυμάτιον ηενκέα[ν]τι τὸ ηεπὶ τῷ ηεπιστυλι[ι] τ]ῷ ηεντός, πεντόβολον τὸ[ν πό]ιδα ηέκαστον, μισθοτῆς Δι[ονυ]σόδωρος ἐμ Μελίτει ηοικ[ὸν, η]ηγγυετῆς ηερακλείδης Ὁ[ἔθ]ε]ν :ΔΔΔ: κεφάλαιον ηενκαυτ[αις]! :ΔΔΔ: κτλ. “To painters in encaustic, for painting the cymatium on the inner epistyle, at 5 ob. per foot, contractor Dionysodoros living in Melite, guarantor Herakleides of Oa, 30 dr. Total to painters in encaustic, 30 dr., etc.”. L. 270-280: ἐνκαυτῆι τὸ κυμάτιον ἐνκέαντι τὸ ηεπὶ τῷ ηεπιστυλιοι τῷ ηεντός, πεντόβολον τὸν πόδα ηέκαστον, πόδασι ηεκατὸν δεκατρεῖς, μισθοτῆι προσηαπέδομεν πρὸς ηῷι πρότερον εἶχε, Διονυσοδῶροι ἐμ Μελίτει ηοικῶντι, ηεγγυετῆς Ηερακλείδης Ὁἔθεν, ΔΔΔΔΗΗΗΗ: κεφάλαιον ηενκαυτῆι :ΔΔΔΔΗΗΗΗ: κτλ. “To a painter in encaustic, for painting the cymatium on the inner epistyle, at 5 ob. per foot, 113 feet, to the contractor Dionysodoros living in Melite we gave in addition to what he had received before, Herakleides of Oa being the guarantor, 44 dr. 1 ob. Total to the encaustic painter, 44 dr. 1 ob., etc.”.

<sup>10</sup> *IG I<sup>3</sup> 35*, l. 8-9: ἀπομισθῶσαι δὲ τὸς πολετὰς ἐπὶ τῆς Λεοντίδος πρυτανείας κτλ. “The *poletai* are to sell the contract within the prytany of Leontis, etc.”. *IG I<sup>3</sup> 45*, l. 10-14: ἀπομισθῶσαι[ι] δὲ τὸ[ς] πολετὰς: ἡό[π]ιος ἄν: ἐντὸς ηεχσέ[κ]οντα: ἔμερῶν: ἐπισκι[ε]υασθῆι: κτλ. “The *poletai* are to sell the contract so that works are ready within sixty days, etc.”.

awarding of construction works – was perceived as a sale (regardless of whether or not several bidders participated to the auction).<sup>11</sup>

The same terminology makes its appearance in Herodotus' narrative concerning the rebuilding of Apollo's temple at Delphi by the Athenian aristocratic family of the Alcmaeonids. Herodotus used the verb *μισθωσάντων* to describe the action of the Amphictyons who awarded the job for 300 t. and the verb *μισθοῦνται* to describe the action of the Alcmaeonids who undertook it (Hdt. 2.180; 5.62).<sup>12</sup> Given the historical context of this narrative, i.e. the late sixth century, we cannot posit that the Alcmaeonids operated under an agreement having all the features that building contracts had in the Classical Age. Yet, it is difficult to believe that Herodotus intended to depict the Alcmaeonids as simple workers hired by the Amphictyons to rebuild the temple. Instead, he probably meant to signal that the Alcmaeonids, against the payment of 300 t., undertook in their own hands the entire rebuilding of the temple, providing material and labor. In all probability, Herodotus, writing in the third quarter of the fifth century, and describing a procedure that could be equated to the contracting out of building works, employed the verbs *μισθοῦν* and *μισθοῦσθαι* because that was the reality evoked by the terminology in question.

3. Having established that contracting out work was not an unknown procedure to fifth-century Athenians, is it correct to argue, as Burford does, that building contracts were still sporadic in fifth-century Athens and then became more common in the fourth century? Mentions of *misthotai* and *misthosamenoι* become admittedly more frequent in the fourth-century epigraphic record. The conditions under which these workers were recruited and remunerated are registered in several building specifications. They are similar to those attested in building contracts throughout the Greek World and make it clear, if proof were needed, that *misthotai* and *misthosamenoι* were nothing else than contractors.<sup>13</sup>

<sup>11</sup> Burford (1969, 160-161) observes that even when then competitive element was missing, and a candidate was asked to undertake a job, the final decision still laid with the auctioneering officials, who were always at liberty to accept or reject bidders as in other kinds of auctions.

<sup>12</sup> Hdt. 2.180: Ἀμφικτυόντων δὲ μισθωσάντων τὸν ἐν Δελφοῖσι νῦν ἔοντα νηὸν τρηκοσίῳν ταλάντων ἐξεργάσασθαι (ὁ γὰρ πρότερον ἔων αὐτόθι αὐτόματος κατεκάη), τοὺς Δελφούς δὴ ἐπέβαλλε τεταρτημόριον τοῦ μισθώματος παρασχεῖν. "When the Amphictyons had awarded for 300 t. the rebuilding of the temple that now stands at Delphi (that which was formerly there having been burnt by pure mischance), it fell to the Delphians to provide a fourth part of the cost". Hdt. 5.62: ἐνθαῦτα οἱ Ἀλκμεωνίδαι πᾶν ἐπὶ τοῖσι Πεισιστρατίδῃσι μηχανόμενοι παρ' Ἀμφικτυόντων τὸν νηὸν μισθοῦνται τὸν ἐν Δελφοῖσι, τὸν νῦν ἔοντα τότε δὲ οὐκῶ, τοῦτον ἐξοικοδομήσαι. "Then, the Alcmaeonids, in their desire to use all devices against the sons of Pisistratus, undertook from the Amphictyons the rebuilding of the temple at Delphi which exists now but was not there yet then".

