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Globalisation, Consumerism and the Ancient Roman Economy: A Preliminary Look at Bronze and Iron Production and Consumption

Melissa L. Ratliff

Introduction

It is tempting to apply modern concepts of globalisation to the ancient Roman economy. Spread of technology, targeted exploitation of resources, long range shipping, and a huge variety of consumer goods – these factors are indicative of globalisation in the modern world, but students of the Roman economy will undoubtedly see parallels from ancient times. Rothe (2006), however, suggests this is just the latest wave of research Zeitgeist. This paper will contribute to the ongoing assessment of the globalisation approach by examining the metal industry of the Roman Empire. Another modern concept, that of consumerism, is also worth considering for the Roman period, given the range of consumer choices available in the Roman markets. In order to assess the validity of globalisation theory for the Roman economy, this paper will focus on bronze and iron metal production across the Empire, albeit biased on the western half. Consumerism will be addressed by zooming in on bronze and iron consumption practices in Pompeii, using the household floor assemblages recorded by Allison (2004, 2006).

Why bronze and iron? To assess both globalisation and consumerism, production and consumption need to be studied in conjunction with each other. Consumption studies have gained in popularity in part because previous scholarship focused only on production. But now the pendulum has swung in the opposite direction and production is often ignored (Miller 2001). In reality both are creative processes which form poles of one's social existence (Buchli and Lucas 2001: 21). As Marx (2001) pointed out, production and consumption are actually inseparable, as neither can exist without the other. Our knowledge about the bronze and iron metal industry in the Roman period as well as preserved sites of consumption such as Pompeii allow us to address both of these aspects.

With metals, too, production in the Roman world has so far garnered more attention. Subsequent consumption studies of these materials, apart from artefact typologies, are lacking. As several scholars point out, there is a gap in our knowledge here which is worthy of pursuit. Jongman's (2007) recent contribution is a prime example – he calls for a study of the consumption of goods and services beyond what was needed for mere subsistence in order to observe whether standard of living improved for ordinary Romans. Particularly, he says we should focus on goods that could have been attained by the sub-elite. Yet he spends very little time on material culture – although he does briefly explore iron goods. Likewise, Greene's (2008) consumption article focuses on applied art, bead necklaces, pottery and lamps, yet calls for more studies to be carried out in order to determine whether Roman consumption practices can be labelled as 'consumerism'. Importantly, he later recognizes the potential for metalwork as a way to assess how surplus in production could be converted into non-essential goods.

Bronze (the more correct terminology now is copper alloy, but I have stuck with 'bronze' as that is how finds were labelled in Pompeii) and iron were the two most abundant metal alloys used in Roman times, with many consumer and capital goods produced from them (Healy 1978). Used in both domestic and industrial spheres, the consumer base for bronze and

iron goods would have been diverse. They were not just consumed by the elite and military minority, but also by the bulk of the Roman population. Already the work of Packer (1975: 141) suggests this to be the case. Looking at smaller residences in Pompeii and Herculaneum, he gives an example of shop 10 in the *Insula Orientalis* II in Herculaneum where the shopkeeper had a 'handsome bronze lamp stand'. This was found in the back room, an area reserved for living space, with a bed, table with a marble *herma*, and a matching weaving frame and stool. The implication is that this was a luxury purchase for someone living in the lower or middle class, and it was surprising to find such a product in the home of a mere shopkeeper. Of course, as Wallace-Hadrill (1990: 148) notes, luxury is a sliding concept. All objects produced of bronze and iron would have been more costly than the same objects made of less durable materials. Thus if someone living at or just above subsistence opted for a good made of bronze or iron, surely to them this was a non-essential purchase. A terracotta lamp or bowl would suffice. Metal ones, however, may well have had differing symbolic meanings for their owners. Overall, bronze and iron goods ran the gamut from luxury to mundane objects. Ray (2006: 36) demonstrates that the collected finds in the Pompeian houses show this, and thus far, as we shall see, the bronze and iron artefacts do as well; there are statues and jewellery as well as hinges and nails.

