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Workshop managers

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The diversity in patterns of production and distribution of ancient artifacts was recognized long ago and has been the subject of acute studies. Models have been proposed, then rejected or refined, with the help of various types of sources, comparative history, and ethnoarchaeology. It is fair to say that none of these models fits all the evidence, although many bring us closer to understanding the complexity of economic practices. Problems of scale have been the most tantalizing, especially when they involve quantifying the production of specific goods in reference to the duration of the activity of the workshop in which they were produced and to their area of distribution. The main problem consists in determining how supply and demand met and adjusted to fluctuations on each side. The solution to this problem is relatively simple in the case of small enterprises producing for the local market, but the matter is more complicated when the products of one firm are found in distant areas. The slowness of long-distance communications and the lack of sophisticated economic indicators made it advantageous, if not necessary, for the centers of production to remain in touch with the market, and the best way to do so was by decentralizing the production and by relying on middlemen whose task was to convey the needs and requirements of the consumers, both in terms of quantity and quality, to the producers.

A few years ago, W. V. Harris postulated, with reference to the terracotta lamp industry, the existence of a system of branch workshops run by agents representing the interests of some dynamic firm owners.[1] Through the legal sources, especially the *Digest* (14.3), we know a great deal about the technical aspects of this type of management, but the people actually in charge of managerial units, main or subsidiary, remain surprisingly elusive. Even though the manufacture of clay artifacts (building material, containers, tableware, and lamps) has left more archaeological vestiges — whole artifacts, sherds, refuse, tools, and kilns — and more epigraphical traces — stamped, cast, or painted inscriptions found on artifacts — than any other economic activity in antiquity, it is true that there is not one single allusion in the legal texts, in the literary works of the classical period, or in the mass of lapidary inscriptions, to any kind of agent (*institor*) involved in the production or distribution of *instrumentum domesticum*.[2] The silence of the written sources could be taken as indicating that workshops were usually owned and operated by the same person. Arguments from silence are weak, however, and there is perhaps something to be gained from a fresh examination of the epigraphical evidence preserved on *instrumentum domesticum*. We must interpret it with regard to what we happen to know about the legal, economic, and social context in which these artifacts were produced.

First, I will describe the legal system whereby business agents were appointed at the head of units of production. Secondly, I will review various terms used in literary and epigraphical sources to refer to workshop managers, and trace them in the stamps preserved on *instrumentum domesticum*. I will then discuss a specific type of stamps, those found on lead pipes, by way of introducing a possible new interpretation of the stamps; such an interpretation may illustrate and corroborate some statements made by the jurists.

Praepositio

The Roman jurists define as *institor* anyone who has been appointed (*praepositus*) manager of an enterprise of any type.[3] An *institor* was more than a mere foreman or overseer, in the sense that he was

1 W. V. Harris, "Roman terracotta lamps: the organization of an industry," *JRS* 70 (1980) 126-45, esp. 128 and 139 ff.

2 This point was already noticed by Harris ibid. 141.

3 Ulpianus (28 *ad ed.*) *Dig.* 14.3.3: Institor appellatus est ex eo, quod negotio gerendo instet: nec multum facit, tabernae sit praepositus an cuilibet alii negotiationi, and *Dig.* 14.3.5. *pr.*: Cuicumque igitur negotio praepositus sit, institor recte appellabitur.

expected to get involved in legal transactions with outsiders, suppliers, contractors, or customers.[4] Thus the manager of a workshop producing clay artifacts was expected to buy tools and raw material (clay, water, firewood) for the production, food and clothing for the workers and for himself, to hire or buy additional hands, to contract for specific tasks to be done in connection with the production (for instance making of moulds, *poinçons*, or individual parts, such as footstands or handles), or for the maintenance of the premises, and eventually to sell the products (wholesale or at retail). The initial step of leasing or buying the property could have been outside the scope of the appointment (*praepositio*), insofar as the character of the enterprise (*negotium*) was defined by its particular *locus vendendi emendive*.[5] In case of breach of contract on the part of the manager, the third contracting party had the option of suing either the manager on the action arising from the contract (*actio locationis, conductionis, emptionis, venditionis*, etc.) or the principal on the 'action on the manager's conduct' (*actio institoria*).

In the Severan period, *institores* could be entrusted with any type of activities on a more or less permanent basis; it was not necessary for them to be assigned a specific location.[6] However, it is likely that the system was more rigid when it was first introduced in the late 2nd c. B.C. At that time, the validity of the agent's appointment may have been tied to a certain type of premises, such as an agricultural estate (*fundus*), a workshop (*officina*), a shop (*taberna*), an apartment building (*insula*), a bank (*mensa*), a stable (*stabulum*), a bakery (*pistrinum*), or a ship (*navis*), which defined the nature of the activities that the manager was expected to perform. The scope of the appointment was sometimes established by a written document (*lex praepositionis*), available for consultation by would-be contracting parties.[7] The lack of such a document would certainly not nullify the appointment, the scope of the appointment being then determined by custom. Consequently, one should make allowance for local and chronological variations. The management of a workshop producing clay artifacts entailed the performance of some well defined business transactions, but the rôle of a manager producing wine amphorae at Cosa in the early 1st c. B.C. is not necessarily comparable to that of a manager producing oil amphorae in Baetica in the 2nd c. A.D. Any deviation from what could be considered standard practice in a particular area at a particular time had to be expressed either by *iussum* or mandate — whereby additional spheres of competence were granted to the agent — or by *proscriptio* (always in a written form) — whereby some or all of the agent's spheres of competence were canceled.[8]

Terminology

With reference to their position as agents working for the owner or lessee of some commercial facilities, business managers are referred to as *institores*, a generic term with a derogatory tone when used by members of the upper classes. No wonder, then, that the literary sources rarely allude to them — and only in order to describe them as debauchees and greedy people involved in vain or reproachable pursuits. The literary writers never describe them as agents as opposed to principals, perhaps because it would amount to admitting the association of the élite with a disreputable class of people.[9] No wonder, either,

4 Paulus (*sing. de var. lect.*) *Dig.* 14.3.18: Institor est, qui tabernae locove ad emendum vendendumve praeponitur quique sine loco ad eundem actum praeponitur.

