At the Edge of Empire: Iron Age and early Roman metalwork in the East Midlands

Thesis submitted for the degree of Doctor of Philosophy

By

Julia Farley

School of Archaeology and Ancient History,

University of Leicester

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Abstract

Title: **At the Edge of Empire:**
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Author: **Julia Farley**

This thesis explores the encounter between East Midlands Iron Age communities and the Roman world from 150 BC to AD 150, through the study of coins and other small portable metalwork (brooches, miniatures, toiletry items, and horse-gear). It combines scientific analysis with an investigation of production evidence, hoarding patterns and the spatial distribution of artefacts to investigate the flows of knowledge and materials through social networks. A broader framework for interpretation is provided by comparison with early colonial North America (AD 1580–1775). The results illuminate the construction of new colonial identities through the interaction of Iron Age and Roman systems of value.

Before 50 BC, British communities were enmeshed in Gallic prestige exchange networks. Gallic gold provided the raw materials for the first insular coin series: all were yellow-gold coins of a standard weight, suggesting a broadly shared discourse on the nature of coinage. After the Roman conquest of Gaul and Caesar's expeditions to Britain, there was massive upheaval in insular coin production. The new red-gold and silver issues were most likely underwritten by gifts of Roman bullion to southern British client rulers. This study demonstrates that the circulation of bullion extended well beyond the client kingdoms, with communities in the East Midlands also using bullion to produce local coinage. The possible emergence of a prestige exchange system based on the circulation of precious-metal bullion, and the development of distinct regional coinage systems, are interpreted as reflecting creative local engagement with the Roman world. Through this interaction, communities in Iron Age Britain contributed to the mutual creation of new colonial systems of value. This thesis investigates the effects of these conquest-period changes on regional power relationships and networks of metalwork production and consumption, viewing coins as just one aspect of wider patterns of exchange and social interaction.

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Introduction

This thesis explores the encounter between East Midlands Iron Age communities and the Roman world, 150 BC–AD 150, through the study of coins and other small portable metalwork (brooches, miniatures, toiletry items & horse-gear). These objects played a key role in mediating the incorporation of British groups into the Empire. Provincial identities were created through the mutual transformation of indigenous and Roman systems of value and exchange, evidenced in the production and distribution of these objects. Iron Age societies did not just selectively adopt aspects of Roman culture, but actively created and negotiated unique identities by creatively blending aspects of local and Roman society, seen in the development of British Iron Age coinage, and subsequently the adoption of Roman coinage.

The East Midlands (Figure 1) lay at the very edge of the Roman Empire, between southern client kingdoms with close ties to Rome, and northern territories which were drawn into the Roman orbit only later (although evidence from Stanwick in North Yorkshire suggests that some northern communities had earlier contact). The hoards uncovered at Hallaton in East Leicestershire (Score 2012) reveal the incorporation of non-local material (e.g. Roman coinage and a silver-gilded Roman cavalry helmet) into depositional practices alongside local objects. The early date of this spectacular site, and the large quantities of local and Roman silver artefacts, have challenged conventional assumptions about the place of the East Midlands in wider social networks. Nevertheless, the area remains peripheral in accounts of Roman relations with pre-conquest and early Roman Britain (e.g. Creighton 2006a; Mattingly 2006). The Hallaton material, alongside abundant new data from the Portable Antiquities Scheme (PAS) and developer-funded excavations, has created the perfect opportunity to reassess the relationship between local communities and the Roman world. The tensions and transformations which played out here are vital to understanding complex and diverse indigenous responses to Roman colonialism.

My research innovatively combines three forms of evidence: scientific analysis, the first comprehensive regional catalogue of portable metalwork, and comparison with historical colonial encounters. Drawing these strands together deepens our understanding of creative responses to colonialism, at the very edge of empire.

Figure 1: The study area (incorporating Leicestershire, Lincolnshire, North East Lincolnshire, North Lincolnshire, Northamptonshire, Nottinghamshire, Rutland, Leicester, Nottingham, and Peterborough)

- **The programme of chemical analysis:**

The analysis (presented in chapter two) focuses on silver objects from Hallaton. This project brings together analytical techniques never previously combined in looking at Iron Age coinage, including Inductively coupled plasma-optical emission spectroscopy (ICP-OES), Wavelength-dispersive X-ray fluorescence (WDXRF), Scanning electron microscopy in combination with diffraction analysis (SEM/EDS), and Neutron diffraction analysis (NDA) carried out at the STFC-funded ISIS neutron and muon source. This allowed me to investigate metal sources and the social organisation of production by considering alloy composition and production techniques. The results are compared with earlier research to explore regional differences in metallurgy and attitudes to value.

- **Historical colonial encounters:**

This component, made possible through an AHRC-funded fellowship at the Library of Congress, investigates the factors underlying gift diplomacy and exchange technologies in colonial North America, c.1600–1775. The results are presented in chapter three. I focus on the shift from 'translation' between separate value systems towards the mutual creation of new 'languages' of exchange and diplomacy. I use this framework to explore the interaction of Iron Age and Roman systems of value. Rather than viewing British innovations in coinage, and the subsequent adoption of Roman currency, in terms of dominance, resistance or acculturation, I examine the processes through which Roman material culture was appropriated, re-interpreted and transformed, leading to the creation of new social and political institutions. Variation in regional Iron Age coin series emerges as reflecting varied responses to the influence of Roman value systems. Diplomatic gifts of precious metals and the development of a tri-metallic coinage system can be seen as creative responses to the colonial encounter, emerging in what Richard White (1991) has called the 'Middle Ground' and Homi Bhabha (1994) terms the 'Third Space'.

- **Spatial distribution and production evidence:**

The analytical and theoretical components are complemented by an investigation of production evidence, hoarding patterns and spatial distribution. The first phase of this analysis (chapter four) compares coin hoarding practices in the East Midlands and the North Thames region, considering the relationship between production practices and patterns of deposition. Both Iron Age and Roman hoards are considered, giving an insight into how Iron Age traditions shaped attitudes to Roman coinage. The second phase (chapter five) considers the spatial distribution of single finds for Iron Age and early Roman coins, brooches, toiletry items, horse-gear and miniatures in the East Midlands. The database compiled for this study incorporates over 14,500 objects. Changing regional distributions of brooches and coins are investigated, alongside 'loss profiles' showing the variation in portable metalwork finds between twenty-five major conquest-period sites. Patterns in the circulation and consumption of these objects illuminate how the Iron Age inhabitants of the East Midlands engaged with wider social and exchange networks.

Innovatively combining these diverse lines of enquiry enables me to move beyond a focus on typologies and regional distributions. I use data on spatial distribution, chemical composition and production practices to consider the full biographies of objects such as brooches and coins, including their deployment in social processes of competition and co-operation. I view these portable metalwork items as evidence of the social networks and exchange systems through which objects, raw materials, social practices and technical knowledge circulated. The changing role of small portable metalwork across the conquest horizon reflects the interaction of Iron Age and Roman social networks, power structures and systems of value.

Chapter one presents a review of previous approaches to understanding the circulation of goods and materials in the ancient world, focusing on the varied roles of coinage, and the interaction of economies and systems of value in colonial encounters. Chapter two introduces the technological evidence for coin production and the circulation of precious metals in Iron Age Britain, including analysis of the Hallaton material. This culminates in a reappraisal of Iron Age coin production in the East Midlands, and how this reflects integration into wider social networks. Chapter three moves away from Iron Age Britain to consider the role of diplomatic gifts and new technologies of exchange in the early colonial period in North America c.1600–1775, emphasising the mutual creation of new socio-political institutions and systems of value. This model is then applied to the Roman Empire. Chapter four returns to the British evidence, considering the social aspects of Iron Age coin production in the light of the broader framework provided by the American case study. I move on to consider the ways in which Iron Age traditions influenced the adoption of Roman coinage in Britain, contrasting the hoard evidence from the East Midlands and the North Thames region. Chapter five extends this model to consider changes in the circulation and distribution of brooches, horse-gear, miniatures and toiletry items over the conquest period in the East Midlands. Regional distributions are considered alongside site-based analyses, showing the differential engagement of local communities in the creation of Romano-British exchange and value systems.

Chapter 1: Exchange and colonialism

This thesis deals with the circulation of small portable metalwork in the Iron Age and Early Roman East Midlands. The introductory chapter is divided into three sections. The first section (1.1) outlines previous attempts to understand ancient exchange systems, beginning with the theoretical background to these debates (1.1.1-3), and extending this to consider three case study topics: prehistoric economies (1.1.4), the Roman economy (1.1.5) and the introduction of coinage in conquest-period North-West Europe (1.1.6), all of which are brought together in this thesis. The second section (1.2) considers wider debates surrounding the study of Roman colonialism, and explores the models of colonial interaction which are applied in later chapters. The final section (1.3) explores the nature of the study region, the East Midlands, in terms of landscape, geology, and Iron Age & Roman settlement, transport networks and industry.

1.1 Reconstructing ancient economies

1.1.1 Formalist and substantivist perspectives

Attempts to understand past economies have largely grown out of 'substantivist' approaches. The terms 'formalist' and 'substantivist' were coined by Polanyi (1957) who argued that 'formal economics' (with its assumption that people behave as 'rational' economic actors) was applicable only to market systems in which the economy was disembedded from the social matrix (Polanyi 1957, 247). This was exemplified by the western capitalist system, in which all goods and services were commoditised and commercialised (Polanyi 1944). Their value was determined by a self-regulating supply and demand mechanism, and expressed in terms of a single standard: money.

In other societies, Polanyi (1944, 46) argued that a 'substantivist' approach, recognising the socially embedded nature of exchanges, was more appropriate. He proposed a framework for analysing economies on their own terms, suggesting that all societies used some combination of three primary mechanisms: exchange, reciprocity and redistribution (Polanyi 1957, 250). There was an underlying evolutionist perspective to Polanyi's approach. Capitalist economies were primarily integrated through exchange, but used all three mechanisms, whereas chiefdoms and non-capitalist states used reciprocity and redistribution, and 'primitive' societies engaged only in reciprocity (in such societies, gift exchange and barter, rather than market exchange, were the main integrating principles – Dalton 1977). This heavily uni-linear approach has since been strongly critiqued and revised, but substantivist perspectives continue to influence archaeological models of ancient economies.

1.1.2 Gift and commodity exchange

One of the concepts which emerged through substantivism (and now underpins many studies of prehistoric economies, e.g. Sahlins 1972; Fontijn 2002; Sharples 2003, 2010) was the distinction between commodity and gift exchange.

The aim of commodity exchange is the acquisition of an object, or the potential for profit, whereas in gift exchange transacted objects are primarily a means through which social relationships are created, negotiated and maintained (Gregory 1982). The exchange of gifts creates relationships between people, but the exchange of commodities creates an objective relationship (of equivalent value) between things. In some societies, the exchange value of an object is expressed in terms of a universal unit of exchange: money or currency. Denominations of money are cardinally ranked; many low-value coins may be the equivalent of a high-value coin. In gift economies, exchange is more tightly structured and controlled through social taboos. Objects may be ordinally ranked into hierarchical spheres of exchange, which are incommensurable. Bohannan and Bohannan (1968) recorded three such tiers amongst the Tiv of Nigeria, summarised in Table 1.1.

Table 1.1: Spheres of Exchange in Tiv society, based on Bohannan and Bohannan (1968)

Tier	Description	Examples
Highest	Rights and obligations of kinship	Rights in 'dependent persons', often marriageable female relatives
Middle	Prestige or wealth items, used in social manoeuvring	Brass rods, cattle, tugudu white cloth, and slaves
Lowest	Subsistence items, created through physical labour	Foodstuffs (e.g. yams, grains, vegetables, small livestock) and everyday utensils and tools

A limited amount of conversion between spheres was possible, often mediated by brass rods. Converting up was seen as a laudable achievement, but converting down was only undertaken in times of dire need. In the Late Iron Age, gold coinage (possibly in combination with other gold objects such as torcs) may have formed a prestige exchange sphere associated with rights over land, kinship ties, or the forging of patron-client relationships (Haselgrove 1987; Creighton 2000; Moore 2007) rather than an all-purpose money (contra Van Arsdell 1989).

Commodity and gift exchange are best understood as opposite ends of a spectrum. Most societies show elements of gift and commodity exchange, and a single object may function as both gift and commodity depending on context (Appadurai 1986; Kopytoff 1986). Bloch and Parry (1989) combine Kopytoff's (1986) model of object biographies and context-dependent meaning with older ideas concerning spheres of exchange. They argue that spheres of exchange may not be restricted to particular object types, but rather to social settings or 'transactional spheres'. They distinguish between a sphere of short-term transactions (e.g. barter, subsistence exchange) where acquisition is paramount and individuals are able to pursue their own gain, and a long-term sphere (e.g. gifts, votive offerings) which facilitates the reproduction of the social and cosmic order and where social relationships are paramount. The long-term sphere is generally considered morally superior to the short-term sphere (Bloch and Parry 1989, 26). Objects can be converted between transactional orders, but the conversion is often morally charged and heavily ritualised. As with movement between spheres of exchange (Bohannan and Bohannan 1968), converting 'up' from the short-term to the long-term transactional sphere is desirable, but the reverse conversion would only be undertaken in desperation. Bloch and Parry's focus on conversion between spheres and the situational redefinition of meaning is partly explained by the fact that they are dealing with money, which is a special case (like the brass rods among the Tiv) and often facilitates movement between spheres of value.

1.1.3 Coinage and monetisation

Anthropologists have argued that our attitude towards money is very much affected by its role in our own society, where it serves as a general medium for exchange, as well as fulfilling a number of other purposes, and often holds negative moral connotations (Bloch and Parry 1989, Maurer 2006). However, outside this modern context 'money' can refer to objects which are put to a variety of uses (defined in Haselgrove 1987, 19):

- Means of payment
- Storage of wealth
- Standard of value
- Medium of exchange

Although modern 'all-purpose' money fulfils all of these roles, its importance in commercial transactions tends to predominate. In other societies, 'money' may perform only one or two of these functions; Polanyi (1968) termed such currencies 'special purpose money'. Another anthropologist, Pryor (1977, 392), makes a distinction between 'commercial money', which he defines as "any standardised object serving actively as a medium of exchange for commercial purposes," and 'non-commercial money', which serves "as a medium of payment for domestic non-commercial purposes…" including marriage payments, taxes, tribute, sacrifices, gifts, 'blood money', peace offerings, or as ornaments or prestige tokens. Within any society, the meaning of money is context-dependent (Bloch and Parry 1989, 21). Meanings are "not only situationally defined but also constantly re-negotiated" (ibid., 23), based on movement between long- and short-term transactional spheres.

What particularly concerns us here is 'monetisation,' where money is introduced or invented in a previously non-monetised society. Most considerations of the 'monetisation' of the Roman economy have focused on commoditization and the role of coinage in exchange transactions. However, this is only one aspect; even after the introduction of money it is extremely rare, perhaps unheard of, for an economy to become entirely commoditised (Sahlins 1972). The 'meaning' of money is likely to include social as well as economic significance.

There is a large body of anthropological literature concerning the introduction of money in modern colonial encounters. Ethnographic case studies (e.g. Comaroff & Comaroff 2006; Hutchinson 1996) which document the interaction of monetary and non-monetary economies often focus on processes of commodification and commensuration. The Comaroffs (2006, 107) define commensuration as "the measures that render equitable and negotiable different orders of value", and use this concept to explore the interaction between the cattle economy of the Tswana peoples of South Africa and the monetary economy of the European colonial powers. They take a materialist perspective, arguing that encounters between different 'regimes of value' "presume mediation, translation and communication among the currencies, at once verbal and material, that objectify them" (ibid, 108). Through this process, new 'regimes of value' were negotiated, leading to the creation of complex hybrid systems of wealth which cross-cut traditional categories in imaginative ways.

This complex process of transformation is also apparent in Hutchinson's (1996) study of the Nuer, amongst whom cattle play an extremely important social role. Hutchinson challenges Kopytoff's (1986) model of the gradual (but unrelenting) commoditisation of indigenous economies. By the time of Hutchinson's study, the Nuer had negotiated a complex, contextual and ambivalent relationship to money. Money was not an all-purpose exchange medium, nor was all money considered mutually equivalent. The Nuer had developed a complex "hybrid categorical system of monetary and cattle wealth" (Hutchinson 1996, 42) which enabled them to balance perceived instabilities and inequalities within the cattle economy, whilst at the same time resisting the idea that cattle (which were closely associated with people) were wholly interchangeable with money.

Similar examples of hybrid categorical systems are known from other contexts, including the Comaroffs' (1990) work in southern Africa. The complexity of these systems highlights the difficulty of reconstructing ancient economies, even in historical contexts. Whilst both Roman coinage and Iron Age issues in North-West Europe fulfilled the necessary criteria to have served as all-purpose money (in terms of portability, high value-to-weight ratio, standardised appearance and the existence of different denominations), it is highly likely that the real picture was more complex, and that coins also served a range of non-commercial functions, dependent on context.

The sections which follow explore the practical application of the theorectical principles discussed so far. Three case study topics are explored: prehistoric economies, the Roman economy, and the introduction of coinage in North-West Europe.

1.1.4 Prehistoric economies

Recent studies of the Neolithic onwards in Britain have tended to take a fairly substantivist view of prehistoric economies, emphasising the potential role of reciprocity and redistribution rather than market exchange and 'rational' economic motives. In the absence of historical records, attempts have been made to study prehistoric exchange systems by considering:

- Characterisation (e.g. Morris 1997), using chemical or physical properties to ascribe materials to particular sources, and plot their distribution.
- Artefact distribution patterns (e.g. Dalton 1977; Haselgrove 1987; Collis 1971; Dietler 1998), although there remains the problem of equifinality (Hodder and Orton 1976)
- Transport networks and access to trade routes (e.g. Sharples 1990)
- Artefact associations in hoards, which may reflect spheres of exchange (e.g. Fontijn 2002, Garrow 2008; Creighton 2000, 31)
- Find contexts, particularly for items such as 'currency' bars or coinage which are thought to be associated with exchange (e.g. Hingley 1990, 2005; Sharples 1990, 2010)

- Production processes (scale, social organisation, degree of control exercised by elites), (e.g. Schrüfer-Kolb 2000, for Roman ironworking; Fulford 1978 and Ponting 2003 on Roman coins)
- Consumption patterns (e.g. Haselgrove 1987, 2005a and Aarts 2005 on Iron Age coins)
- Land tenure: patterns of land ownership may reflect broader social relationships and attitudes to value (e.g. Sharples 2010)
- Standardisation: the use of weights and measures, or mass-produced objects (e.g. Cunliffe 1995)
- Social events (such as feasting and acts of votive deposition) which were used to negotiate status (e.g. Gregory 1980; Bradley 1990; Fitzpatrick 1984; Sharples 2010; Hill 2006)
- Object biographies: in particular, anthropomorphic treatment of objects may reflect their social value (e.g. Fontijn 2002, Gregory 1982, Bradley 2005)
- Written sources (e.g. Caesar BG 5.12; Strabo IV. 5. 3 for Iron Age Britain) may shed light on aspects of exchange systems which have not been preserved in the archaeological record (e.g. Cunliffe 1995, 2005)

Despite this plethora of available approaches, few studies incorporate more than two or three, and there are no wide-reaching discussions of the British Iron Age economy to compare to the models proposed for the Roman Empire. Nevertheless, it is possible to discern general patterns.

Early and Middle Iron Age Britain (800-200BC)

The beginnings of iron production in Britain had an important impact on inter-regional exchange networks. During the Bronze Age, the dispersed distribution of European tin and copper ores promoted the development of long-distance exchange networks based around the circulation of these metals (e.g. Rowlands 1980, Sharples 2010). Individual power and prestige was tied up with access to these exchange networks. Rowlands (1980) argued that the ostentatious metalwork of the Late Bronze Age, frequently deployed in acts of votive deposition, represents a tradition of high status gift exchange. Iron ore, in contrast, is available locally throughout southern Britain (Salter and Ehrenrich 1984, 147-148), and long distance exchange networks were no longer necessary to secure the raw materials necessary for metal production. As a result, social networks became more localised, and status was negotiated in new ways.

From the Middle Iron Age, the landscape of south-east and south-central Britain was largely dominated by hillforts. The traditional view sees these as early towns, centres of production and commerce, and home to local or regional elites. Cunliffe (1984, 27) described hillforts as “focal points” that “articulated the social, economic, political and possibly religious systems of clearly defined territories,” facilitating the accumulation and redistribution of goods from both within and beyond their own territory. However, Cunliffe’s model of elite-dominated hillfort societies has been widely critiqued (e.g. Hill 1995, 2006, Hingley 1984). Evidence for Early and Middle Iron Age elites remains elusive, and Hill (2006) and Sharples (2003, 2010), suggest that these societies were organised along more egalitarian principles. Sharples (2010) highlights the homogeneity of Early and Middle Iron Age material culture and an emphasis on boundary construction; these may suggest a concern with defining the extent of bounded communities, emphasising group membership and communal identity. In the absence of long-distance prestige exchange networks, boundary construction became a medium through which social status, and the relative status of local communities, was negotiated. Communal construction of hillfort ramparts was a form of conspicuous consumption, in this case demonstrating access to human labour. The high volume of storage (e.g. four-poster granaries) at some hillforts compared to non-hillfort sites may reflect the need to accumulate a surplus of food for feasting at construction events.

During the Early and Middle Iron Age, most goods travelled only short distances from where they were produced. The vacuum left by the loss of the far-flung social networks of the Late Bronze Age was filled by the expansion of local social networks (Moore 2007, Sharples 2010), perhaps articulated through gifts of food at household-level feasts, as well as larger construction events. There is evidence that gift exchange involving subsistence goods did occur. The pottery assemblages from Potterne and Danebury show a great degree of morphological similarity between vessels made from local fabrics and those that had been obtained through exchange with communities some distance away (Morris 1997). Morris interpreted this to mean that the pots, and their contents, had been exchanged as a means of creating social relationships rather than with the goal of acquiring the objects themselves.

Pottery was generally produced at the household level in the Middle Iron Age (Morris 1997), with only a very few pots travelling more than around 40km. Local production was the norm in the southeast, whereas in south-central England, some vessels (e.g. distinctively decorated glauconitic sandy wares in Wiltshire) display a regional distribution (*ibid*, 45). We see similar patterns of local/regional exchange in the distribution of whetstones and querns, which often seem to have originated at specialised quarries, such as Lodsworth (Peacock 1987). Here, saddle querns were generally found within 40km of the source, but rotary querns were produced at the quarry itself, and then exchanged over long distances. From patterns of briquetage debris, it seems that salt produced in the fenland estuaries was also widely traded (Lane et al. 2001). These patterns suggest that most Middle Iron Age exchange took place within a radius of c.40km, but that groups using certain specialised production sites engaged in longer-distance exchanges.

There is also evidence for the beginnings of weight standardisation in transactions. The 36 stone measuring weights at Danebury (Cunliffe 1995) suggest a need to weigh out standard quantities, and may imply a form of commodity exchange. Iron currency bars provide independent evidence that metal was traded in standard units towards the end of the Middle Iron Age (Ehrenrich 1985).

After the appearance of currency bars around 300 BC, there is little evidence for primary smelting of local iron ore on downland sites: most high quality iron was probably being imported from more distant sources. Characterisation studies (e.g. Ehrenrich 1985) demonstrate that currency bars (which like the Lodsworth querns were probably produced by specialist craftworkers) travelled long distances from their sources. Acquiring trade iron would have required access to exchange networks which extended beyond the local sphere, and may have run counter to the community-based power structures of hillfort societies (Sharples 2010). Sharples argues that the metalworkers or traders who facilitated the long-distance movement of materials may have occupied a liminal position in the closely-bounded hillfort societies which they served. Settlements which have produced evidence for the primary stages of metalworking after 300 BC (e.g. Hengistbury Head), and other transformative industries such as glass working (e.g. Meare Lake Village), tend to occupy peripheral positions in the densely occupied downland landscape.

There is a strong tendency for currency bars themselves to be deposited in liminal contexts, generally along settlement boundaries (Hingley 1990, 2005). Sharples (1990, 2010) extends this model to suggest that exchange itself might have been liminalised. It certainly appears to have been closely controlled and restricted. It is not until the Late Iron Age that continental contacts are re-established and imports such as wine, wheel-turned pottery and Gallo-Belgic coins appear in the archaeological record. Initially, the cross-channel trade in these items appears to have been mediated through peripheral centres such as Hengistbury Head, which occupied the fringes of a homogenised Middle Iron Age society.

Later Iron Age Britain (200 BC – c. AD 43)

The later Iron Age was a time of far-reaching social changes. In addition to Hengistbury Head, new centres of settlement rose to prominence on the margins of the hillfort-dominated landscapes (Haselgrove 1976, Hill 2007, Sharples 2010). These British '*oppida*' (e.g. Silchester/Calleva, St.Albans/Verulamium, and Colchester/Camulodunum) are not a coherent group (Bryant 2007), but have certain factors in common (Pitts 2010). *Oppida* show a greater quantity and variety of continental imports, such as Gallo-Belgic coinage and Italian wine amphorae, than other settlements. This is a sharp break with Middle Iron Age exchange patterns, suggesting that the taboos which suppressed competitive consumption had begun to break down (Sharples 2010). Some of the most remarkable developments of the Late Iron Age occur in parts of the south-east that were never part of the Middle Iron Age swathe of hillforts. It is here that we see the earliest British coinages, and rich individual burials augmented by continental imports such as amphorae. These factors suggest the presence of an elite sphere of competitive consumption, even if this was not the sole source of elite power (Haselgrove 1996).

The rise of southern British *oppida* around the end of the first century BC has been linked to the emergence of Roman client kingdoms (Creighton 2000, 2006a, Pitts 2010). After Caesar's expeditions to Britain in 55-54 BC, communities in the south-east developed closer ties with the Roman world, and some British elites may have been educated in Rome as *obsides* (Creighton 2000, 2006a). Two Roman client kingdoms were ultimately established in southern Britain: the Commian dynasty ruled the 'Southern Kingdom', while the Tasciovanan dynasty established the 'Eastern Kingdom' north of the Thames (Creighton 2006a). These connections with Rome manifested in new settlement patterns, ritual practices, and changes in material culture, such as the appearance of classical imagery and inscriptions on coinage around 20 BC, and increased continental imports.

Pitts (2010) identifies three main mechanisms for the arrival of imported goods at *oppida* sites: movement through pre-Roman Gallic exchange networks (which remained important even after the conquest), Roman diplomatic gifts, and the (often military) Roman supply chains which accompanied the annexation of Britain. The unusual assemblage of samian drinking vessels from Stanwick in North Yorkshire may suggest a Roman diplomatic gift (Willis 1996: 202). The same may be true of some comparatively rare arretine forms in the south-east (Pitts 2010), but beyond these exceptional cases it seems likely that the majority of imported ceramics at *oppida* sites from the late first century BC onwards represent organised networks of cross-channel trade. Communities of Roman traders resident at indigenous settlements (*consistentes*) are well attested outside other Roman frontiers. Such groups may also have been present in Britain, accounting for sites (e.g. Braughing-Puckeridge) which show large quantities of pre-conquest Roman imports (Salway 1993, 37).

Pitts (2010) argues that Gallo-Belgic wares and Roman wares such as samian ware and amphorae moved into Britain through separate distribution networks, reflected in their associations with particular site types. Gallo-Belgic wares are associated with pre-conquest *oppida*, and are virtually absent from the early Roman urban centres of Colchester and Verulamium. Pitts argues that these ceramics were sourced through pre-Roman cross-channel exchange networks, which persisted after the conquest. The fact that the distribution of Gallo-Belgic wares reached its greatest geographical extent after the conquest, around AD 70, may suggest that pre-Roman exchange networks and social structures continued to play an important role in early Roman Britain. In contrast, later imports of samian and amphorae appear to be linked to the Roman military and the supply networks of early Roman urban centres in Britain. Roymans (2009) suggests a similar distinction between Gallo-Belgic and arretine wares in the Lower Rhine.

After AD 43, both Gallic and Roman trade networks increased in scale and uniformity, appearing to represent "a centralized trade in complete eating and drinking services, rather than a more random accumulation of types that might be expected through less organized and more socially-embedded exchange" (Pitts 2010, 44). In this later period it is highly likely that independent Roman traders (of Italian or Gallic origin) were operating in Britain (Pitts 2010, 54). The presence of Roman traders in provincial communities in Gaul is supported by Classical texts which deal with the Gallic revolts, in which they were often an early target (e.g. Tacitus, *Historiae*, IV, 15; Tacitus, *Annales*, III, 42; Caesar, *De Bello Gallico*, VII, 2, 3).

The mechanisms of exchange (for example acceptable forms of payment and the roles of social hierarchies and institutions such as clientage in determining who traded with who) remain unknown, but the emergence and development of coinage in Iron Age Britain is clearly significant. Numerous attempts have been made to explain the arrival of Gallo-Belgic coinage: the first continental coin series to be systematically imported into Britain, perhaps beginning as early as the third century BC. Explanations range from payment for exported commodities (Strabo IV.5.3 tells us that later Britain was known for its exports of corn, cattle, hides, slaves, gold, silver, iron and hunting dogs) or the services of mercenaries, to the formation of political alliances through gifts between elites (Hobbs 1996, 9). The reasons for the production of the first British issues after the late second century BC are less well explored.

Van Arsdell (1989, 31) has argued that "Celtic coins were money" on the basis that they were standardised, centrally issued, came in different denominations and that forgeries were often produced. Many of these criteria can now be called into question. It seems likely that Van Arsdell overestimated the accuracy with which the alloy content of British Iron Age coins was controlled (Hobbs 1996, 10), and the extent to which production and circulation of coins was controlled has also been contested. Creighton (2000, 68) argues that around 50–20 BC "a systematic attempt was made to withdraw and recoin the gold in circulation" in the south-east, implying a degree of centralised control, but evidence from further north (Leins 2007, 2012) suggests that in some areas several coin issuing authorities may have been in operation simultaneously. Few would now argue that Iron Age coinage constituted all-purpose money.

Less contentious studies (e.g. Moore 2007; Hill 2007; Haselgrove 1987, 1992; Nash 1978, 1981; Roymans 1990, 2004) have focused on the role of Iron Age coinage (especially precious metal issues) in 'non-commercial' payments, articulating ties of clientage and other social obligations. Implicitly or explicitly, these works build on anthropological perspectives on the social roles of technologies of exchange. Haselgrove (1992, 127-129), for example, used Dalton's (1977) work to suggest that gold and bronze coinage may have served different functions, resulting in distinct distribution patterns (chapter five). Roymans (1996, 45-7) suggests a similarly 'multicentric' economy, with separate spheres of exchange, in Northern Gaul.

Precious metal coinage appears to have played an important role in prestige exchange networks. Creighton (2000, 38-40) argues that the distinctive yellowish colour of early gold might have been associated with high status, explaining its deployment in Late Iron Age coinage and on display objects such as torcs and bracelets. British hoard evidence (Garrow 2008) suggests a possible association between torcs, precious metal ingots, horse-gear and gold coins. The association between gold torcs and coins is particularly strong, with evidence that torcs were sometimes melted down to produce coins and vice versa (Creighton 2000, 31). Torcs and coins are also found in association in continental hoards from the third century BC onwards, although prior to this torcs seem to have circulated independently of coinage (Fitzpatrick 2005).

It is possible that these closely related objects formed a separate economic sphere of prestige goods, in which silver also seems to have played a part in the latest Iron Age. Such a sphere does not seem to have existed in Middle Iron Age Britain, although gift exchange clearly persisted on a more domestic scale. The reappearance of gold in south-east Britain at a time when elite status competition was re-emerging might be connected to its role in high-status gift exchange practices. If gold items and horse-gear did indeed form a separate sphere of exchange in the Late Iron Age, there is evidence that these discrete spheres of exchange may have begun to break down by the early Roman period, when the close association between these objects in hoards becomes less clear. A wider range of artefact types are represented in hoards from c. AD 40–100 (Garrow 2008). This was just one reflection of a much wider re-orientation of exchange practices which occurred over the period of the Roman conquest. While there was some persistence of earlier value systems, certain aspects of Roman systems of exchange were also adopted and, in the process, creatively transformed.

1.1.5 The Roman economy

Even when historic sources are available, the interpretation of ancient economic systems can still be fraught with difficulties. Early to mid-twentieth century works on the Roman economy (e.g. Frank 1933-40; Rostovtzeff 1957) tended to assume that modern institutions and concepts such as banks, investment, economic policy and free trade were applicable to the classical world, and that the economy could be viewed as an independent entity comparable to a self-regulating market economy (Hopkins 1983, xi). This began to be challenged as a result of the formalist-substantivist debate in economic anthropology. Finley (1973) and Jones (1974) embraced Polanyi's ideas, and put forward a minimalist, substantivist model for the Roman economy which rejected the modernist stance of earlier scholars. According to Finley and Jones' 'new orthodoxy' (Hopkins 1983, xi), agriculture was the dominant form of economic activity in the ancient world, and most agricultural products were consumed locally. Their model thus emphasised a kind of "cellular self-sufficiency" (Hopkins 1983, xi). The majority of the population were "peasants" (Jones 1974, 30) and the upper classes were mainly landowners who derived their wealth from rent. Land was "the only stable form of capital" (ibid).

Finley's approach demonstrated that high levels of urbanisation were not necessarily indicative of high levels of economic development. Most towns were the residences of local landowners, and were thus centres of consumption (financed by an income from rents and taxes) rather than production or commerce. Whilst the majority of towns may have been administrative or religious centres, they generally saw only small scale-trade and industry. The exceptions (e.g. Rome, Alexandria) were treated as such. Although their model proved influential, Finley and Jones were critiqued for their minimalist stance and static view of the Roman economy. Even Hopkins (e.g. 1980, 1983), who was a firm supporter of the Finley/Jones model, introduced significant modifications which allowed for genuine economic growth from the first century BC into the second century AD.

Finley and Jones did not consider the monetisation of the Roman economy in detail. Nevertheless, at around the same time, other economic historians also working from a substantivist perspective (Crawford 1970; Hopkins 1980) published important works on the role of coinage. Coinage itself, like urbanisation in Finley's model, came to be challenged as an indicator of economic development. Crawford argued that although coins circulated widely throughout the empire, this did not imply the universal adoption of a monetary economy. In his model, true monetisation was limited to the Mediterranean cities of the Empire, and "for the civilian population, both in Germany and Belgium, coinage will have served mainly as a store of wealth and as a (compulsory) method of paying taxes" (Crawford 1970, 45).

Rather than producing coinage in order to serve as a means of exchange, Crawford suggests that, "the Roman government had no policy concerning the supply of coinage and no monetary policy except in matters [such as payment of troops, or taxation] which directly affected its own interest or standing" (Crawford 1970, 48). This view is supported by other more recent scholars (e.g. Harl 1996, Reece 2002). This begs a new question: if provincial inhabitants needed money to pay their taxes, what was the source of this coinage? This was addressed by Hopkins (1980), who was the first to articulate the Roman monetary economy as a system which facilitated the incorporation of provincial economies into an increasingly monetised system of exchange. Hopkins distinguished two types of provinces: rich, tax-exporting regions and poorer tax-importing regions.

According to Hopkins' model, militarised frontier provinces (such as Britannia, Northern Gaul and the Rhine) and central urban authorities (such as those in Rome) were net consumers of the taxes of other provinces, whilst other areas (Spain, Southern Gaul, Northern Africa, Asia Minor, Syria and Egypt) were net exporters, contributing to the wealth of the Empire. Hopkins argued that these net exporters would have been required to pay large proportions of their taxes in coin. To obtain this coinage, they would have needed to export goods of equivalent value, principally to Italy, but possibly also to other provinces and regions. This would have greatly stimulated long-distance trade within the Roman Empire, and also promoted the integration of provincial regions into a monetary economy. Hopkins' model was more dynamic than those of Finley and Crawford, allowing for the development of an increasingly monetised and integrated economy. Aarts (2005, 8) has argued that this 'evolutionistic' aspect of Hopkins' model, whereby indigenous societies develop from pre-monetary to monetised exchange through their incorporation into the Empire, is problematic "[placing] monetization on the same level as Romanization." There is some truth in this, though Hopkins himself doubted the degree to which provincial societies became fully monetised, arguing that the monetary economy of the Roman empire was merely a 'thin veneer of sophistication spread over and tied to the subsistence economy' (Hopkins 1980, 104).

Some of the central precepts of Hopkins' argument, most importantly the assertion that taxes had to be paid in cash, were challenged by Duncan-Jones (1992). Through a close analysis of literary sources, Duncan-Jones demonstrated that many provinces continued to pay their taxes in kind, perhaps largely because of a shortage of coinage. Duncan-Jones suggested that most provincial economies were not fully integrated into the Empire, but remained relatively isolated, with most of the coinage that entered never leaving. Arguing along similar lines, Howgego suggests that this use of 'in-kind' payments alongside coinage in many spheres, including taxes, rents, wages and credit "acted as a brake on the level of monetization of the Roman world" (Howgego 1992, 29). Unfortunately, despite these valid criticisms of Hopkins' model, Duncan-Jones and Howgego do not offer a convincing alternative, returning us to a more static view of the Roman economy comparable to that offered by Finley and Crawford. It seems likely that the use of Roman coin in administrative payments and taxes, even in provincial economies, was one of the causes of the wide adoption of Roman coinage, even if the stimulus to long-distance trade and economic integration was less pronounced than Hopkins originally suggested.

Economic historians such as Finley, Jones, Crawford, Hopkins and Duncan-Jones sought to understand the imperial economy, and the role of coinage in facilitating trade, taxation, credit and payments. Despite perceiving that this imperial monetary economy might be only a 'thin veneer', they did not seek to understand the full range of social roles played by coinage, which could fairly be said to fall outside the scope of their enquiries (Scheidel 2005). The formalist-substantivist dichotomy is now largely obsolete (Aarts 2005). Most would now accept that the Roman economy was socially embedded and that coinage does not by itself indicate a fully monetised economy, but also that financial institutions did exist and that in some spheres ideas of 'rational economic behaviour' may indeed be relevant (see e.g. Harris 2008, Temin 2001 for alternative views).

Aarts (2005) attempts to expand the scope of the debate by embracing more recent anthropological work (Appadurai 1986, Kopytoff 1986, Bloch and Parry 1989) which broadens the definitions of money and monetisation. This approach had already been successfully applied to studies of the Greek economy, where scholars (e.g. von Reden 2003; Kurke 2002;

Seaford 2004) had attempted to explain the social, moral and religious dimensions of the emergence of money. Sitta von Reden (2003) deals with the tensions and negotiations which occur between short- and long-term transactional spheres, looking at the representation of both gift and commercial exchange in the Homeric epics. She argues that these stories were one mechanism for eighth century Ionian Greeks to negotiate new ideas of value as power shifted from a ritual sphere associated with an aristocratic elite, to new political institutions, culminating in the rise of the polis in the sixth century. She suggests that the symbolic and ritual functions of coins were as important as their monetary use and exchange value, highlighting their role in the ritual sphere and the way imagery on coins was deployed to assert the rights of competing political institutions to mint coins and make payments, essentially becoming a medium through which both political authority and systems of value were negotiated and transformed.

Aarts (2005) applies a similar model to coinage in the Roman Empire, emphasising that we should not use purely economic arguments to explain coinage systems, but also need to understand the social roles of coins in non-economic contexts. He focuses on the negotiation of new systems of value in Roman provinces such as Batavia, where he argues the articulation between short- and long-term transactional orders was redefined and renegotiated in the period following the conquest. Constructing an archaeological framework for this research, he suggests that ritual deposits of coinage were part of the long-term exchange cycle, while other coin hoards "did not belong to either transactional order, but were in a state of potentiality between the two orders" (Aarts 2005, 18), and some site finds representing losses during commercial transactions can be seen as part of the short-term sphere.

There are practical difficulties with distinguishing these groups, some of which Aarts himself addresses, but does not resolve. For example, it may be very difficult to distinguish between a 'savings' hoard, ready to be deployed in either short or long-term cycles, and a votive offering never destined for recovery. The association with a sanctuary or temple site is one clear indicator, but Aarts himself concedes that even urban coin deposits were frequently votive in nature, there is also the possibility that some coins found at temple sites could have been lost during commercial transactions (Aarts 2005, 23). Nevertheless, Aarts' approach is a valuable step forward in considering the ritual and social functions of coinage, as well as its role in facilitating economic transactions, and the way in which coinage was integrated with a wider economy which included other object forms and payments in kind.

1.1.6 Coinage in conquest-period North-West Europe

As will be clear from the foregoing discussion, the interaction between Roman and indigenous systems of value was not a simple encounter between a monetary (Roman) and pre-monetary (indigenous) economy. Arts (2005, 10) and Haselgrove (2006a) emphasise the importance of understanding structural differences between pre-conquest exchange systems in different regions, as well as differences in the nature of the colonial interaction which took place. Some conquered groups were coin-using, whilst others had no local coinage tradition. Regions responded in unique ways to Roman influence: whilst in some areas Roman coinage was readily adopted in both commercial transactions and the votive sphere, in other areas this was resisted: the Longhorsley Hoard seems to show that in early Roman Northamptonshire, local inhabitants melted down and recycled Roman bronze coinage into brooches and horse-gear rather than using coinage in exchange (Allason-Jones 2003). Additionally, in both Roman and coin-using Iron Age society, coinage played important non-economic roles in social and ritual practices, and the meaning of money varied according to social context. Creighton, for example, argues that in the late Roman Republic, "far from being impersonal and diminishing social relations, coin was one of the media through which [social ties] were articulated, through … processes of investing, giving and lending it to a range of kin and affines" (Creighton 2006b, 133).

To understand the impact of the conquest, it is necessary to consider the social role of coinage and coin production in pre- and post-conquest contexts. Such an approach is attempted by Haselgrove (2006a), who charts the introduction and spread of Roman coinage in Belgic Gaul and southern Britain. In Belgic Gaul, the penetration of Roman coinage (beyond the military zone) proceeded very slowly following the aftermath of Caesar's conquest, and local coinage remained in production (albeit in new forms) for over thirty years, at least until the Augustan re-organisation of the province in the 20s BC. In Britain, post-conquest coin production was on a smaller scale, and Roman coinage appears to have had a more rapid and immediate impact, particularly in the client kingdoms (where there was a longer history of exposure to Roman goods and ideas) and the heavily militarised zone further north.

Work by Aarts (2005) on Batavia and by Peter Guest (2008) on the distribution of Iron Age and Roman coinage in Wales also provides a useful starting point, though neither is a 'typical' province, if such a thing can be said to have existed. Welsh groups did not produce their own Iron Age coinage, and imported only very limited quantities before the conquest. The indigenous groups of the Batavian region were also non-coin using, but incoming coin-using groups and extensive contact with the Roman army lead to a quick uptake of coinage across the region. A slower adoption of Roman coinage is seen in Wales, with Guest arguing that (as for Belgic Gaul) "coins remained a predominantly military object in the early Roman period and... commercial exchange in non-military contexts developed relatively slowly" (Guest 2008, 55).

Guest focuses on regionality, and the uses to which coins were put in different regions. He sees the presence of both silver and bronze coin finds along the coast and major river valleys as suggesting the use of these objects in "inter-regional transactions with external groups on the coast (trade or the payment of taxes and duties perhaps)." In the interior, an absence of bronze and finds of silver hoards in prominent natural places away from settlements suggest "coins might have been seen as a store of wealth whose value was not necessarily measured in Roman terms" (Guest 2008, 56). Creighton (1992) has similarly argued that non-coin-using groups in England (or those with only a precious-metal coinage) showed a preference for Roman silver (rather than copper), suggesting coins were valued primarily in terms of bullion.

An interesting aspect of Aarts' (2005) model, and to an extent work by Haselgrove (2005a, 2006a), is a shift beyond regionality, to suggest that the same people may have been using coins in different ways in different contexts. An object which was at one moment used as money for commercial exchange could at another time become a votive object in a ritual setting, leading Aarts to suggest that "the life of Roman coins can better be described in terms of a social history of a class of object as suggested by Appadurai (1986)" (Aarts 2005, 12).

Aarts takes the most overtly theoretical approach to the issue of the 'monetisation' of provincial societies. He uses Bloch and Parry's model of long- and short-term transactional spheres to try to understand the changing social roles of coinage over the conquest period, suggesting that "once a society was incorporated into the Roman Empire the number of transactions in the short-term cycle could be expected to increase at the expense of those of the long-term," (Aarts 2005, 19) partly due to the growing number of impersonal economic relationships with outsiders, and the increasingly faceless nature of power as authority shifted from local leaders to centralised Roman political control. Status, rather than being negotiated through the deployment of prestige objects such as coinage in the long-term transactional sphere, was now established through engagement with Roman systems for achieving wealth and power. Citizenship could be acquired through service in the Roman army, but it was only possible to enter the higher social orders by achieving a certain level of personal wealth (measured in *sestertii*) or securing an elite patron.

As Aarts predicts, the shift to more fully Roman systems of value is reflected in the social role of coinage. After the annexation of northern Gaul following the Gallic wars of the mid first century BC, there were substantial changes in systems of coin-use and production. Gold coins largely ceased to be issued in northern Gaul (Aarts 2005) and silver too was gradually replaced by bronze billon and potin coinage. It has been argued (e.g. Wigg 1999) that the shift to a base metal coinage represents increasing monetization of the indigenous economy, but it is likely that initially some of these bronze coins circulated in the same prestige-exchange sphere as gold (Aarts 2005, Roymans 2004). The shift away from gold may partly represent an issue of supply; so much gold was taken back to Italy as tribute that the value of gold fell by a quarter in Rome in the mid first century BC (Suetonius, De vita Caesarum, I. 54).

The use of gold and silver for large deposits continued into the third century AD at shrines in rural areas (such as the Meuse-Demer-Scheldt area), which may not have been as well integrated into Roman socio-political systems (Aarts 2005). Here, traditional value systems may have continued to dominate, although in this case it was Roman rather than local coins which were used to articulate those values. Haselgrove (2006a) also found conservatism at religious sites (on both sides of the channel) with local coinage continuing to be favoured even after Roman coins had penetrated the commercial sphere. However, the first centuries BC and AD were a time during which new systems of value were being negotiated in Roman Gaul, and even in the religious sphere there is evidence for change.

Whilst some bronze coinage may have circulated in prestige-exchange spheres, the latest bronze issues (e.g. the AVAVCIA coins from the Lower Rhine, minted as Roman coins were achieving increasing penetration of indigenous networks) appear closely related to Roman low-value bronze coins. The indigenous coins are found alongside Roman issues in early Roman forts, and Aarts (2005) deduces from this association that both circulated together in a monetary context, being used for commercial exchange. Yet these coins also appear in votive contexts, for example at the Batavian sanctuary of Empel, suggesting a degree of articulation and conversion between the short- and long-term exchange spheres, perhaps partly facilitated by these ritual deposits. Aarts suggests that these may represent low-value offerings made by individuals, rather than the communal conspicuous consumption of valuable objects which we see earlier in the Iron Age (Roymans and Aarts 2005, 354–57). Aarts (2005, 27) further argues that in northern Gaul "the increasing use of low-value coins in gifts to the divine suggests that the symbolic language of the market has entered the relations between men and gods. Perhaps the exchange between man and god is rather perceived as the buying of a service than as the exchange of gifts; in other words, coins have become money."

This 'commoditisation' of the ritual sphere had pre-conquest origins. Both in Britain (Bradley 2005; Hutcheson 2004, 2007) and on the continent (Derks 1998, 183), the incorporation of coinage into the votive sphere (from the third century BC on the continent, and the second to first century BC in Britain) appears to be associated with the increasing centralisation and standardisation of votive deposits, and the emergence of clearly demarcated sanctuary sites. Derks (1998, 183) sees the emergence of such 'cult places' in northern Gaul as part of the process through which this region became increasingly integrated with the more urban societies in central and southern Gaul. I have put forward a similar argument for Britain (Farley 2011). Bradley (2005; 1990, 188-9) argues that the Late Iron Age trend towards standardisation and separation of the votive sphere might already reflect a changed relationships between worshippers and their gods. The system became akin to the Roman practice of drawing up a 'contract' with the gods in which offerings were "payment for services rendered" rather than an occasion for enhancing personal prestige through acts of conspicuous consumption. By the post-conquest period, larger offerings to sanctuaries would no longer have been in the form of votive deposits, but would more likely have been monetary gifts used to pay for festivals or building works at the temple.

One of the goals of this thesis is to contribute to the dialogue begun by Aarts (2005), looking at regional variation in attitudes to coinage across the conquest horizon, considering both the social and economic roles of coinage. I focus on the archaeological evidence, looking at changes in patterns of site finds and the role of coinage in depositional practices, without attempting to divide these explicitly into evidence for short- and long-term cycles of exchange. Like Aarts, I view coinage as one aspect of a complex exchange system. I extend my approach to consider the social roles of other portable metalwork, and the way in which the distribution of these objects reflects integration into (or isolation from) wider exchange networks. In addition to the adoption of Roman coinage, I emphasise the development of indigenous coinage over the pre-conquest contact period, which I view as evidence of the interaction of Iron Age and Roman social systems and categories of value. Technologies of exchange, whilst just one aspect of a colonial encounter, are a facet of colonial engagement which is particularly likely to reveal creative indigenous responses to colonialism. I will argue that Iron Age and Roman systems of value show evidence of mutual influence, rather than merely the creative adoption and adaptation of 'Roman' material by indigenous groups in the provinces.

1.2 Colonial encounters: Roman Britain and beyond

Following on from the foregoing discussion of economies and exchange systems, this section outlines wider debates surrounding the incorporation of Britain and other provinces into the Roman Empire, and how these models of colonial interaction will be applied in the chapters which follow.

The concept of 'Romanisation' (e.g. Millett 1990), advocating a trickle-down, acculturation perspective to the creation of provincial Roman identities, has now been widely critiqued as over-simplistic. The Romanisation model is more or less uni-directional, and denies agency to indigenous populations beyond a few members of the 'elite'. The alternatives to this approach, many of which draw on the work of post-colonial theorists such as Bhabha (1994) and Said (e.g. 1978), have been explored in some detail by Mattingly (2004). Here I briefly consider three models which particularly emphasise the material facet of colonial encounters, and the mutual creation of new socio-political and value systems, namely those of Woolf (1998), Mattingly (2004, 2006) and Gosden (2004).

In his study of Roman Gaul, Woolf (1998) argued that 'becoming Roman' did not merely involve selectively adopting Roman values and material culture, but was a two way process. There was no single 'Roman identity' and provincial communities were actively engaged in creating Roman provincial culture. Creighton (2006a) takes a comparable approach to the British evidence, examining the ways in which emerging urban centres in Britain reflected the influence of both Roman and Iron Age British traditions.

Mattingly (e.g. 2004, 2006) has argued that there was an extremely variable uptake of new forms of architecture and material culture across the Roman provinces, reflecting differential engagement with 'Roman' ideologies and lifestyles. Particular groups would have had very different conceptions and experiences of what it meant to be Roman. Mattingly divides his (2006) book 'An Imperial Possession' into considerations of military, civil and rural communities in Roman Britain, placing an emphasis on discrepant experience and identities. He further argues that "identity is integrally bound up with power in society, and therefore the creation of provincial identities cannot have taken place in a vacuum, isolated from the power negotiations between the Roman empire and its subject peoples" (2006, 16). I explore this proposition through an investigation of changes in authority evidenced in the production and distribution of regional coinages in Late Iron Age Britain.

I also draw on more general models of colonialism such as that proposed by Gosden (2004). Gosden ascribes a central role to material culture in the process of colonisation, seeing colonialism as "a relationship of desire, which creates a network of people and things" (ibid, 153). He focuses on consumption, and on colonial forms as 'circulation systems' through which ideas, values, materials (and of course people) circulate, arguing that,

> "New values… set up a circulation system of people, ideas and artefacts which change all concerned and which have multiple sources. It is not just that the colonisers change the colonised, as these two categories do not exist in simple form, but rather that all involved are changed by the process of circulation, whether they live in the symbolic centres or outside." (Gosden 2004, 156)

Gosden divides colonialism into three forms, 'colonialism within a shared cultural milieu' (most ancient colonialism, e.g. Greek colonies in the Mediterranean), the 'Middle ground', and 'terra nullius' (which mainly concerns violent mass-appropriation of land in more recent colonial encounters in North America and Australasia). The 'Middle ground' is the model he applies to Late Iron Age Britain. This is the form which sees the greatest degree of "experiment and creativity" (ibid, 26). In this model, there is neither acculturation nor cultural destruction, but instead both sides in the encounter work to negotiate common values, creating "new cultural structures, influenced by both sets of cultural logics, but not identical to either" (ibid, 30).

This framework builds on the works of Homi Bhabha (e.g. 1994) and historian Richard White (1991), whose model of the interaction between European and indigenous groups in the North American Great Lakes 1650–1815 introduces the term 'Middle ground'. Bhabha's work emphasises the mutual dependence of coloniser and colonised, suggesting that the idea of separate 'pure' cultures which exist independent of one another cannot be upheld. Rather, Bhabha argues that all statements and cultural systems are constructed in what he terms the 'Third Space of Enunciation' where, "negotiation of incommensurable differences creates a tension peculiar to borderline existences" (1994, 218). While Bhabha's 'Third Space' has wide relevance in modern society, in terms of considering prehistoric colonial encounters, this concept encompasses the 'Middle ground' proposed by Gosden and White. The 'Middle Ground' is a conceptual space which White describes as:

> "[The] place in between: in between cultures, peoples, and in between empires and the nonstate world of villages... [where] diverse peoples adjust their differences through what amounts to a process of creative, and often expedient, misunderstandings.

> People... often misinterpret and distort both the values and practices of those they deal with, but from these misunderstandings arise new meanings and through them new practices – the shared meanings and practices of the middle ground." (White 1991, x)

I build on these ideas, in particular the important role of creativity and experiment in colonial encounters. In considering the creation of a 'Middle ground' in Iron Age and Roman Britain, I place particular emphasis on the role of 'boundary objects' (Star 1989) which facilitate communication within and across the space between cultures. Objects such as coinage, which may hold a variety of different meanings in different contexts, initially allow the 'translation' of concepts and ideas across cultural boundaries. Yet this translation is imperfect and unstable; whilst boundary objects may mediate social interaction, their meanings may be understood very differently by each side in the encounter. In sustained periods of interaction, this may develop into a more articulate 'language of exchange.' This is the stable 'Middle ground' defined by White, where the binary categories of coloniser and colonised do not exist as separate forms, but rather new, mutually created, socio-political institutions and systems of value emerge. I will argue that we see the emergence of such a mutually created system in the diplomatic exchange of precious metals between Roman and indigenous groups, which led ultimately to the shared development of a tri-metallic coinage system.

This dissertation largely explores colonialism in terms of creativity, experiment, and the mutual negotiation of new identities, value systems and socio-political institutions. This does not reflect an intentional neglect of the more violent and oppressive side of colonial encounters. These darker aspects played an important role in the Roman conquest, and indeed were often of paramount importance, with the threat or exertion of violent force determining hierarchies in the new social order. However, this research into portable metalwork feeds more directly into debates on the role of material culture in negotiating power and identity than the role of violence in the Roman conquest of Britain.

1.3 Study area: The East Midlands

This section explores the nature of the study area, in terms of its landscape, and contemporary settlement and industry.

1.3.1 Landscape

The East Midlands is an extremely varied region (Figure 1.1) with diverse landscape zones, from rolling upland hills and clay vales to peat bogs and fenland estuaries. The landscape is cut by several major rivers which divide the study area into interconnected valleys, namely those of the Trent, Witham, Slea, Nene, Welland and Soar. Derbyshire, the main upland zone of the region, is not included in this study, but the Northamptonshire uplands and Lincolnshire Wolds reach heights of over 150m above sea level.

Two scarps run north-south through Lincolnshire. The westerly scarp, the Lincoln Edge, is a line of hills rarely more than 70m high, running almost unbroken down the length of the county. Prehistoric routeways, notably the Jurassic Way, traced the line of this ridge. This was later be echoed by the line of Ermine Street, leading north from London, through Northamptonshire to the Humber, and on to York (Figure 1.2). There are two 'gaps' along the Lincoln Edge which each provide "a natural line of communication" (May 1976, 179) between Lincolnshire's coastal districts and the Trent valley to the west; one is where the River Witham cuts through at Lincoln, and the other is on the River Slea at Ancaster. These 'gaps' were key nodes in waterborne transport networks. East of the Lincoln Edge, across the low, flat Clay Vale, which broadens into the 'Wash', rise the rolling hills of the Lincolnshire Wolds. Here, again, there is evidence here for networks of prehistoric and Roman routeways, generally running north-south along the high ground (May 1976, 7-9)

Eastern Lincolnshire is a very watery environment, dominated by fen and marshland, and waterborne transport would have been important over long distances (Field and Parker Pearson 2003, 158-9). Simmons (1980) has suggested that higher sea levels in the Iron Age might have rendered Lindsey, an area consisting of the Wolds and the segment of the Lincoln Edge north of the Lincoln Gap, a virtual island at some times of year. During the Roman period, falling sea levels and fenland drainage projects would have affected this to some degree.

To the west lie the Trent Valley and Nottinghamshire uplands, with Leicester, in the Soar Valley, lying further south. In the Roman period, the Fosse Way ran from Leicester, along the Trent Valley, to Lincoln (Figure 1.2). Both Leicester and Lincoln formed hubs in the Roman road network. Leicester lies between the two upland regions of Leicestershire, with the Northamptonshire uplands and the Nene Valley to the south. The Nene Valley in particular was densely settled in the Late Iron Age and early Roman period, and formed a major communication route, with connections west to Longthorpe and Water Newton (connecting with Ermine Street), and east to Leicester and Mancetter.

1.3.2 Settlement

Although the fluid patterns of Iron Age settlement in eastern England remain poorly understood in comparison to the well-studied hillforts, enclosed farmsteads, and *oppida* of the south-east (Hill 1999), our knowledge of Iron Age sites in the region has been vastly improved by a growing number of PPG16 interventions. Important new information on regional settlement patterns has been synthesised by Willis (2006, on the Iron Age) and Taylor (2006, on the Roman period). This area can now be understood as a dynamic region in its own right, rather than merely as a periphery to the better studied south-east and south-central zones of Britain (Hill 2007). The position of the East Midlands at the edge of the Roman Empire only serves to emphasise its importance to our understanding of the complex social dynamics of the conquest period. As Taylor writes (2006, 137), the East Midlands formed "a key zone of transition between the developed civilian dominated and classicizing landscapes of towns, roadside settlements, villas and other rural settlements of the south and east and the zone of long term military occupation in which we see the continuing development of indigenous Iron Age traditions of settlement in the north and west." Despite its importance, the East Midlands receives only passing attention in many general accounts of the Roman conquest and Early Roman period (e.g. Mattingly 2006; Creighton 2006a).

Many of our familiar models for how Iron Age societies functioned (e.g. Cunliffe 1984, Hingley and Miles 1984, Hill 1995, 2006) do not seem to apply to the East Midlands evidence, where there are few if any universal patterns. Areas such as the fens were seasonally exploited, while the Leicestershire and Northamptonshire uplands were dominated by hillforts, and North Lincolnshire hosted a network of undefended agglomerated settlements (May 1996).

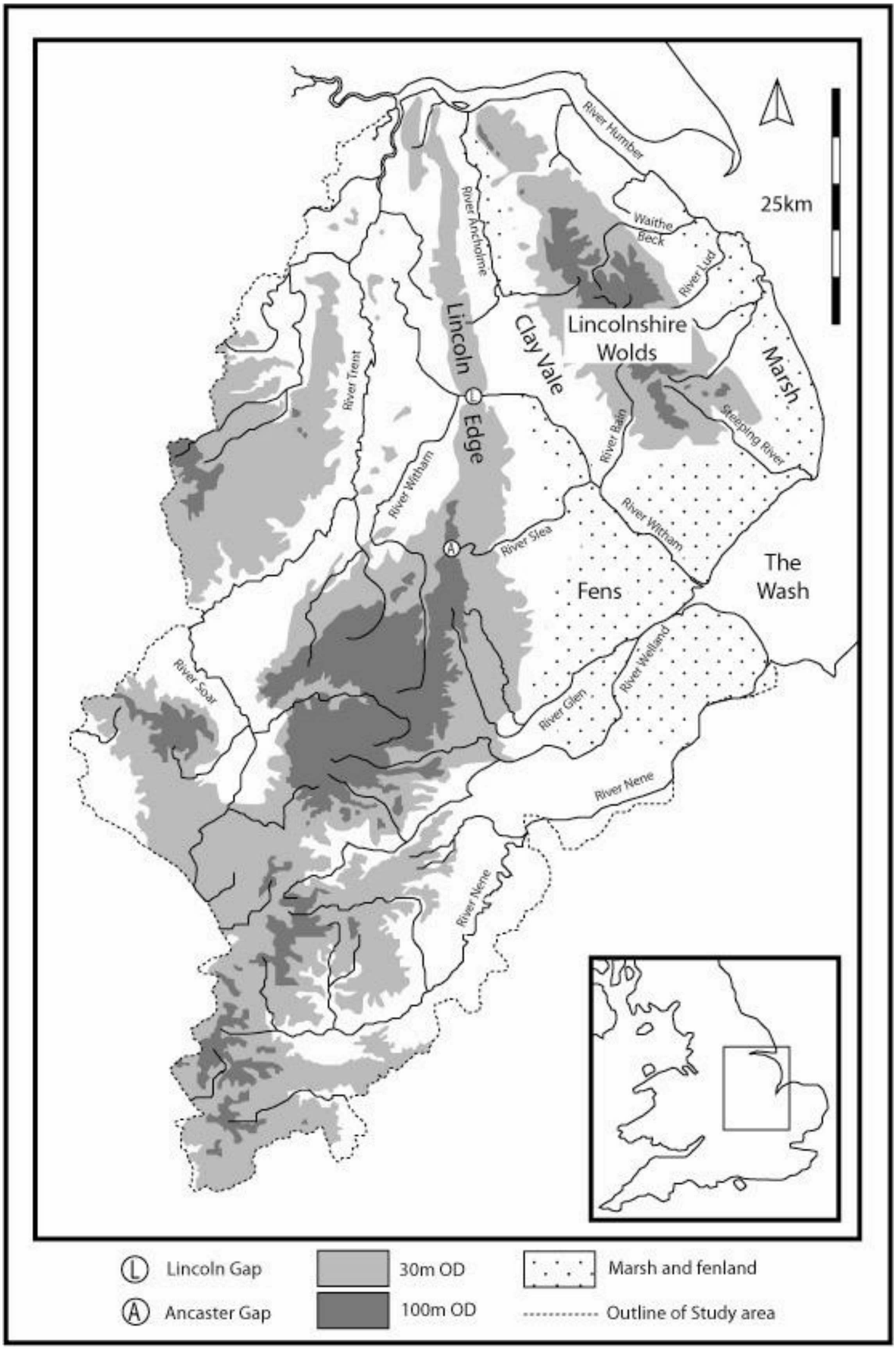


Figure 1.1: Physical geography of the East Midlands. Based on data from May (1976) and Cooper (2006)

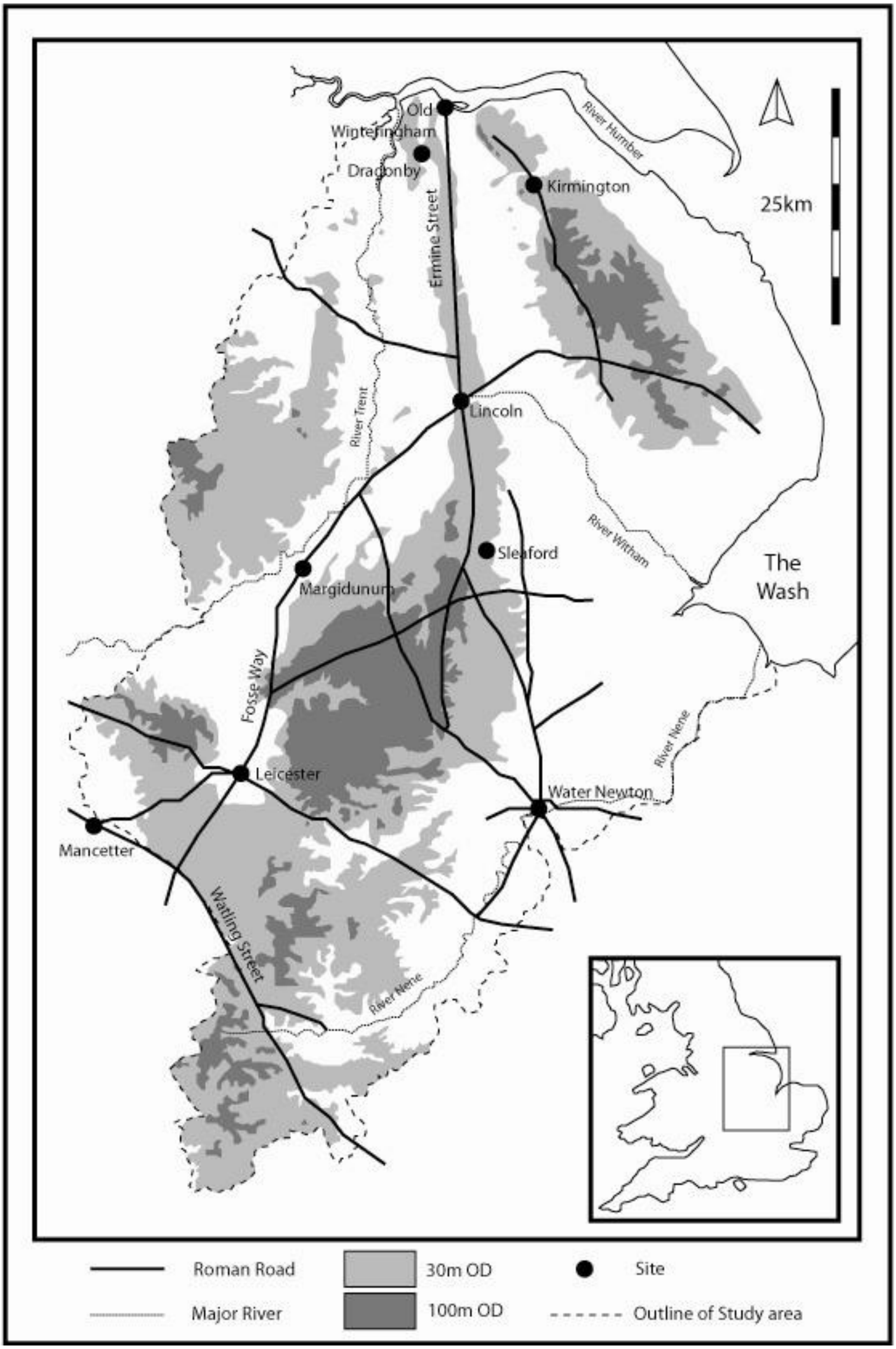


Figure 1.2: Roman roads and major rivers in the East Midlands. Based on data from Taylor (2006)

Our knowledge of the region in the prehistoric period is undoubtedly fragmented and partial. Settlements from the Early Iron Age, in particular, are almost unknown across broad swathes of the Lincolnshire Wolds and the Lincolnshire Clay Vale. This is no doubt partly due to a lack of chronological resolution, and the ephemeral nature of settlement sites of this period (Willis 2006). Known sites cluster in Rutland and the Nene valley. Settlements were generally small and unenclosed, but at least four hillforts have their origins in this period: Breedon Hill & Burrough Hill (Leics) and Hunsbury & Rainborough (Northants).

The Middle Iron Age is also patchily represented, again favouring Northamptonshire, although more sites have now come to light in Lincolnshire and the Trent Valley. Many settlements from this period are small rectangular ditched enclosures containing one or two buildings, e.g. Weelsby Avenue (North Lincs) and Weekley (Northants) (the latter continued to be occupied into the Roman period). Nevertheless, there is considerable diversity in settlement form: large open settlements have been excavated at Ancaster (Lincs), Crick (Northants) and Humberstone (Leics), and a large number of saltern sites in the fens may have been occupied seasonally. Occupation at hillforts continued, with more sites coming into use in this period: Crow Hill & Castle Yard (Northants), Honington Camp (Lincs), and the large marshland enclosure at Tattershall Thorpe (Lincs).

Although the Late Iron Age heralded some drastic social changes, there is strong evidence for continuity at (or near) many Middle Iron Age settlement sites and in the field systems and trackways of the surrounding landscape. The evidence for Late Iron Age occupation is hugely more visible than preceding periods. Even allowing for improved settlement visibility and chronological resolution, the shift is sufficient to suggest a genuine increase in the scale and intensity of occupation, mirrored in other areas such as the Upper Thames valley (Hingley & Miles 1984) and the Tees valley (Still et al. 1989). This suggests that the first century BC saw the beginning of a period of population growth and expansion into previously under-exploited areas (Willis 2006, 127). A wide variety of settlement forms are represented. Although many hillforts had fallen out of use, there is evidence for Late Iron Age activity at Burrough Hill, Crow Hill and Hunsbury (the latter a rare example of a 'developed hillfort' – Cunliffe 1991). Smaller defended sites also remain well attested. Whilst the majority of settlements were small farmsteads, an increasing number of large 'aggregated settlements' appear active at this time, particularly in Northamptonshire (e.g. Wilby Way, Crick, Duston, Stanwick and Twywell) and Leicestershire (e.g. Enderby and Humberstone). In addition, May (1984, 1996) charts the emergence of a series of 'centres' in northern Lincolnshire, including Ludford, Owmby, Ulceby, Old Sleaford, Old Winteringham, Dragonby and Kirmington. The exact nature of these sites is unclear, although Dragonby (like the Late Iron Age centre at Leicester) has been compared to southern British *oppida* sites (Pitts 2010). The main difference between these sites and other large settlements appears to be their consumption of metalwork such as coins and brooches, suggesting these sites may have been enmeshed in social networks which gave them access to a wider range of prestige goods. Only Old Sleaford has produced evidence for specialist functions (coin production).

Many Late Iron sites continued to be occupied into the Roman period, including most of the North Lincolnshire centres, although not some of the other agglomerated settlements such as Humberstone and Enderby. This also applies to the major urban centres of the *Civitas Corieltauvorum,* at Lincoln (*Lindum*) and Leicester (*Ratae*), both founded on the sites of indigenous settlements. Many early villas also have (possibly high status) Late Iron Age origins, including Weekley and Piddington (Northants). Taylor (2006) has synthesised the evidence for Roman settlement. Whilst there are some issues of rural settlement visibility, a fairly dense network of larger nucleated settlements and small towns can be discerned across the region, often clustered along the Roman road network (*ibid*, 144, 148). Large civilian settlements are most densely concentrated in the south and east of the study area, predominantly in Northamptonshire and along Ermine Street.

Military activity is concentrated in the north and west. A network of early forts and marching camps is well attested in Nottinghamshire. Part of the initial expansion after the Claudian invasion, most of these sites were founded by AD 50 and abandoned by AD 70. Further east, in the Trent Valley, first century forts may exist alongside the Fosse Way settlements of Margidunum, Ad Pontem, Crococalana and Vernemetum, but the evidence is inconclusive. A large first century fort lay to the west at Longthorpe, in the Nene valley, close to the major centre and transport hub at Water Newton, on Ermine Street. The Neronian and Flavian periods may have seen a network of forts extending along this road, from Ancaster to Lincoln and the Humber. Lincoln was certainly established by AD 60, and was converted into a *colonia* by AD 96, becoming a major urban centre.

1.3.3 Metalworking industries

The majority of the objects considered in this study are metal items, many of which were locally produced as part of the thriving metalworking industries of the Iron Age and Early Roman East Midlands. Iron production played an extremely important role in the local economy (see e.g. Mattingly 2006, 509-10) owing to the local availability of high quality iron ore. The organisation of the Roman iron industry is now reasonably well understood. Schrüfer-Kolb (2000) produced an integrated synthesis of the production process, from smelting and smithing through to exchange, focusing on a network of sites along the Lincoln Edge. Iron production activities occurred at a range of sites from small villages to larger specialised centres (such as Laxton), which may have been under contract to the state. This builds on other work on contemporary ironworking technology (e.g. Salter & Ehrenrich 1984), and the social and symbolic roles of iron (Hingley 1990; 1997; 2005; 2006).

The East Midlands may also have been a centre for the production of copper-alloy objects (Fox 1958, 45, 56, 145; Jope 1971), although the social organisation of copper-alloy production is less well understood, and seems to have been more distributed in nature than iron production, with many sites showing evidence for limited small-scale copper-alloy working (Dungworth 1997). Only one site in the study area, Weelsby Avenue in North Lincolnshire (Foster 1996), has shown extensive evidence for the production of copper-alloy objects (predominantly horse-gear). Weelsby Avenue itself appears to have been a small enclosed settlement, demonstrating that production activities were not restricted to large settlement centres. The same is also true of Iron Age coin production, which is explored in the chapter which follows.

Chapter 2:
Technological aspects of coin production and working with precious metals

This chapter considers the technological evidence for precious metal working. An introductory section (2.1) provides a preliminary outline of the North-Eastern coin series. Section 2.2 outlines the analysis carried out on objects from the conquest-period hilltop shrine at Hallaton, and briefly reconsiders previous analytical work on gold. Section 2.3 focuses on the reconstruction of coin production techniques, using evidence from the North-Eastern series coins, and modern replicas struck for this study. Section 2.4 integrates this with archaeological evidence for coin production in the East Midlands to outline changes which took place over the Late Iron Age.

2.1 North-Eastern coinage: Types, phases & distributions

There are many excellent summaries of the various regional Iron Age coin series in Britain (e.g. Creighton 2000, 222-227; de Jersey 2001) and several catalogues devoted to this material (e.g. Evans 1864, 1890; Mack 1975; Van Arsdell 1989; Hobbs 1996; Rudd 2010). Whilst some writers (most notably Van Arsdell 1989) have sought to assign specific dates to particular issues, most scholars subscribe to a looser system of chronological phasing developed by Haselgrove (1987, 1993), building on the work of Allen (1944; 1960). These phases are summarised in Table 2.1.

Table 2.1: Phasing of British Iron Age coins, based on Haselgrove (1993) and Creighton (2000)

Haselgrove		Duration	Coin types	Overview
Period	**Phase**			
I	1	Mid/ Late C2 BC	Earliest systematically imported gold coinages; Gallo-Belgic A and B.	Imported Gallic gold and potins, and the earliest British potin production.
	2	Late C2 BC	Later Gallo-Belgic A gold imported. First insular production (cast bronze potins).	
	3	Early C1 BC	British Class I flat linear potins. Latest Gallo-Belgic A and Gallo-Belgic C gold imports, but overall little gold imported.	
II	4	c. 80-60 BC	Class I/II Flat linear potins. Gallo-Belgic C and DC gold imports. First British gold, e.g. British A, B, C, D, F, G.	Later potins. Gallic imports and first British gold.
	5	c. 60-50 BC	Class II Flat linear potins. Gallo-Belgic E and F, and British gold derivatives Qa and La.	Early gold recalled and reminted as British L and Q in the ST/SE and NT.
	6	c. 50-20 BC	Earliest British struck bronze and limited silver. Latest British potins. Legends rare (e.g. Commios).	Creighton's 'dynastic' period, with Roman client kingdoms in the south of England (ST, NT) issuing inscribed coinage with Classical imagery in bronze, silver and gold. Systems differ in the WE, SW, NE, and EA.
III	7	c. 20 BC – AD 10	Inscribed coins in the SE, ST, NT, e.g. Tasciovanus, Addemomaros, Dubnovellaunos, Tincomarus.	
	8	c. AD 10-40	Inscribed coins in the SE, ST, NT, e.g. Cunobelinus, Eppillus and Verica. Also inscriptions in NE and EA.	
	9	c. AD 30-45	Some overlap with phase 8. ST issues including Epaticcus and Cara, also some EA and NE issues.	