As the above paragraph hints, there are pertinent reasons to focus the consumption part of this paper on the finds from Pompeii (*contra* Greene 2008: 70). Its destruction was unique, and gives us an archaeological advantage. While the myth that Pompeii is a pristine 'time capsule', recording daily life as it was moments before the eruption, has been dispelled in recent years, the artefacts preserved are more than mere refuse (Cooley and Cooley 2004: 27–43; Allison 2004: 14–19, 2006: 14–15). Most of the goods that remain were not purposefully thrown away and were still in use at the time of the eruption. What remain for archaeological study are thus floor assemblages, compilations of activity over time – not 'fossilized representations of past activities' (LaMotta and Schiffer 1999: 21). Very few other sites can offer us the details of Roman consumption practices that we will see in Pompeii. This does not mean that Pompeii is unproblematic. Its long excavation history is complicated (*cf.* Cooley 2003; Foss 2007; Laidlaw 2007), and earlier excavators were not as concerned with the same questions we are today, resulting in useful finds being discarded or not recorded. Luckily, metal artefacts have always been seen as worthy of collection. However, we must not be naïve in assuming that all bronze and iron objects were kept. Many shapeless lumps of corroded metal and slag were surely tossed, especially if no form or function could be easily determined. Additionally there was a bias in investigating the grand properties over the humbler, smaller ones.

Even though Pompeii's excavation history is complex, the town has become a staple in modern discourse dealing with the Roman economy (*e.g.* Jongman 1988: 55–57; Laurence 2007: 9–10, 62–81 for an extensive review of Pompeii and the consumer/producer city models). Pompeii was destroyed at a time when the Empire was thought to have been at its most prosperous. Conditions in the late Republic and early imperial period were ripe for economic growth, though there are disagreements over whether, and if so, to what extent this was accomplished (for recent views see contributions in Scheidel *et al*. 2007: 511–647). Thus choosing Pompeii gives the opportunity to see in greater detail the consumption patterns of a diverse group of people at this crucial period in the Roman economy. Harris (2007: 532, n.128) even goes so far as to say that Pompeii is one of the most interesting sites for this time period in looking at aggregate demand for metals, as studies so far have failed to reach their full potential in this regard.

Globalisation Theory

The concept of globalisation is not an unproblematic one, even when used to describe current world connectivity and cultural change. Many different disciplines use the term globalisation yet no one really agrees on an exact definition. As a result, 'globalisation' has been used to describe a process, a condition, a system, a force and an age by both academics and popular culture alike. Steger (2009: 15), after comparing multiple definitions, settles on the following: '[G]lobali[s]ation refers to the expansion and intensification of social relations and consciousness across world-time and world-space'. Obvious contention surrounds the 'world-time and world-space' wording for use in the ancient world, as Greene (2008: 79–80) highlights by saying we have to take the 'globe' part of globalisation literally. The Roman Empire was not global, *i.e.* did not connect all of planet Earth. Of course we must remember that the world as the Romans knew it was very different from the world as we know it today. For that time, the Romans' world was connected through road and trade networks, and through extensive written communication – points Steger himself uses to defend the application of globalisation theory to ancient times.

Greene, however, is not the only sceptic. There are differing views as to how far back in time the term can be applied. Is 'globalisation' a purely modern phenomenon? Or should it extend to the invention of the wheel and domestication of animals, as all future technologies and advances were built on these first steps (Steger 2009: 8, 17–19)? Some clearly side with the former, while others are willing to push the start back to the nineteenth or even sixteenth century, and others still go back to modern man's early beginnings. Applying theories of globalisation to the Roman world is therefore not the most controversial use of these ideas – several scholars have recently weighed the merits of this approach (Witcher 2000; Hingley 2003, 2005; Morley 2007: 90–102; Greene 2008; Pitts 2008), and justifiably so. The Roman economy was very advanced for a pre-industrial society. Roads and long distance sea and river transport enabled regions far away from Rome to share in Roman material culture. Stamped pottery allows us to trace distribution patterns and demonstrate that individual workshops' goods were consumed across the Empire. And wine and olive oil were two popular commodities that were produced in large quantities in the provinces and then sold in Rome and further abroad. As these examples suggest, this paper will be largely focused on economic ideas about globalisation and consumption patterns, though this is not meant to deny the scope of other important political, cultural and ideological aspects of globalisation theory.

Globalisation theory does not assume blanket uniformity. Regional differences exist today just as they did in ancient times. The term 'glocalisation' is employed to explain the process by which local communities respond differently to globalisation. It redirects the theories of acceptance and resistance inherent to 'romanisation' to something a bit more palatable (Pitts 2008: 494, 504). It is equally viable and valuable to study areas of glocalisation as it is to highlight ways in which the Empire was seemingly the same. We shall see that even in metal production regional differences occurred. However, this is not the main focus of the paper.