5 Businessmen who sent their slaves abroad to sell goods were not always willing to make the trip themselves to find them a *taberna*, cf. Ulpianus (60 *ad ed.*) quoting Labeo, *Dig.* 5.1.19.3. Agents could, of course, do without one, and peddle their merchandise on the sidewalk or at the door of private houses: cf. Paulus (30 *ad ed.*) *Dig.* 14.3.4. Business managers borrowing money to pay the rent rendered their principal liable, cf. Ulpianus (28 *ad ed.*) *Dig.* 14.3.5.13.

6 Paulus (*sing. de var. lect.*) *Dig.* 14.3.18 and (30 *ad ed.*) *Dig.* 14.3.4: cum interdum etiam ad homines honestos adferant merces et ibi vendant. Nec mutat causam actionis locus vendendi emendive, cum utroque modo verum sit institorem emisse aut vendidisse.

7 Ulpianus (28 *ad ed.*) *Dig.* 14.1.1.12, in the context of the operation of a ship: Igitur praepositio certam legem dat contrahentibus.

8 Ulpianus (28 *ad ed.*) *Dig.* 14.3.11.2-6 and Paulus (4 *ad Plaut.*) *Dig.* 15.1.47 *pr.*

9 About 60 references listed in P. Fabricius, *Der gewaltfreie Institor im klassischen römischen Recht* (Würzburg 1926) 27, n.11 and in the *Thesaurus Linguae Latinae, s.v. institor.*

that *institores* hardly show up in the lapidary inscriptions: I have collected no more than 5 instances in the whole empire.[10]

With reference to their specific economic activities, business managers are usually named after their respective skills: the superintendant of an apartment building (*insula*) is an *insularius*, the administrator of a temple (*aedis*) is an *aedituus*, the manager of an agricultural estate (*villa, fundus*) is a *vilicus*, etc.[11] Consequently, one can expect the manager of a workshop (*officina*) to be an *officinator*.[12] The word surprisingly is never used in the legal sources,[13] is rare in the literary sources, but it is frequent in the inscriptions and in certain categories of stamps.[14] *Officinatores* were undoubtedly despised by the élite[15] but were certainly no 'small fry' in the eyes of the working class. Apuleius alludes to the position of power and responsibility enjoyed by an *officinator*, whom he shows giving his workers the day off because he expects to be detained by some court business: the work cannot go on without him.[16]

The inscriptions show that the terminology pertaining to business managers was used in a very loose way. There is, for instance, the case of one P. Tullius Felus, who was the *oficinator insule Vitaliane (sic)* in Rome.[17] Admittedly, the dedicator of the inscription might have been a workshop manager operating in some premises located on the ground floor of the apartment building. More striking, and certainly of greater significance, *vilici* are attested not only as managers of agricultural estates (*fundus*), but also of suburban and urban properties and facilities, storage spaces, temples, mints, markets, circus factions, amphitheaters, libraries, baths, water-supply, lead workshops, banks, financial departments, and centers for the collection of taxes. The conclusion to be drawn is that the term *vilicus* represents any kind of business manager working for private individuals, towns, the Roman State, or the emperor. The terminology emphasizes the connection of the manager with a piece of real estate, which was his source of credit and respectability: contracting parties who entered into legal transaction with a *vilicus* knew that the principal's solvency was guaranteed by some type of mortgage.

While we know a great deal about the activities of *vilici* as farm managers,[18] their rôle as workshop managers remains hypothetical. Abundant written and archaeological evidence exists to show that the villa economy sometimes included an industrial sector producing building materials, containers, and other

10 *CIL* VI 10007 = *ILS* 7608; *CIL* IX 3027 = *ILS* 7546; *CIL* XI 1621 = *ILS* 7607; *CIL* III 13523; *CIL* III 14206, no. 21 = *ILS* 7479 = *AE* 1898, no. 148. This list does not include the impersonal reference to *institores* as the cause of price increases in the introduction of Diocletian's Price Edict, *Praef.* 12 = I 23-26 (Lauffer) = *ILS* 642

11 Ulpianus (28 *ad ed.*) *Dig.* 14.3.5 *pr.*-10, citing Servius and Labeo. A 2nd-c. A.D. jurist acknowledges that there is little difference of function between them; cf. Pomponius (6 *ad Sab.*) *Dig.* 50.16.166: Non multum abest a vilico insularius. In *Cod. Theod.* 16.5.36.1 (A.D. 399), the manager of an urban house is called *vilicus*; this was not a later development, cf. Juv. 3.195 and Mart. 12.32.23.

12 There is some later evidence for *praepositi fabricae*, cf. *CIL* XI 9 (4th c.) and 285 (possibly 6th c.), both from Ravenna.

13 *Vocabularium Iuris Romani*, *Thesaurus Linguae Latinae*, and *Index Codicis Theodosiani*. The word *officina* itself appears only 3 times in the *Digest*: Ulpianus (6 *ad ed.*) *Dig.* 3.2.4.2; idem (60 *ad ed.*) *Dig.* 5.1.19.2 (possibly a gloss in both cases); idem (8 *de omnib. tribun.*) *Dig.* 50.14.3 (used as a metaphor); and 6 times in the Theodosian Code: 13.4.4. (374, studio for an artist); 14.3.7 (364 [367], bakery); 14.3.8 (365, bakery); 14.17.3 (368, bakery); 15.1.52 (424, domus cum officinis suis); and 16.5.9 (382, used as a metaphor).

14 *Oxford Latin Dictionary* and *Thesaurus Linguae Latinae*. Cf. for instance a tile from Ostia bearing the inscription BASSVS L(ucii) IVLI HERM(etis) / OFFICINATOR (*NSc* 1911, p. 94 = *AE* 1911, no. 196).

15 Cic., *Off.* 1.150; and 2*Verr.* 4.54, reporting that Verres had established a workshop in the royal palace, where skilled workers — hired from outside or belonging to his own staff — patched together gold vases with confiscated *emblemata*. Cicero adds that Verres spent part of his day supervising the work, dressed as an *officinator* (cum tunica pulla ... et pallio). This attitude is implicitly recognized as unfit for a person of Verres' rank.