<sup>13</sup> *Misthotai* in building specifications: *I.Oropos* 290, l. 74; *I.Oropos* 292, l. 36; *I.Délos* 104-4, l. 29; *I.Eleusis* 141, l. 17, 21, 63; *I.Eleusis* 152, l. 32; *I.Eleusis* 153, l. 26; *I.Eleusis*

However, this apparent increase in the number of contractors is strictly linked to the nature of the epigraphic evidence, which changes significantly from the fifth to the fourth centuries. In the fifth century, evidence for public building projects consists mainly of building accounts that list receipts and expenditures in a tabular and rather concise way, with collective entries lumping together the sums of money that magistrates spent on different categories of craftsmen and types of jobs. For instance, in the first year of the Parthenon accounts (*IG I<sup>3</sup> 436*), dated to 447/6, public officials registered expenses “for quarrymen from Pentelikon” (l. 23: λιθοτόμοις Πεντελῆθεν), “for carpenters” (l. 26: τέκτοσι), or “for the transport of stone from Pentelikon” (l. 24: λιθαγογίας Πεντελῆθεν). Only later, starting with the Erechtheum accounts, magistrates began to offer a detailed list of the individual craftsmen involved in the project, each of them registered with his own name, type of job performed, and payment received. It is not by coincidence, then, that the “first” *misthotes* of Athenian history is found in these accounts. In the fourth century, building accounts, though more detailed, tend to become scarce and are superseded, in the epigraphic record, by building specifications, i.e. documents that, as said above, describe in detail the technical content of the work and some of the conditions by which contractors had to abide.<sup>14</sup> Given this change in the epigraphic habit, it is not surprising that most of the evidence concerning building contracts dates to the fourth century, when building accounts are more detailed, and building specifications allow us a glimpse into the system of labor recruitment and remuneration. By contrast, evidence remains sporadic in the fifth century, when most building accounts are extremely concise. In short, I strongly suspect that the historical evolution from direct hiring to contracts outlined by Burford depends largely on the different nature of the epigraphic evidence available for the fourth rather than the fifth century.

In previous scholarship, the Erechtheum accounts (*IG I<sup>3</sup> 475-476*) have been erroneously indicated as evidence that in Athens, by the last decade of the fifth century, construction workers were mostly daily workers, remunerated through a daily rate system and receiving 1 dr./day regardless of their job or skills.<sup>15</sup> However,

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157, l. 31-32; Maier, *Mauerbauinschriften* nr. 11, l. 122. *Misthosameni* in building specifications: *IG II<sup>2</sup> 1668*, l. 94-95; *IG II<sup>3</sup> 429*, *passim*. The term *misthotai* was used in the same sense in fourth-century building accounts: Maier, *Mauerbauinschriften* nr. 2-3, 7-9, *passim*; *SEG 32.165*, l. 4; *I.Eleusis 159*, *passim*; *I.Eleusis 177*, *passim*; *IG II<sup>2</sup> 1669*, l. 18, 22.

<sup>14</sup> For this change in the Athenian epigraphic habit, see Carusi 2020a.

<sup>15</sup> See Himmelmann 1980, esp. 149-150; Gallo 1987, esp. 44-48; Stewart 1990, 66; Loomis 1998, 117-119. This conviction has been fueled by the parallel that Plutarch’s Pericles draws between soldiers and sailors receiving payment for their service and construction workers being equally rewarded from public money (*Per.* 12.4-7). However, no mention is made in this passage of any standard wage for construction workers or, worse, of any state pay common to soldiers, sailors, and construction workers. Ironically, Richard Randall’s article is often quoted as a reference work for the existence, in the Erechtheum

the epigraphic evidence does not support this conviction.<sup>16</sup> In reality, the only workers paid 1 dr./day in these accounts belonged to the category of the *ὑποργοί* (“helpers”), who performed heavy odd-jobs, such as placing beams, taking down and reassembling scaffolding, moving paints-pots, and operating the block-and-tackle equipment.<sup>17</sup> In a few cases, carpenters were also paid through a daily rate system, but only when they were hired for repetitive jobs like sawing, making and truing up straightedges for the coffered ceiling, laying rafters, etc.<sup>18</sup> In all other cases, as Richard Randall had already pointed out, craftsmen were paid through a piecework system, and though the label of *misthotes* is applied only to the encaustic painter Dionysodoros, there are good reasons to believe that other jobs paid through a piecework system, though not explicitly stated in the accounts, were in reality let out on contract.<sup>19</sup> In fact, the two systems are not mutually exclusive: even Dionysodoros, while being the recipient of a contract, was paid by the unit, i.e. at 5 ob. per foot of painted surface (*IG I<sup>3</sup> 476*, l. 46-54).

This situation is similar to that attested in the Eleusinian accounts (*I.Eleusis* 159 and 177), dated respectively to 336/5 or 333/2 and 329/8. In these accounts, where thirty-three contracts are attested, and the majority of jobs are paid through a piecework system, the use of the daily rate system is limited to the remuneration of the *οἰκόσιτοι*, i.e. private slaves whom the officials of the sanctuary hired in teams for all sorts of jobs. Again, the general characteristic of all these jobs – assembling scaffolding, carrying bricks, sifting earth, laying tiles, sawing wood, polishing doorposts, and so on – seems to be that they were repetitive and best done by a

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accounts, of a standard 1 dr./day wage for constructions workers, whereas he clearly denied that this was the case and rather claimed that methods of payment varied according to the job in hand (Randall 1953, 207-208).

<sup>16</sup> The following discussion is based on a close analysis of the Erechtheum and Eleusinian accounts that is part of my in-progress book. In classifying workers mentioned in these accounts, I profited enormously from the previous, excellent works of Randall (1953) and Feyel (2006), and the detailed commentaries of Caskey (1927) and Clinton (2008). For more data stemming from this analysis see Carusi 2020b.

<sup>17</sup> *Hyporgoi* placing beams: *IG I<sup>3</sup> 476*, l. 718; taking down scaffolding: *IG I<sup>3</sup> 476*, l. 18-25, 134-140; assembling scaffolding: *IG I<sup>3</sup> 476*, l. 25-28; moving paint-pots: *IG I<sup>3</sup> 476*, l. 28-31; operating the block-and-tackle equipment: *IG I<sup>3</sup> 476*, l. 124-134.