Before we switch to the case studies at hand, a word or two of caution. We cannot simply replace 'romanisation' or any other '–isation' words with globalisation. This just turns into a battle of semantics and does not address any of the problems seen in earlier theories. Plus, as we have just seen, globalisation comes with its own baggage as well. Not to mention the fact that globalisation is not appropriate to use in all cases. As Andrew Gardner discussed in his paper 'Challenges of scale in understanding Roman imperialism' presented at RAC 2010, there are limits to globalisation. The role of violence, for example, is often ignored. Wars were

fought to gain new territory, and revolts by locals within and outside of Roman territories were common. For example, a military presence in northern Spain and Wales continued after their conquests, partly to ensure the safe operations of valuable mining and smelting sites in those regions (Greene 1992: 104). Aside from this, globalisation theory is also muddled in the way it is employed. Is the Roman Empire part of a process or being used as a comparandum? And is this approach descriptive or analytical? Of course different research agendas will stress different things, as is also apparent in this article, where the economic connectivity implied by globalisation is of paramount interest.

Production

There are several stages in the actual production of bronze and iron goods. Here we will focus on the sourcing of raw materials as well as the spread of technology. Both of these underline the connectivity of Roman markets. All aspects of connectivity are emphasized through a globalisation framework (Pitts 2008: 504).

The heyday for Roman mining was during the late Republic and early Empire, coinciding with the time when Rome was expanding its influence and borders. This should not come as a surprise; metals (not just copper, tin and iron, but gold and silver as well) were needed to support the spread of urbanization as well as increased state expenditures – the military and the largesse of the emperor. Although Italy was rich in iron, it lacked large deposits of the other important metals needed by the Roman state, members of the elite and everyday citizens (Healy 1978: 86; Woods 1987: 611; Edmondson 1989: 84). Thus while demand was high, there needed to be an increase in supply as well – particularly during the peace the Empire brought, as less booty came in from the spoils of war. It was not by accident that the expansion of the Roman Empire led to the acquisition of excellent mining territories, Spain and the British Isles being just two examples. Mining activities switched to the provinces, and as reported by Pliny (*HN* 33,78) there was even a senatorial decree passed during the time of Sulla that forbade mining in Italy. Whether or not people followed this law is another matter. Penhallurick (1986: 82) believes the law had a dual purpose: to encourage agricultural production within Italy, while at the same time persuading Roman miners to relocate to the more mineral rich provinces. If this was the case, it seems to have worked, as Edmondson (1989: 84) notes:

> 'Romans, and especially Italians, were not slow to become involved in mining overseas, while the state came to gain considerable revenue from the leasing of contracts for the right to exploit state-owned mineral resources'.

Of course not all the provinces were rich in exploitable metals, particularly those needed for bronze and iron artefacts. Bronze is an alloy of copper and tin. The most economically important known copper fields in the late Republic and early Empire were in southern Spain, Sardinia, Cyprus, central Europe and Britain (Healy 1978: 58–59; Hong, Candelone, Patterson *et al.* 1996: 247; Hong, Candelone, Soutif *et al.* 1996: 185). For the later Empire, areas in the East became more prominent, including renewed interest in the Egyptian mines at Timna (modern day Israel) and in the Faynan area in Jordan. As for tin, again the Iberian Massif in modern day Spain and Portugal played a dominant role. This area had a stranglehold on tin production in the Mediterranean from the first century B.C. until the second century A.D. Another key producer was Cornwall in Britain, which was an exporter as early as 500 B.C. Its

supply spread to more of the Empire as production increased around A.D. 250 with the decline of the Spanish mines (Penhallurick 1986: 95–104, 148; Merideth 1998; Rovira and Montero 2003). This goes to show that to make bronze, materials had to be collected from mineralized zones, some of which were a considerable distance away both from each other and from Italy.