16 Apul., *Met.* 9.6: Nam licet forensi negotio officinator noster attentus ferias nobis fecerit ....

17 *CIL* VI 33893 = *ILS* 3679.

18 J. Carlsen, Vilicus. *A study in Roman estate management* (forthcoming); and, for the time being, D. Flach, *Römische Agrargeschichte* (München 1990).

types of artifacts. The primary purpose of such workshops was to provide for the needs of the villa and its inhabitants, but any surplus was eventually to be sold to neighbors and to more distant markets.[19]

In villas managed by *vilici*, it is not clear whether both the agricultural and the industrial sectors formed one single managerial unit or whether they were operated separately. In the first case, one can imagine that both sectors were under the control of a single manager, the *vilicus*. On occasions, the burden may have proved too heavy for a single person to carry, and then two (or more) managers equal in rank could be appointed, whose respective tasks would be defined in the charter of appointment (*lex praepositionis*).[20] It may also have been the case that one manager was subordinated to the other. The brick and tile industry provides instances of *officinatores* bearing the title of *procuratores* or *actores*, whom we know ranked higher than *vilici*.[21] On the other hand, if the industrial sector was of minor importance in comparison with other activities carried out on the estate, the *vilicus* could appoint a subagent. There is some epigraphical evidence for *subvilici*[22] (although we know nothing about their rôle in the enterprise), and the jurists discuss the validity of the appointment of subagents in the context of the operation of a ship.[23] It is likely that in landbased enterprises the appointment of a subagent was valid only insofar as the principal knew of it and agreed to it. The amphorae found in the shipwrecks of Dramont A and of Santa Severa bearing stamps with the names of two slaves — possibly joint *institores*, or agent and subagent — illustrate this point.[24]

There are cases where agricultural and industrial sectors are considered as two distinct managerial units. Two late republican and Augustan jurists, Trebatius and Labeo, explicitly exclude from the

19 Varro, *Rust.* 1.2.22-23, citing the Sisernas; *CIL* XI 1147, II, 14, 89 and 47; Iavolenus (2 *ex post. Lab.*) *Dig.* 33.7.25.1; Ulpianus (18 *ad Sab.*) *Dig.* 7.1.13.5; and Paulus (15 *ad Plaut.*) *Dig.* 8.3.6. *pr.*; V. Righini, "Officine artigianali e nuclei industriali nella villa romana," *La villa romana, giornata di studi, Russi, 10 maggio 1970* (Faenza 1971) 29-36; G. Uggeri, "Un insediamento romano a carattere industriale (relazione preliminare degli scavi sull'argine d'Agosta, 1971-1973)," *Musei Ferraresi* 3 (1973) 174-86. On this question, cf. A. di Porto, "Impresa agricola ed attività collegate nell'economia della 'villa'. Alcune tendenze organizzative," *Sodalitas. Scritti in onore di A. Guarino* VII (Napoli 1984) 3235-77.

20 This arrangement is discussed in the context of the operation of a ship, cf. Ulpianus (28 *ad ed.*) *Dig.* 14.1.1.13-14: Si plures sint magistri non divisis officiis, quodcumque cum uno gestum erit, obligabit exercitorem: si divisis, ut alter locando, alter exigendo, pro cuiusque officio obligabitur exercitor. (14) Sed et si sic praeposuit, ut plerumque faciunt, ne alter sine altero quid gerat, qui contraxit cum uno sibi imputabit. Cf. S. E. Wunner, *Contractus. Sein Wortgebrauch und Willensgehalt im klassischen römischen Recht* (Köln/Graz 1964) 121-25. Cf. also Ulpianus (28 *ad ed.*) *Dig.* 14.3.11.5: Condicio autem praepositionis servanda est (...) item si plures institores habuit, and Papinianus (7 *resp.*) *Dig.* 32.91.2: tabernam purpurariam cum servis institoribus et purpuris.

21 *CIL* XV 705 and below.

22 *CIL* VI 9991 = *ILS* 7374 (suburban estate); *CIL* X 6638; and *Eph. Epigr.* VII 1248 (both imperial). *Subvilici* could be selected among the other members of the *familia* and the *vicarii*, or they could be called or hired from outside.

23 Ulpianus (29 *ad ed.*) *Dig.* 14.1.1.5: Magistrum autem accipimus non solum quem exercitor praeposuit, sed et eum, quem magister...; and 14.1.1.20. Both passages are usually considered to have been interpolated, cf. F. de Martino, "Studi sull' 'actio exercitoria'," *Rivista del diritto della navigazione* 7 (1941) 7-31, and "Ancora sull''actio exercitoria'," *Labeo* 4 (1958) 274-300 (both reprinted in *Scritti di diritto romano* II. *Diritto privato e società romana* [Rome 1982] 148-99, esp. 155-57 and 175-80). I follow G. Pugliese, "In tema di actio exercitoria," *Labeo* 3 (1957) 308-43, esp. 312-15 (and S. E. Wunner, *Contractus* [1964] 115-18) in rejecting F. de Martino's emendation (accepted by G. Longo, "'Actio exercitoria' — 'actio institoria' — 'actio quasi institoria'," *Studi in onore di G. Scherillo* II [Milano 1972] 581-626, esp. 589) of the first sentence "[sed et] <non> eum, quem magister," which is genuine. That this rule could be applied to the managers of landbased enterprises rests on pure speculation, but seems plausible on the basis that other provisions pertaining to the application of the *actio institoria* are said to apply *exemplo exercitoriae actionis* (*Dig.* 14.3.7.1, cf. below). Cf. also Ulpianus (28 *ad ed.*) *Dig.* 14.3.5.18 (qualified by Paulus [30 *ad ed.*] *Dig.* 14.3.6 [itp]) and 14.3.7. *pr.*, who discusses the validity of an appointment made by a *procurator*, a *tutor*, a *curator*, or a *negotiorum gestor*.