<sup>18</sup> Carpenters sawing: *IG I<sup>3</sup> 475*, l. 54-57; *IG I<sup>3</sup> 476*, l. 33-46; making a pipe: *IG I<sup>3</sup> 475*, l. 65-67; making and trimming straightedges: *IG I<sup>3</sup> 475*, l. 67-69; truing up straightedges: *IG I<sup>3</sup> 475*, l. 70-71; laying rafters: *IG I<sup>3</sup> 475*, l. 252-256; doing some unspecified carpentry job: *IG I<sup>3</sup> 475*, l. 287-291; *IG I<sup>3</sup> 476*, l. 104-109 (here at 5 ob./day).

<sup>19</sup> The verb *μισθοῦν* is used at *IG I<sup>3</sup> 476*, l. 109-123, thus implying that public officials contracted out to the carpenters Manis and Kroisos the gluing of moldings at the price of 2 dr. per edge. For other possible contracts, including the carving of rosettes and fluting of columns, see Caskey 1927, 412-413; Randall 1953, 207-209. Conversely, there is no evidence that the appliqué figures for the frieze cost 60 dr. per piece because sixty days of work were needed to carve each of them, nor that the fluting of each column cost 350 dr. because it took it 350 man/days to complete it (see Loomis 1998, 117-119). More likely, these specialized jobs were remunerated through a piecework system.

team.<sup>20</sup> Moreover, no standard daily wage existed, since *oikositōi* labeled as *μισθωτοί* (“hired workers”) received 1 dr. 3 ob./day to perform heavy and unskilled jobs, while *oikositōi* performing more specialized, though still repetitive jobs received wages fluctuating from 1 dr. 1.5 ob./day to 2 dr. 3 ob./day.<sup>21</sup> Apparently, daily wages concerned only a small and peculiar category of workers (the *oikositōi*), and even among them rates varied in accordance with the type of job and other factors that we are not able to establish.<sup>22</sup>

As Feyel rightly points out, there is no evidence that in Athens the cost of labor was preferably estimated on the basis of time. For projects carried out both in the fifth and fourth centuries, building accounts show that no uniform system of labor recruitment and remuneration was applied. Instead, the choice of magistrates must have depended merely on the different requirements of each job and the capacity for negotiation that some craftsmen were certainly able to exercise.<sup>23</sup> This explains why the same type of job could be remunerated in different ways. For example, the same carpenter, Rhadios, was paid for sawing wood first at the daily wage of 1 dr., then by measure, with each cut paid first 2 ob. and then 1 dr., and finally by piece, with 1 dr. 2 ob. for cutting a single wooden pipe (*IG I<sup>3</sup> 475*, l. 54-65).

4. In this context, where different systems of labor recruitment and remuneration coexisted both in the fifth and fourth centuries, can we agree with Feyel that in Athens the use of building contracts was usually linked to jobs that were more

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<sup>20</sup> Three *oikositōi* building bricks into a wall and assembling a scaffolding (*I.Eleusis* 177, l. 26-28); six *oikositōi* carrying bricks, making mortar, and transporting wood and clay (*I.Eleusis* 177, l. 28-30); two *oikositōi* dressing and plastering a wall (*I.Eleusis* 177, l. 31-32); ten *oikositōi* working (?) in the sanctuary (*I.Eleusis* 177, l. 32-34); thirty *oikositōi* removing and breaking bricks (*I.Eleusis* 177, l. 44-46); ten *oikositōi* breaking up earth and sifting it (*I.Eleusis* 177, l. 60-62); three *oikositōi* removing tiles and laying beams (*I.Eleusis* 177, l. 172-173); two *oikositōi* sawing wood (*I.Eleusis* 177, l. 221-222); four *oikositōi* polishing doorposts (*I.Eleusis* 177, l. 239-240).

<sup>21</sup> The term *misthotōi*, though used to indicate hired workers, did not imply that such workers were hired and paid on a daily basis. In fact, teams of *misthotōi* who were not *oikositōi* were paid through a piecework system (*I.Eleusis* 159, l. 4, 44-45; *I.Eleusis* 177, l. 220-221). In previous scholarship, there seems to be some confusion concerning *misthotōi*. Burford (1969, 112) claimed that in the Erechtheum accounts “*μισθωτός* represents something in the scale of contract even if he is not a full contractor” (sic). However, *misthotōi* are not attested in the Erechtheum accounts, where we observe only *hyporgoi* remunerated through a daily rate system. According to Feyel (2006, 437-438), in the Eleusinian accounts *misthotōi*, which he translates as “handymen”, were workers paid through a daily rate system. However, as we just saw, *misthotōi* were not paid through a daily rate system unless they were *oikositōi*.

<sup>22</sup> Given what the Eleusinian accounts actually reveal, it is improper to claim that “in 329/8 skilled workers were paid 1 ¼ dr. to 2 ½ dr./day and unskilled workers 1 ½ dr./day” (quoted from Loomis 1998, 120). This statement applies to *oikositōi* only.

<sup>23</sup> See Feyel 2006, 402-404.



complex, expensive, and quality-oriented than others? Again, the epigraphic evidence does not point univocally in this direction.

The job performed by the only craftsman explicitly labeled as a contractor in the Erechtheum accounts, the encaustic painter Dionysodoros, does not stand out in terms of cost and complexity. Dionysodoros' remuneration, amounting to 94 dr. 1 ob., is among the highest wages attested in the accounts but does not reach the upper tier of the earnings achieved by other Erechtheum workers. For example, Phalakros of Paiania placed three sets of different stone blocks on the north wall and dressed their top surface with the aid of an assistant. Even though he was paid separately for each of these concurrent operations, the entire job yielded him a payment of 117 dr. 4 ob. (*IG I<sup>3</sup> 475*, l. 28-34). In the same way, a metic living in Melite took care of a section of the coffered ceiling by making, smoothing, and gluing two wooden frames and completing them with moldings. Again, he was paid separately for each operation and made a total of at least 111 dr. (*IG I<sup>3</sup> 475*, l. 206-224).<sup>24</sup> These jobs were not less expensive than Dionysodoros' and there is no reason to assume that they were less complex and quality-oriented than the painting of the molding on the inner epistyle.