Morley (2007: 96) states in his chapter on the limits of ancient globalisation that iron was one of three basic goods produced from the land that ancient society would have truly ceased to function without (comparable to oil in modern times). He goes on to say that this is a fairly evenly distributed natural resource across the globe and thus the connectivity of the Roman Empire did not truly matter. I would beg to differ on this account for a few reasons. Yes, iron is an extremely common mineral in the earth's crust – only silicon and aluminium are more prevalent – but some deposits, like the copper and tin discussed above, were clearly more important for exploitation than others. Pleiner (2000: 42) mapped the larger centres, which were focused in Roman Gaul, Britain and Noricum (*cf.* Healy 1978: 63–65 for a more exhaustive list). We know Italy was rich in iron, and that perhaps local production continued here even after the senatorial decree forbidding mining. Elba in particular continued to produce iron. Yet for its large-scale iron production needs, Rome tended to look beyond Italy to the provinces, from the first century B.C. until the third century A.D. (Pleiner 2000: 271). Even areas outside the borders of the Empire, such as in the Holy Cross Mountains in Poland, produced enough for export, with goods intended for Roman markets (Bielenin 1986: 86; Müller-Wille 1999: 210). Local production was clearly not always an option, or the best one. Plus, shipwreck evidence as well as written sources demonstrate that raw iron blooms and billets were transported around the Empire. Diodorus Siculus (5.13.1–2) explains the production process on Elba where the raw iron ore was collected and smelted. The blooms were then shipped to Pozzuoli in the Bay of Naples (although we know Populonia was also a key receiver) where they were worked further and then traded to 'every region and thus many parts of the inhabited world have a share in the usefulness which accrues from them'. Connectivity did matter.

We can see in practice how these materials were brought in to a city like Pompeii, our case study for consumption. Wagner (2000) carried out a study on the provenance of the copper used in 132 bronze kitchenware vessels from the city. Using lead isotope and trace element analysis on both the artefacts and sample ores from selected areas, he was able to show where most of these vessels' copper ores originated. Table 1 demonstrates that for the vast majority, the answer lay in southern Spain or south and central deposits in Sardinia. Since the mining region in Spain is so well attested, he believed most of these came from Spain, and not Sardinia, even though the close proximity of Sardinia to Pompeii might have made it a more appealing choice since the price of shipping would have been a factor. Additionally, some ores were clearly originating from Cyprus. The trends found here in Pompeii compare nicely with studies done on early Imperial copper coinage (Klein *et al.* 2004). While it has been shown that it is possible (though more difficult) to carry out similar analysis on iron goods (Degryse *et al.* 2007; Blakelock *et al.* 2009), to my knowledge this has not yet been done for any iron finds from Pompeii.

Table 1: Source of the copper ores for 132 Roman bronze 'kitchenware' vessels from Pompeii (after Wagner 2000).

Ore Source	*Tin Bronzes (88 % of sample)*	*Leaded Tin Bronzes (12% of sample)*
Southern Spain	40 %	
Sardinia	10 %	
Southern Spain *or* South and Central Sardinia	22%	100%
Cyprus	12%	Ruled Out
Mixed Ores? (did not match any known sources)	16%	

The distribution of metal resources and Wagner's study show that the markets were connected for the metal supply, a key component for globalisation. Some may argue the distribution of resources merely demonstrates a redistribution of goods. The Roman state did in fact employ such methods to help feed the populace in Rome (Kehoe 2007: 549). With metal goods destined for the army, this may be true as well. Often the army was involved directly with production or overseeing stability in the area. However, the state tended to lease large mines to private individuals and partnerships (often payment was a portion of the ore produced), and smaller workings were privately owned (Greene 1992: 193; Kehoe 2007: 567–568). We can clearly see that metal goods found their way into the hands of vast numbers to everyday citizens of the Empire – a provision the state did not oversee. These goods were not just reserved for local markets. Some finished products were being traded across the Empire with remarkable uniformity seen in metal selection and composition as well as style. This is clearly demonstrated with the Aucissa type brooch, which is almost always pure brass. Aucissa brooches found in Britain are near identical in composition to others found in Masada (Israel) which suggests 'an Empire-wide distribution from a single or limited number of sources' (Bayley 1998: 15). Shared material culture went far beyond the *terra sigillata* examples which are often cited.