Ascription of 'tribal' identities to coinage is problematic (e.g. Sellwood 1984) and has gradually been replaced with an emphasis on regions (Haselgrove 1987; Hobbs 1996; Creighton 2000; de Jersey 2001; see Figure 2.1). The North-Eastern series was produced and circulated in the East Midlands. Under the 'tribal' nomenclature system, this was known first as 'Brigantian', then as 'Coritanian' (e.g. Allen 1963) or 'Corieltauvian' coinage (e.g. Van Arsdell 1989). The less loaded regional terminology is used here.

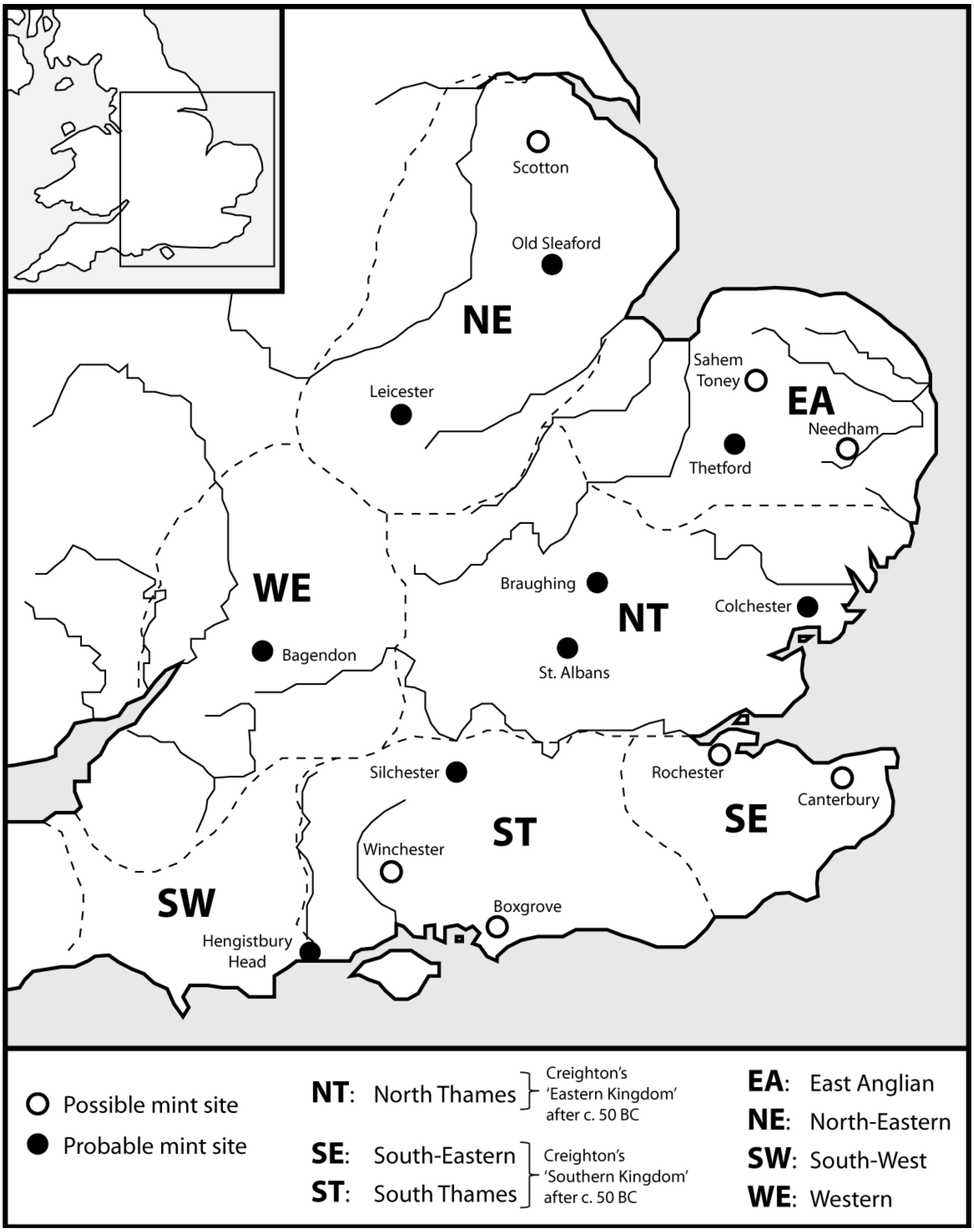


Figure 2.1: Iron Age coin production regions and possible mint sites. (Adapted from de Jersey 1997; 2001)

The first synthesis of the North-Eastern series was provided by Allen (1963), and its phasing was also considered by Haselgrove (1987). More recently, Leins (2007, 2012) has proposed some modifications to Haselgrove's dating. Leins' revised dates are summarised in Table 2.2.

Table 2.2: Revised chronology for the North-Eastern series coins, adapted from Leins (2007, 2012) [additions in square brackets]. Correlation with Haselgrove's phases suggested to allow wider comparison.

Date	Haselgrove Phase	Denominations	Coinage in the East Midlands
Pre-c.50 BC	4/5	[IMPORTS ONLY (Gold staters and quarter staters)]	[IMPORTS ONLY Gallo-Belgic B, D (rare) and E imports. Also rare southern British imports e.g. potins, British G.]
c.50–20 BC	6	Gold Staters (6-6.2g) [and Scyphate quarter staters (1.4g)]	Local yellow-gold prototypes (British H and I). [based on weight standards (Figure 2.2), Ha and Ic (6.2g) may represent an earlier issue than Hb and Id (6.0g). The H/I classification is based on a horse right/horse left distinction.] [Scyphates (dish-shaped quarter staters)]
20 BC–AD 10	7	Gold Staters (5.6g) Silver units (1.3g), half units (0.5g)	First local bimetallic (red-gold and silver) issues. Gold: South Ferriby; Silver: Prototype Boar/Horse issues
AD 10–20/30	8	Gold Staters (5.4g) Silver units (1.1g), half units (0.4-0.5g)	Later uninscribed bimetallic coinage Gold: Kite, domino; Silver: later South Ferriby Boar/Horse and Kite/Domino types.
AD 20/30–45		Gold Staters (5.3-5.4g) Silver units (1.1g), half units (0.4-0.5g), minims (VEP only) (0.2g)	Inscribed issues. Leins divides these into three groups: Southern – TATISOM Central – AVN COST, VEP/ VEP CORF Northern – VOLISIOS DVNOCOVEROS, VOLISIOS DVBNOVELLAVNOS (VDV/C), VOLISIOS CARTIVELAVNOS and DVMNOC TIGIR SENO
Post-AD 40	9		Latest inscribed issues: IISVPRASV

My analysis of gold coinage weight standards using the Celtic Coin Index (CCI) data (Figure 2.2), supports Leins' chronology, placing the South Ferriby issues before their Kite/Domino counterparts (contra Allen 1963). This accords well with the evidence for circulation, based on site assemblages and hoard groups (Leins 2012).

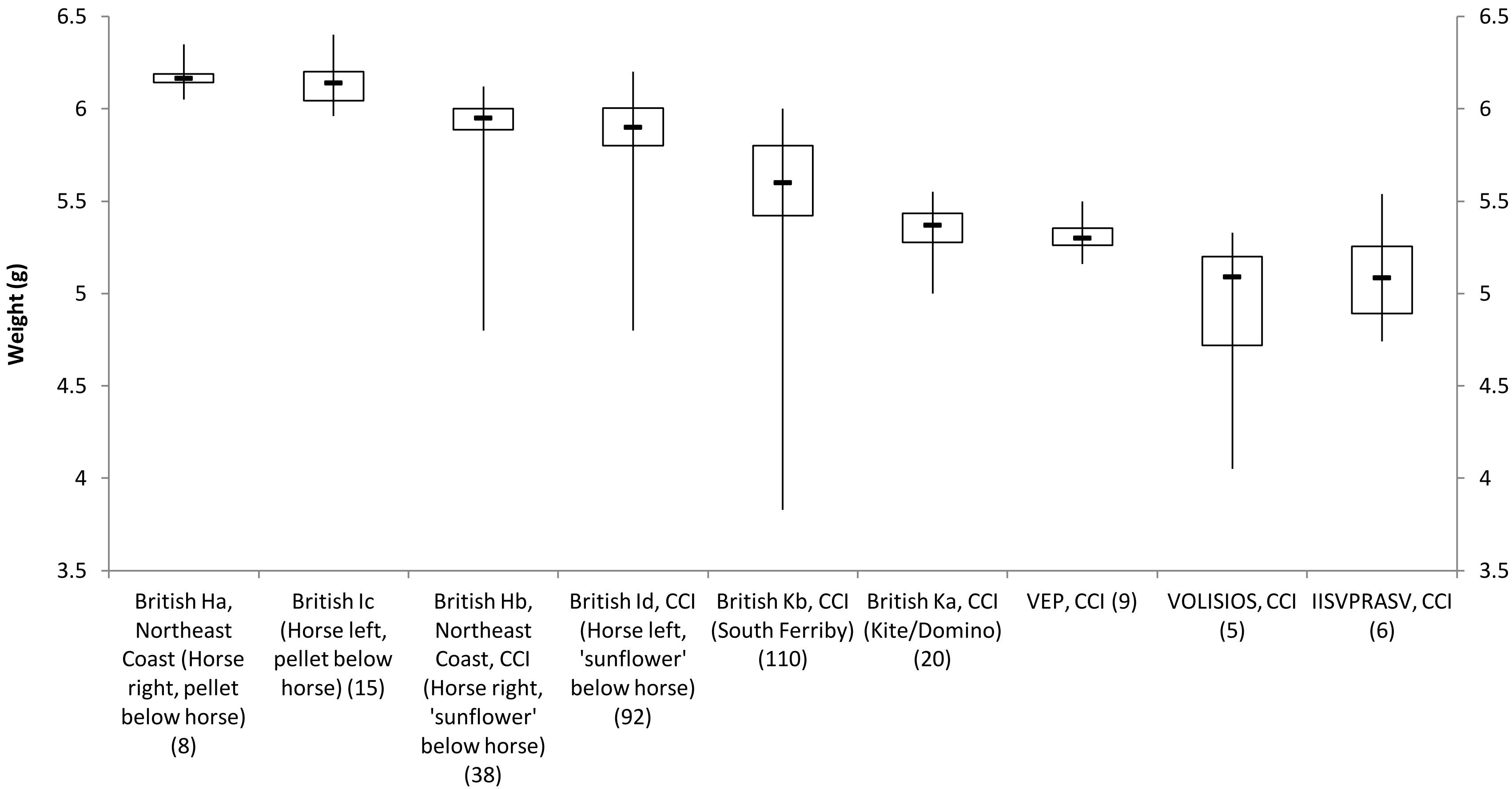


Figure 2.2: Box and whisker plot showing the weight distributions of North-Eastern gold staters. The short horizontal bars represent the median values, the thin vertical lines show the spread of the results from minimum to maximum, and the boxes show the interquartile range (the spread of the central 50% of values). Numbers in brackets are number of coins. The values for VOLISIOS and IISVPRASV may be unreliable due to small sample size.

Leins' most significant departure from Haselgrove's dating is the shorter period proposed for inscribed coinage (15-25 years). This is based on the high proportions of uninscribed coinage (70-90%) at many sites occupied close to the conquest period (e.g. Dragonby, Ancaster, Old Sleaford) (May 1992, 93-111; Leins 2012), and the relative quantities of inscribed and uninscribed coins (around 77% of the North-Eastern coins listed on the CCI are uninscribed). The shorter period allocated to inscribed coinage does not allow much time for a lengthy sequence of rulers to correspond to each type (as per Van Arsdell 1989), but Leins' analysis of the inscribed coins from Hallaton uncovered numerous incidences of production links, suggesting that many of the inscribed types were in fact issued contemporaneously, rather than representing a neat sequential series. Paired names are also common, supporting the idea of contemporary rather than sequential production. Only the IISVPRASV coinage appears notably later (Leins 2007, 2012; Edwards and Dennis 2006), possibly representing a post-conquest issue, although maintaining close connections to the AVN and VEP series. Some post-conquest circulation (and possibly production) of VOLISIOS issues also occurred north of the Humber (Haselgrove 2006a).

It is difficult to fit the production of any coin series into neat chronological 'boxes', and there are problems with Leins' chronology just as with previous dating. Under Leins' system, the South Ferriby gold units fall into an earlier category than their silver counterparts, which share similar (though not identical) designs and are often found in association. In reality there is likely to have been some overlap between these issues. After the production evidence has been considered, a more nuanced chronology with be offered. However, Leins' revised dates appear broadly correct, and are used to allow comparison with other regions.

2.2 The programme of chemical analysis

A programme of analysis was carried out on two ingots, the silver bowl, and a group of silver coins from Hallaton. A variety of techniques were used to reveal information about the composition and structure of the objects, including ICP-OES, WDXRF, NDA and SEM/EDS. In combination, these analyses reveal information about alloying processes, the organisation of production, and the circulation of precious metals in Late Iron Age Britain and beyond.

2.2.1 Aims of the programme of analysis

The programme of analysis was designed to answer questions concerning organisation of coin production, concepts of value, the social role of coinage, and the relationship of the East Midlands to the Roman world in the immediate pre-conquest period. The questions addressed include:

- How were coins produced, and on what scale?
- How closely was their precious metal content controlled?
- What was the source of the silver?
- How centralised was coin production? Were a number of different 'minting authorities' in operation simultaneously, or was coin production fairly standardised?

2.2.2 The microstructure of copper-silver alloys and implications for analysis

Analytical techniques for copper-silver alloys must be carefully selected depending on the internal structure of the metal. This structure is dependent on alloy composition and the production techniques used, and is best discussed in terms of phases. A phase is a region of material with uniform physical and chemical properties. It may be composed of a single element, or several. Pure silver is single-phase. A silver alloy containing less than 8% copper may also be single-phase, with the copper atoms dispersed among the silver atoms. Silver-copper alloys with more than 8% copper will form a two-phase system, consisting of a silver-rich phase (α) and a copper-rich phase (β).

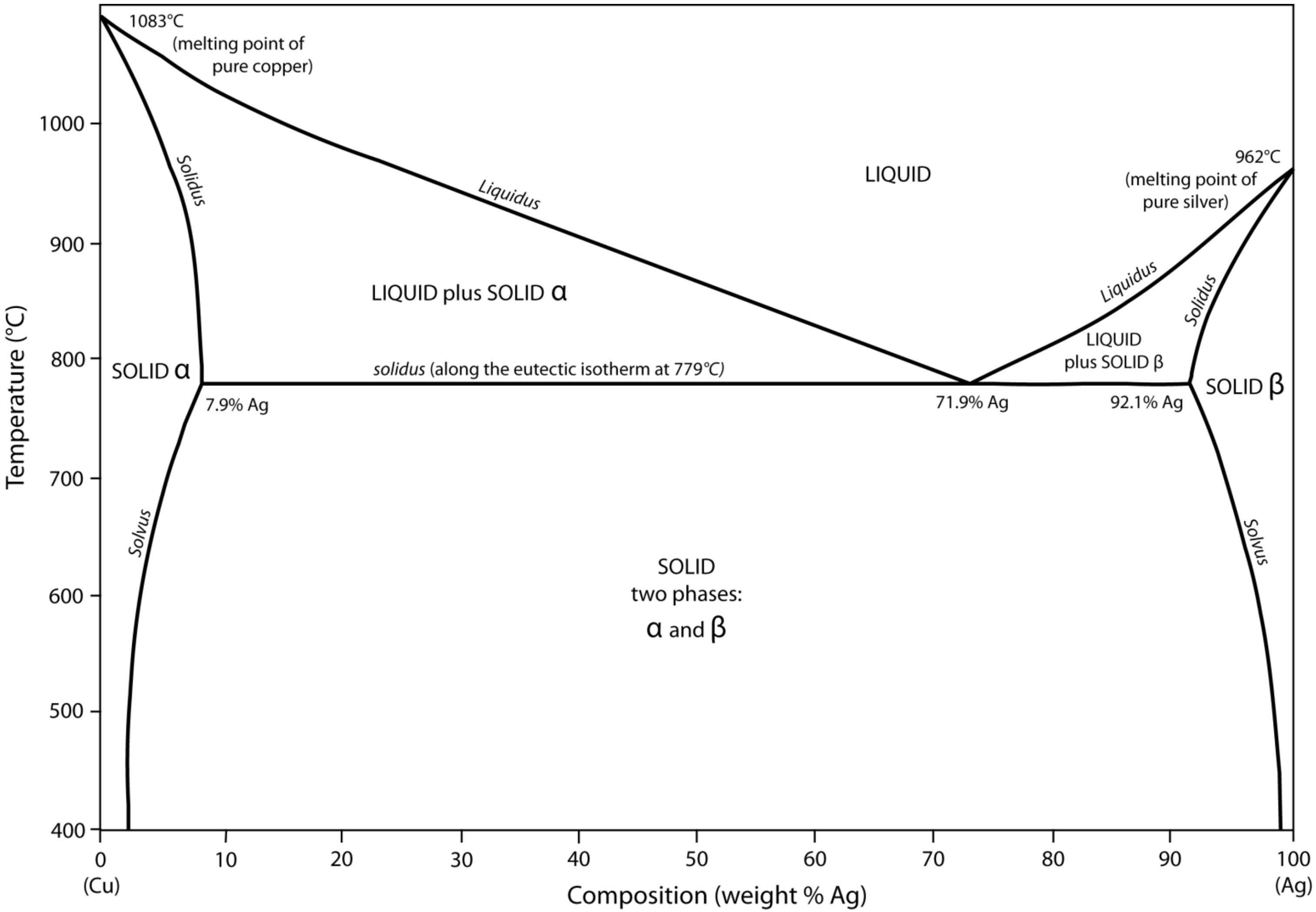


Figure 2.3: The Cu-Ag phase diagram (adapted from Lyman 1973). Temperature is along the vertical axis and composition along the horizontal axis. α is the copper-rich solid phase and β is the silver-rich solid phase.

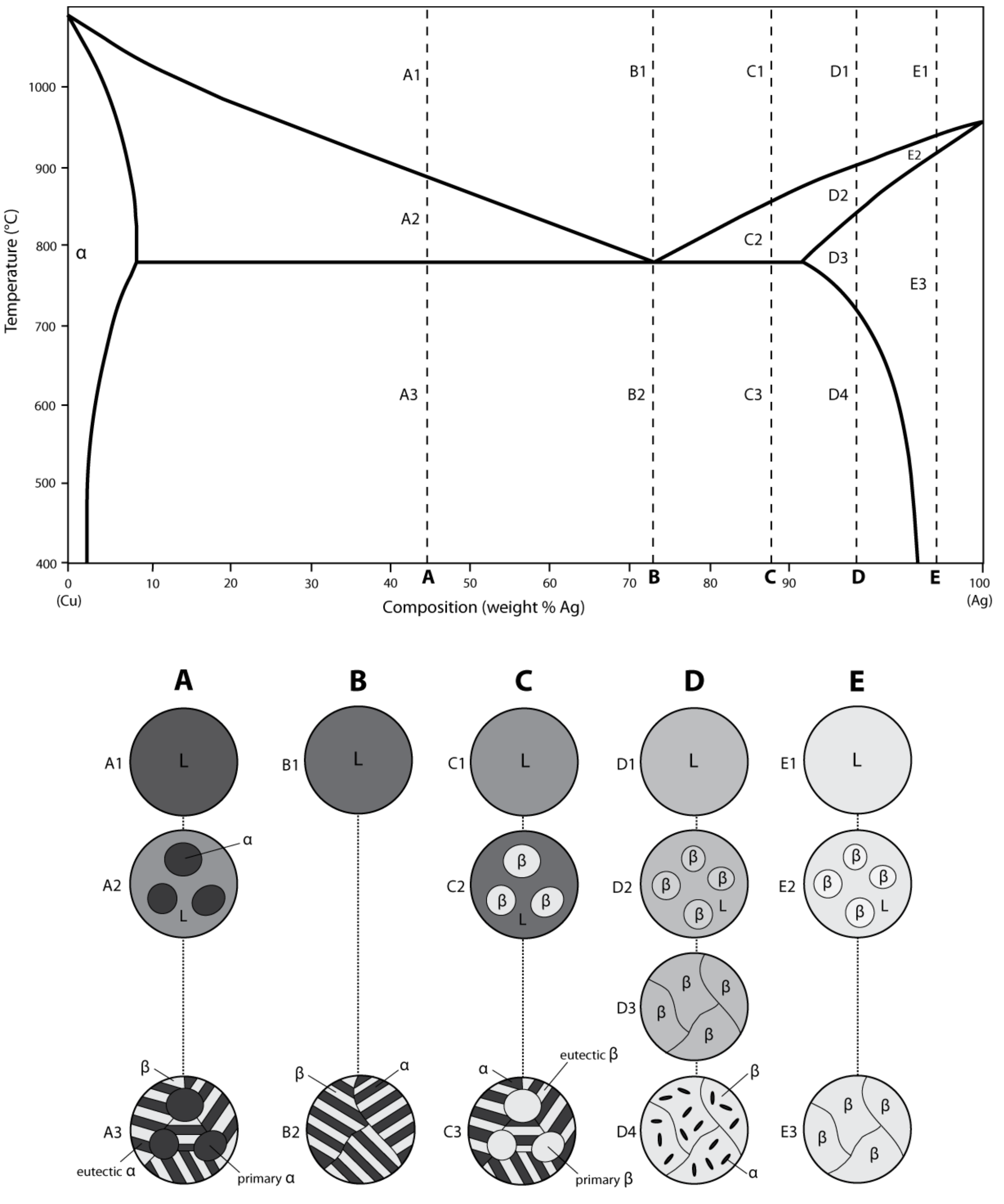


Figure 2.4: Schematic representations of the solidification of various Cu-Ag alloys (based on Callister 1994, 253-9). The 90-100% Ag region has been extended to show composition E in more detail. This assumes gradual cooling; under non-equilibrium conditions (e.g. rapid quenching) other structures are possible. (L: Liquid; α: copper-rich phase; β: silver-rich phase).

Figure 2.3 gives the phase diagram for copper-silver alloys, showing the composition of any copper-silver alloy at a given temperature. As an alloy of a given composition cools under equilibrium conditions (i.e. slowly), it moves vertically down through the phase regions on the diagram. Above the liquidus line the alloy is entirely liquid, below this line it begins to solidify. When pure molten silver or copper are cooled, they change from liquid to solid at a single temperature, the melting point. Other alloys (with the exception of the eutectic at 71.9% Ag) solidify over a range of temperatures, passing through a region (between the liquidus and the solidus) in which they are part solid and part liquid. Below the solidus, the alloy is entirely solid, and may be composed of either one or two phases. The solvus line shows solid solubility levels. Silver and copper are most mutually soluble at higher temperatures. The maximum level of solid solution of silver in copper and vice versa is 7.9%. These peaks occur at the eutectic temperature, the lowest melting point of any copper-silver alloy, 779°C.

Figure 2.4 gives schematic representations of the microstructures most likely to appear in Iron Age coinage. The simplest case occurs with composition E. In practice, for the coins tested, this applied in cases where the silver content was greater than 98.5%. On cooling, the structure takes the form of a single-phase polycrystalline solid. All of the copper remains in solid solution in the β phase. A different pattern is observed for alloys containing 1.5%-7.9% copper (D). At room temperature, the copper content of the alloy is no longer fully soluble, and small α particles crystallise out. The solid displays a two-phase microstructure, consisting predominantly of β crystals, but with small particles of α.

The eutectic alloy (B) is a special case. All constituent elements crystallise simultaneously at the eutectic temperature (779°C). Redistribution of the copper and silver components to form distinct α and β phases is accomplished by atomic diffusion. Because the microstructure transforms at a single temperature, the transformation occurs quickly and the atoms are only able to move short distances. This creates alternating α and β layers (B2) called the eutectic structure (Figure 2.5a).

Figure 2.5a: Part of the internal structure of 'Replica 3,' produced for this study, enlarged from an image taken at approximately 2500 times magnification. This backscattered electron image shows atomic number contrast: higher atomic numbers appear brighter. Thus the silver-rich phase β appears bright and the lower atomic number copper-rich α phase appears dark. The image shows the eutectic structure, with alternating layers of α and β.

The eutectic structure also appears in alloys with compositions C and A. The vast majority of the North-Eastern coins tested fell into category C (71.9%-92.1% silver to copper). In this case, as the metal cools and the liquidus is crossed, β crystals begin to form as grains (C2) or a snowflake-like structure called a dendrite. The spacing of the dendrite arms relates to how fast the metal has cooled, fine arms closely spaced suggest fast cooling, while slower cooling gives a larger dendritic structure. As the metal cools, the remaining liquid reaches the eutectic composition and transforms into the eutectic structure (C4) in the spaces between the β dendrite arms or β grains. The β phase is present as 'primary β' (dendrite or grain) formed during the initial cooling (C2, C3) and in the eutectic structure, where it is referred to as 'eutectic β'. Dendrites are typical of cast alloys. Cold-working will distort the dendrites into flattened, elongated 'dendritic stringers' (Scott 2011, 31), but hot-working will tend to allow recrystallisation and remove the dendrites (Figure 2.5b).

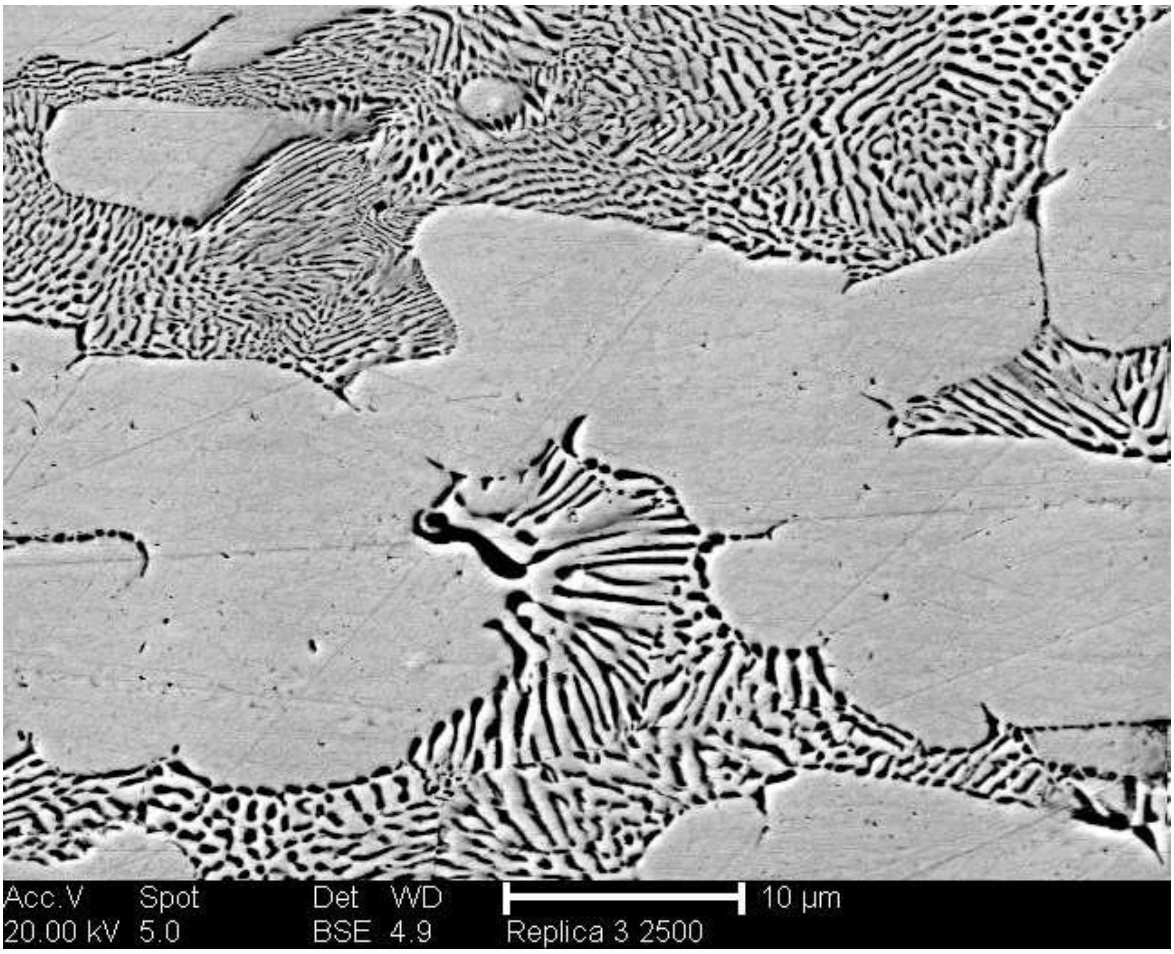


Figure 2.5b: Part of the internal structure of coin 'Replica 3,' produced for this study. This section shows the eutectic structure (Figure 2.5a), filling the gaps between the larger β grains.

In baser alloys (7.9-71.9% copper to silver, A), the proportion of copper is higher than the eutectic alloy. The α phase crystallises out of solution first (A2-3). At 779°C, the remaining liquid solidifies in the eutectic alloy proportions. Alloys with this composition will therefore show primary α and eutectic α. For both A and C, the proportion of the eutectic varies according to composition.

In theory, given an infinitely slow cooling period, the phases would remain in true equilibrium through the process of atomic diffusion. In practice this does not occur, and the α and β phases are not internally homogenous. The heart of the primary β grains will be more silver-rich than their edges, and the heart of the primary α grains will be more copper-rich than their edges. This effect is known as 'coring.'

Surface enrichment and selection of analytical techniques

Non-destructive WDXRF and EDXRF can reliably be used to reveal the chemical composition of certain types of object, but this is not the case for copper-silver alloys in compositional groups A-C (including most British Iron Age silver objects). Alloys containing <92.1% silver will tend to display 'surface enrichment', meaning that the exterior contains a higher percentage of the silver-rich phase (and hence a higher percentage of silver) than the interior (see Figure 2.6).

Non-destructive XRF techniques often cannot penetrate through the surface enrichment layer, giving a misleadingly high silver content. Such techniques may also be affected by corrosion products on the surface. To avoid these problems, it is necessary to analyse material which represents a cross-section of the sound metal at the heart of the coin. It is this heart-metal which most accurately represents the alloy mixed in antiquity (Butcher and Ponting 2005).

Surface enrichment in coins is caused by three main factors (Dennis 2006, 49):

- **Inverse segregation:** In base copper-silver alloys (A, <71.9% silver) the microstructure takes the form of a copper-rich dendrite with the eutectic mixture filling the interdendritic spaces. In such coins, the outer layer appears silver-rich relative to the core. Dennis (*ibid*) argued that this was caused by the interdendritic eutectic being forced to the surface as the alloy solidified. An alternative explanation for this phenomenon is variable cooling rates across the object. The outermost edges of the cast coin pellet are where cooling is fastest, and fine grains form here. The coring effect means that primary α grains contain more silver near the grain boundaries than at their centres, and thus the fine grains at the edges of the pellet are more silver-rich than the interior of the coin. Whatever the ultimate cause of inverse segregation, Dennis (*ibid*) established that it was more important than heat treatment factors in the surface enrichment of East Anglian coins. Inverse segregation was not observed in the North-Eastern coins, the majority of which were higher in silver than the eutectic alloy, and thus do not have a copper-rich dendrite core.

- **Annealing and corrosion:** When a silver-copper alloy object is annealed close to the eutectic temperature (a 'red heat'), copper close to the surface of the metal becomes oxidised, creating black or red staining. The depth of oxidation is proportional to the length of time the coin has been held at high temperature. This staining can be removed by blanching the object in acid (e.g. vinegar or urine), leaching out the oxidised copper to leave a porous silver-rich surface. Natural corrosion processes can mimic this effect by preferential removal of copper. However, this process was intentionally utilised by Roman moneyers to reduce the pinkish-colour of copper-rich silver coins.

- **Work hardening:** When a copper-silver alloy is cold-hammered, the copper-rich phase work hardens faster than the silver-rich phase, allowing the silver-rich phase to flow around it. In the case of base silver coinage (A), this can "result in a pattern of elongated copper-rich dendrites encapsulated in silver... presenting an enriched surface" (Dennis 2006, 49). The same factor is also likely to affect more silver-rich coins, where the copper-rich phase is present only in the eutectic structure.

Thus, although to some extent corrosion processes are responsible for surface enrichment, the phenomenon is related to the alloy used and the treatment of the coin at the time of production. Iron Age and Roman moneyers may have deliberately exacerbated surface enrichment to produce coins of a particular colour, masking reduced bullion content (Butcher and Ponting 2005, Dennis 2006, 49). This is particularly evident in the case of Roman coinage.

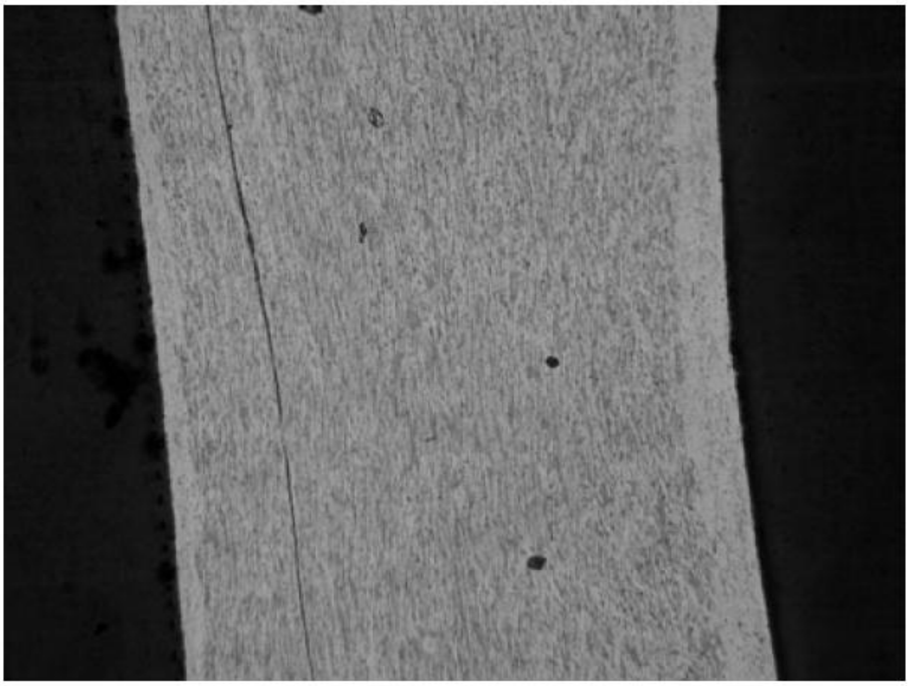


Figure 2.6: SEM back-scatter image of a cross-section through a post-64 *denarius* of Nero, silver content 78.4% (from Butcher and Ponting 2005). The darker areas represent the copper-rich α phase and the lighter areas show the silver-rich β phase.

On both faces of the Roman *denarius* in Figure 2.6, a silver-enriched surface layer is clearly visible. The coin blank was heated for an extended time and then blanched to remove surface copper. The silver-rich surface was then consolidated by cold-striking the coin, evidenced in the deformed, elongated grain structure. The resulting effect is almost akin to plating (Butcher and Ponting 2005, 173-4). Less extreme surface enrichment was also encountered by Dennis (2006) in the East Anglian coinage.

In order to test for surface enrichment in the North-Eastern coins, the results of several different techniques (WDXRF, NDA, SEM/EDS) were combined to give the fullest possible picture of their composition and production processes. All coins were tested using both non-destructive WDXRF (as a preliminary measure of silver content, and to gauge relative proportions of trace elements) and NDA to give a more accurate analysis of silver content. SEM/EDS was used to produce images of the internal structure of a sample of coins, and to quantify the composition of the heart metal. For other objects tested (two ingots and a silver bowl), ICP-OES analysis was used to reduce any chance of contamination from surface material. See Pollard et al. (2007) for more information on the techniques used.

In almost all ancient coins containing less than 94% silver by NDA, WDXRF gave a higher value for silver content, suggesting some degree of surface-enrichment (Figure 2.7) in one coin imaged using SEM/EDS this was quite extreme, extending to a depth of 200μm. However, there is little evidence for the intentional control of surface-enrichment properties. This might have been unnecessary: bullion content was on average higher than in many British regions. In most cases corrosion and heating time appeared the dominant factors, and extended heat treatment was not reserved for low-silver coinage.

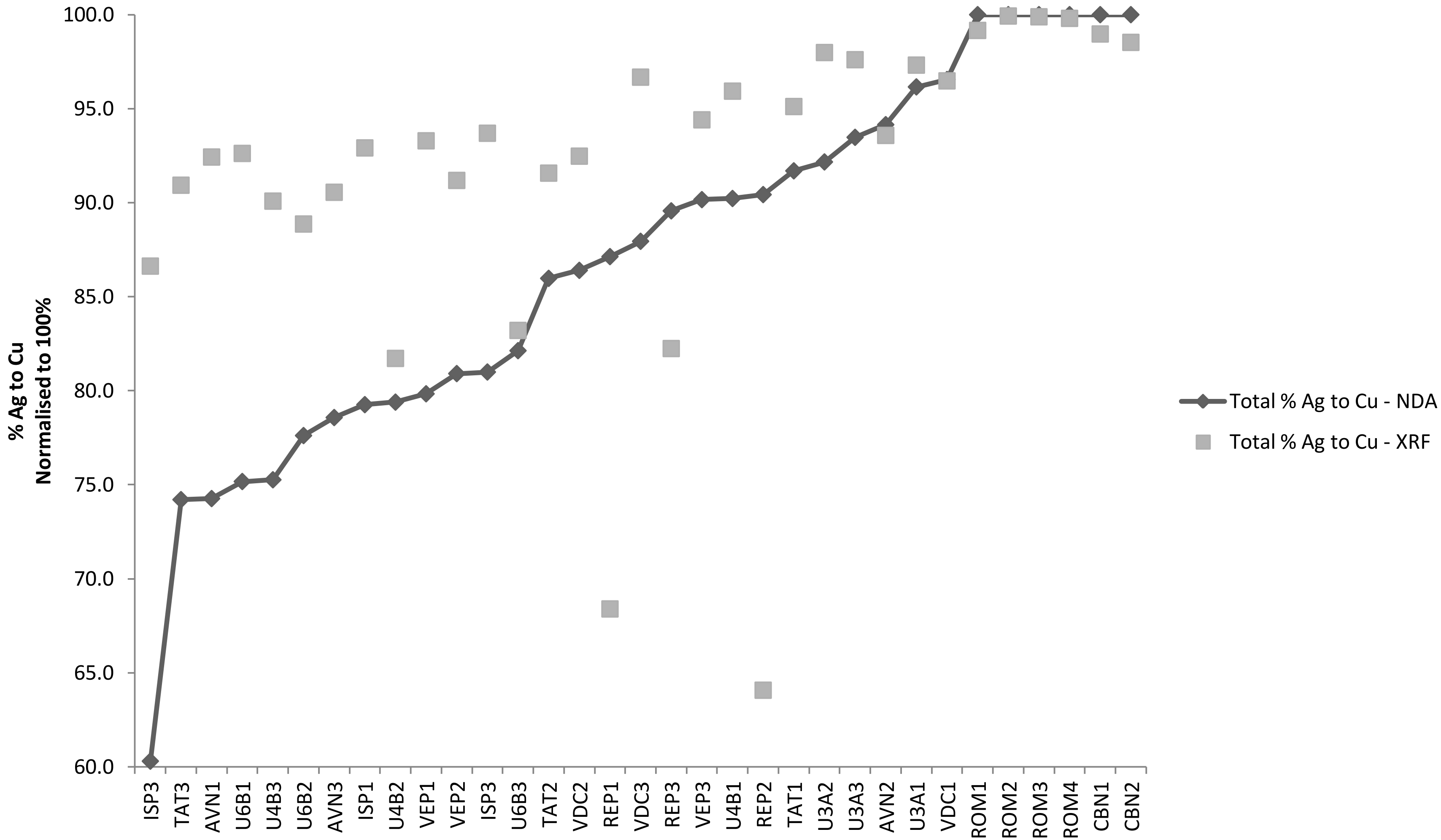


Figure 2.7: Comparison of XRF and NDA results, showing the effects of surface enrichment. XRF gives an analysis of the elements present on the surface of the coin, whilst NDA gives a bulk analysis. Coins with a bulk composition <94% Ag by NDA tend to show surface enrichment. The three notable exceptions are modern replicas, where results were skewed by surface oxidation from the production process.

2.2.3 Analysis of silver objects from the Hallaton treasure

The ingots

Two of the Hallaton ingots, one semi-circular, one triangular (Score 2012, No.s 43 and 44), were analysed using ICP-OES. Three samples were drilled from widely-spaced points on each ingot. The ICP method is outlined in Farley (2012).

Results

The results are shown in Table 2.3. The accuracy of these results, by comparison with certified standard reference metals and solutions, is approximately 2–3% for major elements and 5–6% for minor and trace elements. The elements recorded as 'below detection limit' had very low concentrations of <0.05ppm which would equate to <0.002%.

The semi-circular ingot (No. 43) is a tin bronze, approximately 85% copper to 13% tin. The triangular ingot (No. 44) is high in silver (around 83%), debased with copper (around 15%). Both also contain a variety of trace elements. The close agreement between the samples for each ingot shows a high degree of homogeneity within each artefact.

Table 2.3: ICP-OES results for samples from the semicircular ingot and the triangular ingot. (BDL: below detection limit; ND: not detected).

Sample	Concentrations as Weight % (Normalised to 100%)												
	Ag	As	Au	Bi	Co	Cu	Fe	Mn	Ni	Pb	Sb	Sn	Zn
Semi-circular A	BDL	0.049	0.743	BDL	0.007	86.011	0.344	ND	0.062	0.298	0.086	12.356	0.043
Semi-circular B	BDL	0.054	0.773	BDL	0.008	84.697	0.401	ND	0.064	0.315	0.097	13.506	0.085
Semi-circular C	BDL	0.049	0.749	BDL	0.007	85.378	0.355	ND	0.063	0.285	0.087	12.990	0.037
Semi-circular (average)	BDL	0.051	0.755	BDL	0.008	85.368	0.366	ND	0.063	0.299	0.090	12.947	0.054
Triangular D	82.464	BDL	0.614	BDL	0.003	15.098	0.213	ND	BDL	0.546	0.013	0.980	0.068
Triangular E	82.887	BDL	0.556	BDL	0.003	14.946	0.201	ND	BDL	0.504	0.012	0.850	0.041
Triangular F	83.211	BDL	0.560	BDL	0.003	14.856	0.069	ND	BDL	0.474	0.010	0.789	0.028
Triangular (average)	82.847	BDL	0.577	BDL	0.003	14.969	0.162	ND	BDL	0.509	0.012	0.875	0.046

Interpretation and conclusions

Both ingots were initially believed to be silver. In fact, they emerged as strikingly different in composition, with the semi-circular ingot containing no silver at all. This highlights the need for scientific analysis to determine composition, both for the archaeological information this can provide and also to ensure that correct conservation procedures are followed.

The triangular ingot is known to have been produced partly by melting down coinage. Two coins are visible half-melted into the upper surface, at least one appears to be North-Eastern (Leins 2012). I argue below that the composition of this ingot (in particular the silver content, the variety of trace elements, and the proportions of lead and tin) suggests that it was produced by recycling a non-selective mixture of North-Eastern coins, rather than by debasing silver bullion with a copper alloy. The Pb–Sn–Zn ratio and the ratio of silver to copper are both extremely close to the mean values for the North-Eastern coins tested.

The bowl

A sample of around 20mg was scraped from the edge of the damaged area at the base of the bowl (Score 2012, No. 30) and analysed using ICP-OES (full details in Farley 2012). The analysis was done by Chris Walne at the London Assay Office, and I am grateful to Chris for permission to include these results.

Results

The results are shown in Table 2.4. Accuracies and detection limits are as for the ingots. The bowl is high in silver (84%), debased mainly with copper (13%) and also containing traces of gold, lead and tin.

Table 2.4: ICP-OES results for the bowl

Sample	Concentrations as Weight % (Normalised to 100%)														
	Ag	**As**	**Au**	**Bi**	**Cd**	**Co**	**Cu**	**Fe**	**In**	**Mn**	**Ni**	**Pb**	**Sb**	**Sn**	**Zn**
Bowl	84.03	BDL	0.404	ND	ND	ND	12.78	BDL	ND	ND	BDL	1.816	ND	0.292	BDL

Interpretation and conclusions

These results are consistent with a production route involving the debasement of a relatively pure silver alloy with copper. Recycling of lower purity silver (such as local coinage) would result in a higher proportion of tin to lead, and the presence of a wider variety of trace elements (as seen in the triangular ingot). See below for full discussion.

The silver bullion available to Late Iron Age metalworkers was not pure, but contained small quantities of lead, gold and bismuth, generally accounting for at least 1–2% of the alloy (Scott 2011, 28–9). These elements derived either from the ore itself, or the extraction process (Craddock 1995, 211–14; Dennis 2006, 54). The total of these elements gives an idea of the bullion content of the silver alloy used to make the bowl, which is around 86%. The silver bullion was debased with a relatively pure copper alloy (around 98% copper to 2% tin). The purity of the alloys used suggests that this was a carefully undertaken project, probably carried out by an experienced metalworker who intended to produce an alloy with specific qualities.

Pure silver is extremely soft, and adding around 13% copper would have made the resulting alloy harder and more durable, whilst maintaining its ductility. First century Roman silver plate was generally debased by 1-5% with copper, but was rarely debased by more than 10% (Strong 1979, 4; Dennis 2006, 119). The comparably high copper content of the bowl alloy could support the hypothesis that this object was produced in Britain. Although composition alone cannot rule out production elsewhere outside the Roman world, stylistic similarities with British vessel forms suggest local production. Copper-alloy vessels which display similar production techniques are known from several British sites, so the discovery of a similar vessel in precious metal is not unexpected.

The coins

Sample and methodology

Thirty-six coins were tested, including 24 Iron Age British coins from the North-Eastern series, selected to represent the range of uninscribed and inscribed types present in the hoard. Each type sampled was represented by three coins. Two coins of Cunobelin and four Roman *denarii* were also tested. With the exception of one Roman coin, all were from Hallaton. Six replica coins were also tested for comparative purposes. The replicas were made from an alloy of 90% silver, 10% copper, using techniques similar to those thought to have been used in Iron Age Britain. Neil Burridge, the metalworker responsible for producing the replicas, has worked extensively with Philip de Jersey (de Jersey 2009) to investigate Iron Age coin production techniques. Production of the replicas is shown in Appendix 1, a video produced for Market Harborough Museum.

The coins were first tested using WDXRF to give a preliminary indication of their composition (Farley 2012). Since surface preparation was not undertaken, the XRF results cannot be regarded as fully quantitative.

The NDA (neutron diffraction analysis) was carried out on the GEM instrument at the STFC-funded ISIS research facility in Oxfordshire (for methodology see Farley 2012). The diffraction results gave information on the bulk composition of the coins. Texture patterns were also analysed to give information concerning manufacturing routes; this aspect is explored further below, alongside the SEM imaging of the coins.

Results

The XRF results (Tables 2.5 and 2.6) give a semi-quantitative indication of the composition of the coins. As expected, this revealed complex alloys of Ag–Cu. With the exception of the replicas (produced using pure Ag and Cu), most contained small proportions (almost exclusively <2%, and generally much lower) of Au, Bi, Fe, Pb, Sn and Zn. The Pb–Sn–Zn ratios and Bi-Au ratios are discussed below.

Table 2.5: Results of WDXRF on North-Eastern series coins, normalised to 100%. Values for Cu and Ag are affected by surface enrichment (Figure 2.7).

Category	Type	Code	Ag	Cu	Fe	As	Zn	Sn	Bi	Au	Pb
North-Eastern series Uninscribed	3a ('Ferriby' unit)	U3A1	95.25	2.63	0.55	0.00	0.00	1.02	0.00	0.29	0.26
		U3A2	96.61	1.99	0.34	0.00	0.00	0.02	0.11	0.61	0.33
		U3A3	96.79	2.37	0.19	0.00	0.00	0.00	0.00	0.42	0.23
	4b ('Ferriby' half unit)	U4B1	95.12	4.03	0.20	0.00	0.04	0.03	0.00	0.41	0.17
		U4B2	79.74	17.84	0.09	0.00	0.00	1.49	0.00	0.45	0.40
		U4B3	89.38	9.84	0.00	0.00	0.02	0.00	0.00	0.33	0.43
	6b ('kite' unit)	U6B1	90.15	7.18	0.11	0.00	1.29	0.00	0.16	0.44	0.67
		U6B2	86.06	10.78	0.84	0.00	0.18	1.49	0.03	0.34	0.29
		U6B3	80.10	16.17	0.15	0.00	1.42	1.31	0.00	0.26	0.59
North-Eastern series Inscribed	AVN Type 2 (Unit)	AVN1	91.29	7.48	0.12	0.00	0.00	0.02	0.00	0.83	0.26
		AVN2	91.43	6.28	0.25	0.00	0.00	0.85	0.00	0.69	0.50
		AVN3	84.51	8.82	0.00	0.00	0.06	5.05	0.00	0.69	0.86
	IISVPRASV Type 1 (unit)	ISP1	92.20	7.03	0.12	0.00	0.00	0.00	0.00	0.40	0.24
		ISP2	87.36	5.88	0.47	0.00	0.17	4.37	0.00	0.45	1.30
		ISP3	76.84	11.86	0.17	0.00	0.07	0.00	0.05	10.84	0.17
	VEP Type 3b (unit)	VEP1	90.98	6.54	1.34	0.00	0.05	0.00	0.03	0.50	0.55
		VEP2	89.01	8.61	0.11	0.00	0.00	1.21	0.18	0.47	0.41
		VEP3	90.86	5.38	0.07	0.00	0.02	2.21	0.05	0.42	1.00
	IATISON Type 1 (unit)	TAT1	93.24	4.79	0.08	0.00	0.00	0.87	0.05	0.55	0.42
		TAT2	88.47	8.14	0.30	0.00	0.14	1.24	0.10	0.91	0.70
		TAT3	90.09	8.99	0.17	0.00	0.03	0.00	0.05	0.45	0.21
	VDC Type 2 (half unit)	VDC1	84.14	3.07	0.00	0.00	9.98	0.00	0.47	1.10	1.24
		VDC2	90.19	7.34	1.01	0.00	0.19	0.00	0.11	0.72	0.43
		VDC3	95.83	3.30	0.11	0.00	0.00	0.02	0.05	0.48	0.21

Table 2.6: Results of surface WDXRF on southern British, Roman and replica coins, normalised to 100%. Values for Cu and Ag are affected by surface enrichment in the ancient coins, and the presence of copper oxide on the surface of the replicas (Figure 2.7). ICP results for ROM4 (carried out on heart metal drilled from the interior of the coin) are included for comparison. The close accordance suggests that the XRF results are reasonably accurate for minor and trace elements.

Category	Type	Code	Ag	Cu	Fe	As	Zn	Sn	Bi	Au	Pb
Roman	RRC 442 (49 BC)	ROM1	98.31	0.83	0.19	0.00	0.00	0.00	0.00	0.44	0.23
	RIC 30 (Tiberius, AD 14-37)	ROM2	98.43	0.07	0.65	0.00	0.00	0.00	0.10	0.69	0.05
	RIC 167a (Augustus, 15-13 BC)	ROM3	98.56	0.11	0.33	0.00	0.00	0.00	0.06	0.86	0.08
	RRC 458/1 (Caesar, 47-46 BC)	ROM4	99.12	0.19	0.22	0.00	0.00	0.00	0.00	0.37	0.09
		ROM4 ICP	98.83	0.66	0.06	0.00	0.07	0.01	0.00	0.31	0.06
North Thames British	Cunobelin VA 2057	CBN1	97.79	1.02	0.17	0.00	0.00	0.00	0.00	0.92	0.11
	Cunobelin VA 2061	CBN2	97.55	1.46	0.10	0.00	0.00	0.00	0.00	0.89	0.00
Replicas made by Neil Burridge	Replica 1	REP1	67.64	31.26	1.01	0.00	0.04	0.00	0.00	0.00	0.05
	Replica 2	REP2	63.39	35.55	1.05	0.00	0.00	0.00	0.00	0.00	0.00
	Replica 3	REP3	81.40	17.58	1.02	0.00	0.00	0.00	0.00	0.00	0.00

Whereas the XRF results give a semi-quantitative analysis of the elements present on the surface of the coins, NDA gives a quantitative analysis of the phases which comprise the bulk of each coin. The results are given in Tables 2.7 and 2.8.

Table 2.7: Phase results from the neutron diffraction analysis of North-Eastern coins. (BDL: below detection limits).

Category	Type	Code	Cat. No.	Phase results from NDA					Approx. % Ag to Cu, including Cu and Ag from compound phases, normalised to 100%
				Wt% Ag phase	Wt% Cu phase	Wt% Cu_2O phase	Wt% AgCl phase	Wt% CuCl phase	
North-Eastern series Uninscribed	3a ('Ferriby' unit)	U3A1	3208	95.86	3.83	BDL	BDL	BDL	96
		U3A2	3209	91.9	7.81	BDL	BDL	BDL	92
		U3A3	3243	93.13	6.5	BDL	BDL	BDL	93
	4b ('Ferriby' half unit)	U4B1	2057	89.05	3.78	6.61	BDL	BDL	90
		U4B2	0012	78.9	16.2	4.82	BDL	BDL	79
		U4B3	0571	74.74	19.23	6.01	BDL	BDL	75
	6b ('Kite' unit)	U6B1	1300	74.49	17.84	7.62	BDL	BDL	75
		U6B2	0013	76.86	17.66	5.08	BDL	BDL	78
		U6B3	0014	81.63	13.26	5.07	BDL	BDL	82
							BDL	BDL	
North-Eastern series Inscribed	AVN Type 2 (Unit)	AVN1	0193	73.81	22.18	3.83	BDL	BDL	74
		AVN2	0185	91.54	1.76	4.54	2.15	BDL	94
		AVN3	2372	78.05	18.71	2.9	BDL	BDL	79
	IISVP RASV Type 1 (unit)	ISP1	0252	79.09	19.03	1.88	BDL	BDL	79
		ISP2	0259	80.59	17.18	1.95	BDL	BDL	81
		ISP3	0246	60.24	39.12	0.62	BDL	BDL	60
	VEP Type 3b (unit)	VEP1	2724	79.57	18.49	1.81	BDL	BDL	80
		VEP2	0046	80.58	16.49	2.84	BDL	BDL	81
		VEP3	0048	89.3	5.81	4.43	BDL	BDL	90
	TATISOM Type 1b (unit)	TAT1	0233	90.8	3.69	4.32	BDL	1.09	92
		TAT2	0235	84.82	6.81	7.45	BDL	0.64	86
		TAT3	0237	73.99	23.66	2.32	BDL	BDL	74
	VDC Type 2 (half unit)	VDC1	0425	96.24	1.76	1.89	BDL	BDL	97
		VDC2	3196	85.99	9.90	4.09	BDL	BDL	86
		VDC3	1790	87.52	8.39	4.06	BDL	BDL	88

Table 2.8: Phase results from neutron diffraction analysis of the southern British, Roman and replica coins. (BDL: below detection limits).

Category	Type	Code	Cat. No.	Phase results from NDA					Approx. % Ag to Cu, including Cu and Ag from compound phases, normalised to 100%
				Wt% Ag phase	Wt% Cu phase	Wt% Cu2O phase	Wt% AgCl phase	Wt% CuCl phase	
Roman	RRC 442 (49 BC)	ROM1	0437	99.76	BDL	BDL	BDL	BDL	100
	RIC 30 (Tiberius, AD 14-37)	ROM2	3341	98.3	BDL	BDL	1.53	BDL	100
	RIC 167a (Augustus, 15-13 BC)	ROM3	1291	99.73	BDL	BDL	BDL	BDL	100
	RRC 458/1 (Caesar, 47-46 BC)	ROM4	N/A	97.85	BDL	BDL	2.01	BDL	100
Non-local British (North Thames region)	Cunobelin (VA 2057)	CBN1	0009	99.42	BDL	BDL	BDL	BDL	100
	Cunobelin (VA 2061)	CBN2	2050	98.92	BDL	BDL	0.61	BDL	100
Replicas		REP1	N/A	86.8	12.82	BDL	BDL	BDL	87
		REP2	N/A	90.05	9.53	BDL	BDL	BDL	90
		REP3	N/A	89.47	9.98	0.5	BDL	BDL	90
		REP4	N/A	87.21	12.27	0.5	BDL	BDL	87
		REP5	N/A	90.01	9.58	BDL	BDL	BDL	90
		REP6	N/A	88.51	11.08	BDL	BDL	BDL	89

Whilst NDA cannot reveal information about trace elements present at concentrations of below *c.* 0.5%, it has a major advantage over XRF. The XRF results are highly dependent on the elements present near the surface of the coin, and are thus affected by surface enrichment (Figure 2.7; Dennis 2006, 49–53; Gitler and Ponting 2003, 10–16; Butcher and Ponting 2005, 173–4). NDA is a non-destructive technique that measures the total composition of each coin without requiring any sample preparation. The high level of penetration achieved by the neutron beam means that the results reflect the composition of the entire coin, not just the surface, or particular targeted regions.

The raw NDA data (Tables 2.7 and 2.8) quantify phases, rather than the elemental composition of the coins. A silver-rich and a copper-rich phase (Figures 2.3 and 2.4) were encountered as the main phases in all North-Eastern issues. In the less debased Roman and southern British coins, all copper remained in solid solution in the silver phase. Some coins showed small proportions of corrosion phases (Cu_2O, AgCl and CuCl). The minor elements detected in the XRF analyses were not present as separate phases in the coins, suggesting that they remained in solid solution in the metal, probably as a more complex Ag–Sn–Cu phase.

Since the results for Cu and Ag represent the proportions of these phases, rather than the elements themselves, some care needs to be taken in interpreting the results. Lattice parameter shifts confirmed that these phases do not consist of the pure elements copper and silver. Comparison with the XRF results showed correlations between the degree of the lattice parameter shift and the levels of other elements detected. The patterns suggested that the lattice parameter shifts were due to small proportions of copper and gold dissolved in the silver phase, and low levels of silver and tin dissolved in the copper phase. Most important here is the fact that the silver phase includes a small proportion of copper in solid solution, and vice versa. Levels of solid solution depend on a number of factors, including temperature; the maximum level of solid solution for copper in silver and vice-versa is around 8% at 779°C (Figure 2.3). Levels of solid solution at room temperature are much lower. XRF testing on East Anglian silver coinage suggests that the maximum observed level for solid solution of silver in copper and vice versa is around 3–4% (Dennis 2006, 49).

Because of the difficulty in establishing the levels of solid solution in each coin, for the purposes of calculating the percentage of silver to copper, the Ag and Cu phases were treated as if they represented pure Ag and Cu. Comparison with known values and results from other techniques demonstrates that the results given here for percentage of Ag to Cu should be considered accurate to within ±2-3%. The replicas are known to consist of approximately 10%

Cu, 90% Ag by weight, and the mean % Ag to Cu from the NDA was 89%. XRF results for the coins which displayed only a single homogenous silver phase (the Roman issues and the coins of Cunobelin) showed concentrations of less than 1.5% Cu, and this was further confirmed by ICP analysis on ROM4. A representative sample of three replica and three ancient coins were also tested using SEM/EDS (energy dispersive XRF in combination with a scanning electron microscope). A small area at the edge of each coin was ground and polished, removing approximately 1mm of material to reveal the internal structure. The average (mean) difference between the SEM/EDS and NDA results for normalised % Ag to Cu was just 1.5%, further supporting the accuracy of the NDA values given in Tables 2.7 and 2.8.

The silver phase more accurately reflects 'precious metal' content than pure silver. At low levels, gold will be present in solid solution in the silver, but even if there were enough gold to form a separate phase, the lattice parameters for Ag and Au are too close to be distinguishable by NDA. Nevertheless, this phase is considered as a silver phase here for two reasons. Firstly, all but one of the coins showed less than 1.2% gold when tested using XRF (at this level the gold would most likely be present in solid solution in the silver, rather than forming a separate phase), so this will not affect the results to any great degree. Secondly, the low levels of gold present should rightly be considered to form part of the silver bullion content of the coins (Craddock 1995, 211–14; Scott 2011, 28–9; Dennis 2006, 54).

Interpretation and conclusions

Figure 2.8 displays the analysis results graphically. There seems to have been very little concern to standardise the silver content of particular coin types, with ranges of 10–15% within types the norm. Nevertheless, the silver content of most of the coins is relatively high, only one showing less than 74% Ag to Cu. There is also no clear pattern of debasement over time, as has been suggested for the East Anglian and Western coinage (Dennis 2006; Northover 1992). This is demonstrated in Figure 2.9, which shows the relative purities of the (earlier) uninscribed and (later) inscribed types tested.

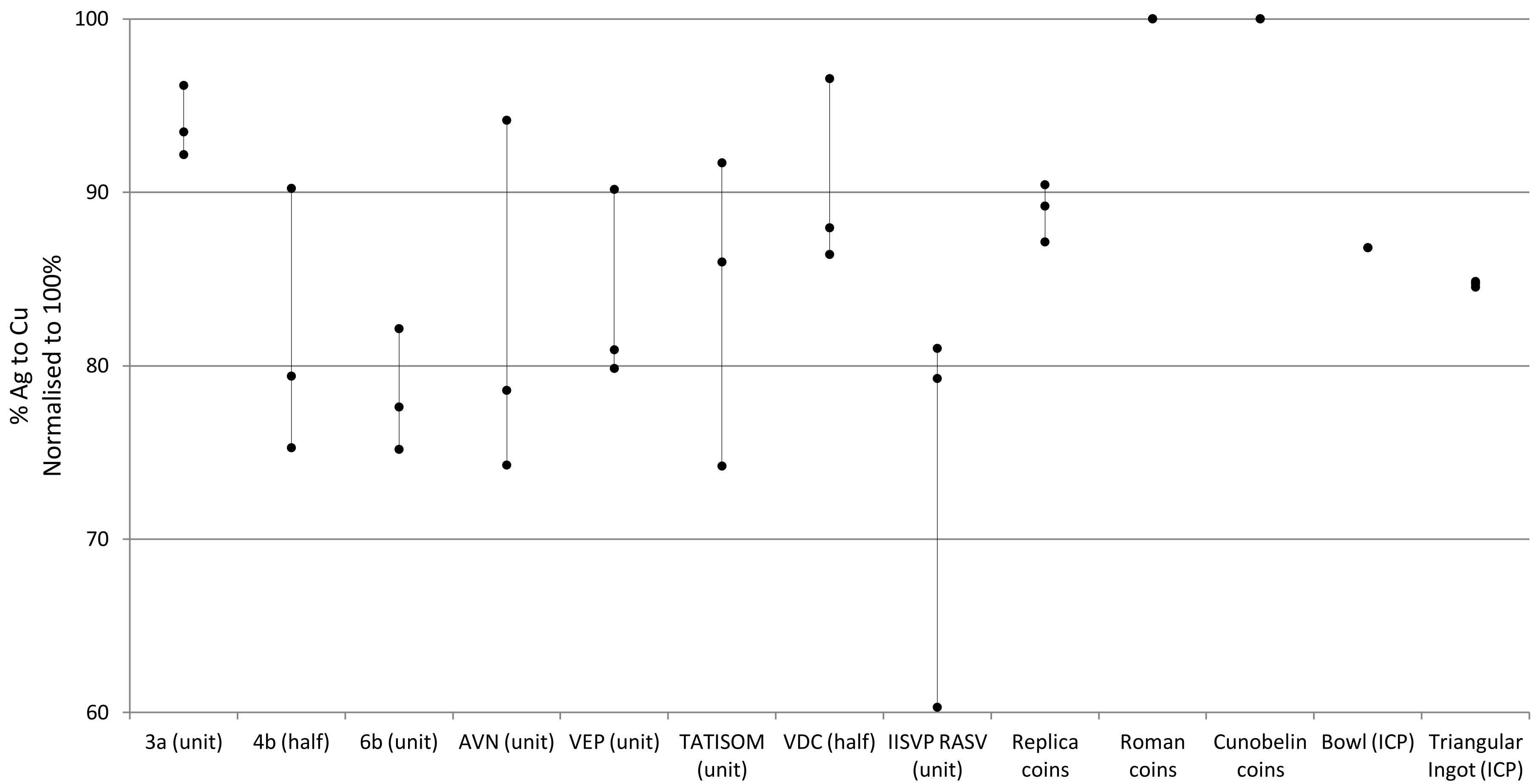


Figure 2.8: The percentage of silver to copper normalised to 100% for all silver objects analysed. NDA results are used for the coins, ICP results for the bowl and triangular ingot. Each dot represents a single analysis – except in the case of the replicas, where the three dots represent the maximum, minimum and median values of six analyses. The three near-identical results from the triangular ingot cannot be distinguished individually.

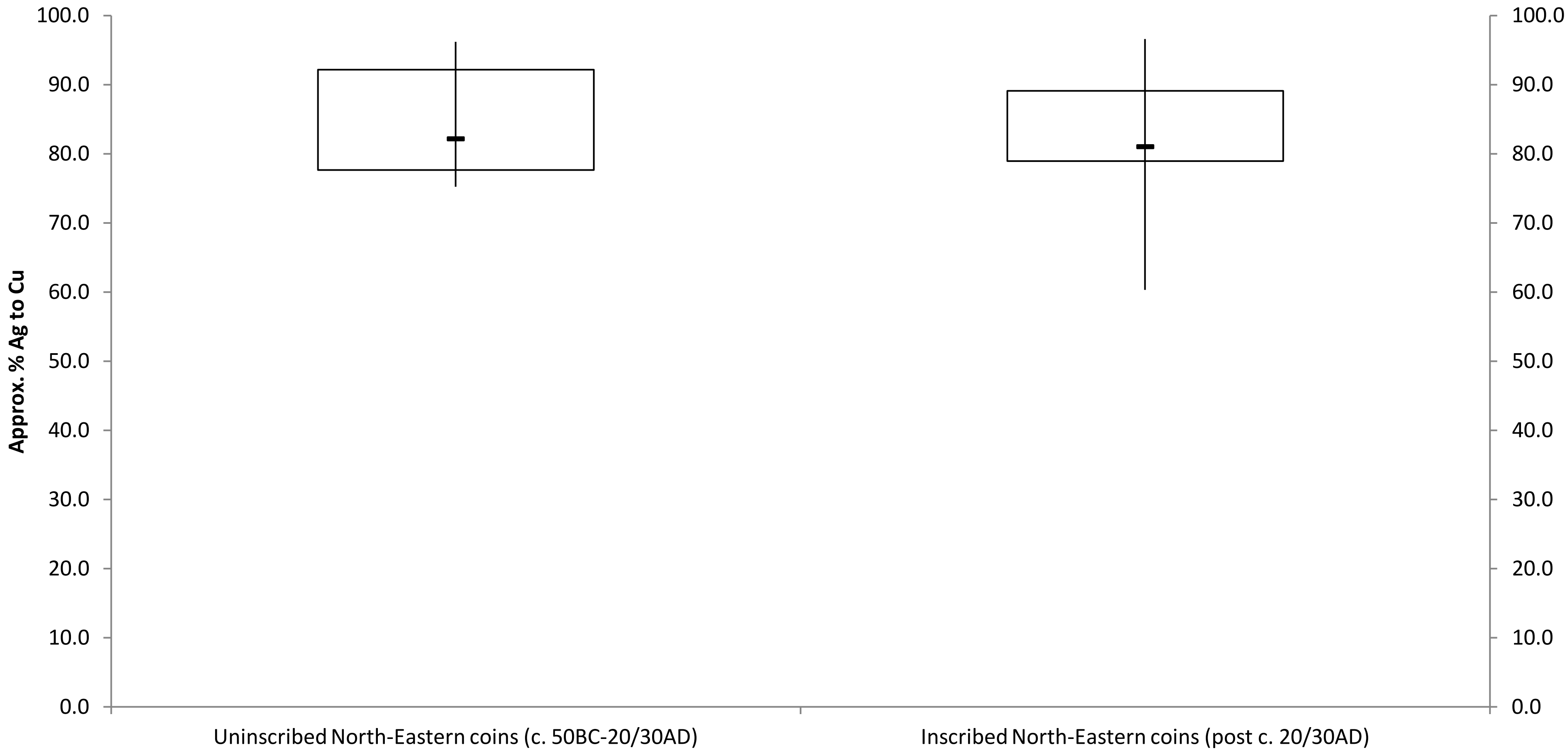


Figure 2.9: Box and whisker plots showing the silver purity of uninscribed and inscribed North-Eastern coins.

The vast majority of North-Eastern silver coins from both periods are 75–95% pure. This represents quite a high level of purity, standardisation and continuity in alloy composition compared to East Anglian and Western issues (Dennis 2006; Northover 1992). Figure 2.9 seems to suggest that uninscribed coins were less standardised than inscribed coins, but this masks the fact that the alloys represented in the uninscribed coins are not evenly distributed over the 75–95% silver range. Figure 2.10 shows the frequency of different alloy compositions for both inscribed and uninscribed coins.

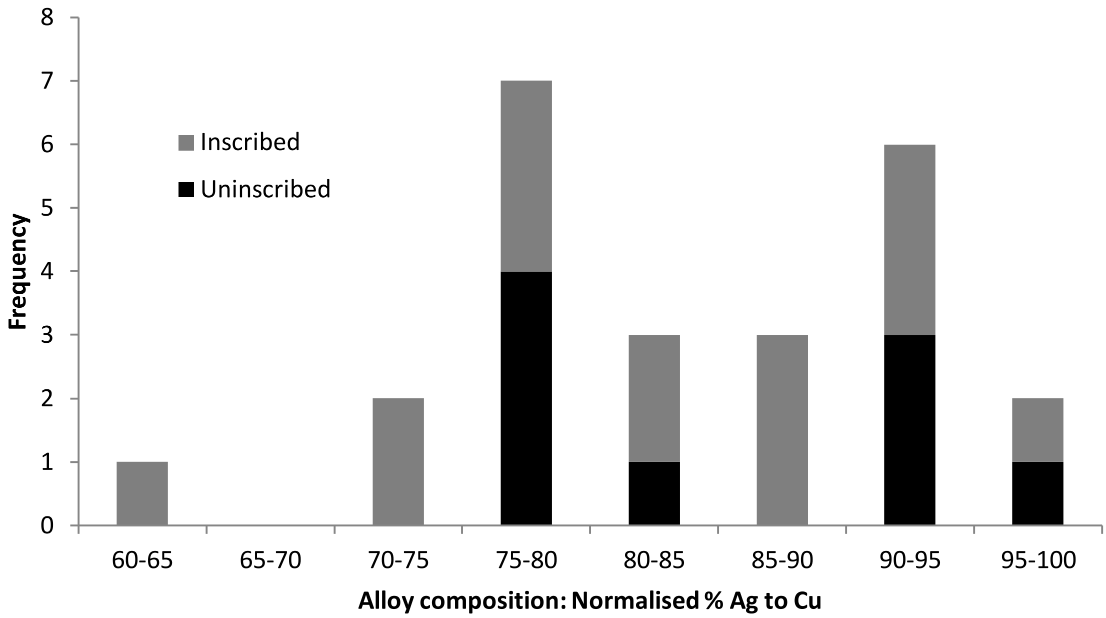


Figure 2.10: The relative frequency of different alloy compositions for North-Eastern coins.

There are two 'favoured' alloy compositions for the uninscribed North-Eastern series: one very high in silver, around 90–100%, and the other debased around 20–25% with a copper alloy. This is not apparent for the later inscribed coins, where alloy compositions are more evenly distributed. For both groups, there is a floor of debasement at c.75% Ag, below which those responsible for mixing the alloys seem to have been unwilling to go. With less than 75% silver, coins would have appeared noticeably more 'coppery' in colour.

Importantly, coins of the same type were made in both high- and low-purity alloys. It would have been impossible to tell, just by looking at the general design or inscription on a coin, what its fineness was. This supports the assertion that the North-Eastern silver series was not issued to a standardised bullion content. Perhaps a high degree of standardisation was not considered necessary; high purity certainly does not seem to have been essential for assuring the value of the coins.

A few coin types are worth commenting on in more specific detail. The 3a uninscribed coins are the earliest tested. They are also the most consistently high in silver, and the most standardised, with the lowest variation in silver purity. This could suggest that the earliest silver coinage was not debased with copper to any large degree, and may have been produced by recycling a high-purity silver alloy. These high purity early issues are the strongest evidence for increasing debasement of coins over time, but there are problems with such an interpretation. The associated 4b half units (probably contemporary, although the South Ferriby series was produced over a long period) do not show the same high levels of purity and standardisation. The difference in purity between the 3a coins and later issues is also small, and some inscribed types (e.g. VOLISIOS) show an almost comparable level of purity and standardisation.

ISP1 ISP2 ISP3

Figure 2.11: The IISVPRASV coins tested.

The IISVPRASV type, probably minted after the Roman invasion (Leins 2012), also stands out in this analysis. Two of the IISVPRASV coins (Figure 2.11, ISP1 and ISP2) are very similar in design, and show comparable alloy compositions of around 80% Ag to Cu. The other issue, ISP3, could not be more different. The design is more crudely executed, and it has the most unusual composition of any coin tested. NDA revealed ISP3 had the lowest silver content at just 60%, and ISP3 also showed an unusual composition in the XRF analysis, with over 10% Au. The next highest Au value was just 1.1%. The poor quality die engraving and unusual alloy composition suggests a botched or hurried batch of coins. This perhaps suggests that some of the IISVPRASV issues may have been made to very different standards, and using a different alloying process, than earlier types.

The AVN, VEP and TATISOM issues, which Leins suggests were broadly contemporary (Leins 2012), show fairly similar compositional ranges. However, the VOLISIOS DVMNOCOVEROS coins stand out, with a consistently high silver content, comparable to the earliest uninscribed coins, although only a small sample of each type has been tested.

VOLISIOS coins are also unusual in other respects; they show a different style of engraving, an absence of die-links to other groups, and a consistently northern geographical distribution, different to that of the other inscribed coin types. These factors suggest that the VOLISIOS coins may be the product of a separate northern mint. Production debris from Scotton supports the hypothesis that some coins were being produced much further north than the probable centres of production at Old Sleaford (Elsdon and Jones 1997) and Leicester (Clay and Mellor 1985).

2.2.4 Synthesising the chemical analysis results: Clues about bullion sources

The use of silver bullion and debasing alloys

Comparing the NDA results with the XRF data gives further insight into production processes and the types of alloys used. Whilst the XRF results are unreliable measures of silver content, they provide useful information about the relative proportions of other elements. The ratio between the lead, tin and zinc components of the alloys is shown in Figure 2.12.

Two distinct clusters are present, one comprising a group of alloys where lead predominates in the Pb–Sn–Zn ratio, and the other displaying a higher proportion of tin. There are high- and low-purity silver coins in each group. This makes it unlikely that the two groups represent different silver sources. Repeated recycling would have blurred the distinction between the groups, tending towards a more even mixture of lead and tin (given that use of alloys containing zinc appears to be reasonably limited). The 'x' symbol marks the mean coin composition. The triangular ingot has a Pb–Sn–Zn composition extremely close to the mean. At 84.7% silver to copper, its purity is also consistent with the recycling of a random selection of high- and low-purity North-Eastern series coins: the mean for all the North-Eastern coins tested in this study was 83.5% silver to copper.