Similarly, the contracts attested in the Eleusinian accounts do not seem to stand out in terms of size and cost of the jobs. Half of them (fourteen out of thirty-three) yielded more than 100 dr. and, among these, six yielded between 200 and 500 dr. However, these figures are in line with the individual wages of other craftsmen who were not labeled as *misthotai* and were paid through a piecework system. Among these, for example, an unknown stonemason who provided for the quarrying, transport, and placement of 155 blocks of conglomerate stone for 490 dr. 5 ob. (*I.Eleusis* 177, l. 21-22), and Euthyas of Eleusis, who made 9,000 1.5-foot bricks for 360 dr. (*I.Eleusis* 177, l. 56-57). Even the most lucrative contract – 2,631 dr. 3 ob. to Agathon living in Alopeke for quarrying, transporting, and placing 831 stone blocks for a retaining wall (*I.Eleusis* 177, l. 17-19) – does not match the top earner of the Eleusinian accounts, i.e. the metalworker Sosidemos, who performed some work to the block-and-tackle equipment for 3,560 dr. 1/5 ob. (*I.Eleusis* 177, l. 267-268). Moreover, the other half of the contracts yielded less than 100 dr., with some *misthotai* making quite small sums. For example, Mys of Phaleron undertook a contract for the transport and possibly dressing of twenty stone blocks at 16 dr. 4 ob. (*I.Eleusis* 159, l. 5-6), Sikon living in Skambonidai for some unknown job, perhaps involving the transport of wood, at 9 dr. 3 ob. (*I.Eleusis* 159, l. 10-11), and a carpenter named Karion for the sawing of Makedonian woods for lintels and door panels at 23 dr. (*I.Eleusis* 177, l. 66-67). Not even the complexity of the job can draw a clear distinction between contracted and non-contracted jobs, since the same

<sup>24</sup> Other examples: Phylomachos of Kephisia (sculptor), for delivering four appliqués figures for the freeze, earned 260 dr. (*IG I<sup>3</sup> 476*, l. 144-147, 158-178); Stasianax living in Kollytos (woodcarver), for delivering eleven rosettes for the ceiling, earned 154 dr. (*IG I<sup>3</sup> 476*, l. 335-338).

types of jobs, such as the quarrying and transport of stone and the making of doors, could be assigned to both contractors and non-contractors.<sup>25</sup> Moreover, one-third of the contractors attested in the Eleusinian accounts operated also outside the framework of building contracts. For example, Mnesilochos living in Kollytos undertook a contract for some work concerning the assemblage of a wagon (*I.Eleusis* 159, l. 31-34) and performed several other jobs, including the sharpening of iron tools, as non-contractor (*I.Eleusis* 159, l. 36-38, 42-44, 51-52). Pamphilos of Otryne made doors as a contractor (*I.Eleusis* 177, l. 227-228, 234-235) and performed some work to the *himatiotheke* and the block-and-tackle equipment as non-contractor (*I.Eleusis* 177, l. 357-358, 364).

Finally, it does not seem that at Eleusis public officials used contracts to attach craftsmen to the sanctuary, as it may have happened at Epidauros, Delos, and Delphi. In fact, out of thirty-three craftsmen who make more than one appearance in the accounts, only nine were contractors, while the others were paid through a piecework system. Out of five craftsmen attested in the accounts of both 336/5 (or 333/2) and 329/8, only a stonemason called Moschion was the recipient of a contract for 50 dr. (*I.Eleusis* 159, l. 40; *I.Eleusis* 177, l. 247-248). All the others, including two haulers, a metalworker, and a supplier, remained attached to the sanctuary without being the recipients of any contract.<sup>26</sup>

On the basis of the available evidence, it is not possible to claim that in Athens building contracts were consistently linked to jobs that were more complex, expensive, and quality-oriented than jobs paid through a piecework system nor that they were used to retain the services of the most qualified and reliable craftsmen.<sup>27</sup> In reality, what building accounts reveal is that each building project, be it large or small, was often divided into many portions and carried out by several different craftsmen, usually through various systems of labor recruitment and remuneration, both in the fifth and fourth centuries.

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<sup>25</sup> Quarrying, supplying, and transport of stone by contractors: *I.Eleusis* 159, l. 5-6; *I.Eleusis* 177, l. 8-9, 17-19, 247-248; by non-contractors: *I.Eleusis* 177, l. 21-22, 48-50, 53-54, 191-195, 236-237, 265-266. On-site stone-related jobs by contractors: *I.Eleusis* 177, l. 19, 19-21, 23-25, 46-47, 51, 54-55, 74-75, 76-77, 77-78, 159-160, 195-196; by non-contractors: *I.Eleusis* 177, l. 51-52, 52-53, 237-238, 251-252, 362. Making doors by contractors: *I.Eleusis* 177, l. 225-226, 227-228, 234-235; by non-contractors: *I.Eleusis* 177, l. 67-68.

<sup>26</sup> These are: the haulers Sosias (*I.Eleusis* 159, l. 18; *I.Eleusis* 177, l. 259) and Kyprios (*I.Eleusis* 159, l. 20; *I.Eleusis* 177, l. 58-59), the metalworker Hephaistion living in Eleusis (*I.Eleusis* 159, l. 36-38; *I.Eleusis* 177, l. 183-184), and Ameinias of Kydathenaion, who sold baskets to the sanctuary (*I.Eleusis* 159, l. 45; *I.Eleusis* 177, l. 65-66, 229-230).

<sup>27</sup> Even Feyel (2006, 442-445), though claiming that jobs executed within the framework of building contracts were usually more complex and expensive or more quality-oriented than jobs paid through a piecework system, is forced to admit that in the Athenian evidence it is sometimes difficult to uphold this distinction.

This fragmentation is particularly remarkable in the Erechtheum accounts. For example, the task of shaping ten pediment blocks of the east gable, for a total of 79 dr., was divided among five stonemasons, each one in charge of only one or two blocks of different size, paid through a piecework system (*IG I<sup>3</sup> 475*, l. 97-117). In the same way, the scraping of 388 cross-pieces for the roof, costing 1.5 ob. per piece, was assigned to five carpenters, each one responsible for a variable number of pieces, for a total of 97 dr. (*IG I<sup>3</sup> 475*, l. 240-248). The laying of the same cross-pieces was assigned to three *hyporgoi*, each one paid 1 dr. per day, and working respectively for six, three, and five days, for a total of 14 dr. (*IG I<sup>3</sup> 475*, l. 252-256).