Another component to consider when dealing with production and globalisation is the spread of technology. White (1984: 14–15) points out that technological advances are erroneously interpreted just on the basis of inventions (*cf.* Greene 1992, 2000). Technological transfer and innovation are equally important. While the Romans did not invent bronze or iron production, they facilitated the spread of the more economically efficient slag-tapping furnaces (Craddock 1995: 245–246; Rovira *et al*. 2004; Schrüfer-Kolb 2004: 24–30, Paynter 2007). Håland (2004: 14–15) notes that slag pit furnaces could only be used once, whereas the slag-tapping variety could be used multiple times 'thus economizing on fuels and raising the total output', in addition to saving on materials and manual labour. Experiments by Crew (1991: 35) show that slag-tapping furnaces also produced larger blooms. Surprisingly, the slag-tapping furnace did not completely replace the slag pit furnace during Roman times. Within the East Midlands' Jurassic Ridge in Britain, for example, sites such as Laxton and Wakerley employed both kinds of furnaces (Schrüfer-Kolb 2004: 24–30, 51–54). Rural areas were less likely to change, and Alexander (1983) suggests ritual behaviour would have played a role in the dissemination of technology (a point ignored in Greene 1992). Other religious, political and cultural considerations could explain this as well, which all fits nicely with the concept of glocalisation discussed above. Perhaps keeping their tried and true methods alongside the more

efficient Roman furnaces allowed them to be connected to the markets while holding on to important aspects of their lives from before their immersion in Roman material culture.

Corresponding to the spread of technology, the Romans were able to exploit more ores on a larger scale than their predecessors, particularly the harder to smelt sulphides. This in part had to do with their ability to mine below the water table with the use of impressive water lifting devices (Wilson 2002: 20–21). Together, these two things led to an industrial-level output of metals at many of these mining districts, which had huge economic implications. Presumably metal objects could be manufactured more cheaply than before, something that definitely happened with the spread of brass, another copper alloy which was too costly to produce before the invention of the cementation process in the first century B.C. (Craddock 1978: 8). Again the Romans did not invent the procedure, but they did spread the technology across their known world. Britain, for example, has no evidence of brass production before the Roman conquest (Bayley 1998: 10–11). All of this heightened production resulted in an equally staggering scope for the Roman public to consume massive amounts of metals across socio-economic classes. Did this lead, as Greene (2008) suggests, to what can be termed 'consumerism'?

Consumption and Consumerism

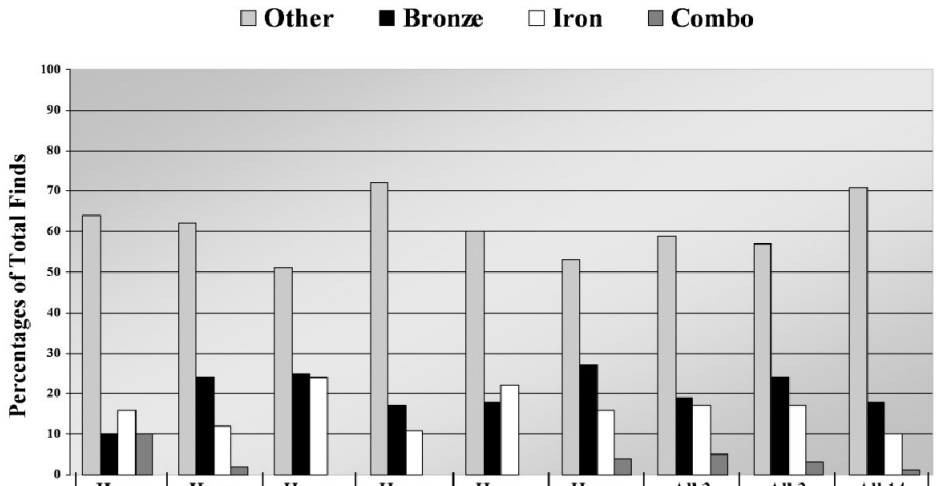
With modern notions of globalisation come discussions of the vast array of consumable goods. As Greene (2008: 66) states, there is a difference between consumption, often need based, and consumerism, which is larger in scale and driven by wants and desires. Consumerism has a stronger cultural component – we want what our friends, neighbours and social superiors have. Like globalisation, consumerism is often used in a modern context (eighteenth century onward), and its definition is complex. In addition to what Greene notes, Majewski and Schiffer (2001: 27) state '[C]onsumerism is the complex of technologies, organizations, and ideologies that facilitate the mass production, mass distribution, and mass consumption of goods'. We have seen that bronze and iron were definitely mass produced and distributed, and now we shall look in more detail at their consumption in Pompeii. Archaeologists normally assess consumption practices through adoption studies – meaning once the product has been purchased. The household is the typical unit of analysis where socio-demographic information can be inferred as well. Majewski and Schiffer (2001: 34) consider ceramics to be 'a mirror of consumerism', and given the levels of metal artefacts found in Roman contexts, these artefacts should work in the same way. The Pompeian evidence, as previously addressed, is well-suited to such analysis. Thus we can see how consumption practices differed among the socio-economic classes and move toward determining if Roman consumption truly reached 'consumerism' status.