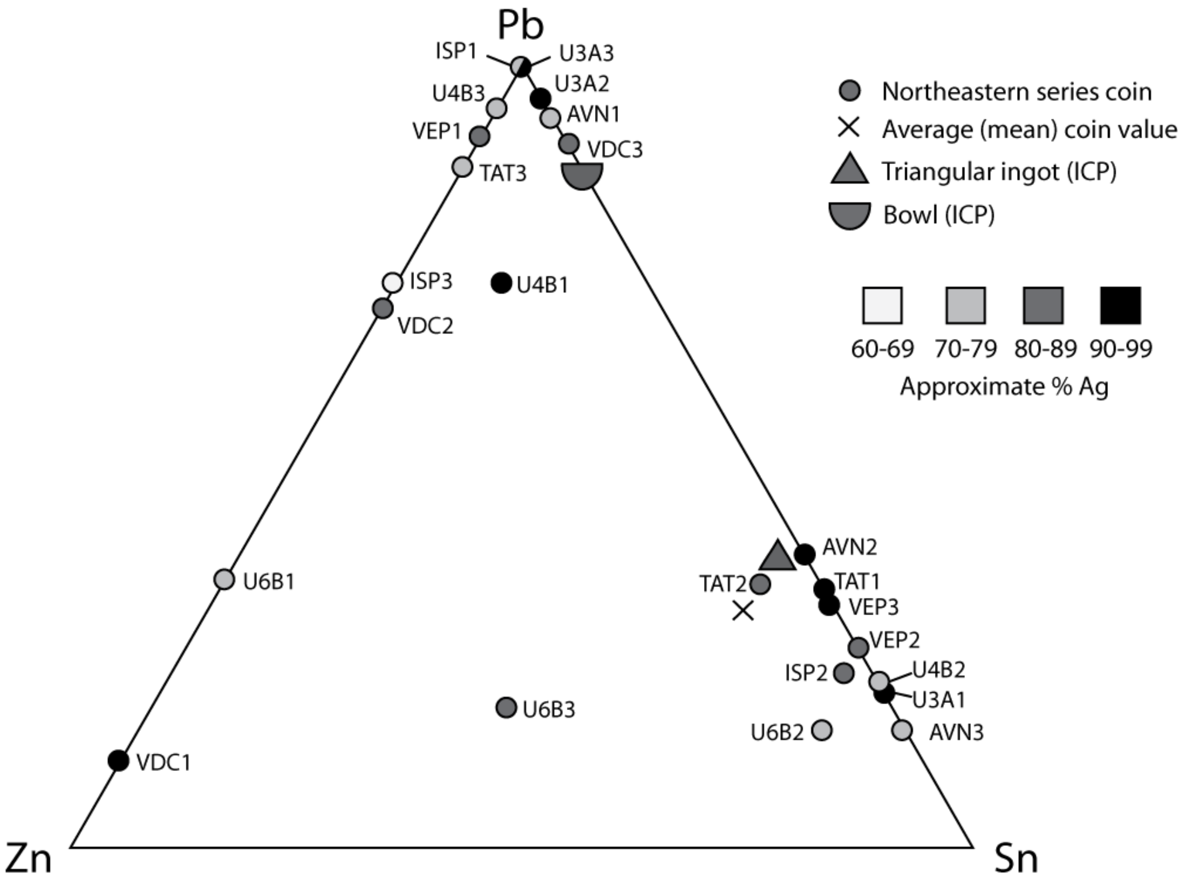


Figure 2.12: Ternary diagram showing the relative proportions of Pb, Sn and Zn for North-Eastern coins (XRF, with approx. %Ag from NDA), and the bowl and triangular ingot (ICP). The Roman and Cunobelin coins are not included; only Pb (most likely from bullion) was detected in these coins. ICP analysis on ROM4 confirmed that levels of Sn and Zn in this coin were below 0.08%. One outlier, VDC1, was a broken half unit, and presented only a very small surface for XRF analysis. The unusually high level of zinc recorded for this particular coin may be misleading, so this result was omitted from calculation of the average (mean) Pb–Sn–Zn ratio.

The calculated mean for the coins and the measured value from the triangular ingot thus give us an idea of the composition that might be expected from non-selective recycling of local coins. Some coin alloys (e.g. TAT2) could have resulted from such a recycling process. It is unlikely, however, that the alloys with the highest levels of tin, or those in the high-lead Pb–Sn–Zn ratio cluster (including the bowl), were the result of indiscriminate recycling. Nor would such recycling explain the existence of high-purity silver alloys. Whilst coins containing less than 10% copper might have been produced directly from a high-purity silver alloy, most were more substantially debased. The most likely explanation is that the majority of the objects tested were produced by debasing a high-purity silver alloy with a copper alloy. Dennis has come to the same conclusion regarding East Anglian silver coins (2006, 59–63). There does not seem to have been any particular criterion for selecting the debasing alloy, since every coin type tested is represented in more than one region of the Pb–Sn–Zn ternary diagram.

For all coins, lead levels were below 1.3% of the total alloy composition as determined by XRF. This is low enough to be attributed to the presence of residual quantities of lead in the silver bullion used to make the coins (Scott 2011, 28–9). It does not necessarily imply the addition of any lead during the alloying process. The same may be true for the bowl, which contains 1.8% lead. Thus objects in the high-lead ratio cluster may have been debased with relatively pure copper, or not at all. In rare instances, brass appears to have been used as the debasing alloy, but most of the coins show higher levels of tin and were probably debased with an alloy of copper and tin.

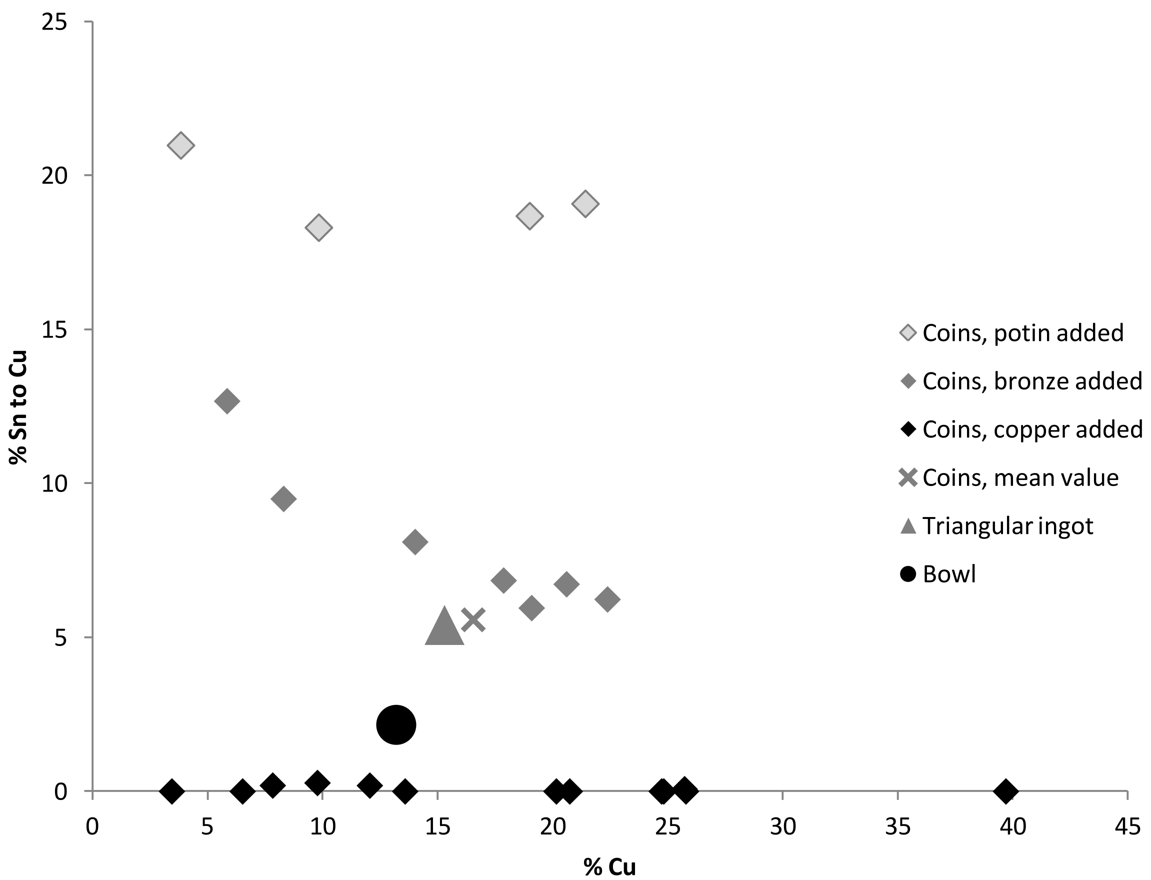


Figure 2.13 The %Sn to Cu plotted against %Cu for the North-Eastern coins (Sn values from XRF, Cu values from NDA). ICP values for the bowl and the triangular ingot are also included.

Figure 2.13 plots the percentage of tin to copper against the overall proportion of copper for the local silver objects. The distribution once again demonstrates the use of several different debasing alloys. The group containing very little tin were most likely debased with pure copper or an alloy of copper and zinc. Coins with 5–13% tin to copper (U4B2, U6B2, U6B3, AVN2, TAT1, TAT2, VEP2) may have been debased with bronze, whereas the four coins with the highest tin content, around 20% (U3A1, AVN3, ISP2, VEP3) were debased with a high-tin copper alloy such as potin. Again, there is no correlation between the debasing alloy selected and coin type or silver purity. The triangular ingot again corresponds closely to the mean value for North-Eastern coins, supporting the hypothesis that it was produced through non-selective recycling of local coinage. The unusual Sn–Cu ratio for the bowl reinforces the argument that the alloy used to produce this object was carefully manufactured for particular properties, rather than by casual debasing.

A model of production involving the debasing of a high-purity silver alloy with a copper alloy substantially narrows the potential sources of the silver used in the Iron Age East Midlands. There is little evidence for the refining of debased silver in Iron Age Britain. Cupellation hearths (identical to Roman examples from Wroxeter and Silchester) were uncovered at Hengistbury Head in association with a block of copper-silver alloy (Gowland 1915, 72; Northover 1987; Salter and Northover 1992), but these may date to the Roman period (Dennis 2006, 18). There is no evidence of comparable technology in the East Midlands or neighbouring regions. Even if the technology and skills to refine debased silver were available, it seems highly unlikely that such a process was used to produce North-Eastern coins, given the variation in silver content even within issues. With silver purity not a key issue in determining the value of coinage, there would be little point in expending valuable time, energy and resources on the difficult process of purifying a silver alloy only to debase it by an unspecified amount with a non-standard copper alloy. This suggests that some of the silver sourced by the East Midlands mints must have been over 95% pure. Since there is little or no evidence for local silver extraction from British ores either in the East Midlands, or in Iron Age Britain as a whole (Bayley *et. al.* 2008, 41)[1], this silver must have been imported.

There are a number of channels through which imported silver could have reached Iron Age communities in the East Midlands.

1 Although circumstantial evidence for Iron Age silver mining has been uncovered in the Mendips (Todd 2003), this may have been connected with lead extraction.

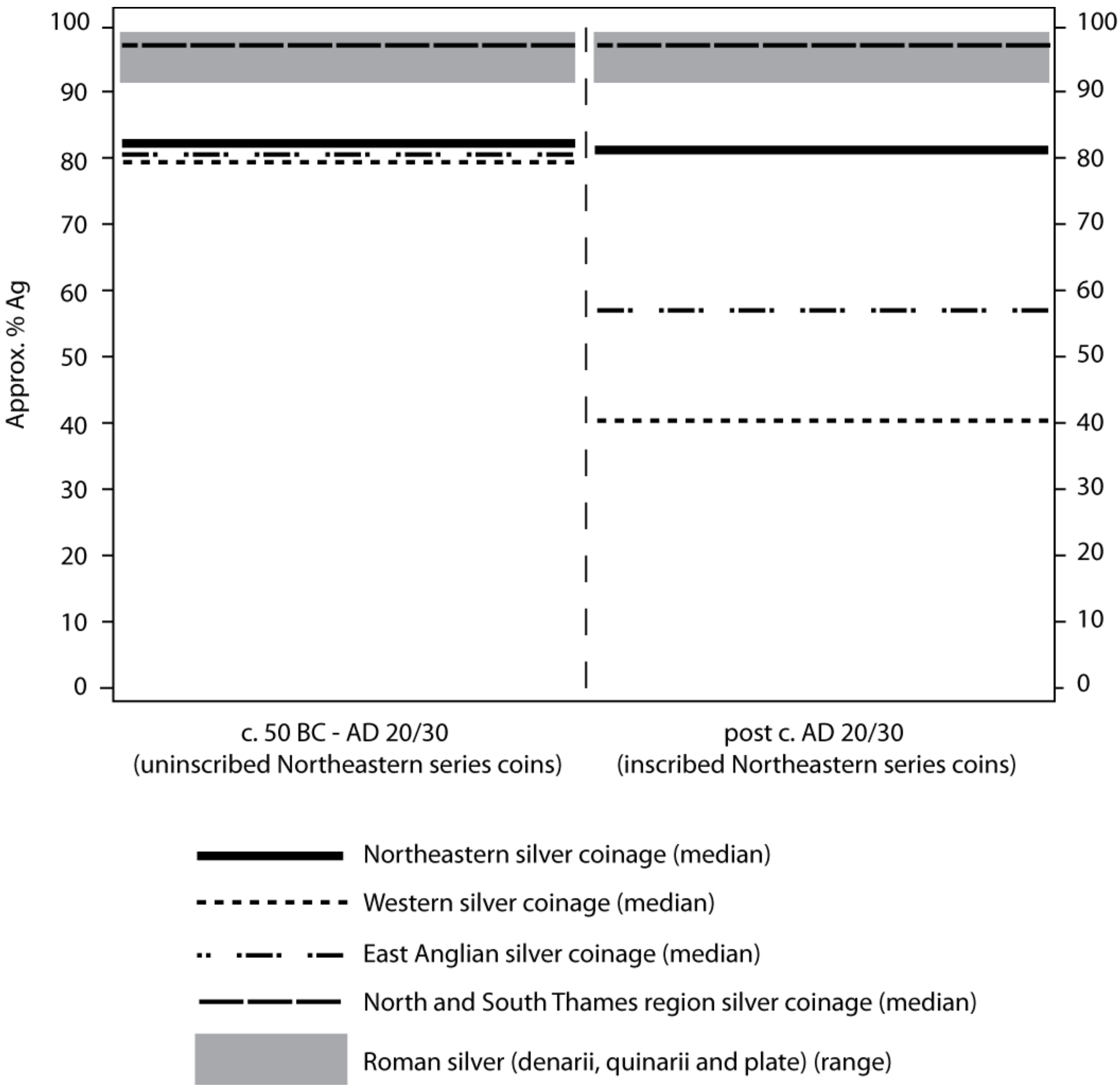


Figure 2.14: Silver purity of uninscribed and inscribed North-Eastern silver coinage alongside potential contemporary sources. (NB: coins from other regions are considered on the basis of their probable date, not the presence or absence of inscriptions, since the change to inscribed coinage occurred at different times in different regions). The values given here are approximate, summarising the data presented by Dennis (2006), including her own analyses of East Anglian silver coins, and unpublished analyses of other regional series by Northover. Other sources include Northover (1992); Cowell *et al.* (1987); Hobbs (1996); Strong (1979); Butcher and Ponting (2005) and Riha and Stern (1982).

Figure 2.14 shows the purities of the silver sources potentially available to Iron Age communities in the East Midlands. Considering silver percentage alone, some of the uninscribed issues (although not high-purity types such as 3a) could have been made from recycled East Anglian or Western issues. However, this would not explain the existence of discrete Pb–Sn–Zn clusters within this period, even between coins of similar purity: recycling would not tend to produce such grouping. Instead, it is likely that even in this early period North-Eastern coins were produced via the dilution of a high-purity silver alloy. This certainly must have been the case in the later inscribed coinage period, when there is no clear source of a 75–95% silver alloy. Each batch of coins produced in this way would have had a unique Pb–Sn–Zn signature depending on the debasing alloy. This is exactly the pattern observed. Some recycling of North-Eastern (and probably a few non-local) issues is almost certain to have taken place, but most of the alloys observed cannot be explained in this way.

High-purity silver alloys (such as that used to produce Roman plate), or even refined silver bullion (around 98% pure, containing traces of gold, lead and bismuth), could have been obtained from a number of sources. Gallic contacts are unlikely, since silver this fine was only available from central or eastern Gaul (Dennis 2006, 109–16). Silver objects from these regions are not found in the East Midlands (and indeed are very rare in Britain as a whole), so it seems unlikely that Gallic silver was being imported in large quantities in the Iron Age. It is more probable that refined silver was entering the East Midlands either through southern British contacts or through direct interaction with the Roman world.

The lead, gold or bismuth content of a silver alloy can sometimes reflect the bullion source (see e.g. Butcher and Ponting 2005). Lead content is likely to be attributable to the method of extraction, whilst gold and bismuth are related to ore type. Figure 2.15 shows a fairly even distribution of lead contents, though the earliest uninscribed coins show the tightest distribution, supporting the suggestion that these coins were made from relatively pure bullion, perhaps from a single source. The value for the triangular ingot is once again extremely close to the mean, supporting the argument that it was produced from local coins. The bowl appears as a clear outlier, suggesting it may have utilised bullion from a different source. The lead levels are all low enough to be attributable to bullion content alone, but it is impossible to rule out the possibility that the debasing alloy contained a small amount of lead. Thus lead content does not allow further speculation about bullion sources.

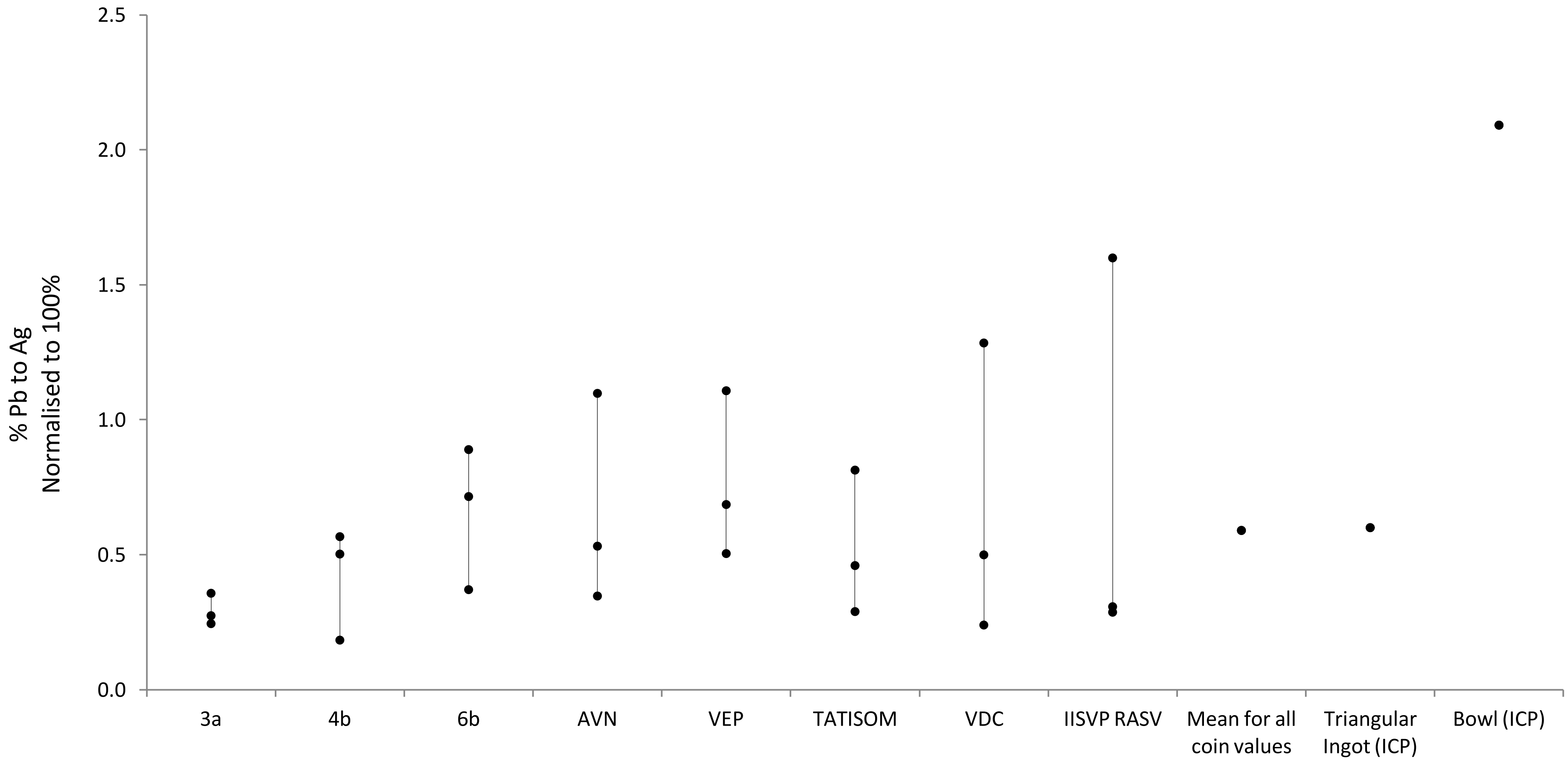


Figure 2.15: Lead content (XRF) normalised against silver content (NDA, ICP) by coin type

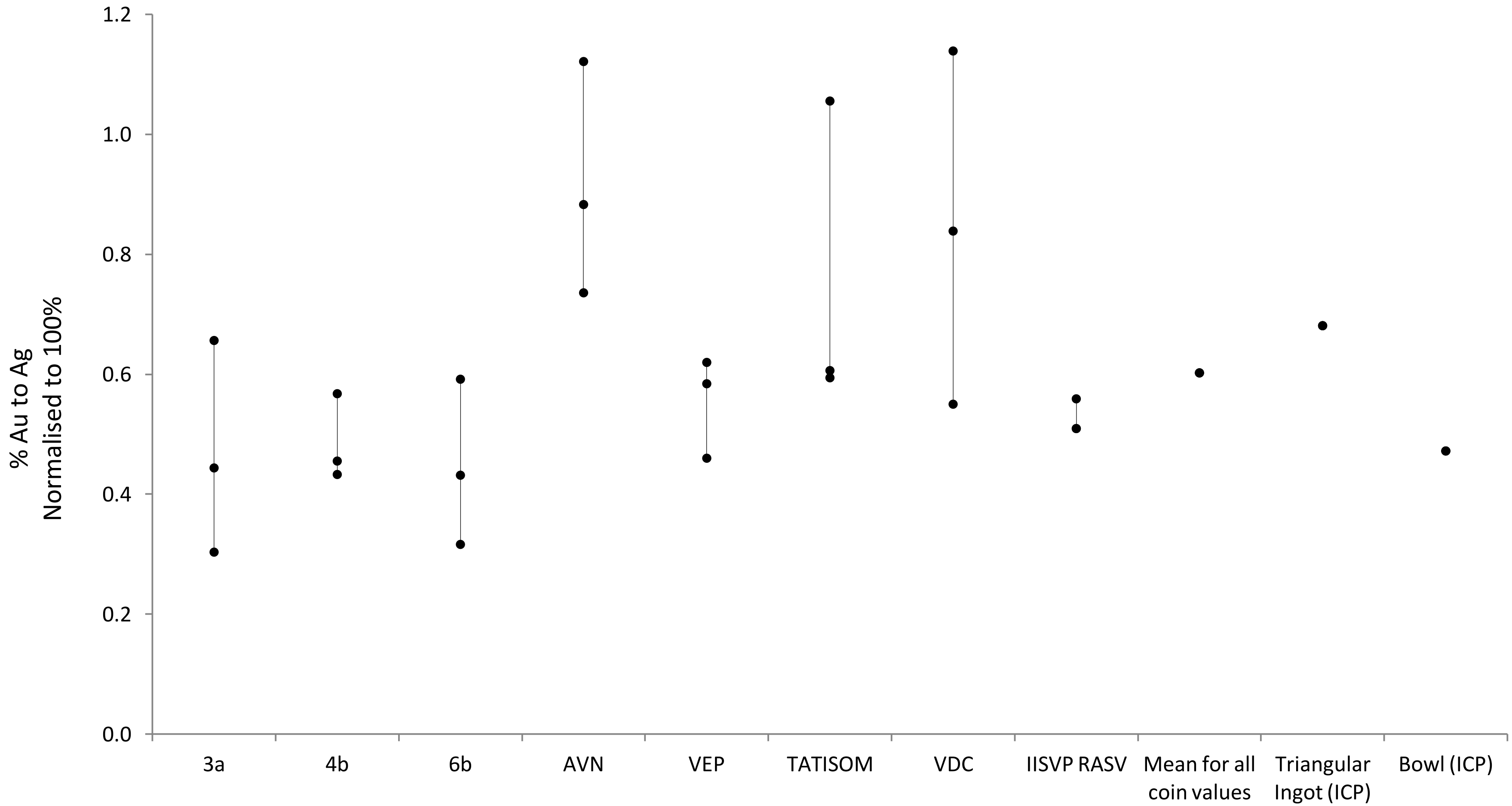


Figure 2.16: Gold content (XRF) normalised against silver content (NDA, ICP) by coin type. The high value for ISP3 (over 17%) was omitted

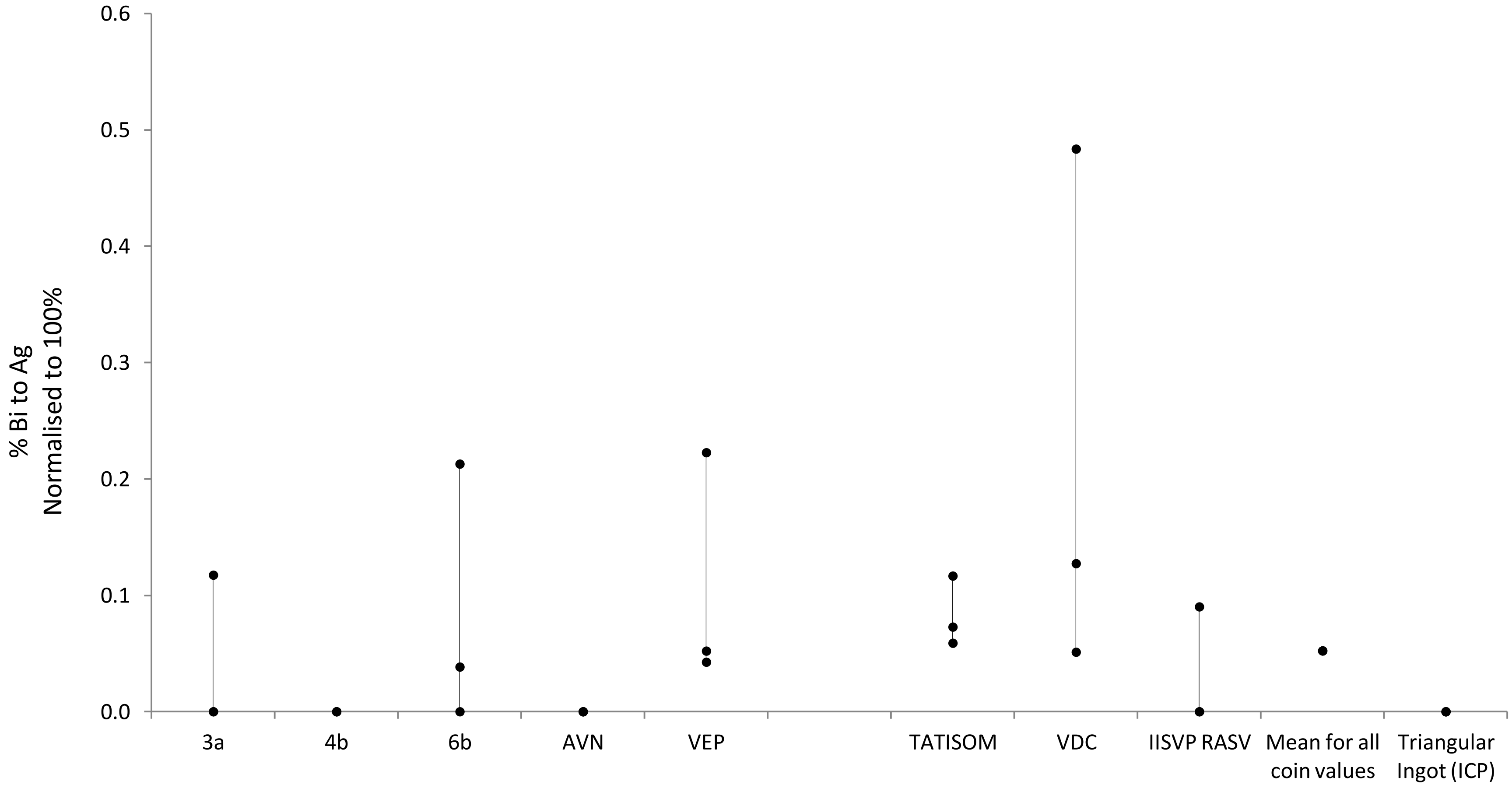


Figure 2.17: Bismuth content (XRF) normalised against silver content (NDA, ICP) by coin type. The mean for all coin values excludes the high value for VDC1. The zero value for the triangular ingot is not problematic in terms of the recycling interpretation offered above, since the mean coin value (around 0.05% Bi to Ag) is close to the detection limit.

There are, however, some patterns in the gold and bismuth content of the coins (Figures 2.16 - 2.17). The groupings are most easily identified in Figure 2.18, which shows the relationship between these components. Other than bullion content in uninscribed 3a coins and possibly VOLISIOS issues, this is the only area of the compositional analysis which shows grouping by coin type.

This grouping supports the hypothesis that coins were made by debasing bullion, and suggests that different issues may have used different bullion sources. Uninscribed types are generally more clustered and lower in gold than inscribed types. Of the uninscribed issues, types 3a and 6b are the most varied in gold and bismuth content. Whilst they generally show no (or very little) bismuth, and 0.3-0.5% gold, one coin of each type contained higher levels of both. The 4b issues all contained no bismuth (or very little) and 0.4-0.6% gold. There is more variety among the inscribed types. The IISVPRASV coins (and the bowl) lie in the same region as the majority of the uninscribed coins, but the others vary in their distribution. The AVN coins have no (or very little) bismuth, but higher gold contents. TATISOM and VOLISIOS have moderate to high levels of both gold and bismuth, while VEP has moderate gold levels but high to moderate bismuth content.

The pattern in gold/bismuth signatures can help to identify the source of the bullion used. It is not possible to suggest precise ore sources, but oxidised ores such as cerussite and anglesite or dry ores such as chlorargyrite and argentite are the strongest contenders for most of the uninscribed coins and the AVN and ISSVPRASV issues, whilst jarosite ores are a more likely source for the VEP, VOLISIOS and TATISOM issues (based on data from Craddock 1995, 212–14). Recycling will have affected the ore signatures to some degree.

Since all silver bullion in Iron Age Britain was probably ultimately imported, the most fruitful way to approach these data is through comparison with contemporary silver objects to look for possible sources, or regions drawing on a shared resource. Comparative charts are given in Figures 2.19 to 2.23, showing the gold and bismuth content of contemporary Roman issues and other British coin series.

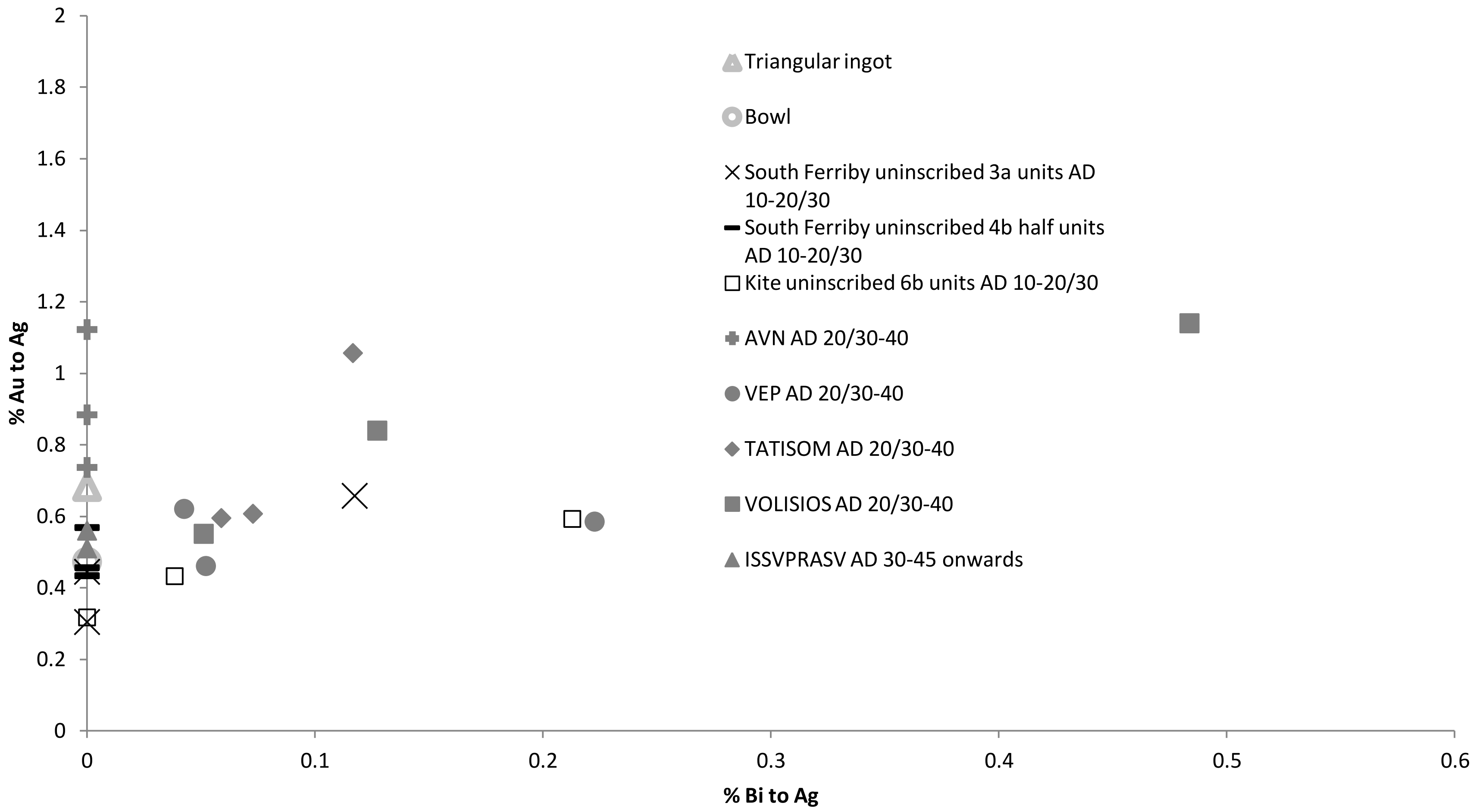


Figure 2.18: Scatterplot of Gold and Bismuth (XRF, ICP), scaled to silver content (NDA, ICP) for North-Eastern silver. ISP3 is once again omitted. Values should be considered as only semi-quantitative due to the lack of sample preparation, but the revealed grouping between types most likely reflects genuine differences.

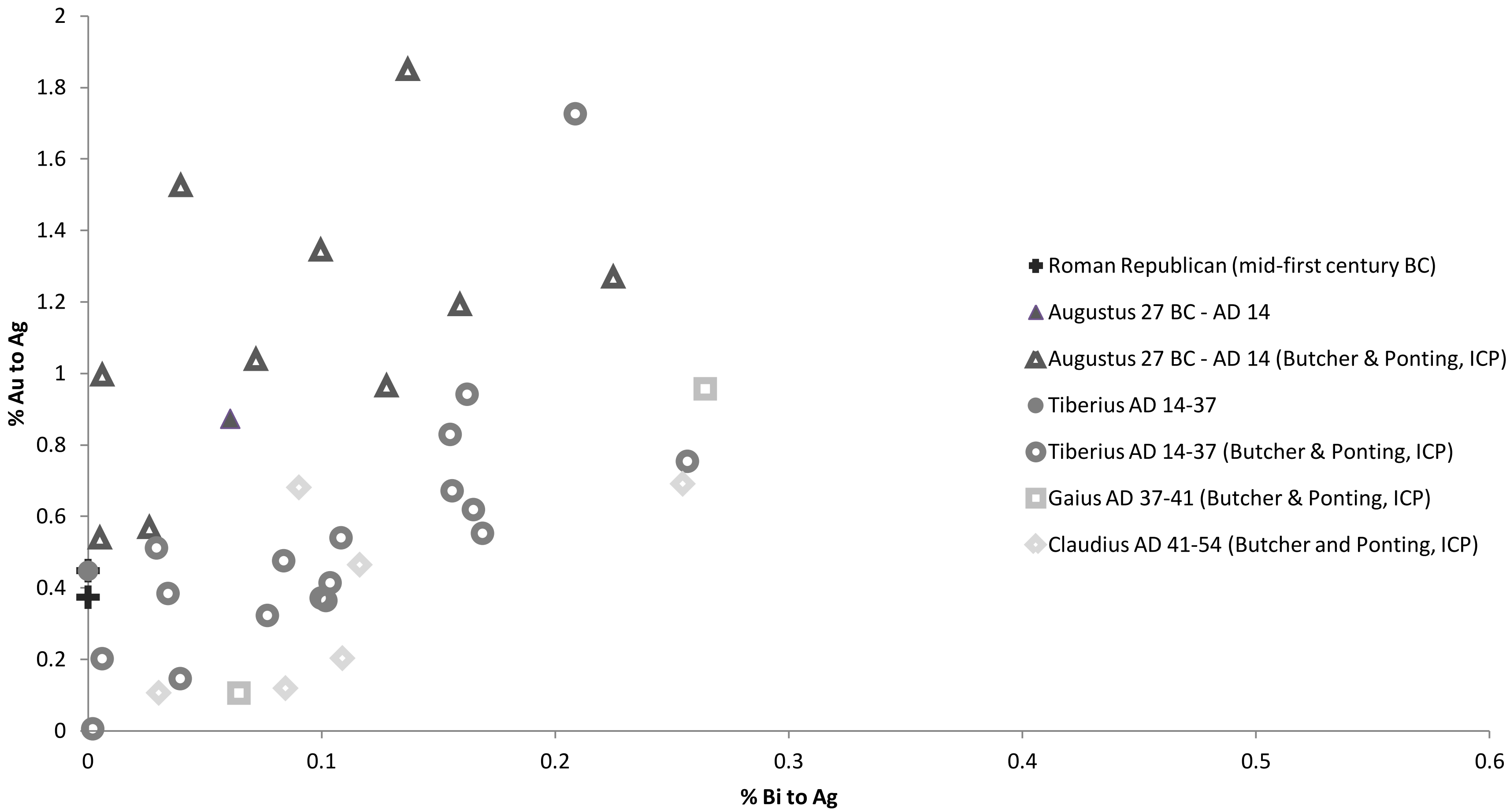


Figure 2.19: Scatterplot of Gold and Bismuth content scaled to silver for Roman coins. This graph incorporates data from both this study and the work of Butcher and Ponting (2005). Coin ROM4 was tested using both XRF and ICP, the XRF results are represented here.

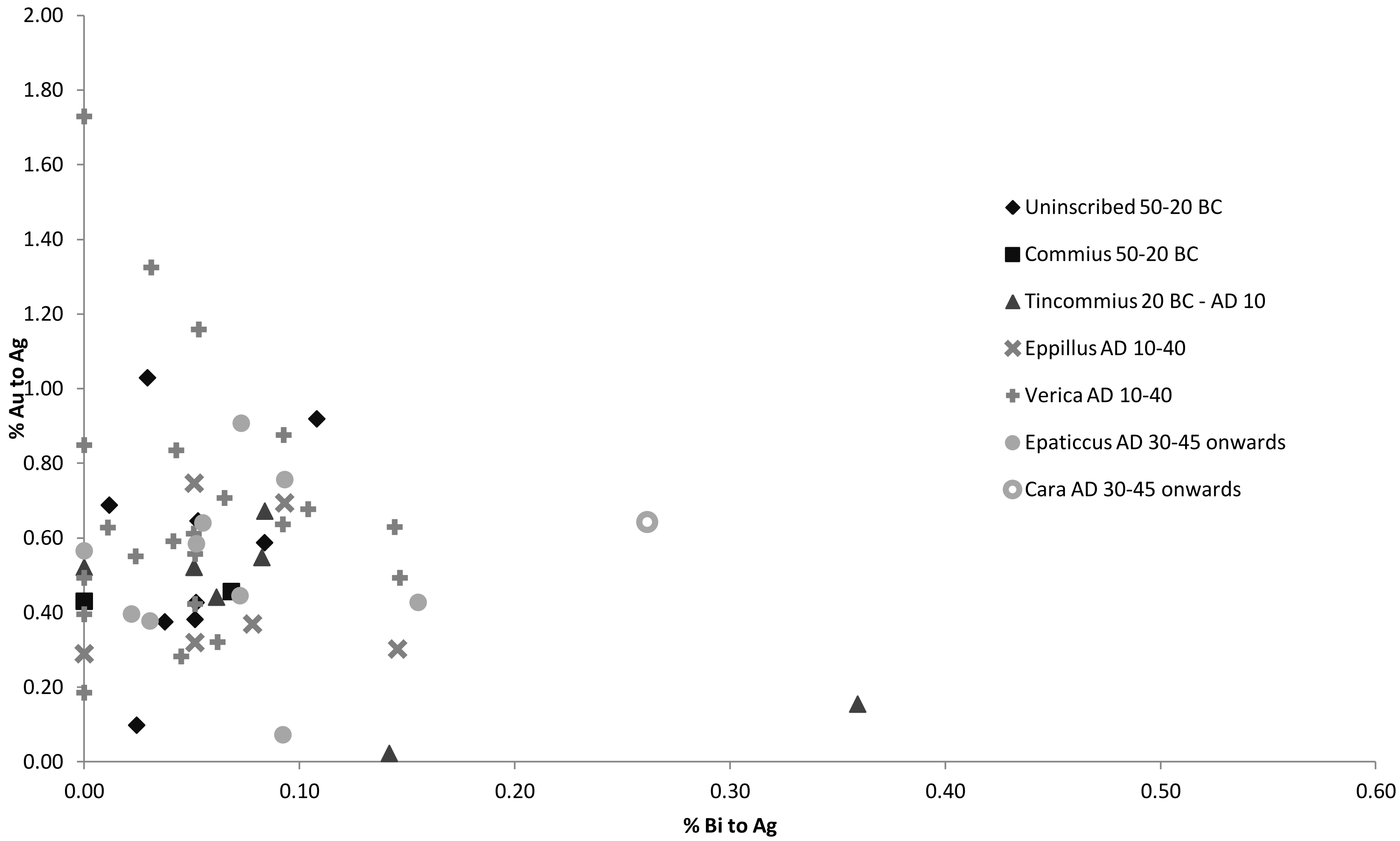


Figure 2.20: Scatterplot of Gold and Bismuth content scaled to silver for Southern coins (data from XRF analysis by Northover, 1992)

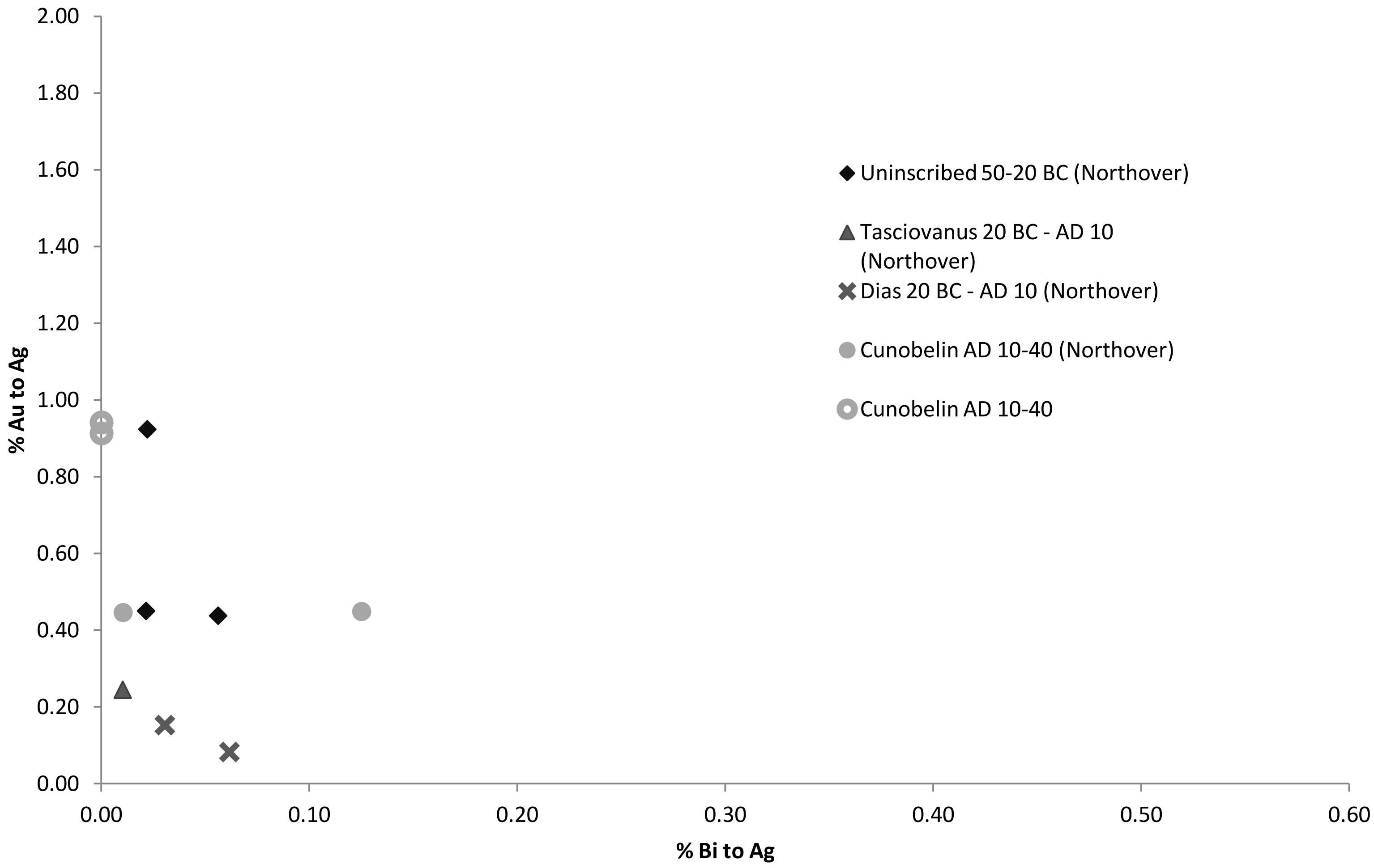


Figure 2.21: Scatterplot of Gold and Bismuth content scaled to silver for North Thames coins. This graph incorporates XRF data from this study and Northover (1992)

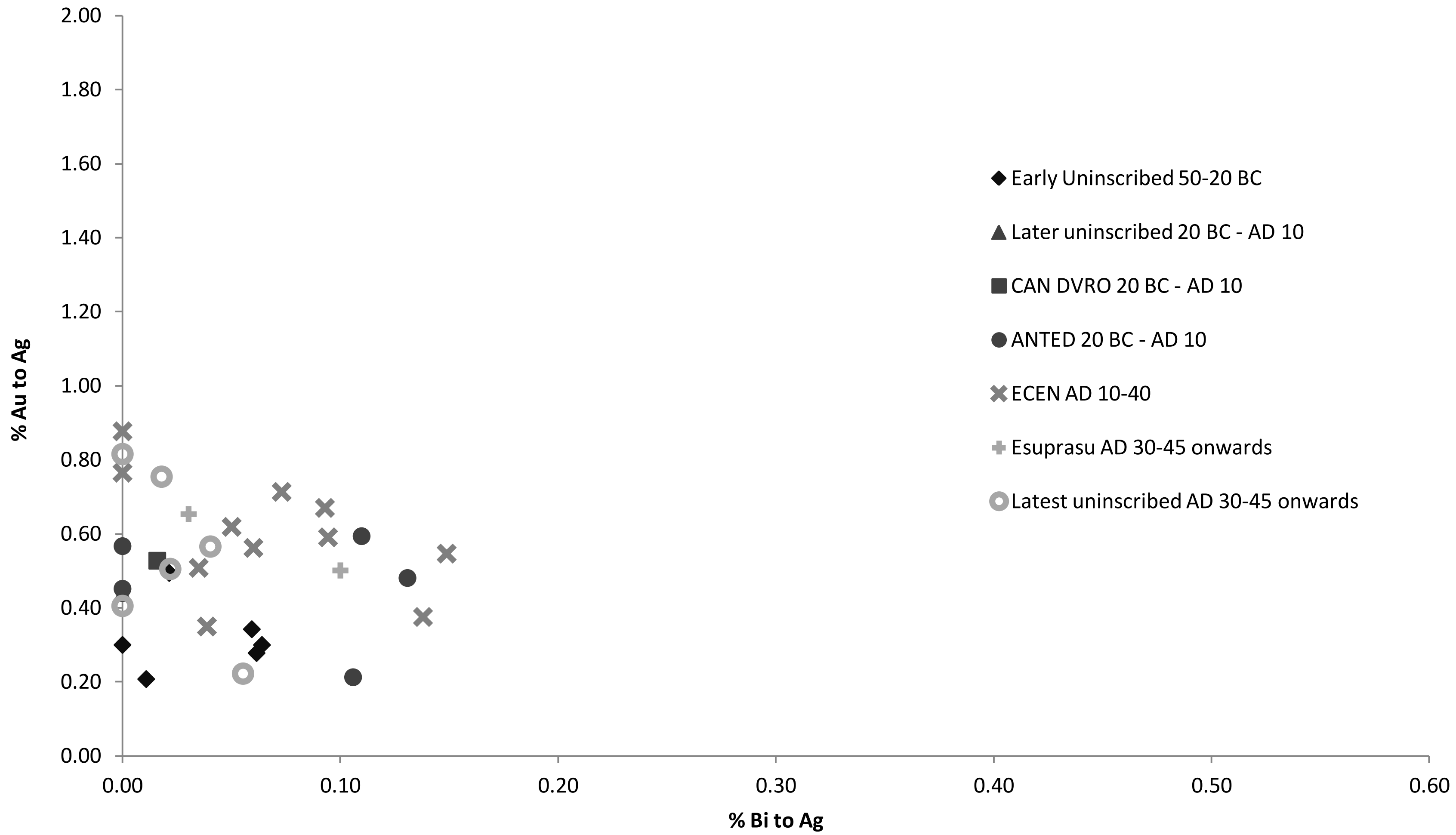


Figure 2.22: Scatterplot of Gold and Bismuth scaled to silver for East Anglian coins (all data from XRF analysis by Northover, 1992; these findings are in keeping with the data presented by Dennis 2006, 62, 65.)

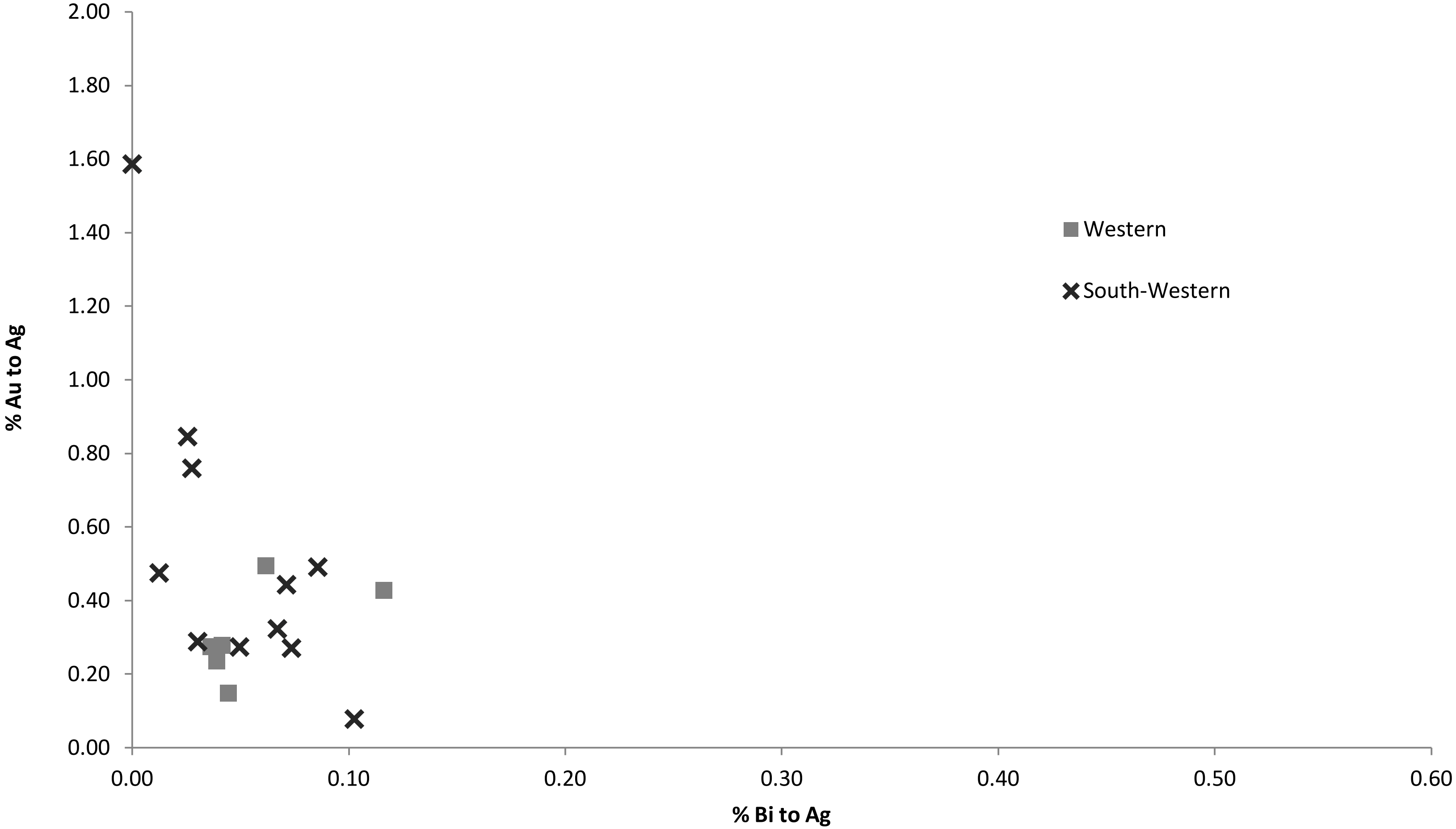
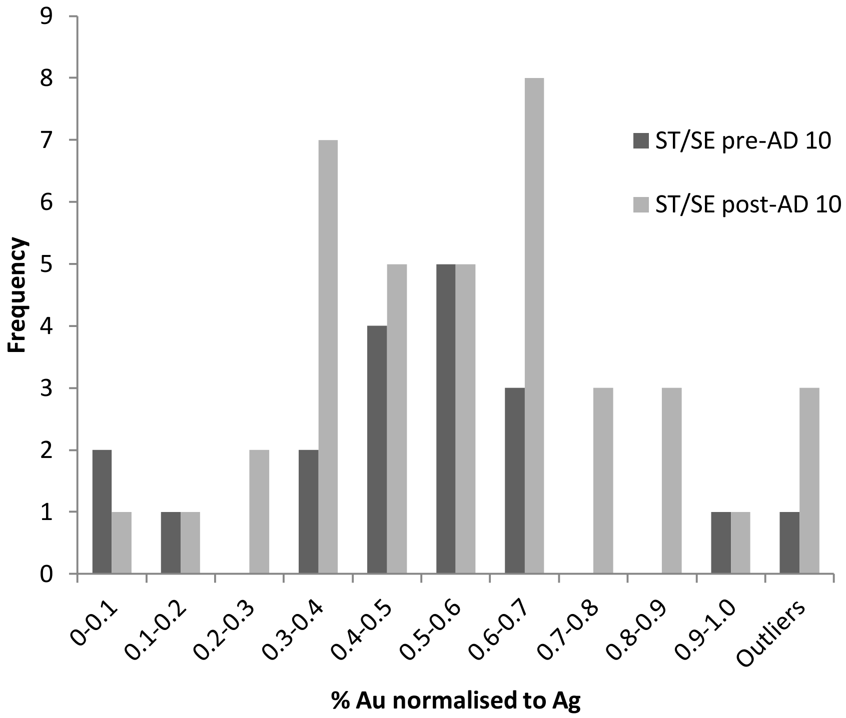


Figure 2.23: Scatterplot of Gold and Bismuth content scaled to silver for Western and South-Western coins (all data from XRF analysis by Northover 1992. Only data for coins containing over 50% silver was included.)

Almost all British Iron Age coins show gold contents of 0.2–0.9% relative to silver, and bismuth levels of 0–0.18% (Figures 2.18-2.23). As in the North-East, the earliest coins (50 BC–AD 10) generally show the most clustered ranges (0.1–0.6% gold, 0–0.12% bismuth). The two mid-first century Republican denarii tested as part of this study are a good match for some of this early low-gold, low-bismuth bullion, including the material used to produce North-Eastern uninscribed coinage.

Recycled Republican denarii and plate are a plausible source for most British Iron Age silver coinage in this early period (50 BC–AD 10), perhaps arriving as gifts to client kings in the south. Van Arsdell (1989, 236-40) argued that the earliest silver coins in the East Midlands (the 'Hostidius' type) may have been modelled on a Republican *denarius*. Whilst the parallel is not as strong as suggested by Van Arsdell, these are certainly the most 'classicised' of the North-Eastern issues. Republican denarii could have provided the raw material as well as the inspiration. Augustan silver would have been a possible source for coins struck during or after Augustus' reign (27BC–AD14), but Augustan *denarii*, and hence probably most Augustan bullion, are too high in gold to have provided a large proportion of the material for most Iron Age British issues.

This model would require the movement of large, but not vast, quantities of Republican silver into Britain. Silver production was very limited in the earliest period (50-20 BC) when gold still formed the bulk of most regional coin series. From 20 BC to AD 10, silver production increased, but silver coins from this period still make up only a small proportion of coinage in the dynastic kingdoms: around 30% by number of coins listed on the CCI, which equates to only around 10% by weight. In the East Midlands, silver coinage was more popular, accounting for over 50% of the CCI coins, though still equating to less than 20% by weight. Gold bullion remained dominant.



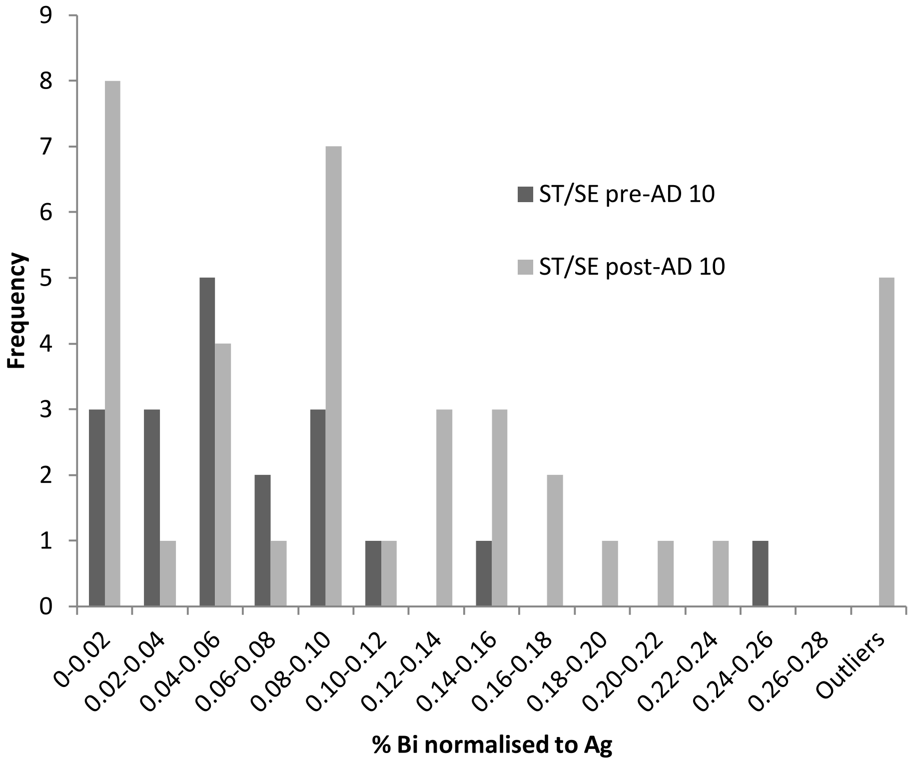
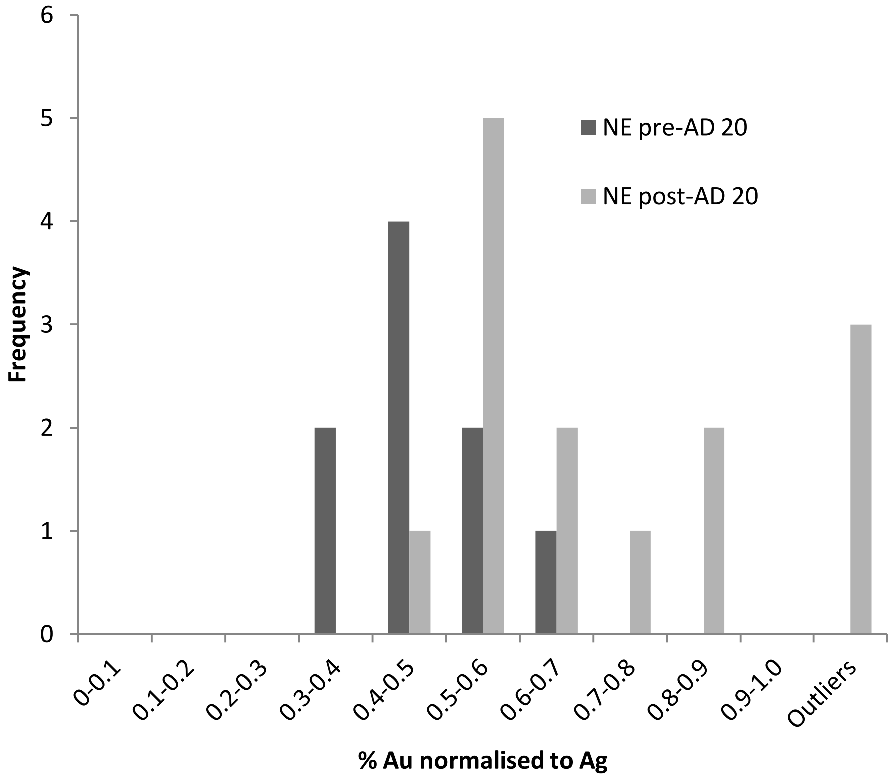


Figure 2.24: Gold and Bismuth distributions for South Thames and South-Eastern Coinage



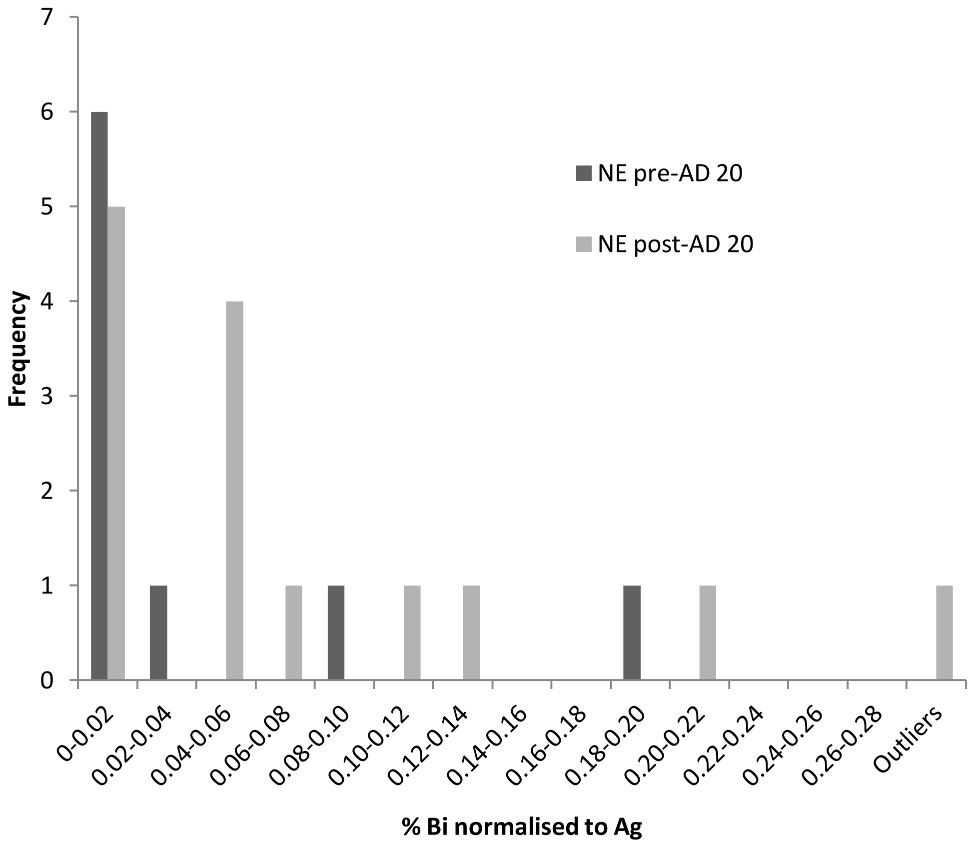


Figure 2.25: Gold and Bismuth distributions for North-Eastern Coinage

Across Britain, later silver coinage (AD 10–40) shows a more varied composition. Figure 2.24 shows the distribution of gold and bismuth in Southern coinage, and Figure 2.25 the same data for North-Eastern coins. In both cases early issues (pre-AD 10) show a more or less normal distribution, as would be expected from recycling a small 'circulation pool' of Republican silver (frequent recycling would homogenise distinctive gold/bismuth signatures). Later coins (post-AD 10/20) show more diverse gold and bismuth values, generally still within the range of 0.2–0.9% gold 0–0.18% bismuth, but with a greater number of outliers and, particularly with bismuth, non-normal distributions. Gold content is in general slightly higher. The increased variation in gold/bismuth signature in later coins suggests an injection of silver into Britain after c.AD 10.

The gold/bismuth range in later coinage is an extremely close match for the alloys of Tiberian *denarii*, which also fits the suggested date range (Tiberius was in power 14–37 AD). The match holds for later issues of Gaius and Claudius, but these rulers came to power too late to have provided the bullion for the majority of British Iron Age issues. The only British coin types consistently high enough in gold to suggest a predominantly Augustan source are some issues of Verica and the AVN North-Eastern inscribed issues (these are thought to post-date Augustus's reign, but could have recycled earlier bullion).

An injection of Roman silver into British Iron Age coin production during the reign of Tiberius is also a good fit in terms of the quantities produced. Silver coin production shot up sharply from AD 10-40, though it remained more popular in outlying regions like the East Midlands and East Anglia than in the client kingdoms. In the Southern kingdom, silver accounts for around 75% of coins dating from AD 10–40 listed on the CCI, which equates to around 50% by weight. In the Eastern Kingdom, silver remains at the lower levels seen in the preceding period, but this is perhaps explained by the explosion of silver production in neighbouring regions. Nearly 90% of post-AD 10 North-Eastern series coins listed on the CCI are silver, equating to around 60% by weight. If Tiberius offered subsidies of Roman silver bullion to client kings in the south, it is possible that some of this reached the East Midlands, perhaps as gifts from the North Thames region to ensure good relations with their northern neighbours. A direct relationship between the East Midlands and Rome cannot, however, be ruled out, and is in fact quite likely in the latest pre-conquest period.

The ultimate source for much of this Tiberian silver was probably Spain. Large quantities of jarosite-ore were processed at Spanish silver mines such as Rio Tinto, and Butcher and Ponting (2005, 188-94) suggest this as a possible source for many *denarii* of Tiberius. Their analyses suggest that, during the Tiberian period, Spanish silver might have been refined using British lead, highlighting close pre-conquest relationships between British communities and the Roman world. It seems that silver, as well as lead, was moving through Roman imperial networks, in this case from Spain to Britain.

Whatever the cause of the variation in gold and bismuth levels, the pattern in the North-Eastern series suggests that the issuers of inscribed types may have drawn on more diverse silver sources than their predecessors. This could simply imply varied batches of imported bullion, but clustering of coins by type hints at underlying differences. The issuers of VEP coins seem to have consistently used a different bullion source to those who produced the AVN and ISSVPRASV coinages. This could be a chronological indicator, or it could suggest that the bullion was reaching Iron Age Britain through different social networks.

Some notes on gold sources from other analytical work

Throughout the period of British silver coin production, gold was also in circulation. Studies of Iron Age gold alloys have been undertaken by Northover (1992) and Cowell (1987, 1992), and further advanced by Van Arsdell (1989) and Creighton (2000).

Gallo-Belgic gold

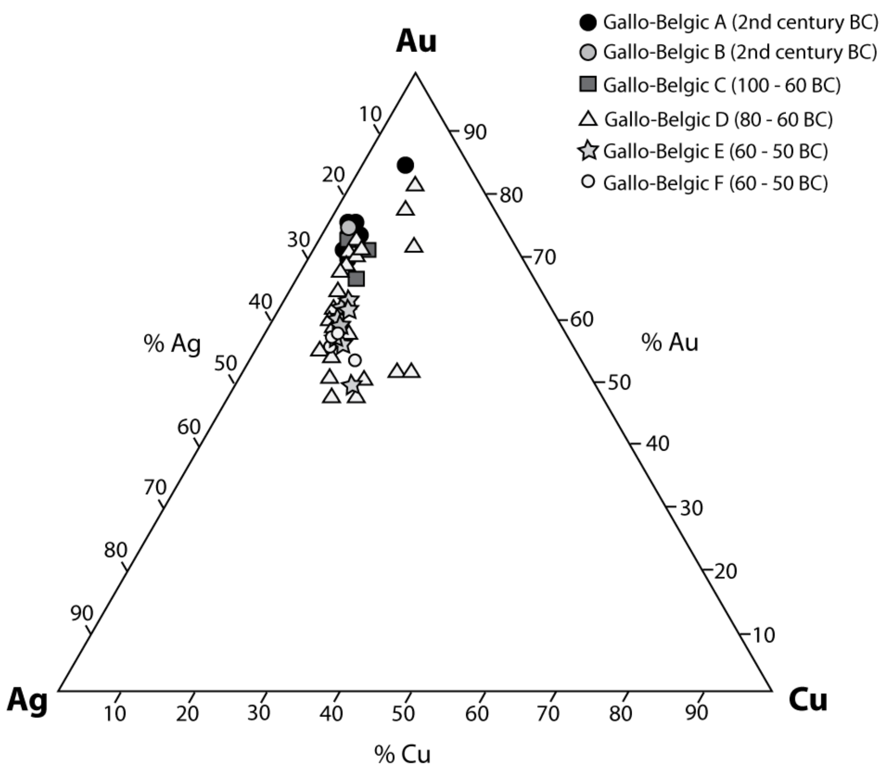


Figure 2.26: The composition of ternary gold alloys in Gallo-Belgic coinage (combining the results of Northover 1992 and Cowell 1992)

The earliest gold coins systematically imported into Britain (Figure 2.26) were Gallo-Belgic A-D issues, produced in yellow-coloured ternary alloys of gold, copper and silver. Northover (1992, 243) argues that Gallo-Belgic gold composition suggests the use of natural European gold on the continent, possibly in combination with imported refined gold (e.g. Macedonian staters), debased with the silver-copper eutectic alloy. The degree of debasement gradually increased, but always remained within the yellow(ish) area of the ternary diagram. The same is true of other contemporary objects including torcs and bracelets (Northover 1992, Cowell 1992), suggesting that this was the desired colour for gold objects in this period (Creighton 2000, 37-40). The same is not true for all Gallic groups (Northover 1992, 244-5), but the vast majority of gold objects entering Britain through exchange networks with the near continent were yellow-gold alloys.

Southern British gold

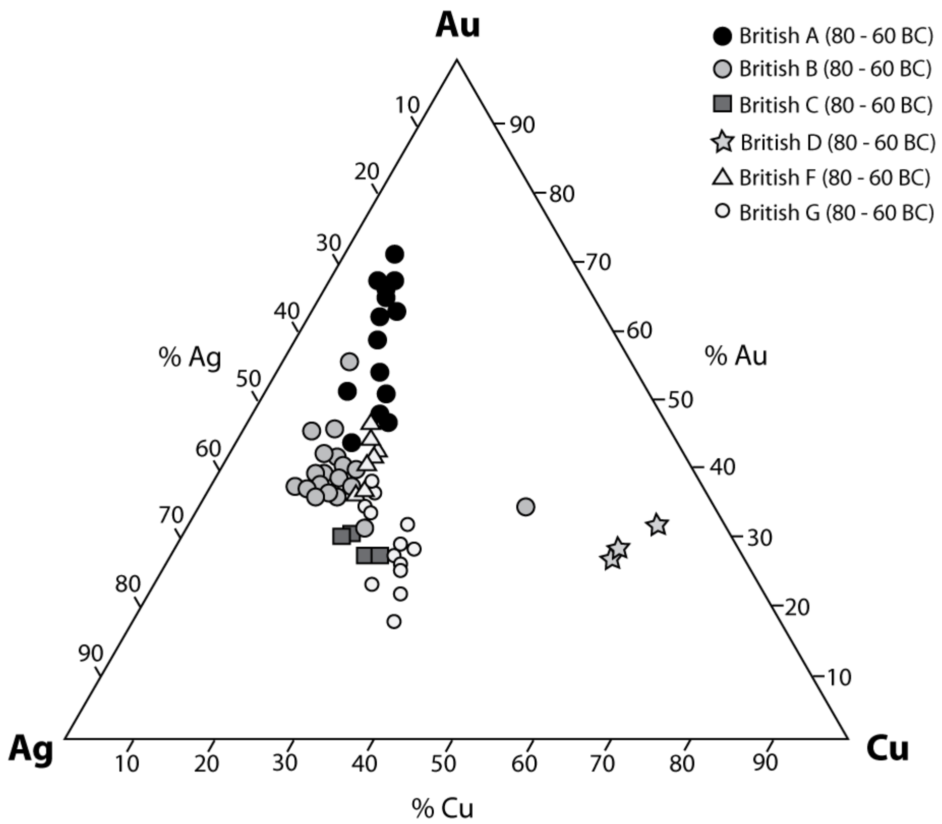


Figure 2.27: The composition of ternary gold alloys in early southern British coinage (80–60 BC) (combining the results of Northover 1992 and Cowell 1992)

Gallo-Belgic C appears to have provided both the metal source and the design inspiration for the first British gold issues, British A (Figure 2.27). Recycled Gallo-Belgic gold, occasionally with some additional debasement, also seems to have been the source of other early British issues.