However, fragmentation is not a peculiarity of these accounts. At Eleusis as well, magistrates tended to divide each project into several portions and assign them to workers recruited and remunerated in different ways. The most evident example is the rebuilding of the so-called “old fallen tower”.

System of labor recruitment and remuneration	Worker(s)	Job	Cost
Daily Rate (1 dr. 3 ob./day)	30 anonymous <i>oikosioi</i> working for four days	Removing old bricks and earth from the tower and breaking them (l. 44-46)	180 dr.
Contract	Daos living in Kydathenaion	Removing and clearing the old tower's foundation down to bedrock (l. 46-47)	48 dr.
Business partnership Piecework rate (1 dr. per block)	Demetrios, Ergasion, Kyprios, Euarchos, and Milakos	Quarrying 304 blocks of conglomerate stone for the new foundation (l. 48-50)	304 dr.
Business partnership Piecework rate (1 dr. 3 ob. per block)	Philonikos, Euxippos, Archias, and Pherekleides from Boeotia	Transporting the 304 conglomerate blocks to the sanctuary (l. 50-51)	456 dr.
Contract Piecework rate (1 dr. per block)	Neokleides of Kephisia	Placing the 304 conglomerate blocks (l. 51)	304 dr.
Business partnership	Pistias of Sphettos and Douriktonides from Kolonos	<i>Exagoge</i> (dressing?) of the conglomerate blocks (l. 51-52)	270 dr.
Piecework rate (1 dr. per block)	Neokleides of Kephisia	Laying 34 blocks of Aeginetan stone on the top of the conglomerate blocks (l. 52-53) <sup>28</sup>	34 dr.

<sup>28</sup> These blocks must have been quarried and transported to the sanctuary in a previous year.

Business partnership	Ergasion and Daos	Quarrying and transporting blocks of Eleusinian stone (l. 53-54)	78 dr.
Contract Piecwork rate (4 dr. 3 ob. per unit of length)	Neokleides of Kephisia	Laying the blocks of Eleusinian stone (l. 54-55)	48 dr. 3 ob. <sup>29</sup>
Piecwork rate (36 dr. per 1,000 bricks)	Euthymides living in Kollytos	Making 14,000 1.5-ft. bricks from the old bricks and clay taken from the tower (l. 55-56)	504 dr.
Piecwork rate (40 dr. per 1,000 bricks)	Euthias of Eleusis	Making 9,000 1.5-ft. bricks (l. 56-57)	360 dr.
Unspecified	Unknown hauler	Transporting 1,500 bricks leftover from the previous year (l. 57-58)	25 dr. 3 ob.
Business partnership Piecwork rate (25 dr. per 1,000 bricks)	Karion, Artimas, Kyprios, Eukles, and Konon	Transporting the 9,000 bricks made by Euthias to the sanctuary (l. 58-59)	225 dr.
Contract Piecwork rate (17 dr. per 1,000 bricks)	Demetrios living in Alopeke	Laying all the bricks above (10,500 plus 14,000 for the wall) (l. 59-60)	416 dr. 3 ob. <sup>30</sup>
	Number of workers: 52	Number of portions: 14	Total cost: ca. 3,200 dr. <sup>31</sup>

Table 1. The rebuilding of “the old fallen tower” in the Eleusinian accounts (*I.Eleusis* 177)

As shown in Table 1, the project, costing ca. 3,200 dr., was divided into at least fourteen portions, assigned to fifty-two workers through different systems of labor recruitment and remuneration (contracts, daily rates, and piecwork rates). Moreover, the example shows that portions assigned to contractors were not necessarily costlier or more complex than jobs assigned to business partnerships or to craftsmen who apparently were non-contractors. Finally, the same craftsmen (e.g. Daos and Neokleides) could perform more than one job within the same project both

<sup>29</sup> Possibly a mistake for 49 dr. 3 ob., given that 48 dr. 3 ob. cannot be evenly divided by the unit price of 4 dr. 3 ob.

<sup>30</sup> Some of these bricks were used for the wall, so this money figure does not include only bricklaying for the tower.

<sup>31</sup> It is impossible to establish the exact total given that the rest of the construction expenses (e.g. for roofing and plastering) are lost in a lacuna.

within and outside the framework of a building contract. Incidentally, one may note again that contractors were sometimes paid by unit.<sup>32</sup>

In earlier accounts, the tabular form has probably obscured the presence of several systems of labor recruitment and remuneration. As seen above, concise entries merely stating that a certain sum of money was spent “for carpenters” or “for the transport of stone” do not reveal how many workers were involved and under what kind of agreement they were recruited and remunerated. However, nothing prevents us from assuming that within the general category of “carpenters” or “transport of stone” magistrates collected all expenditures made towards that category, regardless whether some of the workers were remunerated through a piecework system, a daily rate system, or even operating within the framework of building contracts – exactly as later accounts show us to be the case.

5. A close and careful analysis of the evidence reveals that in Athens building contracts were more widespread than traditionally thought since the second half of the fifth century and were not necessarily linked to the size and complexity of the tasks involved. No significant change in the system of labor recruitment and remuneration occurred from the fifth to the fourth centuries. Throughout the Classical Age, the fragmentation of each project in many portions assigned to many different workers, recruited and remunerated in different ways, was probably the rule. Some scholars see in the fragmentation of building projects, and the relatively small size of construction firms that it entails, a clear indication of the primitive character of the Athenian construction industry – a condition apparently confirmed by the lack of evolution in the composition of the Athenian labor market throughout the Classical Age.<sup>33</sup> In reality, however, this situation was the product of technological constraints and strictly economic dynamics, as the recent analysis of Peter Acton shows.<sup>34</sup>

According to Acton, in antiquity as well as today, once a workshop has reached the optimum number of workers required for the most efficient production of the final artifact, it can grow only by winning a larger market share than its competitors, i.e. by earning some advantage in terms of profitability over its competitors. Due to technological constraints, ancient workshops did not have the possibility to obtain the same advantages as in modern business practice. They could not, for example,

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<sup>32</sup> The same fragmentation and variety of recruitment and remuneration systems seem to have characterized the wall-building program of the late 390s, according to some short accounts (Maier, *Mauerbauinschriften* 1-9; *SEG* 19.145; *SEG* 32.165), and the construction of the fourth-century Portico of the Telesterion, as attested by several specifications and accounts (*I.Eleusis* 151; 152; 157; 165; 166; 159, l. 64-100).

