

## Overview of the arguments presented

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In this final contribution, we present a brief overview of the arguments presented in the foregoing chapters, to draw out some common themes and increase the volume's usefulness in stimulating future research and debate on the topics of ownership and exploitation of land and natural resources in the Roman world, and also to facilitate consultation of the book by specialists in other pre-modern societies who might like to use it for comparative purposes.

In the second chapter of the volume's preliminary section, as a prelude to the more detailed studies in the chapters that followed, **Paul Erdkamp** offered a wide-ranging and comparative-historical discussion of the ways in which the production factors land and labour might have interacted to produce *per capita* economic growth even under the conditions of slow yet sustained population increase that are usually postulated for the late Republic and early and high Empire. Erdkamp dismissed current pessimistic Malthusian scenarios espoused by e.g. Walter Scheidel and Bruce Frier in which, assuming the absence of widespread technological innovation in the Roman economy, population growth is viewed as inevitably undermining standards of living, making actual *per capita* growth impossible. According to Erdkamp, we should not so much focus on technological innovation, even though it undoubtedly had a part to play, but rather on agricultural underemployment (a typical phenomenon in pre-industrial economies, as comparative evidence shows) and market integration. In Erdkamp's view, increased market integration especially in and between the core areas of the empire made it possible to transfer agricultural labour surpluses to remunerative non-agrarian forms of production. This non-agrarian production took place either in the countryside, in rural households (subsidiary labour), or in the (expanding) cities. In addition, given the increased integration of rural and urban markets, farmers could opt for more labour-intensive but highly profitable forms of agriculture, raising cash crops for urban consumption. In this way, the Roman economy may well have been able to escape from the Malthusian low equilibrium trap and broad swathes of the population may have experienced above-subsistence living standards.

### Part I Ownership and Control

This first part of the volume focused on who enjoyed 'rights of exploitation' of natural resources and what these rights were based upon. A central issue here was whether, and how, legal security could be obtained by those exploiting natural resources, which would guarantee their continued 'right of exploitation' and the enjoyment of the fruits thereof.

Property rights – one of the key institutions of NIE – were an obvious focus in this part, but also political control of public land and the right to farm it in exchange for substantial or nominal fees. Two chapters focused explicitly on access to and control over water, that most precious of natural resources. There was also an explicit focus on the

development of structures of ownership and property rights over time, from the late Republic until (very) late Antiquity, and, in case of Marano's chapter, even post-Roman Italy, allowing the possibility of a long-term view.

Thus in his chapter, **Kyle Harper** targeted the rarely questioned view that the size of aristocratic property grew since the late Republic until everywhere in Late Antiquity the best agricultural lands were monopolized by only a few hundred families. This 'accumulation thesis' was propagated since the early nineteenth century, but relies on just 'a few dramatic literary sources'. It was developed before modern archaeology, epigraphy and papyrology showed that small and moderate sized landholding continued to thrive until Late Antiquity. Neither census requirements nor estimates of elite wealth imply elite properties as large as postulated by the accumulation thesis. Papyrological and epigraphic sources indicate that the typical size of medium to large scale holdings of local elites did not change much between Principate and Late Antiquity. Truly massive estates in the order of hundreds of thousands of *iugera* (one *iugerum* equals roughly a quarter of a hectare) did exist, but there is no indication that their number increased in Late Antiquity. According to Harper, land continued to be a production factor (like labour and capital) that constantly changed hands through markets; it did not become progressively locked inside a social and political power system. The Roman empire allowed imperial elites to build up properties that were orders of magnitude larger than in the Hellenistic period but this development had already reached its limits by the end of the Republic.