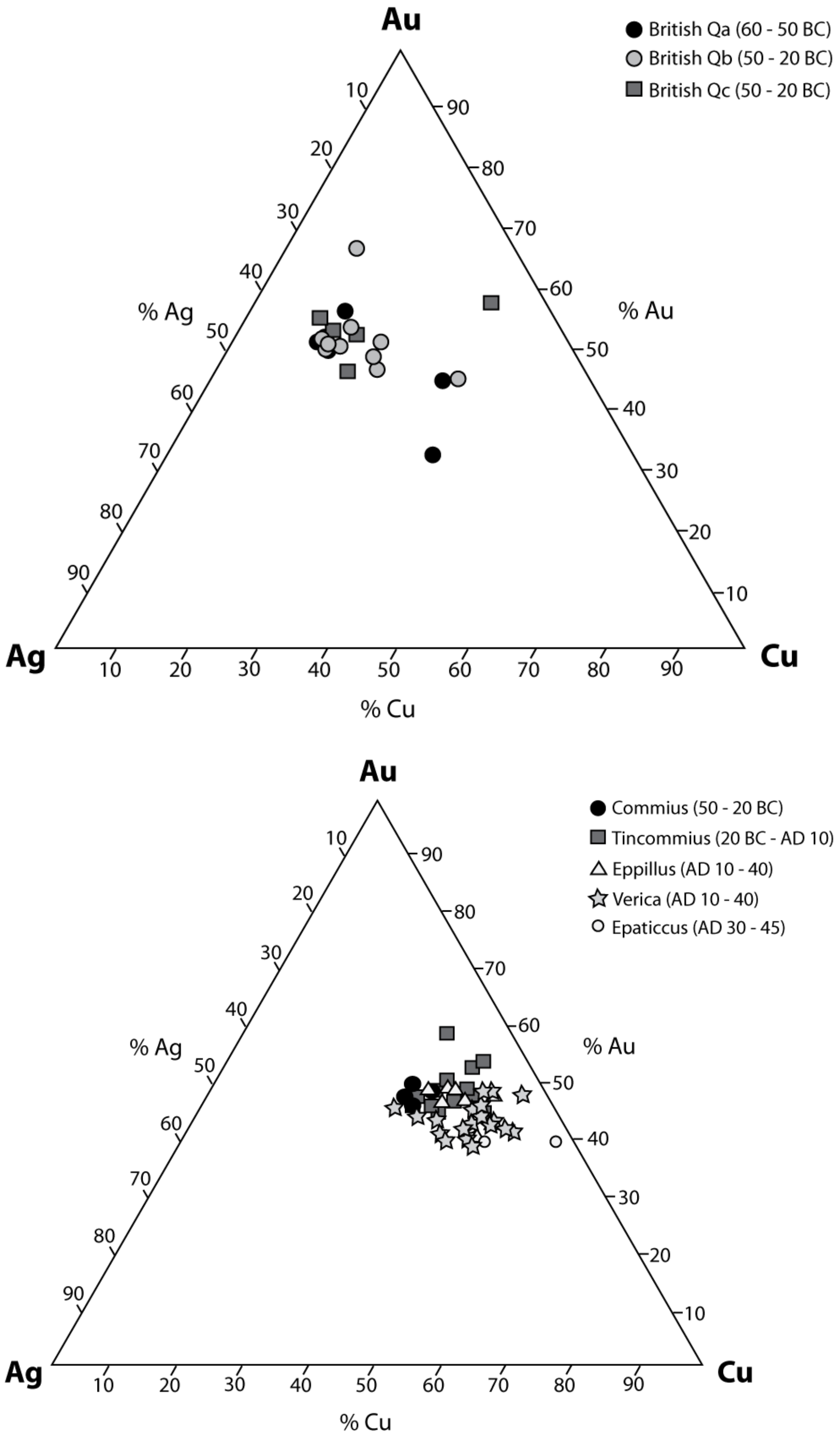


Figure 2.28: The composition of ternary gold alloys in post-50 BC and dynastic gold coins from the Southern Kingdom (combining the results of Northover 1992 and Cowell 1992)

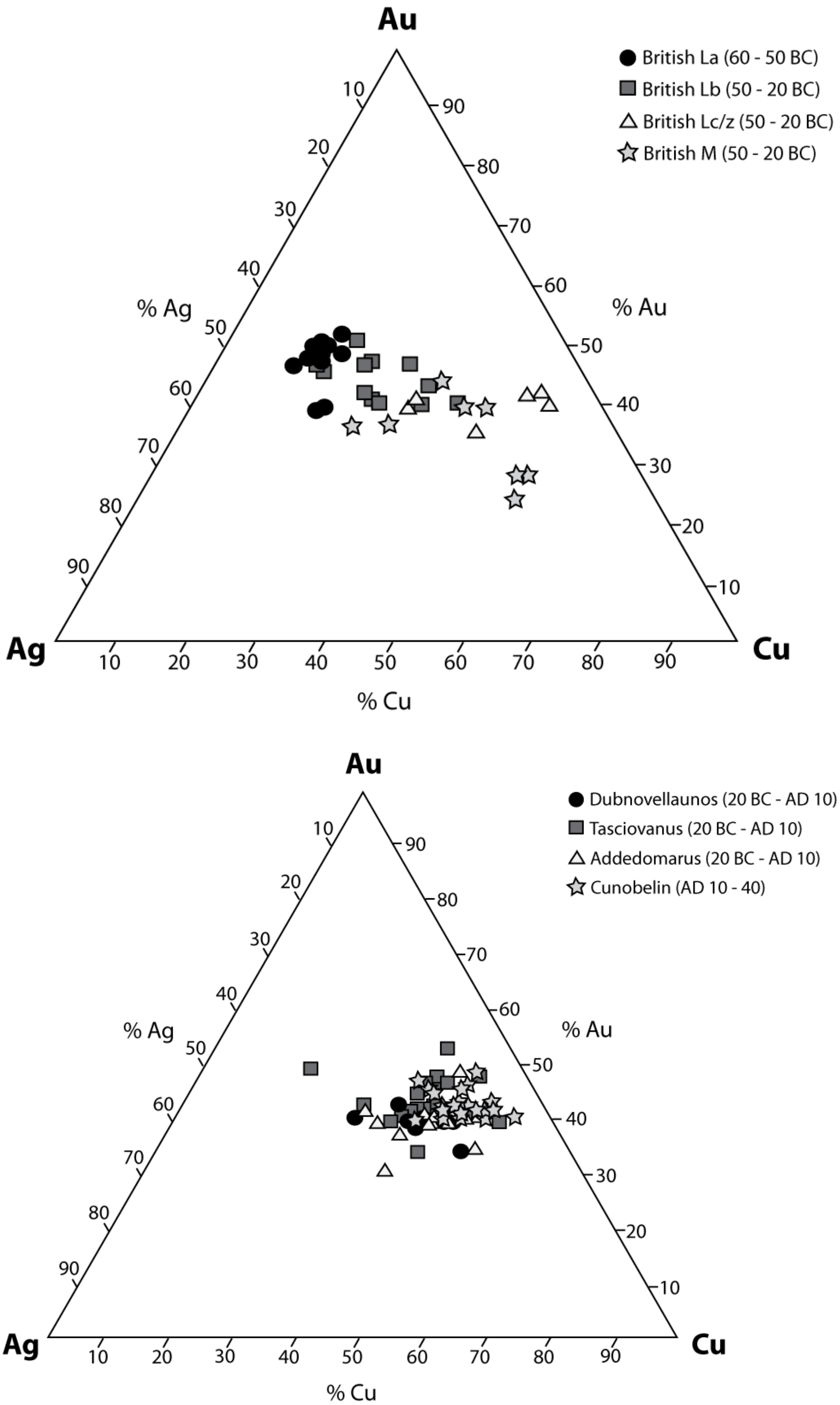


Figure 2.29: The composition of ternary gold alloys in post-60 BC and dynastic gold coins from the Eastern Kingdom (combining the results of Northover 1992 and Cowell 1992)

After around 50 BC, when Caesar had made his expeditions into Kent, and the Gallic War had ended with the Roman conquest of Gaul, southern British coinage shows a shift in alloy composition (Figures 2.28 and 2.29) and also design. The first of the new coinages, British L and Q, were produced around 60–20 BC. These appear to involve the recall and reminting of all earlier gold issues, giving a distinctively homogenised alloy signature. Early British gold (British A-G) is very rarely found in hoards with later issues (see chapter four), suggesting that these coins were successfully removed from circulation, or actively excluded from later hoarding practices.

By 20 BC, the yellow Gallic golds had been completely replaced by more copper-rich red-gold alloys, alongside the first major silver issues. Creighton (2000, 55) writes, "It was as if the yellow ternary alloy had been rent asunder into two completely new metals: red-gold and white silver." In the dynastic kingdoms, the proportion of refined gold was extremely consistent, at 39-41%, with a copper-silver ratio from 4:1 to 2:1. Northover (1992, 249) suggests that this distribution must represent "the result of the mixing of refined gold with a variable copper-silver alloy." The source of this refined gold will be discussed in chapter four, but there is little doubt that it derived ultimately from the Roman world. Creighton (2000) argues compellingly that this Roman gold bullion arrived directly from Rome, as gifts to client kings. Whilst Augustus may not have kept his client kings well-supplied with silver, it does appear that he provided large quantities of gold bullion.

Southern production of red-gold and silver coinage continued right up until the conquest, suggesting that the supply of both gold and silver bullion eventually became well-established. It was argued above that the first large gifts of silver may have occurred during the Tiberian period.

North-Eastern gold

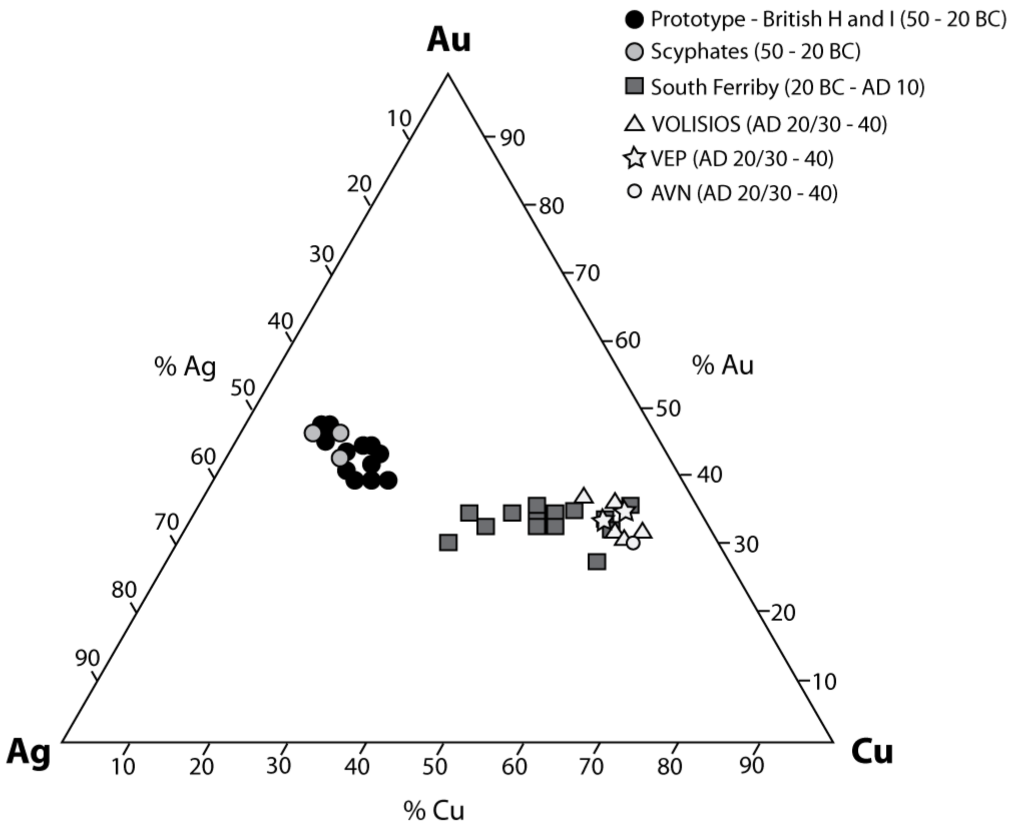


Figure 2.30: The composition of ternary gold alloys in coins of North-Eastern issues (combining the results of Northover 1992 and Cowell 1992)

North-Eastern gold production probably began before 50 BC. Early issues have a composition centring on 45% Au, 40% Ag, 15% Cu (Figure 2.30). This fits most closely with the composition of Gallic and southern British issues from 80-50 BC, rather than earlier coinage (e.g. Gallo-Belgic A-C, British A) or later series (British L & Q). Coinage may have been produced predominantly by recycling a mixture of the later, more debased southern issues (British F and G) and Gallo-Belgic E.

North-Eastern gold alloys for the South Ferriby series (produced between 20 BC and AD 10) cluster around 35% gold, debased with a variable copper-silver alloy. The horizontal distribution suggests that gold bullion was also in use in the East Midlands, here being diluted to a slightly lower standard than in the south. This bullion could have been sourced through southern contacts, or directly from the Roman world.

No analyses have been done on North-Eastern gold Kite/Domino staters (perhaps issued AD 10–20/30), though these also show the shift to red-gold. Inscribed North-Eastern issues (probably produced after AD 20/30), show a more clustered range, but still in line with the 'northern standard' of around 35% gold rather than the 'southern standard' of 40-50% gold. This implies that East Midlands groups were still mixing their own alloys during this period, most likely by diluting bullion with a standard silver-copper alloy (although dilution of recycled southern coins is also a possibility).

Other regions

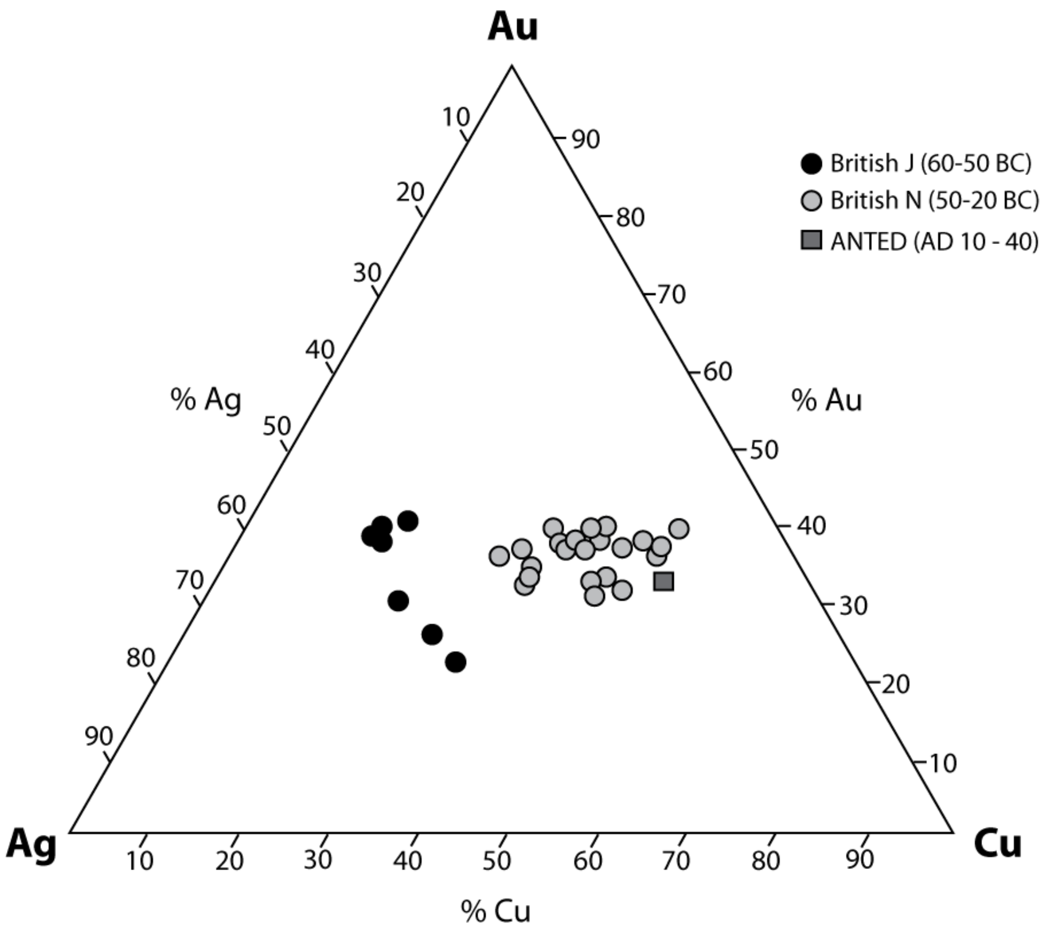


Figure 2.31: East-Anglian gold issues (combining the results of Northover 1992 and Cowell 1992)

The East Anglian series (Figure 2.31) shows a similar pattern to the North-East, although earlier issues are more debased. The horizontal distribution of later issues again suggests access to bullion. East Anglian issues adhere to the 'northern standard' of 35-40% gold rather than the 'southern standard' of 40-50% gold. The North-East and East Anglia may also have shared other aspects of their coin production technologies.

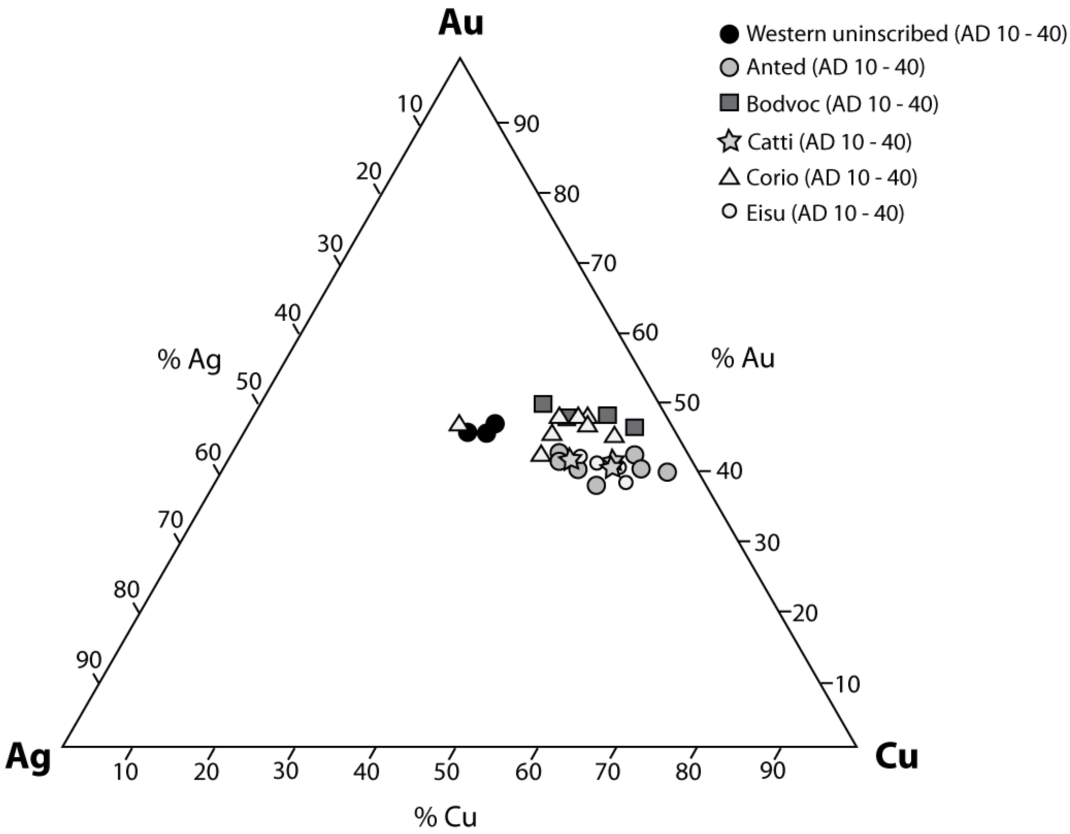


Figure 2.32: The composition of ternary gold alloys in Western issues (combining the results of Northover 1992 and Cowell 1992)

Western issues (Figure 2.32) adhere to the 'southern standard' of 40-50% gold, rather than the lower 'northern standard' (although some issues lie closer to 50% and others to 40%, suggesting differences in source or debasement process). In this case the issues may be clustered enough to suggest the recycling of southern gold rather than the use of bullion, but the latter production route cannot be ruled out.

2.3 Reconstructing ancient production techniques

This section continues the investigation of production techniques using two additional strands of evidence: analysis of the coins themselves (SEM imaging of coins alongside textural data from NDA) and the archaeological evidence for British coin production (the East Midlands evidence is considered separately in the final section of this chapter). The combination of the analytical and archaeological data is used to provide a possible reconstruction of the minting techniques in use across much of Iron Age Britain (allowing for regional variations).

2.3.1 The Analytical results: NDA textural results and SEM imaging

NDA provided data on the crystallographic texture of the objects tested. At an atomic level, the structure of most metals, including silver-copper alloys, is based on a lattice of cubic crystals. Silver-copper alloys show an FCC (Face-Centred Cubic) crystal structure (Figure 2.33).

Copyright not obtained.

Figure 2.33: Schematic representation of an FCC crystal lattice (from Callister 1994, 31)

The coins, like most metal objects, are composed of many different crystals, called 'grains' or 'crystallites'. Each crystallite has the same FCC structure, but may show a different lattice orientation to its neighbours. When a metal object is cast, the orientations of the crystallites will be randomly (or 'uniformly') distributed. A cast coin pellet will show no preferred orientations of crystallites. This is changed by mechanical treatment, because the deformation of grains is easier in some directions than in others. The working of a cast metal object (such as the transformation of a pellet into a coin) creates preferred orientation of crystallites known as 'crystallographic texture'. The 'texture index' (TI) of an object is a measure of the degree to which it shows such preferred orientations. The occurrence of particular orientations is measured in 'multiples of random distribution' (MRD). For a given orientation, an MRD of 1 suggests that this orientation occurs at the same frequency as would be expected to occur in a cast metal. A higher MRD show that this is a preferred crystallite orientation, while an MRD of below 1 suggests that fewer of these orientations were detected than would be expected in a cast structure.

Measurements of crystallite orientation can be used to create diagrams called 'pole figures' which illustrate the distribution of crystallite orientations. A pole figure is the stereographic projection of the poles used to represent the orientation of crystallites in space, thus each point represents a specific crystallite orientation. Preferred crystallite orientations (MRD>1) appear as 'high density' areas on the pole diagram. Three complementary pole figures (one for each plane which is used to describe the orientation of a crystallite in space, in this case the 110 plane, 200 plane and 220 plane) make up a full set of pole figures for one object. These can be additionally complemented by 'inverse' pole figures. Whilst pole figures are a description of crystal orientations with respect to the sample co-ordinate system, inverse pole figures are a description of the sample orientation with respect to the crystal co-ordinate systems. Instead of the crystal planes, the three inverse pole figures represent sample directions which are historically called the normal direction (ND), the rolling direction (RD) and the transverse direction (TD). In this case the normal direction is perpendicular to the coin face, parallel to the incoming beam direction.

Examples of pole figures for the coins tested are shown in Figure 2.34. Interpretation of these images can provide evidence about manufacturing techniques (Artioli 2007, Kockelmann et al. 2006). All coins tested were shown to have been struck. This 'compression texture' is characterised by strong density in the centre of the 220 pole, equivalent to pronounced density in the lower-right 110-corner of the inverse pole figure (Artioli 2007).

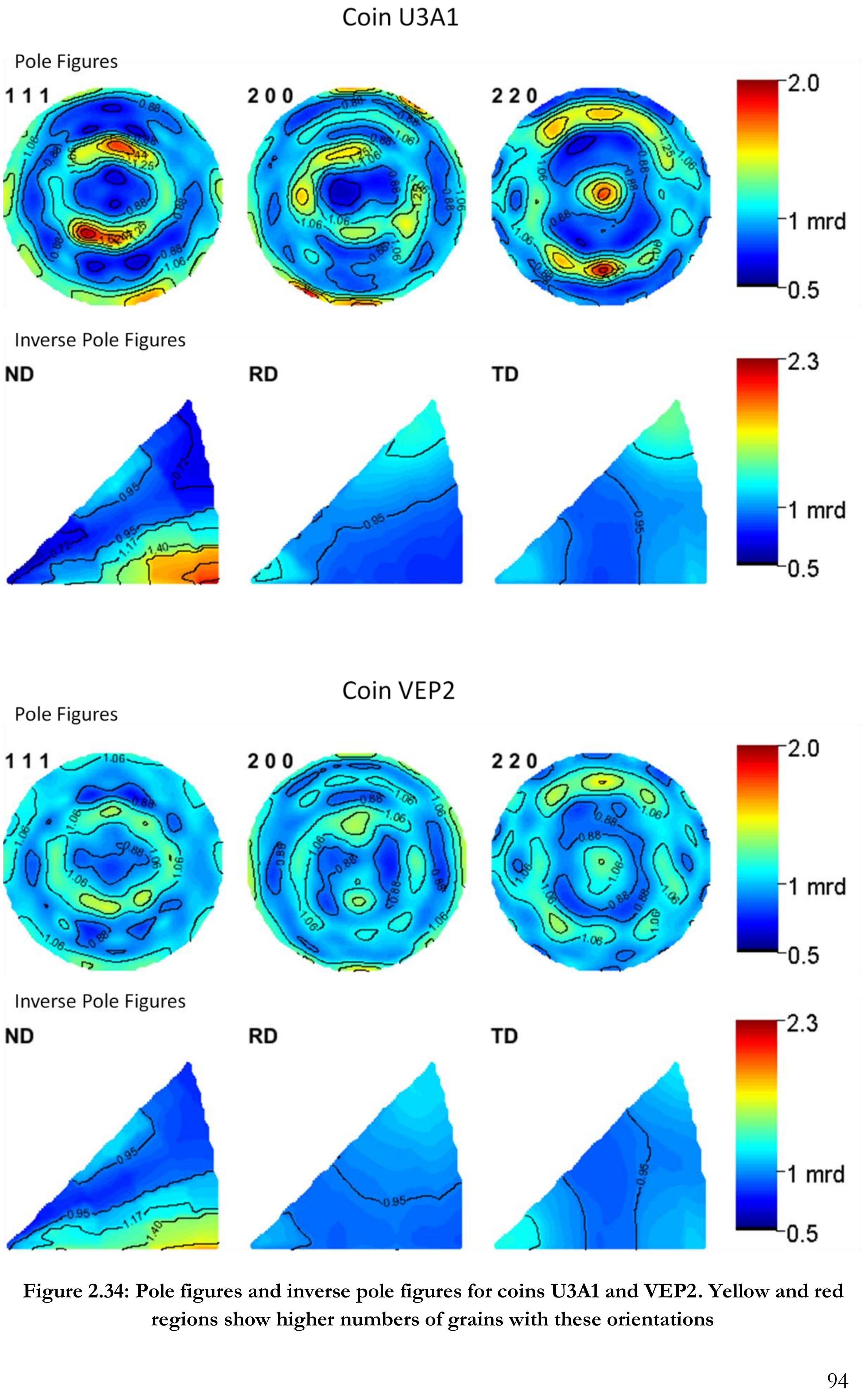


Figure 2.34: Pole figures and inverse pole figures for coins U3A1 and VEP2. Yellow and red regions show higher numbers of grains with these orientations

Although all coins show the same type of texture, indicating a similar production route, there are variations in the degree of texture, apparent from the different levels of intensity in Figure 2.34. Uninscribed coin U3A1 shows far more pronounced texture than the inscribed coin VEP2. Tables 2.9 and 2.10 order the coins by TI (i.e. degree of texture shown). Table 2.9 reveals a distinction between the earlier uninscribed and the later inscribed issues, with the former showing a higher level of texture. The cut-off is at a TI of around 1.5. Uninscribed North-Eastern issues generally have TI 1.56-1.76 (with an outlier at 2.5 and only U6B1 below 1.5, at 1.34). Inscribed issues have lower TIs: 1.21-1.44. As Table 2.10 shows, the coins of Cunobelin and the modern replicas have mid-range TIs (1.37-1.52) and Roman coins (except ROM4) show fairly high TIs (1.55-2.07).

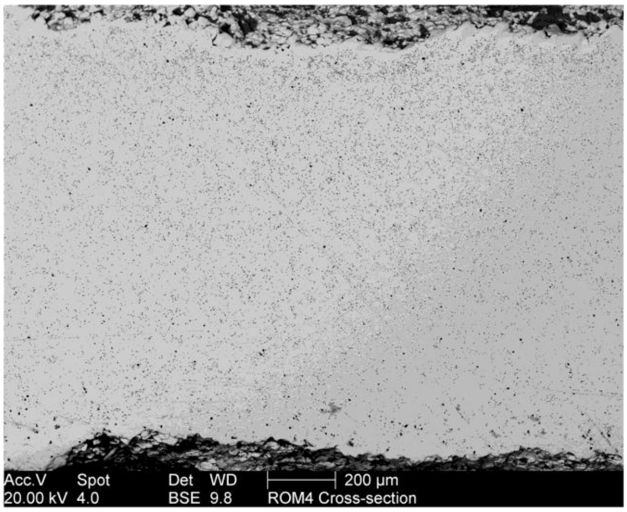
Table 2.9: North-Eastern coins, ordered by increasing TI

Coin Type	Weight	% Ag to Cu	Code	Minimum MRD	Maximum MRD	Texture Index (Ag)
NE inscribed	1.06g	86	IAT2	0.72	1.34	1.21
NE inscribed	1.29g	80	VEP1	0.73	1.36	1.23
NE inscribed	1.28g	60	ISP3	0.66	1.52	1.24
NE inscribed	1.27g	79	ISP1	0.66	1.57	1.27
NE inscribed	1.25g	81	VEP2	0.69	1.46	1.27
NE inscribed	0.22g	97	VDC1	0.72	1.54	1.27
NE inscribed	1.17g	90	VEP3	0.69	1.46	1.28
NE inscribed	0.5g	86	VDC2	0.64	1.52	1.29
NE inscribed	1.16g	74	AVN1	0.63	1.87	1.31
NE inscribed	1.16g	74	IAT3	0.71	1.49	1.31
NE inscribed	0.88g	79	AVN3	0.66	1.51	1.32
NE uninscribed	0.77g	75	U6B1	0.58	1.65	1.34
NE inscribed	1.11g	94	AVN2	0.68	1.55	1.38
NE inscribed	1.27g	81	ISP2	0.68	1.60	1.40
NE inscribed	1.19g	92	IAT1	0.65	1.60	1.40
NE inscribed	0.51g	88	VDC3	0.68	1.85	1.44
NE uninscribed	0.35g	79	U4B2	0.53	1.85	1.56
NE uninscribed	1.18g	96	U3A1	0.58	1.94	1.64
NE uninscribed	0.94g	92	U3A2	0.49	1.80	1.68
NE uninscribed	1.28g	93	U3A3	0.48	1.98	1.71
NE uninscribed	0.3g	90	U4B1	0.33	1.80	1.71
NE uninscribed	0.65g	82	U6B3	0.52	2.05	1.72
NE uninscribed	0.97g	78	U6B2	0.42	1.96	1.76
NE uninscribed	0.5g	75	U4B3	0.48	2.65	2.50

Table 2.10: Roman, southern British and replica coins, ordered by increasing TI

Coin Type	Weight (g)	% Ag to Cu	Code	MRD minimum	MRD maximum	Texture Index (Ag)
Roman	3.32	100	ROM4	0.54	1.45	1.34
Replica	1.04	90	REP5	0.63	1.70	1.37
Replica	1.01	87	REP4	0.64	1.82	1.39
Cunobelin	1.25	100	CBN2	0.57	1.63	1.42
Replica	0.97	90	REP2	0.67	1.61	1.42
Replica	1.02	87	REP1	0.54	1.91	1.46
Replica	1.00	90	REP3	0.59	1.75	1.49
Cunobelin	1.36	100	CBN1	0.52	1.73	1.52
Roman	3.63	100	ROM1	0.60	1.99	1.55
Roman	3.53	100	ROM2	0.55	2.05	1.77
Roman	3.68	100	ROM3	0.45	2.27	2.07

There is no correlation between weight or alloy composition and TI. This suggests that the patterns in texture levels may reveal differences in production routes. To test this theory, the microstructures of a representative sample of seven coins (Replicas 1, 3, and 5; ROM4, VEP2, U3A1, and U6B3) were examined using SEM. The coins were mounted on edge in a small aluminium clamp, exposing around 1mm of the edge. This edge material was then ground down and polished to expose a cross-section. The final polish was carried out using 1μm diamond paste, giving a sufficiently fine polish to allow metallographic analysis of the internal structure. Three figures are shown for each coin (Figures 2.35-2.41). In each case (a) shows a full cross-section taken at around 100x magnification, (b) was taken at 500x magnification and (c) at 2500x magnification (note the images are not reproduced to these dimensions here: see scale bar in each image for size).



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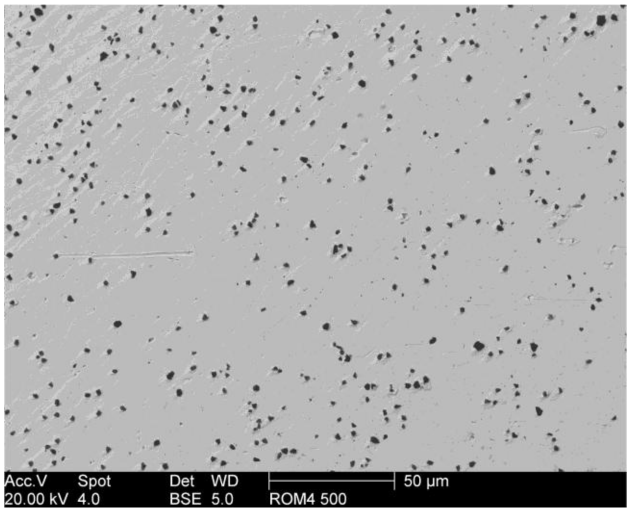

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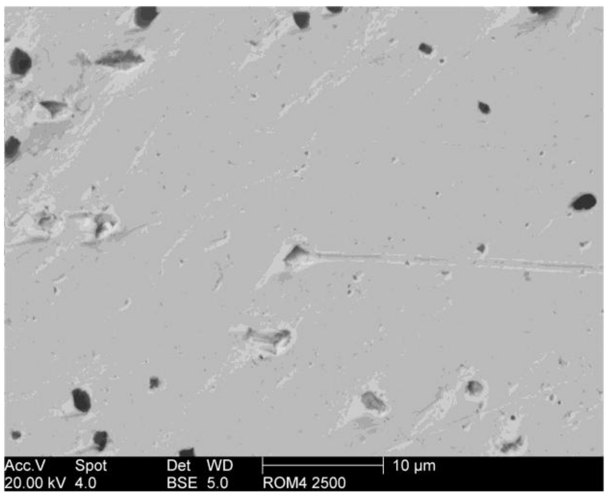
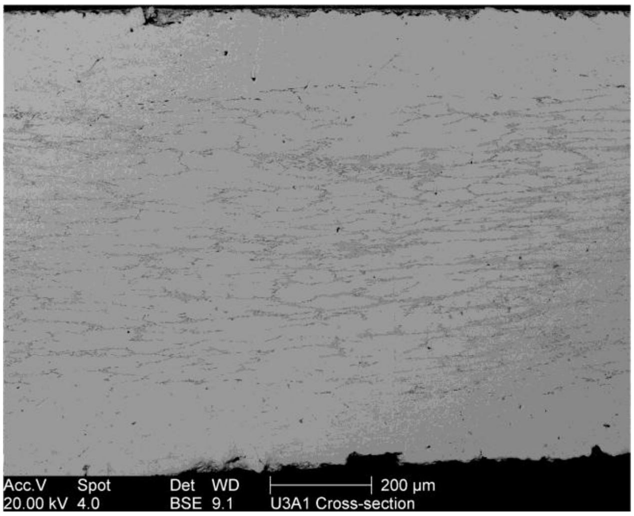
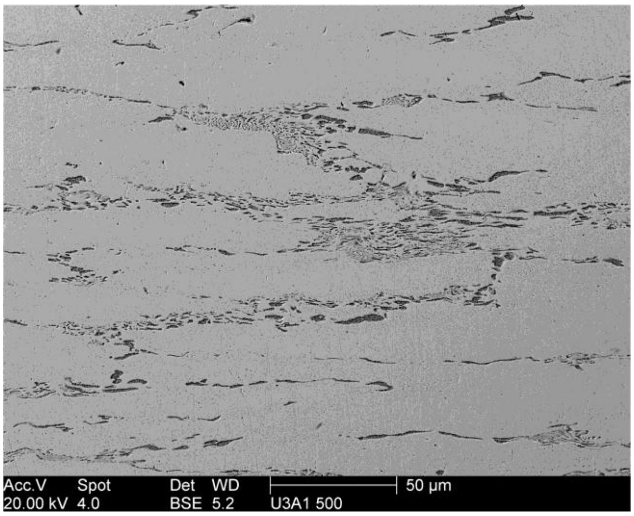


(c)

Figure 2.35a-c: ROM 4: Republican *denarius* of Caesar. (small dark particles are diamond particles from polishing) [% Ag to Cu (EDX): 99.45. % Ag to Cu (NDA): 100 (i.e. all Cu remains in solid solution). TI (Ag): 1.34].



(a)



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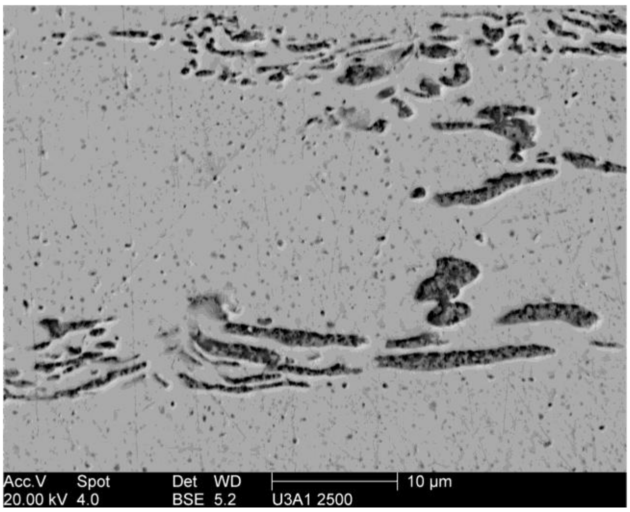


(c)

Figure 2.36a-c: U3A1: South Ferriby unit. Note the laminar pancake-shaped grains. Equiaxed grains would be expected in a cast microstructure. [% Ag to Cu (EDX): 92.68. % Ag to Cu (NDA): 96.16 (the difference between EDX and NDA results is due to extensive surface enrichment of silver seen in this coin). TI (Ag): 1.64].

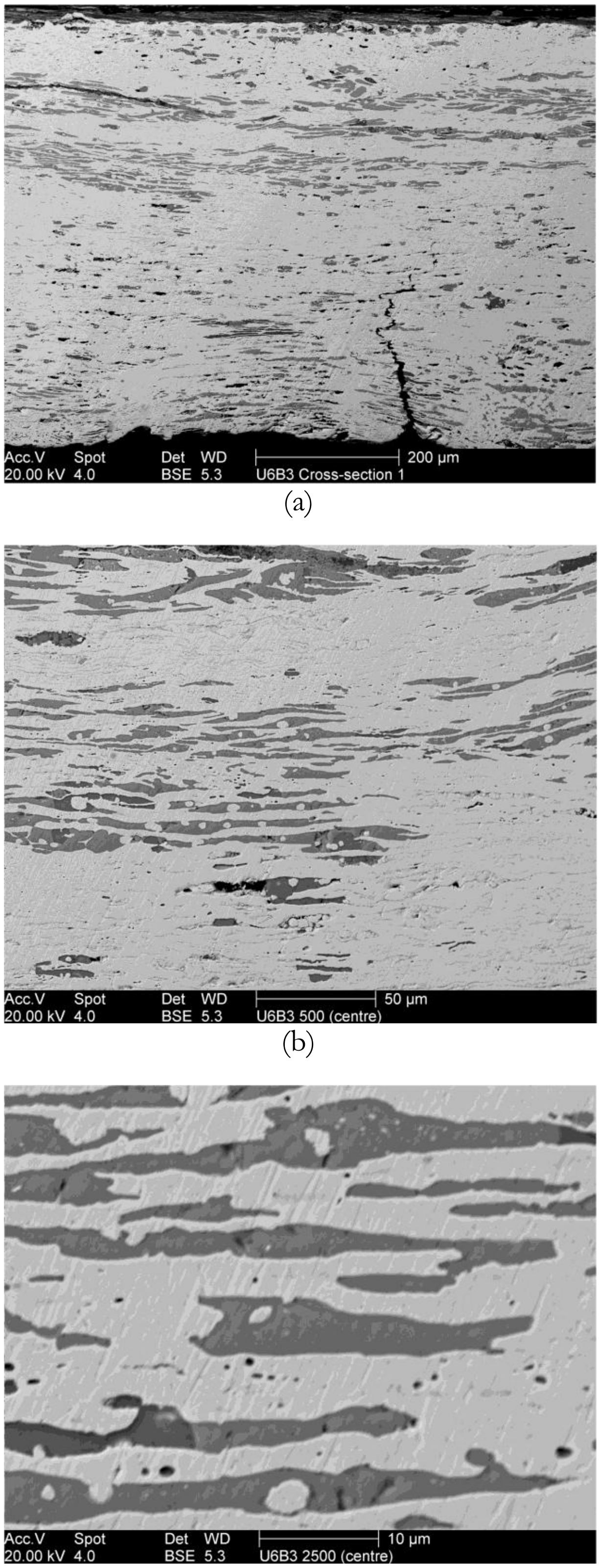
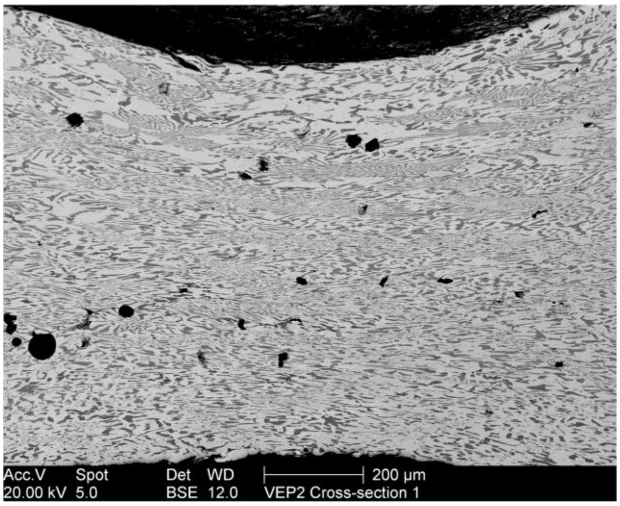


Figure 2.37a-c: U6B3: Kite unit. Note the cracking and pronounced orientation of the microstructure, with elongated pancake-shaped grains in a laminar structure. [% Ag to Cu (EDX): 87.15. % Ag to Cu (NDA): 82.13 (the difference between EDX and NDA results is likely explained by the loss of copper oxide during SEM preparation – excluding Cu from Cu2O, the NDA result was much closer: 86.03%) TI (Ag): 1.72]



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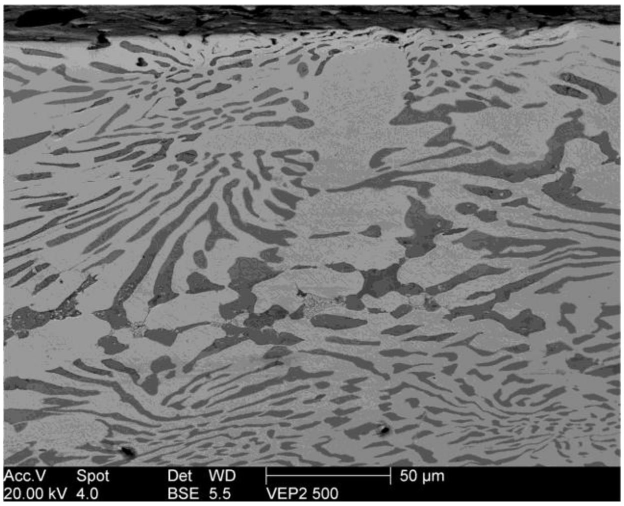

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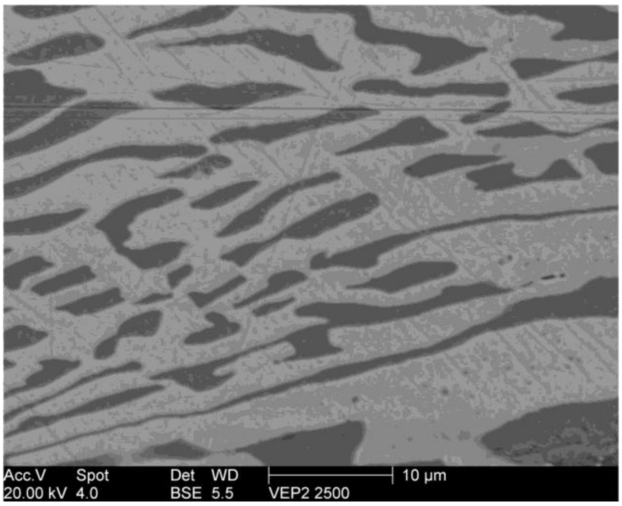
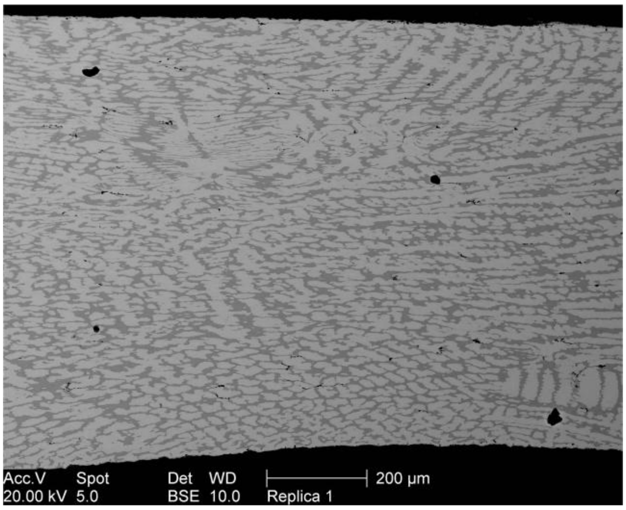
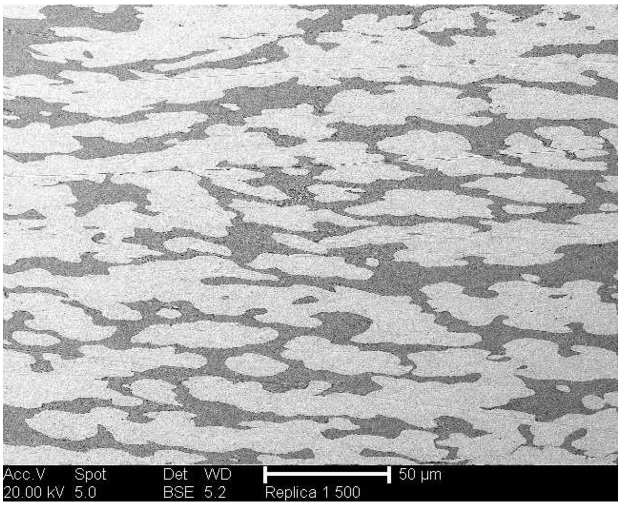


(c)

Figure 2.38a-c: VEP2: inscribed unit. (a) shows a laminar structure, but without the pancake-shaped grains seen in the uninscribed coins. Equiaxed grains are also present. [% Ag to Cu (EDX): 79.52. % Ag to Cu (NDA): 80.91. TI (Ag): 1.27]



(a)



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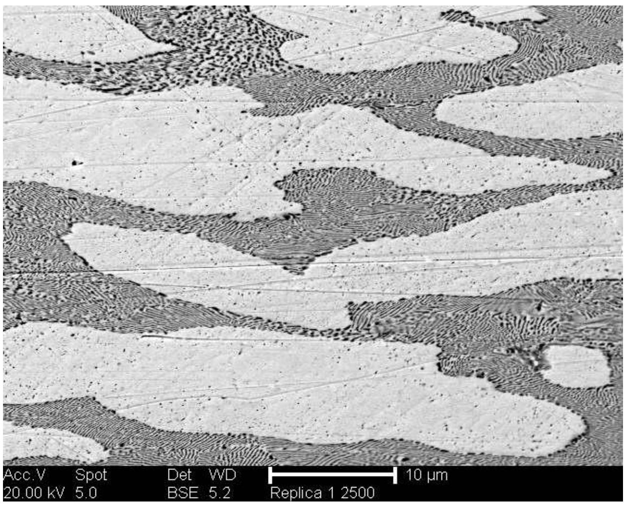
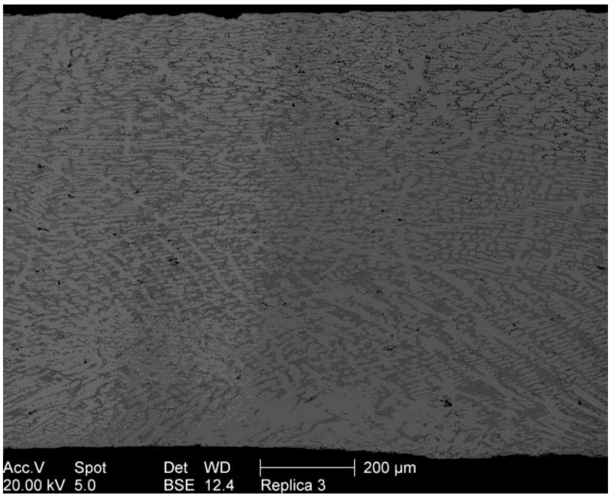
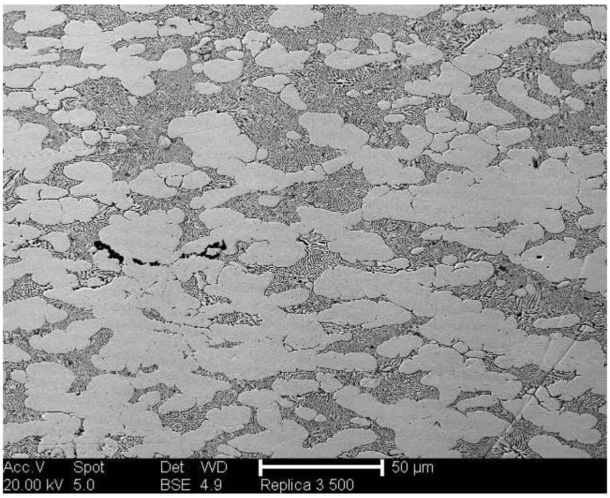


(c)

Figure 2.39a-c: REP 1: replica. (a) shows a partially laminar structure, but without the pronounced pancake-shaped grains seen in the uninscribed coins. Equiaxed grains are also present. [% Ag to Cu (EDX): 88.94. % Ag to Cu (NDA): 87.13. TI (Ag): 1.46]



(a)



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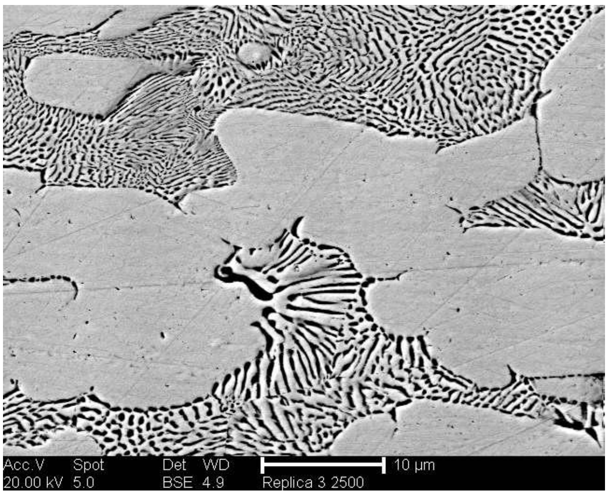
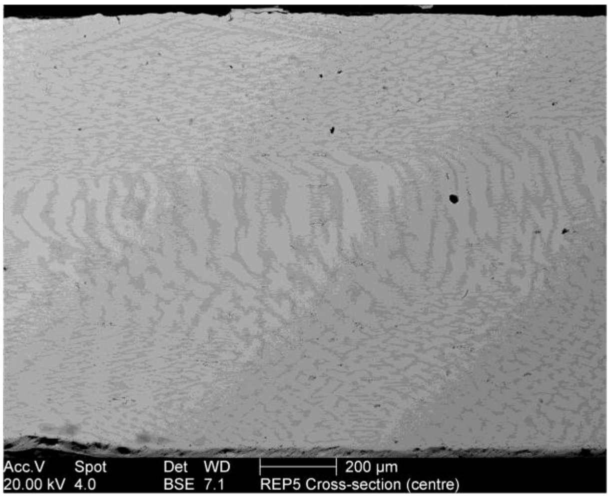
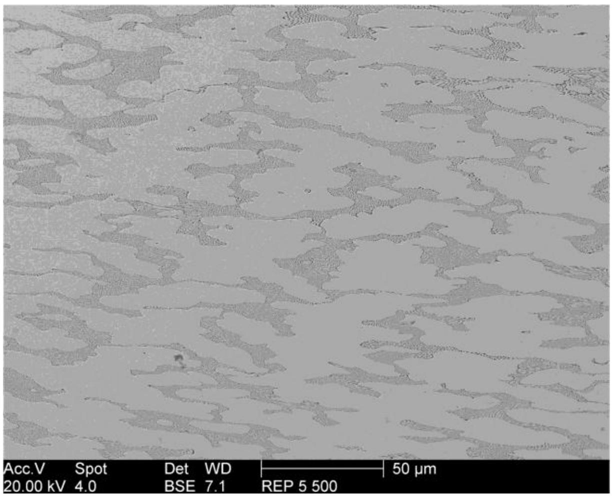


(c)

Figure 2.40a-c: REP 3: replica. Non-laminar structure. Grains are predominantly equiaxed. [% Ag to Cu (EDX): 90.63. % Ag to Cu (NDA): 89.56. Texture Index (Ag): 1.49]



(a)



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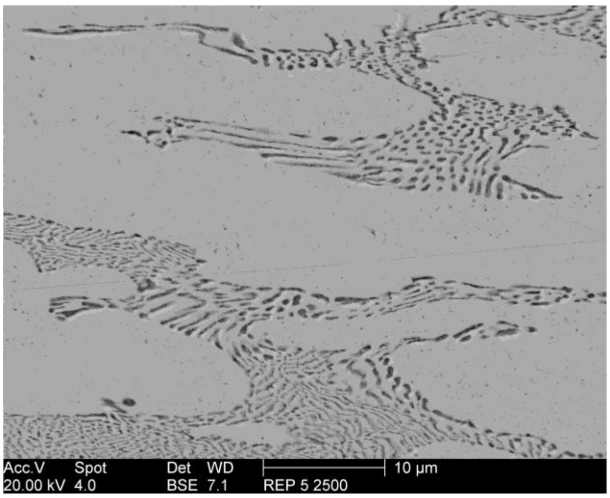

(c)

Figure 2.41a-c: REP 5: replica. (a) shows a partially laminar structure, but without the pronounced pancake-shaped grains seen in the uninscribed coins. Equiaxed grains are also present. [% Ag to Cu (EDX): 91.20. % Ag to Cu (NDA): 93.98. Texture Index (Ag): 1.37]

Only one phase was present in ROM4 (Figure 2.35a-c), as expected based on its extremely high silver content, so it was not possible to see variations in the microstructure. The microstructure of the other coins revealed clear differences between the lower-texture coins (VEP2 and the replicas) and the higher texture coins (U3A1 and U6B3), compare Figures 2.36-2.41.

The two high-texture coins (U3A1 and U6B3, Figures 2.36 & 2.37) show evidence of deformation through cold-striking, with elongation of relict silver dendrites into flattened 'dendritic stringers' (Scott 2011, 31). Cold-striking would explain the higher TI values for these coins. Cold-working causes far more deformation of the crystal structure, since at room temperature it is not possible for any recrystallisation to take place. This would also explain the crack seen on U6B3. All but one uninscribed North-Eastern coin showed comparably high levels of texture. This suggests that most of the earliest North-Eastern types, like most Roman issues and the East Anglian Iron Age coins (Dennis 2006), were cold-struck.

The replicas made for this experiment were hot-struck. This gave TIs of 1.37-1.52, comparable to the upper values for inscribed coins. The replicas examined under SEM (Figures 2.39-41) showed the microstructure which would be expected from their composition, a primary silver-rich phase with the eutectic mixture filling the spaces in between. Whilst the replicas showed varying degrees of recrystallisation (for example REP3 shows a greater degree of recrystallisation than REP1, compare Figures 2.39c and 2.40c), none showed anything like the degree of deformation seen in the two uninscribed coins. The inscribed VEP coin (Figure 2.38) showed a microstructure far more similar to the replicas, appearing to be hot-struck rather than cold-worked. There is some evidence of compression layers, but much of the structure, including the large equiaxed primary silver-phase grains near the surface, represents an almost as-cast recrystallised structure. This coin, like the other inscribed North-Eastern issues tested, gave a lower TI value, in this case 1.27. This may suggest that there was a shift in production practices around the time of the latest uninscribed or first inscribed North-Eastern issues, from cold-striking to hot-striking. Whilst other factors may affect texture indices, it is possible that the coins of Cunobelin, which also show texture indices in the same range as the replicas, were also hot-struck.

The 6b and VEP coins did not show a substantial degree of surface enrichment, although VEP2 in particular appeared surface-enriched from the XRF results (most likely due to corrosion). However, the earliest coin tested (U3A1) showed a high degree of surface enrichment, with a surface-enriched layer up to 200μm in depth. This may be partly due to work hardening or corrosion processes, but it is likely that there was a also a certain amount of heat treatment and blanching of the alloy in antiquity, consolidated by cold striking of the coin as argued by Butcher and Ponting (2005) for later Roman issues. Longer heating of the coin could have been unintentional. The VEP and 6b coins did not show evidence for extended heat treatment.

This could conceivably have caused a slight distortion of the value for silver content for coin U3A1 in both XRF and NDA analyses, since the surface-enriched region makes up a substantial proportion of the coin. SEM/EDS analysis of the heart metal gave a value of 92.68% Ag to Cu, compared to a value of 96.16 from NDA and 97.3% from XRF. Thus the production processes used to produce the 3a issues may partly explain their close clustering in terms of silver content, although it does seem that they were indeed a high-purity issue to start with.

In sum, the evidence suggests that whilst all North-Eastern silver coins were struck, there was significant variation in production techniques through time. The results for the 3a types suggest that early in the period AD 10–20/30, coins were cold-struck, and blanching and heat treatment factors may have exacerbated surface enrichment (although whether intentional or unintentional is an open question). Later in the same phase, coins (e.g. 6b) were still generally cold-struck, but there may have been a decline in the blanching or heat treatment practices. This period marks a turning point in production technology: whilst two of the coins appear to have been cold-struck, one has a lower texture index which might indicate hot-striking. By the time inscribed North-Eastern issues were being produced after AD 20/30, hot striking appears to have become the norm: all coins from this period show the lower texture indices (below around 1.5) which appear to be associated with hot-striking.

2.3.2 The archaeological evidence

Artefacts which shed light on coin production techniques include:

- **Triangular crucibles**. Relatively common site-finds, also used in copper alloy working, but they have been found in association with coin production debris, e.g. at Old Sleaford, Colchester/Camulodunum and Bath Lane, Leicester (Elsdon and Jones 1997, 55-6; Hawkes and Hull 1947; Kipling and Parker 2009).
- **Coin pellet trays**. Clay slabs with dibbed holes, most likely used for producing pellets which were then worked into blank coin flans and struck.
- **Coin scales.** Sometimes found at coin production sites, e.g. Verulamium (Wheeler and Wheeler 1936, 176-7), these could have been used to weigh out metals for alloying, or for checking the weights of finished pellets or coins (Van Arsdell 1993; Wainwright and Spratling 1973, 115, 120).
- **Coin dies**. Used for striking coins, although these are rare finds.
- **Coin pellets and blanks**, which for whatever reason were never struck.

Similar objects are also found on the continent, suggesting parallels between British and continental coin production (e.g. Tournaire et al. 1982), though there were also differences (see below).

2.3.3 The process

The following section constructs a possible sequence for the production of Iron Age struck precious-metal coinage:

1. Design and die production
2. Mixing the alloy
3. Making the pellets
4. Flattening the pellets into coin flans
5. Striking the blanks
6. Check, repeat and recycle

This sequence is based on archaeological evidence (e.g. Tournaire et al. 1982, Elsdon and Jones 1997, Kipling and Parker 2009, Langdon 2009, Frere 1983) and a series of experiments carried out by Philip de Jersey and Neil Burridge (de Jersey 2009), with reference to earlier experimental work (e.g. Sellwood 1963, Tylecote 1962). There was regional variation in the techniques employed, but much of this will have been connected to alloy composition and standardisation, die construction, minting apparatus and temperature control. In general, the evidence suggests that fairly similar techniques were employed throughout Britain and the near continent.

In order to produce controls for analysis, a small-scale experimental minting was carried out with Neil Burridge. The resulting video (Appendix 1) summarises stages 3-5 below. The alloys were mixed on a coin-by-coin basis, but it is highly unlikely that this would have happened in the Iron Age. Alloys were probably produced in bulk, as described in stage 2, allowing the production of batches of coins (Northover 1992, 266).

1. Design and die production

Initially, the decision to strike an issue of coins had to be taken, and the design agreed. The dies then had to be cut. This is one of the most complicated parts of the coin production process, summarised in Figure 2.42. Blank dies were cast in bronze alloys (copper with the addition of 15-25% tin to increase hardness) and engraved with the desired design. The engraving process may have used iron punches such as those known from Gussage All Saints (Fell 1988) or dies could have been hubbed from existing coins (particularly likely in the case of plated copies) (Cottam 2001). Finished dies were encased in iron sleeves to protect them from shattering during the minting process (de Jersey 2009, 259).

It is possible that some aspects of the design of prototype coinages (such as the rather blocky imagery on British A, and the reversal of the horse compared to its prototype, Gallo-Belgic C – see Figure 4.1) resulted from a lack of experience in die-production, or an incomplete understanding of the mechanics of the process (the images on the coins are reversed). We should, however, remain aware of the possibility that these aspects of the design were understood but deemed to be of little consequence, or were actively planned (the 'head' on the obverse of British A is the same way round as for Gallo-Belgic C).

In some cases, controlling die design may have become a political issue. Creighton (2000) suggests that the traditional 'celtic' imagery on many early Iron Age issues may have been inspired by trance imagery, controlled by a religious elite. He interprets the introduction of Classical designs and inscriptions on Southern British coins as representing the usurpation of these traditional leaders by a new Roman-influenced elite, who took control of the minting process. This interpretation may be a step further than strictly allowed by the evidence, but it is highly likely that die design and production was closely monitored and controlled by the minting authorities.

Copyright not obtained.

Figure 2.42: Stages in designing and producing a coin die (Gruel and Morin 1999)

Close control of dies may explain their present scarcity. Coin dies are infrequent finds, particularly in Britain where only two examples are known, both metal-detected finds from Hampshire (Ainsworth and May 2003, May 2006). These date from the earliest period of British coin-use, and may represent imports, or an early phase of experimental coin production. No dies are known for any of the well-established insular issues. More dies are known from the continent (e.g. Furger-Gunti 1987, Malacher and Collis 1992, Dembski 1995, Auberson and Geiser 2001), but even here they are rare considering the volume of surviving coinage. These objects may have been intentionally destroyed by the minting authorities once their useful life came to an end. This is in contrast to other minting debris, such as coin pellet trays, which seem to have been casually discarded in large dumps at several sites when local coin production came to an end.

2. Mixing the alloy

Once the design and die-production stages were complete, coin production could begin. The first step was mixing a suitable alloy. Both North-Eastern and East-Anglian silver coins (above, Dennis 2006) appear to have been produced by debasing silver bullion with copper alloy. After 50–20 BC, undiluted bullion may have been used in southern England (Northover 1992, 256-7). In the NDA analysis, pairs of North-Eastern coins of the same type (e.g. U3A, VEP, VOLISIOS, ISSVPRASV) sometimes showed similar compositions, perhaps suggesting they were produced as part of the same 'minting event', if not from the same batch of alloy. However, variation of 10-15% in bullion content within issues suggests that fine control of alloy standardisation between batches was either not achievable or not desired.

Triangular crucibles (of the kind in which coins were melted to create the Hallaton silver ingot) are sometimes found alongside coin pellet mould debris, for example at Bath Lane (Kipling and Parker 2009), Old Sleaford (Elsdon and Jones 1997) and Colchester/Camulodunum (Hawkes and Hull 1947). XRF results have confirmed their use in working with precious metals (preliminary analysis of the Bath Lane crucibles undertaken with the assistance of Ian Whitbread showed traces of gold and silver, as well as copper and lead; see also Elsdon and Jones 1997). This suggests that the mixing of gold and silver alloys for coin production was achieved using these objects. The metal to be recycled would have been stacked into the crucible and then heated in a charcoal furnace until its melting point of around 900-1000°C was reached, before being allowed to cool to form an ingot (either in the crucible, or after being poured into the desired form). Silver ingots are known from Hengistbury head (Northover 1987; Salter and Northover 1992) and Essendon, but it is not known whether they were intended for coin production. The triangular Hallaton ingot does not appear to have formed part of the typical coin production process. This would perhaps have made its production and deposition even more potent. In a system where bullion was required to make a 'legitimate' batch of coinage, melting down silver-copper alloy coins would have been a powerful statement. If the debased silver could indeed not be purified using local technology, then rather than representing stored wealth offered to the gods, the production of the Hallaton ingot may in fact have been a profound act of destruction, permanently removing the coins (and the bullion they contained) from circulation.

3. Making the pellets

Once the alloy had been mixed, it would have been necessary to divide this material into appropriate sized units to form the pellets for coin striking. The level of weight standardisation within and even across coin types is generally extremely high: inscribed North-Eastern silver units show median weights within a range of less than 0.1g (see Figure 2.43).

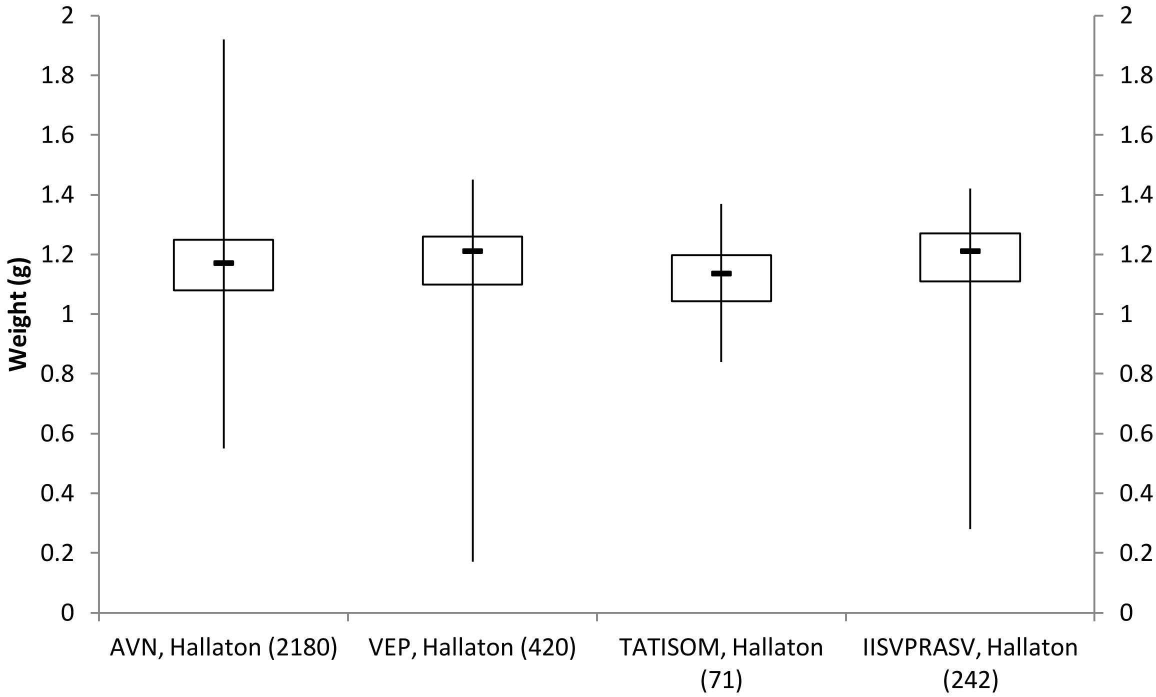

Figure 2.43: Box and whisker plots showing weights of silver units from Hallaton. Coins recorded as broken omitted. These objects were buried when still showing little wear: CCI data consistently gives lower and less standardised weights.

Weight standardisation could have been achieved in a number of ways. Gruel suggested that Armorican Corisiolite pellets were produced by pouring droplets of molten metal onto a slab (Sellwood 1963; Gruel 1981, 1989). A number of factors speak against this as common practice. It would be extremely difficult to maintain a crucible at a high enough temperature to allow pouring, and such a method could almost certainly not produce the closely controlled weight ranges seen in most Iron Age British coins.

Gruel's suggestion was partly an attempt to explain the absence of coin pellet trays from Armorica. These are circular or rectangular clay slabs with dibbed holes, which come in a variety of sizes, sometimes correlated with coin denominations (Elsdon and Jones 1997, 56-64). There is some local variation in form. Some British coin pellet trays are five-sided, with a 'seven-by-seven plus one' pattern of holes (Verulamium/St. Albans: Anthony 1961; Bath Lane: Clay and Mellor 1985, Kipling and Parker 2009). An example from Bath lane is shown in Figure 2.44. Others appear to have been rectangular (Old Sleaford: Elsdon and Jones 1997) or circular (Scotton).

Figure 2.44: A typical '7x7 plus 1' flan tray from Bath Lane, Leicester

Coin pellet trays are regular finds from sites in Britain and on the continent (Tournaire et al. 1982 summarises the French evidence; British sites include major centres e.g. Silchester/Calleva: Fulford 1984, 251; St.Albans/Verulamium: Frere 1983, Anthony 1961; Braughing-Puckeridge: Langdon 2009; Colchester/Camulodunum: Hawkes and Hull 1947; Bath Lane: Clay and Mellor 1985, Kipling and Parker 2009; Old Sleaford: Elsdon and Jones 1997; Bagendon: Allen 1961; but also smaller, more enigmatic rural sites such as Scotton and Saham Toney - see Figure 2.1). Analysis has repeatedly revealed traces of precious metals (and occasionally bronze) (V. Ščasnár et al 1984; Tournaire et al. 1982; Elsdon and Jones 1997, Frere 1983), almost certainly linking the trays to coin production (Collis 1985). At Old Sleaford, a silver coin pellet weighing 1.175g (the weight of a local silver unit) was discovered in the indentation of a pellet tray.

Whilst pellets could have been produced by pouring molten metal into these trays, the trays do not generally show evidence of 'splashes' of molten metal as might be expected were this the case, and there are indications that the trays themselves were heated (Langdon 2009, Kipling and Parker 2009). Analysis and experiments (e.g. Raub and Fingerlin 1984; Castelin 1960; Meltzer and Weiller 1977; Tylecote 1962) suggest that metal was weighed into the indentations in strip or powder form, and the tray was then heated. Weighing the material for each pellet individually would have been a painstaking procedure. Rather than using coin scales for this process, the mixed alloy could have been cast into narrow rods (or drawn out into wire or strips, although this in itself would have been a time consuming process) and cut to standard lengths.

There is likely to have been local variation in the methods used for weighing out of the alloys and heating. Some sites (e.g. Bagendon: Allen 1961) show evidence that trays were heated from above, perhaps using a charcoal block and bellows. Other trays appear to have been heated from below (e.g. Old Sleaford: Elsdon and Jones 1997; St.Albans/Verulamium: Frere 1983) or stacked and heated in a charcoal kiln or other reductive environment (e.g. Braughing-Puckeridge: Langdon 2009; Bath Lane: Kipling and Parker 2009). In a kiln, the melting point of the metal could have been reached in just 2-5 minutes (Gebhard et al. 1998).

On heating, the small fragments of metal in each hole of the coin pellet trays melted together to form globular prills. Because of their surface-tension properties, silver and gold cannot be poured or melted into flat flans suitable for minting, but instead form hemispherical pellets.

On removal from the furnace, the pellets may have been quenched in water, or left to cool.

4. **Flattening the pellets into coin flans**

The cooled pellets need to be flattened before they can be struck. There are several stages to this process. First they must be cold hammered. This achieves some flattening, but not sufficient to produce a coin flan.

The pellets cannot be flattened further through cold hammering alone, and need to be annealed (i.e. heated to and briefly maintained at a temperature above the recrystallisation temperature of the alloy and then cooled, to relieve internal stresses and improve the cold-working properties of the metal). The pellets need to be heated until they are cherry red (600-650°C). The flans would most likely have been returned to coin pellet trays for this second stage of heating, and heated either in a charcoal furnace or using a glowing charcoal block and a blowpipe for more controlled heating. The precise temperature control required must have taken a great deal of expertise to maintain, and perhaps also a certain amount of trial and error. The annealed pellet-blanks would most likely have been quenched in water before being cold hammered once more in order to flatten them into coin flans, ready for minting. Quenching is particularly important to avoid cracking in gold ternary alloys (Northover 1992, 267). At this point in the process, blanching may have been carried out to clean copper-oxide from the flans. The transformation from pellet to coin flan can be seen in Figure 2.45.

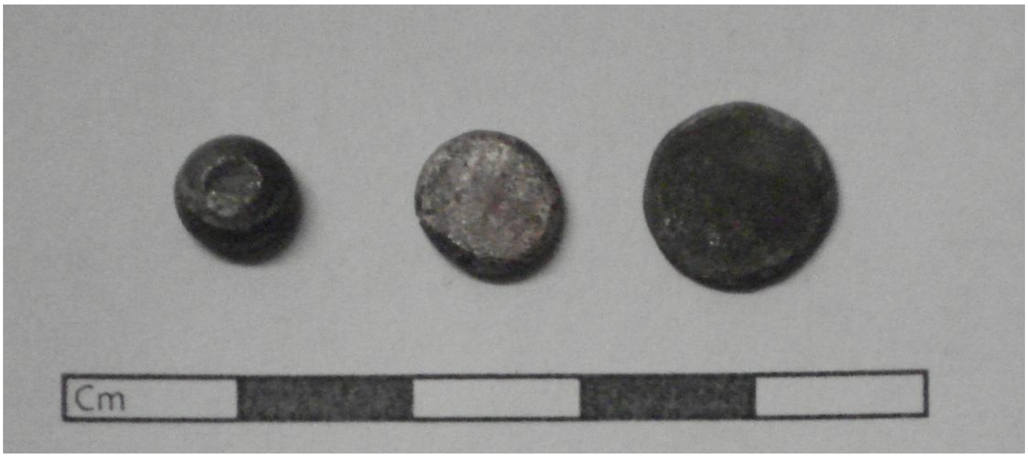

Figure 2.45: A pellet, cold-hammered pellet and annealed coin-flan

De Jersey (2009, 262) found that a team of three people worked best at this stage of production, one to remove heated blanks from the furnace and place on an anvil or flat surface, one to strike them with a hammer and one to remove the finished flans from the anvil surface. Additional workers would have been required to maintain the charcoal furnace.

5. Striking the blanks

Some Iron Age British coins, including East Anglian (Dennis 2006) and early North-Eastern issues, were cold struck, but many Iron Age coins must have been hot-struck to produce the results we see (e.g. Gruel 1981, de Jersey 2009). In the latter case, the blanks must once again be heated until they are cherry red (600-650°C), and then struck immediately. This would have been done one coin flan at a time, since the blanks cool very quickly. The heating must have been achieved using glowing charcoal and bellows, but the precise arrangements can only be guessed at.