Allison's (2004) *Pompeian Households* study focuses on just *atrium* style houses which were the cream of the crop in terms of socio-economic status. For this paper only the fourteen most recently excavated properties (Allison's *PH* House IDs 1–14) were included in an attempt to control for excavation bias. The largest house, the *Casa del Menandro* has a ground-floor area of 1,830 m^2. All the other properties fall between 200–650 m^2, but even these figures are high compared to the sample of 234 houses from Pompeii and Herculaneum examined by Wallace-Hadrill (1990, 1994). He finds that the vast majority of properties were between 0–100 m^2. Clearly the *Pompeian Households* work is not representative of the property sizes available in Pompeii. With this in mind it seems hard to imagine how Ray (2006: 31), using

only the *Pompeian Households* dataset plans to address two of his three main aims: '[D]id the rich have more, or did they also have different? Within any patterns that emerge, are there levels of consumption represented by subsets of the population?' Of course it is extremely difficult to see lower levels of society in the archaeological record, but it seems reasonable to assume those living in the 0–100 m^2 houses and shops were a lot less well-off than those in properties two or more times their size (slaves excluded of course). Expanding the dataset of smaller residences will allow questions such as those posed by Ray to be better addressed. Further data collection is needed to completely meet these aims, but including properties from Allison's (2006) work on the *Insula of Menander* moves us in the right direction. Here, the smallest three dwellings are analysed – House I 10,1 (80 m^2), House I 10,2–3 (85 m^2) and House I 10,18 (125 m^2). It should be noted that there is an overlap in large houses between the two studies (Allison's *PH* House IDs 9–12). When this occurred, figures were taken from the *Insula of Menander* catalogue as it was more detailed and complete.

Analysis on houses from Allison's (2004, 2006) two datasets has so far produced interesting results. Together there are 2,262 'bronze' artefacts and 1,249 iron ones, with 196 that are combinations of bronze and iron or one of these metals and another material. These come from seventeen houses. One might have expected to see more iron artefacts than bronze. Clearly this is not the case. In fact, bronze finds were more numerous in almost all properties. This is somewhat surprising, especially if the major iron smithing sites in the Bay of Naples, as discussed by Diodorus Siculus in the first century B.C., were still operational at this time. Iron was presumably cheaper than bronze, and the extent to which Romans used iron has repeatedly been emphasized. Greene (2000: 55) even goes so far as to suggest that the greatest technological achievement of the Romans (Greek world included) was the 'maturing of the European iron age, when the use of iron first proliferated into all spheres of use'. But the numbers here suggest bronze consumption was just as important (in Pompeii, at least), if not more so, although this did depend on the type of artefact, as we shall see below (Tables 2 and 3).

Astonishing as it may seem, at this point there do not appear to be major differences between the socio-economic classes as illustrated in Fig. 1. If we examine the data from the three smallest houses and the three largest houses we see that the percentages of finds that are bronze, iron or a combination material containing one or both metals did differ from house to house. This, however, was not dictated by size. House I 10,18, which had a ground-floor area of only 125 m^2, had a greater proportion of metal finds than the *Casa dell'Efebo* (House I 8,10–12) which was 650 m^2. The choice to represent the finds in terms of percentages was a conscious decision. One would expect the larger houses to have more. They certainly did, as the data series in Fig. 1 details. Instead it is noteworthy to see if their spending habits, *i.e.* the proportion of goods consumed of bronze and iron, differed among the classes. So far this does not appear to be the case. Looking at data for the three smallest houses combined compared to the combined data for the three largest houses, any observable differences between individual houses disappear, and we are faced with an even more striking similarity between the small and large houses. Both have 17% of their finds made out of iron and only a 5% difference in bronze consumption.



Total No. of Finds	House I 10,1	House I 10,2-3	House I 10,18	House I 6,11 *Casa dei Quadretti Teatrali*	House I 8,10-12 *Casa dell'Efebo*	House I 10,4 *Casa del Menandro*	All 3 Small Houses	All 3 Large Houses	All 14 Atrium Houses
Other	69	55	36	142	493	1312	160	1947	8697
Bronze	11	21	18	33	151	648	50	832	2212
Iron	17	11	17	22	184	378	45	584	1204
Combo	11	2	0	0	0	93	13	93	183

Figure 1: Percentages of finds for the three smallest, three largest and combined properties from the current dataset with attached total number of finds for each (after Allison 2004, 2006).