24 D. Manacorda, "Le anfore dell'Italia repubblicana: aspetti economici e sociali," *Amphores romaines* 443-67, esp. 457-58.

implements of the agricultural estate (*instrumentum fundi*) those potters who were employed in the industrial sector of the villa, even though they might have been spending most of their time working in the fields.[25] These potters are deemed to belong to a separate unit of production and to form a household of their own that could be called *familia cretaria*. Since we know that the managers (*institores*) were themselves part of the *implementum* of the unit of production in which they operated,[26] it seems that each sector could have been entrusted to a distinct manager, both managers being equal in rank and independently appointed by the owner of the estate and of the workshop.

A double appointment for the production of lead pipes and administration of water supply

This is not to say, however, that the same person could never be in charge of two or more managerial units. Ulpianus mentions the case of an *institor* who had the double task of managing an oil business and of taking out, or recovering, loans. This is an example of double appointment.[27] Thus a *vilicus* running a farm could be at the same time the manager of a workshop as a result of a double appointment.

The *instrumentum domesticum* provides some epigraphical evidence pointing toward the possibility of such a double appointment in the context of the manufacture of lead pipes and the administration of the water supply: a public slave of the colony of Verona is described as *vilicus plombariorum*,[28] which seems to indicate that he was in charge of a workshop producing lead artifacts. A similar *vilicus a plumbo* is attested at Capua.[29] The function of such *vilici* may be illustrated by a collection of lead pipes from Bononia stamped with the names and title of 9 *vilici*.[30] While most of them seem to have been slaves (private or public?), one is certainly a public freedman.[31] In one case, two *vilici* signed jointly,[32] in another case the signature of the *vilicus* is combined with that of a municipal magistrate (quaestor?), probably the master of the slave and/or the person in charge of the water supply of the town.[33] It is striking to note that Frontinus, our main source on the administration of the water supply of Rome down to the time of Nerva and Trajan, lists *vilici* amongst the members of the *familia aquaria*, a point which is confirmed by some Roman epigraphical evidence.[34] If these inscriptions from Verona, Capua, Bononia, and Rome

25 Iavolenus (2 *ex post. Lab.*) *Dig.* 33.7.25.1: Quidam cum in fundo figlinas haberet, figulorum opera maiore parte anni ad opus rusticum utebatur, deinde eius fundi instrumentum legaverat. Labeo Trebatius non videri figulos in instrumento fundi esse. Item cum instrumentum omne legatum esset excepto pecore, pastores oviliones, ovilia quoque legato contineri Ofilius non recte putat.

26 Papinianus (7 *inst.*) *Dig.* 33.7.17.1-2 (fishermen, bathkeepers, foresters); *CIL* II 5042 = *FIRA* III^2, no. 92, pp.295-97 (= *Formula Baetica*, 1st-2nd c. A.D.; farmer). Cf. E. M. Staerman & M. K. Trofimova, *La schiavitú nell'Italia imperiale* (Roma 1975) 78.

27 Ulpianus (28 *ad ed.*) *Dig.* 14.3.13 *pr.*: Habebat quis servum merci oleariae praepositum Arelate, eundem et mutuis pecuniis accipiendis (...). Cf. also Paulus (29 *ad ed.*) *Dig.* 14.3.16; and T. J. Chiusi, "Landwirtschaftliche Tätigkeit und *actio institoria*," *ZRG* 108 (1991) 155-86, esp. 176, with reference to money-lending activities of estate managers.

28 *AE* 1946, no. 136: Iovi Lustrali / Phoebus Veronens(is) / vilicus plombariorum / v(otum) s(olvit) l(ibens) m(erito).

29 *CIL* X 3967: Eutychus vili[c(us)] / a plumbo / Euagogus a flam[? (= a flatura?)] / fecerunt sibi et suis.

30 *CIL* XI 725 and 731-36 (Cinnamus, Acutus, Campanus, Dignus, Lausus, Peculiaris, and L. Publicus Asclepius); and *AE* 1976, no. 214 (2 stamps mentioning Super and Aphrodisius as joint *vilici*) = E. Andreoli, "Bologna — rinvenimenti nella casa Benelli, all'angolo di Via Parigi con via Porta di Castello," *NSc* 1932, 42-50, who dates the stamps to the late 1st c. A.D. on palaeographical grounds. About the rôle of the *plumbarii* in the manufacture of lead pipes, cf. C. Bruun, *The water supply of ancient Rome. A study of Roman imperial administration* (Helsinki 1991) 285, n.1 and 304-68, esp. 364 n.20.

31 *CIL* XI 736 (L. Publicus Asclepius).

32 *AE* 1976, no. 214.

33 *CIL* XI 725 (a): L RVFIO SEX PONTIO Q and (b): CINNAM VILIC. These stamps appear on a pipe of a larger size than the others, which is thought to have been used in the part of the conduit directly connected to the water-tank (*castellum*); cf. E. Andreoli, *NSc* 1932, 46, n.4.

34 Front., *Aq.* 105.3; 112.4 and 7; and 117.1. These *vilici* belonged to the *familia publica* (240 people paid by the *aerarium Saturni*) or to the *familia Caesaris* (460 people paid by the *fiscus*). They were assigned (*praepositi* in *Aq.* 117.4) either to a *castellorum et munerum statio* (as was the case for other *aquarii*, cf. *CIL* VI 8489 and 36781)

illustrate the same phenomenon, namely a connection between manufacture of lead pipes and administration of the water supply, Frontinus' account may help to explain the function of these *vilici*. According to Frontinus, the *vilici* were subordinated to a senatorial commissioner (*curator*) and to an imperial servant (*procurator*) and were responsible for supervising the stamping of delivery-necks (*calices*) and of the pipes used on the first 50 feet (14.8 m) of private water conduits, in compliance with a senatorial decree of 11 B.C.[35] One should stress that it is nowhere said that the name of the grantees should appear on the conduits. On the other hand, as *vilici* were responsible for any negligence and fraud pertaining to the quantity of water delivered to property owners in accordance with the terms of imperial grants, their involvement could be proven only if the faulty pipes could be traced back to them.[36] The purpose of *fistula* stamps was obviously to permit the identification of the origin and official character of the pipes, thus preventing property owners from surreptitiously substituting the pipes located just next to the delivery-neck with larger, spurious ones, in order to secure more water than allowed by the imperial grant. Consequently, it is possible that the people whose names appear in *fistula* stamps were the manufacturers — principals and/or agents — of the pipes, and not the property owners to whom the water was to be delivered, as most historians assume.[37] If I am right, the numerous cases where ownership of a building has been established on the basis of *fistula* stamps should be reconsidered.