The hot flan is struck between two dies, probably held in vertical alignment using a system of wooden supports, since the force needed to strike the blow is extremely great, and would be hard to achieve using purely hand-held apparatus (de Jersey 2009, 263). The dies appear to have been free to rotate, however, since wherever this has been studied in detail, the images on Iron Age coins show great variation in the axial alignment of the obverse and reverse dies (Dennis, 2002, 2006). Most Roman dies were hinged, and hence show no variation in alignment. Figure 2.46 shows the wooden die-support arrangement used by Neil Burridge. Figure 2.47 shows a group of replica coins after minting, with the upper die lying alongside and the lower die fixed into an iron base.

De Jersey (2009, 264-5) found that a team of four people was ideal for the hot-striking process. The first person takes the heated blank from the furnace and places it onto the lower (obverse) die, while a second person holds the upper (reverse) die in a raised position and then lowers it onto the blank. A third member of the team was responsible for striking the coins, hitting the upper die with a large hammer. The second person was then able to raise the die for a fourth team member to remove the struck coin as the first person placed a blank flan in its place for the cycle to begin again.

The growing evidence for the cold-striking of some Iron Age coins is somewhat problematic: experiments have simply not been able to reproduce the results we see on ancient coins (de Jersey 2009). It is possible that a die arrangement based on lever principles may have been used to exert greater force than could be achieved by hammer-striking.

Figure 2.46: The die-support arrangement used by Neil Burridge

Figure 2.47: Replica coins after minting, with the upper die and (blank) lower die lying alongside

6. Check, repeat and recycle

The coins would have been counted and checked, with any that failed to make the grade perhaps being recycled with the next batch. Coin scales would have been useful for this part of the process. It would have been necessary to repeat these stages many times in order to produce even a few thousand coins.

2.3.4 Rate and scale of production

It is difficult to assess how many of a given Iron Age issue were produced (Esty 1986, Buttrey 1993), but it is possible to produce estimates based on the number of known examples, the number of die-links, evidence of die wear and informed estimates of the numbers of coins that could have been produced from a single die. Where such estimates have been attempted, the numbers are surprisingly large. Haselgrove's calculations (Haselgrove 1984; Sills 2005) suggest that as many as 14 million Gallo-Belgic E staters might have been struck. Allen's (1975) study of the gold of Cunobelin suggests that around a million coins may have been produced over a period of thirty years. A similar study of the coinage of Verica (Allen and Haselgrove 1979) gave an estimate of 300,000 staters. In the latter cases, the true number of estimated *coins* is much larger, since these estimates include the output of quarter stater dies as a stater equivalent, and do not include any estimate for the silver and copper alloy coins issued under these rulers.

In de Jersey's experiment (de Jersey 2009), a team of three to four people were able to produce around 450 flans an hour (stage 4), or mint about 480 coins (stage 5). In order to simultaneously carry out stages 4-5 of the minting process, additional people would have been required to ferry flans between the teams and maintain the charcoal furnaces. A team of 8-10 people could have produced around 450 coins an hour (perhaps more for experienced individuals at peak efficiency). For smaller groups, production rates would be much slower. Importantly, these estimates do not include the time taken for stages 1-3 or 6, which would most likely have been very time-consuming.

Based on de Jersey's experimental work, just producing and striking the blanks (stages 4 and 5) to produce 30,000 coins (Cunobelin's estimated annual gold stater output) would have taken a minimum team of 8-10 people 67 hours, or perhaps 8-10 days work. In practice it is likely that continuous operation at peak efficiency could not have been maintained over a ten-day period. The labour and resources required are significant: the craftworkers would have needed a continuous supply of pellets, charcoal, and coin dies. At least 162 kg of alloy would have been required. Based on the weight of the triangular ingot at Hallaton (around 1.25kg), this might have required mixing at least 130 alloy batches. The process for weighing out the pellet material (stage 3) is not well understood, but would probably have been more time consuming than stages 4 and 5. Large quantities of charcoal would also have been required (de Jersey 2009, 267): two small furnaces – one for stage 4 and one for stage 5 – would have consumed around 268kg of charcoal over a 67 hour period. Based on estimated charcoal yields of around 15% (Craddock 1995, 193; Cleere 1976, 240), this would have required almost 1.8 tonnes of wood. Stages 2 and

3 (mixing the alloy and making the pellets), would have required additional charcoal, most likely more than stages 4 and 5.

It is clear that producing an issue of precious metal coins was a serious undertaking, requiring (and thus demonstrating) access to a large quantity of imported bullion and local resources such as charcoal, as well as technical expertise and a large labour force. The social aspects of this process are considered in chapter four.

2.4 Coin production in the East Midlands: An overview

By combining the analytical results and the archaeological evidence, it is possible to construct a chronology of North-Eastern coin production.

2.4.1 The archaeological evidence

No Iron Age dies have been recovered from the East Midlands, and crucibles and coin scales cannot by themselves be taken as evidence for coin production. Thus the production evidence in this region (as for most of Britain) consists of blanks, pellets and pellet trays. The distribution of these finds has been summarised by Leins (forthcoming), and is summarised in Figure 2.48.

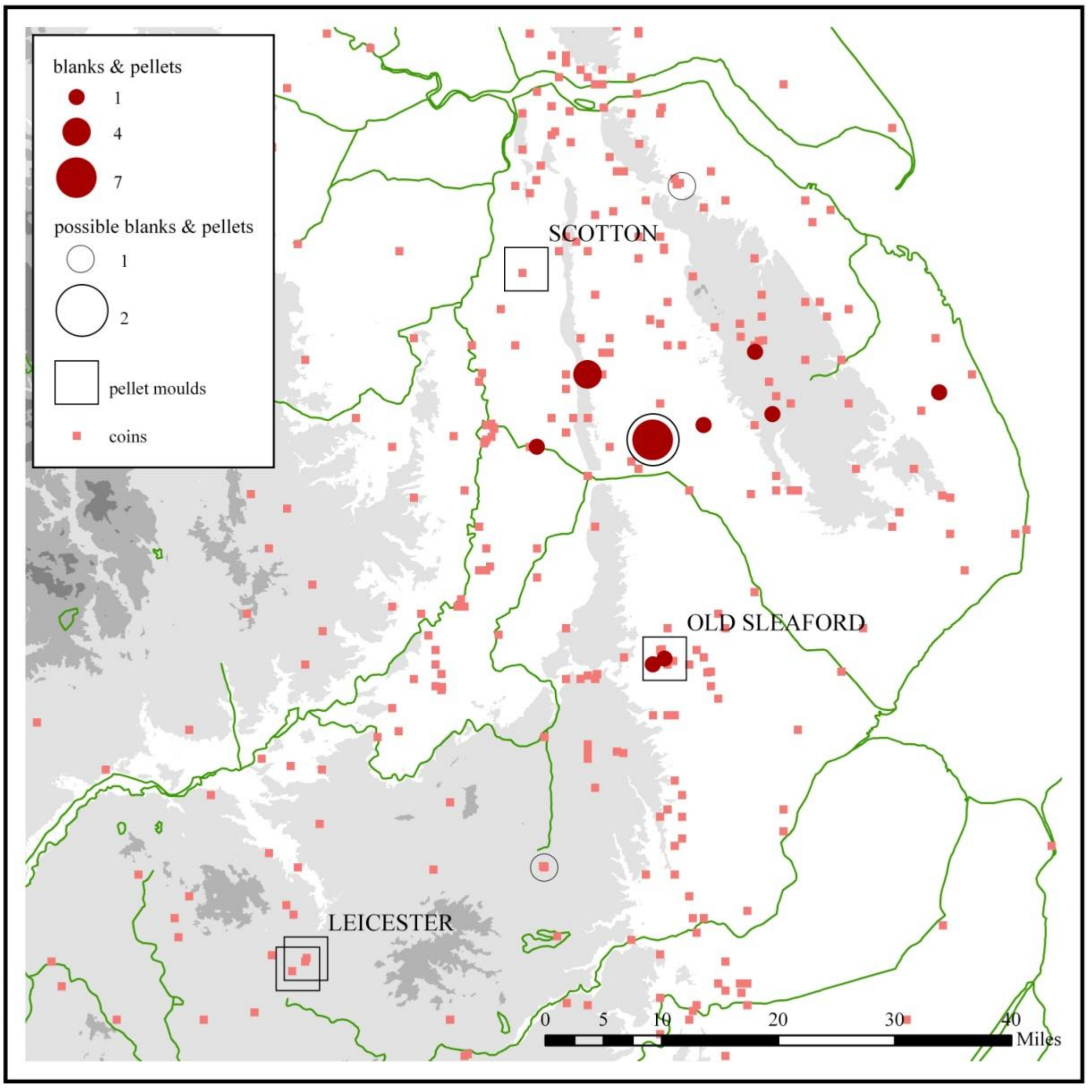

Figure 2.48: The distribution of coin-blanks, pellets and pellet trays in the East Midlands, image courtesy of Ian Leins.

Blanks and pellets

Nine sites in the East Midlands have produced blanks or pellets. Although twenty two such objects are listed on the CCI, Leins (forthcoming) excludes two of these based on weight or metal composition. Leins also identifies additional pellets from the Old Sleaford report (Elsdon and Jones 1997) and the Saxilby/Broadholme hoard, where a "gold droplet" was found in association with four early gold staters (Leins 2008). Table 2.11, based on Leins' data, includes an additional five finds which may be related to Iron Age coin production, but based on their weight could not represent blanks or pellets.

Table 2.11: Sites yielding coin-blanks and pellets.

Site	*Details*	*Coin type?*	*Total No.*
Ludford	Gold blank: 5.25g	Gold stater	1
Market Stainton	Gold blank: 5.63g	Gold stater	1
Old Sleaford	Silver blank: 1.2g; Silver pellet: 1.175g	2 Silver units	2
Strubby	Gold blank: 1.46g	Gold quarter stater	1
Saxilby/ Broadholme	Gold pellet: 5.33g	Gold stater	1
Wragby	Gold blank: 5.02g	Gold stater	1
Owmby	Gold blank: 5.54g; Three silver blanks: 1.31g, 1.03g, 0.55g	Gold stater 2 Silver units 1 Silver half unit	4
Stainton by Langworth	Five gold blanks: 6.29g, 6.27g, 6.24g, 6.21g, 5.65g; Two silver blanks: 1.34g, 1.24g	5 Early (?) gold staters 2 Silver units	7
Croxton	*Possibly Iron Age.* Silver, 4.67g	No match	1?
Thistleton	*Possibly Iron Age.* Silver: 5.18g	No match	1?
Stainton by Langworth (additional)	*Possibly Iron Age*: Gold, 2.68g and 1.1g	No match	2?
Total			*18 (+5?)*

Most of these finds cluster in mid-Lincolnshire, with the largest concentration around Stainton by Langworth. Leins proposes Stainton or nearby Owmby as possible mint sites. Both sites have produced gold and silver blanks. Four of the five gold blanks from Stainton are unusually heavy for North-Eastern coinage, although they fit at the upper end of the heavier British H and I types. They may well represent an early experimental period of coin production.

In addition to the North Lincolnshire scatter, one pellet and one blank were discovered at Old Sleaford, a probable southern minting centre.

Coin pellet trays

At least three sites in the East Midlands have produced pellet trays (Table 2.12).

Table 2.12: Sites yielding coin pellet trays

Site	Description	Context	Coin types?	References
Bath Lane (Leics)	A moderate assemblage of pellet tray fragments (over 300 pieces, around 4kg), in association with crucible fragments. Trays appear to be of the 7x7+1 form seen at southern centres such as Verulamium.	Pellet tray finds were spread across two contexts, spanning the conquest horizon. The association with Roman pottery from the mid-late first century BC suggests most of the trays were probably deposited in or after the Claudian period.	XRF analysis ongoing. Crucibles show traces of gold, silver, lead and copper-alloys, so both gold and silver coinage may have been produced at the site. Four indentation sizes are represented, which could suggest production of all four local denominations (Gold staters, silver units, half units and minims)	Clay and Mellor 1985; Kipling and Parker 2009
Old Sleaford (Lincs)	A large assemblage of pellet tray fragments (over 4300 pieces, around 34kg), in association with crucible fragments. Trays are larger than 7x7+1, and may have been rectangular e.g. 6x10 or 7x11.	The majority of the assemblage (97%) came from a ditch context, in association with mid-first century AD pottery and metalwork, suggesting a Claudian or later date for deposition.	XRF analysis of the trays showed traces of silver. Three sizes of indentation may represent the three known silver denominations (units, half units and minims).	Elsdon and Jones 1997
Scotton (North Lincs)	One fragment of what appears to be a cirular pellet tray, similar to examples from at Aulnat-Gardaillat and la Boissière in France (Tournaire et al. 1982), but without British parallel.	Unstratified find from fieldwalking	Only one indentation size is represented (c.16mm), possibly supporting a connection with gold stater production. No XRF analysis has been carried out.	Collis 1971, 75; Whitwell 1982, 15; North Lincolnshire Museum: SNAC 14

The unusual circular form of the Scotton example may represent ties to the continent, since it is without parallel in Britain. More material has been recovered from Old Sleaford and Leicester, although trays from these sites differ in form. At Old Sleaford, the late context, the predominance of silver and the suggestion that minims (a late issue in the East Midlands, associated only with VEP coinage) were produced here favours a late date, probably after 20/30 AD. The pellet trays from Leicester are harder to date, but also seem to evidence the production of minims, and were discovered in a large dump of material dating to the conquest horizon. This pattern may suggest that this material was discarded when local coin production ceased.

The dispersed nature of production evidence in the East Midlands in quite different to that in southern Britain.

2.4.2 Comparison with the North Thames region

Leins (forthcoming) has also summarised the evidence from the North Thames region (Figure 2.49).

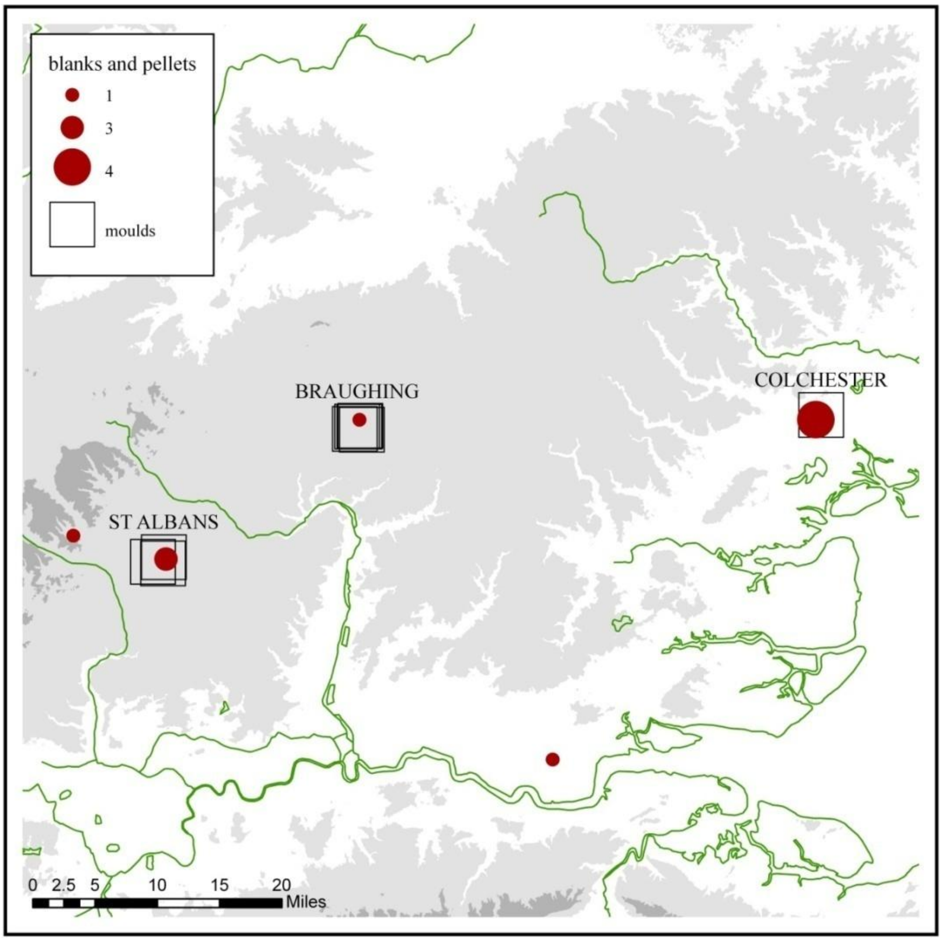

Figure 2.49: Evidence for coin production in the North Thames region, image courtesy of Ian Leins.

Here, aside from the single stray find of a blank near the Thames, all coin production debris comes from the major 'royal complexes' at St Albans/Verulamium, Braughing-Puckeridge and Colchester/Camulodunum. Leins (forthcoming) argues that this suggests "a model of centralised and controlled production... associated with the emergence of kingship in the south-east and the rise of new powerful rulers like Cunobelin." The pattern contrasts with the dispersed finds from Lincolnshire, suggesting that the social organisation of coin production in the two regions may have been very different.

Whilst the evidence for the latest period of coin production in the East Midlands sees a focus on significant southern settlement centres (Old Sleaford and Leicester), the northern evidence is not restricted to such sites. This suggests a more diffuse production process, perhaps with different stages occurring at different times or in different places. At the very least it is clear that products such as pellets were not so closely controlled as in the dynastic kingdoms. The summary which follows suggests a shift in production practices around 20/30 AD which brought this more dispersed North-Eastern system into closer alliance with the southern dynastic mints.

2.4.3 Summary of coin production periods in the East Midlands

Figure 2.50 suggests a new, more nuanced chronology for coin production in the East Midlands, taking into account weight standards, alloy composition, production techniques, and shared design characteristics, as well as the circulation factors noted by Leins (2007, 2012). Table 2.13 summarises these phases. This new chronology is largely in line with Leins' re-evaluation, but considers gold and silver issues separately, allowing more overlap between the South Ferriby gold and silver coinages. All dates remain approximate.

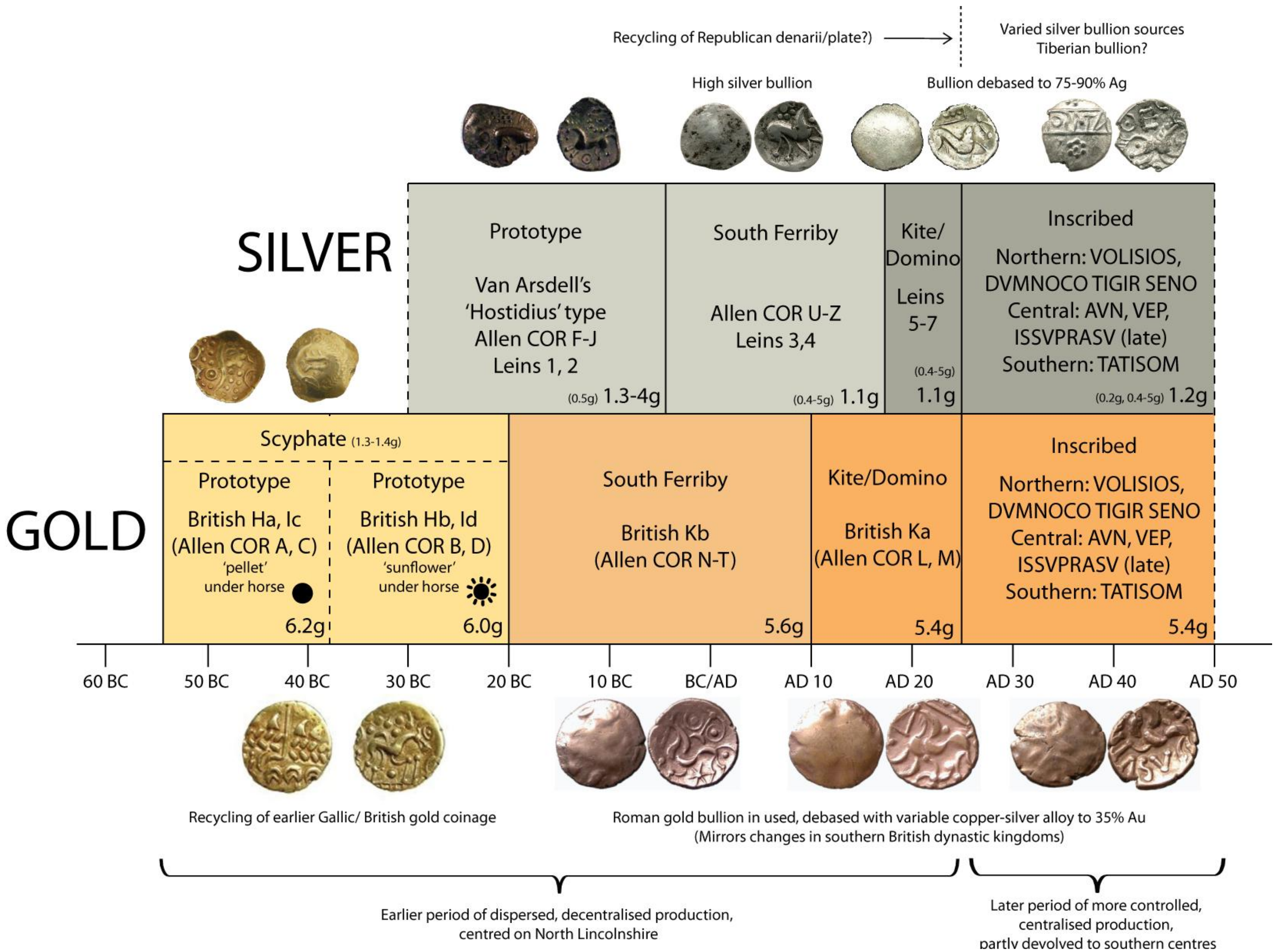

Figure 2.50: A revised chronology for the North-Eastern coinage, based on Leins' earlier re-evaluation (2007, 2012). All dates are approximate.

Table 2.13: East Midlands coin production chronology

Period	Coin Types	Nature and distribution	Production evidence	Metal sources	Production techniques	Weight standards
Pre-50–20 BC (Haselgrove Phases 5-6)	**Local gold prototypes (British H & I) Scyphates**	The earliest imported coins in were Gallo-Belgic E (rather than southern British issues), suggesting continental ties. Gallo-Belgic E is known almost exclusively from three hoards along the Humber shoreline and a hoard from Peatling (Leics). The earliest North-Eastern coins (Ha & Ic) cluster in northern Lincolnshire. Their lower-weight successors (Hb & Id) have a more extensive southerly distribution, but still cluster in northern and mid-Lincolnshire. Unusual 'scyphate' quarter staters were also produced.	Production evidence (e.g. high weight gold blanks/pellets) centres on northern and mid-Lincolnshire. Continental ties may be reflected in the circular pellet tray fragment from Scotton in North Lincolnshire. This material is very hard to date, but alloy composition and Weight standards also emphasise ties to the continent in this period. The scattered nature of production evidence suggests that production was dispersed, or perhaps that different stages occurred at different sites.	All issues have a similar composition centring on 45% Au, 40% Ag, 15% Cu. Gallic or southern British sources are most likely (e.g. British F & G, Gallo-Belgic E).	No analysis of early coin production techniques has been done. However, this seems to have been a time of experimentation, with local innovations such as the peculiar dish-shaped scyphate quarter staters.	There are two weight standards for gold coinage from this period. The highest (and likely the earliest), around 6.2g, is similar to later Gallo-Belgic E (but lower than contemporary southern issues such as British F and G). The lower weight standard, around 6.0g is a closer match for British L and Q, suggesting southern influence.

<table>
<tr><th>Period</th><th>Types</th><th>Nature and distribution</th><th>Production evidence</th><th>Metal sources</th><th>Production techniques</th><th>Weight standards</th></tr>
<tr><td>20 BC–AD 10 (Haselgrove Phase 7)</td><td>First local red-gold and silver issues (prototype silver Boar/Horse and the first silver South Ferriby types, alongside South Ferriby gold.)</td><td>The first local silver issues show classicised designs. Republican denarii could have provided the raw material as well as the inspiration.

Aside from this short-lived foray into classical design, traditional imagery persisted. Coins continue to circulate in Northern and Mid Lincolnshire, also achieving more southerly distributions.</td><td rowspan="2">Some of the coin blanks and pellets from North Lincolnshire most likely date to this period, particularly those from Owmby, Ludford, Broadholme and Market Stainton.
Only the gold stater blank from Ludford is unusually light and could fit more comfortably in the later inscribed period.

The variety of sites at which coin-making debris is located suggest that (like the preceding period) this was a time of dispersed, decentralised production.</td><td rowspan="2">Gold bullion most likely sourced through southern or Roman contacts.

Silver bullion most likely arrived through the same channels. There is little variation in the gold/bismuth signatures of coins from this period, suggesting the recycling of objects made from low-bismuth silver, such as Republican denarii.</td><td>Gold bullion in use, debased to c.35% with copper-silver alloy. Silver bullion also in use, generally debased <10% with copper alloy. High-silver profile of coinage may be exaggerated by heat treatment factors. Silver coins cold-struck.</td><td>The weight of gold staters decreases to around 5.6g, in line with contemporary southern issues.
The first silver prototypes are heavier than southern issues (c.1.3g), but the subsequent South Ferriby issues are closer in line with southern British standards (c.1.1g.)</td></tr>
<tr><td>AD 10–20/30 (Haselgrove Phase 8)</td><td>Later uninscribed bimetallic coinage (South Ferriby silver persists alongside Kite/Domino silver and gold)</td><td>Traditional imagery.
Coins continue to circulate in Northern and Mid Lincolnshire, also achieving more southerly distributions.</td><td>Gold bullion still in use? Silver bullion in use, debased by up to 25% with copper alloy. Some silver coins still cold-struck, but the first experiments with hot-striking may be taking place.</td><td>Silver unit weights remain at around 1.1g, while gold weight standards drop to 5.4g, in line with southern British issues.</td></tr>
</table>

<table>
<tr><th>Period</th><th>Types</th><th>Nature and distribution</th><th>Production evidence</th><th>Metal sources</th><th>Production techniques</th><th>Weight standards</th></tr>
<tr><td>AD 20/30–40 (Haselgrove Phase 8)</td><td>Majority of inscribed issues: AVN, VEP, TATISOM, VOLISIOS, DVMNOCO</td><td rowspan="2">A variety of inscribed types appear to circulate simultaneously, with IISVPRASV as the only demonstrably later issue. Three regional groups are identified by Leins:

Southern – TATISOM
Central – AVN COST, VEP/ VEP CORF/ ISSVPRASV (which share die links)
Northern – VOLISIOS and DVMNOC TIGIR SENO (which show paired names, a distinctive form of inscription and may have a higher bullion content)</td><td rowspan="2">Production possibly more centralised during this period, with fewer stray blanks and pellets suggesting closer control of the minting process

Production ‘devolved’ to regional centres. Northern production appears to continue in the form of the VOLISIOS issues, but two more southerly possible production centres are also known, at Old Sleaford and Leicester.</td><td rowspan="2">Gold alloys from this period are more standardised (around 35% Au, 10%Ag, 45% Cu). The maintenance of the ‘northern standard’ for gold content suggests bullion was still in use, sourced through Southern or Roman contacts.

Silver alloys continue in the 75-90% range, although one IISVPRASV coin showed greater debasement. The range of gold/bismuth ratios suggests that the North-East benefitted from the arrival of a quantity of Tiberian bullion.</td><td rowspan="2">All silver coins hot-struck

The only local variation in alloys is the possible predominance of high-silver alloys in Northern VOLISIOS coinage.</td><td rowspan="2">Gold weight standards remain relatively stable at 5.3-4g. Weights are possibly slightly lower or less standardised in certain inscribed issues such as VOLISIOS or ISSVPRASV, but this may be a distortion due to the small numbers available for analysis.

Silver units show a high degree of weight standardisation to the same standard of around 1.2g (the same as or slightly above contemporary southern issues).</td></tr>
<tr><td>AD 30–45 (Haselgrove Phase 9)</td><td>Latest inscribed issues: IISVPRASV</td></tr>
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Coin production can be divided into three main periods. In the earliest period of coin importation and production the best-connected area of the East Midlands was Northern Lincolnshire, perhaps suggesting exploitation of the Humber as a route to maritime trade. Later, the balance of power began to shift. Closer ties to Rome are seen in the southern regions (Leicestershire, South Lincolnshire and Northamptonshire), which bordered with the friendly kingdoms to the south.

Pre-50–20 BC:

During this early period, only gold coinage was produced. Alloy and weight standards suggest close early ties to the continent, and most likely a partly Gallic source for the metal. Gallo-Belgic E coins were discovered in association with later British L and Q issues at Scartho in Lincolnshire, suggesting that these continental imports continued in circulation for some time. The weight standards of later issues show southern British influence, but the alloy remains the same. Minting debris is centred on Northern Lincolnshire. The only pellet tray from here (found at Scotton) is similar to continental examples, and may date to this early period. No pellets or blanks were recovered at Scotton, but there are a number of finds from further south, near Stainton and Owmby.

The fact that pellets and blanks are not restricted to any single site is unusual in Britain. This may have been a dispersed and decentralised period of production, with different stages of the minting process happening at different sites, or the products of the early stages may simply not have been as closely controlled as they were in the south. This also appears to have been a period of experimentation, such as the production of unusual 'scyphate' quarter staters.

20 BC–AD 20/30:

Gold production continued in this period, and the first silver coins were introduced. Production was most likely still quite decentralised, and may have remained focused on northern and mid-Lincolnshire. Coinage begins to show evidence for a wider range of contacts: Roman influence is possibly seen in the iconography of the prototype silver issues, and Republican silver may have been recycled to produce the South Ferriby issues. Gold bullion also appears to have been introduced. These metals could have been sourced through southern British or Roman contacts.

The influence of East Anglian traditions is also seen. East Anglia and the North-East shared a 'northern' gold standard (35% Au debased with a variable copper-silver alloy), different to the 'southern' dynastic standard (40-50% Au). Production techniques are also shared between the East Midlands and East Anglia: cold-striking was the norm in both regions, and alloys initially used relatively pure silver bullion, but were soon debased with copper alloys.

Experimentation with hot-striking techniques towards the end of this period may represent southern influence, or could have been pioneered in the East Midlands.

AD 20/30 onwards:

Gold and silver coinage both remained in production and circulation. Classical imagery was abandoned, but inscriptions were introduced, perhaps indicating ties to the southern kingdoms. This was a very loosely structured form of inscribed coinage. A wide variety of inscribed types circulated simultaneously (Leins 2012 identifies three regional inscribed series: 'Northern', 'Central', and Southern'), and some inscriptions (e.g. TATISOM) quickly degenerated into patterns.

Two possible southern centres of production have been identified at Old Sleaford and Leicester (representing the closest regional parallels to the southern mint sites at St.Abans/Verulamium, Colchester/Camulodunum, Braughing-Puckeridge, and Silchester/Calleva), while further north production apparently continued in the form of the VOLISIOS issues. The devolution of coin production to the two additional southern centres would have served to increase coin supply to Leicestershire and southern Lincolnshire. The paucity of stray blanks and pellets from this period suggests closer control of minting, implying that the rise of the two southern East Midlands mints may have coincided with increased centralisation and standardisation of production techniques, more comparable to that seen in southern England.

It appears that 'rules' governing alloy mixes and coin production techniques were largely shared throughout the North-East, suggesting a degree of collaboration and shared knowledge. Hot-striking of silver was universal, as also seems to be the case for coins of Cunobelin (although cold-striking continued in East Anglia). Alloy composition also remained relatively constant. Silver alloys were not further debased in the North-East, remaining in the range of 75-90% pure. Although gold alloys become more standardised, they remain at the 35% purity level. Thus the alloys used do not fall into line with southern issues, but neither were silver issues increasingly debased as in East Anglia. The expansion of coin production to the two southern centres may have been made possible by gifts of Tiberian bullion from Rome or Romanised elites in the dynastic kingdoms to the south. By the end of the period a large volume of bullion-based silver coinage was in circulation. The quantities involved, and the association of Roman objects with this silver at Hallaton, suggest that at least some communities in the East Midlands were in direct contact with the Roman world.

An overall trend in North-Eastern coin production is the persistence of regional traditions (e.g. alloy mixes and 'Celtic' iconography) alongside the adoption of southern British or Roman characteristics (inscriptions, hot-striking and the centralisation of minting). Yet while the southern East Midlands adopted many of the trappings of dynastic coin production, it never came fully in line with the dynastic mints. The coin series itself remained fragmented (with many inscribed types circulating simultaneously and no close control of bullion content or standardisation of design), and there is great variation in the coin production debris from Old Sleaford and Leicester. There is also a lack of clear archaeological evidence for 'Royal' complexes (although Lincoln and Leicester are candidates). This suggests that East Midlands communities developed closer ties with their southern neighbours and the Roman world in the latest pre-conquest period, but never made the shift to a more centralised coin-producing 'kingdom'.

This chapter has outlined the technological aspects of coin production in the East Midlands. It now remains to consider the social aspects of this process, and the social dynamics which underpinned the circulation of precious metals. These social processes were clearly driven at least partly by colonial interaction with Rome, perhaps often mediated through the client kingdoms established in southern Britain. The chapter which follows attempts to inform this discussion by taking a broader perspective, considering the role of exchange and portable objects in more recent historical colonial encounters. I return to the social significance of Iron Age coin production and precious metalworking in chapter four.

Chapter 3:The role of exchange in colonial North America c. AD 1580-1775

In order to understand the social significance of precious metals and coinage in Iron Age Britain, and their role in the colonial encounter with Rome, it is helpful to consider a broader framework provided by comparison with historical colonial encounters. This chapter considers the role of gifts and trade in colonial North America, 1580-1775, exploring the ways in which indigenous groups "spun webs of exchange" (Hall 2009, 9), weaving North American communities into an expanding European economy, and binding Euroamericans into indigenous networks of exchange, politics and power. Issues raised by this discussion are then applied to the evidence from Iron Age Britian and the Roman world.

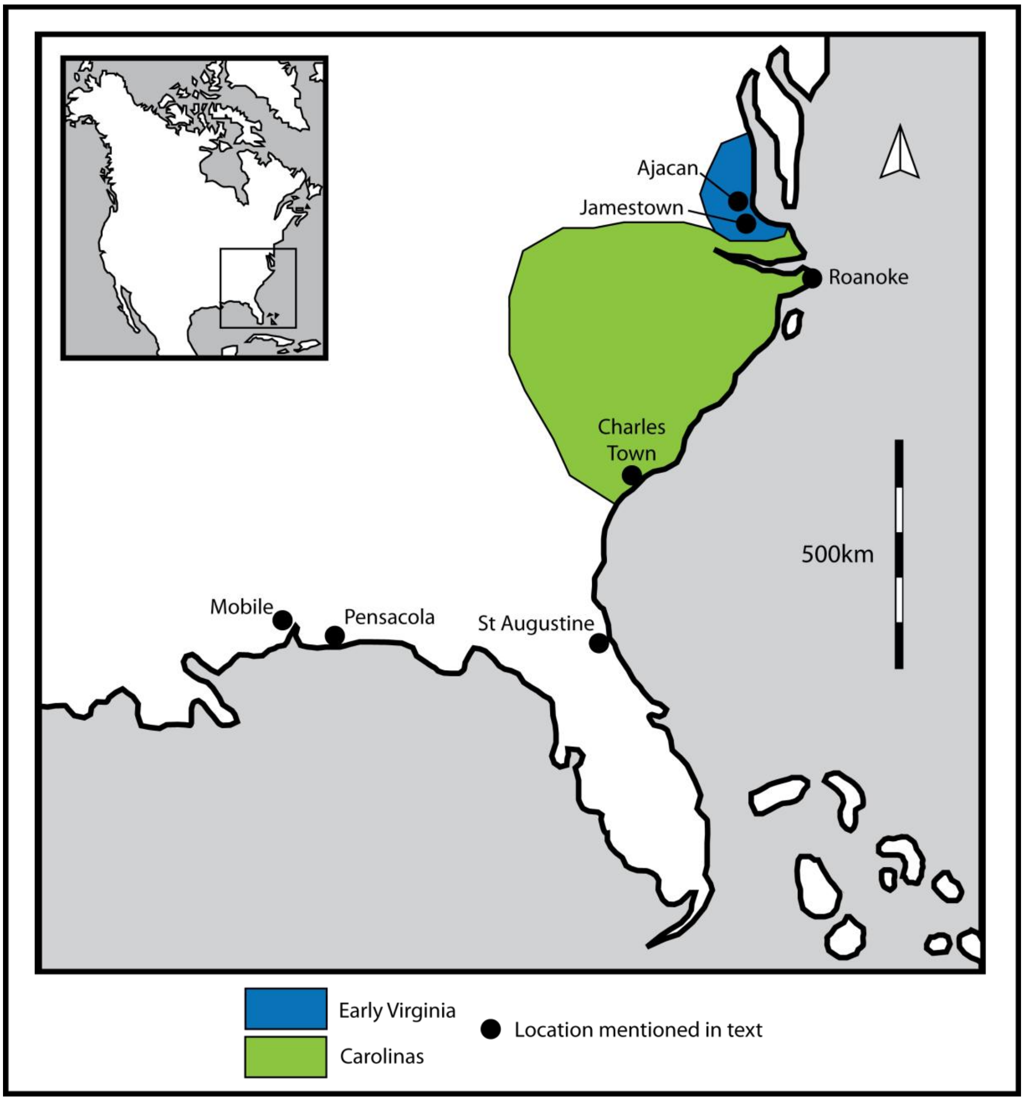

Figure 3.1: Map showing the location of the two North-American case-study areas

I draw on two primary North American case studies: early colonial Virginia and the later colonial Carolinas (Figure 3.1). I focus on the role of diplomatic gifts, the interaction between European and indigenous systems of value, and the impact of European colonialism on indigenous social organisation and hierarchies (and vice-versa). The Virginia section explores how objects, people, and socio-political concepts such as kingship were 'translated' between worlds, while the second (the later colonial period in the Carolinas) considers the mutual creation of new 'languages' of exchange and socio-political institutions which shared aspects of indigenous and European systems. The latter echoes White (1991) and Gosden's (2004) 'middle ground,' though it was less stable and long-lived than in the Great Lakes region which formed White's study area. In both cases, I focus on English/British colonialism, but the impact of competing European powers is also considered.

3.1 Similarities and differences

There are many parallels between the North American colonial encounter and the interaction between Iron Age British communities and the Roman world, but there were also many different factors in play. It is important to sketch out some of these structural similarities and differences in order that any parallels drawn between the two should be valid (Hodder 1982, see especially Moore 1982).

3.1.1 Iron Age Britain

Indigenous groups in pre-conquest North America displayed a wide variety of social forms. The archaeology implies that this was also the case in Late Iron Age Europe. Crumley (1995) suggests that some Iron Age societies were heterarchical, with social power being established and maintained in a variety of different ways, through separate but inter-related power structures based on spiritual, economic or military power. Hill (2006) articulates this further. He suggests that households were loosely organised into 'clusters' of communities, occupying territories 15-20km across, but that kinship, exchange networks (e.g. Moore 2007) and other ties cut across community identities. These wider networks created larger entities which Hill tentatively calls 'tribes'. Hill emphasises that 'tribes' would have been fluid structures; individual households could have been tied into a variety of social networks.

The proximity of the politically volatile and often militarised frontier of the Roman Empire was arguably an underlying factor in a process of 'tribalisation' (Whitehead 1992) across much of North-West Europe in the final centuries BC. This was a period of great instability which saw frequent wars and large-scale population movements (Roymans 2004). This upheaval resulted in the formation of more clearly defined 'tribal' units, with a shared sense of identity and a greater degree of social hierarchy and centralised political authority (e.g. Wells 1999, 2001).

Whilst Hill argues for relatively egalitarian social forms, he concedes that after c.20 BC southern England saw the emergence of a form of kingship (Creighton 2000, 2006). Here, hereditary rulers were able to establish their authority partly through engagement with inter-regional systems of prestige exchange: gold objects played an important role in establishing political and perhaps spiritual power. Such well-defined social hierarchies may not have existed in the East Midlands, where negotiation of power and status remained fluid and competitive well into the first century AD, but communities here were also enmeshed in the precious-metal prestige exchange system.

Much of the bullion which circulated in Late Iron Age Britain originated ultimately in the Roman world. Objects were important in Roman imperialism. Roman authorities engaged in the cycle of diplomatic gift-giving not only through gifts of bullion to indigenous elites, but also royal regalia such as curule chairs, sceptres and robes (Creighton 2006a, 36). These exotic paraphernalia could have been a source of great power in a society where elites drew social status from controlling the circulation of prestige goods. Roman diplomatic overtures may not only have recognised the power of indigenous leaders, but could also have allowed Rome to manipulate indigenous hierarchies. Ultimately, through the creation of client kingdoms, and finally the annexation of Britannia as a province, British communities were integrated into wide-reaching networks of tribute and exchange which bound them ever more closely into the Roman world. Roman currency replaced indigenous coinage, taxes and tribute became payable to Rome, and the arrival of independent traders facilitated greater integration with Gallic and Roman trade networks (Pitts 2010).

In addition to the upheaval of war, there would have been huge shifts in the nature of social organisation in the wake of the conquest. Although British Kings continued to be honoured for generations at sites such as Verulamium, Camulodunum and Calleva (Creighton 2006a, 124), the mechanisms for achieving social status would have been markedly transformed by the beginnings of Roman authority. Power now lay not in controlling the circulation of prestige goods, but in conforming to Roman ideals of wealth, piety and citizenship. Learning the rungs of the new social hierarchy and assimilating a more overtly 'Roman' system of value must have been challenging for many individuals and communities.

3.1.2 North America

Certain facets of the North American colonial encounter do not apply to Iron Age Europe. One of the most important is infectious disease: where indigenous populations had little resistance to European pathogens, they may have suffered heavy losses as a result (White 1991), though epidemics were not universal (Hall 2009). Differences in technological capabilities also impacted on conquest-period social dynamics, although indigenous 'mystification' with European technologies has been greatly overstated. While it is true that many European groups did become reliant on European trade to provide commodities such as guns, knives and cloth, particularly in the early colonial period these objects were frequently woven into indigenous social structures and exchange networks, representing appropriation rather than acculturation (Merrell 2006, 268-9). The technological differences ran both ways. Whilst guns gave Europeans some advantages, lack of experience of indigenous agriculture and hunting technologies could prove catastrophic: the settlers at Jamestown would have died without indigenous assistance. The final major difference is the presence in some regions of up to three competing colonial powers (Dutch, French, Spanish and English/British), or competing colonies of the same nationality (e.g. Georgia and the Carolinas). This allowed indigenous groups eager for access to European trade networks to play one group off against the other. Roman imperialism was probably more centrally controlled, and groups in Britain may not have had this degree of leverage. However, in terms of trade networks this is perhaps something that can be challenged in the light of Pitts' (2010) recent work, which suggested that Roman and Romano-Gallic goods may have been moving into Britain through separate exchange networks. The social and political ramifications of this demand further consideration.

Despite these differences, there are many similarities between the Roman conquest of Iron Age Britain and the North American colonial encounter (I am not the first to suggest the comparison, see Gosden 2004). Parallels range from forms of social organisation to the interaction of different systems of value and development of new technologies of exchange. The North American evidence again shows a wide variety of social structures, from small communities in scattered villages to the Powhatan 'paramount chiefdom' of early colonial Virginia and the mound-town complexes of the later colonial South-East. These were also flexible and changing social structures; Whitehead's (1992) 'tribalisation' model was initially developed in relation to the colonial Americas. The American evidence shows how indigenous groups were incorporated into European empires, and also how the Europeans themselves were incorporated (or perhaps more accurately 'translated') into the indigenous world-view.

In both Iron Age Britain and North America, objects played a key role in mediating and facilitating colonial encounters. From gifts to trade goods to new technologies of exchange and diplomacy, objects and the social relationships which underpinned their circulation were a driving force for colonial expansion, and a means through which both sides sought to understand, incorporate and ultimately (at least in America) dominate the other. The American case studies involve indigenous communities where controlling the circulation of exotic prestige goods (often imbued with a form of spiritual power) was a major source of influence. The role of copper in early colonial Virginia invites possible comparisons with the role of gold in Late Iron Age Britain.

The conquest of North America has sometimes been modelled as a collision between a capitalist market economy and a pre-capitalist gift-exchange system (e.g. Morris 1999). According to this model, the indigenous inhabitants of sixteenth and seventeenth century North America were slowly and unwittingly drawn into a capitalist world system through their engagement with the fur trade and their subsequent dependency on European trade goods such as clothing, copper kettles and iron tools (Kardulias 1997, 2007; Ceci 1990; Murray 2000, 116-7): indigenous groups familiar with reciprocal gift-giving were forced to conform to the norms of a European commodity economy. It is true that in both Iron Age Europe and colonial North America, the conquest integrated indigenous populations more deeply into wider systems of trade and exchange (encompassing much of the known world) where commercial transactions may have been predominant. Nevertheless, in both cases the real picture is more complex.

Just as Roman coinage served a range of commercial and non-commercial functions, sixteenth and seventeenth century European economies were not fully commoditised. Labour could be offered as payment of debts alongside goods or currency, and there was no fully standardised money in the colonies until the eighteenth century, with trade goods such as wampum frequently serving this purpose on an ad hoc basis. Values were negotiable, and depended in part on forms of kinship and social or financial indebtedness. Even within European communities, a willingness to trade, or to offer credit or favourable exchange rates, depended as much on social relationships as on economic motivations. The economic did not begin to separate from the social until the rise of alienation in the retail sphere in the eighteenth century (Carrier 1994).

Alongside commercial transactions, a system of diplomacy based on gifts and ceremonial exchanges continued to persist in North America right through the eighteenth century. This partly reflects the nature of the Euro-American interaction, but also "the unstable movement between apparently separate spheres of value on the European side" (Murray 2000, 9). Some Europeans explicitly sought to profit financially from the North American colonial encounter, but others had more complex motives, such as religious conversion or political domination. The Spanish 'mission economy' (Mallios 2006, Murray 2000), demonstrates some of the complex and contradictory logics of European imperialism. Ostensibly a straight forward trade in which a sovereign God offered salvation in direct return for faith (Murray 2000, 168-9), there were added economic and spiritual consequences on the earthly side of the heavenly kingdom. The 'pure gift' of salvation (Mallios 2006, 114) was ideally not to be sullied with corrupting material influences (Murray 2000, 174). Some groups such as the Spanish Jesuits at Ajacan, in what is now Virginia, refused to engage in barter or trade with the groups they were attempting to convert. Instead, physical nourishment of the missionaries was expected as a reciprocal gift for the spiritual nourishment which they offered to their followers (Mallios 2006). Groups outside the scope of the mission, however, were offered the opportunity to engage in commercial transactions. Such a contradictory and irrational approach to exchange with indigenous groups was not restricted to the Spanish mission economy. The English ostensibly championed free trade as a mechanism of colonial incorporation, yet the behaviour of English leaders at Jamestown, for example, was often motivated by social and political factors as much as by economic concerns. With English leadership deeply factionalised, generosity to indigenous groups was one way to undermine the authority of rivals. Indigenous groups were well acquainted with the idea of barter, and the communities near both Ajacan and Jamestown who were excluded from commercial trade reacted in a hostile manner (Mallios 2006). In both colonial North America (Mallios 2006, Hall 2009) and Roman Gaul (Aarts 2005), it has been suggested that transgressions of indigenous norms of exchange contributed to violent uprisings in which imperial and independent traders were prime targets.

It is important to understand the differences between indigenous and imperial systems of exchange, without stereotyping either. Rather than viewing the North American colonial encounter (or indeed Roman imperialism in Britain) as a collision between a market and a non-market economy, I follow the model put forward by Murray (2000). Just as Gosden (2004) models empires as dynamic systems of circulation through which objects, ideas and people are in constant movement, Murray (2000, 8-19) characterizes an 'economy' as a discursive system through which objects circulated not just as physical materials but also as ideas, signs and representations. Signs may take the form of language, religious symbols, money or goods such as clothing; through their circulation, they create and maintain a particular system of value. Murray's model accepts that in a colonial economy each encounter and each exchange will involve the translation and conversion of objects, ideas and identities as different systems of value and categorisation interact. This is similar to the model of commensuration (Comaroff and Comaroff 2006) described in chapter one.

Early interaction between European and indigenous economies in colonial North America was based on misunderstandings and the mutual creation of meaning in each encounter. Objects were mutable and transformative, capable of being understood differently by each side in the transaction. Gifts acted as 'boundary objects' (Star 1989, Carlile 2002), facilitating interaction between different frameworks and systems of value by helping to create a shared (and shareable) context that "sits in the middle" (Star 1989, 47) of different but overlapping perspectives. Through the process of interaction, a new system emerged, a unique colonial economy with its own rules and systems of value, what White (1991) and Gosden (2004) have called the 'Middle ground'. The examples which follow illuminate the development of complex and creative languages of diplomacy and exchange in North America. I go on to suggest how the same model can be applied to the Roman encounter with Iron Age Britain.

3.2 Translation: Early colonial Virginia, 1580-1625

In early colonial Virginia, indigenous Powhatan groups attempted to incorporate Europeans and European objects into their existing world view, while Europeans worked just as hard to translate indigenous values and hierarchies into familiar terms. In indigenous eyes, the English Captain John Smith became a tribal 'werowance' or chief, while Wahunsenacawh, the local ruler, was crowned an indigenous vassal of King James by the colonists. These two worlds existed in parallel for a quarter of a century. From one perspective, the English were colonists on so-called virgin territory, bent on subjugating, converting and profiting from the local indigenous community. Through local eyes they became a new Anglo-Powhatan tribe, woven into the indigenous political system as a tributary community, providing the paramount ruler Wahunsenacawh with a new source of prestige goods such as copper sheets, glass beads and iron hatchets. In this period, every exchange between the English and the Powhatan people was simultaneously a conversion and a translation of goods, ideas and social relationships. Whilst there was not time for a developed or lasting 'middle ground' to emerge (as was often the case outside the Great Lakes– Richter 1993, 390), both sides certainly attempted to incorporate or at least accommodate the other.

Table 3.1: Timeline of events in colonial Virginia, c. 1500-1650

Year	Virginia
1523	Giovanni da Verrazzano's French-sponsored expedition explores the east coast, absconding with at least one indigenous child.
1560	A Spanish expedition into the Chesapeake Bay takes an indigenous child back to Mexico. He is baptised 'Don Luis', and eventually journeys to Spain.
1570	Jesuit mission at Ajacan – the first European attempt at settlement in the Chesapeake. The Spanish Jesuits were accompanied by Don Luis. The project ended violently; local villagers, led by Don Luis himself, murdered the missionaries with their own tools less than a year after the mission was founded.
1585-86	First English attempt at settlement in the Chesapeake, at Roanoke. Evacuated due to lack of supplies.
1587-90	1587: Second expedition to Roanoke, carrying over 100 colonists. Cut off due to the continuing Anglo-Spanish war, the colony did not survive. 1590: A returning English supply vessel finds the Roanoke colony deserted.
1606	April: James I grants charter to the Virginia Company December: Admiral Newport sets sail to Virginia with three ships
1607	May: Newport's fleet arrive in Virginia and found Jamestown, the first permanent English settlement in the New World. December: Captain John Smith, one of the Jamestown leaders, is captured by an indigenous hunting party whilst on an expedition to trade for food.
1608	January: Smith returns to Jamestown to find only 38 of the original 104 colonists remaining. Newport arrives from England with the First Supply. February: Smith takes Newport to meet Wahunsenacawh, the indigenous paramount chief. Beads are exchanged for provisions. Two young men (Thomas Savage & Namontack) are also 'exchanged', to act as interpreters. September/October: Arrival of the Second Supply (with coronation gifts) October: Wahunsenacawh's coronation
1609-10	January 1609: Final encounter between Smith and Wahunsenacawh. Breakdown of relations escalates to violence. First Anglo-Powhatan War. August 1609: Arrival of the Third Supply September 1609: An accidental injury forces Smith's return to England. September 1609 - May 1610: The "starving time". Jamestown's population falls from 500-600 to just 60.
1614	Peace concluded between the English and the Powhatans. John Rolfe marries Wahunsenacawh's daughter, Pocahontas. Peace also concluded with the independent Chickahominy tribe.
1617	Increasing indigenous unrest. Wahunsenacawh abdicates in favour of his two brothers, Opeckankenough and Opichapam. Wahunsenacawh dies in 1618, and Opichapam before 1620, leaving Opeckankenough as ruler.
1622-32	Second Anglo-Powhatan War. Though sparked by fatal raids led by Opeckankenough, the conflict was fuelled by the pressures of missionary activity and increasingly expansionist English colonial policies.
1644-6	Third Anglo-Powhatan war. Caused by continuing English encroachments into indigenous lands and tensions due to the Wars of the Three Kingdoms. Opeckankenough killed. The new chief, Necotowance, signs a treaty which renders all Virginian Algonquian groups tributaries to the English colony.
1650s	Continued decline in Algonquian political authority. Werowances in some cases replaced by councils; elsewhere many werowances appointed by the English.

3.2.1 'Much they marveled': John Smith's compass

In winter 1607, less than eight months after arriving in the New World, Captain John Smith was in something of a predicament. Along with two indigenous Chickahominy guides and the colonists Jehu Robinson and Thomas Emmery, Smith had been exploring some forty miles upriver from Jamestown. While searching for the source of the Chickahominy River, the group was ambushed by a hunting party from the local Pamunkey tribe. Robinson and Emmery lay dead. Smith himself had been struck in the thigh with an arrow, and was attempting to use one of the Chickahominy guides as a human shield. Armed only with a pistol, Smith soon found himself surrounded by bowmen he numbered at two hundred. His unlucky guide 'treated betwixt them and me of conditions of peace', informing them of Smith's rank as a Captain. Losing his footing in the boggy terrain, Smith found himself up to his waist in freezing water, and finally admitted defeat. Discarding his weapons, he was led to 'the king' (Smith 1608 [Barbour 1986,45-47]).

Finding himself in an apparently impossible position, outnumbered, unarmed, and able to converse with his captors only through a translator, Smith decided to offer King Opeckankenough a gift.

> "I presented him with a compasse diall, describing by my best means the use thereof, whereat he so amazedly admired, as he suffered me to proceed in a discourse of the roundness of the earth, the course of the sunne, moon, stares and planets. With kind speeches and bread he requited me, conducting me where the Canow lay and John Robbinson slaine, with twenty or thirty arrows in him." (Smith 1608 [Barbour 1986, I, 46]).

Cuts have been made from the subsequent section of Smith's 1608 letter, which was published by the Virginia Company in London, without Smith's knowledge, to entice new investors and colonists. Nevertheless, although written over a decade later in London, Smith's 'Generall Historie of Virginia' deals with the immediate aftermath in more detail. The account (which Smith narrates in the third person) makes it clear that Smith attributed his survival to the gift of the compass.

> "Much they marvailed at the playing of the Fly and Needle... they all stood as amazed with admiration. Notwithstanding, within an houre after they tyed [Smith] to a tree, and as many as could stand about him prepared to shoot him, but the

> King holding up the Compass in his hand, they all laid downe their Bowes and Arrowes, and in a triumphant manner led him to Orapaks, where he was after their manner kindly feasted." (Smith 1624 [Barbour 1986, II, 146-7])

Smith's ingenious use of the compass as a gift (although it was eventually returned to him: Smith 1608 [Barbour 1986, I, 49]) appeared to have been a success. Smith was not shot, but was escorted by King Opeckankenough and his men on a rambling, hundred-mile expedition lasting several weeks (Smith 1624 [Barbour 1986, II, 149). This experience gave Smith the chance to encounter indigenous society first hand, and he wrote extensively (if perhaps at times over-colourfully) about local customs and religion in several of his published works (e.g. Smith 1608, 1612a, 1624). The communities that Smith encountered were Algonquian language speaking groups living in a dense network of villages throughout the Virginian coastal plain (for more detailed information on the eastern Algonquian way of life, see Rountree 1990). In the warmer months they farmed corn, beans and squash, but the winter, when John Smith first encountered them, was hunting season, when groups of hunters led a more mobile existence, exploring up into the piedmont in search of deer and other prey. Farming was the preserve of women, but hunting was largely a male activity. Waterways, which formed an arterial network connecting all of the major settlements, were central to Algonquian life. Fish, shellfish and other aquatic wildlife formed an important part of the Powhatan diet, and the waterways also provided building materials such as willow and reeds. Much transport was waterborne, and John Smith and his captors often travelled by canoe.

Smith soon came to realise that the 'king' to whom he had offered his gift, Opeckankenough, was not the supreme ruler of the area, but a local chief who paid tribute to a paramount chief titled 'Powhatan' – a name which was also used to refer to his people. The Powhatan's name was Wahunsenacawh. Wahunsenacawh's rise to power had begun decades earlier, when the Algonquian communities in the Chesapeake Bay area had been a series of independent but politically intertwined chiefdoms (Gallivan 2003, 2007; Turner 1993, 76). Wahunsenacawh inherited authority over several coastal districts in the mid to late 1500s, and expanded the scope of his dominion through a mixture of astute political manoeuvring and violent conquest. By the turn of the century, his territory extended over thirty districts in the Chesapeake, covering an area of around 16,500 square kilometres, and encompassing at least 14,000 Algonquian subjects (Turner 1976). Whilst some groups within this area, such as the Chickahominy, managed to maintain their autonomy (Potter 1993; Rountree 1993) and others at the fringes were at least semi-autonomous (Rountree 1993, 6; Potter 1993), scholars agree that by the early 1600s the Virginian Algonquian Indians were organised into a hierarchical paramount chiefdom ruled by Wahunsenacawh. In each district, Wahunsenacawh, the paramount chief, 'Powhatan' or 'Mamanatowick', installed a local chief or 'werowance' who was loyal to him and paid tribute to him in his residence at Werowocomoco (Rountree and Turner 1994, 364). A third level of Powhatan elite also existed, made up of warriors and shamans (Scarry and Maxham 2002, 157). Wahunsenacawh was a seasoned ruler and a canny politician who knew the importance of loyal supporters and carefully exploited the tightly woven web of Algonquian kinship: Opeckankenough, charismatic werowance of the powerful Pamunkey tribe, and recipient of Smith's compass, was Wahunsenacawh's brother.

This centralisation of power predated European influence in the region (Turner 1976; Mouer 1981; Gallivan 2003, 2007), but may have been exacerbated by the looming threat of European encroachment (Rountree 1989, 141). Whilst Jamestown was an early attempt at settlement, it was far from the first European foray into the region: the first explorers had arrived almost a century earlier. (Table 3.1; Quinn 1977, 153-5). The Chesapeake Bay area itself had already seen several unsuccessful attempts at European colonisation: a Spanish mission at Ajacan, just to the north of where Jamestown would later be located, and a British colony at Roanoke, to the south. Mallios (2006) has argued very convincingly that the failure of these ventures (Table 3.1) was connected to the unwillingness of the colonists to reciprocate indigenous generosity. Cycles of gift giving were an important part of Algonquian culture. A refusal to participate in the web of reciprocity led to a breakdown of relations at a time when settlers were reliant on the support of local communities for food and supplies. Ultimately, at least in Ajacan, this culminated in violent tragedy. Where the colonies at Ajacan and Roanoke failed, Jamestown succeeded (albeit narrowly avoiding disaster) partly because the settlers were initially adopted by Wahunsenacawh as a tributary polity.

Smith's gift of the compass was the first step in securing this support. Until now, Wahunsenacawh had been allowing individual werowances such as Opeckankenough to deal with the English as they saw fit. This was confusing for the colonists, who had sometimes been able to engage in apparently friendly exchanges, and at other times had suffered violent attacks. No doubt reports about these sometimes bizarre encounters had been carried back to Wahunsenacawh. Now, Smith was about to meet the ruler himself, and Wahunsenacawh had some demands of his own. Smith's behaviour on this occasion, and over the next few months, would be instrumental in deciding the fate of the Jamestown colony.

Finally, weeks after Smith had been taken captive, he arrived with Opeckankenough and their entourage at Werowocomoco, Wahunsenacawh's chiefly residence. Wahunsenacawh received Smith in full state, sitting on a bed sumptuously strewn with furs, surrounded by his wives. Smith was treated to a lavish feast, and the two men fell to talking. At this point, Smith may have been treated to a strange and terrifying ceremony, in which he once again felt his life to be in danger, but this is most likely a fiction concocted as a way to introduce Pocahontas (Wahunsenacawh's daughter, and later a great celebrity in London) into Smith's later work. It is unlikely that Smith met Pocahontas until much later; she would have been just ten years old at the time of his first visit to Werowocomoco. It is clear, however, that Smith came to an agreement with Wahunsenacawh, and was allowed, at length, to return to Jamestown. He had been away for almost a month.

Smith's discharge was, however, conditional. Wahunsenacawh (Smith 1608 [Barbour 1986, I, 57]) made the colonists an offer which Smith, describing himself as their leader, accepted on their behalf (although Smith later reneged on his parts of the bargain). Wahunsenacawh offered not only a peaceful resolution, but also gifts of corn and venison (it would have been apparent by now that these strange foreigners knew nothing of how to support themselves from the land – most of Smith's earlier encounters with indigenous groups had been attempts to barter for food and supplies). Wahunsenacawh made two demands in return. Firstly, he requested that the English colony be relocated closer to his own residence (where it would be easier to keep an eye on the newcomers) and secondly he demanded that "hatchets and copper" be given to him. He may also have requested more immediate gifts of "Two great gunnes, and a gryndstone" (Smith 1624 [Barbour 1986, II, 151]), though Smith managed to avoid parting with these upon his return to Jamestown, startling the Indians sent to collect them with a display of firing the guns. In hindsight, it is clear that Smith, though he responded (at least initially) in the correct manner by accepting Wahunsenacawh's terms, fundamentally misunderstood the nature of the encounter that took place. In a sense, this all hinges on the significance of the compass.

Smith's rather self-serving accounts read as if Opeckankenough and Wahunsenacawh (Smith 1608 [Barbour 1986, I, 49, 53]) were impressed by his masterful grasp of cosmology, seafaring, religion, and political geography, being dazzled by his explanation of the compass and taking "great delight in understanding the manner of our ships, and sayling the seas, the earth and skies of our God" (Smith 1608 [Barbour 1986, I, 49]). In return, these indigenous leaders told Smith about their own dominions (Smith 1608 [Barbour 1986, I, 55]).

Smith may have been inspired in his dealings with the Indians by the works of Harriot, who wrote about how objects such as compasses were used to mystify Indians in what is now North Carolina during the early days of the Roanoke colony, in the mid 1580s. Harriot claimed that:

> "Mathematicall instruments, sea compasses... were so straunge unto them ... that they thought they were rather the works of gods then of men, or at the leastwise they had bin given and taught us of the gods... Whereupon greater credite was given unto that we spake of concerning [religious] matters. Manie times and in every towne where I came... I made declaration of the contentes of the Bible... the true doctrine of salvation through Christ." (Harriot 1588 [Hulton 1972, 27])

Smith himself describes several occasions on which he believed that the Indians felt him to be invested with divine powers (divination: Smith 1624 [Barbour 1986, II, 148]; ability to bring back the dead: Smith 1624 [Barbour 1986, II, 211]). There are dangers in taking this recurring image of the European-as-god too literally (Cheyfitz 1997). Such an assumption reveals more about European attitudes to deity and religion than it does about indigenous beliefs and responses. What is clear is that objects such as Smith's compass were being read in a new way by indigenous groups.

Murray (2000, 9) has argued that every such exchange involved translation and conversion; the overlap with linguistic and religious terminology is far from accidental here. The object, just like Smith's improvised cosmological discourse, needed to be translated into an indigenous form. Linguistically, this raises a number of questions about the capability of Smith's translator, not to mention the extent to which the abstract concepts of which Smith claims to have spoken, were readily transferable into the Algonquian cosmology. Such translations of objects and concepts were frequently caught up (at least in the minds of the Europeans involved) with religious conversion – hence Harriot's emphasis on his own attempts at religious instruction, which were apparently given weight by the unlikely vector of mathematical instruments. In reality, rather than being mystified by these objects, indigenous groups seem to have woven them into well-accepted existing systems of classification. Trade objects may have offered access to various different forms of 'power' (Miller and Hammell 1986). Exotic objects coming from beyond the sphere of the Powhatan chiefdom, such as copper from the Monacan territories to the west, had long been seen as powerful (Helms 1988, Potter 1993). English imports were incorporated into the same class of exotic and powerful objects (Gleach 1997, 54-9).

In the case of Smith's gift of the compass, there is an extra set of factors in play. The world was already far smaller than Smith believed; it is possible that Opeckankenough, the king to whom Smith presented his gift, was closely related to 'Don Luis' (Rountree 2005, 26-29; Cheyfitz 1997, 81), the man responsible for the massacre of the Jesuit missionaries at Ajacan in 1571, who had spent a considerable amount of time in Spain (Table 3.1). The Powhatan people would have been well aware of English attempts at settlement on Roanoke Island in the 1580s (Rountree 2005, 48), and perhaps more distantly of the Spanish and French settlements in Florida and the Carolinas which had been established since the 1560s. It is unlikely that Opeckankenough was as bedazzled by the compass as Smith believed, and it is equally unlikely that he (or Wahunsenacawh) was hearing about Europe for the first time. However, these men would have been keen to learn more of the strangers who had arrived in their lands, and as such, Smith's overture of friendship would have been welcomed, although his actions were clearly motivated by fear.

The compass played a role as a Janus-faced object in this encounter. It held significance for both sides, and facilitated an interaction, but the understanding of the events (and the significance of the exchange itself) differed greatly between the parties involved. In this context the compass, like any diplomatic gift in the early stages of a cross-cultural encounter, functioned as an intercultural 'boundary object'.

Ideas about power, sovereignty and religion were being translated alongside the exchange of this object. Smith was spared in his original encounter with Opeckankenough not merely because of the compass, but because of his high rank. Traditionally, werowances were taken captive rather than killed, though evidently it was sometimes possible to arrange the return of such individuals through payment of a ransom or entering into a tribute agreement (as Smith appears to have done) (Smith 1612a [Barbour 1986, I, 166]; Smith 1624 [Barbour 1986, 119]). Scholars (e.g. Mallios 2006, Barbour 1986, Cheyfitz 1997, Rountree 2005) have argued that the encounter between Smith and Wahunsenacawh was part of an orchestrated 'adoption' ritual which led to Smith's assimilation a junior werowance or chief (and by extension the Jamestown inhabitants as the first Anglo-Powhatans - Gleach 1997, 120). Smith was explicitly declared a werowance by Wahunsenacawh in February 1608, around two months after these events took place (Smith 1608 [Barbour 1986, I, 67]).

The gift of the compass may have been one of the factors which saved Smith's life – not by bedazzling gullible natives with his god-like knowledge, but by signalling a willingness to enter into indigenous webs of reciprocal gift-giving and tribute payment. At the end of Smith's ceremony of inclusion, Wahunsenacawh dictated the required exchanges which should follow once Smith was returned to his people, as well as requesting the relocation of the colony itself. Such agreements were a means of weaving these newcomers into the indigenous social hierarchy. Jamestown had become a tributary polity within Wahunsenacawh's chiefdom. Wahunsenacawh was used to demanding tribute from chiefdoms which fell under his control: William Strachey recorded that he had the right of refusal over "eight parts in ten" of the produce and harvests of his subject peoples (Strachey 1612a [Wright and Freund 1953, 87]).

The case of the Anglo-Powhatans raises important questions. Whilst it is common to consider the processes through which indigenous groups become incorporated into an expanding empire, it is equally important to understand the processes through which the colonisers were incorporated into indigenous cosmologies and systems of classification, particularly in the early stages, before new categories and systems could be developed. The dealings between Smith, Opeckankenough and Wahunsenacawh emphasise creative indigenous manipulation of existing social and political systems to find a place for the newcomers. Alongside the objects which were being exchanged, ideas such as sovereignty were moving between worlds, being translated. This raises questions about power relations in such an encounter. Translation is necessarily a two-way process, and it is often far from clear which side is dominant.

Around ten months after the incorporation of Jamestown into the indigenous hierarchy, a strangely parallel ceremony took place. This event again involved the incorporation of a new group into an existing political system, but the roles had been reversed: Captain Newport was sent from England to crown Wahunsenacawh as an indigenous vassal of King James.

3.2.2 'A more strange coronation': Crowning Wahunsenacawh

When the second supply arrived at Jamestown in October 1608, under the leadership of Captain Newport, the colonists were tasked with further exploration of the Monacan region to the west, at a time when they were ill-equipped to undertake such a venture. In addition to this "strange discovery" as Smith called it, they were also to carry out a "more strange coronation" (Smith 1612b [Barbour 1986, I, 234]). Several commentators have talked about the ambiguity of this rather extraordinary encounter (Cheyfitz 1997, 59-61; Jehlen 1993, 687-9; Hulme 1993).

The King had sent gifts to Wahunsenacawh, including "presents of Bason and Ewer, Bed, Bedstead, Clothes, and such costly novelties," (Smith 1612b [Barbour 1986, I, 234]) requiring that he be crowned in a manner which would both recognise his authority over his subjects, and also install him as a local sovereign subordinate to the English crown. Smith set out to Werowocomoco to persuade Wahunsenacawh to come to Jamestown to receive his gifts. He was also keen to enlist his help in subduing the Monacans, a hostile group that were outside the boundaries of Powhatan authority (Smith 1612b [Barbour 1986, I, 236]).

Wahunsenacawh refused Smith's request. It was customary for a chief to receive tribute in his own residence, so the demand for him to come to Jamestown to receive 'presents' seemed out of place. Smith records Wahunsenacawh's rather forceful reply as follows:

> "If your King have sent me Presents, I also am a King, and this is my land: eight dayes I will stay to receive them. Your Father [Newport] is to come to me, not I to him, nor yet to your Fort, neither will I bite at such a bait: as for the Monacans I can revenge my owne injuries." (Smith 1612b [Barbour 1986, I, 236])

It was agreed that the coronation ceremony would take place at Werowocomoco, and an expedition from Jamestown was arranged. Two years later, the propaganda pamphlet 'A True Declaration of the Estate of the Colonie in Virginia' (Council of Virginia, 1610) would argue that legal grounds for colonisation of Algonquian territories pertained because "Powhatan, their cheife King, received voluntarilie a crown and a sceptre, with a full acknowledgement of dutie and submission," but the description of the coronation penned by John Smith (who was then serving as president of the council at Jamestown) suggests a rather more ambiguous encounter:

> "All things being fit for the day of his coronation, the presents were brought, his bason, ewer, bed and furniture set up, his scarlet cloake and apparel (with much adoe) put on him (being perswaded by Namontacke [an indigenous translator] they would doe him no hurt.) But a fowle trouble there was to make him kneele to receave his crowne, he neither knowing the majestie, nor meaning of a Crowne, nor bending of the knee, indured so many perswasions, examples, and instructions, as tired them all. At last by leaning hard on his shoulders, he a little stooped, and Newport put the Crowne on his head. When by the warning of a pistoll, the boates were prepared with such a volly of shot, that the king start up in a horrible feare, till he see all was well, then remembring himselfe, to congratulate their kindnesse, he gave his old shoes and his mantle to Captain Newport. But perceiving [Newport's] purpose was to discover the Monacans, [Wahunsenacawh] laboured to divert his

> resolution, refusing to lend him either men, or guids." (Smith 1612b [Barbour 1986, I, 236-7])

Smith's rather slapstick presentation of this fascinating tableau has caused much discussion among scholars (Jehlen 1993, 686-692; Hulme 1993, 184-5). Smith certainly had his reasons for wanting to portray Captain Newport – one of his main rivals for authority in Jamestown – as incompetent, but as Jehlen (1993, 687) comments, the incident seems "curiously out of ideological focus... Smith describes a scene in which not just Newport but the English as a whole and their coronation ritual appear ridiculous." Despite, and perhaps because of, the historical questions raised by Smith's narrative, it seems likely that the account accurately reflects real reluctance on Wahunsenacawh's part. Cheyfitz (1997, 60) points out that through this 'crowning' event, "Powhatan [Wahunsenacawh], whom the English, with their own dream of empire exerting terrific force, typically nominated "Emperor" of the Algonquians... was translated into English political terms, where he becomes a power subject to the English crown... effectively circumscribing the Indians within the English civil code." This is the English equivalent of the Powhatan ceremony of inclusion which saw Smith inducted as a junior werowance. The fact that Wahunsenacawh refused to kneel to accept his crown, and that force was required to even persuade him to bow his head, suggests that perhaps Wahunsenacawh did understand something of the significance of the ceremony (an effective translator was certainly available on this occasion, in the form of Namontack, a young local who had recently returned from England). If he had indeed understood the implications, Wahunsenacawh certainly does not appear to have been enthusiastic about becoming a subject of King James.

Despite the strong claims made in subsequent Virginia Company propaganda (Council of Virginia 1610), in reality they knew that Wahunsenacawh had never acquiesced to their demands for regional authority. In 1609, they tried to 'buy' Wahunsenacawh's land with copper (Smith 1624 [Barbour 1986, II, 221]) and in a report in 1624, the Virginia Assembly conceded that:

> "We never perceaved that the natives of the Countrey did voluntarily yeeld themselves subjects to our gracious Sovraigne, nether that they took any pride in that title, nor paide at any tyme any contributione of corne for sustenation of the Colony... what... was done proceeded from feare and not love, and their corne procured by trade or the sworde." (The Virginia Assembly, quoted in Green and Dickason 1989, 232-3)

What was the point of carrying out this ceremony if the English actors in the performance knew that Wahunsenacawh did not accept (and possibly did not even understand) its significance? There are echoes of other similarly inscrutable encounters: Harriot's impromptu sermons in the Carolinas in the 1580s, when it seems unlikely that he was even understood, or the Spanish use of the 'Requerimiento' – a legal document read aloud in first contact situations in the Americas until 1556, which used dubious Christian rhetoric to explain (in Spanish) to bemused and often uncomprehending onlookers, that the Spanish had been 'granted' sovereignty over the Americas. Even John Smith's discourse on the heavens as he handed his compass to Opeckankenough. In many cases, the exchange of physical objects facilitated or lent weight to such transactions. Harriot described his use of mathematical instruments as persuasive aids towards indigenous salvation, the reading of the Requerimiento was often followed by the erection of a cross and sometimes the distribution of 'trinkets,' and Wahunsenacawh's coronation was, of course, accompanied by gifts. Like Smith's compass, these were, in a sense, boundary objects which grounded an otherwise transient and intractable exchange in physical and social reality. Wahunsenacawh was rendered subject to King James not through the mere performance of words and ceremony but because, the Virginia Company would later argue, he had "received voluntarilie a crown and a sceptre" (Council of Virginia 1610). As for Smith's compass, these gifts also needed to be translated into indigenous terms, as did the ideas which they represented.

Henry Spelman's 'Relation of Virginia', penned a few years after the coronation ceremony, gives us some idea of how Newport's gifts to Wahunsenacawh were incorporated into indigenous society. In the Powhatan town of Oropaks stood an important temple complex, which housed the idol of an important deity called 'Cakeres'. Here lay entombed the mummified remains of Wahunsenacawh's royal ancestors and kin, along with corn which had been offered as tribute, and would later be planted or consumed at diplomatic feasts. Alongside the idol were laid out all presents received by Wahunsenacawh, including "ye beades [and] Crowne [and] Bedd which ye Kinge of England sent him" (Spelman 1609 [Haile 1998, 486]). The crown and the bed (no doubt intended for Wahunsenacawh's use in receiving local and foreign dignitaries as he had once entertained John Smith) in fact ended up being incorporated into the religious sphere. Not only were these objects kept in the temple, the crown at least was also used in religious ceremonies. Spelman describes the annual ceremony of the sowing of Wahunsenacawh's corn, where on an appointed day a large workforce of Powhatan subjects assembled to do the planting. After the work was finished, Wahunsenacawh put on the crown and walked through the fields. His people walked backwards before him, and Wahunsenacawh advanced, scattering beads as gifts to thank them for their labour (Spelman 1609 [Haile 1998, 486]). This passage gives us some small insight into how European objects were deployed in indigenous society in a way which played with ideas of power, sovereignty, generosity and gift giving, at a time when these concepts were becoming increasingly fluid.