When more data can be combined extreme examples should disappear, allowing for a more accurate picture of consumption patterns to be detected. This can be seen in the final set of bars in Fig. 1 where all fourteen *atrium* style houses have been combined. From this, a different pattern emerges. Here bronze finds make up only 18% of the overall artefacts, which is slightly less than the 19% seen in the combined three smallest houses. Iron too decreases by 7%. This decrease was expected; previously the *Casa del Menandro* (House I 10,4) skewed the results as the data series shows – it had far greater numbers of artefacts in all categories than any of the other examined properties. Additionally, one would expect the larger houses to contain a greater variety of goods in the 'other' category, which will also decrease the proportion of metal goods when averaged out. As of now, the sample size for smaller properties is insufficient. It will be interesting to see what pattern they will yield once data on even smaller properties can be included.

What is clear, however, is that a vast range of goods are represented in these houses. Just showing that the properties had bronze and iron goods is not as important as discussing what kinds of goods were present. Were they primarily fittings for furniture, or did more opulent pieces such as the bronze lamp stand discussed previously regularly make their way into the hands of the less well to do? Table 2 details the breakdown of iron goods in the same six houses discussed in Fig. 1. The categories have been developed by combining ones already

employed by Allison in her two studies. Future analysis will refine these even further. Currently we do see a difference between the small and the large houses when it comes to iron. Owners of the smaller properties only possessed iron fittings and tools, implements and utensils. Perhaps this is not surprising given the mechanical properties of iron and the types of goods that are best produced from it. The larger houses had a greater variety of iron goods, spread over all seven categories, although again each house varied. *Casa dei Quadretti Teatrali* (House I 6,11) for example, looks more like the smaller houses in its diversity, as it only had one more category containing ten pieces that were of indiscernible function, and thus labelled miscellaneous. Even in these larger houses, the vast majority of their iron goods fell into the fittings and tools, implements and utensils categories, suggesting that perhaps the consumption practices in large and small houses were not as different as they appear on initial examination.

Table 2: Iron finds in the three smallest and three largest properties broken down by artefact categories (after Allison 2004, 2006).

House	*Adornment, Dress and Weaponry*	*Fittings*	*Furniture Pieces*	*Misc. Objects*	*Tools, Implements and Utensils*	*Vessels*	*Weights*
I 10,1		14			3		
I 10,2–3		11					
I 10,18		13			4		
I 6,11		30		10	14		
I 8,10–12	1	105	27	15	35	1	
I 10,4	2	279	6		95		2

Table 3 gives the same information for the bronze finds. One will quickly see that there are ten artefact categories here. This increase is to be expected. There were no Roman iron coins, and sculptures, due to bronze's superior casting ability, were more likely to be made out of bronze. Other differences could be due to sampling bias. Roman iron lamps are known for example, just not from these six houses. Again we see that the smaller properties have a less diverse spread of bronze artefacts than their larger counterparts. However, while none of the smaller houses exceeds five categories, overall eight of the ten categories are represented. Owners were selective in their luxury consumption. Some opted for personal adornments and others for more opulent vessels; in House I 10,2–3 they had both. Bronze furniture pieces and lighting equipment are absent from all three. Two of the larger properties have all ten, and the other has eight. The fittings category still has the most finds for all properties, but now vessels have overtaken the tools, implements and utensils category in most cases. Having the hinges or locks of a chest made out of bronze rather than iron, bone or wood, might have been all the embellishment needed to give the appearance of luxury.

Table 3: Bronze finds in the three smallest and three largest properties broken down by artefact categories (after Allison 2004, 2006).