This interpretation, which is consistent with what we know about the stamping of other types of material (mostly bricks), is not immune from criticism. One objection that could be raised is that the production of any single known workshop seems to have enjoyed a very narrow distribution. One could reply that we are dealing with a transient type of industry, composed of very small units of production supplying a neighborhood for a short period of time: lead processing is a hazardous occupation[38] that must have taken its toll on the workers employed in it and consequently made it less profitable for workshop owners than, say, the manufacture of bricks and tiles. One can wonder, for instance, whether the 4 *officinatores* working for the imperial freedman Aelius Dionysius were employed simultaneously or successively.[39] The reason why some people would invest in the lead industry under those circumstances

or to an aqueduct (*aqua*), cf. *CIL* VI 8495; 8496; 33732; 33733. We do not know the size and the composition of these managerial units, but Frontinus speaks of some degree of internal division of labor (*Aq.* 117.1: Utraque autem familia in aliquot ministeriorum species diducitur, vilicos, castellarios, circitores, silicarios, tectores aliosque opifices.

35 Front., *Aq.* 105-6 and 112.6. The requirement that lead pipes be used on at least 50 feet from the main conduit was implemented outside Rome too, cf. *CIL* X 4842 = *FIRA* I^2, no. 67, ll. 43-44 (*Edictum Augusti de aquaeductu Venafrano*).

36 Front., *Aq.* 112.7: Ita demum enim vilicus, cum scierit non aliter quam signatas conlocari debere, omni carebit excusatione.

37 For instance, H. Dressel in *CIL* XV.2, pp. 910 (i) and 912 (ii), and more recently W. Eck, "Die *fistulae aquariae* der Stadt Rom. Zum Einfluss des sozialen Status auf administratives Handeln," *Tituli* 4 (1982) 197-225, esp. 200-8; S. Priuli, "Le iscrizioni sulle fistulae," *Il trionfo dell'acqua. Acqua e acquedotti a Roma IV. sec. a.C. – XX sec.* (Roma 1986) 187-95, esp. 188-90. Bruun 1991 recognizes that there are some problems with the traditional interpretation (59-62), proposes an alternative explanation (in my view, the correct one, 87-95), but surprisingly never rejects the old (in my view, incorrect) one altogether (63-95 and 371). Bruun's study of the material from Ostia (287-93), the result of which shows almost no overlap between the people whose names appear in the genitive form in *fistula* stamps and the numbers of the local élite (hence most likely to benefit from water delivery) known to us through other sources, should have allowed him to settle the matter once and for all.

38 Vitr., *De Arch.* 8.6.11: Exemplar autem ab artificibus plumbariis possumus accipere, quod palloribus occupatos habent corporis colores. Namque cum fundendo plumbum flatur, vapor ex eo insidens corporis artus et inte exurens eripit ex membris eorum sanguinis virtutes.

39 *CIL* XV 7369-7372. The *officinatores* (P. Aelius Iuvenalis, Aurelius Zosimus, T. Claudius Colendus, and P. Raius Magnus) all seem to have been freedmen or even freeborn. In another stamp (*CIL* XV 7373), Aelius Dionysius appears himself as *officinator*, next to the name of a probable senator, T. Vibius Postumius Terentianus. This stamp may reflect an earlier stage in the career of Aelius Dionysius; for a different interpretation, cf. Bruun 1991, 93-95. This might also be the case of one Septimia Procilla who is attested both as joint manager (*CIL* XV 7532: SEP PROCILLA ET SEP DATIBVS FECC) and as owner (*CIL* XV 7531: SEPTIMIAE PROCILLAE).

had probably something to do with the satisfaction of their own personal needs, and it is quite likely that the majority of the people that I would like to identify as workshop owners would have been qualified by their social position for an imperial grant of water.

Another problem is that there are so many names on *fistulae*, either in nominative or genitive forms, that it seems difficult to admit that such a large group of persons was involved in the lead industry. One should recall, however, that the productivity of lead workshops (*officinae plumbariae*) cannot be estimated on the basis of stamped pipes, since other types of lead artifacts, such as unstamped pipes, sarcophagi, caskets, writing material, various tools, weights for fishnets, weapons (*glandes*), tokens (*tesserae*), etc. were made in the same workshops.[40] In addition, the production of these workshops was not necessarily restricted to lead material, and there is some evidence pointing towards a connection between the lead industry and the mint.[41] Nevertheless, the figures used by scholars who defend the traditional interpretation deserve to be examined. W. Eck collected the names of 288 'private owners' (i.e. in the genitive form) from some 3847 *fistula* stamps (out of a total of 9955 including those stamped with the name of the emperor or of some public community) from Rome and its immediate vicinity and pertaining to a period of *c.*250 years.[42] 63% of the stamps bear the names of members of the senatorial aristocracy, 6% represent the equestrian order, 7% depict imperial freedmen, while 24% (including 1 private freedman and 2 physicians) cannot be ascribed to any of the above categories. Assuming that these individuals were indeed the owners of workshops producing lead pipes (which does not necessarily imply that they were themselves the managers), one has to account for less than 300 workshops over a period of 250 years, or an average of 30 workshops active simultaneously for a period of 25 years.[43] This would not include public and imperial production, which amounts to *c.*60% of the pipes. Even though we may expect stamps with new names to appear, the total number is unlikely to increase dramatically. Provided then that virtually all private workshops are recorded in preserved stamps,[44] the figures are not completely unrealistic, especially if one allows for a faster turnover than estimated above and for a few cases of joint ownership (several names appearing together in the same stamp).[45] In addition, the social make-up of the group of workshop owners is comparable with that of *domini* in the brick industry, with the imperial family and household and the senatorial aristocracy strongly represented. It is striking that the number of *plumbarii* (managers, not excluding those owning their workshop) collected by C. Bruun (*c.*288 from Rome, and 148 from the surrounding area, including imperial and public servants) from the same material is consistent with the number of 'owners' (whatever they are) described by Eck.[46] As Bruun pointed out, cases where a family or social connection between the two categories is explicit are fairly rare.[47]

40 H. Blümner, *PW* 3 (1897) cols. 561-64, *s.v. Blei.*

41 *CIL* VI 8461 = *ILS* 1637: D(is) M(anibus) / fecit Mindia Helpis C. Iulio Thallo / marito suo bene merenti, qui egit / officinas plumbarias Transtiberina (regione) / et Trigari(o), superposito auri monetae / numulariorum, qui vixit ann(is) XXXIII m(ensibus) VI / .... Cf. Bruun 1991, 355-56.