<sup>33</sup> See, e.g., Francotte 1900, 94; Mossé 1962, 96-100.

<sup>34</sup> The following discussion is based on Acton 2014, 28-46; Acton 2016 (see also Harris 2002, esp. 70-71; Bresson 2016, 187-190). For a survey of previous scholarship’s claim concerning the primitive character of the Athenian manufacturing sector, see Acton 2014, 22-28.

improve labor productivity with the use of machinery or foster a more efficient use of assets through technological innovation. Since the investment to run a workshop consisted almost exclusively in the purchase of raw materials and slave labor, and both these assets had more or less the same cost for all competitors, there was not much room to cut production costs and gain an advantage over competitors in this way.<sup>35</sup> The only competitive advantage available to an ancient workshop was product differentiation, i.e. when a craftsman could achieve a reputation in his job that allowed him to differentiate his product from others so as to command the customers' preference and even ask for a higher price.

When this potential for product differentiation existed, the manufacturing sector tended to structure in several niche businesses, each one represented by a single craftsman working with a few assistants. Depending on the reputation of the craftsman, the workshop could make pretty high returns. Still, there was no basis for expansion as long as the reputation of the product was linked exclusively to the skills of the owner. On the other hand, when skills and reputation were transferable to a larger number of workers, there was room for expansion. In this case, a workshop could grow if it had access to capital for buying more slaves and raw material and if it could maintain its brand strength. If competitors did not have the same access to capital nor the same brand strength, they were barred entry to the market or knocked out of it. In this scenario, the manufacturing sector tended to structure in a smaller number of larger workshops, which grew by winning larger market shares at the expense of their competitors. In the construction sector, most businesses belonged to the former category, with a few stonemasons and carpenters probably belonging to the latter and being the owners of larger workshops employing teams of slaves.

Given these premises, it is clear that even in Athens, where the building sector was extremely lively, and the demand for construction workers was ordinarily substantial and consistent, workshops tended to remain relatively small and the labor market quite fragmented, with no significant change from the fifth to the fourth centuries. In this context, the fragmentation of building projects into many small tasks assigned to many different workers, recruited and remunerated in different ways – possibly depending on the requirements of each job and the capacity for negotiation of said workers – was not a sign of underdevelopment but the most logical strategy to take advantage of the structure of the labor market. From the viewpoint of public officials, it would have been pointless to assign a larger portion, or more portions, to the same worker or contractor when he and his workshop did not have the productive capacity to perform the job at the same pace as multiple

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<sup>35</sup> As is widely known, in Athens free men were unavailable to work as employees in someone else's business for an extended period of time (the exception being when the state was the employer). When repetitive service on a regular basis was required, slave labor was the only solution. On this, see Cohen 2000, 141-143.

workers and contractors operating simultaneously at different parts of the same project.

6. In this scenario, where the demand for construction workers was usually substantial and the labor market fragmented, there were certainly moments when the higher density of public building projects created some periods of peak demand, as, for example, during the Periclean and Lykourgan administrations.<sup>36</sup> What happened in these situations? Probably, some craftsmen were attracted to Athens from abroad, while the owners of local workshops might venture to buy or rent more slaves – obviously, only in those cases in which, as said above, adding slave labor could increase the productivity without losing brand strength. Interestingly, the Eleusinian accounts, dating to the Lykourgan age, reveal another possibility, which allowed overcoming the limitations set by the fragmentation and small size of businesses, i.e. the establishment of business partnerships.

<b>Workers</b>	<b>Job</b>	<b>Wages</b>
Demetrios, Ergasion, Kyprios, Euarchos, and Milakos (5)	Stonemasonry Quarrying 304 blocks of conglomerate stone for the foundation of the old fallen tower (l. 48-50)	304 dr.
Philonikos, Euxippos, Archias, and Pherekleides from Boeotia (4)	Hauling Transport to the sanctuary of the conglomerate blocks above (l. 50-51)	456 dr.
Pistias of Sphettos and Douriktonides from Kolonos (2)	Stonemasonry On-site dressing of the conglomerate blocks above (l. 51-52)	270 dr.
Daos living in Kydathenaion and Ergasion (2)	Stonemasonry and hauling Quarrying and transport of blocks of Eleusinian stone for the old fallen tower (l. 53-54)	78 dr.
Kyprios, Karion, Artimas, Eukles, and Konon (5)	Hauling Transport to the sanctuary of the 9,000 bricks made by Euthias for the tower and walls (l. 58-59)	225 dr.
Artimas and Manes (2)	Supplying Straw for the construction of the wall, the house of the priestess, and the <i>epistasion</i> (l. 73-74)	180 dr.
Bion of Paiania and Diokleidas the Megarian (2)	Hauling Job in lacuna (l. 157)	14 dr.
Archias and Aristokrates (2)	Stonemasonry Some stonework to the sacred threshing floor (l. 362)	23 dr.

Table 2. Business partnerships in the Eleusinian accounts (*I.Eleusis* 177)

<sup>36</sup> For a survey of the building activities undertaken during the Periclean and Lykourgan administrations, see Camp 2001, 72-117, 137-160.

As shown in Table 2, eight business partnerships are attested in the Eleusinian accounts. Eight of the individuals involved in these partnerships are attested elsewhere in the accounts as working on their own. Some of them, i.e. Pherekleides, Archias, Daos, Kyprios, Bion, and Diokleidas, were active in the same field of the joint venture in which they took part. Others operated in different fields: Ergasion was an encaustic painter, while Karion was a carpenter. Moreover, three individuals, Artimas, Archias, and Ergasion, were involved in two different partnerships each. Artimas sold (and possibly delivered) straw in partnership with Manes and transported 9,000 bricks with four other partners; Archias did some stonework with Aristokrates and participated in the transport of blocks of conglomerate stone; Ergasion participated in the quarrying of conglomerate stone and the quarrying and transport of Eleusinian stone. Arguably, then, these partnerships were not permanent arrangements but were established expressly for the purpose of completing a particular job, after which everyone was free to return to work on his own or join other partners in a new venture. Thus, nothing prevented foreigners from participating, as was the case for Pherekleides from Boeotia and Diokleidas from Megara. Finally, most of the jobs undertaken by these partnerships yielded sums of money located in the upper tier of the earnings attested in the Eleusinian accounts and concerned jobs requiring logistics and resources that could go beyond the capacity of a single craftsman. The same phenomenon can be observed in the accounts from Epidauros, Delphi, and Delos, where ad-hoc partnerships tend to concern large and lucrative jobs.<sup>37</sup> Apparently, most of the craftsmen involved did not have the productive capacity or could not bear the financial risks of undertaking such large jobs on their own. In fact, since jobs were paid when completed and delivered, it is possible that a lone craftsman might need associates not only to overcome issues of logistics and expertise but also to meet the financial requirements of completing rather burdensome tasks.<sup>38</sup>

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<sup>37</sup> See Davies 2001, 223; Feyel 2006, 457-464.

