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The archaeology and history of Roman ports

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The harbour of St Andrews was once a busy port. It is now deserted except for a few lobster fishermen and some pleasure craft. Its fate is typical of a series of small harbours in this part of southeast Scotland (Graham, 1968–9), and bears out powerfully the words of the geographer Catherine Delano Smith: 'In the last analysis a port is a man-made feature, and it is on human factors that its survival must depend' (Delano Smith, 1979). Shifts in social, economic and political power have taken traffic away from St Andrews, the ancient capital of the Kingdom of Fife.

My message, therefore, when I took part in the First International Workshop on Ancient Mediterranean Harbours two years ago (Rickman, 1985) was that any study of Roman harbours undertaken now should be fundamentally different from Lehmann-Hartleben's famous work, *Die antiken Hafenanlagen des Mittelmeeres*, published in 1923. That study, extraordinary for its time, concentrated on substantial surviving harbour remains, on the history of the development of constructional techniques and on harbour layout as an aspect of town planning in antiquity. Such work, of course, was, and still is, important. Roman harbours could be beautiful constructions, as at Leptis Magna (Bartoccini, 1958); the positioning of their moles and breakwaters in many cases match up to the most demanding modern recommendations (Du Plat Taylor, 1949; Quinn, 1961); and Roman mastery of a concrete which would set under water was not equalled, in Britain certainly, until 1800 and the perfecting of a waterproof mortar by the engineer John Smeaton (Jackson, 1983). Our understanding of such things is being improved all the time by modern underwater excavations, not least those at Cosa in Italy and at Caesarea in Israel (Raban, 1985; McCann, 1987).

But important though this work is, harbours should not be studied just as structures, but in relation to the purposes which they served. They have to be seen as part of a network of ports, fulfilling a function in the Roman world. To their study, therefore, we have to bring not just archaeological techniques, but the questions and skills of the social and economic historian. Why were ports positioned where they were, in relation to geography, population, manufacture or political need? Who paid for them and why? What governed their success and how were ports used?

Such a proposed scheme of study is not novel. The French scholar Raymond Chevallier, as I have since discovered, was already calling in the late 1960s for interdisciplinary and international co-operation in the study of navigation and ancient ports. But the number of sites that have to be dealt with,[1] the diversity and sometimes downright inadequacy, of the evidence, the range of skills, which, as scholars, we have to aspire to, all make the undertaking formidable; and it has not yet been achieved. Equally difficult is the framing of questions and concepts in the correct manner.

It seems to me now that the simple contrast which I drew between a 'harbour' and a 'port' will not do (Rickman, 1985). I both understated and overstated my case. On the one hand, a great Roman port might be much more than just a single harbour together with remarkable lines of penetration into a rich hinterland; while on the other hand, individual small harbours were not necessarily unimportant in the overall pattern of Roman trade.

The best—even if exceptional—example of a great Roman port is, of course, Rome itself.[2] What is striking about it is the complexity of its group of subsidiaries and outliers. With no harbour on the coast, Rome, 15 miles upstream

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Figure 1. Aerial view of Lake Avernus and Portus Iulius (Frederiksen, 1984).

on the river Tiber, was served with difficulty by sea-going ships. They might prefer to unload in the natural harbour of Puteoli to the south in Campania. That area was therefore part of Rome's port complex throughout the late Republic, and it continued to be so right up to the 2nd century AD. The creation of Portus Iulius as a military base to the north of Puteoli in the 30s BC, although it lost its military role very quickly, significantly increased the port facilities in the area.[3] Part of its drowned remains form one of the most tantalizing glimpses of Roman harbour installations (Schmiedt, 1970, Fig. 1). From the famous arcaded mole at Puteoli, built probably under Augustus, a whole series of docks and warehouses swept northwards via the Ripa Hortensiana up the coast to Portus Iulius. The mole was a wonder, and a tourist attraction, but it was this shoreline and all its facilities which made Puteoli the great port that it was.