42 W. Eck, *Tituli* 4 (1982) 210 ff., supplemented by Bruun 1991, 77, n. 1, who has 6 more instances. Eck (p. 203) argues that out of the datable material *c.*48 cases belong to the 1st c. A.D., *c.*73 to the 2nd, and *c.*80 to the 3rd c. Cf. also W. Eck, "Organisation und Administration der Wasserversorgung Roms," in *Wasserversorgung im antiken Rom* I (München/Vienna 1982) 63-77, esp.73. These figures should be compared to those provided by T. Helen, *Organization of Roman brick production in the first and second centuries A.D.* (Helsinki 1975) 8 and 22-23, and P. Setälä, *Private domini in Roman brick stamps of the empire* (Helsinki 1977) 21 (citing Helen), who report a total of 1325 persons among whom they identify 150 as owners (*domini*), 355 as workers (*officinatores*), and 820 as "others"(?), on the basis of a study of 1825 stamps — not including variants — from a collection of over 9000 bricks found in Rome and vicinity, Ostia, and Portus.

43 In lamp, *terra sigillata*, and brick and tile production, some workshops are known to have been active for a longer period. L. Naevius, who signed his tiles from 68 to 36 B.C., may have been typical, cf. *ILLRP* 1155-57, 1159, and 1163-70.

44 This has been assumed with regard to brick stamps, cf. Helen (supra n.42) 24, and *terra sigillata*, cf. *CVArr.*

45 Bruun 1991, 94, n. 75 records 40 such cases.

46 Bruun 1991, 309.

47 Bruun 1991, 25, 87-95, 320 (so-called *domestici plumbarii*); and 345-50. Bruun mentions (345-46) an interesting stamp from Rieti, where the *officinator* was a *servus alienus* working for a different person, cf. M. Spadoni

If it is correct to interpret *fistula* stamps as a sign of authorized production, one may wonder how *fistula* manufacturers and the administration of the water supply worked in concert with each other. It is clear that a significant part of the production of lead pipes was in the hands of the imperial and public administration. Some members of the *familiae aquariae* may have had some (private?) interest in the lead industry: one M. Aurelius Caricus, attested as *aquarius* in Rome, owned a workshop producing pipes used in the region of Alba.[48] The production of public and imperial workshops was perhaps not sufficient to build and maintain all public and imperial conduits, and private workshop owners and managers retained a share of the market.[49]

Regarding the legal relationship between workshop owners and managers, it is uncertain whether the latter were tenants or agents of the former. Since *officinatores* were working on commission, they seem more likely to have been agents. The *vilici* from Verona, Capua, Bononia, and Rome may be representative of a practice common in all kinds of manufacturing.

Principal and agent in the stamps

One should try to compare *fistula* stamps with those found on other types of artifacts. Unfortunately, the title of *vilicus* does not, to my knowledge, appear in any other stamp.[50] Whether some of the names appearing in stamps are those of *vilici* is a matter of speculation.

Another category of agents appearing in stamps is that of *actores*, who are otherwise well attested in the legal, literary, and epigraphical sources. *Actores* probably belonged to a higher level of administration than *vilici*, but they still fall into the category of *institores*, as they are described as *praepositi* in the legal sources.[51] More than 150 Latin inscriptions from Italy and Sicily show them in charge of agricultural estates, gardens, urban houses and buildings, and in private, public, and imperial administration. More interesting for our purpose is that they occasionally appear in tile stamps: from Rome, a recently published stamp is signed by one Soterichus, agent of T. Statilius Maximus, owner of the *figlinae Brutianae* from 123 to 134 (at least).[52] From Sicily, the stamp of Eulalus, agent of one L. Minicius Natalis, is found on a tile of Trajanic date and of African origin.[53] From Rome and from Sardinia come the stamps of Earinus, agent of Lucilla Veri, known in an earlier period as Domitia Lucilla Minor, mother of Marcus Aurelius.[54] These stamps should be dated to the period 145-155. Other stamps signed by Earinus

Cerroni, *AnnPer* 16 (1978-79) 167-75, esp. 173: GEMINVS Q PETILI AGRICOL SER FEC and TI CLAVDI SATVRNINI (not recorded in *AE*).

48 *CIL* VI 131 (dated to A.D. 218) and and *NSc* 1914, p.429 = *AE* 1975, no.158. Cf. Bruun 1991, 327-48.

49 For private *plumbarii* supplying the imperial administration, cf. Bruun 1991, 354.

50 One *Statia vilic(a) nostra* appears on a terracotta lamp, dated to the republican period on the basis of its typology; cf. *CIL* XV 6905 = *CIL* I^2 504 = *ILLRP* 1193. The inscription is scratched, not stamped, but the name probably refers to the manufacturer (compare with *ILLRP* 1194-96 = *CIL* XV 6913, 6336, and 6627a, where the reference is more explicit). Other cases, such as *AE* 1927, no. 27, read on an amphora found at Augusta Raurica (G(arum) HISP(anum) / FRONTONIS V[ilici]), and *AE* 1952, no. 93, read on an amphora found in London ([Gem]ELLVM / MVN(ati) C[e]LER(is) AVR(eli) [V(ilici)), are based on a hypothetical reconstruction and therefore inconclusive.

51 Paulus (71 *ad ed.*) *Dig.* 44.4.5.3; Scaevola (24 *dig.*) *Dig.* 40.7.40.4; Gaius (*sing. ad form. hyp.*) *Dig.* 20.6.7.1 (possibly interpolated).