**Elio Lo Cascio** focused on the possessions of the one property-owner whose landed wealth *did* in fact by far outstrip that of any other economic actor in the Roman world, and increasingly so –the emperor. Yet he shares with Harper the conviction that we should analyze the distribution and exploitation of (in this case, imperial) landed property first and foremost in market-economic terms. The emperor, Lo Cascio argues, did in fact behave like any other owner of landed property in the Empire. As an absentee landlord, he either had his estates run by managers (*procuratores* and *actores*) belonging to his household (the *familia Caesaris*), or he leased his property in individual units to tenants (*conductores* or *coloni*). The exploitation of imperial estates, moreover, was clearly market-oriented. The emperor's personal *patrimonium* should not be equated with the patrimony of the state. The public sector, which remained separate from the private possessions of the emperor, consisted of property defined as belonging to 'the Roman people' (*populus*), who had their own treasury, administration, and landed property in the form of *ager publicus* in Italy and in the people's provinces. Given this situation, Lo Cascio argues, the existence of an imperial *patrimonium* cannot be used as an argument in favour of a model of the Roman economy that would make the state the dominant force in the imperial economy (as recently formulated by Peter Bang). Imperial property differed from other elite properties in terms of scale, and in terms of the ends some of its proceeds were made to serve, which were generally 'public', such as the grain distributions at Rome (although a comparison could here be made with the euergetism of senators, knights and *decuriones*). Also, they enabled the emperor to invest massively in certain types of economic activity, such as mining or

quarrying. Both such investments and the exploitation of imperial estates, which may well have operated fairly efficiently, are likely to have stimulated economic growth.

**Laurens Tacoma** studied the imperial *ousiai* – large estates in Egypt owned by the Julio-Claudian emperors or their close relatives and intimates. In contrast to Lo Cascio, he developed a primarily socio-political explanation of the role and function of these imperial properties. Under the Flavians, the *ousiai* were transformed into regular imperial property, attached not to the person of the emperor but to his office. Unlike the Ptolemaean *doreai* – gift-estates donated by the king to high ranking officials who held the estates in temporary possession – *ousiai* were held in full ownership. They circulated, however, in ‘a system of indirect redistribution’ linked to Roman testamentary customs and imperial *liberalitas*. The owners of imperial *ousiai* belonged to the circle of intimates who were expected to bequeath a substantial part of their wealth to the emperor, but who could also hope to receive bequests from the emperor himself. Other privately owned *ousiai* were acquired as imperial gifts. This redistributive system was distinctly Roman. It was not in itself limited to the emperor, nor was it a closed system. However, because of the hierarchic nature of the elite network around the emperor and the central position of the latter within it, the end result was that estates accumulated in the hands of the emperor. The case of the Egyptian *ousiai* shows that transfers of large landed properties were a frequent occurrence. Tacoma suggested that this stimulated land markets but also notes that the predominance of gift-giving in the redistributive system ‘vitiating the emergence of price-setting’ markets. The circulation of *ousiai* was part of the institutional set-up of the empire. Its rationale was not *economic* efficiency. Rather it provided an efficient way to build and maintain power networks that created ‘a power-set that was not wholly congruent with the traditional elite’. Because the system was based on Roman principles of property devolution, is likely that it functioned in a similar way outside of Egypt.

**Dennis Kehoe** pointed out that the growing levels of urbanization in the Roman economy imply that for a number of centuries, the Romans were able to increase agricultural surplus production. At the same time, they managed to stave off a Malthusian subsistence crisis. Kehoe argued that the legal framework contributed to making this possible because it allowed an efficient use of rural labour. According to Kehoe legal institutions effectively protected the interests not just of landowning elites but of also of small-scale farmers. Such small farmers provided the bulk of the empire's revenues. Hence the emperors took care to create and enforce laws that protected the interests of modest owner-cultivators and tenants on both imperial and private estates.

This was not always in the interests of large landowners. Their interests, however, were served by the legal framework's stress on private property. In addition, private estates were taxed very lightly, which created incentives for owners to invest in raising productivity (for instance by the installation of olive presses) and provided landowning elites with the chance to extract sizeable rents even from tenants working close to subsistence level. Huge tracts of land, however, remained in the ownership of the emperor or the state. These lands were mostly leased to small-scale farmers who paid substantial rents in kind. However, since

these rents were expressed as shares of the crop the risk of crop failures remained largely with the state/emperor. In addition, the tenants enjoyed security of tenure, which again created incentives for them to invest in (for instance) olive trees and vineyards.