The creation of a harbour near the mouth of the Tiber itself by the Emperor Claudius in the mid-1st century AD, therefore, did not, and could not, turn attention from Campania. Claudius' successor, Nero, made a determined effort to link the southern outliers in Campania to the port facilities on the Tiber by means of canals and inland waterways. Traces of that effort still exist near the Lago di Paolo at Circeii.[4] Only after it failed did attention switch

decisively to the Tiber mouth. Trajan excavated a safer inner basin for the harbour of Claudius in the early 2nd century AD (Fig. 2). But he also created splendid harbours, with good road connections, at Terracina and at Civitavecchia (Centumcellae), to the south and north of the Tiber, as satellite outliers for the new double harbour of Portus (Schmiedt, 1970, Fig. 3). The technical skill, which allowed the Romans to do almost whatever they wished, if the need was great enough, is impressive.

But this geographical concentration of a group of harbours closer to Rome was only part of the solution to the problems of Rome's port. The river barges on the Tiber took 3 days to be dragged upstream from Ostia to Rome, and that meant two night stops (Casson, 1965). Consequently, as the recent survey of the Tiber and its embankments by the Italian Mocchegiani has shown, there were docking facilities virtually all the way up the river. Portus, Ostia and Rome were continuously linked. The wharves and docks also took account of the road system in the area, as at the significantly named Vicus Alexandri, just outside Rome (Castagnoli, 1980). The congestion on the river must at times have been intense (Rickman, 1980)—much more than in Rome's famous river ports of the Middle Ages, the Ripetta and the Ripa Grande, immortalized by Piranesi—and the taking of some goods by road for part of the way made sense. The same was true of the port of London by 1791. The East India Company deliberately unloaded its goods from the east down the river Thames at Blackwall Reach and brought them in armed processions to the Company's warehouses in the City of London (Jackson, 1983). In both cases, the ports were linked to subsidiaries down river, and not just by water but by land.

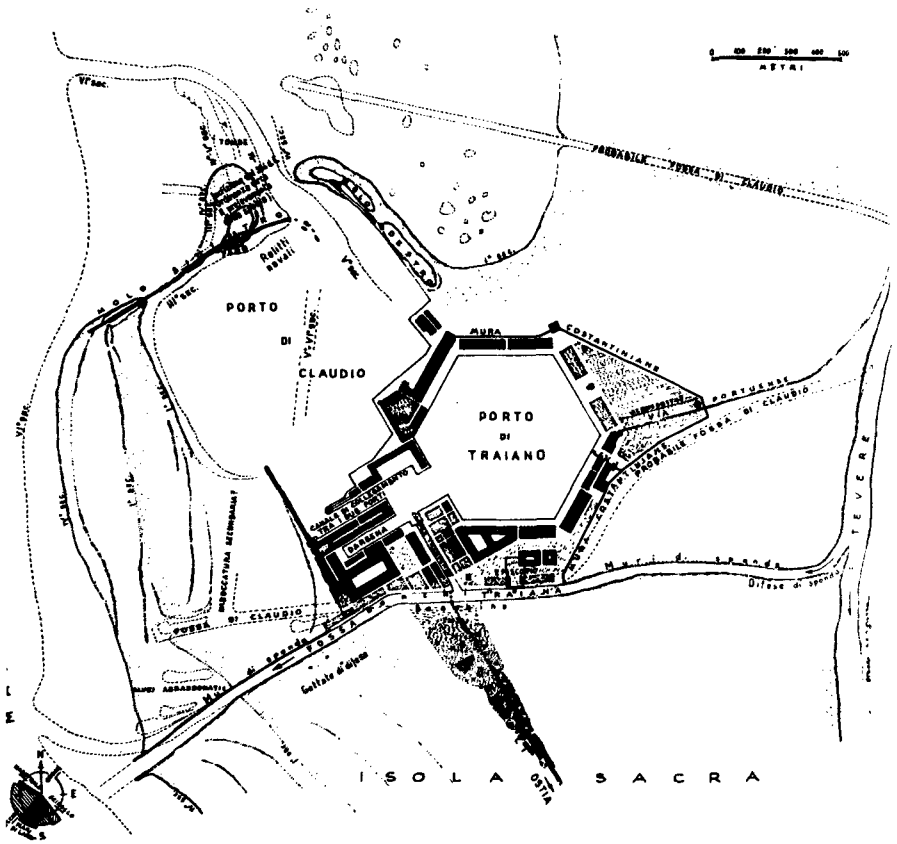

Figure 2. Portus (O. Testaguzza, *Portus*).