52 *AE* 1984, no. 56: BRVTIAN(a tegula) / SOTERICHI / T(iti) STAT(ilii) MAX(imi) / ACT(oris); cf. Setälä (supra n.42) 186-88.

53 *CIL* X 8045, no. 12: CEL (*hedera*) NIGR MAIO / L(ucii) MINICI NATALI[s] / EULALVS ACTOR EI[us]. Nigrenses Maiores is the name of an oasis in Numidia. One L. Minicius Natalis is attested there as *legatus pro praetore* of the Third legion in 104/5, cf. *CIL* VIII 2478.

54 *CIL* XV 1049 and *CIL* X 8046, no. 5: EARINI LVCILLAE VERI ACT(oris) / (opus) DOL(iare).

have been found, but his title of *actor* is not always recorded.[55] Finally, there is one possible instance of an *actor* signing a vase from Soluntum in Sicily.[56]

Fistula stamps and brick stamps have in common the fact that they often — at least in the 2nd c. A.D. — contain a set of two names, which have been interpreted as representing respectively the *dominus* and the *officinator*. This structure is rarely found in stamps on *terra sigillata*, amphorae, and lamps. It is obvious, however, that many of those signing artifacts were slaves or freedmen: they bear a servile *cognomen*; they mention the name of their master(s); and they occasionally advertise their status as *servi*, *liberti*, or *statuliberi*. The following stamp on *terra sigillata* is an example: L(ucii) VM(bricii) SC(auri) / NO(thus?) STA(tuliber) (*CVArr* 2412). The name of the master/patron (L. Umbricius Scaurus) appears either before or after the name of the slave/freedman (Nothus).[57] Another slave of L. Umbricius Scaurus, named Icarus, signed either L VMBRICI / SCAVRI IC(arus) (*CVArr* 2411) or ICARVS / L VMBRICI (*CVArr* 2441). Examples of this phenomenon are abundant, but when the name of the slave appears after the name of the master, it is not clear whether one or two persons are referred to, especially if the master uses only two names (*praenomen* + *nomen*), as was common until the mid-1st c. A.D. I tentatively suggest that at least some of the stamps on the *instrumentum domesticum* may exhibit the combination of a pair of names, the first in the genitive representing the principal, the second in the nominative or genitive representing the agent in charge of a managerial unit owned or rented by the principal. As M. Steinby suggested in the context of the brick industry, the stamp summarized the legal relationship existing between *dominus* and *officinator*.[58] The purpose of the stamp was internal in the case of tenancy, and both internal and external in the case of agency: principal, agent and third contracting party had a shared interest in the advertisement of the appointment.

One consequence of this interpretation of the stamps is that most of the time it is not possible to determine the legal status of the agent (slave or free[d]): we know, however, that from a legal point of view it did not matter.[59] The liability of the principal for the transactions performed by his agent resulted from the appointment, and not from the nature of the legal (contractual or non-contractual) relationship between them.

It is not uncommon to find women in either position in the stamps.[60] In brick stamps there are even cases where both principal (*domina*) and manager (*officinatrix*) are women.[61] This is quite consistent with the

55 *CIL* XV 1047: O(pus) FIG(linum) D(oliare) EX PR(aediis) DOMIT(iae) LVCILLAE / EARINI; *CIL* XV 1048: EARINI DOMITIAE LVCILLAE / OPVS DOLIARE; *CIL* XV 1050: EARINI LVCILAE (*sic*) VERI / OPVS DOLIARE; cf. Helen (supra n.42) 111.

56 *CIL* X 8056, no. 154: C( ) GAV( ) / SVMA( ) / ACT( )

57 A. Oxé, "Zur älteren Nomenklatur der römischen Sklaven," *RhM* 59 (1904) 108-40, esp. 136-40, about his Form IX (presented in a tentative way).

58 M. Steinby, "I senatori e l'industria laterizia urbana," *Tituli* 4 (1982) 227-37; cf. also her article in this volume.

59 Gaius, *Inst.* 4.71: Institoria vero formula tum locum habet, cum quis tabernae aut cuilibet negotiationi filium servumve aut quemlibet extraneum sive servum sive liberum praeposuerit, et quid cum eo eius rei gratia cui praepositus est contractum fuerit. Cf. also Paulus, *Sent.* 2.8.2: Si quis pecuniae fenerandae agroque colendo, condendis vendendisque frugibus praepositus est, ex eo nomine quod cum illo contractum est in solidum fundi dominus obligatur: nec interest, servus an liber sit; and Ulpianus (28 *ad ed.*) *Dig.* 14.3.7.1 (below). This may not have been the case in the early history of the *actio institoria*, but it is widely believed that agents who were not dependents of the principal rendered the latter liable much earlier than the time of Gaius; cf. M. Kaser, *Das römische Privatrecht* I[2] (München 1971) 608, n.27. I discuss this point at some length in my dissertation (100-4 and 165-71).

60 For women producing *terra sigillata*, cf. for instance *CVArr* 487: ATTICE/P CORNE(li) and *CVArr* 1915: ATTICE/C TELLI; for women owners of lead workshops; cf. Bruun 1991, 289, citing W. Eck, *Tituli* 4 (1982) 203 and 207, lists 67 women in Rome (= *c.*25% of all Roman "owners"), half of them belonging to senatorial families; for women managers of lead workshops (*plumbariae*), Bruun 343-44 lists 27 cases in Rome (= almost 10% of all *plumbarii*).