<sup>38</sup> In those cases in which we can observe how craftsmen involved in partnerships fared on their own, we can conclude that in joining partnerships they usually increased their productive capacity, i.e. undertook jobs that they could not have achieved on their own, at least as far as we can judge from their wages. Among these, there are Ergasion, Archias, Kyprios, and Karion, who, on their own made, 40, 10, 4, and 23 dr. respectively (*I.Eleusis* 159, l. 20; *I.Eleusis* 177, l. 66-67, 248, 265-266), as compared to the joint ventures in which they took part yielding 304, 456, and 225 dr. Even Pherekleides from Boeotia, who arranged on his own the transport of bricks for 390 dr. (*I.Eleusis* 177, l. 22-23), might not have had the capacity to arrange on his own the transport of stone for 456 dr. On the other hand, Daos living in Kydathenaion made 115, 48, and 169 dr. working on his own (*I.Eleusis* 177, l. 19, 46-47, 195-196), while his job with Ergasion was paid only 78 dr. It is possible, however, that in this particular case, the necessity of joining forces concerned a different set of expertise: when working alone, Daos did only on-site stonework, while with Ergasion he arranged the quarrying and transport of stone. Nothing we can tell of the hauling job that Bion of Paiania undertook with Diokleidas



In the case of building contracts, as said above, usually contractors received advance payments. In addition, if they defaulted their duties, the appointed guarantors had to step in to complete the job or provide financially for it, also paying possible fines. In this respect, a guarantor may be considered a sort of business partner, so much so that there was often a professional connection between a contractor and his guarantor. This seems to be the case not only for the arrangements attested in the Epidaurian and Delphian accounts but also for the encaustic painter Dionysodoros and his guarantor, Herakleides of Oa, who was probably a carpenter working on the Erechtheum building site as well (*IG I<sup>3</sup> 475*, l. 234).<sup>39</sup> In general, by looking at the evidence on the use of guarantors in Athenian public and private transactions of all sorts, one gets the impression that being a guarantor could be a sort of profession, a way of investing money that could result, if everything went well, in a financial gain.<sup>40</sup> Since only Athenian citizens could act as guarantors, though, this option was not available to everyone.<sup>41</sup> On the other hand, the eight business partnerships attested in the Eleusinian accounts do not appear to involve the undertaking of contracts, as such not needing guarantors and being open to the participation of not only citizens but also metics, foreigners, and, possibly, autonomous slaves. In this respect, they may be considered an alternative form of recruitment and remuneration as compared to building contracts.

What was the advantage for the city of Athens in allowing such partnerships? As far as we know, partnerships are attested in Athens for other types of public contracts, such as the exploitation of mines and tax collection. In both these cases, however, it seems that partnerships, though their existence was well known to everyone, were officially represented by a single team leader vis-à-vis the state, while other partners remained behind the scene and did not have any official role.<sup>42</sup>

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from Megara for 14 dr., the former making 60 dr. as a solo hauler (*I.Eleusis* 177, l. 195) and the latter 7 dr. 3 ob. (*I.Eleusis* 177, l. 15-16).

<sup>39</sup> Though Herakleides himself is not attested in the extant portions of the Erechtheum accounts, a slave belonging to him is attested as making one of the square frames of the coffered ceiling (*IG I<sup>3</sup> 475*, l. 234). Since all slaves attested in these accounts belong to craftsmen working on the building site, we must assume that this was the case for Herakleides as well. For craftsmen acting as guarantors at Epidaurus and Delphi, see Feyel 2006, 464-466.

<sup>40</sup> For the role of guarantors in Athenian transactions, see Erdas 2010, esp. 196-197, for the “professional” aspect of this role. Unfortunately, the available evidence (courtroom speeches, *poletai* records, etc.) tend to report cases where the transactions went wrong rather than instances where transactions were successful and both contractors and guarantors benefitted from the partnership.

<sup>41</sup> For this rule, see Walbank 1991, 163; Erdas 2010, 194-195.

<sup>42</sup> For partnerships in mining operations, see D. 40.52; Hyp. 4.35; Bissa 2008, 272, for the possibility that groups of investors might be behind a single leader. For cartels in tax collection, see the famous cases involving Agyrrhios and Andocides (And. 1.133-134) and Alcibiades (Plu. *Alc.* 5); Migeotte 2001, 168-169; Fantasia 2004, 523-524. For four *priamenoï* renting together the Piraeus theatre, see *Agora* XIX L13 with Carusi 2014.

This was probably the case for tax farmers' cartels, such as the one famously headed by Agyrrhios, which aimed at keeping the bidding for tax collection at a low level by eliminating all competition, with a clear loss for the city's revenues. Although we may assume that usually public officials tried to discourage the formation of such cartels, the grain-tax law of 374/3 (*SEG* 48.96) seems to go in the opposite direction. Here a seemingly innovative clause was introduced (l. 31-36), which allowed a group of six tax farmers to bid jointly for collecting a portion of the tax six times as large as the portion allowed to a single farmer. Since Attic law lacked the notion of partnership or corporation, it was stated explicitly that in case of default, the city was permitted to extract the tax output both from the six men jointly and from each of them individually.<sup>43</sup> As Ronald Stroud points out, the likely goal of this provision was to attract a broader range of possible tax farmers who could enter into the business with different levels of investment and different sets of skills and expertise. However, unlike unofficial cartels, here business partners had to take responsibility for a larger share of the city's revenues rather than splitting among themselves a smaller share, and their obligations towards the city were formally and officially spelled out.<sup>44</sup>