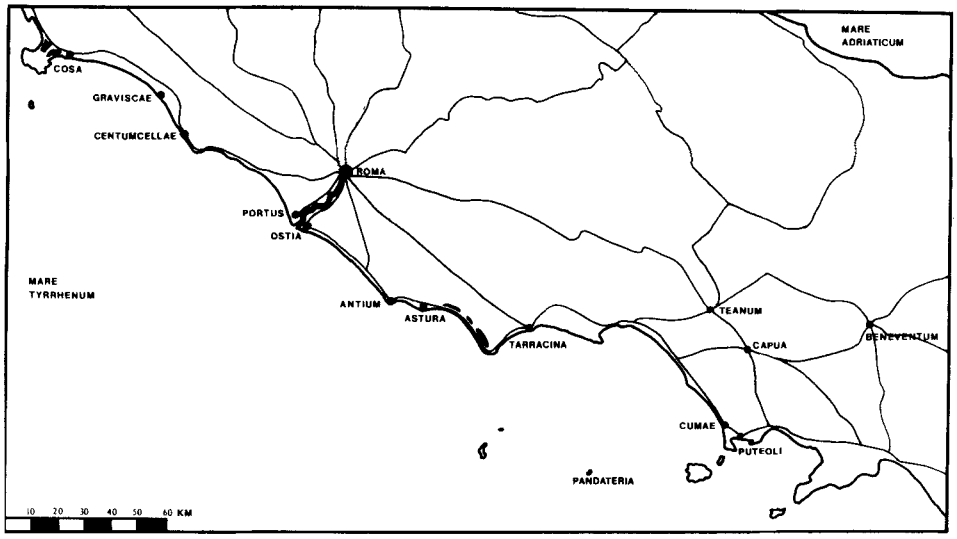

Figure 3. . Central Italy: roads and harbours.

But if I misrepresented the possible complexity of the notion of a 'port', I was also too dismissive of the importance of the notion of a 'harbour'. Of course not all harbours were, or could be, full-blown ports. But that does not diminish their importance in the scheme of things in antiquity. There was always a need, particularly in the days of sail, for harbours of refuge (Jackson, 1983). But more than that, any kind of coasting trade, 'cabotage', dictates that, if possible, small harbours must be available every 40–50 km.[5] When one looks and thinks about it, that fits the work done recently by both historians and archaeologists.

Among ancient historians, Keith Hopkins (Hopkins, 1980, 1983*a, b*) has made a challenging re-appraisal of the extent and nature of Roman trade. Working largely from theoretical models, he has argued, against the current orthodoxy of scholars like A. H. M. Jones and Moses Finley that in the late Republic and early Empire a huge volume of staple goods of great value, involving considerable sums of capital, was moved and traded around the Roman world. This trade in basic essentials helped to create the framework of shipping, credit, harbour facilities and quayside arrangements which could then be used for a wide range of other goods. The trade was not all of one single, simple kind, and it was not, except in rare cases, of absolute fixed regularity. Short-haul, middle-range and long-distance trade all existed side by side, ebbing and flowing in response to unpredictable demands, but—and this is the important point—they interlocked and fed into each other so as to promote an interdependent vigour.

If this is true, small harbours, *escales*, ports of call obviously have a part to play in the pattern of trade. So in southern Gaul, for example, while we may rightly stress the importance of Narbonne and Arles, and the geographical and political factors which favoured their success, we must not forget, as Rougé has reminded us, Port Vendres, Agde, Lattara and Maguelone, and the other *escales de cabotage*, which meshed with them (Denizot, 1957; Rougé, 1978; Delano Smith, 1979).

The same message is clear from General Schmiedt's recent study, with the help of aerial photography, of the harbours of Italy in the late Empire. He has emphasized how many harbours and ports of call there were, positioned between the limited number of ports proper, and what a vital role they played. It seems that, however one looks at it, archaeologically or historically, one should perhaps think of ports and harbours not individually but in clusters.