House	*Adornment, Dress and Weaponry*	*Fittings*	*Furniture Pieces*	*Misc. Objects*	*Tools, Implements and Utensils*	*Vessels*	*Weights*	*Coins*	*Lighting*	*Sculptural Artefacts*
I 10,1		15		1	2		1	3		
I 10,2–3	2	11			2	2		6		
I 10,18	2	12						3		1
I 6,11	3	163		4	18	25		20	6	2
I 8,10–12	2	67	16	13	7	21	3	8	2	12
I 10,4	24	517	4	16	5	71	2	90	8	3

To date, analysis has been carried out purely by count. How do we justify equating an iron axe to an iron nail or a bronze statuette to a bronze needle? The amount of material and skill level needed to produce these objects varied significantly, and presumably so did the price. Thus even if the percentages or numbers of goods are similar, the value of the actual goods probably varies to a much higher degree. Unfortunately, the weights of these artefacts were not recorded (though some measurements are). To overcome this difficultly in future a ranking system will be employed. Artefacts that were simple to make with smaller amounts of metal will be given a lower value than more complex items (on a scale of one to ten). I have held off on this level of analysis for the time being, as I would like first to collect more data from smaller properties to see all the kinds of artefacts represented. As the title of this paper suggests, this is just a preliminary look at the data, with more yet to come. However, at this point I can already say that the smaller properties were not just filled with nails and small fittings. House I 10,1, for example, had (among other metal goods) an iron knife, and a bronze mirror, a strigil, forceps and a balance rod. Likewise, House I 10,18 contained several larger iron tools – an axe, an adze-hammer, and two hoes, as well as bronze buckles for personal adornment.

Together these bronze and iron artefacts show us that the owners of these properties were not just buying what was needed for survival. A variety of metal goods were purchased when a cheaper alternative clearly existed. Ceramic serving dishes worked just as well as bronze ones. Economic concerns were not the only factor driving Pompeians' consumption. Social and cultural concerns played a role too, leading to something resembling a more consumerist approach. While not on the scale of modern consumerism it would appear to me that here Romans were consuming non-essential goods which were produced from a surplus in metal production. Again, this is an example Greene (2008: 69) uses to identify the existence of consumerism in the ancient world.

Conclusions

Taking this all in, we can return to the question of whether metal production and consumption patterns reinforce or discourage us from using a globalisation and/or consumerism framework

for approaching the Roman economy. In my mind this breaks down into two questions: are these ideas applicable and is there anything to gain by applying them?

We have seen there are aspects of globalisation that clearly work for metal production and consumption. The market for raw goods for the production of bronze and iron was clearly connected across the Empire. Production areas rose and fell in prominence at different times, and well-travelled trade routes were employed to distribute the materials produced. The spread of technology bolstered the ability of different areas to mass produce, but at the same time some local traditions and technologies persisted. This all led to the mass production of metals, especially during the first two centuries A.D., 'on a scale unparalleled again until the nineteenth century' (Wilson 2002: 26–27). Like pottery examples, metal goods of the same style from the same source material were traded in different areas of the Empire. These things existed whether we call it globalisation or not. But by bringing in globalisation theory we bring the scale and advances in the Roman economy to the attention of scholars who otherwise might have no interest. The Romans were accomplishing things that in my opinion were more modern than not, and deserve to be addressed as such. And using globalisation as a framework focuses our attention on aspects of production and consumption that are not usually brought together. In addition, it moves us away from the well-worn consumer/producer city debate.

As for consumerism, it has forced us to look seriously at the consumption practices for all levels of Roman society, and recognize the array of goods available on the market. I already stated that the very poor are hard to see archaeologically, mainly because they leave behind little material culture. The households examined from Pompeii, particularly the smaller residences, are instead probably showing us a so-called 'middle class'. They were living above subsistence, but below the extremely wealthy (such as the inhabitants of the *Casa del Menandro*). The purchasing power of the middle class of 'non-utilitarian goods and services' is an extremely important component of consumerism (Majewski and Schiffer 2001: 31). In modern times even the poor sometimes spend money on status symbols like flat screen TVs and iPods, when money would be better spent on food, clothing, shelter and healthcare. We may never know to what extent metal goods were making their way to the poorest levels of Roman society. But at Pompeii at least, we can see that those in the middle were buying goods similar to their wealthy counterparts, even if the rich had more, and vastly more in some instances. The mass production of bronze and iron led to many objects being made out of these metals even when functionally unnecessary. This sort of ancient consumerism allowed people from different socio-economic backgrounds to acquire goods that we may have traditionally thought to be out of their reach – goods which were unnecessary for survival and thus purchased solely based on the wants and desires of the buyer. Even if people are uneasy with using the term 'consumerist economy' in connection with the Romans, surely we can agree that it was well on its way to becoming just this. This work is just one piece of the puzzle, but as further similar studies are completed they can be synthesized to develop a more complete story of how consumption trends developed over time. This may well cement the Roman economy's place as a forerunner of our own modern economy.

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