Unfortunately, building accounts, unlike laws and draft contracts, do not allow us to reconstruct the precise working of these arrangements in the building sector. Despite this, we can posit that, for the city of Athens, allowing the formation of such partnerships had a similar benefit as in the case of the grain-tax law. The idea was to put to work as many craftsmen as possible and combine their different sets of expertise and productive capacity so that they could contribute to the completion of tasks that under normal conditions they might not be able to undertake on their own. For the city, this resulted in a more effective and efficient use of the available resources, especially in moments when building activities were more intensive and construction workers more in demand than usual. As for the absence of guarantors in business partnerships, it is possible that members of these partnerships were asked to guarantee each other *vis-à-vis* the state. In alternative, we may recall that in particular circumstances, officials could loosen the reins on this form of security in exchange for expanding the pool of possible contractors. This is what happened in fourth-century Macedonia when the auction for collecting harbor dues was opened to those who could present guarantors for only one-third of the sum ([Arist.] *Oec.* 2.22.1350a). This measure, which was recommended by the Athenian Callisthenes,

<sup>43</sup> *SEG* 48.96, l. 31-36: συμ[μορ]ία ἔσται ἡ μερὶς τρισχίλιοι μέδιμ[νοι], ἕξ ἄνδρες· ἡ πόλις πράξει τὴν συμμορ[ία]ν τὸν σίτον κ<α>ὶ παρ' ἐνὸς καὶ παρ' ἀπάν[των] τῶν ἐν τῇ συμμορία ὄντων, ἕως ἂν τ[ῆ] α]ύτῆς ἀπολάβῃ κτλ. "A *symmoría* will consist of a portion of 3,000 *medimnoi*, six men. The *polis* will exact the grain from the *symmoría*, both from one man and from all who are in the *symmoría*, until it recovers what belongs to it, etc."

<sup>44</sup> See Stroud 1998, 64-67, with Harris 1989; Migeotte 2001, 168-169; Fantasia 2004, 525-527.

Agyrrhios' nephew, yielded to the state an amount twice as large as the usual tax output.<sup>45</sup>

Famously, the regulations on public building contracts issued at Tegea in the fourth century (*RO* 60) limited to two individuals the number of joint contractors for any work, and to two pieces of work the number of contracts that the same individual could undertake at the same time (l. 21-31).<sup>46</sup> The goal was probably to avoid the formation of cartels and prevent contractors from overstretching their resources to the detriment of the city. We do not know if similar regulations were ever issued in Athens and whether or not Athenian officials had the same concerns as their colleagues in Tegea. It is clear, in any case, that the Athenians were flexible enough to take advantage of all the opportunities that the market offered and to use the legal instruments that better suited their interests and needs in any specific circumstance. By fragmenting projects in many tasks and providing for each of them in different ways – from direct hiring to contracts and business partnerships – Athenian magistrates did not betray, as some scholars believe, the inadequacy of their office, caused by time and financial limitations or lack of expertise.<sup>47</sup> On the contrary, they implemented the most effective and efficient strategy to deal with the fragmented and complex structure of the labor market.

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<sup>45</sup> [Arist.] *Oec.* 2.22.1350a: Καλλίστρατος ἐν Μακεδονίᾳ παλουμένου τοῦ ἐλλιμενίου ὡς ἐπὶ τὸ πολὺ εἴκοσι ταλάντων, ἐποίησεν εὐρεῖν τὸ διπλάσιον. κατιδῶν γὰρ ὠνουμένους τοὺς εὐπορωτέρους ἀεὶ διὰ τὸ δεῖν ταλαντιαίους καθιστάναι τοὺς ἐγγύους τῶν εἴκοσι ταλάντων, προεκήρυξεν ὠνεῖσθαι τὸν βουλούμενον καὶ τοὺς ἐγγύους καθιστάναι τοῦ τρίτου μέρους καὶ καθ' ὅποσον ἕκαστος δύνηται πείθειν. “Kallistratos, when in Macedonia, caused the harbor dues, which were usually sold for 20 t., to produce twice as much. For noticing that only the wealthier men used to buy them because it was necessary to present guarantors for the 20 t., each one worthy 1 t., he proclaimed that anyone might buy the dues on presenting guarantors for one-third of the amount and getting their consent for as much as each of them could (pledge)”.

<sup>46</sup> *RO* 60, l. 21-31: μὴ ἐξέεστω δὲ μηδὲ κοινᾶνας γενέσθαι πλέον ἢ δύο ἐπὶ μηδενὶ τῶν ἔργων· εἰ δὲ μή, ὀφλέτω ἕκαστος πενήκοντα δαρχημαῖς· ἐπελασάσθωνι δὲ οἱ ἀλιασταί, ἰμφαίνεν δὲ τὸμ βολόμενον ἐπὶ τοῖ ἡμίσοι τᾶς ζαμιάυ, κά τὰ αὐτὰ δὲ καὶ εἰ κάν τις| πλέον ἢ δύο ἔργα ἔχη τῶν ἱερῶν ἢ τῶν δαμ[ο]σίων| κατ' εἰ δὲ τινα τρόπον, ὅτινι ἄμ μὴ οἱ ἀλιαστα[ῖ]| παρατάζωνσι ὁμοθυμαδὸν πάντες, ζαμιά[σ]θω| καθ' ἕκαστον τῶν πλεόνων ἔργων κατὸ μῆνα| πενήκοντα δαρχημαῖς, μέστ' ἂν ἐπιτ[ε]λέσῃ| τὰ ἔργα τὰ πλεόνα κτλ. “It is not to be permitted for more than two people to contract jointly for any of the works. In case of any breach, each is to be fined 50 dr., and the *haliastai* are to enforce this; anyone who wishes may make an exposure (*imphainein*) for a reward of half the penalty. In the same way, if anyone has contracts for more than two pieces of work, either sacred or public, in any way, to whom the *haliastai* have not given express and unanimous permission, he is to be penalized 50 dr. a month for each work over two until he completes those supernumerary contracts, etc.”.

<sup>47</sup> On the limitations inherent to the office of construction overseers, see Feyel 2006, 469-484.

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