A feature of General Schmiedt's work has been his use of a Medieval *portolano*, the *Compasso di Navigare*, to locate sites (Motzo,

1947). Perhaps he has been sometimes seduced into seeing a Roman harbour where there was really only a Medieval one, but he is right, in my view, to use a Medieval source where it can help. We should not be shy, therefore, of looking at, say, the registers from Genoa of the port-and-mole safekeepers, which are extant from AD 1340 (Podestà, 1913); or extracting what we can from legal contracts between merchants, or from wills leaving money to communities for port work, so as to get some sense of the life and administration of Medieval ports (Kedar, 1976; Arenson, 1978).

Of course, that evidence may suggest differences from, as well as similarities with, the Roman world. But that may alert us to questions we should ask. For example, Gordon Jackson has recently made the following comment on the rise of ports in Medieval Britain:

> Taxing trade has always been an easy way of raising revenue, and technically ports were not places at all, but stretches of coastline divided up for fiscal purposes. In practice, business centred on the harbour towns, which did everything possible to confine it to their borough limits for the simple reason that they no less than the Crown drew revenue from trade. Thus a port was not a place where a ship might *conveniently* load or unload, but a place where it might *legally* do so in the presence of the King's 'Customer'—the collector of Royal Customs. Such a place was eventually designated the 'head port', and other havens within the limits were 'member ports' where deputy officers resided, or 'creeks' where no officer resided and where trade was illegal except under special licence or 'sufferance'.

Certainly, in my part of Scotland the port of Crail 10 miles to the south of St Andrews with its fine Customs House controlled the tax collecting for all ports and landing places in its area (Graham, 1968–9). The Roman government may not have taken such excessive revenue from trade, and I have yet to understand how the collection of Roman *portoria*, taxes on movement of goods both by land and by sea, was actually organized within Roman harbours. But in southern Spain, the *procurator ad ripam Baetis*, although stationed at Seville (Hispalis), seems to have supervised collection of *portoria* at all the ports on the Guadalquivir river (De Laet, 1949; Mackie, 1983). Were similar arrangements made for harbours along a stretch of coastline?

Medieval evidence also suggests that the services and dues in ports were broken down into

Figure 4. Torlonia harbour relief (Meiggs, 1973).

Figure 5. Unloading and checking wine (Meiggs, 1973).

very specific and exact payments—for mooring, for unloading, for measuring, for warehousing, as well as for general taxes and tips (Mor, 1978). Was that also true for the Roman world? Perhaps evidence in the form of ostraka and papyri from the Red Sea ports could help us with both questions.

There is of course a dearth of evidence in general about port administration in the ancient world. We know the titles of certain state officials in charge of the harbours at Ostia and Puteoli, but little about what they actually did. Presumably, like a modern port captain, they were responsible for the disciplined use of the port in the interests of navigation, and of the security of both people and things (*Enciclopedia Italiana*, 28: 23). Entrance and exit of ships, anchorages, embarkation and disembarkation of passengers and goods, and deposit of goods within warehouses would all come within their control. There might even be a certain zoning for different types of cargo—as at the wharves in Rome. Who was responsible elsewhere than at Ostia and Puteoli is unknown, although George Houston has plausibly suggested that it was the local municipal officials. But what does that mean for the city of Rome itself? Control of shipping at the Tiber wharves in the city would have been essential. Mocchegiani has suggested recently that the *curatores alvei Tiberis et riparum*, the officials responsible for the bed and the banks of the Tiber, were in charge and that their *statio* formed a sort of 'port captaincy'.[6] But, although responsible for the maintenance of the mooring embankments, did they also control the shipping on the river? There is a puzzle here, and I have yet to be convinced. Alexandria at the other end of the Mediterranean is no less intriguing. Papyri refer to a *procurator Phari*, the official in charge of the famous lighthouse there, in such a way as to suggest that those who wanted to leave the port needed an exit permit from him.[7] Was he therefore a kind of port captain? And is that typical of other ancient ports? How in fact did an ancient port work?