61 *CIL* XV 73-74, 139, 140, 630, 692-94, 1217, and 1302 (134): EX FIG(linis) MEMMIAE L(uci) F(iliae) MACRINAE / (ex) OF(f)IC(i)N(a) PROCILL(iae) GE/MELLAE; cf. Helen (supra n.42) 112.

opinion of Ulpianus, who says that gender was of no significance.[62] Some modern scholars assume that women would not have been involved in the manufacturing process, either as workers or as managers. A bilingual inscription on a tile from Pietrabbondante (Samnium) points against such a view.[63] Two slave girls in their early teens left the imprint of their feet next to their signatures, written in two different hands and respectively in Oscan and in Latin, comprising the name (in the genitive form?) of their master, one Herennius Sattius,[64] followed by their own names, respectively Detfri and Amica (note the sequence). The fact that the girls were literate suggests that they occupied a position with responsibilities, possibly the management of the tile factory. Since this document originated in the first decade of the 1st c. B.C., it shows that the social reality described by classical jurists sometimes reflects much earlier, even pre-Roman conditions. The young age of the two girls, estimated on the basis of the size of the two sets of footprints, is made plausible by a remark of Gaius, who says that 'it is quite common to appoint boys and girls to run a business'.[65] And it is perhaps no coincidence that out of only 5 lapidary inscriptions recording *institores*, one commemorates a slave shopkeeper who died at the age of 16 after cheating his customers,[66] and another possibly a 15-year old business manager.[67]

Epilogue

The study of the production of artifacts from the point of view of those involved is facilitated by the availability of a variety of types of evidence, one of which — the stamps — is silent about the process of distribution. Admittedly, painted inscriptions on amphorae and stopper marks shed some light on this process, but they tell more about the marketing of the content than of the container. There is no doubt, however, that *institores* were also to be found as agents in the distribution of goods, mostly as peddlers or retailers.[68] Under what circumstances artifacts reached the places where they have been found will be resolved less by the epigraphical element of the *instrumentum domesticum* than by the study of its petrological composition in conjunction with the chronological context of the finds.[69]

62 Ulpianus (28 *ad ed.*) *Dig.* 14.3.7.1: Parvi autem refert, quis sit institor, masculus an femina, liber an servus proprius vel alienus. Item quisquis praeposuit: nam et si mulier praeposuit, competet institoria exemplo exercitoriae actionis et si mulier sit praeposita, tenebitur etiam ipsa. Sed et si filia familias sit vel ancilla praeposita, competit institoria actio.

63 A. La Regina, "Rivista di epigrafia italica," *SE* 44 (1976) 284-88 (never recorded in *AE*). The text reads: a) HN SATTIIEIS DETFRI / SEGANATTED PLAVTAD and b) HERENNEIS AMICA / SIGNAVIT QANDO / PONEBAMVS TEGILA = P. Poccetti, *Nuovi documenti italici* (Pisa 1979) 42-43, no. 21; cf. also V. Pisani, "Seconde postille italiche," *SE* 45 (1977) 347; and P. Poccetti, "Per una definizione delle iscrizioni 'bilingui' in area etrusca ed italica," in E. Campanile *et al.* (edd.), *Bilinguismo e biculturalismo nel mondo antico* (Pisa 1988) 127-43, esp. 139-42. The structure of the inscription is similar to another one found on a type of strainer from Umbria, cf. *ILLRP* 1206 = *AE* 1952, no. 55: a) NVMESIER VAREA FOLENIA and b) NOMESI VARIA.

64 The scholars who commented on the name of the owner (cf. preceding note) usually understood Sattius as the *gentilicium* and Herennius as a *praenomen*. The *nomen* Sattius is attested; cf. *ILLRP* 708 (Capua) and *ILS* (index); but so is the *nomen* Herennius, which is much more common, especially in the republican period, than Sattius; cf. *ILLRP* and *ILS* (index). I wonder whether one should not consider that Detfri was owned by one Sattius and worked for Herennius as *serva aliena*.

65 Gaius (9 *ad ed. prov.*) *Dig.* 14.3.8: Nam et plerique pueros puellasque tabernis praeponunt.

66 *CIL* III 14206, no. 21 (= *ILS* 7479 = *AE* 1898, no. 148): Vitalis C. Lavi Fausti / ser., idem f., verna domo / natus, hic situs est, vixit / annos XVI, institor tabernas / Aprianas, a populo acceptus, / idem ab dibus / ereptus. Rogo / vos, viatores, si quid minus / dedi mesura ut patri meo adicere(m), / ignoscatis. Rogo per superos / et inferos, ut patrem et matre(m) / commendatos (h)abeatis. / Et vale.

67 *CIL* III 13523 (Tüffer, Noricum) but the reading of the inscription is not sure.

68 Paulus (30 *ad ed.*) *Dig.* 14.3.4; Val.Max. 2.7.1; Hor., *Carm.* 3.6.29-32; Ov., *Ars Am.* 1.421-22; Sen., frg. 52 (Haase); Sen., *QNat.* 4b.13.8; Σ Juv. 7.220-221; *Cod. Iust.* 12.57.12.3 (436).

69 G. Schneider and E. Wirz, "Chemical answers to archaeological questions — Roman terracotta lamps as documents of economic history," *Doc. et Trav. IGAL* 16 (Paris 1992) 13-53; cf. also the papers of J. T. Peña, G. Olcese, and G. Schneider in this volume.

The method applied here, which consists in checking one type of evidence against the other, is not new, but more work of this kind is needed. It is also desirable that students of Roman law pay more attention to the historical context, known to us increasingly through the material culture,[70] before dismissing as interpolations what they regard as logical or stylistic oddities.[71] It is quite unlikely that the compilers would have modified the opinions of classical jurists in such a way that they would end up saying the opposite of what they originally meant. When it can be checked against other types of evidence, the picture of Roman society presented by the jurists seems to be in touch with reality, though not necessarily up to date.[72]

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70 As suggested, for instance, by A. Bürge, *ZRG* 105 (1988) 856-65 and W. D. H. Asser, *RHD* 56 (1988) 370-72 in their reviews of A. di Porto, *Impresa collettiva e schiavo manager in Roma antica* (Milano 1984 [1985]).

71 G. Pugliese, *Labeo* 3 (1957) 315: Circa la sostanza della soluzione giulianea [about *Dig.* 14.1.1.5, cf. above], si deve ammettere, con le parole di Samuel Stryk [*Opera omnia* 14 (1841) col. 633], che 'illud valde singulare est quod exercitor non tantum teneatur ex magistri sui, sed etiam substituti eius facto.' Ma la singolarità non è un motivo sufficiente per addebitare la soluzione ai maestri postclassici, come se da essi potesse aspettarsi qualunque assurdità. For a different view, cf. F. de Martino (1982) [= *Labeo* 4 (1958)] 177.

72 As shown by B. W. Frier, "Law, technology, and social change. The equipping of Italian farm tenancies," *ZRG* 96 (1979) 204-28.