The case of Egypt shows how the Roman system of self-governing cities run by landowning elites that bore most of the costs of government resulted in the growth of large privately owned estates. Yet at the same time small and medium-sized farms continued to thrive. The concentration of private property mainly occurred because of the abandonment of public and private lands as a result of the demographic contraction caused by the Antonine plague. At the same time elsewhere the extent (in Spain and Africa) of imperial land increased under the Severi.

Meanwhile until Late Antiquity Roman emperors continued to legislate and enforce laws destined to protect the interests of small farmers and tenants, who never ceased to be crucial to keep imperial revenues at a sufficient level. So, while Rome's legal regime concerning property rights had multiple economic effects that are hard to disentangle, it seems clear, according to Kehoe, that it 'nudged upward the share of wealth' controlled by the lower classes, while at the same time, it stimulated investments to raise productivity and to increase the amount of cash crops being cultivated.

Kehoe's arguments suggest that a thorough consideration of Roman legal notions of private property is crucial if we truly want to understand the rationale and socio-economic implications of Roman land and natural resource management. Modern conceptions of legal ownership as an absolute, exclusive and unlimited individual right were inspired by classical and Justinian Roman law. **Éva Jakab**, however, showed that this development of 19th century legal thought was rooted in Enlightenment philosophy. Although inspired by Roman law the modern legal concept of ownership was not a basic feature of Roman law. The Roman legal concept of ownership was the result of a long historical process. It was a 'legal institution in motion' that developed in response to social and economic changes. Legal ownership in its full sense was originally recognized only for lands of which the boundaries had been determined through sacred, state-sanctioned rituals. In historical times only land surveys and assignments (primarily through *centuriatio*) created private ownership rights, but a plethora of alternative usages by private persons was accepted. The Gracchan land laws and the *lex agraria* of 111 BCE are turning points because they 'privatized' these different forms of land usage, making full ownership rights applicable and enforceable by Roman law. These laws 'created a new legal environment for agrarian activities' and stimulated economic growth by establishing clear legal conditions.

Concurrently with this development of 'ownership', Roman law also developed the notion of *possessio* that protected and limited private rights on land that could not be brought under the ownership of the person who used or cultivated it. This concept came to play an important role in the Principate to protect the rights of those who appropriated wasteland for cultivation, in some cases even against its legal owners. Imperial intervention used *possessio* to define and protect property rights in areas of the empire suffering from

plagues or other crises. To obtain *possessio* it was sufficient that a person had cultivated a certain piece land undisturbed for a long period of time (*praescriptio longi temporis*).

The view of Roman ownership as absolute, unlimited and exclusive further ignores that in reality it consisted of bundles of specific property rights. These could be changed by private agreements or limited for the benefit of society or of other private persons. Servitudes (that is, rights, attached to a piece of land or a building, allowing persons other than the owner to make a certain use of the property in question) for instance could be attached to specific plots land and thus permanently change or limit the property rights of its owner. These limitations and changes need to be taken into account when considering the economic effects of Roman property law. Rather than treating Roman ownership as an abstract unchanging concept, Jakab argued, we should see it as ‘a dynamic category with changing legal contents according to changing social, political and economic environments.’

The issue of servitudes was taken up by **Christer Bruun**, in the first of two chapters on the ownership and control of water resources. Bruun showed how servitudes on water, whereby the owner of a landed property had the legal right to conduct water from, or across, land owned by another, differed fundamentally from communal water sharing arrangements sanctioned by tradition. Servitudes, he argued, presuppose strict private property; they regulate the right to enjoy private resources and reduce uncertainty regarding entitlements. Although servitudes are *stricto iure* part of Roman law and therefore applicable only in Italy, Bruun argued that the legal regime of servitudes spread through the provinces. This would imply that private property land regimes became more widespread too, which increased the potential for markets to develop. In Bruun’s view, however, servitudes on water were established not so much to generate short- or medium-term productivity increases. Rather, through safeguarding the value of properties by establishing clear and enduring legal rights, they served to support the long-term, intergenerational stability of patrimonial possessions.