The layout and mooring facilities of a harbour in antiquity had to be able to cope with a range of ship lengths, from quite small, perhaps 5–20 m

long, to rather large, say 15–40 m long.[8] Most cargo vessels seem to have been moored prow forward towards the quayside, like diagonal car parking today. They were tethered by ropes tied to mooring stones, set either at the front or at the rear of the quay (Fig. 4). The latter often had a series of working surfaces at different levels. In a large harbour, a ship might well be towed to its position, and once there would, I suppose, have thrown out an anchor to the rear, so that there was no danger of collision with a neighbour. Despite the importance of the moles and lighthouses for protection and safe operation, the essential working area of a harbour must have been the *ripa*, the 'shore', vital still in the small Scottish ports with which I am familiar. But were there, in addition, projecting jetties, like the 'finger piers' common in North American ports, which were important in Medieval Genoa? There seems to be an example at Portus Iulius (Fig. 1) and, perhaps, at Caesarea and Cosa. Pictorial evidence suggests that they may have occurred more frequently than we think, perhaps made of wood (Bass, 1972; Schmiedt, 1978; Raban, 1985). Their purpose in more recent times has been not just to extend the length of quayside, but to allow cargoes, particularly mixed cargoes, unloaded from a ship on one side, to be sorted and then loaded straight into barges on the other (Jackson, 1983). There could well have been a need for that special sorting capacity in the Roman world.

Once the ship was in position at the quayside, gangplanks were laid, and porters of different kinds ran up and down, loading and unloading (Casson, 1965; Meiggs, 1973, Fig. 5). There were dock-side machines—cranes, balances and derricks—known from literary references and from pictorial representations (Rougé, 1957, Fig. 6). But human labour, as for the greater part of recorded history, provided the muscle power and the skill needed. The docks teemed with men. The workers could be divided up into very specialized groups—*saccarii*, carriers of sacks, *phalangarii*, carriers of great amphorae, *mensores*, who measured, *urinatores*, divers for salvage of goods dropped overboard, and so on (Mocchegiani Carpano, 1984).

Cargoes could thus be packed and handled with great skill. Shipwreck evidence shows how expertly *amphorae* were stacked and how often cargoes were mixed.[9] Smaller consignments of

Figure 6. Unloading a ship (Bardo Museum, Tunis).

Figure 7. Tomb mosaic (G. Becatti, *Scavi di Ostia* IV).

pottery or other goods might be added to a main cargo—to hitch a ride, as it were, with the bulk goods. Toby Parker has drawn attention to how much trans-shipment and harbourside dealing is implied by this sort of shipwreck evidence (A. J. Parker, unpubl. data). Many small consignments in mixed cargoes need not have been loaded in their area of origin at all. They were probably acquired from dealers at the quayside, or direct from other ships in port. The ports themselves, therefore, acquire added significance in the patterns of trade and exchange. Even Ostia and Portus, as Pavolini has argued recently, which appear at first sight to offer no obvious return cargoes to shippers, may be more important than we have been prepared to admit as entrepots for the indirect exchange of goods.

But dock labour poses problems. However much the demand for dock workers during the summer sailing season, in winter those who were not slaves could find themselves unemployed.[10] That in its turn could lead to discontent in dock areas, which throughout history have tended to be unruly and in need of special fire, security and police control. Puteoli was notorious for its civil disturbances (Jackson, 1983; Frederiksen, 1984). But the racial mixture in the society of such port towns could make them even more volatile (Cracco Ruggini, 1959, 1978, 1980).

How far the state, or community, concerned itself with these social problems was probably a matter of location and luck. If you were in Rome, or in some similar city like Alexandria, subject to discipline, or eligible for benefaction public or private, that was one thing. If you were elsewhere, it might be quite different (Hands, 1968; Rickman, 1980).