The account of the coronation gives an additional glimpse into the two-way nature of early diplomatic exchanges: Wahunsenacawh's return gift of his 'old shoes and his mantle'. The fate of the 'mantle' is now forgotten, but it might be the garment or wall-hanging now known as 'Powhatan's mantle', which made its way to England as a 'curiosity' and was later displayed as a museum exhibit (Rountree 2005, 114; Waselkov 2006). The idea of the 'curiosity cabinet' gives a curious parallel with indigenous mystification of European goods (Murray 2000, 69-73). Here, everyday indigenous paraphernalia, everything from cloaks and shoes to pipes and stone tools, were displayed as exotic curios, with little or no commentary on (or understanding of) their manufacture or intended use. Again, we find ourselves faced with a mirror image: two sides in an encounter struggling to understand and categorise the other. Initially this was a simple process of translation, each side appropriating the symbols of the other in new contexts in which they held different meanings. Although each side understood the events differently, the balance of power in these early encounters was more-or-less equal, with both sides able to dictate the terms to a certain extent.

Implicitly, Wahunsenacawh's coronation and later use of the gifts in a ceremonial context gave weight to the English assertion that they had the authority to grant or withdraw his power. Nevertheless, at least initially, the English had little impact on Wahunsenacawh's sovereignty over his own people. The English were still reliant on Wahunsenacawh for political support as well as physical nourishment; it would be many years before the colonists were able to support themselves. Wahunsenacawh was able to accept the coronation gifts on his own terms (refusing to travel to Jamestown to receive what he regarded as tribute, and refusing to kneel or bow) and subsequently he felt able to reject Newport's request for assistance in the English campaign against the Monacans. Gradually this balance began to change, as diplomatic gifts become tools of power, dominance and authority, and the English attempted to assert a greater degree of control over indigenous hierarchies and political systems.

3.2.3 'All things ought to be delivered unto him': Asserting indigenous hierarchies

In the early days of the indigenous-European encounter in Virginia, terms of exchange were heavily influenced by indigenous hierarchies. John Smith, for example, chose Opeckankenough to receive his gift of the compass because he believed him to be the 'King' in charge of the hunting group, although he would not have fully understood the nature or extent of Opeckankenough's power. Similarly, Opeckankenough was presumably quite unclear about Smith's role as a 'Captain', but it seems likely that Smith's gift was accepted and his life spared because of the high status which he claimed to hold among his people.

Encounters of this kind sometimes led to misunderstandings about the 'correct' ways to engage in gift exchange, which had to be corrected. This is well illustrated by Arthur Barlowe's account of one of the earliest contacts between the English and Algonquians. On July 17th 1584, a group of around forty Algonquians, including 'the King's brother' Granganimeo, sailed across the bay to meet English scouts for the ill-fated Roanoke colony. Disembarking, Granganimeo and his entourage came over to where the English vessels lay at anchor. A group of servants laid out a matt, on which Granganimeo sat with four of his followers. He beckoned the English to join them and (after he had made a long, rather unintelligible but seemingly friendly speech), the English presented him with gifts.

> "wee presented him with divers thinges, which hee receaved very joyfully, and thankefully. None of his companye durst to speake one worde all the tyme: onely the foure which were at the other ende, spake one in the others eare very softly...
>
> "After wee had presented... such things as we thought he liked, we likewise gave somewhat to the other[s] that sate with him on the matte: but presently he arose, and tooke all from them, and put it into his owne basket, making signes and tokens, that all things ought to be delivered unto him, and the rest were but his servants, and followers." (Barlowe 1584-5 [Quinn 1955, 98-100])

A few days later, when they had begun trading with the indigenous people in earnest, comparable rules were still strictly observed. When Granganimeo was present:

> "none durst to trade but himselfe, except such as weare redde peeces of copper on their heades, like himselfe: for that is the difference betweene the Noble men, and governours of Countries, and the meaner sort." (Barlowe 1584-5 [Quinn 1955, 103])

Smith and other later chroniclers do not mention quite such strict terms of engagement, but Strachey remarks that Wahunsenacawh controlled the circulation of valuable materials such as copper in the indigenous economy (Strachey 1612a [Wright and Freund 1953, 107]). There are also occasions where Wahunsenacawh finds it necessary to explain the conventions surrounding exchange to his new allies, just as he dictated suitable terms for the presentation of his coronation gifts.

The indigenous ruler certainly made clear to Smith that he was used to receiving tribute from his allies. The concept was introduced when Smith was given his first tour of Wahunsenacawh's domain, after his capture by Opeckankenough:

> "the King [Wahunsenacawh], conducting mee to the River, shewed me his Canowes, and described unto me how hee sent them over the Baye, for tribute Beades, and also what Countries paide him Beads, Copper or Skins." (Smith 1608 [Barbour 1986, I, 69])

Wahunsenacawh was also careful to lay down 'correct' terms for his first exchanges with the English. When Smith attempted to barter for corn, Wahunsenacawh explained the rules:

> "Not being agreed to trade... [Wahunsenacawh] desired to see all our Hatchets and Copper together, for which he would give us corne... his offer I refused, offering first to see what hee would give for one piece. Hee seeming to despise the nature of a Merchant, did scorne to sell, but we freely should give him, and he liberally would requite us." (Smith 1608 [Barbour 1986, I, 71])

Asking to be presented with hatchets and copper (which Smith promised that the colonists would provide), and agreeing in return to provide food, Wahunsenacawh was attempting to structure the exchange in terms of tribute owed to him by the English.

In these early contacts, Wahunsenacawh was controlling (or at least attempting to control) the nature and terms of the exchanges, much as Granganimeo chastised a reckless Barlowe twenty years earlier. Nevertheless, Smith and the English did not always acquiesce to Wahunsenacawh's demands, and gradually the solid indigenous foundations on which exchanges were initially based began to falter. Wahunsenacawh continued to demand that the English offer weapons in trade, but the English were unwilling to relinquish the one advantage they had over the Powhatans: their guns. The attempts at dialogue ultimately failed, and the breakdown in amicable trade relations led to coercion, extortion, and finally the outbreak of the first Anglo-Powhatan war in 1609-10.

In the space of just three years, vast changes had occurred in the balance of power between the Jamestown colonists and the Powhatan people, and also in the ways in which this relationship was expressed through exchange. The following section explores these transformations in more detail, using the case study of copper.

3.2.4 'Esteemed more highly by them than gold or silver': Copper and transforming indigenous systems of exchange

Smith wrote in one of his early works that the indigenous inhabitants of Virginia were, "generally covetous of copper, beads, and such like trash" (Smith 1612a [Barbour 1986, I, 160]), and Harriot reported that copper was "esteemed more highly by them than gold or silver" (Harriot 1588 [Hulton 1972, 71]). Although such an attitude suggested naïveté to Smith and Harriot, within the indigenous world view it made complete sense. At the time of the arrival of the first colonists, copper was an extremely valuable spiritual material in Algonquian society. It played an important role in religious ceremonies, being used to adorn idols (Harriot 1588 [Hulton 1972, 71]; Smith 1612a [Barbour 1986, I, 169]) and as an offering to the gods (Smith 1612a [Barbour 1986, I, 169-171]). It even ensured powerful chiefs a place in the afterlife (Smith 1608 [Barbour 1986, I, 58]; Smith 1612a [Barbour 1986, I, 169, 172; Mallios 2006, 19). Copper was a powerful, even dangerous substance, which imbued its wearer with spiritual power. Copper ornaments served to demarcate and maintain social hierarchies: Barlowe (1584-5 [Quinn 1955, 103]) Smith (1612a [Barbour 1986, I, 160-161]) and Harriot (1588 [Hulton 1972, 61]) all remark on the wearing of copper by Algonquian nobles. One of John White's drawings, made during the second expedition to Roanoke, shows a high status 'nobleman' wearing a copper gorget, about six inches square, suspended around his neck (Hulton and Quinn 1964, I, 107-8 and II, Pl 50). Wearing such gorgets symbolised "alliance, prestige, and strength" (Mallios 2006, 18), since the circulation of copper was restricted. As paramount chief, much of Wahunsenacawh's power rested on his ability to control access to this spiritual material and other prestige goods. By giving gifts of high status objects to local werowances, he secured them in his debt.

The importance given to copper, particularly of a reddish hue, is reflected in the local Algonquian dialect. Smith and Strachey both give definitions of Algonquian words, including the names for metals. Strachey's more exhaustive dictionary (Strachey 1612b [2005], 29, 67, 40,

64) records only two words relating to metal: Matassun (copper); and Osawas (brass). The narrowness of this vocabulary is likely to reflect indigenous preoccupations (iron and precious metals were the resources most highly sought after by the colonists) and highlights the value ascribed to copper, and the importance of colour. The two words distinguish between reddish copper ('mat' is most likely to come from a root word meaning 'red' – Barbour 1972; 1986, I, 37) and the more yellowish brass ('osawas' derives from an element corresponding to 'ore' or 'mineral' and a root word meaning 'yellow' – Siebert 1975, 328-329, 409-410). Smith's vocabulary (1612a [Barbour 1986, I, 137]), whilst largely cognate with Strachey's, defines the two materials differently: Mattassin – Copper; and Ussawassin – "Iron, Brasse, Silver, or any white metal." This suggests that it was the reddish colour which gave copper its significance. Yellowish or white metals were grouped together in another category of lower value materials – very different to the European understanding of metals and their values. This is given weight by observations made at the time: Ralph Lane, reporting on the first Roanoke voyage, stated that "copper carieth ye price of all, so it be made red" (Lane 1585 [Quinn 1955, 209]).

Even before their departure from England, the Jamestown colonists were aware of the value of copper as a trade good, through the writings of earlier settlers and explorers such as Harriot and Barlowe. Harriot had explicitly advised Mace, who led an early expedition to Virginia in 1602, to carry "copper not brasse 20 or 30 pound in plates. Some as thin as paper & small & great," even going so far as to include size specifications for 276 plates both square and round, from three to seven inches across (Quinn 1974, 411-412). Quinn suggests that Harriot was attempting to provide Mace with a suitable supply of the kinds of gorgets he had seen during his own voyages to America, "which were clearly suitable and profitable items for trade" (Quinn 1974, 413).

Previously, to obtain copper, Wahunsenacawh had been forced to rely on the hostile Monacan groups to the west (See Mallios 2006, 19-20; Hantman 1993; Quinn, 1955, 269 (note 2), 332-3 (note 1); Smith 1612a [Barbour 1986, I, 165]). Contact and trade with the English after 1607 allowed Wahunsenacawh to free himself from this dependence, giving him more autonomy and power both within and beyond his chiefdom. The advantages of having access to a friendly supply of copper may have been a major factor in Wahunsenacawh's willingness to deal with the English (Mallios 2006, 24).

In the earliest stages of contact, Wahunsenacawh maintained his ability to control the supply and circulation of copper amongst his indigenous subjects (Strachey 1612a [Wright and Freund, 107], Potter 2006, 219). Nevertheless, the sudden influx of large quantities of European copper had unforeseen and unintended consequences, putting a strain on Powhatan relations with the European intruders, and ultimately contributing to the eventual decline and collapse of centralised Powhatan political authority. Once copper was available through sources outside of those with spiritual power, the indigenous spiritual and political world was severely destabilised.

Quitt (1995), Mallios (2006) and Potter (2006) have all put forward models for the devaluation of copper as a prestige good, and the subsequent decline of Wahunsenacawh's power. Potter (2006, 231-2) posits a three stage process. According to Potter's model, Wahunsenacawh was in full control of the indigenous circulation of prestige goods before the founding of the settlement at Jamestown in 1607. Within the first two years of the founding of the colony, owing to the sudden influx of European copper and prestige items, there was a 'temporary crisis' (ibid, 231) in the regional political hierarchy, but Potter argues that Wahunsenacawh was able to regain control. He writes that "until other factors (such as depopulation, defeats in war, and discrediting of the priesthood) weakened their authority, the werowances were apparently able to limit the devaluation of copper and its widespread acquisition by the majority of society" (ibid, 231). According to Potter's model, the werowances' control of status goods was not finally curtailed until after 1630, with the rise of the fur trade in the area allowing low-status individuals direct access to prestige objects through trade with Europeans, "thereby flouting the ebbing authority of the werowances" (ibid, 232).

Whilst there is evidently a good deal of truth in Potter's model, his chronology is based largely on the quantities of copper and other European items interred in the communal graves of non-elite individuals. Excavations carried out since his article was originally published in 1989, (Potter 2006, 234), suggest that the shift may have occurred well before 1630, perhaps shortly after the arrival of the first Jamestown colonists. This fits more closely with the arguments of Quitt (1995) and Mallios & Emmett (Mallios 2006, Mallios and Emmett 2004) who suggest that copper had been substantially (and permanently) devalued as a prestige item as early as 1609, and certainly by 1620.

Mallios (2006, 80-106) charts the effects of three separate 'inundations' of European goods into the indigenous exchange system, corresponding with the arrival of the first colonists (May 1607) and subsequent groups that arrived from England with the first supply (January 1608) and the second supply (September 1608). Mallios views these inundations and the circumstances surrounding them as violations of indigenous gift exchange practices. Not only did colonists flood the indigenous economy with large quantities of objects that were previously valued partly for their rarity, they also ignored local hierarchies, exchanging copper with any individual who was willing to offer them goods of sufficient value in return (see Mallios and Emmett 2005, 4; Mallios 2006, 91, 116-7). This flagrantly undermined both the authority of Wahunsenacawh as paramount chief, and the significance of copper itself as a spiritually powerful material. The nature of exchanges also changed during this period, with "a significant drop... in the number of reciprocal copper-based transactions between the colonists and Algonquians and the diminished value of the metal scraps" recorded in the historical sources (Mallios and Emmett 2004, 2). The archaeological evidence also shows a sharp decline in the quantities of copper scraps and trimmings in Post-Fort Period (i.e. post-1625) features at Jamestown, suggesting that demand for copper had substantially decreased.

Contemporary sources show that the Jamestown colonists were entirely aware of the risks and problems associated with 'flooding the market' with copper and other European imports. Smith later wrote that, "Those at the fort so glutted the Savages with their commodities as they became regarded not" (Smith 1612b [Barbour 1986, I, 215]), bemoaning in particular the behaviour of those who arrived with the long-awaited first supply, whose desire for a quick profit "cut the throat of our trade" (*ibid.*). The English focus on prices and profits was a misreading of the Powhatan system, in which power was based around controlling the circulation of a spiritual valuable, but the sources show that both sides were concerned with the 'value' of copper.

Quitt (1995), Mallios (2006) and Hantman (1993) all concur that transgressing the rules of indigenous exchange led to friction between the colonists and the Powhatan people. Mallios in particular highlights the relationship between gift exchange violations and violent retribution, emphasising that each of the three inundations was followed by "a month or two of native exchange rejections and thefts, followed by violence a month later" (Mallios 2006, 104). This accords well with Quitt's model, which charts the breakdown of relationships between the colonists and the Powhatan people between 1607 and 1609.

In January 1609, Smith and Wahunsenacawh had a dramatic final meeting. By this time, peaceful relations were already close to breaking point. Wahunsenacawh had declared an embargo on trade with the colonists (Quitt 1995, 252-4), and invited Smith to visit him at Werowocomoco, hoping to lure him into an ambush. The two men engaged in a deft exchange of words, each attempting to undermine the other's argument by using his own language against him. Wahunsenacawh called for 'friendly trade', (Smith 1612b [Barbour 1986, I, 248]), while Smith, in turn, fell back on the rhetoric of gift exchange:

> "By the gifts you bestowe on me, you gaine more then by trade; [if] you would visite mee as I doe you, you should knowe it is not our customes to sell our curtesie as a vendible commoditie." (Smith 1612b [Barbour 1986, I, 249])

Quitt (1995, 256) maintains that this "extraordinary moment of cultural reversal" existed in language only. Whilst the two leaders had finally been able to grasp the differences in their attitudes to trade, and were able to use this in the rhetoric which they employed against the other, they were unable to assimilate more than the ideas involved – neither offered a practical solution. In a final blow to Smith, Wahunsenacawh declared that he would trade for guns and swords, or not at all. The colonists at Jamestown were facing starvation, but were desperately unwilling to part with their weapons, their one advantage over the Algonquians at a time when they were outnumbered at least twenty-seven to one (Quitt 1995, 241). It was Wahunsenacawh who ended negotiations: "[he] concluded the matter with a merry laughter... saying he could eate his corne, but not his copper." (Smith 1612b [Barbour 1986, I, 246])

Copper had lost its power as a spiritual valuable, and the time of peaceful trade was over. The showdown between Smith and Wahunsenacawh ended in violence. The Jamestowners got their corn, but afterwards trade was largely achieved through the use of coercion and force (Quitt 1995, 256-8). Relations with the indigenous community were irreparably damaged. Smith, one of the colonists' major assets in their dealings with Wahunsenacawh despite his often hard-headed approach, departed the colony in September 1609, following his injury in a gunpowder accident. By then, the colony was irrevocably descending into the first Anglo-Powhatan war.

The devaluation of copper in the indigenous economy had unforeseen and ultimately undesirable effects on English relationships with the Algonquians, destabilising indigenous systems of spiritual power, tribute and exchange. This led to drastic changes in the nature of settler relationships with local groups, and ultimately contributed to the outbreak of war. Whilst these effects on indigenous hierarchies and exchange networks were largely unintentional (and self-evidently counterproductive for the English in the short-term), this early phase of contact was a precursor to more direct and calculated intervention in indigenous politics and hierarchies. Diplomatic gifts and indeed copper objects remained highly important, but these were now woven into a more recognisably European system of value, albeit one with roots in pre-conquest traditions.

3.2.5 'For their Diligence': A new language of exchange and restructuring indigenous hierarchies

In the later years of the colony at Jamestown, after the resolution of the first Anglo-Powhatan war and the peace-making gesture of John Rolfe's marriage to Pocahontas in 1614, the balance of power began to shift more noticeably in favour of the English colonists. This was achieved and maintained partly through the clever deployment of diplomatic gifts, designed to play an active role in the restructuring of indigenous hierarchies and social systems. These gifts no longer functioned as Janus-faced boundary objects, capable of being translated into indigenous terms. Instead, a new shared language of power began to be created, situated in the emerging 'middle ground' between English and Algonquin groups. Despite the fact that all sides contributed to this dialogue, there can be no doubt that the English played a dominant role in dictating the terms.

After the English colonists made peace with Wahunsenacawh in 1614, a group outside Powhatan authority, the Chickahominy, also agreed to make peace. The Chickahominy had always resolutely refused incorporation into the Powhatan paramount chiefdom, but they were concerned that their autonomy would be threatened by the powerful new Anglo-Powhatan alliance. They came up with a surprising solution: they decided to become English. Hamor (1615 [1957, 11-15]) reports the circumstances of this unusual alliance.

Upon hearing of the English peace with Wahunsenacawh, the Chickahominy sent two messengers to Sir Thomas Dale, then acting Governor of the Virginia colony. They requested to become subjects and tributaries of King James, providing that they be allowed to maintain their own system of government, which at this time involved the leadership of eight male elders. They suggested that they relinquish their old name and become instead 'Tassantassas,' the name given by locals to the English colonists, originally meaning 'Strangers' or 'Foreigners' (Rountree 2005). Dale accepted, and set out to meet the assembled Chickahominy people. The visitors were feted, and a council held the next morning, at which conditions were laid down by the English. These mostly concerned laws for the maintenance of peaceful relations, and secured the Chickahominy's promise to furnish the English with bowmen in times of war. It is the sixth condition of the peace that most concerns us:

> "[The] eight chiefe men which governe as substitutes and Councellors under Sir Thomas Dale, shall at all times see these Articles and conditions duly performed for which they shall receive a red coat, or livery from our King yeerly, and each of them

> the picture of his Majesty, ingraven in Copper, with a chaine of Copper to hang it about his necke, whereby they shall be knowne to be King JAMES his noble Men: so as if these conditions, or any of them be broken, the offenders themselves shall not onely be punished, but also those Commanders, because they stand ingaged for them." (1615 [1957, 14])

The newly named Tassantassas accepted the conditions, and peace was confirmed. This was the first in a long series of diplomatic negotiations and treaties with local groups. It is notable in part because it contains the first mention of a set of objects approximating what would later be called 'peace medals': the "picture of his Majesty, ingraven in Copper, with a chaine of Copper to hang it about his necke" described by Hamor (1615 [1957, 14]). These were hybrid objects, drawing on an Algonquin tradition (the wearing of copper gorgets by nobles) and also the century-old European tradition of presenting medals engraved with the image of a ruler to mark treaties or significant events (e.g. Hawkins 1885, 14-15). The gifts to the elders weighed heavily: the medallions not only reinforced their authority, but rendered them answerable for transgressions committed by any of their people, whether or not such punishment would have been applicable under indigenous codes of justice (precedent suggested it would not, Rountree 2005).

This was the first phase in the creation of a new form of diplomacy, underwritten by the exchange of particular forms of diplomatic gift, which laid the power in such transactions squarely in the hands of European colonial administrators. The English had by now acquired the power to actively intervene in the indigenous political order, partly through the leverage provided by offering access to trade goods, and also through the judicious use of diplomatic gifts to create and define new positions of power within the shifting landscape of increasingly fluid indigenous hierarchies. While diplomatic gifts were still produced and presented on an ad-hoc basis rather than representing a coherent colonial policy, there can be no doubt that the balance of power was shifting. In the later seventeenth and into the eighteenth century, interventions into indigenous politics became a matter of carefully calculated and increasingly centralised British policy, involving the development and deployment of evolving technologies of exchange. Diplomatic gifts were no longer objects requiring mutual translation. A new level of colonial authority and a new language of engagement was emerging, which both sides not only contributed to, but actively exploited. This development is considered in the following section.

3.3 Eloquence: The later colonial Southeast, 1700-1775

One hundred and fifty years after Thomas Dale awarded his engraved copper discs to the Chickahominy, a very different encounter took place further south. Again, the English (now British) colonial authorities were using peace medals as leverage in treaty negotiation, but the power dynamics and the nature of the participants had shifted irrevocably. Peace medals were now a well-established language of exchange, used by all three major colonial powers (the French, British and Spanish) to secure tribal loyalties, and manipulate indigenous hierarchies.

It was 1765. John Stuart, who had been appointed British 'Superintendant of Indian Affairs' for the southern colonies in 1762, had been tasked with securing peace after the upheavals of the French and Indian War, in which Britain and her allies had recently emerged victorious. One of Stuart's tasks was to ensure that local groups who had previously allied themselves with the French gave up their French medals for British ones, symbolising a new alliance, and a willingness to cede land for a British colony in Florida. This was no easy task. At a conference in the former French capital of Mobile in Louisiana, Stuart entertained a series of Choctaw and Chickasaw delegations with the assistance of his new employee, an experienced French diplomat, the Chevalier de Monberaut. The Chickasaws had traditionally been supporters of the English, and were reasonably open to negotiations, but the Choctaws, former French allies, were reluctant (de Monberaut 1765 [1965, 28-9]). Monberaut entertained the delegations with lavish feasts and the promise of English gifts such as new medals and gorgets to replace their French commissions. He and Stuart succeeded in winning them over. One group of Choctaws, however, arrived late. Monberaut's account makes clear that they were not so easily won:

> "On the first or second visit which the elders... made to Mr. Stuart, he told them that all the chiefs and captains of the Great Division and the Six Villages had surrendered to him the gorgets and commissions which they had been given by the French, in order to secure others in King George's name; that he hoped that the chiefs of the Eastern Division would do so as well. So abrupt a demand astonished the savages, and they showed their surprise by saying that 'the English were like snakes who hide in the grass, lying in wait for travelers, and strike them on the leg, for the English do not give men time to know, until the pain comes; they made them repugnant propositions'... Mr Stuart, who did not expect that resistance, was appeared incensed by the comparison, but let it stand without reply on his part... The next day the interpreters came to announce that the savages' resolution was not

> to give up their medals, gorgets and commissions; upon which Mr Stuart said that he would crush them all and give their medals, gorgets and commissions to others."
> (de Monberaut 1765 [1965, 150])

Monberaut hastily intervened to offer a more diplomatic resolution, but the threat of removing the recalcitrant leaders and replacing them with more enthusiastic supporters of the British remained. This exchange clearly shows the way in which symbolic diplomatic gifts such as peace medals were used as leverage on both sides in an attempt to bring about the desired outcome. The Choctaws were offended that they had not been consulted about the transfer of their province from French to British rule, and a resolute refusal to relinquish their French commissions was one way to convey this dissatisfaction. Stuart, in his response, uses the same objects to underline his authority, threatening to remove the leaders from their positions. In the end, the Choctaws were forced to submit to his demands.

This interaction highlights the vast changes which had occurred in the intervening 150 years since John Smith had made his desperate gift of a compass to Opeckankenough. Smith gave his present blindly, little understanding the social role of the leader with whom he was dealing and sharing no language in common. Smith took for granted the power of a European-made object to bedazzle his captors, and had little understanding of the indigenous perspective. The compass successfully mediated the encounter between Opeckankenough and Smith, but their appreciation of its significance was very different, and Smith remained in a subordinate and vulnerable position.

Stuart understood indigenous societies far better than Smith had done, and was able to deploy the language of ceremonial gift-giving to manipulate the Choctaws. The British were now powerful and well-established enough to dictate the terms of alliance, using peace medals to intervene in indigenous hierarchies. Nevertheless, although Stuart felt able to threaten that he would 'crush them all', he was still required to play by the rules of the game: feasting the delegation and offering them British medals in exchange for their French commissions. When he attempts to hurry the proceedings too quickly, the Choctaws accuse the English of being 'like snakes who hide in the grass'. There was an accepted format to the encounter to which both sides were expected to conform, allowing both to use the medal ceremony to make their opinions heard. Peace medals had become a shared 'language' through which power and control were articulated. Both sides influenced the development of these new technologies of exchange and diplomacy which bridged the gap between European and indigenous understandings.

Table 3.2: Timeline of events in the North American Southeast c.AD 1000–1775

Year	Events in South-Eastern North America
c. 1050	Cahokia mound-town complex at its height, with a population of 8-15,000 people. Powerful chiefs control mound-town complexes. Flows of tribute goods maintain a web of relationships between hamlets, tributary towns and ally towns.
1100 onwards	Mound-town complexes (e.g. Moundville, Etowah) appear elsewhere in the Southeast (Georgia, Alabama and Tennessee). 'Pax Moundvilliana': In the region of Moundville, densely clustered defended towns give way to undefended villages and hamlets. Homogenization of material culture (e.g. drinking vessels) in region of both Moundville and Etowah. Town as centre of cosmology and political life, exchange with other communities reinforces and bolsters local autonomy. Elite power rests on ability to control the sacred (probably partly manifested through flows of materials and sacred goods).
1400 onwards	Fall of powerful regional polities such as Moundville. Emergence of Late Mississippian chiefdoms (not as powerful or far-reaching as their predecessors). More localism and competitiveness, e.g. competing for tributaries and partners. Frequent small-scale warfare.
1540	Hernando de Soto's (Spanish) expedition into the Southeastern interior
1565	Spanish found St. Augustine (in what is now Florida). Spanish missions in the interior.
c.1620	Exchanges, previously dominated by gifts and diplomacy, begin to become more commercialised.
1653	Virginians found the first Carolinian colony (Charles Town founded 1670) by later colonists
c.1660	New communities of native and English slave-raiders enter the region. Refugees from areas north of Spanish missions flee these violent incursions.
1682	French colony of Louisiana founded (Mobile founded 1702)
c.1700	Refugee groups begin to coalesce into powerful new alliances that force the English and French to engage in gift diplomacy, even at the expense of their profits.
1715-18	The Yamasee War. Tensions surrounding issues of debt, slavery and access to trade networks erupt into war between the English colonies and their former partners. Indigenous groups reorganize, reviving older patterns of gift exchange to strengthen their alliances and protect their local autonomy. Members of this new alliance named 'Creeks' by the Carolinians.
1720s onwards	Creeks and their native and colonial neighbours renegotiate the norms of post-war exchange. British colonies respond by taking a more centralised colonial approach.
1732	British found a new colony, Georgia
1750s-60s	**1754-63:** French and Indian War, the culmination of a long series of intercolonial wars. France and Britain fight for control of their North American colonies. The competition for indigenous allies is fierce. Both France and Britain increase their expenditure on gift diplomacy. New forms of diplomacy such as wampum begin to be used in the South-East. **1755:** In an attempt to reduce the diplomatic damage caused by unscrupulous traders, Britain overhauls its trade system. New rules are introduced to control competition and regulate the sale of guns, ammunition and liquor. As part of this more centralised approach, two British 'Superintendents of Indian Affairs' are appointed: William Johnson in the Northern Colonies, and Edmund Atkin in the South. Atkin dies in 1762, and is replaced by John Stuart, who holds the role until his death in 1779. **1763:** After their victory over France, the British distribute up to £5000 worth of presents to cement peace with the Creeks and Choctaws, more than the annual budget of £3000. **1765:** British attempts to secure land cessions in Florida from the Chickasaws, Choctaws and Creeks requires more gifts, and Stuart's use of peace medal diplomacy.
1775-1783	American War of Independence. Gift diplomacy (especially use of peace medals) again on the rise as the British struggle to maintain the support of their indigenous allies.

This section explores the unfurling of these languages in the colonial Southeast and beyond, particularly the British Carolinian colonies, 1700-1775. In the politically fluid colonial setting, eloquence in the new languages of diplomacy became a source of power for European and indigenous groups alike. Initially both groups contributed equally to the evolving dialogue, but gradually, as the French and Spanish withdrew from the Southeast, indigenous groups began to lose some of their power and leverage. Yet, although the British were able to harness the multilateral politics of the region to become the dominant power, they were never free of the obligation to engage in the gift exchange demanded by indigenous groups.

3.3.1 'He saw nothing come but letters': The language of gifts in the colonial Southeast

Prestige objects had long held a particular power in the Southeast. Table 3.2 charts the rise and fall of the mound-town complexes which dominated the region until European arrival (Hall 2009). Ruling over each town, a chief stood at the heart of a web of relationships between outlying hamlets, tributary towns and ally towns. The authority of the ruling elite, and their capacity to assemble a large mound-building labour force, rested on their ability to control and direct sacred power. This was manifested in part by the flows, as gifts or tribute, of prestige goods and sacred materials such as copper ornaments and finely decorated ceramic vessels. Exchange with other communities, rather than representing regional interdependence, was felt to reinforce local autonomy. It was into this competitive and dynamic system of local alliances and rivalries that Europeans entered in the sixteenth century.

John Stuart would write in 1764 that trade was the "Original great tie between Indians and Europeans" (Hall 2009, 3), and there is truth in this statement. Initially, European goods and trading partners were incorporated into the existing values of the prestige exchange sphere, much as they had been in the early days at Jamestown (Merrell 2006, 268-9; Axtell 1997, 66; Richter 2001, 41-3). By 1700, this had changed. Rather than high-status ornaments symbolising ties with exotic exchange partners, European goods had become essential everyday objects. Guns, knives and cloth were now in far greater demand than copper ornaments or beads. Hall (2009, 2) argues that "the gifts that had once tied a few leaders together with bonds of reciprocity and mutual obligation had apparently given way to commodities which bound many men and women in relations of prices and profits." Nevertheless, the power of the gift was not dead, and trade and exchange was not merely a mechanism through which indigenous groups were drawn into the webs of Empire, but also a vehicle for indigenous influence (Hall 2009, 9).

Whilst the so-called 'Indian trade' has frequently been constructed as the dependency of a technologically inferior society on a technologically superior one, with indigenous groups becoming 'addicted' to European goods (Merrell 2003; Morris 1999, 148) the reality involved a reciprocal dependency. Trade and alliances were mutually beneficial in both economic (e.g. Jennings 1975, 98-9) and military terms. In the early 1700s, there was competition for indigenous trade between colonial powers (the French, Spanish and British), and even between British colonies: Virginia and the Carolinas. This demand for exchange partners allowed indigenous groups to influence the course of imperial expansion in the Southeast and beyond.

Just as European traders expected local people to conform to their economic expectations, accepting credit and paying debts, so indigenous groups compelled Europeans to understand their practices of diplomatic gift-giving. Each year, colonies spent a small fortune on gifts to their trading partners and military allies. Even after European goods had become commonplace, trade and exchange remained a means through which indigenous groups wove European colonists into their own webs of social relationships.

Morris (1999) describes the role played by European traders in indigenous communities. From the earliest colonial period in the Southeast, trade was bound up with diplomacy, and in the early 1700s fur traders were the primary 'diplomats' of the colonial regime. Unregulated and unfair trading practices caused a great deal of friction. Traders frequently offered levels of credit so high that the spiralling cycle of debt eventually led many indigenous groups to cede land to European colonies as payment (Morris 1999, 94, 142). Demand for bonded labour in the British colonies distorted existing notions of slavery, causing increased intertribal conflict as groups began to undertake commercial slaving expeditions (Hall 2009,118; Perdue 1979, 19). All of these problems were exacerbated by rising numbers of traders, leading to increasingly cut-throat competition. In 1715, these problems came to a head with the outbreak of the Yamasee War (Morris 1999, 81; Hall 2009, 11). The revolt lasted for three years, during which a new multiethnic and multilingual indigenous power bloc emerged, called 'Creeks' by the Carolinians. The indigenous groups in this alliance revived older patterns of gift exchange to forge a collective identity whilst protecting their autonomy (Hall 2009, 8).

In the aftermath of the uprising, groups such as the Cherokees, Chickasaws and Creeks drew on traditional strategies of courting multiple allies and protectors to gain leverage with all three colonial powers (British, French and Spanish). In November 1715, the Cherokees successfully negotiated favourable fixed trade prices and a steady flow of gifts from the Carolinian colonies. Carolinian agent Joseph Boone bemoaned that "by their demands (with which we were forced to comply) [they] made us their Tributaries" (Joseph Boone to Board of Trade, London, April 25th, 1717: Sainsbury 1890, 7:15). In 1717 the Chickasaws secured assurances that the same fixed prices would also apply to them, despite the fact that traders had to travel further to reach Cherokee lands. Social relationships, rather than economic concerns, were once again paramount: the Cherokees and Chickasaws were both British allies, and "prices would mark the equivalence of friendship rather than costs of transport" (Hall 2009, 127). The new agreements pacified a trade that for over half a century had been violent and unpredictable, underpinned by commercial slave-raids.

The Creeks, Cherokees and Chickasaws harnessed the multilateral relations of the colonial Southeast so well that the Carolinians responded by reorganizing to take a more consolidated 'British' approach. Whereas previously each colony had acted independently, colonies now came to rely on each other for support, functioning as states in a growing British Empire. Ironically, the Creeks' attempts to defend their autonomy ultimately reinforced the power and authority of the British colonies. These previously factionalised groups united to form a recognisably British empire with a distinct, shared identity and policy. In turn, the British intentionally used trade and diplomacy as tools to promote centralised authority among the Creeks, since it was easier for the colonies to deal with discrete power blocs than fluid and shifting alliances. A unified Creek nation, beholden to the British in Charles Town for their supplies of European tools, cloth, weapons and ammunition, would also be a powerful deterrent to French and Spanish advances.

Whitehead (1992) argued that warfare plays an important role in the coalescence of 'tribal' polities on the edge of a larger empire, but it seems that during more peaceful times other mechanisms such as trade agreements and diplomatic gifts could be deployed to similar effect. Nevertheless, British attempts to create a more unified and Eurocentric Southeast were largely unsuccessful, in part because of the ongoing presence of the French and Spanish in the region. The British were forced to deal with indigenous leaders on a local level, continually negotiating complex multilateral relationships.

Lavish demonstrations of generosity and gift-giving took place at 'conferences' between European groups and their indigenous allies. These occasions were often associated with securing military assistance, or maintaining friendly relations in an aggressively competitive environment, where access to trade goods was everything. By 1750, these elaborate demonstrations of allegiance were costing the French 50,000 livres a year (Morris 1999, 111). The British fared little better. Between 1716 and 1736, the Carolinian government was compelled to increase the proportion of their annual budget allocated to gift diplomacy from 4% to 7% (Mancall et al. 2005, 304). As part of an attempt to regulate trade in the 1750s, Thomas Boone, then governor of South Carolina, wanted to ban these costly 'conferences' (Morris 1999, 88, 129) but it was not possible for the British to extricate themselves from the cycle of diplomatic gift-giving, any more than it was possible for indigenous fur trappers to escape the cycle of credit and debt through which they acquired European goods.

International competition for indigenous allies intensified during the intercolonial wars, culminating in the French and Indian war (1754-1763), as Britain and France fought for control of their North American colonies. While local troops did not guarantee victory, their support was occasionally critical. Indigenous groups often sided with the Europeans they deemed the most powerful, but they also chose their allies based on trade agreements, using the language of trade and diplomacy to manipulate their European partners. In April 1751, a group of Cherokees informed the governor of South Carolina, James Glen, that they would continue to fight the French on behalf of their British allies "while we have any ammunition to go to war with, which we are at present very short of" (McDowell 1958, 64). The Cherokees, in other words, would support the British only so long as they were kept plentifully supplied with trade goods. In November 1756, a British Captain, Raymond Demeré, wrote to South Carolina's new Governor Lyttelton with a plea to offer a more favourable trade agreement to the Tellico, a powerful Cherokee group, in the hope of keeping them loyal to the British. Demeré was concerned that "Indians are a comodity that are to be bought and sold and the French will bid very high for them.... on this occasion if we don't bid as high we shall [absolutely] lose them" (McDowell and William 1970, 249).

Demeré was not the only colonial officer to have such concerns, and the war with France had two main outcomes in terms of British trade and diplomacy. Firstly, in 1755 the entire British trade system was overhauled. Exploitative traders were a dangerous liability that could cost the loyalty of British allies, whom the French were encouraging to attack the British (Morris 1999, 116-9, 123-4). In order to regulate the 'Indian trade' more effectively, Britain's North American colonies were divided into two districts, each given a 'superintendent of Indian affairs', who reported directly to colonial authorities in London. In the South the superintendant was Edmund Atkin until his death in 1762 when John Stuart took the position, holding it until his own death in 1779 (Morris 1999, 99). Stuart's rules (Morris 1999, 137) included a ban on the sale of liquor, rifles and ammunition. He also introduced sales and credit limits and imposed a uniform set of weights and measures and a list of fixed prices to prevent competition between traders and subsequent bad feeling from groups who felt they had been offered a poor deal.

Secondly, British expenditure on diplomatic gifts increased. Indigenous communities maintained the power to force European administrators to engage in gift-diplomacy, accompanying treaties and alliances with presents. Old Hop, a Cherokee leader, informed Captain Demeré in 1757 that he suspected that "[Demeré] would tell him Lyes, ... [because] he had for a long Time expected Somethings would be sent him from Charles Town, but that he saw Nothing come but Letters. He expected to receive Presents as a Token that the Cherokees were as Children to King George" (Captain Raymond Demeré to Governor Lyttelton, 1st April 1757, McDowell and William 1970, 359). New technologies of diplomacy such as wampum, peace medals, and the calumet ceremony developed partly in response to a need for high-status gifts to reinforce treaties and agreements, and to emphasise the authority of leaders and their roles within cross-cultural alliances.

3.3.2 'A strong inclination for a great medal': Peace medals

After the Yamasee War, British forts became a common feature in the backcountry beyond European settlements, especially in contested areas. In 1717, a veteran soldier called John Barnwell was despatched by the Carolinian government to petition the Board of Trade in London (who oversaw colonial policy) to fortify the southern frontier (McDowell 1955, 248-9). Barnwell's petition also included a request for the Board to authorise the distribution of British medals among the indigenous elite in Carolina. These medals would have symbolised the ties of these groups not just to Carolina, but to the British Empire, weaving a previously decentralised system of trade and exchange into wider imperial policy. This was a means of subverting existing systems of prestige exchange to favour the British. Hall argues that "by introducing medals into old exchange relations, Carolinians hoped they might foster the hierarchies that would bind Creek followers to their leaders and Creek leaders to Carolinian interests" (Hall 2009, 135). Peace medals soon became a currency of power in the colonial Southeast, a means through which British authorities were able to intervene in indigenous hierarchies (Hall 2009, 140-1).

Peace medals were issued by various different groups, including the colonial authorities themselves and trading companies such as the Hudson Bay company (Belden 1966; Laws 2005; Prucha 1994). The earliest medals, in the late seventeenth century, were commemorative European issues, not originally intended for use in indigenous diplomacy, but peace medals proved so useful that in the eighteenth century medals began to be designed and issued by the British, French and Spanish specifically for presentation to indigenous elites in the American colonies (Adams 1999; Prucha 1994; Le Roux 1892; Mickelson 1973). Unofficial British peace medals, with the portrait of the King on one side and symbols of peace and indigenous life on the reverse, were produced from 1714 onwards (Quarcoopome 1987; Stahl 1991). It may have been these medals that Barnwell had in mind when he approached the Board of Trade. During this period, medals were commissioned by traders or colonial agents on an ad hoc basis to meet the demands of particular situations (Quarcoopome 1987, 10) but, from the reign of King George III, official British peace medals endorsed by the King were produced at the Royal mint. During times of conflict and uncertainty, when it was important to placate indigenous allies, investment in peace medals was at its peak (Adams 1999).

Peace medals gradually developed from an incidental accompaniment to important treaty events to an integral part of diplomatic policy. Medals became a means of creating diplomatic leverage, and a mechanism through which colonial officials sought to interfere in indigenous hierarchies, creating new positions of power and installing chiefs loyal to the British crown. To this end, British introduced the concept of 'Great Medal Chiefs,' a powerful leadership role which effectively created a new tier of power and authority in local indigenous hierarchies, which the British were able to manipulate.

In the Great Lakes region, White (1991, 35-40) has argued for the existence of an alliance hierarchy which existed in parallel to (and independent from) French and indigenous leadership structures. It was possible for an individual to hold a position of power in the alliance which was quite different to the level of authority which they wielded in their own society. In the seventeenth and eighteenth centuries, "[Although] there was no more an office of chief in Algonquian societies than there was in French society... the word *chief* came to refer to both Algonquians and Frenchmen. Alliance chiefs were people who represented their society to outsiders. They mediated disputes among allies and acted to focus the military power of the alliance against outside enemies. Any man who performed such tasks, no matter what political or social position he held within his own society, was an alliance chief" (White 1991, 37-9). A similar argument can be made in the case of great medal chiefs in both English and French alliances in the colonial Southeast, where new positions of power were created in both European and indigenous communities.

This is particularly apparent in one interaction between John Stuart and an indigenous leader of the Creeks, known as 'the Mortar'. After the end of the French and Indian War, Stuart had successfully secured allegiance and land cessions from the Cherokees and Choctaw, as we saw at the beginning of this section. However, the Mortar was proving recalcitrant, so Stuart decided to use a new tactic. At a conference at Pensacola in Florida, later in 1765, he received the Mortar with full ceremony, adding a rather unusual element of surprise:

> "The first time he visited me, I received him with the French commissions, medals and gorgets given up by the Choctaws strewed under my feet and chair; they soon attracted his attention; he seemed struck by the sight and formed conceptions of our influence with that nation superior to any I could otherwise have conveyed to him which contributed greatly to facilitate our negotiations." (John Stuart in a report to General Thomas Gage, August 6th 1765, see Corkran 1976, 248-9)

Stuart, greeting the Mortar seated atop a pile of gorgets and medals, like a dragon guarding his hoard, was every inch the performer. The Mortar had consistently refused to accept a medal from the French, but Stuart carefully persuaded him to see the British medals as a symbol of power, honour and authority. He emphasised the prestige accorded to 'great medal chiefs' – an office conferred by the gift of a suitable medal from a French or British official. Stuart initially feigned reluctance to award the Mortar such an honour, but eventually 'allowed' himself to be persuaded.

> "I was minute in explaining the privileges and power conferred upon medal chiefs which seemed extremely agreeable to him, and although I could perceive that he had a strong inclination for a great medal, yet I allowed myself to be solicited many days before I consented to confer one upon him." (John Stuart in a report to General Thomas Gage, August 6th 1765, see Corkran 1976, 248-9)

Creating such a position for the Mortar was at once a show of generosity and friendship, and also a stark reminder of the power of the British to interfere in indigenous affairs. Such deft manipulation was only possible because by now these leaders shared a common language of power, articulated largely in terms of trade and diplomacy. Both Stuart and the Mortar held previously unprecedented leadership roles in their own societies, which had evolved through the unfurling of the colonial encounter. Peace medals, too, were not merely European objects, but were the result of a long history of interaction between indigenous groups and colonial powers, and the creation of a new alliance hierarchy which cut across traditional categories.

3.3.3 'The white string denotes friendship': Wampum

Colonial period North America also saw the development of other technologies of exchange and diplomacy, including wampum. Wampum (black and white marine shell beads, sometimes fashioned into belts) had origins even older than those of peace medals, beginning in the north (Beauchamp 1880; Speck 1919; Snyderman 1954; Snyder 1999; Ceci 1990). Wampum was essentially a spiritual material in indigenous cosmology, but Europeans, who used it to articulate early fur trade exchanges in the northern colonies, understood wampum in terms of its exchange value, equating it with money Murray (2000, 121). Wampum even served as a general currency in New England until 1662, facilitating exchanges between Europeans as well as transactions involving indigenous groups. Despite European attempts to promote currency-based exchanges, they never succeeded in reducing wampum to a single 'financial' unit of value. In fact, wampum evolved into a complex ceremonial and diplomatic language that facilitated social relationships more readily than mere financial transactions.

The significance of wampum in the colonial economy was largely due to its ability to transcend conceptual categories and embody a range of different functions and values, taking on new meanings and roles in each new set of contexts. Wampum functioned as currency, as contract, as ceremonial gift, as religious symbol, ornament or insignia, and even as a mnemonic system in the case of the more elaborate wampum belts (Murray 2000, 139-40; Foster 1985). These functions were not in a stable opposition, but rather the meaning of the material was being constantly redefined. Murray argues: "the [wampum] belt... is therefore an intermediary, an object of value in exchange and *by* exchange, and also a mnemonic record. It can also be transformed, literally broken up and reassembled to mean something else, as the individual elements are recombined" (Murray 2000, 130).

This transformative potential is highlighted by one particular object: a coat of wampum owned by the chief of the Wampanoag Indians in the mid seventeenth century, known to the English as 'King Philip' (Speck 1919, 63). This use of wampum as high status ornament was common, but more unusual here was the way in which King Philip actively exploited the potential for wampum to be 'broken up and reassembled' into a new form. When Philip needed to call on the support of other chiefs in the region, he cut up the coat, and distributed the pieces to leaders to the east and south (Murray 2000, 127). This created a personal tie between giver and recipient, since the fragments of the coat were not entirely alienable objects, but the wampum itself also constituted both a message (an offer of alliance), and in a sense payment for the military assistance requested. The significance of this object is considered in more detail below. Such ambiguous, fluid, and innovative uses of wampum were not restricted to indigenous communities. Jesuit missionaries, for example, used wampum to recruit new converts, and to certify the truth of their biblical teachings (Thwaites 1896-1901, 10: 27-29, 12:247).

The complex uses of wampum in commodity exchanges and negotiating political alliances had longest to develop in the colonial Northeast, home to indigenous groups such as the Iroquois Confederacy, and their European allies and enemies (e.g. Jennings 1985; Lewis 1990). Wampum was one of the means through which a stable 'middle ground' was able to evolve between these groups (White 1991). All parties needed not just to learn but to actively create a new language of exchange and diplomacy in which they could communicate. Whilst inevitably diplomatic measures often broke down, leading to violence and coercion, the elegant and complex ceremonies which evolved as a way for European and indigenous groups to interact are one example of a mutually creative response to the colonial encounter. Wampum beads could be given as political gifts in their own right, but more commonly they were worked into beaded belts which embodied specific meanings and were used to carry messages between groups. From the late seventeenth century onwards, Europeans were being forced to grapple with the concept of wampum belts in their diplomatic dealings with northern groups such as the Iroquois (Foster 1985, 100).

The ceremonies for the exchange of wampum belts were frequently highly choreographed symbolic encounters combining elements of both European and indigenous diplomacy (Shannon 2008, 78-102). Wampum belts of different colours and designs carried different messages, for example a black or purple belt might signify the threat of war, whilst a white belt, particularly if it included positive imagery such as an image of a peace pipe, or 'calumet,' was an offering of peace and friendship (see e.g. Speck 1919, 37-8). It was not only indigenous groups that contributed to the expanding lexicon of symbolism and metaphor employed in the belts themselves and the ceremonies which accompanied their 'reading' and exchange. Beauchamp (1880, 395) reports that William Johnson, Superintendent of Indian Affairs for Britain's northern colonies 1756-74, "used both strings and belts with a lavish hand, multiplied emblems and ceremonies, and gave precision to many that were indefinite before."

The use of wampum in diplomacy proved so useful to both sides that it spread well beyond the Northeast. Wampum and wampum belts "in the Manner of the Northward" (Talk of Canneecatee of Chote and others, April 22nd, 1752, McDowell 1958, 254) began to be used in diplomacy in the Southeast from at least the 1750s.

Captain Demeré played a key role in the spread of wampum belts to the Southeast. On the frontlines of this diplomacy, Demeré appears to have quickly developed a working knowledge of the conventions, which he was sometimes at pains to impart to his superiors. On one occasion, having been asked to present a wampum belt to the Tellico during a particularly delicate negotiation, Demeré informed Governor Lyttelton that "if it be agreeable to them I shall forward your Excellency's Letter with the Belt of Wampum. I shall be obliged to purchase some white wampum to send, as a Belt of black Wampum without any white mixed with it signifies War and not Peace" (Captain Raymond Demeré to Governor Lyttelton 13th Oct 1756, McDowell and William 1970, 218).

Messages could also be more complex, and interwoven with other evolving diplomatic technologies, such as the calumet ceremony. Demeré reported to Lyttelton after one of the Mankiller of Tellico's visits:

> "The Mankiller hereupon took out of a Bagg a Piece of Tobacco, and sayed that the Head Man of the Oakechois had sent it to Old Hop and the English Warrior to smoak together. At the same Time he delivered a small String of white Wampom which came from the Oakechois Warrior (aforesaid) [which] was interpreted that he hoped he now knew the steight and clear Path, and that he was like a great Oake in the Town of Chota that would not be bent by the gentle Gales of Wind, and hoped that he would not be byased by any Talks as he now knew the streight Path. When the Mankiller of Tellico took out the white Wampom aforesaid, I perceived that he had tied up in the same Bundle several Strings of black Beads as a Signall of Warr from the French" (Captain Raymond Demeré to Governor Lyttelton, 8th Dec 1756, McDowell and William 1970, 263).

A knowledgeable speaker to interpret the wampum 'talk' was essential. Demeré himself often performed this function for the British, but he was occasionally forced to delegate. "Mr. Kelly," wrote Demeré less than two months later:

> "I have wrote a Letter to the Mankiller of Great Tellico. You are to see that [it] be interpreted to him in the best Manner. You are also to be cautious with regard to the Wampum inclosed, and to let him know that the white String denotes Friendship between the Cherrockees and us, and that every Thing is streight and clear between me and the Mankiller. You are to tell him that the black Wampum

relates to the French whom we expect he will strike immediately" (Captain Raymond Demeré to John Kelly, 26th Jan 1757, McDowell and William 1970, 329)

In the end, a willingness to engage with emerging technologies of diplomacy such as wampum and peace medals contributed to the British victory in 1763, when the French withdrew from the lands they had previously controlled east of the Mississippi.

The immediate aftermath of the French and Indian War was an expensive time for the British government: four or five thousand pounds worth of presents were ordered to be distributed at a conference held in Georgia in 1763 to cement British ties with the Upper and Lower Creeks and Choctaws, and prevent them defecting back to the French (Morris 1999, 135). This was an unprecedented level of expenditure: later that decade, Stuart's budget would allow for a maximum of three thousand pounds per annum to spend on such gifts (Morris 1999, 140). The French were notoriously generous to their indigenous supporters, and the British were concerned about whether it would be possible to wean these former French allies off the large gifts to which they had grown accustomed (Gold 1969, 177-8). There were certainly difficulties in persuading some groups to part with their French medals and commissions, as John Stuart experienced in 1765 at Mobile, but subsequently turned to his advantage in his meeting with the Mortar.

John Stuart's letters, and the records of the South Carolina colony, particularly Demeré's letters, show the ways in which emerging technologies of exchange - peace medals, wampum and the calumet - spread and evolved through a combination of indigenous and European action and most particularly through the interaction of these groups. The records clearly show colonial administrators' attempts to understand wampum as a means of communication and a diplomatic tool, which they implemented alongside the use of British peace medals and also the calumet peace pipe ceremony. As well as the interaction of these different technologies, in these records and letters we can hear the voices of both groups as they learned how to articulate their needs and desires in the emerging languages of diplomacy. There is evidence of change, compromise and improvisation on all sides, and signs that gifts and diplomatic overtures were capable of being read in different ways, with objects such as wampum belts being particularly flexible. This mutability of objects allowed the transfer and translation of complex ideas across two cultures. Nevertheless, the balance of power gradually shifted in favour of the European colonists, although Euroamericans did not rid themselves of the burden of gifts and diplomacy for generations after the end of the French and Indian War (e.g. Morris 1999, 148). Just as indigenous groups had become dependent on European trade goods, so Europeans had become irrevocably woven into indigenous social networks of generosity and diplomacy.

3.4 Wahunsenacawh's crown and King Philip's coat

The argument presented here for the development of new languages of exchange and diplomacy in colonial North America can be understood through the juxtaposition of two very different objects: Wahunsenacawh's crown and King Phillip's coat. Both of these played an important role in a small aspect of the wider colonial drama, being used in the negotiation and creation of new forms of alliance. Beyond this similarity however, their differences highlight the changes which took place in the half century which separated their creation.

Wahunsenacawh's crown was a European-made object designed to appeal to indigenous tastes, made of the coveted copper which had proved so valuable as a trading material at Jamestown. It was a unique object, presumably manufactured as a one-off piece, designed to meet the exigencies of a particular situation. Captain Newport bestowed the crown on Wahunsenacawh as a symbol both of his authority over his subjects, and as a way of incorporating him into the hierarchical structure of the English empire as an indigenous vassal of King James. The format of the coronation ceremony was also ostensibly English. However, in reality, the crown (and the coronation ceremony itself) was interpreted very differently by the two parties involved. Although the English devised the idea of a coronation, the event itself took place in Wahunsenacawh's home town of Werowocomoco, suggesting that Wahunsenacawh received the gifts presented to him not as evidence of his subjugation, but as tribute from the colonists. By this point, from an indigenous perspective, the community at Jamestown had been incorporated into the Powhatan chiefdom as a subordinate group, with John Smith as a junior Anglo-Powhatan werowance. Certainly, Wahunsenacawh's words to Smith and his resolute refusal to kneel to accept his crown suggest that he considered himself to be at least equal to, and probably in a position of power over, the English. The crown was subsequently appropriated into the indigenous ritual sphere, being kept at the temple complex at Orapaks and incorporated into the annual ceremony of planting Wahunsenacawh's corn. This at once celebrated and neutralised the 'otherness' of the crown, subsuming it into an existing indigenous system of valuable exotic objects which circulated in a prestige exchange sphere and embodied certain aspects of sacred power. Just as Wahunsenacawh's position of authority had been translated into English colonial terms, so Wahunsenacawh had translated both the English community and their gifts into an indigenous world-view. Whilst the crown and the other coronation gifts facilitated and mediated a particular encounter, they created a curious disjuncture in English and Powhatan understandings.

King Philip's coat, also an item of clothing or adornment owned by an indigenous ruler, albeit over half a century later, was in many ways the opposite of Wahunsenacawh's crown. The coat (itself most likely of indigenous construction) was made of wampum beads which may have been of either indigenous or European manufacture, but would certainly have been produced in North America. King Philip's costume communicated a message of power and authority which was understood not only by his own people and neighbouring indigenous groups, but also by the European colonists. When King Philip needed to call on the assistance of other indigenous leaders during his revolt against the British, he fragmented the coat, sending sections of it as diplomatic gifts with his envoys. As the coat was transformed from a royal insignia to a series of diplomatic gifts and payments, the transition was clearly apparent to all parties. Rather than an ungainly translation, this represents an eloquent statement in a mutually intelligible and to an extent co-created language. This was an indigenous-made object, deployed in diplomacy between indigenous groups, but in a uniquely colonial situation. European expansion had shifted the balance of power, with European groups becoming increasingly dominant. King Philip responded to the use of force and coercion in an unbalanced political landscape by rallying troops of his own. Wampum, an indigenous material, had evolved as a medium of diplomacy because of European influence. European groups had promoted the production of wampum for use in the fur trade, and also created an unstable political situation which required the invention of new technologies of diplomacy. Wampum emerged in the space between European and indigenous communities, fulfilling the role that had previously been held by one-of-a-kind intercultural gifts such as Wahunsenacawh's crown, but emerging as a complex and mutually intelligible language of power. Whilst the significance of wampum was still unstable and contested in the mid-seventeenth century when King Philip's coat made its appearance, it continued to evolve into a fully-fledged (although always dynamic) system of value, created by the interaction of both indigenous and European influences and desires.

Trade and exchange was used by all groups in the colonial encounter in attempts to accommodate, assimilate and dominate the others. European trade goods were initially appropriated by indigenous communities into existing categories and spheres of interaction, with European groups and concepts being translated into the indigenous world-view just as the colonists sought to understand and incorporate indigenous communities in European terms. Later, as Europeans gained a military and political foothold on the eastern seaboard and trade goods became woven into indigenous life, the balance of power shifted, with Europeans increasingly able to dictate the terms of trade and alliance. Trade and diplomatic gifts became a means to create, negotiate, maintain and even manipulate others' identities, hierarchies and alliances, as well as conveying powerful messages about morality, sovereignty and status. This shift is apparent in the differences between John Smith's interactions with Wahunsenacawh and John Stuart's manipulation of the Mortar a century and a half later.

Later encounters were articulated through complex languages of diplomacy which emerged over the course of the colonial period, demonstrating the creative potential of all communities involved. Throughout the colonial period there was a complex interplay of indigenous and European ideas, ceremonies and systems of value. Although undoubtedly at times violent, coercive and destructive, this was also a period of experimentation, mediation and creativity; Euroamericans emerged dominant, but no group came out of the encounter unchanged.

3.5 Returning to Iron Age Britain

The North American colonial encounter, whilst embedded in its own particular contexts and conditions, can nevertheless inform the questions we ask when dealing Roman interaction with Iron Age communities in Britain.

The American evidence highlights the need to consider the encounter as two-way. Just as indigenous groups were incorporated into an expanding empire, so those same groups attempted (at least initially) to translate the colonists, and imported objects and concepts, into their own world-view. This may be apparent in the ways in which trade goods and diplomatic gifts are incorporated into the archaeological record. The deposition of a Roman cavalry helmet at an indigenous shrine at Hallaton perhaps suggests an ambiguous reaction to this object, just as the incorporation of Wahunsenacawh's coronation gifts into the religious sphere could be seen as both a way to honour these symbols of value and power, and a means to neutralise threatening objects by absorbing them into the indigenous ritual sphere. The role of creativity and experiment also emerges as highly important, with new forms of trade, exchange and diplomacy emerging as both sides sought to incorporate and control the other. In North America, this was clearly demonstrated in the role of gift diplomacy in both Virginia and the Southeast, and the development of increasingly nuanced shared technologies of exchange and diplomacy such as peace medals and wampum.

The following sections explore some of these factors in the colonial encounter between Iron Age Britain and Rome. I argue that just as new languages of exchange and diplomacy emerged in colonial North America, so the circulation of precious metals and the development of new coinage systems in Iron Age Britain may reflect the interaction of indigenous and Roman systems of value, creatively transformed into new social and political institutions which bridged the gulf between coloniser and colonised.

3.5.1: Coinage and precious metals in the Roman world

At the time of the annexation of Britannia, silver coinage had long been a means of exchange in Italy, with an established unit, the *denarius*, in place since c.200 BC. Roman victories in the second and first centuries BC ensured a flow of silver bullion from Greece and Spain. This gradually increased the availability of silver coinage in Italy, allowing it to become the predominant medium for everyday exchanges in Mediterranean cities (Harl 1996, Crawford 1974). Silver coins also emerged as a powerful symbolic system. Aristocratic iconography was used to assert political authority on early Republican silver, and silver coins were distributed to the public at festivals as a way for the elite to demonstrate their generosity and power.

Gold also entered the Roman treasuries from Greece, Spain and North Africa, but was generally cast as ingots rather than circulating as coins. Early Republican gold coins such as the Mars/Eagle issues, which accompanied the first *denarii* around 210 BC, were issued during upheaval in the currency system, and were probably never intended for widespread circulation (Crawford 1974). Imported Macedonian staters circulated as trade currency in the early years of the Republic, often used to pay mercenaries, but fell out of use by the mid-second century BC (Harl 1996, 39, 49). There was no standardised Roman gold coinage until the mid-first century BC. This was not due to shortages of gold: Harl (1996, 45) estimates that in 157 BC, 80% of the treasury reserves were held in the form of gold bullion. Harl (1996, 49) suggests that, "the Senate chose not to issue a gold currency, since Romans preferred silver for their coins and viewed gold as a regal metal better dedicated to the gods." Where necessary, payments were made in certified ingots, or Macedonian staters. The first Roman *aurei* were issued by Sulla c.90-80 BC during the Social Wars which marked the beginning of the end of the Republic. In defiance of Republican custom, these coins showed Sulla himself as 'Imperator.'

It is no coincidence that Sulla's prototype *aurei,* the first Roman gold coins in over a century, were issued at a time when concepts of power, hierarchy and authority were being reconfigured. These early *aurei* were short-lived. When Sulla stepped down, his restored Senate suspended the minting of gold coins. Nevertheless, Julius Caesar minted sizeable issues of gold *aurei* after his success in the Gallic War, around 50 BC, at the start of the civil wars which eventually destroyed the Republic. Caesar declared made a powerful statement about his newfound and unprecedented position of power and authority through the minting of the first truly standardised gold currency, which articulated with the *denarius*.

Sulla and Caesar began the process of releasing into circulation gold bullion and plate which had accumulated in private hands and temple reserves (Harl 1996, 45). Caesar also drew on gold booty from his Gallic conquests: at his triumph in 46 BC he displayed gold equivalent to 800,000 *aurei*, as well as silver to the value of over 400 million *denarii*. Suetonius (De vita Caesarum, I. 54) suggests that this inundation of gold bullion reduced the value of gold in Rome by a quarter.

This was the beginnings of Roman imperial currency. *Aurei* grew in popularity during Augustus' reign. Harl (1996, 53) suggests that these *aurei* succeeded because they echoed the design of the regal Macedonian staters which had been in sustained and widespread circulation for generations. However, it is unnecessary to look so far into the past for a model for the Roman *aureus*. The Macedonian staters were also the prototypes for Gallic, and ultimately British, Iron Age coins. It could equally be suggested that Sulla and Julius Caesar were drawing on the contemporary symbolism of gold in the Gallic (and British) world, and the close association of Iron Age gold coinage with the institution of kingship. It is certainly interesting that Roman gold coinage emerged as Rome came into a direct colonial relationship with the North-West provinces of Gaul and Britannia. Rather than Rome introducing a fully-fledged tri-metallic coinage system into passively recipient provinces, the Iron Age and Roman worlds were locked into a system of mutual negotiation and creation of value systems and new structures of hierarchy, power and authority.

3.5.2: Coinage and precious metals in the colonial encounter with Iron Age Britain

Table 3.3: Coinage in Britain's Pre-Dynastic Period (100 BC to c.50-20 BC)

Area	Coin types	Precious-metal sources	Precious-metal content	Design?	Use
North-East	Yellow-gold	Recycled Gallic/Southern British gold?	Yellow-spectrum (c.40-50% gold)	'Celtic'	Non-commercial
East Anglia	Yellow-gold	Recycled Gallic/Southern British gold?	Yellow-spectrum (c.20-50% gold)	'Celtic'	Non-commercial
West	Yellow-gold	Recycled Gallic/Southern British gold?	Yellow-spectrum (c.45% gold?)	'Celtic'	Non-commercial
South-West	Yellow-gold	Recycled Gallic/Southern British gold?	Yellow-spectrum (c.35-50% gold)	'Celtic'	Non-commercial
North Thames	Yellow-gold, potin	Recycled Gallic gold?	Yellow-spectrum (c.20-70% gold)	'Celtic'	Non-commercial
South Thames	Yellow-gold	Recycled Gallic gold?	Yellow-spectrum (c.30-70% gold)	'Celtic'	Non-commercial
South-East	Yellow-gold, potin	Recycled Gallic gold?	Yellow-spectrum (c.30-70% gold)	'Celtic'	Non-commercial
Northern Gaul	Yellow-gold, potin	Recycled Macedonian gold? Natural river gold	Yellow-spectrum (c.40-70% gold)	'Celtic'	Non-commercial
Rome	Silver, bronze (gold not established as standard issue until reign of Caesar c. 50 BC)	Wide variety of silver sources (indemnities, booty and Spanish mines)	No standardised gold coinage. Silver generally 'pure' bullion (c.98-99%)	Classical, inscribed	Non-commercial and commercial

Before 50 BC in Britain, several regions were importing Gallic gold and minting their own yellow-gold coinages (Table 3.3). This suggests a broadly shared discourse on the nature of coinage across much of Britain and Northern Gaul, although there were some regional variations in alloy and design. The period between 50 and 20 BC was an intermediary phase of upheaval in regional coinage systems, as the wider political landscape shifted and British communities were drawn into new social networks. After this period, during which the Southern and Eastern client kingdoms were established, we see a far greater regional diversity in coin production (Table 3.4), perhaps reflecting differential interaction with Rome, and Roman systems of value.

Table 3.4: Coinage in Britain's dynastic period (post-50-20 BC to mid 1st Century AD)

Area	Coin types	Precious-metal sources	Precious-metal content	Design	Uses
North-East	Red-gold, silver	Roman bullion?	Gold: 35-40% 'northern standard' Silver: 75-95%	'Celtic' (Inscribed after c.AD 20)	Non-commercial ?
East Anglia	Red-gold, silver	Roman bullion?	Gold: 35-40% 'northern standard' Silver: 90-40% (gradual debasement)	'Celtic', Inscribed/ Classical, inscribed (after c.AD 30)	Non-commercial ?
West	Red-gold, silver	Roman bullion or recycling of non-local issues	Gold: 40-50% 'southern standard' Silver: 90-20 % (gradual debasement)	'Celtic' (Inscribed after c.AD 10)	Non-commercial ?
South-West	Debased silver/ bronze	Unknown. Continued recycling of local issues?	Silver: 90-20 % (gradual debasement)	'Celtic'	Non-commercial ?
North Thames	Red-gold, silver, bronze	Roman bullion?	Gold: 40-50% 'southern standard' Silver: 98-99%	Classical, inscribed	Non-commercial and commercial ?
South Thames	Red-gold, silver	Roman bullion?	Gold: 40-50% 'southern standard' Silver: 98-99% 'Roman standard'	Classical, inscribed	Non-commercial and commercial ?
South-East	Red-gold, silver, bronze	Roman bullion?	Gold: 40-50% 'southern standard' Silver: 98-99% 'Roman standard'	Classical, inscribed	Non-commercial and commercial ?
Northern Gaul	Roman coins. Some local silver and bronze	Precious-metal coins mostly Roman issues	Gold: 98-99% Silver: 98-99% 'Roman standard'	'Celtic'/ Classical, inscribed (after c. 20 BC)	Non-commercial and commercial ?
Rome	Silver, bronze, gold	Gold: partly recycled Gallic coinage? Silver: variety of sources, including Spanish mines.	Both 'pure' bullion (though silver coinage began to be debased after the reign of Nero, c. AD 64)	Classical, inscriptions	Non-commercial and commercial

One attribute which united the majority of British coinage systems after 20 BC was the shift to red-gold alloys. This reflected a shared shift in metal source, production practices and attitudes to colour and value. Widespread use of bullion to produce British regional coinages suggests the existence of a prestige exchange network (or system of diplomatic gift-giving) involving the circulation of precious-metal bullion. This most likely reflects Roman subversion of an existing prestige exchange network of yellow-gold objects among Gallic and British elites (Northover 1992, Creighton 2000). Rome appears to have actively promoted and engaged in this network, providing gold bullion to client kingdoms from c.50–20 BC (chapter four).

Precious metals also circulated through prestige exchange networks in the form of symbolically powerful display objects, such as the Roman silver drinking vessels from the King Harry Lane cemetery (near Verulamium), and the Winchester torcs. While the torc is a 'Celtic' symbol rather than a classical one, the workmanship and high refined gold content of the Winchester torcs, which were deposited on a hilltop in Hampshire, suggest a Mediterranean origin. Creighton (2006a, 44) argues that these may have been imperial gifts "entirely appropriate to a returning British prince..., representing both northern European symbolism and Roman power and technology." Like Wahunsenacawh's crown, these objects may have been one-off diplomatic gifts, but it is clear that they fitted into a wider system involving the circulation of precious metals.

In some regions, the interaction between Iron Age and Roman systems of value remained at the level of 'translation'. Although exchanges of gold and silver bullion and objects perhaps facilitated diplomatic relationships or prestige exchanges over a wide area, the significance of these materials seems to have remained fluid and contextually dependent, capable of being read in different ways. In other regions, coinage emerged as a more complex shared symbolic language of power and value. This regional variation can be observed in distinctive local coinage systems which developed in the immediate pre-conquest period.

After c.20 BC, the North Thames and South-East regions engaged in the production of bronze, silver and gold coinage. This would have been broadly contemporary with the early Imperial bronze, silver and gold issues of Caesar and Augustus. The tri-metallic coinage system can be seen as emerging through a process of mutual engagement between Iron Age and Roman communities in North-West Europe in a politically fluid colonial context. Before the Roman world became closely entangled with the northern provinces of Gaul and Britannia, the use of gold coinage was restricted in Rome. During the second half of the first century BC, the politics of power was being re-invented in both Rome and southern Britain. The increased importance of gold in Roman coinage after this date could reflect the role of gold coinage in forging clientage networks in the Northern provinces, revealing the 'Roman' tri-metallic coinage system as a newly created exchange technology, emerging out of the colonial encounter. Just as the use of silver and bronze coinages in conquered provinces could mirror Roman attitudes to value, so the revival of gold coinage in the Mediterranean world may reflect provincial influence on the symbolic centre of the Empire. In this corner of Britain, coinage thus became a language of power and value which articulated closely with the emerging Roman system.

Outside the North Thames and South-East, other British regions developed unique regional coin series by 20 BC: precious-metal-only coinages in the North-East, East-Anglia and South Thames, and an increasingly debased billon coinage in the South-West. The emergence of these regional systems with their shared and contrasting attributes may have developed through the interaction of Iron Age and Roman systems of value, but here the interaction perhaps remained at the level of 'translation', rather than the emergence of a shared and co-created language of value and power. There was no agreed 'right' way to produce coinage, but regional communities appear to have selectively and creatively adapted both earlier traditions and aspects of Roman value systems. Bullion-content shows distinct 'northern' and 'southern' gold standards, and varied silver bullion contents (from a high purity 'Roman' standard in the client kingdoms to controlled or pronounced debasement in outlying regions). In some regions, silver was the preferred metal for coinage, while in others (particularly the client kingdoms) gold predominated. The precise combination of these elements was unique in each region, most likely reflecting varied attitudes to value and exchange, differences in the social functions of coinage, and local access to precious metals. Regional systems were also dynamic; for example I argued in chapter two that later inscribed coin production in the East Midlands came more closely in line with the centralised dynastic mints.

Just as copper was a prestigious material in early colonial Virginia, so gold and silver appear to have been highly valued in Iron Age Britain, being used to make ornaments for conspicuous display, being imitated and being incorporated into the religious sphere as offerings. Just as copper gorgets and ornaments circulated through high status spheres of exchange in Virginia, so gold and silver in the form of torcs, brooches and coins are likely to have circulated in Iron Age Britain, perhaps as a way of marking status, or making and maintaining alliances and loyalties. Offering a reliable alternative access route to such a powerful symbolic materials could have played a vital role in Roman diplomacy. Moving away from traditional core-periphery models, we should explore the possibility that indigenous groups further north may have sought their own direct relationships to the Roman world. The high-purity of the North-Eastern silver coinage and the presence of high-status centres with large quantities of continental imports along the Humber and at Stanwick in North Yorkshire all argue for the possibility of local groups dealing with Rome on an independent basis. We should also consider the role played by existing indigenous exchange networks and power politics, and how relationships between indigenous groups could have been transformed through Roman intervention. Treaties with Rome could have had a profound impact on the relationships between competing Iron Age polities, for example if groups in north-central Britain had previously been forced to source their imported goods and precious metals through their southern neighbours. The role of access to precious metals in regional power politics is explored further in chapter five. The suggestion that the silver-gilded cavalry helmet from Hallaton, with its spare cheek-piece sets, might have been a diplomatic gift is even more tantalising in this context. What a potent message this object would have sent, drawing on the symbolism of a valuable and powerful material, silver, but showing (on at least one of the sets of cheek pieces) the image of a Roman Emperor trampling a barbarian underfoot. Truly a double-edged gift.

In early colonial Virginia, the inundation of copper appears to have quickly resulted in the devaluation of this material and the undermining of indigenous hierarchies based on control of prestige objects. Here, English settlers offered copper in exchange for food and other widely available materials, and the indigenous elite were unable to maintain their monopoly over this once restricted sacred material. However, this pattern was not repeated in all European colonial encounters. For example, in seventeenth century Cuba, the influx of European brass reinforced existing hierarchies because indigenous elites were able to keep control of local supplies of gold, for which brass was exchanged (Cooper et al. 2008).

In some instances Roman officials almost certainly intervened in indigenous social hierarchies using gifts and diplomacy to elevate co-operative rulers, but the question of whether Roman trade goods in Britain reinforced or challenged existing hierarchies remains open to debate. Control of resources and who had access to these materials are key questions which need to be explored. In southern England, the 'inundations' of Roman bullion do not appear to have had the same effect on the value of these materials as the inundation of copper in Virginia. This suggests that the restricted circulation of these materials was maintained by Rome, most likely as a deliberate diplomatic strategy to support their own appointed rulers in the south.

However, as seen above, there was regional variation in the indigenous response in Iron Age Britain. In the next chapter, I argue that the immediate post-conquest period did see a devaluation of gold (and perhaps silver) in the East Midlands. Ostentatious ornaments are absent in the early Roman period (though tinned brooches and gold rings are not uncommon), and significantly there is an abrupt post-Conquest hiatus in hoarding evidence. An inundation of Roman bullion might naturally have led to such a decline if it sufficiently distorted the social value of precious metals in Iron Age communities in this region. The introduction of Roman coinage may also have been a key cause. Locally produced Iron Age coins may have emphasised the power of individual local leaders, and their access to precious metal resources and the services of skilled metalworkers, whilst imported Roman coins may not have held the same associations of loyalty, politics and power. These aspects of North-Eastern Iron Age coinage were unique, and could not survive translation into the medium of Roman coinage.