Yet if a clear legal framework sanctioned by powerful authorities was needed to safeguard access and regulate ownership of natural resources, what happened when authority, and along with it, the legal framework it supported and the infrastructure it maintained, started to break down? As **Yuri A. Marano** argued, water-supply and drainage systems are crucial to the flourishing of urban centres. The demographic decline along with the decline of urban authorities in Late Antiquity caused serious problems for the water-supply and management system created centuries before. It required intervention from higher authorities. The Ostrogothic kings took this task to heart and were generally successful in restoring and ensuring public water-supply after a long period of disruption and neglect. Maintaining the water-supply system was an important aspect of their administration and propaganda. As a rule, the Kings intervened to finance large restoration and construction projects, but local authorities were made responsible for routine maintenance. Unlike other public slave staffs, the numbers of the *aquarii*, charged with the maintenance of aqueducts, were kept up. Private landowners bore the burden of cleaning and providing the raw materials for the upkeep of the public aqueducts that ran through

their lands. In return, they were exempt from other taxes and the provision of recruits for the army. Theoderic spread this burden more evenly over all the landowners around Ravenna. Private (mostly) illegal tapping was combated. The water supply of the great public *thermae* was maintained, although they had been in decline since the 5th century. Urban water-mills, fed by aqueducts, were maintained in function as well, since they were crucial for the *annona* and for private commercial milling. Bishops did not play an important role in the Ostrogothic secular administration. Only after the Ostrogothic defeat did the Church gradually take over responsibility for the water-supply system. Public baths fell into decay, but bishops tried to provide water for 'charitable' baths for the poor and sick, for flour-mills, and for public fountains and baptisteries.

### Part II Organisation and modes of exploitation

The chapters in this part of the volume dealt with the organization of natural resource-exploitation. Several chapters focused on the pivotal role of landed estates as units for the exploitation of natural resources, not just of land, which could be cultivated employing (combinations of) various different labour regimes, but also of e.g. sulphur deposits, clay-beds, and maritime resources. Another chapter focused on the exploitation of land and water resources in the decidedly un-Mediterranean environment of the Palmyrene oasis city, while the final chapter of this part is devoted to another crucial area of natural resource exploitation, animal husbandry.

Against the once prevalent view that the rise of the villa was based on the crisis of the Italian peasantry, **Alessandro Launaro** sees the emergence of market oriented landed estates as concomitant with a growing population. Landowners saw themselves confronted with a seasonally fluctuating demand for labour, while villa owners employing slave labour faced high costs in supervision. Peasant labour was seasonally integrated in the form of wage labour. Considerations of lowering management costs and a preference for stable rather than high profits favoured tenancy as a management system of elite rural properties. Hence, villas prospered against a background of a large free population. Landowners were not interested in maximizing the input of capital in their rural properties, as the ceiling of useful investment was soon reached. The need to pay rent either in cash or in kind stimulated the production of a marketable surplus. The increasing concentration of landownership (on which see however Kyle Harper's chapter in this volume) that is reflected in the growing number of villas not only caused the growth of aggregate agricultural production, but also supported *per capita* growth of production and consumption.

**Annalisa Marzano** investigated the variegated relationships between the non-agricultural and the more strictly agricultural activities on Roman estates. She emphasized that contemporary views on what constituted 'agriculture' were much broader than ours. The utilisation of uncultivable land often complemented that of cultivated land, as in the use of reeds in viticulture. Other activities on landed estates consisted of the exploitation of sulphur deposits, clay-beds, lime kilns, and potteries. Archaeological evidence for the scale of such enterprises regularly indicates a market-oriented strategy rather than fulfilment of

the estate's needs. High transportation costs induced land-owners to integrate the activities of exploitation and processing of their natural resources, as was the case with ore extraction on Elba. Marzano points out that maritime villas were generally more productive than literary sources suggest. In view of the huge demand for luxury food items such as oysters and tuna, Roman estate-owners made huge profits from maritime resources, the profitable exploitation of which included the acquisition of salt and amphorae and the distribution of the finished product. The unclear boundaries of exploitation rights caused authorities to intervene to balance the interests of various exploiters of maritime resources, in particular fishermen and estate-owners.