The same mixture was probably true of actual expenditure on dock works. Public and private financing of harbours has often co-existed. In some places in Britain, such as Liverpool in the 18th century, the local public Corporation provided both money and land. In others, such as Hull a little later, the task of producing new docks was left to private initiative (Jackson, 1983). The details are different in antiquity, but the pattern is similar. The Emperor, the local community, or private individual, could, given the right circumstances, create, maintain and repair moles and harbours (Houston, 1980). By the end of antiquity, mere maintenance might demand the sternest efforts. At Portus, dredging to keep a channel open across the old Harbour of Claudius to Trajan's inner basin (Fig. 2) even

appeared in the title of an imperial official, the strangely named *consularis molium, fari, atque purgaturae*—consular in charge of the moles, the lighthouse and dredging.[11]

The motives for expenditure, whether from public sources or private purse, remain debatable and in need of the most careful evaluation. Roman trade, during the late Republic and early Empire at least, was vigorous, and, as has rightly been said, showed signs of 'complexity, order, and system in its institutions'—perhaps even of involvement indirectly by the highest social elements in the state. But the Roman world was not one of developed capitalism as we understand it now, and, as Hopkins remarks, the only ports which truly grew beyond the supportive capacity of their hinterland—Rome, Alexandria, Carthage, Antioch—owed their greatness to acts of political and administrative will. That they could be sustained so massively is indeed a tribute to the economic sophistication which had built up in the Roman world; but it is not a proof that economic factors alone could generate such results.[12] The pressures and constraints in antiquity—technical, economic, social and political—were not always or necessarily the same as those of our world. If we, in an imaginative co-operation between archaeologists and historians, can grasp how, in response to these different conditions, Roman ports evolved and functioned, we may understand better how the Roman world itself worked and why it worked in that way.

Ironically, port areas which by their nature are crowded, noisy and full of stress, have come, in comparison to the greater dangers of the sea outside, to connote safety and release from tension. Latin and Greek, like other literatures, abound in port metaphors.[13] We all seek a safe haven—ultimately, as a tomb mosaic at Ostia poignantly puts it, 'the harbour where ends all pain' (Fig. 7).

Notes

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[1] N. C. Flemming (1972: 163 ff.)—at least 240 major ports in the Eastern Mediterranean and 179 in the Western Mediterranean.
[2] See C. Mocchegiani Carpano (1984: 21–81) with earlier bibliography.
[3] F. Castagnoli (1977: 41–79, especially p. 62 ff.). M. W. Frederiksen (1984: 324–37, 353).
[4] Suet. *Nero* 16.1, 31.3; Tac. *Ann.* 15.42; cf. R. Meiggs (1973: 57, 63); Schmiedt (1970: *Tav.* 139, fig. 4); G. Lugli (1928: 45 ff.).
[5] Chevallier (1967: 228). There are problems of definition between 'escales' and 'ports', 'ports of call' and 'ports' proper, cf. J. Rougé (1978: 67–124); cf. J. Gilissen (1974: 195).
[6] Mocchegiani Carpano (1984: 40–1). For zoning of different cargoes, e.g. wine, see N. Purcell (1985: 1–19, especially p. 12 n. 53).
[7] *P. Oxy.* 1271, 3118; *CIL* 6.8582, 10.1271; cf. Strabo 2.101.
[8] R. Scranton *et al.* (1978: 13 ff. 'The harbourage' by J. W. Shaw), but I doubt whether ships were often moored with their sterns towards the quays.
[9] A. Tchernia *et al.* (1978: 19–26 and fig. 2). Cf. H. T. Wallinga (1964: 1).
[10] There is a debate whether the labour in the docks of Rome was slave or free. See L. Casson (1978: 43–51); P. Brunt (1980: 81 ff., especially p. 92). The difficulties in the late Empire in Antioch in winter of poor townsfolk who found summer employment in the port is not in doubt. See J. Chrysostom, *PG* Vol. 51, col. 261.
[11] *CIL* 14.4449, cf. *Cod. Theod.* 10.23 concerning a *classis Seleucena* used *ad auxilium purgandi Orontis* for Antioch.
[12] J. D'Arms (1977: 159–79, especially p. 167); cf. J. D'Arms (1981); P. Garnsey *et al.* (1983: introductory pp. ix–xxv by K. Hopkins); and K. Hopkins (1983*a*: especially pp. 86, 89 and 105).
[13] *Thesaurus Linguae Latinae*, s.v. 'portus'.

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