In the North Thames region, local indigenous coinage already articulated closely with Roman issues, and the tri-metallic system to an extent represented a shared language of value and power. In the chapter which follows I argue that, because of this, the introduction of Roman coinage was more easily accepted in the North Thames region, and marked less of a drastic shift in the use of coins. The different responses to Roman coinage in the North Thames and East Midlands suggest that Iron Age traditions continued to shape attitudes to institutions like coinage long after the annexation of Britannia was complete.

Chapter 4:
The social aspects of coinage and precious metal circulation

In this chapter, I propose a new approach to Iron Age coinage, focusing on the social role of coins. I explore the mechanisms through which coin production technologies were disseminated, the flow of bullion through social networks, and the role of coinage in social processes of co-operation, competition and establishing authority.

4.1 Why mint coins?

Imported Gallo-Belgic C gold stater (6.45g)
Minted in Gaul in the late second or early first century BC

British A gold stater (6.5g)
Minted in southern England in the early first century BC

Figure 4.1: Gallo-Belgic C and British A staters

I suggested in Chapter three that the production of yellow-gold staters in the earlier first century BC was perhaps the only time during which there was a shared discourse on the nature of coinage in Iron Age Britain. These early issues were based on existing continental imports. The first coins imported into Britain in significant numbers were Gallo-Belgic A and B. These appear in the second century BC, following third century Picardy gold imports in the south-east. During the early to mid-first century BC, Gallo-Belgic C, D and E entered Britain in large quantities (e.g. Creighton 2000, figure 2.3; Sills 2003). These imported coins were the metal source for the first insular gold issues (Cowell 1992, Northover 1992). Local production is often treated as a logical progression from the circulation of imports, but in fact the reasons from this development are far from clear (Collis 1971).

Figure 4.1 shows a Gallo-Belgic C gold stater, minted in Gaul in the late second or early first century BC, and its 'British A' counterpart, for which Gallo-Belgic C appears to have provided both the stylistic influence and the raw material (Northover 1992). Coin production was not a simple process, and in this case the resulting product would not by itself have justified the investment of labour and resources. Our models of Late Iron Age coin production must be able to explain the great lengths to which people went to transform small metal discs into incredibly similar objects of equivalent weight, effectively copies of the original coins. The answer may lie in the process itself. Status and authority were asserted, displayed, and perhaps even created by presiding over the striking of an issue of coins. This act would have reinforced the ability of individuals and communities to source large quantities of precious metals (most likely through engagement in prestige exchange networks with neighbouring groups) as well as demonstrating access to the knowledge, labour and resources necessary to transform this raw material into a new batch of local coinage.

4.2 Reframing our approach to coinage

To pursue this model, I propose an approach which moves away from static typologies and regional distributions to focus on the social aspects of coinage. This introductory section develops the technological model put forward in chapter two by considering:

- **The social role of coin production** (including the social organisation of production, and how this relates to power and authority)

- **Transfer of knowledge** (how knowledge of coin production techniques was made mobile, and the social networks through which knowledge moved)
- **Flows of materials through social networks** (the social networks in which coin-producing communities were enmeshed and how this is reflected in precious-metal sources)

These aspects of coin-use and production are explored through a comparison of the social role of hoarding across the East Midlands and the North Thames region.

4.2.1 The social role of coin production

In chapter two, I showed that precious metal coin production can be divided into six stages:

1. Design and die production
2. Mixing the alloy
3. Making the pellets
4. Flattening the pellets into coin flans
5. Striking the blanks
6. Check, repeat and recycle

The production of an issue of coins was a large and complex undertaking which demonstrated the ability of individuals or communities to access a large pool of:

- Labour
- Resources (e.g. charcoal)
- Knowledge (e.g. metalworking techniques)
- Raw materials (primarily precious metals)

Production would have involved specialist metalworkers, and also the wider community. Specialists would have undertaken stages 1, 2, 3 and 6, such as mixing and measuring out the alloys and checking the finished coins. These were more highly-skilled (and possibly socially restricted) tasks than hammering and striking the flans. The labour-intensive stages 4 and 5 would have required expertise to set up, but also larger numbers of people (some of whom would not have needed any specialist knowledge or skills) grouped into separate teams for each stage. From estimates of production capacity based on experimental coin production (chapter two), it seems possible that mints were not operating stages 4 and 5 year-round. These more labour-intensive and less skill-based processes may have been the focus for communal activity during quiet times in the agricultural cycle, when more men, women and children would have been available to assist. Given the required investment of effort and resources, there must have been strong motivations for issuing coins, or the exertion of a considerable amount of power and authority.

Mints can play many roles. Modern mints are a service set up to facilitate currency-based exchange, but this was rarely if ever the case in the ancient world. It is commonly argued by Roman historians and numismatists (e.g. Crawford 1970; Harl 1996; Reece 2002) that, in the Roman world, the purpose of minting money was to make money. Roman mints served to increase the value of the metals in the treasury, rather than to provide a convenient mechanism for exchange. Whilst *denarii* had long been used for administrative purposes such as the payment of soldiers' wages (Crawford 1970, 1974), large scale minting of Roman copper-alloy coins was only established with Augustus, and the supply of these coins to the provinces was often limited.

In Roman and modern mints, the product was of primary importance, but this does not appear to be the case for Iron Age Britain. Most British coins, certainly most precious metal issues, were not 'small change' serving primarily as a medium for exchange (as in modern mints), nor did a minting event necessarily increase the number or value of coins in circulation (as in Roman mints). In Britain, the process of minting coins may have been more important than the end result. Minting coins was part of a *social process* of laying claim to power and authority. Through the transformative process of minting, a sense of investment and ownership was created. The individuals with the authority to direct the striking of an issue, and distribute the resulting coins, were not merely participating in a prestige exchange network: they were providing the foundations for a new set of exchanges, in which *they* had provided the social capital. Minting coins was an alchemy of sorts, transforming a set of materials gathered through engagement in external prestige exchange networks, and access to local labour and resources, into the foundations for a new form of power and authority.

In the Dynastic period, this system was subverted by Roman client kings in southern England to assert a new form of political power. Creighton (2000) explores how emerging dynasties used imagery taken from Augustus' creation of the Principate, in combination with Roman gifts of bullion, to create a new regional coinage. Here, it seems likely that minting coins was part of a closely controlled and extremely hierarchical power structure, centralised at specialist minting centres, under the patronage of a small elite (chapter two).

Coin production in the East Midlands was less centralised. The dispersed distribution of production evidence from the earliest periods in North Lincolnshire (c.60 BC–AD 20) suggests that stages 1-3, involving skilled craftworkers, may have occurred separately from stages 4-5. The evidence certainly confirms that the products of stages 1-3 were not so closely controlled as in the south. Whilst later evidence from Old Sleaford and Leicester is more comparable to the southern mints, even here there is variation, for example in the form of pellet trays used. This suggests a more fragmented system.

In the East Midlands, rather than using coinage to establish and represent a single centralised authority, people may have used the minting process to negotiate power relationships on a more local scale. Here, where coin issues were less standardised, it seems likely that the production of an issue of coinage was a community enterprise, sponsored by individuals or groups with access to prestige exchange networks and enough social influence to call on local labour and resources. Nevertheless, there was also a degree of co-operation in maintaining the system, seen in die links and shared technologies such as the universal shift from cold-working to hot-striking.

While coins may well have functioned as prestige objects, coin production undoubtedly drew on the labour and resources of whole communities. Sharples (2010) has argued that the collective labour needed to construct hillfort ramparts and other earthworks was instrumental in community cohesion in the earlier Iron Age. Perhaps it is time to extend such a model to Late Iron Age 'prestige' objects such as coins, particularly at the fringes of the coin-using zone. In the East Midlands, competition for power, status and prestige may have been an integral part of precious metal circulation, driving the cycles of exchange, accumulation, re-issuing and redistribution, lending a strong sense of community (and communal motivation) to the production of these high-status objects.

In both the North Thames region and the East Midlands, coinage became a theatre of value through which people were able to display their wealth and demonstrate their social connections. To understand this, we need to consider ways in which knowledge can be made mobile.

4.2.2 Transfer of Knowledge

At the start of the later Iron Age, gold had not been worked in southern Britain since the Bronze Age (Creighton 2000, 10; Bayley *et al*, 41), and silver was a new material, probably introduced in the early first century BC (Northover 1992, 255). The techniques for working with these materials had to be learned or re-invented. Struck coin production has no direct parallel in other metalworking traditions, such as iron smithing or casting copper-alloy objects (though this was not the case with cast potin coins, the first continental coins to be copied).

It is clear that people were quick to absorb or develop the techniques needed to work with precious metals. Even early coins were produced to a fairly high standard, and objects such as the Snettisham torcs show craftsmanship unparalleled in the classical world. Alex Brogden, a modern silversmith who examined the insular silver bowl from Hallaton suggested that the craftworker who produced it was in possession of a specialised toolkit and must have made comparable objects many times before. Iron Age metalworkers were not blindly experimenting with unknown techniques, but were skilled individuals successfully grappling with new materials and technologies, achieving astonishing results in a fairly short span of time.

Although there were regional and temporal differences in the techniques employed, the similarities in coin design and production across Britain and the near continent e.g. Gebhard *et al*. 1998; Sheers 2000) suggest that techniques were learned from distant or neighbouring groups rather than being independently re-invented in each region. To produce an issue of precious-metal coins it was also necessary to have access to the raw materials, which quite probably meant being enmeshed in existing coin-using social networks. It seems that knowledge and technological advances also moved through these networks.

In the East Midlands, knowledge transfer is implicated at three points: the beginnings of local (yellow-gold) coin production around 60-50 BC, the shift to red-gold and silver production around 20 BC, when new alloying techniques (involving the debasement of bullion) were introduced, and the shift to more centralised production and the introduction of hot-striking around AD 20. The mechanisms will not necessarily have been the same at each stage, and there is evidence for influence from different regions (Gallic influence in the earliest stages, and later contact with southern British groups).

According to a model put forward by Marilyn Strathern (2003) in relation to more modern innovations, there are three main ways for knowledge to move:

- **Objects.** Strathern (*ibid.*) argues that consumption can create 'communities' or 'circuits' of communication within which knowledge is carried by objects themselves. All objects contain information concerning their production, decipherable by those with the appropriate knowledge and skills. This is unlikely as a sole explanation in the case of coinage. With the possible exception of cast potin coins (the first to be recreated by British metalworkers), the coins alone do not contained enough detailed information to account for the overlap in production technologies, and it is reasonable to assume that access to associated paraphernalia such as flan trays would only be possible through a connection with someone who had used one of these objects, or seen one used.

- **People.** This covers mechanisms such as the movement of craftworkers. At some level, this must have occurred within and between communities in Britain and the near continent. Direct contact appears more-or-less essential to explain similarities in production techniques, as well as the quick uptake of coin production across much of southern England in the first century BC, when precious metals had not been worked for around 700 years. It is interesting to consider this in relation to the third option: projects.

- **Projects.** A large project brings people together to work on it, and those people form a community or network that can develop and refine existing technologies, and circulate that knowledge. Once the project is completed, those involved may move on (or return to their home communities) and disseminate and share that knowledge. Issuing a sizable batch of precious metal coins was a huge undertaking, requiring the involvement of a large number of people with varying degrees of skill. Such projects must have sometimes drawn on a labour pool which extended beyond the local area. Gallo-Belgic E, a continental type issued before and during the Gallic War, was produced in unprecedented quantities and occurs over an extremely wide area. It has been argued that large numbers of people were on the move in northern Europe at this time, facilitating contact (however indirect) between geographically distant communities. Projects such as the production of Gallo-Belgic E might have provided an opportunity for disseminating coin production techniques.

If British individuals were involved with continental minting projects, or projects in a region beyond their immediate community, they could have learned (and perhaps helped to refine and develop) minting techniques, and taken that knowledge home. It is perhaps no coincidence that coin production in the East Midlands, showing substantial influence from continental traditions and most likely using Gallic gold as a raw material, may have begun around the time of the Gallic War. This model seems inherently more plausible than one which requires the movement of (at the very least) several specialist, and presumably high status, continental craftworkers to distant areas of Britain. This may have occurred in later periods, particularly in the client kingdoms, but seems unlikely to have been the catalyst for early coin production in outlying regions.

Different levels of involvement in wider projects might also explain the regional variation which emerged after 20 BC. Around this time, communities in the East Midlands adopted the gold alloying process seen in southern Britain, and also the practice of producing silver coinage. Nevertheless, there are differences between these regional systems. In the southern client kingdoms, alloy standardisation and fineness were key factors in coin production. In the East Midlands, whilst the weight standard and visual properties of coinage were carefully maintained, silver alloys were less standardised than in the south, and gold was debased to a lower standard of fineness. The model of sharing knowledge through communal production events would explain the shared aspects production technologies, but also the absence of a single discourse on the nature of coinage, with each group adapting the production systems to reflect their own value systems and priorities.

The differences between southern and East Midlands coin production certainly make it unlikely that southern metalworkers were brought in to run northern mints. Even in the very last stage of North-Eastern coin production (when mints came more closely in line with the dynastic model and hot-striking and inscriptions were introduced), there is a variation in the production debris at North-Eastern mints, and a quick degeneration of inscriptions suggests limited literacy. Most likely, coin-producing groups in the East Midlands drew initially on Gallic technologies and were subsequently influenced by trends in southern Britain, but production techniques and systems of value were developed locally rather than imported wholesale.

In addition to technical knowledge, the spread of coin production will have depended on the dissemination of social and ritual knowledge. Ritual behaviours often accompany metallurgical technologies in non-modern societies (Budd and Taylor 1995, 139), and may well have been associated with the design and manufacture of coinage. Knowledge of the ritual aspects of coin production would have been as important as technological knowledge, and could have been spread through the same combination of movement of people and involvement in wider projects.

The desire to make coins also presupposes the existence of social rules concerning the use and function of coinage, which may have varied between regions. It is significant that all coin-producing regions appear to have imported coins for at least a brief period before beginning local production. Here coins came to fulfil particular social functions, perhaps being exchanged to establish new kinds of social relationship such as networks of alliance or clientage (Allen 1976, Nash 1981, Haselgrove 1987, Hill 2007). Not all areas which imported coinage went on to produce local issues, suggesting that in some cases this innovation (and perhaps the new forms of social relationship it entailed) was rejected (Collis 1971).

4.2.3 Flows of materials through social networks

Engagement with existing coin-using social networks was necessary not only to enable the dissemination of social and technological knowledge, but also for access to sources of precious metals. British gold and silver sources were not widely exploited until the Roman period (Bayley *et al.* 2008), although there is some evidence for earlier Iron Age gold mining at Dolucauthi in Wales (Burnham and Burnham 2005). Before 50 BC, imported Gallic gold provided the main raw material for coin production. This was almost certainly sourced through prestige exchange networks with Gallic communities, although imported objects probably also circulated extensively between British elites.

The composition of the red-gold alloy in use after 50 BC was distinctive, suggesting the use of imported bullion (chapter two). According to Northover, just as Gallic contacts provided the raw materials for early British gold, the logical source for the new red-gold alloy was the newly conquered province of 'Romanised Gaul' (Northover 1992, 249). This is indeed a possibility, but there are problems with this model. Although Northover suggests that the supply of refined rather than debased gold "[reflects] changed economic and political conditions for the tribe concerned after the Roman conquest of Gaul", there is evidence that gold was substantially drained from this region after Caesar's conquests, and that the province was otherwise left substantially alone until the Augustan re-organisation of the 20s BC, too late to explain the shift. Direct ties with Rome are suggested by the Augustan iconography of early dynastic issues, and Creighton (2000, 2006a) convincingly argues that gifts of refined gold were made directly from Rome to client kings in southern Britain, and this model was followed in chapter two.

Prior to the colour shift, gold alloys were deliberately mixed in such a way as to maintain a yellowish colour. The same colour could have been produced using refined gold, but it appears that red-gold became more desirable after the mid-first century BC. Along with the shift to more Classical imagery and the introduction of dynastic inscriptions, this suggests a desire to visually express the change in gold source (Creighton 2000, 37-41, 68-70). The decision to issue coins to a greater degree of standardisation and fineness could also signal the adoption of a more 'Roman' attitude to the concept of value, with bullion content as well as colour becoming important.

The yellow to red alloy shift is also seen outside the client kingdoms, reflecting a broad shift in the widely shared symbolic language of coinage. Communities in the East Midlands and East Anglia adopted the same red-gold colouring for their coins after c.20 BC, but seem to have been independently mixing this from gold bullion. Whilst these groups had access to gold bullion, and adopted the southern practice of debasing it to create a red-gold, the North-Eastern and East Anglian alloys are clearly distinct from those of the southern dynasties, suggesting local variation in both production techniques and value systems.

Silver, as well as gold, circulated widely as bullion, with refined silver being used to produce most batches of silver coinage. During the reign of Tiberius (AD 14–37), in particular, there appears to have been a substantial injection of silver into Britain, perhaps as gifts of bullion to client kingdoms in the south. Silver coinage played a more important role in East Anglia and the East Midlands than in the neighbouring Eastern Kingdom, where gold coinage continued to predominate. This could suggest that the Eastern Kingdom used Roman gifts of silver bullion to placate disruptive northern neighbours, but it is equally possible that these more northerly regions had their own connections to Rome.

I proposed in chapter three that the widespread circulation of gold and silver bullion suggests the existence of a prestige exchange sphere of precious metals. It appears that the earlier cross-channel exchange of gold objects between and among Gallic and British elites was co-opted by the Roman authorities. Gifts of bullion to client kings may have been one way in which Roman diplomacy sought to install and support sympathetic British leaders. At a time when new forms of power and authority were being negotiated across southern Britain, the prestige exchange of gold and silver bullion appears to have become a far-reaching system, extending well beyond the client kingdoms. The use of bullion in coin production would have demonstrated access to this prestige exchange sphere, which may have been an important factor in establishing local authority. Nevertheless, this new system of coin production was highly regionalised.

Despite the sense of increasing engagement with the Classical world, and in contrast to southern British coinages, the North-Eastern series shows a surprising resistance to Roman iconography. Although the change in metal colour closely parallels the southern shift, the Classical imagery which appears on the first silver coins was quickly jettisoned in favour of more familiar designs. Leins (2012) argues that even on the latest North-Eastern coins the inscriptions do not suggest literacy. The southern legends are generally well executed, and include Latin words such as 'Rex' or 'F' for 'Filius'/'son of'. In the East Midlands, inscriptions are simple and often degenerate quickly into patterns, as on 'TATISOM' issues. They are not intended to follow a Roman model. The die-designers may have been less concerned with inscribing a particular message or name than with demonstrating access to a particular form of knowledge. Whether the North-Eastern mints were sourcing their silver through the southern kingdoms or the Roman world, they recycled and reissued this bullion in their own style, taking what they wanted from the Roman influence, and ignoring other aspects. The process of selective engagement with Roman coinage and Roman systems of value may have been an underlying cause of the development of diverse regional coinage systems in Britain after c.20 BC. During this immediate pre-conquest period, new systems of power and value were being negotiated, and coinage played an important role in these changes.

Coinage was a theatre of value through which access to both local resources and wider social networks could be displayed, reinforcing the power and authority of coin issuing elites. In the next section, I explore how these social aspects of coin production relate to the use of coinage in hoarding practices. The results show that peaks in hoarding evidence are often associated with periods of social and numismatic upheaval, when coinage may have become a more politically-charged material.

4.3 The social role of coins across the conquest: Hoarding in the East Midlands and North Thames regions

This section considers the coin hoard evidence from the East Midlands and North Thames region[2] in relation to contemporary changes in metal sources and production technologies. Whilst hoard deposition was never an everyday occurrence, in periods of dramatic social change it appears to have become a field of discourse through which political allegiances and new systems of value were negotiated and reinforced.

In the North Thames, coin production was centrally controlled during the dynastic period, with 'royal' mints producing a tri-metallic coinage, complete with Classical imagery and complex inscriptions. This suggests close engagement with the Roman world and perhaps, as argued in chapter three, the emergence of a complex shared language of value and power. This region shows continuity in hoarding across the conquest horizon, suggesting many of the social functions of Iron Age coins were readily transferable to Roman coinage. Communities in the East Midlands, whilst certainly in the Roman orbit and possibly in direct contact with Rome during the pre-conquest period, appear to have resisted direct Roman influence. Whilst certain aspects of the Roman value system were translated into local terms, this region did not share the Roman and southern British value system. Production remained far more fluid and dispersed, only coming into closer line with the dynastic mints after around AD 20. The disruption of the conquest was far greater here. With the collapse of local coin production, hoard evidence disappears for up to a hundred years, and precious metals appear to become devalued.

A coin hoard is defined here as an associated group of two or more coins, found in a sealed context or in sufficient proximity to suggest that they were deposited as a single event. Each group was considered individually, since (owing to the vagaries of taphonomic processes, and varied levels of recording) it was not possible to determine fixed criteria for factors such as distance between coins. Intentionality was assessed on a case by case basis, but its 'proof' was deemed too open to interpretation to be used as a baseline criterion for inclusion. Hoards and their contents are listed in Appendix 2.

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[2] The 'North Thames region' here refers to Oxfordshire, Essex, Hertfordshire, Bedfordshire, Buckinghamshire and Berkshire. Northamptonshire is here excluded from the East Midlands study area, as it shows a very different pattern of coin-use (see Chapter five). Modern county boundaries were used not because these have any significance relating to the Iron Age, but because they provide an appropriate sample area of two regions with very different Iron Age social and political systems.

Archaeologists tend to assume that prehistoric hoards were largely votive in nature and not intended for recovery (e.g. Bradley 1990). This is probably true of many Iron Age hoards, particularly those from 'shrine' sites such as Hallaton. In contrast, many Roman hoards are thought to represent savings, buried for safekeeping. In the latter case, we cannot talk about intensive periods of hoarding, only intensive periods of non-recovery (Reece 2002). Peaks in hoarding evidence might thus represent times of social disruption during which many hoards went uncollected and were forgotten, rather than periods when more hoards were buried. In the discussion which follows, such peaks are considered on a case by case basis, and will be referred to as peaks in hoard evidence rather than peaks in hoarding. In many cases it is not possible to discern whether changes reflect levels of hoarding or levels of non-recovery or (as seems likely) a combination of the two. However, the types, locations and sizes of hoards give a fuller picture, and where contextual information is available it is sometimes possible to make more definite assertions. Differences between the two case study regions (and between these regions and the 'British mean' for Roman coin hoards), are also illuminating.

Aarts (2005, 23) has argued in the case of Batavia that "changing patterns of deposition may perhaps be read as changes occurring in the articulation between the short-term and long-term transactional orders as a consequence of the integration of 'native' societies into the Roman Empire." Whilst this is true, the ability to distinguish between long-term (social or religious) and short-term (commercial) transactional orders depends on discerning the motivation behind the burial of hoards. I do not believe that this is possible for much of the evidence. Instead, I view changes in depositional practices as representing shifts in indigenous systems of value, and the roles deemed appropriate for coinage, rather than specifically an articulation between transactional orders. I assume only that intentional deposition of a hoard represents an ascription of value to the contents. This value could have been conceptualised in terms of the social prestige associated with conspicuous consumption, the spiritual benefits of votive offering or the financial protection of concealing a valuable savings hoard. In many cases it is not possible to discern which factors were most relevant. Nevertheless, if particular coin types or metal types appear to have been deliberately included or excluded from hoarding, or are frequently found in association together, this may reveal contemporary attitudes to the value of these objects.

I will first briefly consider the nature of non-hoard coin finds, since the selection of coins for hoarding purposes necessarily draws on the coins in circulation. The evidence is broken down into periods as shown in Table 4.1. The overlap between some of the periods is due to the difficulties of ascribing date ranges to the latest Iron Age issues. In most cases, the Iron Age dating follows Haselgrove (1987, 1993, 2006b), but for North-Eastern types, the new chronology proposed by Leins (2011) is used (in terms of terminal periods this accords well with the new chronology proposed in chapter two).

Table 4.1: Coinage periods

Date Range	Haselgrove/ Reece Period	Coinage in North Thames region	Coinage in the East Midlands
150–80 BC	Haselgrove 1-3	Gallo-Belgic A and B imports. Imported Kentish Primary potins.	
80–50 BC	Haselgrove 4-5	Flat linear potins Gallo-Belgic C, D, E and F imports. First local gold (British G, Clacton type) and later issues British L (and Q in Southern kingdom)	Gallo-Belgic E imports.
50–20 BC	Haselgrove 6	First red-gold and silver issues (Lb-Lx) (first inscribed coinage in southern Kingdom – COMMIOS)	Local gold prototypes (British H and I, Northeast coast types)
20 BC–AD 10	Haselgrove 7	First inscribed coins of Tasciovanan dynasty: TASCIOVANVS, RVES, DIAS. (Southern dynasty: ADDEDOMARVS, TINCOMARVS, DVBNOVELLAVNOS)	First local red-gold and silver issues (South Ferriby gold and prototype silver Boar/Horse issues)
AD 10–40	Haselgrove 8/ Reece 0	Roman Republican issues; later dynastic issues: CVNOBELINVS, EPPILLUS, VERICA	Roman Republican issues; later uninscribed bimetallic coinage (Kite, domino and later Boar/Horse). c. AD 20–45, inscribed issues: AVN, VEP, TATISOM, VOLISIOS, DVMNOCO
AD 30–45	Haselgrove 9/ Reece 1	Roman pre-Claudian imperial issues; latest southern dynastic issues of EPATICCVS and CARA	Roman Claudian issues; Latest inscribed issues: IISVPRASV
AD 41–54	Reece 2	Roman coins: Claudian	
AD 54–69	Reece 3	Roman coins: Neronian	
AD 69–96	Reece 4	Roman coins: Flavian	
AD 96–117	Reece 5	Roman coins: Trajanic	
AD 117–138	Reece 6	Roman coins: Hadrianic	
AD 138–161	Reece 7	Roman coins: Antonine I	
AD 161–180	Reece 8	Roman coins: Antonine II	

4.3.1 Non-hoard coins (stray finds and site finds)

Figures 4.2 to 4.5 highlight some of the regional differences. Figures 4.2 and 4.4 show non-hoard coin finds by period, whereas figures 4.3 and 4.5 display the results as 'finds-per-year' in order to take into account the relative length of each period. Data were taken from the CCI, PAS and Bland and Loriot's (2010) corpus of Roman gold coins.

In the East Midlands, only very small numbers of coins dating from pre-50 BC were imported into the region. The first phase of local coin production (c.50–20 BC) sees a rise in the number of coins represented. Single finds of gold staters may represent small hoards in their own right, and this will be considered below. After the shift to red-gold and silver around 20 BC, there is another increase in the number of coins lost or deposited. More 'gold' staters are known than for the preceding period, but in fact around half of these are plated. There is great debate over whether these represent unofficial forgeries intended to deceive, or official issues produced when the gold supply was limited (Cottam 2001). Some combination of the two is most likely but, official issues or not, people actively excluded plated coins from hoards. There was clearly great pressure on gold supplies in this period. The networks through which refined gold was now sourced may have provided insufficient material to meet demand for the new red-gold coins. This may partly explain the use of a lower purity gold alloy than that seen in southern coinage.

In the final phase of local production (AD 10-45), the East Midlands benefitted from an injection of Tiberian silver bullion. This is reflected in a sharp increase in the occurrence of silver issues. As silver came to play a bigger part in regional coinage, it may have taken on some of the associations of gold; the increase in silver production is accompanied by a scaling back on gold. However, gold production continues right through to the end and it was clearly important to maintain a sequence of gold issues: the proportion of plated staters once again increases in the very latest issues (IISVPRASV). Small numbers of Roman silver coins may also have begun to circulate in the immediate pre-conquest period, although the arrival of these *denarii* at a later period is also possible: many remained in circulation until Nero's coinage reforms, and the low-silver Mark Anthony legionary issues persisted until the third century (Orna-Ornstein 1997).

Throughout the Iron Age, levels of copper-alloy coinage in the East Midlands remained low. No local issues were produced, presumably reflecting a rejection of this material as inappropriate to local needs. Copper-alloy coinage only appears in quantity in the Roman period. Only small numbers of Roman coins are known from immediate post-conquest contexts, but quantities increase in the late first century and second century, mirroring national trends. Only in the second century, several generations after the conquest, do copper-alloy coins appear in higher quantities than silver, perhaps reflecting the use of coins in a greater proportion of commercial transactions. Creighton (1992) argued that British regions without local copper-alloy coinage were slower to adopt Roman copper-alloy issues, favouring silver, but PAS data has changed this picture: similar proportions of silver to copper are seen in the East Midlands and North Thames regions. Roman gold coins are very rare in comparison. Only a handful of stray finds are known. With a small sample, dating is problematic, as gold issues are likely to have persisted in circulation long after they were minted.

The picture in the North Thames region (figures 4.4 and 4.5) is very different. Iron Age coin production levels were far greater than in the East Midlands (largely due to the large quantities of later copper-alloy issues). There is early production of some potin and struck gold issues before 50 BC (roughly when local production begins in the East Midlands). Whilst potin subsequently drops out of circulation, there appears to be a peak in the circulation of gold 80–50 BC, with issues of British L and Q particularly well-represented. After 50 BC, when the Eastern client kingdom was becoming established and the shift to red-gold alloys had taken place, a new tri-metallic system appears to have rapidly become established, in line with the emergence of a similar system in the Roman world. Local copper-alloy issues, which are rare imports in the East Midlands, come to make up a high proportion of North Thames coinage. Though the proportional representation of metal types did not change, production increased in scale 20 BC–AD 40, as the dynastic mints expanded their activities, no doubt supported by diplomatic gifts of Roman bullion. Only a very small proportion of known gold coins are plated examples, suggesting that this region had a more reliable gold supply, sufficient to supply local demand.

The North Thames pattern of Roman finds is remarkably similar to the East Midlands, although gold coins are better represented in all periods. There is a sharp post-conquest drop-off in finds of copper-alloy coinage. This may partly be due to the difficulties of identifying and dating Roman copper-alloy issues, and the longer history of recording finds through the CCI, but the pattern is marked. If Iron Age copper-alloy coins were being used for market-based exchanges before AD 43 (e.g. Haselgrove 1987), there may have been a great shortage of 'small change' in the Roman period, not rectified until the third century. It is possible that some Iron Age copper-alloy issues continued to circulate into the Roman period, although the two are not found together in hoards. Nevertheless, the tri-metallic system was maintained, and hoarding evidence suggests that at least some of the social roles of Iron Age coinage were more readily transferred to Roman coins in the North Thames than in the East Midlands.

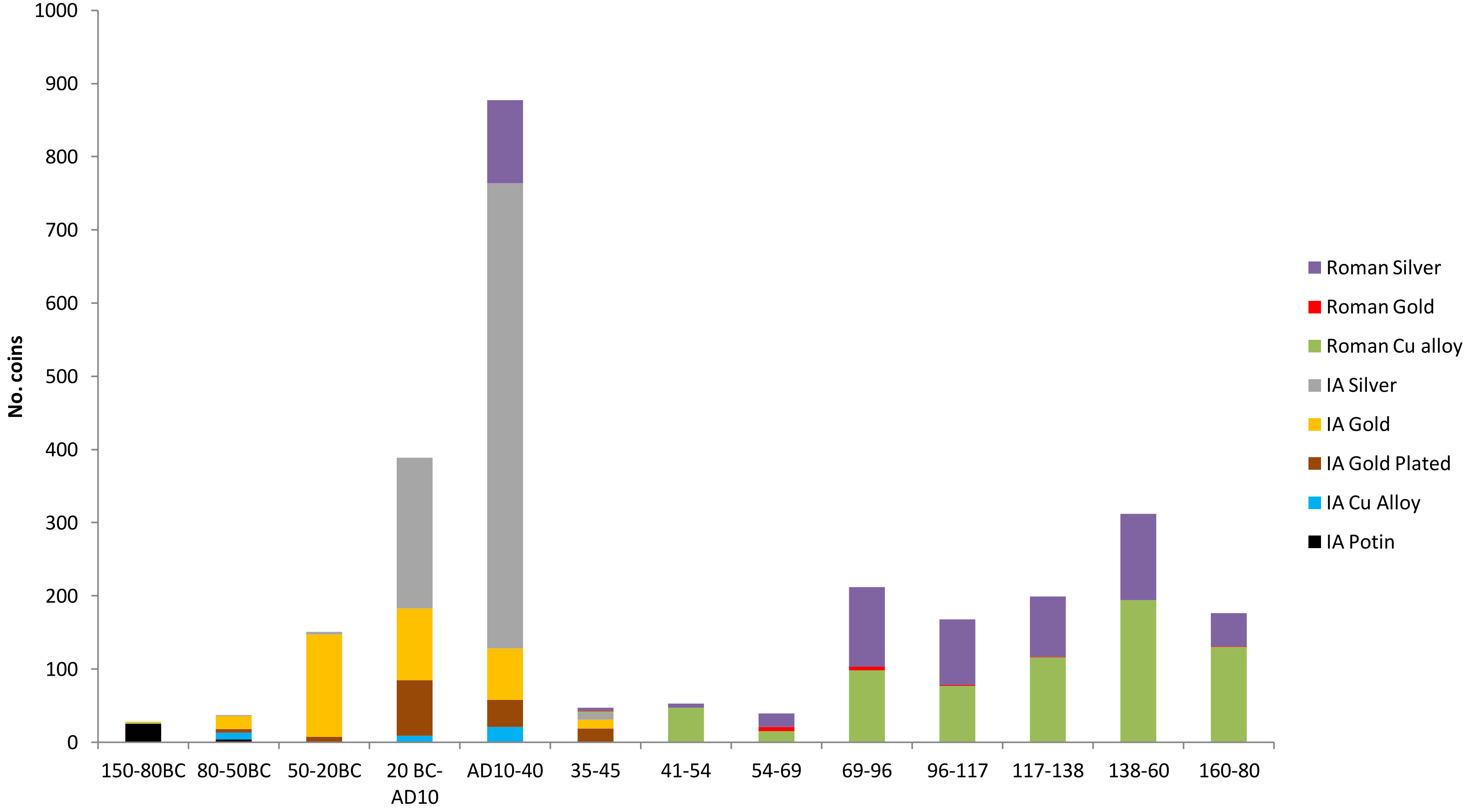

Figure 4.2: East Midlands non-hoard coin finds

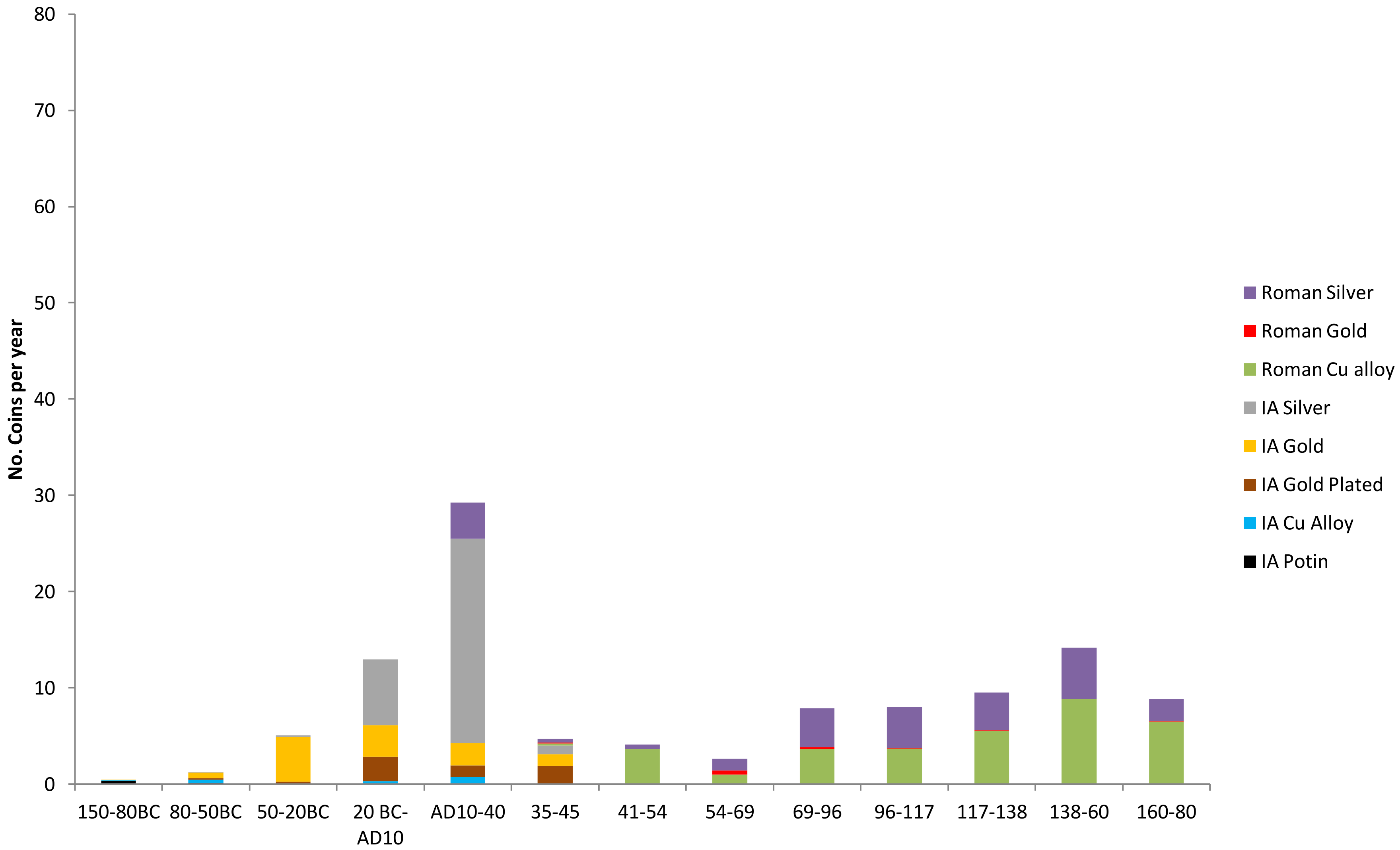

Figure 4.3: East Midlands non-hoard coin finds as coins-per-year

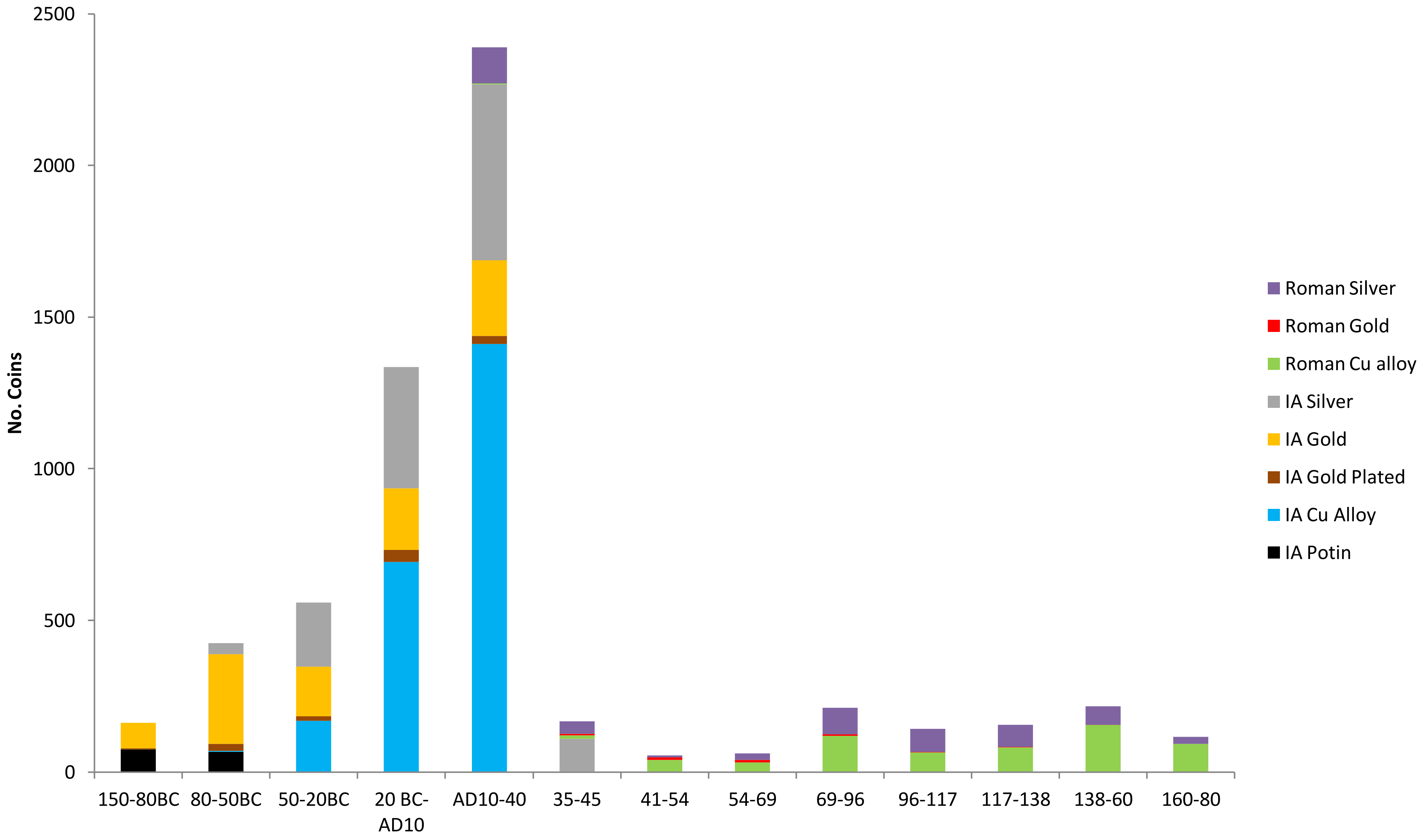

Figure 4.4: Non-hoard coin finds from the North Thames region

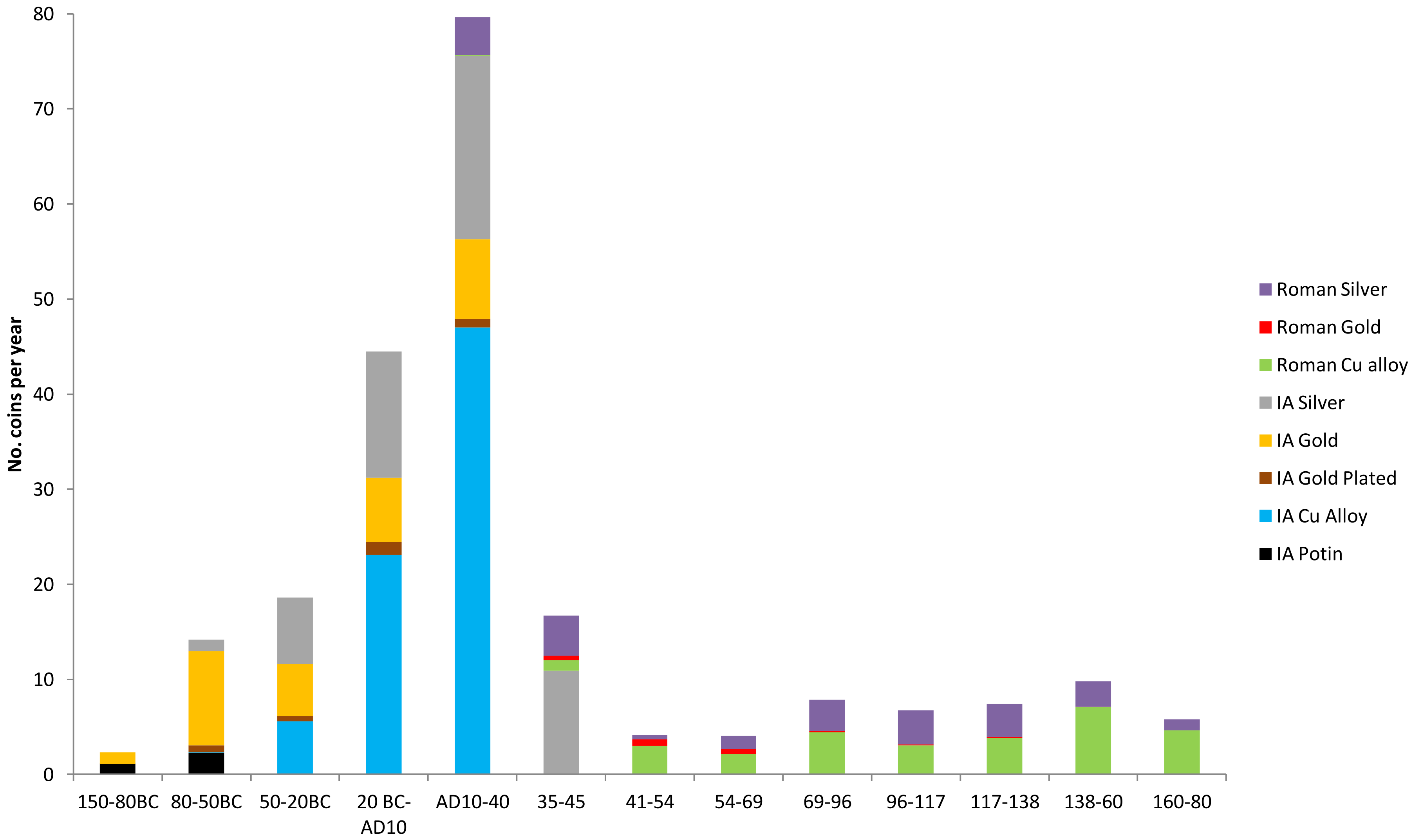

Figure 4.5: Non-hoard coin finds from the North Thames region as coins-per-year

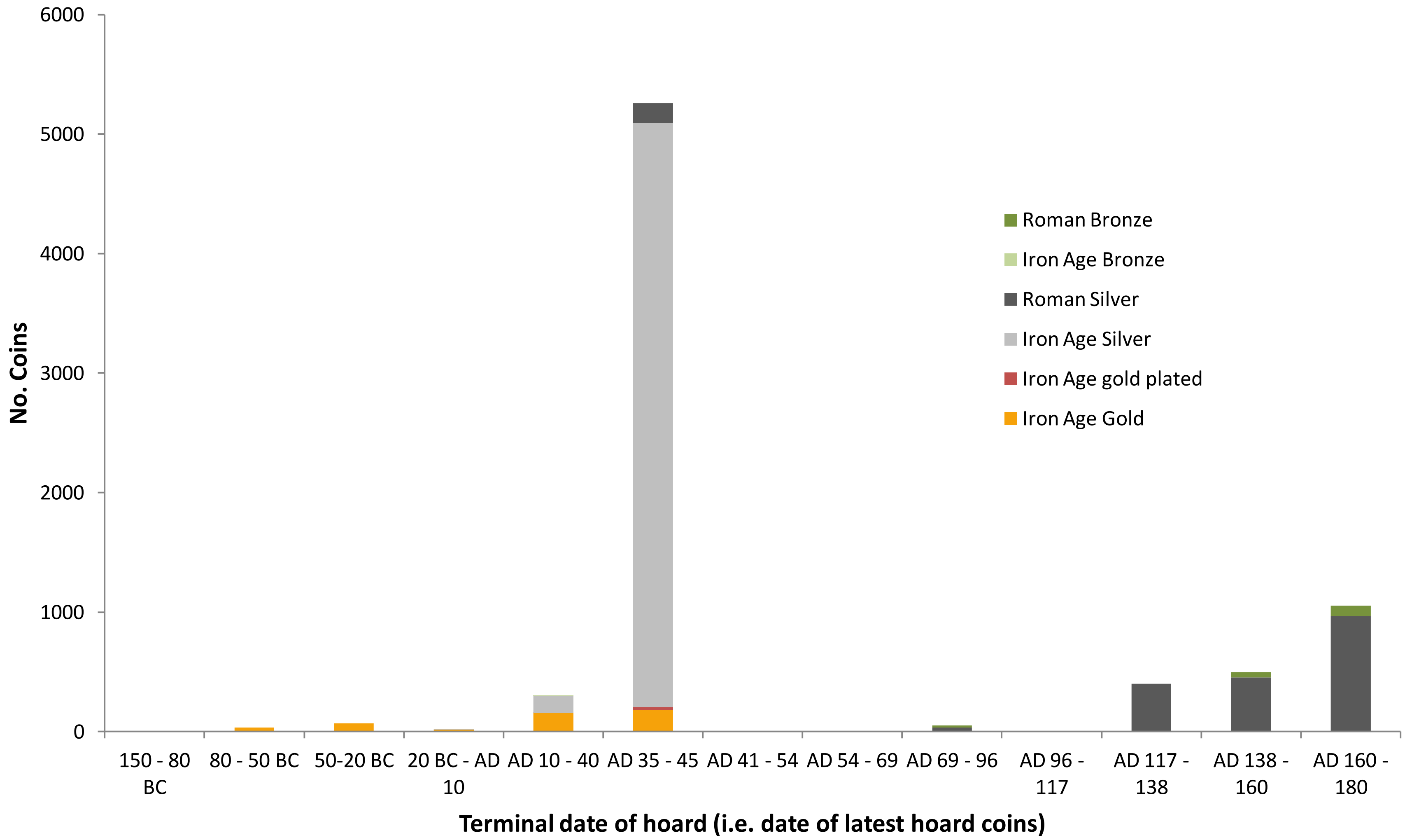

Figure 4.6: Iron Age and Early Roman coin hoard periods for the East Midlands

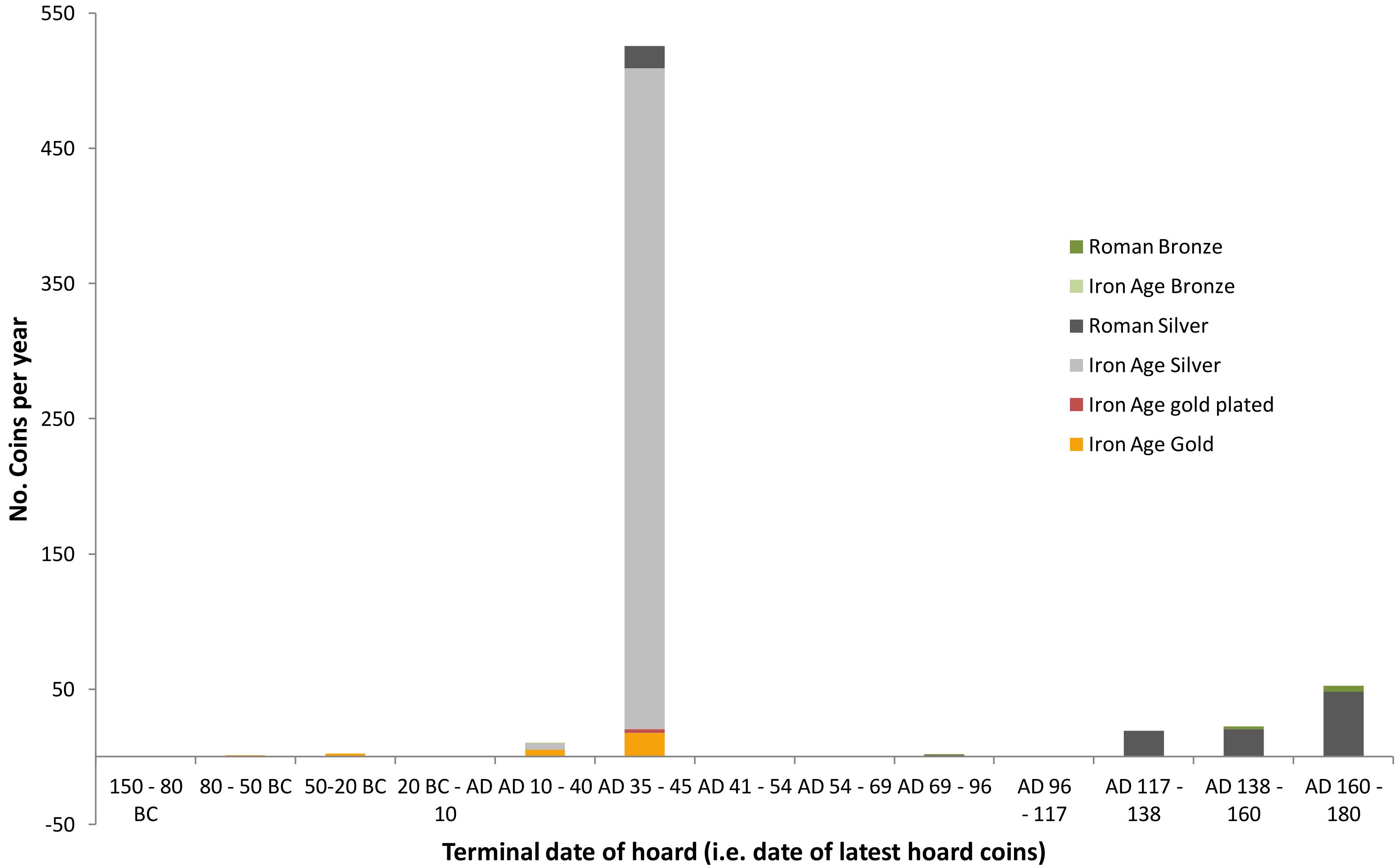

Figure 4.7: Iron Age and Early Roman coin hoard periods for the East Midlands, as coins-per-year

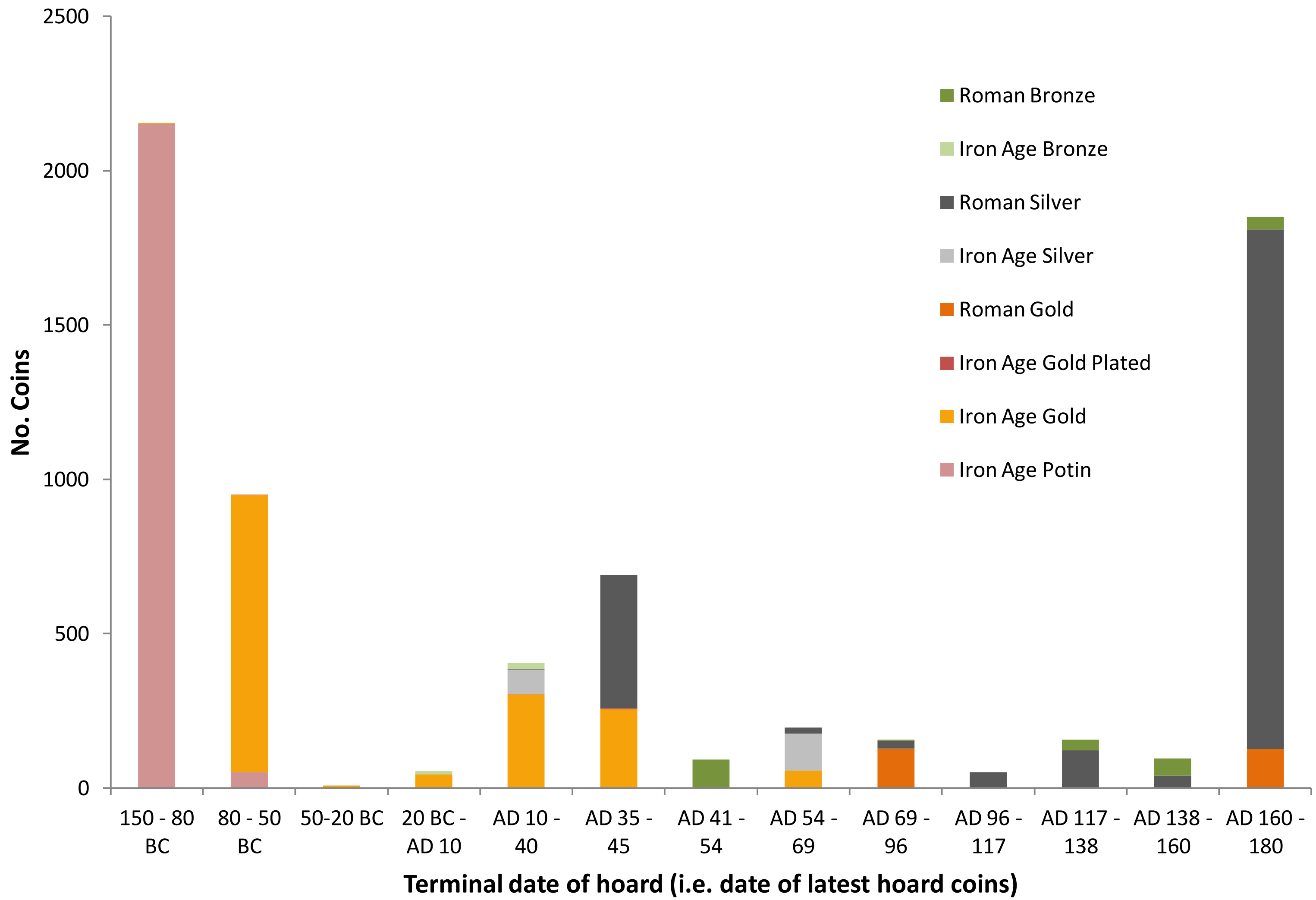

Figure 4.8: Iron Age and Early Roman coin hoard periods for the North Thames Region

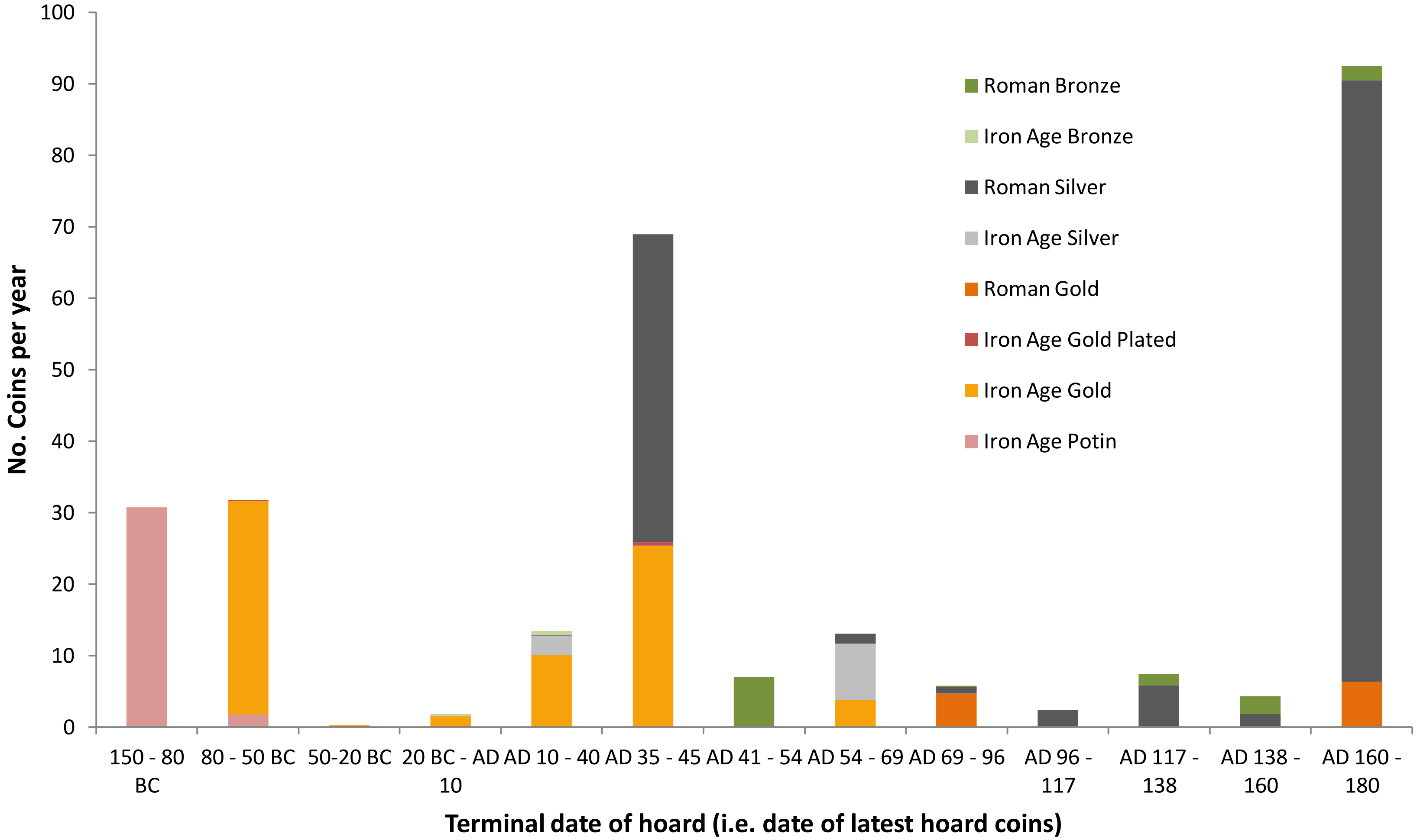

Figure 4.9: Iron Age and Early Roman coin hoard periods for the North Thames region, as coins-per-year

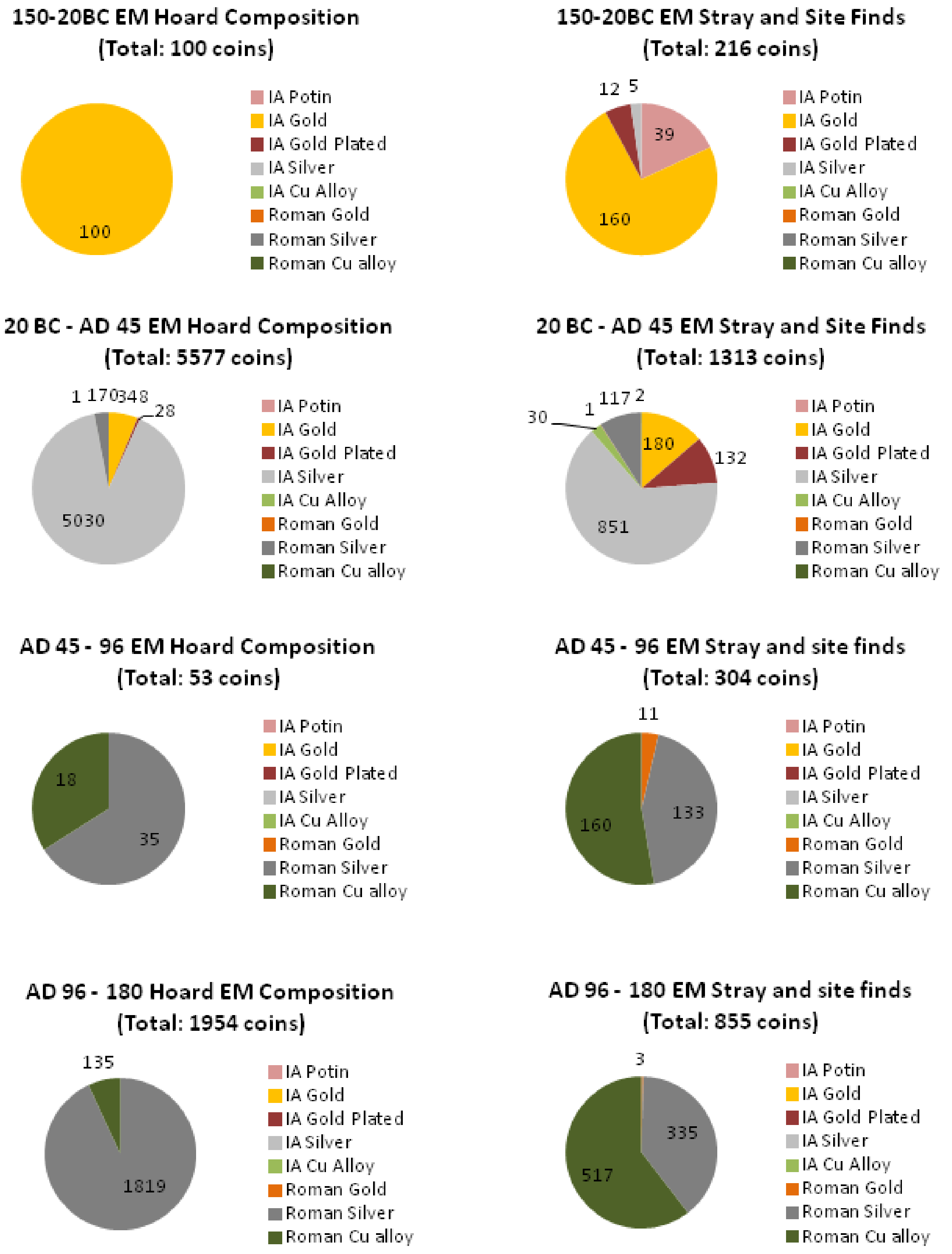

Figure 4.10: The composition of coin hoards and site finds in the East Midlands, by period. Hoard charts show the composition of hoards terminating with issues from that period.

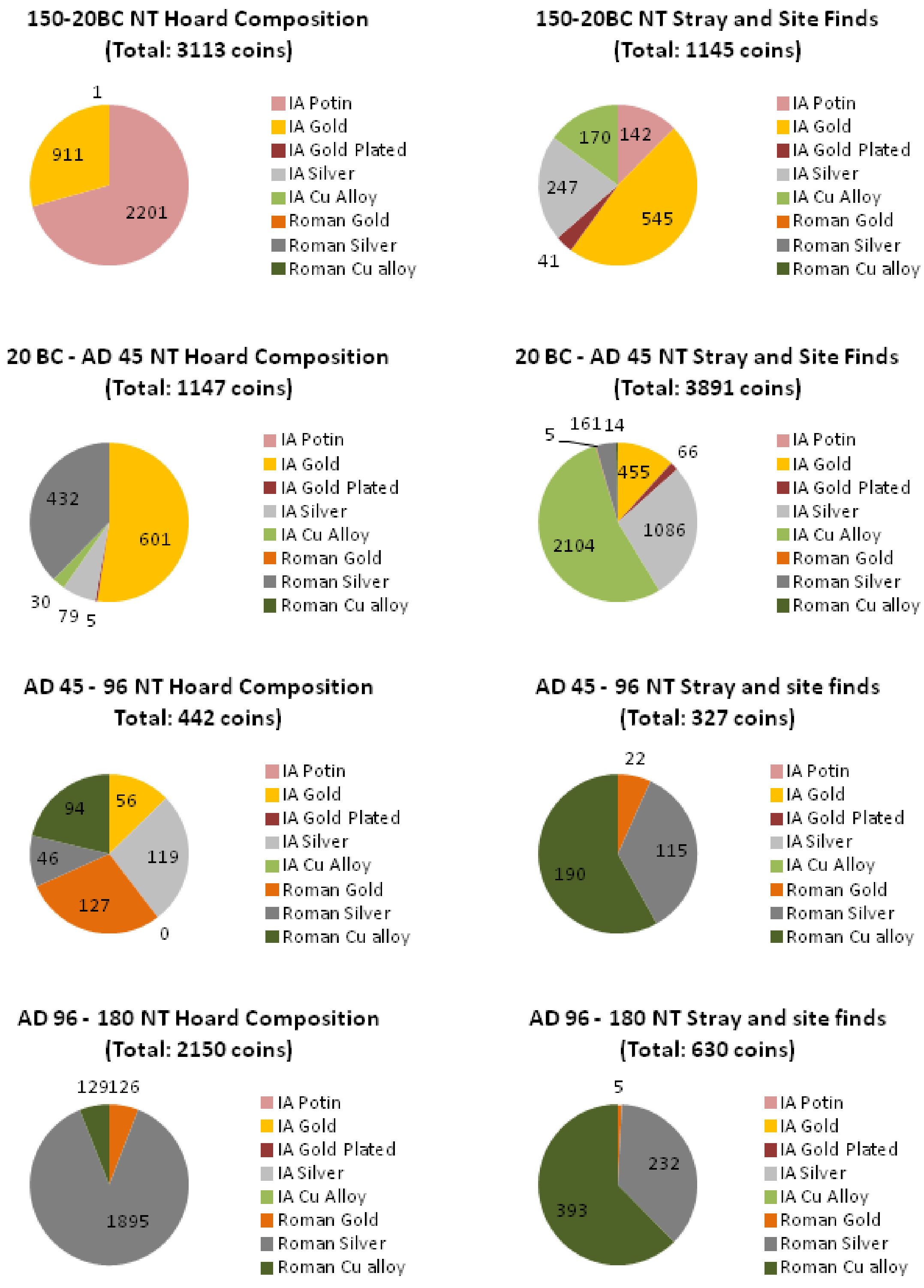

Figure 4.11: The composition of coin hoards and site finds in the North Thames region, by period. Hoard charts show the composition of hoards terminating with issues from that period.

4.3.2 Hoards (a brief introduction)

Figures 4.6 to 4.9 show the number and types of coins represented in coin hoards terminating with issues from each period. Figures 4.10 and 4.11 show differences between the composition of stray and site finds, divided into four broad periods, and the coins from hoards terminating in each of those periods.

In the East Midlands (figures 4.6, 4.7 and 4.10), in the earliest periods of yellow gold importation and production (c.80–20 BC) only gold coins were selected for inclusion in hoards. Plated examples were actively excluded. Around 30% of coins from this period are known from contemporary hoards rather than as single finds, although some single deposits may represent small hoards in their own right. Most hoard coins from this period are imported Gallo-Belgic E staters or early local yellow-gold issues. In the later period of red-gold and silver production (20 BC–AD 45) the vast majority of known coins (c.80%) are from hoards. This is largely accounted for by the exceptional deposits at Hallaton. Iron Age silver coins seem to be favoured for deposition, but Iron Age gold and Roman silver are also included. Copper-alloy and plated coins appear to be actively excluded from deposits, but a few plated staters do appear in hoard contexts, whether intentionally or in error. In the earliest Roman period, hoard coins account for just 15% of finds. The significance of this apparent hiatus is discussed below. Silver coins appeared to be favoured in hoard contexts, whereas copper-alloy issues are under-represented and gold coins unknown. In the second century, hoards are once again in evidence, and now account for around 70% of finds, a sharp climb from the previous period. Once again, silver is the favoured metal. This increase in hoarding evidence comes largely at the end of the period, from the 150s to 180 AD, a time of political and economic instability in northern Britain (Salway 1993, 153-161).

The evidence for the North Thames region is quite different (figures 4.8, 4.9, 4.11). In the earliest phases (150–20 BC) both gold and potins are hoarded. Hoard coins account for 75% of finds, though this is partly due to the exceptionally large potin hoard at Thurrock (see below). Many of the gold hoard coins are from the period 80–50 BC, a time of upheaval in local coin production, with the shift from yellow to red gold. From 20 BC to AD 45, when communities in the North Thames region were in close contact with the Roman world, hoarding patterns again shift. Hoard coins now account for just 20% of finds (compared to 80% in the East Midlands). This is largely due to the introduction of local copper-alloy issues, which circulated in large quantities but appear to have been largely excluded from hoards. Iron Age gold coins and Republican silver issues are the most frequently hoarded types from this period, though some of the Republican silver hoards may be later in date. Whilst the early Roman period in the East Midlands sees a hiatus in hoarding evidence, in the North Thames hoards account for almost 60% of coins (although numbers are lower than in preceding periods). Iron Age coins continue to be deposited alongside Roman issues. This demonstrates the difficulty of dating single finds – many may have been deposited well after the period in which they were produced, but it is generally only possible to ascertain this in hoard contexts where they are deposited alongside later issues. As in the East Midlands, the second century sees an increase in the number of Roman coins in circulation, and also an increase in levels of hoarding evidence (with hoards accounting for nearly 80% of coin finds). Silver is heavily favoured in hoards of this period, but gold and copper-alloy issues were also hoarded.

Looking at Iron Age and early Roman hoarding patterns in the East Midlands and North Thames regions, a trend emerges, approximated by the following model:

- **Initiation:** Following the appearance of a new form of coinage (innovative in terms of source, production, materials or denomination), these coins will most likely be found only in small hoards, at a restricted number of sites, perhaps representing a limited circulation.

- **Expansion and Experimentation:** As the 'new' coinage moves into more widespread circulation, hoarding practices expand both in variety and quantity of hoards and coins, representing a period of creativity and experiment as new value systems are negotiated. In this period there may be a wider range of hoard sizes and locations, and more coins appear in hoard evidence. This is particularly likely if this period coincides with wider social changes. Where social upheaval was represented in changes in coin production, coin hoarding may have become a field of discourse through which political allegiances and attitudes to value could have been displayed, negotiated or reinforced. In this case, this phase may be related to a period of 'peak hoarding.'

- **Disruption and peak hoarding:** This stage is generally precipitated by a change in the availability or social value ascribed to a form of coinage. This disruption may take the form of a change in coin issuing authorities and possibly a recall of the coinage in question. This will be associated with a boom in non-recovered coin hoards, which may be either sporadic (associated with an increased number of medium to large hoards across a variety of sites) or massive (bulk-hoarding of extremely large numbers of coins at a single site, e.g. Thurrock, Hallaton). There may be a combination of both sporadic and massive peak-hoarding.

- **Decline:** The peak hoarding period will be followed by the decline of the appearance of the coin type in question in the hoard evidence, and often a decline in the number of non-recovered hoards in general.

- **Response:** As the volume of non-recovered hoards once again begins to increase, the response to the disruption in coinage supply/production/value will be in one of two forms: elastic or inelastic.

  (i) **Elastic response:** This tends to follow a sporadic peak-hoarding period. In the case of an elastic response, the coinage in question appears to remain in circulation, appearing in later hoards in association with other forms of coinage. There appears to be some continuity in terms of the value of particular metal types or coinage forms, and in the nature of hoarding practices. This leads to a subsequent phase of expansion and experimentation, again demonstrating creativity and change, but with some continuity with older practices.

  (ii) **Inelastic response:** In this case, the particular coinage in question appears to become permanently devalued, falling out of circulation altogether. This particularly tends to follow a period of massive peak-hoarding, with very large numbers of coins being deposited at a single site. Hoards/hoard groups of over 500 coins are known only from two sites: Thurrock and Hallaton, in both cases in excess of 2000 coins. These clearly represent exceptional deposits and it is possible that both were associated with the coinage represented in the hoard falling out of use. There are no well-reported exceptionally large hoards consisting primarily of issues which continued to circulate as valuable objects in later periods (one possible exception, Whaddon Chase, is considered below). This suggests that the phenomenon of bulk-hoarding may be associated with removing devalued coins from circulation. This may have been (directly or indirectly) the reason for burial, or the reason for subsequent non-recovery. After a period of apparent hiatus, later hoarding evidence shows a clear break with earlier traditions in terms of both site type and location, hoard size and coin types selected for inclusion.

Three case studies are considered:

- Iron Age potin in the North Thames region (inelastic response)
- Iron Age precious metal coinage in the North Thames region (elastic response)
- Iron Age precious metal coinage in the East Midlands (inelastic response)

In each region and period the relationships between coin sources (imported or local), materials and production processes are considered, in order to explore the social role of coinage and changing systems of value. The evidence is broken down into the periods shown in Table 4.1. The hoards terminate with issues of the period to which they are assigned, but could have been buried later.