Stressing market incentives as well, **Matthew S. Hobson** explained the timing of the economic boom in Roman Africa by linking it to the social and political integration of the region in the Roman Empire. Roman North Africa saw an increase in exports in the second century CE, with levels remaining high in the Later Roman Empire. Most visible in the archaeological evidence are olive oil, wine, fish sauce and salted fish, next to coarse and fine ceramics, but also less visible goods like textiles were exported. Large olive press installations that were built in a single phase within one agricultural unit reflect the landowners' market orientation and intended scale of production. Roman elites obtained land and exploited large estates in the newly conquered region from the second century BCE onwards, a large part of which came into imperial ownership during the late first and second century CE. Epigraphic evidence indicates that the profitability of these estates was founded on the exploitation of the class of tenant farmers. Politically the region saw the integration of Roman citizens and local communities, the incorporation of local families in the highest imperial circles, and the heightening of the legal status of local cities. While the increased cohesion of African society forms the background of the economic upsurge, it was nevertheless based on economic exploitation and inequality.

Increased integration of regional economies into the mainstream of Roman economy and society, as reflected in processes of resource exploitation, is also the focus of the chapter on Palmyra by **Julia Hoffmann-Salz**. In ecological terms, the surroundings of the imperial oasis city of Palmyra differed greatly from the Mediterranean heartlands of the Roman empire, but the institutions that governed the exploitation of land and water resources in this environment resembled those of Greece and Rome. Nevertheless, as Hoffmann-Salz showed, these institutions developed from a highly different background. The population of Palmyra, which emerged as a city around 300 BCE, largely stemmed from Aramaic and Arab nomadic peoples, and aspects of nomadic culture and society and relations with pastoral tribes continued to be an important part of Palmyrene life. In view of the scarcity of land and water resources, control of these resources was largely in the hands of the tribes. Aramaic legal tradition on ownership and possession differed from the Roman one. However, over time, civic institutions replaced the older tribal traditions, and water and grazing rights became 'public' property, very much as in Roman law. Ownership became personal and hereditary, rather than communal and restricted. Hence, the growth of the population and the increased wealth stemming from the caravan trade allowed the

emergence of commercial agriculture and private investment in irrigation schemes that closely resembled agricultural investments in other parts of the Roman empire.

In his chapter on animal husbandry, **Michael MacKinnon** showed how both market opportunities and the seductive pull of 'Roman identity' governed the behaviour of producers and consumers in this crucial area of resource exploitation. The use of zooarchaeological evidence provides a much more detailed understanding of the changes in animal husbandry in Roman times than the literary sources by themselves can offer. On the basis of the zooarchaeological characteristics of the three main species of livestock – pigs, cattle, and sheep – MacKinnon investigates the modifications within these breeds and the changes in exploitation that these modifications indicate. While the strategies of farmers and herders to exploit the opportunities provided by the economic context of the Roman world are at the core of the issue, MacKinnon makes clear that a wide spectrum of variables underlie the modification of livestock. The empire's population not only grew in number, in particular in the cities, but also on average became more prosperous, providing an increased market for the products of animal farming, and hence a stimulus to invest in larger and healthier animals. The desire of many people to express their Roman identity led to the spread of a pork-rich diet, often at the cost of other forms of agriculture. The emergence of market-oriented farms allowed more capital- and labour-intensive kinds of farming, providing more fodder and thus larger and healthier animals. In short, demographic factors, cultural preferences, and economic institutions explain the growth of productivity in animal farming – in terms of meat, secondary products, or both – in Roman times, as well as their decline in Late Antiquity.

### Part III Exploitation and processing of natural resources

Natural resources are rarely 'ready at hand' or 'ready to use'. Their exploitation requires an amount of know-how. Various degrees of processing are required before they are suitable as raw materials or consumption goods. Ores have to be located and delved, their minerals extracted. Clay has to be filtered and prepared. Grapes need to be turned into wine, olives into olive oil, fish into *garum*, wood into charcoal, and so on. All this, of course, in turn requires a stable and sufficiently complex and sophisticated institutional and organisational context, without which the processing of natural resources cannot take place at all. The chapters in this third part of the volume focused on several natural resources crucial to the operation of the Roman economy, the processing of which was complex and costly and required the intervention of powerful economic and political actors.

**Isabella Tsigarida** discussed the role of the Roman government in the exploitation of salt in the province of Asia during the Late Republic. Salt was an essential nutrient, preservative, medicine and auxiliary agent in various industrial processes. Because of its importance, the access and management of salt works inevitably called for state intervention and regulation. The Roman state predominantly made use of lease-holders (*publicani*) to exploit or tax salt works in Asia Minor. In turn the *publicani* often sub-let parcels to subcontractors. Theoretically, profitable exploitation was stimulated because the



system allowed various agents to partake in the profits of the salt works. Unsurprisingly, however, disputes between local authorities, tax farmers and individuals concerning rights of ownership and taxation were common. The royal lands of the Attalids had been turned into *ager publicus*, but the boundaries with city or temple lands and the legal and fiscal status of the latter two were often unclear. It was the task of the provincial governor to mediate and to establish and protect the legal rights of all parties involved, but in practice many governors were easily corrupted. This was facilitated by the fact that there was no overarching policy to handle conflicts. Each case was considered separately and decisions were taken on an *ad hoc* basis. There was little incentive for the Roman state to intervene because under the lease-system the state received fixed amounts anyway. However, Rome was concerned to maintain political and economic stability. For this reason it did intervene relatively often to grant tax-exemption on lands whose legal status was unresolved. This favoured local authorities, but ate away at the profits of the *publicani* who resorted to illegal exactions and corruption to protect their private interests.

In his chapter on quarries, **Alfred M. Hirt** addressed the same theme of indirect exploitation of natural resources involving private entrepreneurs vs. direct state exploitation. Hirt showed how continuous production at the quarries required a change from indirect exploitation by private contractors (entrepreneurs) to direct state run production. The role of private enterprise was reduced. Hirt suggests that this was part of a more general policy in the administration of public or imperial natural resources. In some cases the policy was to improve contractual conditions for private contractors, in other cases, it consisted of a switch to direct state exploitation. In both cases we may surmise that building contractors in Rome, Italy and the provinces benefitted from a more regular and quicker supply of materials.

Continuing the theme of state intervention in the exploitation of natural resources, **Fernando López Sánchez** offered an intriguing long-term view of the fundamental relation between political institutions and gold mining operations. He argues that gold mining always required the presence of a strong state authority to provide protection and logistical expertise. This was true for all historical mining operations from the exploitation of the Spanish gold mines under Augustus down to the exploitation of the central European gold mines of the High Middle Ages. The presence of gold reserves as such was never an issue in the Mediterranean. Mines were not abandoned because they were exhausted but because political power centres shifted and changed. In Late Antiquity and in the Early Middle Ages the Byzantine empire was the only significant producer of gold in the Mediterranean region because it was the only political power capable of maintaining the logistics and protection required. It supplied nearly all the gold used for coining and other purposes by the Western Empire, the Successor Kingdoms and early Arabic empire. Gold may be an exceptional resource, but, as López Sánchez clearly demonstrates, the presence of a natural resource as such brings little benefit if the institutional apparatus required to exploit it is missing. As such, his argument offers a fitting conclusion to this volume, which has been particularly focused on the specific institutional contexts required for the successful management and

exploitation of land and natural resources in pre-modern (in this case, the Roman, Late Roman and immediately post-Roman) economies.