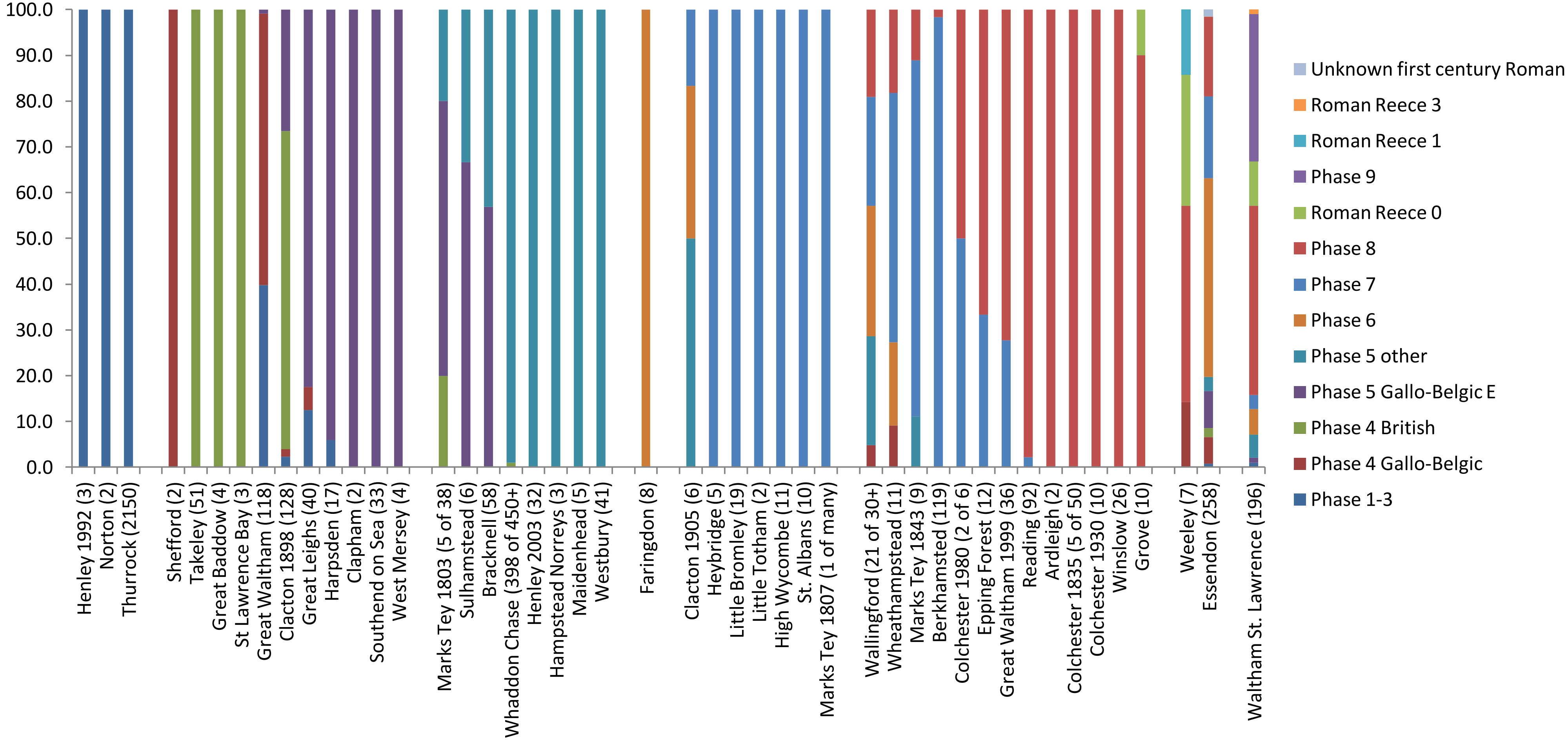

Figure 4.12: Iron Age hoards from the North Thames region, by % composition (numbers in brackets denote no. coins in hoard. Where not all coins were identified, two numbers are given)

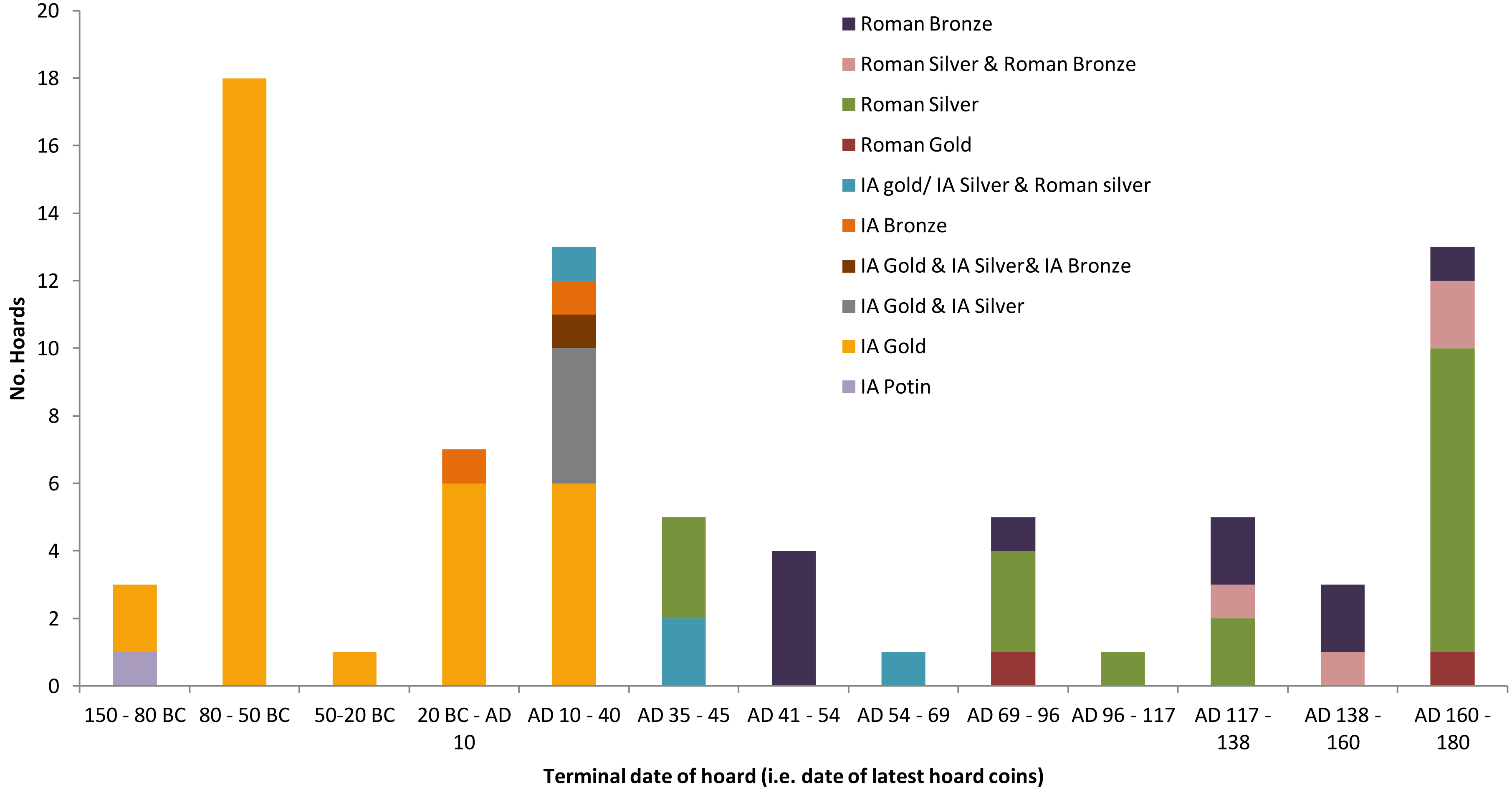

Figure 4.13: Iron Age and early Roman coin hoards in the North Thames region by hoard type

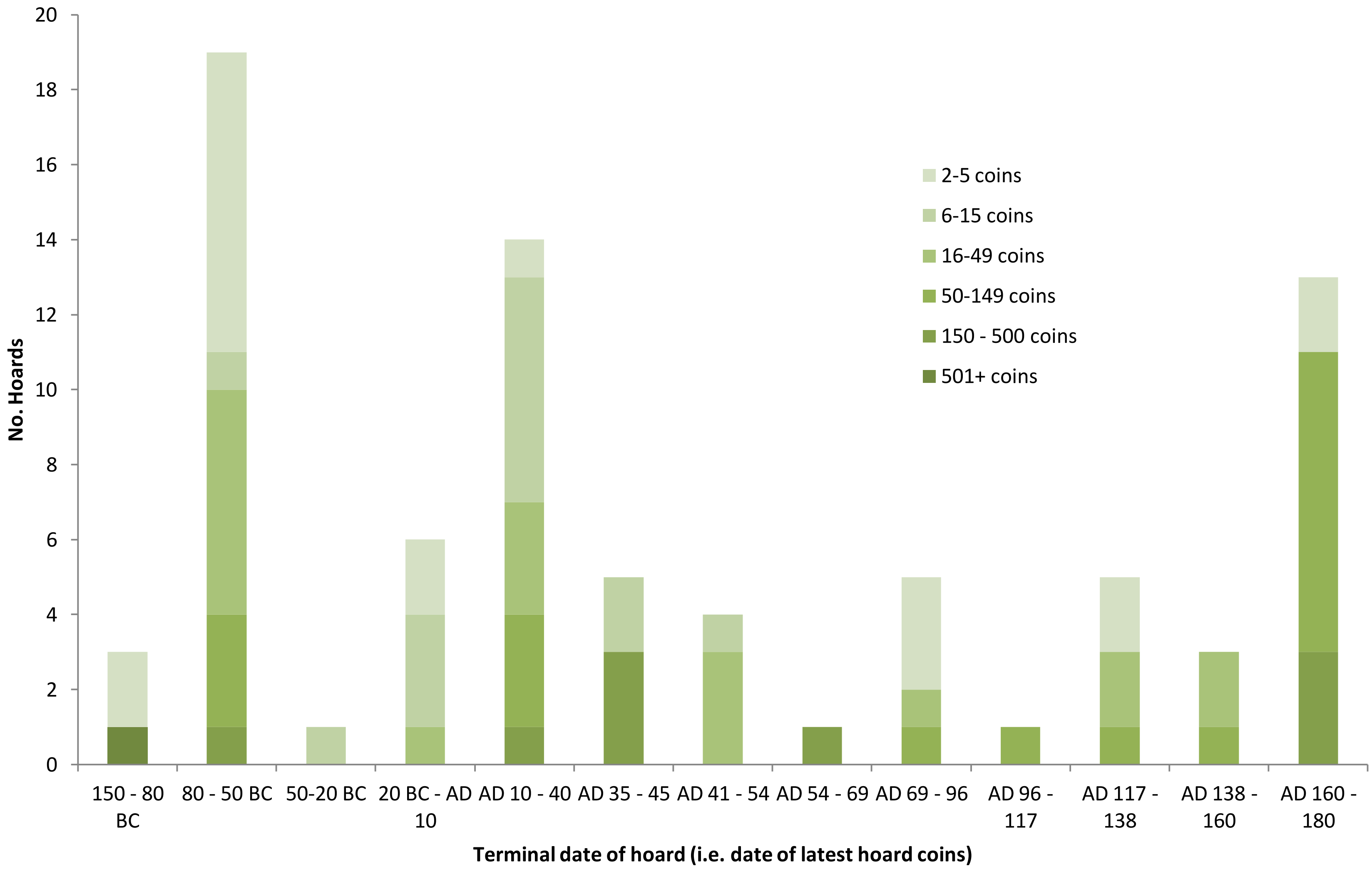

Figure 4.14: Iron Age and Early Roman coin hoards in the North Thames region by hoard size

4.3.1 Iron Age potin in the North Thames region (inelastic)

(Figures 4.8-4.9; 4.12-4.14.)

150–80 BC

Site	County	No. Iron Age Potin	Hoard Type	Context/ Site Type
Thurrock	Essex	2150	Primary Potin	Hillside

Imports/Production: Potins (high-tin cast copper-alloy coins) were the first example of insular production. Initially based on a Massiliot prototype, Kentish Primary potins were made in the South-East c.150–80 BC (Haselgrove 1987, 248-249; 2006b), although they circulated more widely. When new, potins would have had a rich, silvery colour owing to their high tin content. Dolley (1954), Haselgrove (1987, 249) and Collis (1974) argue that early potins were high-value, circulating alongside imported Gallo-Belgic gold. It may have been easier to produce insular copies of cast potin coinage than the accompanying gold. Copper alloy casting techniques were already familiar to insular metalworkers, and the visible sprues on the imported Gallic potins would have provided a clue as to the means of their production.

Thurrock, the only early potin hoard, has no direct archaeological context. Over 2000 Kentish Primary potins were found by a metal-detectorist over a period of several months, spread over an area 10–15m in length. The site lies on a south-east-facing slope above an area of marshland, approximately 10m from the brow of a low hill. The pattern of early potin deposition is different to contemporary gold and later potins. Primary potins may have been frequently selected for votive deposition, with just 14% of known coins being site finds (Haselgrove 2006b). The full range of Primary potins is represented at Thurrock, although the main area of circulation of these coins is further south, in Kent. Although the coins had travelled some distance, at least some do not seem to have circulated widely: one coin showed protruding flash suggesting it had only recently been cast (Van Arsdell 1989, 320). The deposition of this wide range of coins at the edge of the main range of their circulation suggests that this hoard may coincide with the end of Primary potin production.

80–50 BC

Site	County	No. Iron Age Potin	Hoard Type	Context/ Site Type
Takeley	Essex	51	Flat Linear Potin	Settlement

Imports/Production: Class I and Class II Flat Linear potins were also produced in Kent. Later potins used an easier method, resulting in small, thick, "dumpy and unappealing" coins (Van Arsdell 1989, 79). This foreshadows the introduction of struck bronze issues, which most likely circulated as a low-value coinage (Haselgrove 1987). Over time the main range of potin circulation shifted north and west. Some Class II potins may have been produced in the North Thames region, coinciding with the first struck bronze issues in Kent (Haselgrove 1988, 117; 2006b; Holman 2000, 224).

A hoard of 51 potins from Takeley was found in the fill of a roundhouse gully in a small defended settlement (Havis and Brooks 2004, 99, 102-4), thought to have been occupied c.75–25 BC. Six are known Kentish Class II varieties. The others resemble Class I issues, but are the size of Class II potins; these unique coins may have been locally produced (Haselgrove 2006b). Hoards of Flat Linear II coins are rare, with only one other known (New Addington). Whilst the majority of Primary potin coins were hoard coins, or found in rural areas with no evidence for occupation, the Flat Linear series are more commonly found on settlements. Flat Linear II coins in particular cluster around nucleated settlements (Haselgrove 2006b). Collis (1974) suggested that over time the value of potin may have declined to a low-value medium akin to small change. The picture is evidently complex (and may be partly due to chronological factors – Haselgrove 2006b) but it appears potin did become devalued.

With only two recorded potin hoards in the North Thames region, it is not possible to untangle discrete phases of hoarding. The massive peak-hoarding at Thurrock, near the end of Primary potin production in Kent, may have been associated with a crash in the value of potin coinage. These coins are found outside their main range of circulation and some do not seem to have been in circulation for long. Later coins are more common as site finds, and may not have circulated in the same prestige exchange sphere, although they do appear in the much smaller hoard at Takeley, perhaps representing local experimentation with the uses of coinage.

In this case, the response was inelastic: bronze coins appear to have remained low-value issues, certainly in the North Thames region, and most likely also in the south-east. The nature of the disruption which triggered this crash in value is unclear, but a candidate may be found in the beginnings of insular gold production. This began around 80 BC, just as Primary potin coins were falling out of production. It is possible that, as large quantities of local gold issues became available, potins became less desirable. Whilst potins could be produced from widely available copper alloy, using traditional casting techniques, insular gold issues would have demonstrated access to quantities of Gallo-Belgic gold, and also the skill and expertise needed to work with this new material. Potin, it appears, could not compete.

4.3.2 Iron Age precious metal & copper-alloy coinage in the North Thames region (elastic)

(Figures 4.8-9; 4.12-4.14)

Initiation:

150–80 BC

Site	County	No. Iron Age Gold	Hoard Type	Context/ Site Type
Henley 1992	Oxon	3	IA Gold	Unknown
Norton	Essex	2	IA Gold	Unknown

Imports/Production: The earliest precious-metal coins in the North Thames region were imported Gallo-Belgic A and B gold staters, most likely entering Britain through prestige exchange with Gallic elites.

Only two small hoards terminate with Gallo-Belgic gold issues imported c.150–80 BC. The small size of these hoards contrasts with the vast deposit from Thurrock, emphasising the value and rarity of gold. Nevertheless, it appears that gold coins did not function as an important mechanism for wealth storage or conspicuous consumption until later.

Expansion and experimentation; Peak hoarding:

80–50 BC

Site	County	No. Gallo-Belgic (A-D)	No. Early British Gold (A-K)	No. Gallo-Belgic E	No. Later British Gold (Q, L)	TOTAL IRON AGE GOLD	Hoard Type	Context/ Site Type
Shefford	Beds	2				2	IA Gold	Unknown
Great Baddow	Essex		4			4	IA Gold	Unknown
St Lawrence Bay	Essex		3			3	IA Gold	Coastal
Great Waltham 1996 / Great Dunmow	Essex	117		1		118	IA Gold	Just off brow of low hill near stream/river
Clacton 1898	Essex	5	89	34		128	IA Gold	Coastal
Great Leighs	Essex	7		33		40	IA Gold	Just off brow of low hill near stream/river
Harpsden	Oxon	1		16		17	IA Gold	Unknown
Clapham	Beds			3		2	IA Gold	Unknown
Southend on Sea	Essex			33		33	IA Gold	Settlement
West Mersey	Essex			4		4	IA Gold	Coastal
Marks Tey 1803	Essex		1	3	1	5	IA Gold	Near Colchester
Sulhamstead	Berks			4	2	6	IA Gold	Unknown
Bracknell	Berks			33	25	58	IA Gold	Hillside
Whaddon Chase	Bucks		4+		394+	398+	IA Gold	Just off brow of moderate hill
Henley 2003	Oxon				32	32	IA Gold	Unknown
Hampstead Norreys	Berks				3	3	IA Gold	Unknown
Maidenhead	Berks				5	5	IA Gold	Unknown
Westbury	Bucks				41	41	IA Gold	Just off brow of low hill near stream/river

Imports/ Production: The beginning of this period saw the first local gold production. Early Gallo-Belgic issues, perhaps further debased with silver, most likely provided the metal source (Northover 1992). In the mid-first century BC, there was substantial numismatic upheaval, probably reflecting important social and political changes. As Allen (1960) and Creighton (2000, 67-8) have noted, few hoards combine early British issues (British A-K) with later British issues (e.g. British L and Q) – see Figure 4.12. More recent finds do not change this picture. Creighton suggests that around 50 BC a new issuing authority was established, perhaps connected with the founding of client kingdoms. The first stage (Creighton 2000, 68-9) involved recalling and recycling existing issues to produce early British L and Q.

The earliest hoards (Shefford, Great Baddow and St. Lawrence Bay) were all small, and consist exclusively of British or Gallic staters. This is similar to the preceding period.

A much larger number of hoards are known from during or shortly after the mid-first century BC. This period also shows a peak in the number of single gold coin finds (Figure 4.4-4.5). The hoards are more varied in their composition and landscape locations, and cover a broader geographic range, suggesting an expansion in the nature of hoarding practices. All are gold hoards, with quarter staters represented for the first time. The hoards vary in size, from just two coins at Clapham to over 400 at Whaddon Chase. Whaddon Chase may in fact have been a much larger find. Evans (1864, 75) suggests as many as 2000 coins, but this may be too high (de Jersey pers. comm.).

This peak in hoarding evidence could simply be due to the fact that more hoards went unrecovered, possibly due to loss of value if they contained earlier types which had subsequently been recalled. However, this would not explain the increased diversity, nor the number of hoards containing British L and Q (particularly the large find at Whaddon Chase). Hoarding patterns may have shifted partly in response to changes in the meaning and value of coinage. The rise of new issuing authorities with the power to recall and remint earlier issues suggests major upheaval in local power structures. In this period of rapid social change, hoarding may have provided a field of discourse through which political allegiances and new systems of value could be negotiated, challenged or reinforced. The new coins issued by this mint were visibly distinguishable from their predecessors, and would have reflected the social networks in which their owners were enmeshed. If coinage had become a more politically volatile material, it is unsurprising that this might be reflected in increased levels of hoarding, not just an increase in the numbers of unrecovered hoards. After this period, bullion-based red-gold coinage came into circulation, and patterns of deposition again shifted.

Decline:

50–20 BC

Site	County	No. Iron Age Gold	Hoard Type	Context/ Site Type
Faringdon	Oxon	8	IA Gold	Hillside

Production: After 50 BC, red-gold issues were produced, accompanied by silver. This alloy shift most likely reflects gifts of bullion to client kingdoms in the North and South Thames regions: Rome, rather than the Gallic world, was now the predominant precious-metal source.

Only one hoard terminating in this period is known in the North Thames region: a group of eight gold staters of Commios (a southern ruler), representing some of the earliest inscribed insular issues. The hoarding of coins issued by a Roman client king reinforces the impression of close ties between the North Thames region and the Roman world.

The paucity of hoards suggests that the earlier period of upheaval and increased hoarding (or non-recovery) had run its course. Although single finds of staters remain relatively common, the absence of local hoards perhaps suggests that the new red-gold and silver were not immediately incorporated into established patterns of hoarding.

Elastic response; Second phase of expansion and experimentation:

20 BC–AD 10

Site	County	No. IA Gold	No. IA Bronze	Hoard Type	Context/ Site Type
Clacton 1905	Essex	6		IA Gold	Coastal
Heybridge (near Maldon)	Essex	5		IA Gold	By a spring
Little Bromley	Essex	19		IA Gold	Unknown - near Colchester
Little Totham	Essex	2		IA Gold	Just off the brow of a low hill
High Wycombe	Bucks	11		IA Gold	Hillside (concealed in flint nodule)
St. Albans	Herts		10	IA Bronze	Cremation burial
Marks Tey 1807	Essex	?		IA Gold	Unknown - near Colchester

Production: In addition to the alloy shift, descendants of British Q and L displayed other changes best explained by increasingly close contact with the Classical world: Classical imagery and inscriptions. Bronze coins were also *introduced, perhaps reflecting the interaction of Iron Age and Roman systems of value, and the emergence of a shared symbolic language (chapter three).*

Seven hoards terminate with the first North Thames inscribed issues of Dubnovellaunos, Addedomarus, Tasciovanus and Rues. The variety of types, sizes and locations is almost comparable to the mid-first century BC.

Six are hoards of British gold staters (generally small to medium, though the number from Marks Tey 1807 is unknown). This suggests that the alloy shift and the establishment of new, centrally-controlled coin-issuing authorities had not permanently affected the value or social function of gold coinage (an elastic response).

The final hoard, St. Albans, is the first hoard of copper-alloy coins since the first century BC potins. This group of ten copper-alloy coins of Rues was found with a cremation burial at King Harry Lane cemetery (associated with the contemporary settlement at Verulamium) dated AD 1-40 (Stead and Rigby 1989, 354, 84) and may represent the contents of a purse. The evidence from this cemetery (including imported vessels and other objects) suggests close contact with Rome, so it is unsurprising to see new ways of using coinage represented. This is clearly a very different kind of deposit to the earlier potin hoards, reinforcing the argument that the early first century BC saw a crash in the value of potin from which there was no elastic recovery.

The new metal, silver, may not yet have been incorporated into traditional hoarding practices, perhaps not being considered suitable for wealth storage or votive offerings. Silver may at first have occupied an ambiguous position in the new systems of value which were being created through the colonial encounter.

Further expansion and experimentation; Disruption; Peak hoarding:

Imports/Production: Red-gold, silver and bronze coinage continued to be issued by centralised authorities until the conquest. There is evidence for the injection of Tiberian silver bullion into British coin-production networks (chapter two). Issues from this period are the first to use fully Classicised imagery. Allen (1975, 2) even argues that the dies of the later issues of Cunobelin "must have been the work of an engraver with experience of Greek or Roman coin-making," suggesting the movement of Mediterranean craftworkers. Roman coins appear to be in circulation towards the end of the Iron Age period, perhaps before the military conquest. This is unsurprising considering the region's close ties to Rome.

AD 10–40

Site	County	No. Iron Age Gold	No. Iron Age Silver	No. Roman Silver	No. Iron Age Bronze	TOTAL	Hoard Type	Context/ Site Type
Wallingford	Oxon	21				21	IA Gold	Unknown
Wheathampstead	Herts	5	6			11	IA Gold/ Silver	Hillside near river
Marks Tey 1843	Essex	9				9	IA Gold	Unknown - near Colchester
Berkhamsted	Herts	71	48			119	IA Gold/ Silver	On ridge below brow of hill, above river
Colchester 1980	Essex	6				6	IA Gold	Unknown - near Colchester
Epping Forest	Essex	12				12	IA Gold	On or near hillfort
Great Waltham 1999	Essex	36				36	IA Gold	Unknown
Reading	Berks	92				92	IA Gold	Unknown
Ardleigh	Essex	1	1			2	IA Gold/ Silver	Unknown
Colchester 1835	Essex	25	15		10	50	IA Gold/ Silver/ Bronze	Unknown – near Colchester
Colchester 1930	Essex				10	10	IA Bronze	Settlement, Colchester (Sheepen)
Winslow	Bucks	17	9			26	IA Gold/ Silver	Unknown
Grove	Oxon	9		1		10	IA Gold/ Roman Silver	Unknown

This is a period of further expansion and experimentation in the coin types selected for inclusion in hoards. Precious metals predominate. Six gold hoards range from small to large, and the first mixed gold-silver groups appear: five hoards, again ranging from small to large. The Grove hoard contained a single Roman Republican *denarius* alongside nine gold staters of Cunobelin, highlighting ties to Rome. There is also one bronze hoard from Sheepen

(Colchester 1930), and a mixture of bronze, silver and gold coins from close to the Balkerne Lane Temple site (Colchester 1835). The very mixed nature of the latter assemblage suggests that it may represent an accumulated deposit at a temple site rather than a hoard. Again a variety of areas, site types and landscape locations are represented, with a total of three hoards from at or near the major centre at Colchester (Marks Tey 1843, Colchester 1835, 1930 and 1980). The two Hertfordshire hoards (Berkhampstead, Wheathampstead) are both located on hillsides or just below the brow of a hill close to a river.

AD 30–45

Site	**County**	**No. Iron Age Gold**	**No. Roman Silver**	**TOTAL**	**Hoard Type**	**Context/ Site Type**
Weeley	Essex	4	3	7	IA Gold/ Roman Silver	Hillside
Essendon	Herts	254	4	258	IA Gold/ Roman Silver	Hillside – shrine site?
Ayot St. Lawrence	Herts		230	230	Roman Silver	Unknown – near Verulamium
Woodham Mortimer	Berks		189	189	Roman Silver	Unknown
Mersey Island	Essex		5	5	Roman Silver	Coastal

All hoards terminating in this period close with pre-Claudian Roman imperial coins, rather than the latest Iron Age issues minted further south e.g. Epaticcus, Cara. Three hoards consist purely of Roman silver. The absence of Iron Age silver perhaps suggests that Roman *denarii* had already begun to take on some of its social functions.

The other two hoards (Weeley and Essendon), both hillside locations, consist predominantly of Iron Age gold issues but terminate with Roman *denarii*. Weeley is a small hoard of just seven coins, whereas a total of over 250 have been unearthed at Essendon. Both have unusually varied compositions. Essendon, in particular, probably consists of at least three separate hoards, perhaps as many as nine (BM records; Stead *et al.* 2006). This may represent a long-lived shrine site.

The 18 hoards terminating AD 10–45 represent an expansion of hoarding practices, both in the types represented and the range of locations, with an increasing focus on areas around the settlement centres (and minting sites) at Colchester and Verulamium. This increase in the level of hoarding evidence may reflect the disruption of the Roman conquest. Coinage once again became a politically volatile material, which would have represented not only personal or communal wealth, but also the social networks in which individuals and communities were enmeshed. However, despite the increasing predominance of Roman issues, there is no sea-change in hoarding practices. This peak-hoarding period is sporadic, characterised by increasing numbers of medium to large hoards, rather than vast hoards at single sites (unlike the thousands of Thurrock potins, or the vast silver deposits at Hallaton, during the conquest period - see below).

Decline in precious metal hoard evidence; Elastic response with bronze issues:

Imports: After AD 43, production appears to cease fairly abruptly in the North Thames region, although some posthumous issues of Cunobelin may be post-conquest (Haselgrove 2006a). In the Claudian period, Iron Age coinage was supplanted by imported Roman issues, which seem to have taken on many of its social functions. Iron Age coins may, however, have retained some aspects of their value, and remained in circulation for a period of at least thirty years. This may have been made possible by the close articulation between North Thames Iron Age issues and Roman coins, which showed to some degree a shared symbolic language of value.

AD 41–54

Site	**County**	**No. Roman Bronze**	**Hoard Type**	**Context/ Site Type**
Colchester 1826	Essex	36	Roman Bronze	Romano-British cemetery, Colchester
Colchester 1926	Essex	27	Roman Bronze	Romano-British settlement, Colchester
Colchester 1965	Essex	4	Roman Bronze	Romano-British settlement, Colchester
Minster Lovell	Oxon	24	Roman Bronze	Unknown

Included here are hoards which close with Roman Claudian issues. Again, there is some overlap with the preceding period. All four examples are small to medium bronze hoards. The apparent hiatus in precious-metal hoarding is potentially deceptive. Claudian silver is rare in Britain, and the hoards closing with pre-Claudian *denarii* could have been deposited at any time up to the Flavian period (Orna-Ornstein 1997).

Three bronze hoards (Colchester 1826, 1926, 1965) are settlement or cemetery finds from Colchester. This represents continuity with Iron Age practices: the two known Iron Age bronze hoards were also small deposits at large settlement centres (Sheepen: Hawkes and Hull 1947, 101, 140; St. Albans: Stead and Rigby 1989, 354). This suggests an elastic response to the introduction of a new form of low-value bronze coinage, with bronze coins retaining a similar value and social role across the conquest period.

Elastic response in precious metal hoarding evidence:

AD 54–69

Site	County	No. Iron Age Gold	No. Iron Age Silver	No. Roman Silver	TOTAL	Hoard Type	Context/ Site Type
Waltham St. Lawrence	Berks	56	119	21	196	IA Gold/ IA Silver/ Roman Silver	Hillside shrine? Near Roman Temple site

Only one hoard from the North Thames region closes with Neronian issues. It is a very unusual case, and comes from the south-western edge of the study region. This is the hoard from Waltham St. Lawrence (Burnett 1990), which contains Iron Age gold alongside both Iron Age and Roman silver issues. For the first time in any North Thames hoard, silver issues predominate. This may represent a shift towards a more 'Roman' system of value; gold had always made up the bulk of Iron Age hoards. The hoard was discovered slightly to the west of the Roman Temple at Weycock Hill. Unusually, it mixes earlier Iron Age types, including Gallo-Belgic E, British Q and early bimetallic issues (though not early British gold), with later inscribed types, predominantly Verica and Epaticcus, and Roman coins. The Iron Age composition is not unprecedented; a similar (although much smaller) group of Iron Age coins was recovered on the coast of Selsey, West Sussex, in 1986 (Bone and Burnett 1986), and a similar group including Roman issues has been reported from a temple site at Wanborough, Surrey (Haselgrove 2005b Cheesman 1994). The Roman issues most likely associated with the Waltham St.Lawrence hoard include 11 *denarii* of the Roman Republic, 8 of Mark Anthony, one of the civil wars and one of Vitellius (i.e. closing AD 69). At both Waltham St. Lawrence and Wanborough, it is possible that these represent a sequence of deposits at a long-lived ritual site; excavations at Wanborough have revealed several separate phases of activity (Haselgrove 2005b).

The burial of precious-metal coinage at a possible temple site has echoes of earlier Iron Age hoards such as that at Essendon, and suggests that Iron Age precious-metal coinage remained in circulation (or safekeeping) well after the conquest. Across the client kingdoms and East Anglia, Iron Age coins (particularly precious-metal issues) may have remained in circulation for more than a generation after the annexation of Britannia (Dennis 2006; Creighton 1992). These coins continued to be deployed in similar social contexts, in this case possibly as a votive offering. The association with Roman coins at several sites suggests that these deposits represent the meaningful deposition of valuable objects, rather than merely disposing of coinage that was no longer 'legal tender'. Continuity in hoarding practices in southern Britain implies that some of the social functions of Iron Age precious metal coinage were transferred to Roman issues.

AD 69–96

Site	**County**	**Roman Gold**	**Roman Silver**	**Roman Bronze**	**TOTAL**	**Type**	**Context/ Site Type**
Shillington A	Beds	127			127	Roman Gold	Shrine site? On springline below scarp
Hemel Hempstead	Herts		19		19	Roman Silver	Unknown
St. Albans	Herts		4?		4	Roman Silver(?)	Romano-British cemetery
Bedford	Beds		2		2	Roman Silver	Unknown
Verulamium 1957	Herts			3	3	Roman Bronze	Romano-British settlement, Verulamium

Hoards terminating in the Flavian period and beyond contain only Roman issues. However, continuity in hoarding practices remains. The small Flavian bronze hoard from Verulamium fits with established patterns of bronze deposition (small groups at urban sites). Silver is also represented, with three small to medium hoards of *denarii* (at Hemel Hempstead, Bedford and St. Albans). With silver there is a greater degree of experiment and expansion in hoard contexts and types. The 19 *denarii* from Hemel Hempstead are an unremarkable deposit, in keeping with earlier traditions. The small hoard from St.Albans, however, contained at least one *denarius*, and was found in a child's grave at St. Stephen's cemetery near King Harry Lane (Frere *et al.* 1985, 293). This represents the first time that silver coinage appears in such a context, where previously only bronze was used. This may reflect the incorporation of silver into the same sphere of day-to-day transactions that most likely characterised the use of bronze coins (although the first definite example of a mixed hoard is in the Hadrianic period, at Wendlebury, Oxon). The third and final silver hoard, two Flavian coins from near Bedford, were found in association with a possibly second-century gold ring, so may in fact have been deposited slightly later. There is also a Flavian gold hoard of 127 Roman *aurei* from Shillington (Curteis and Burleigh 2002, 65). This appears to be a hillside shrine site, perhaps comparable to Waltham St. Lawrence. It is located on a springline below the chalk scarp of the north Chiltern Hills, overlooked by a long barrow and at least one round barrow on the scarp. Other Late Iron Age and early Roman pottery and metalwork were also found at the site, including brooches, two Iron Age coins, and a later hoard (or hoards) of Roman *denarii* terminating in the Hadrianic period. It appears that gold as well as silver (in this case Roman *aurei* and *denarii*), remained suitable as a form of wealth storage, and possibly votive offering.

The early Roman period in the North Thames region shows continuity in precious-metal and bronze hoarding practices, in terms of both the metal types and locations selected for acts of deposition. As in other parts of southern Britain, Iron Age coins remained in circulation long after the region was annexed. Even after Iron Age coins ceased to be deposited alongside Roman issues, Roman coins themselves were incorporated into practices reminiscent of Iron Age hoarding, as at Shillington. This suggests that the values associated with particular types of coin remained constant, an elastic response to the upheaval of the conquest and the introduction of Roman coinage. This is perhaps to be expected in a region which had been using a tri-metallic system of coinage, incorporating Classical imagery and inscriptions, for over half a century. Although Roman coins were not local products, they were probably not unfamiliar in appearance. North Thames issues had been centrally produced at the two mints at Verulamium and Colchester since the beginnings of the Tasciovanan dynasty, c.50 BC. Coin supply was probably already controlled by a Roman-oriented elite, even in the late first century BC, and there seems to have been a high degree of continuity in symbolic languages of power across the conquest (Creighton 2006a).

I will now consider the East Midlands, where the response to the conquest was very different.

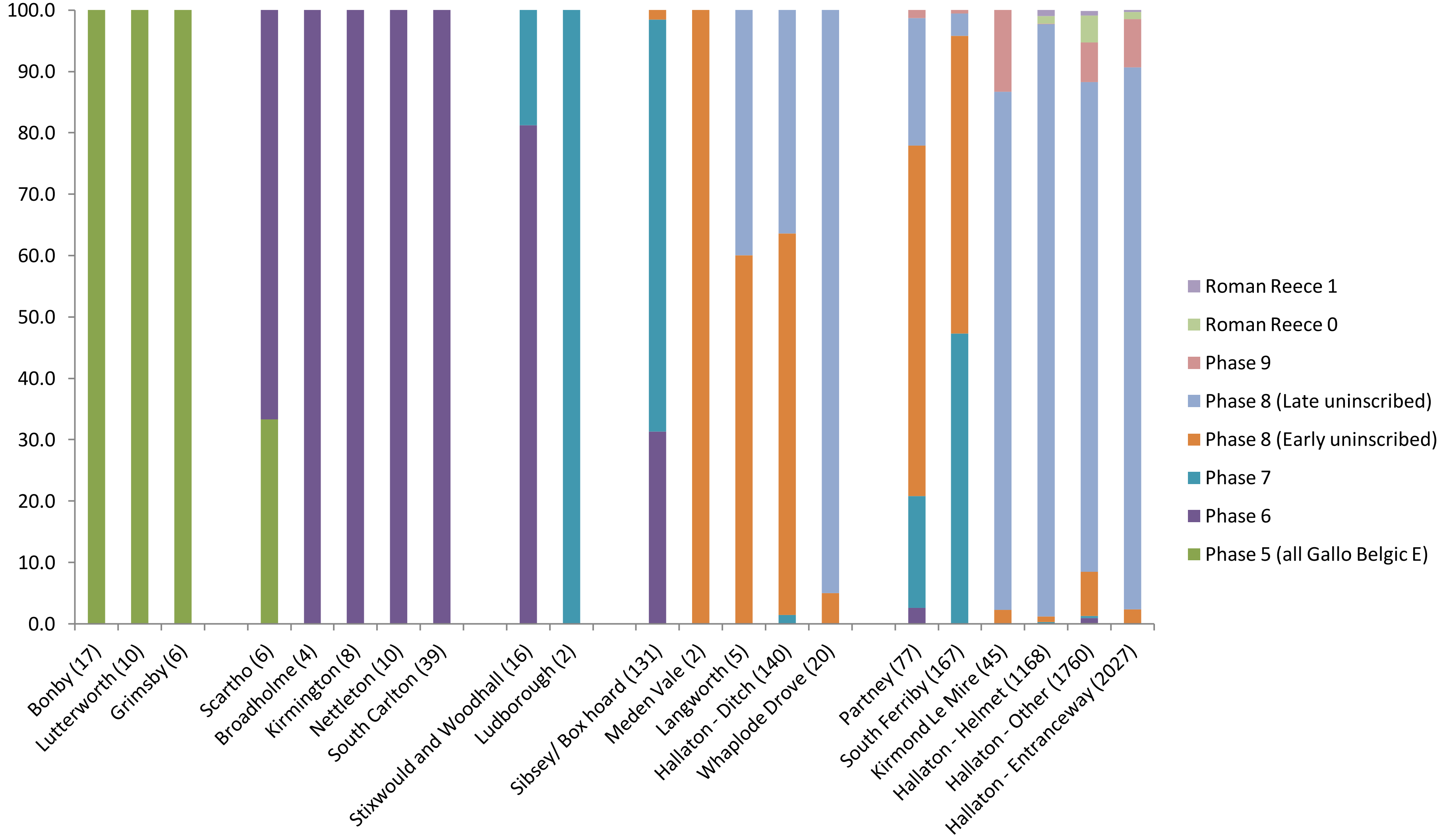

Figure 4.15: Iron Age hoards from the East Midlands, by % composition (numbers in brackets denote no. identified coins in hoard)

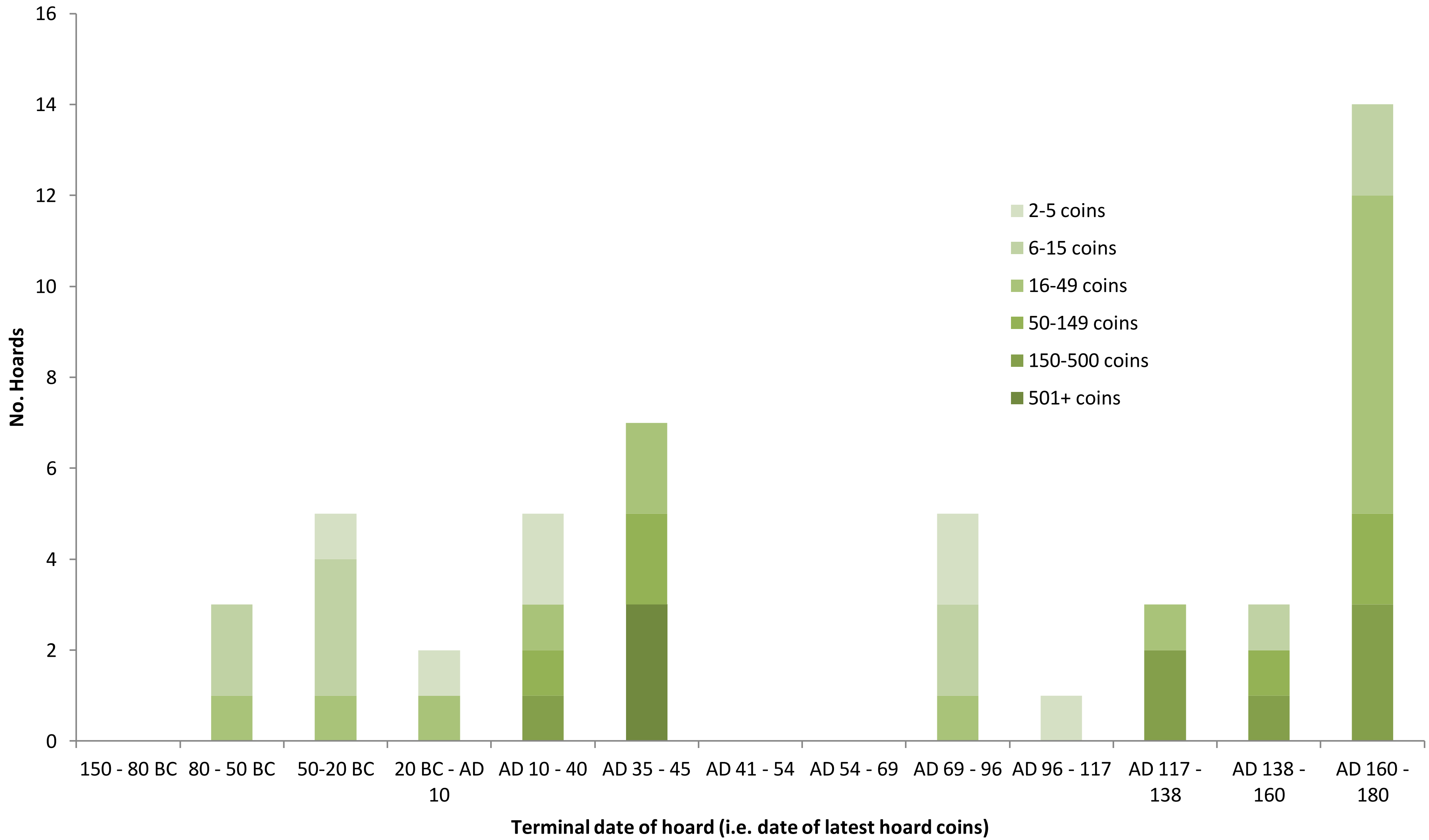

Figure 4.16: Iron Age and Early Roman coin hoards in the East Midlands by hoard size

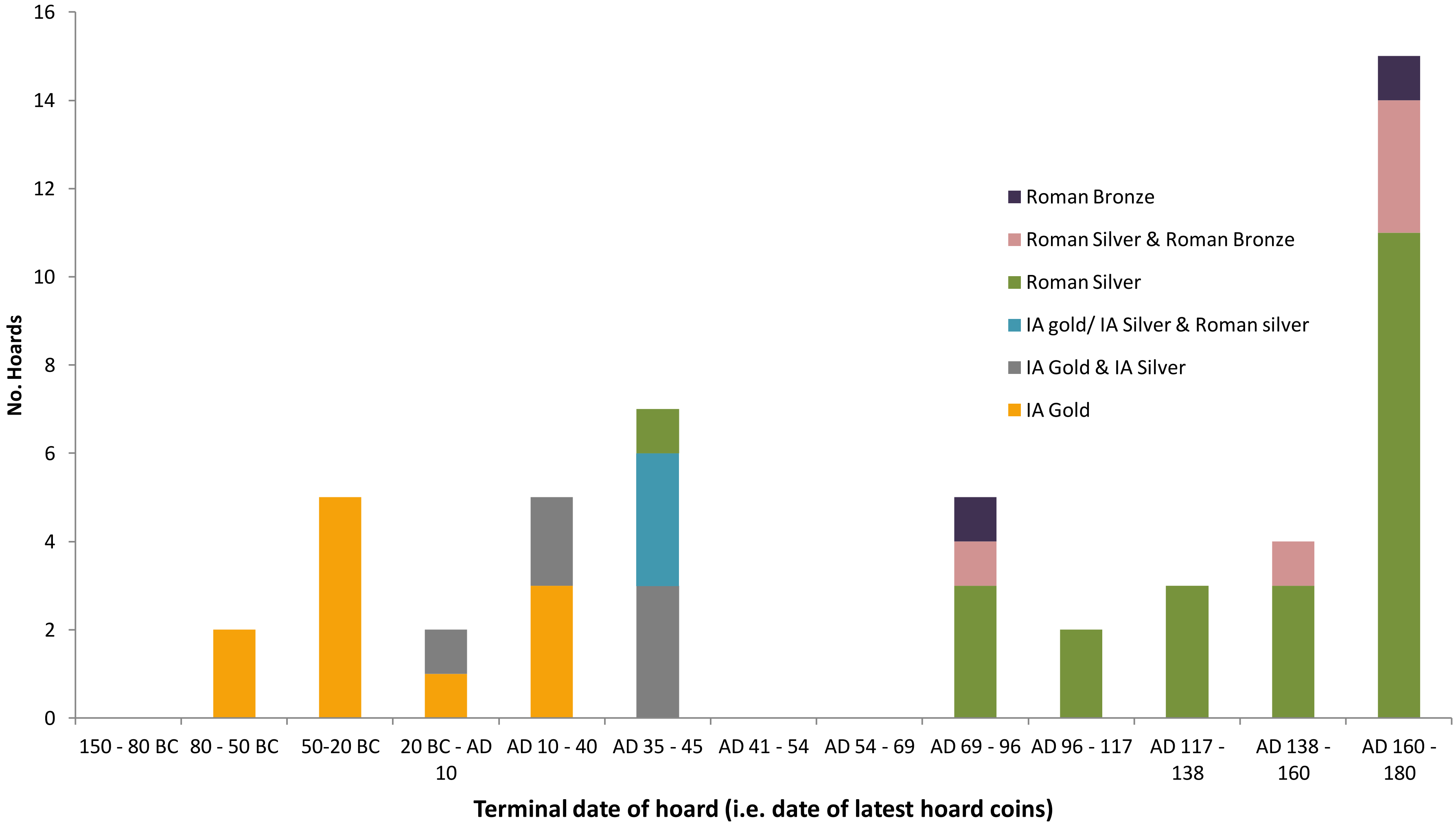

Figure 4.17: Iron Age and Early Roman coin hoards in the East Midlands by hoard type

4.3.3 Iron Age precious metal coinage in the East Midlands (inelastic)

(Figures 4.6-4.7; 4.15-4.17)

Initiation:

80–50 BC

Site	**County**	**No. Iron Age Gold**	**Hoard Type**	**Context/Site Type**
Bonby	Lincs	17	IA Gold	Unknown, at western edge of Wolds
Peatling	Leics	10	IA Gold	Unknown
Grimsby	Lincs	6	IA Gold	Unknown, near South Humber shore

Imports: There was no local production in this early period; all coinage was sourced through southern British communities, directly from Belgic Gaul, or through a combination of these channels. Early coinage such as British A-G and J, and Gallo-Belgic A-D are not well-represented in the East Midlands, where it appears that coinage did not become widespread until the mid-first century BC.

While in the North Thames region we see a period of expansion and peak-hoarding in the mid first century BC, in the East Midlands this is a period of initiation, with only three small to medium hoards, consisting exclusively of Gallo-Belgic E staters, a total of 33 coins. This represents a reasonably large proportion of gold coins known from this period. There are just 13 recorded single finds (three plated).

Expansion and Experimentation:

50–20 BC

Site	**County**	**No. Iron Age Gold**	**Hoard Type**	**Context/Site Type**
Scartho	Lincs	6	IA Gold	Unknown, near South Humber shore
Broadholme	Lincs	4	IA Gold	Unknown, just west of Lincoln
Kirmington	Lincs	8	IA Gold	Unknown, low ground in Wolds
Nettleton	Lincs	10	IA Gold	Hillside? Wolds
South Carlton	Lincs	39	IA Gold	Unknown, just north of Lincoln

Imports/Production: The first North-Eastern coins were British H and I gold staters produced from c.50 BC (Leins 2012). Scattered finds of gold blanks and pellets suggest that this was the least centralised period of coin production. Compositional analyses by Northover (1992) and Cowell (1987, 1992) suggest that a mixture of early southern British gold and imported Gallo-Belgic E staters could have provided the metal source. The relative absence of early British issues, and the fact that local production follows the appearance of Gallo-Belgic E, could support a model of knowledge transfer through participation in continental minting projects. These first local coins may have been produced in North Lincolnshire, suggesting a possible connection with Late Iron Age centres along the Humber (although none have produced evidence for coin production). Easy access to maritime trade routes might have given groups in North Lincolnshire an advantage in forging connections further afield.

Five East Midlands hoards terminate with issues dated to 50-20 BC. All are small to medium hoards of gold staters. Scartho combines North Thames L and Q issues with Gallo-Belgic E; the other hoards consist exclusively of local issues. In addition to these hoards, there are around 150 single finds of early North-Eastern gold staters, which are much more common than single finds of earlier imports (Figures 4.6-4.7). This expansion in deposition may be due to changes in hoarding practices, or simply the wider availability of gold coinage. Whatever the case, it appears that locally produced coinage was preferred for deposition. In this earliest period of decentralised production, it is possible that both coin production and consumption of coins through hoarding became a field of competition between local elites, perhaps explaining the increased number of coins entering the archaeological record.

20 BC–AD 10

Site	**County**	**No. Iron Age Gold**	**No. Iron Age Silver**	**TOTAL**	**Hoard Type**	**Context/Site Type**
Stixwould and Woodhall	Lincs	14	2	16	IA Gold/ IA Silver	Unknown, Clay Vale
Ludborough	Lincs	2		2	IA Gold	Unknown, Wolds

Production: After 20 BC, coins minted in the East Midlands began to reflect earlier changes in southern metallurgy: silver was now issued alongside red-gold coinage. Both gold and silver bullion were in use, most likely sourced through southern Britain, explaining the shared alloy shift. Nevertheless, the first North-Eastern silver issues are the most classicised of the series, suggesting communities were at the very least aware of the ultimate *source of the bullion. The foray into classical imagery was short-lived, and inscriptions did not appear for some time, suggesting a certain resistance to Roman iconography.*

The paucity of hoards from this period may reflect a period of disruption surrounding the introduction of the new metals (red-gold and silver), although it seems that both were subsequently incorporated into existing hoarding practices. The hoard from Stixwould and Woodhall is the first bi-metallic group. The increased number of single and site finds in comparison to the preceding period suggests that the use and circulation of coins may have been expanding at this time, even if this is not reflected in the hoard evidence: over two hundred single gold staters are known from this period, some of which may represent intentional deposits.

Massive peak hoarding around the conquest

Production: Production of a bi-metallic coinage continued into the first century AD. By the end of this period, silver predominated, although gold issues (many plated) continued to the end of local production. Although Classical imagery never reappeared, inscriptions were introduced around AD 20-30. A wide variety of inscribed types appear to have circulated simultaneously (Leins 2012). The introduction of inscriptions coincides with changes in production practices, with the introduction of hot-striking techniques that might have made large-scale production more efficient. Whilst the earliest North-Eastern issues clustered around North Lincolnshire, subsequent issues are generally more widely dispersed. Production appears to have been largely devolved to two southern minting centres (Old Sleaford and Leicester) although the VOLISIOS issues may represent a continuing northern tradition. The increasing centralisation of coin production seen at the probable southern mints, and the likely use of Tiberian silver bullion after around AD 20, highlight increasing interaction with the southern dynastic kingdoms. Despite these shifts, other aspects of coin production, including alloying techniques, remain unchanged and the North-Eastern coinage system remains fragmented, probably reflecting the absence of a centralised minting authority. In addition to closer ties to the southern kingdoms, the burial of Roman coins and objects alongside Iron Age issues at Hallaton suggests that by the end of this period communities in the East Midlands may well have had their own connections to Rome.

AD 10–40

Site	**County**	**No. Iron Age Gold**	**No. Iron Age Silver**	**No. Iron Age Bronze**	**TOTAL**	**Hoard Type**	**Context/Site Type**
Sibsey/ Box hoard	Lincs	131			131	IA Gold	Hillside, near fen edge
Meden Vale	Notts	2			2	IA Gold	Unknown
Langworth	Lincs	1	4		5	IA Gold/ IA Silver	Unknown, just east of Lincoln
Whaplode Drove	Lincs	20			20	IA Gold	Unknown, near fen edge
Hallaton - Ditch	Leics	2	137	1	142	IA Gold/ IA Silver/ IA Bronze/	Shrine site, just off brow of hill.

Five hoards terminate with issues of this period, including the ditch deposits at Hallaton (assigned to this earlier period due to the absence of *denarii* and ISSVPRASV issues). The deposits from Hallaton are here considered in terms of broad groups: the ditch deposits, the helmet deposits, the entranceway deposits and the unstratified coins. Unstratified coins post-dating the latest securely provenanced hoard coin (an AD 41 issue of Claudius) were excluded. All unstratified coins are also considered as a site assemblage group in chapter five. This grouping of the hoards is an attempt to make the site at Hallaton comparable to other less well recorded groups such as Essendon and Waltham St. Lawrence, without losing all of the nuances of the evidence.

Two of the three gold hoards from this period (Sibsey and Meden Vale) terminate early, containing only uninscribed issues. By the time inscriptions were introduced, silver was a well-established medium of value and wealth storage, predominating in both of the mixed-metal hoards. Only one hoard terminating with inscribed issues (Whaplode Drove) is not dominated by silver. This is very different to the North Thames region, where gold predominated in all Iron Age hoards.

AD 30–45

Site	County	No. Iron Age Gold	No. Iron Age Silver	No. Roman Silver	No. Roman Bronze	TOTAL	Hoard Type	Context/Site Type
Partney	Lincs	7	75			82	IA Gold/ IA Silver	Hillside, possible temple
South Ferriby	Lincs	81	86			167	IA Gold/ IA Silver	Riverside (S. Humberside)
Kirmond Le Mire	Lincs	1	34			35	IA Gold/ IA Silver	Hillside?
Hallaton: Helmet	Leics	22	1120	26		1168	IA Gold/ IA Silver/ Roman silver	Shrine site, just off brow of hill
Hallaton: Other, unstratified	Leics	53	1616	91		1760	IA Gold/ IA Silver/ Roman silver	Shrine site, just off brow of hill
Hallaton: Entranceway	Leics	42	1956	29		2027	IA Gold/ IA Silver/ Roman silver	Shrine site, just off brow of hill
Warsop	Notts			22		22	Roman Silver	Unknown

This latest Iron Age period is dominated by Hallaton. The vast majority of the Hallaton coins were probably buried around AD 43-50 (Leins 2012), on the cusp of the Roman conquest. After this period, Iron Age coinage appears to have fallen out of use in the East Midlands. The huge quantity of coins deposited at Hallaton represents an unprecedented increase compared to previous periods. Removing these coins from circulation may have been associated with peri-conquest changes in the value and social role of silver.

The incorporation of Roman silver objects at Hallaton supports the hypothesis that these changes may have been the result of the colonial encounter. The dramatic deposition events at this site may have been a way to celebrate (or attempt to control) new social connections and sources of power and wealth. Objects such as the Roman silver-gilded cavalry helmet and cheek pieces may represent diplomatic gifts from envoys to local elites. Incorporating these objects into an exaggerated form of existing hoarding practices was perhaps a way of neutralising, as well as publically recognising, the foreign influence of these exotic objects (chapter three). The complex relationship between precious metals and power networks appears to have been coming to a head as people struggled to adjust to the massive social upheaval around the time of the conquest. Power-bases were shifting, and the role played by local coinage in negotiating power and authority in fluid and competitive Iron Age social structures peaked and then rapidly receded as Roman authority took hold.

Beyond Hallaton, four hoards terminate in this period. Three (Partney, South Ferriby and Kirmond Le Mire) are mixed Iron Age silver and gold hoards, in which silver predominates. All terminate with small numbers of ISSVPRASV coins. There is also a medium-sized Roman hoard from Warsop in Nottinghamshire, containing 22 Republican and early Imperial *denarii*, closing with issues of Tiberius (AD 14–37). This is comparable to contemporary and later hoards of Roman silver in the North Thames region, and it is significant that it occurs in Nottinghamshire, which lay outside the main area of Iron Age coin circulation (only one small hoard is recorded). Whilst Roman coinage seems to have been readily accepted in Nottinghamshire as a medium of value and wealth storage, this was not the case in Lincolnshire and Leicestershire (where Iron Age coinage was produced and deposited in large quantities).

Decline:

AD 41–69

Production: After the conquest, Roman coins replaced Iron Age issues, and local production gradually ceased, although it is possible that IISVPRASV (and perhaps some VOLISIOS) issues post-date the conquest horizon. Some Iron Age coins may have remained in circulation, but by-and-large Iron Age issues appear to drop out of circulation suddenly, and permanently; after Hallaton, no post-conquest hoards in the East Midlands mix Iron Age and Roman issues. Indigenous coin production ceases almost entirely within a single generation of the conquest, with the possible exception of low-value copper-alloy Claudian copies, which were used in interaction with the Roman military but were rarely selected for inclusion in hoards and certainly represent a very different phenomenon to Iron Age precious-metal coinage. 'Dumps' of decommissioned coin pellet trays are found in the peri-conquest horizon at the Late Iron Age centres at Bath Lane, Leicester (Clay and Mellor 1985) and Old Sleaford (Elsdon and Jones 1997). This sudden termination of indigenous production suggests that coinage was indeed tied up with processes of negotiating power and authority. The malleable power structures of the immediate pre-conquest period were now crystallised in a new form: political subservience to Rome.

There are no recorded hoards terminating in the Claudio- Neronian period. To a certain extent this mirrors national trends (compare Figure 4.18). Roman silver issues from this period are rare even as single finds, suggesting that few reached Britain. However, the East Midlands would need four or five additional hoards from the period to bring it in line with the British mean, suggesting that this does reflect a significant local pattern. After 15 years or so of apparently intense hoarding (albeit largely represented at one site), there is at least a twenty year hiatus in hoard evidence.

Hoarding, most likely including the deposition of votive hoards which were not intended for recovery, was a large part of Iron Age engagement with coinage, but suddenly this seems to stop. I have argued that a primary role of Iron Age coin production and deposition in the East Midlands was the assertion of power and authority by minting coins and engaging in conspicuous consumption through acts of deposition. This appears to end with Roman rule. Indeed, the complete absence of precious-metal hoards over at least a twenty year period suggests that precious-metal coinage may no longer have been considered a viable form of religious offering or wealth storage.

There is no reason why Romano-British hoarders in the East Midlands should have been inherently more likely to return for a savings hoard than their Iron Age forebears, or their counterparts in the North Thames region, particularly during this unstable period. Yet the patterns are strikingly different, especially considering the similarity between Roman single coin find profiles across the East Midlands and North Thames region (compare Figures 4.3 and 4.5). This hiatus in hoarding foreshadows an inelastic response to the disruption of the conquest and the introduction of Roman issues. Unlike the North Thames, where many of the social and religious functions of Iron Age coinage were potentially transferred to Roman coins, in the East Midlands precious metals (most particularly gold) do not appear to retain many of their previous associations. Some Iron Age hoards terminating with late issues could of course have been buried post-conquest, but there is no evidence that Roman coins were treated in the same way, particularly in Lincolnshire and Leicestershire.

Inelastic response:

AD 69–96

Site	County	No. Roman Silver	No. Roman Bronze	TOTAL	Hoard Type	Context/Site Type
Lincoln	Lincs		11	11	Roman Bronze	Roman military fort – purse?
Annesley	Notts	4		4	Roman Silver	Unknown
Upton	Notts	20		20	Roman Silver	Hillside
Hoveringham	Notts	4		4	Roman Silver	Riverside (Trent)
Askham	Notts	14+	?	14+	Roman Silver/ Roman Bronze	In an urn, accompanied by bones – burial?

Levels of recovered hoards remain low in the Flavian period. Although the East Midlands is now roughly in line with the North Thames and the British mean in terms of number, types and sizes of hoards (below), these are predominantly from Nottinghamshire. Only one hoard of this period is known in Lincolnshire, a group of 11 bronzes from a military context, which may represent a lost purse. If we exclude this military bronze purse assemblage from Lincoln, there are no hoards in Lincolnshire until Hadrian. In Leicestershire (aside from a possible hoard of 2-3 *denarii* of Trajan, reported in 1607) there are no known hoards until the reign of Marcus Aurelius (AD 161–180). In the heartland of competitive Iron Age coin production and conspicuous consumption through hoarding, there is an apparent hoarding hiatus of 60–100 years.

This is a peculiarity of the hoard record rather than merely an issue of supply: the East Midlands and North Thames show similar patterns in terms of site and stray finds. Roman bronze and silver from the Flavian period onwards are quite common finds in the East Midlands. This suggests that they became incorporated into the sphere of everyday exchanges, as was apparently the case in the North Thames, where Iron Age bronze coins already served this purpose. In the North Thames, where Iron Age minting was centrally controlled by a Romanised elite, the social functions of Iron Age coins in terms of wealth storage and votive offerings appear to have been readily transferred to Roman coinage. In Lincolnshire and Leicestershire, where Iron Age coinage served a very different social role, with distributed and perhaps competitive production between local elites, this was not the case. Roman coins certainly seem to have been available in similar quantities to the North Thames, but evidence for their use in hoarding practices is lacking. This disjuncture between pre- and post-conquest coin use practices may be connected to the lack of a shared symbolic language of value between North-Eastern and Roman coins. Unlike in the North Thames region, local Iron Age coins did not articulate directly with Roman issues, nor did they incorporate classical imagery.

There is no parallel in the East Midlands for the hoard of *aurei* from Shillington. Roman gold remains largely absent from the East Midlands until the fourth century AD (Bland and Loriot 2010). Aside from a possible savings or votive hoard at Upton in Nottinghamshire, there is nothing comparable to Iron Age hoards from the pre-conquest periods. Precious metals appear to have become devalued as a medium of value and wealth storage. Removed from the sphere of elite competition, precious metals were no longer considered suitable for use in conspicuous consumption, or perhaps such practices were made unnecessary by the changes in political structure which accompanied the beginnings of Roman rule.

4.3.4 After the conquest: Contrasting responses in the North Thames and East Midlands

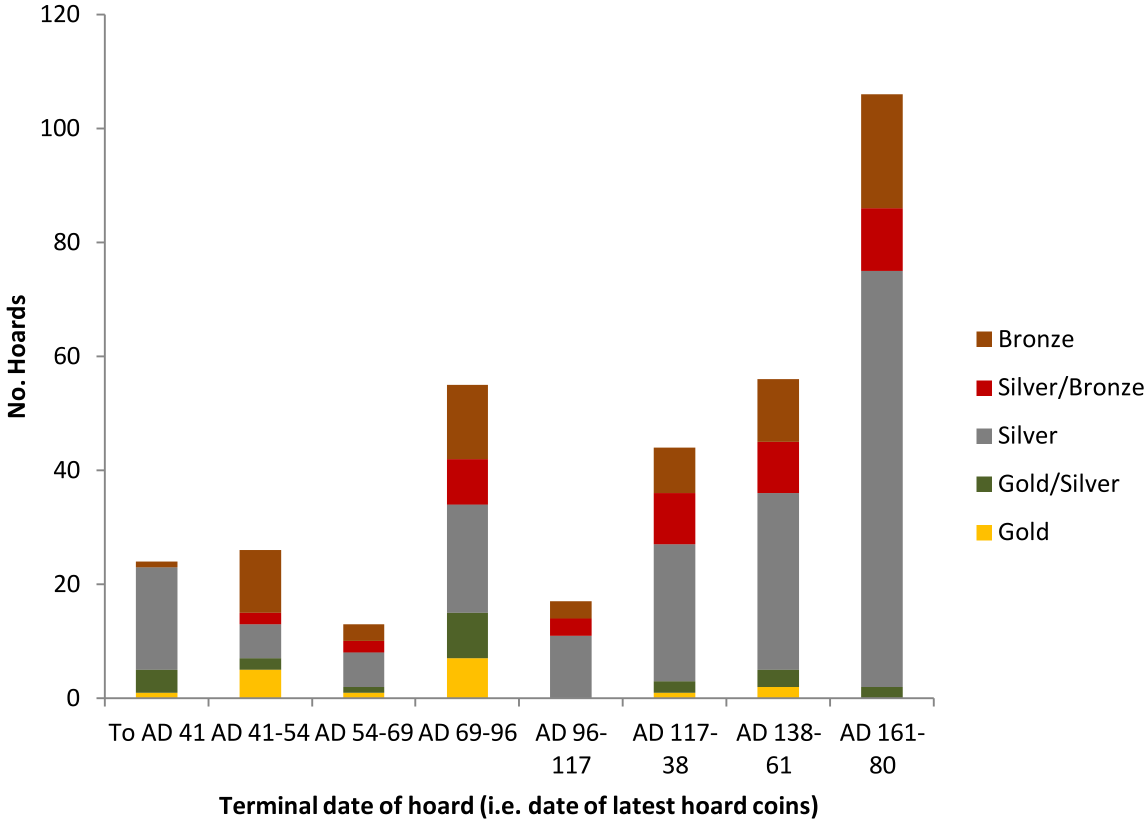

Figure 4.18: Roman coin hoards in Britain (including Iron Age hoards terminating with Roman imperial issues). Sources: Robertson 2000, Bland and Orna-Ornstein 1997, Abdy *et al.* 2002, and Score 2012)

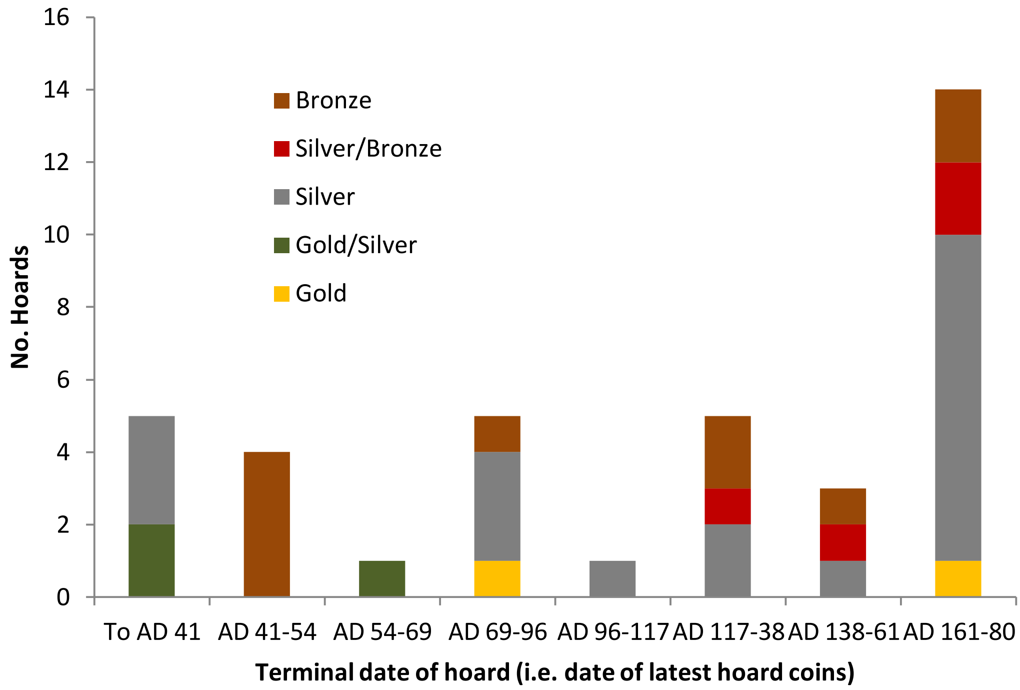

Figure 4.19: Roman coin hoards in the North Thames region (including Iron Age hoards terminating with Roman imperial issues)

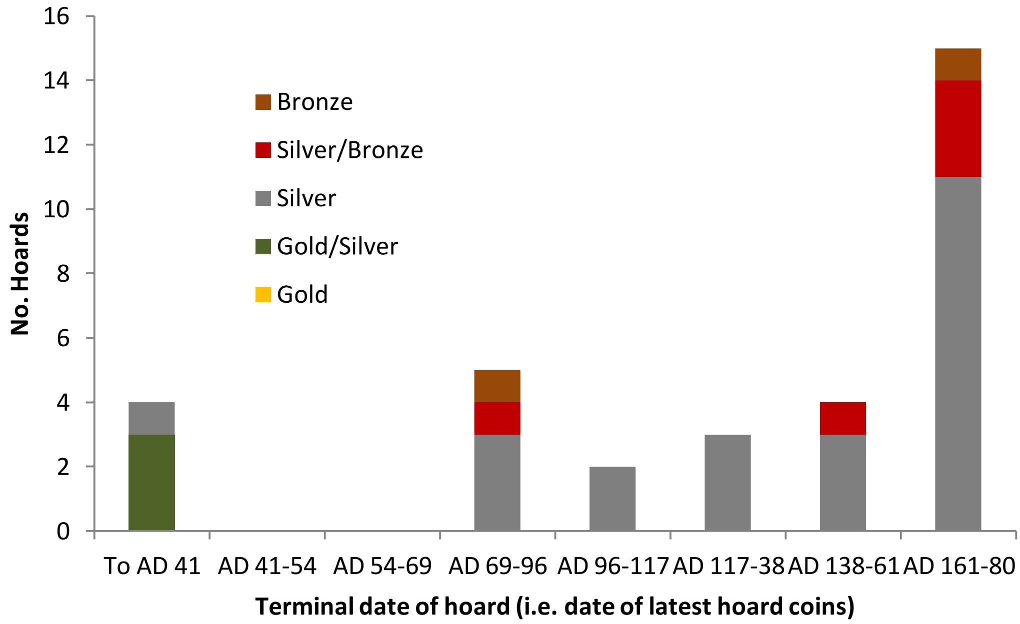

Figure 4.20: Roman coin hoards in the East Midlands (including Iron Age hoards terminating with Roman imperial issues)

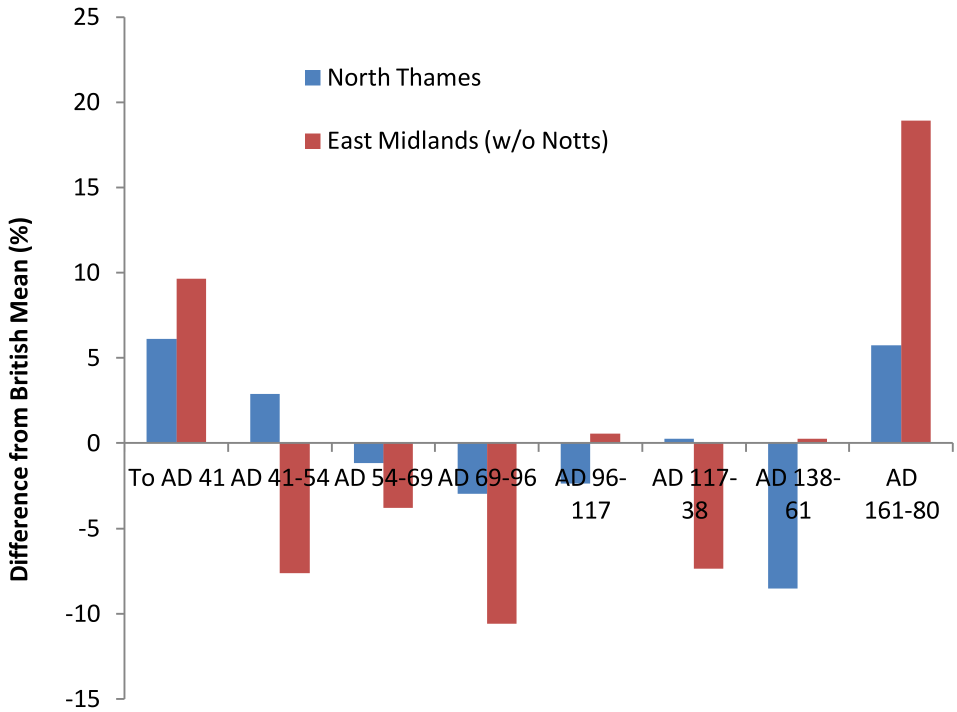

Figure 4.21: Roman coin hoards in the East Midlands and North Thames region: difference to the British Mean

Patterns of hoarding in the North Thames and East Midlands are noticeably different during the first century AD (compare Figures 4.19 and 4.20). Both show a peak period in the peri-conquest period, but in the North Thames this is sporadic, with small to large hoards across many sites and regions. In the East Midlands there is a small increase in sporadic hoards, but the most notable peri-conquest development is the massive peak at Hallaton. Both regions have an unusually high proportion of hoards terminating with pre-Claudian Roman issues compared to the British mean (see Figure 4.21). This reflects the incorporation of Roman issues into existing Iron Age hoarding practices (which will not have been the case in the many areas of Britain where Iron Age coinage was not in circulation).

The proportion of North Thames hoards terminating AD 41–54 remains slightly above the British mean, as bronze hoarding patterns appear to have been particularly resilient; there are several bronze hoards from this period. The East Midlands has no Claudio-Neronian hoards, suggesting a sharp break, rather than continuity in practices.

Hoarding settles down quickly in the North Thames. Hoards terminating AD 54–138 are close to the British mean in terms of the proportions from each period. Post-conquest hoarding practices incorporate many aspects of Iron Age traditions, with a continuation in the appearance of small bronze assemblages in grave deposits and at urban sites and the non-recovery of precious-metal hoards (both silver and gold) on hillsides and at shrine sites. Iron Age issues continue to be incorporated into these practices until near the end of the first century, suggesting these coins remained in circulation or safekeeping for several generations. After Iron Age issues disappear from hoards, Roman issues are used in similar practices, as at Shillington, where the hoard of *aurei* terminating with issues of Domitian (AD 81-96) was accompanied by a separate *denarii* hoard terminating with Hadrianic coins (AD 117-138). Deposition of gold also occurred in the second century: a hoard of 126 *aurei* terminating with Marcus Aurelius (AD 161-180) has been recovered from Didcot in Oxfordshire. Whilst these gold hoards could have been savings hoards intended for recovery, the continuation of Iron Age practices at Shillington is clear, and both demonstrate that gold continued to be valued as a form of wealth storage, and possibly even a votive offering. Silver issues were rare in Iron Age hoards, but began to become more dominant after the Roman conquest, taking on some of the social functions (in terms of wealth storage and use in depositional practices) previously ascribed to gold.

The pattern of hoarding appears less resilient in the East Midlands. Nottinghamshire, at the edge of Iron Age coinage networks, displays a pattern similar to the North Thames in terms of numbers and types of hoards, incorporating both silver and copper-alloy issues. However, there was a much longer apparent hiatus in hoarding in Leicestershire and Lincolnshire, lasting into the second century. It is not until the Antonine period that a significant number of non-recovered hoards are known from these counties. Iron Age hoarding practices would by this time have been well beyond living memory, and hoarding practices seem to owe more to surrounding regions such as the North Thames and Nottinghamshire than they do to continuation with Iron Age traditions. In one particular respect, however, the East Midlands remains distinct from neighbouring regions, and this is the relative absence of gold.

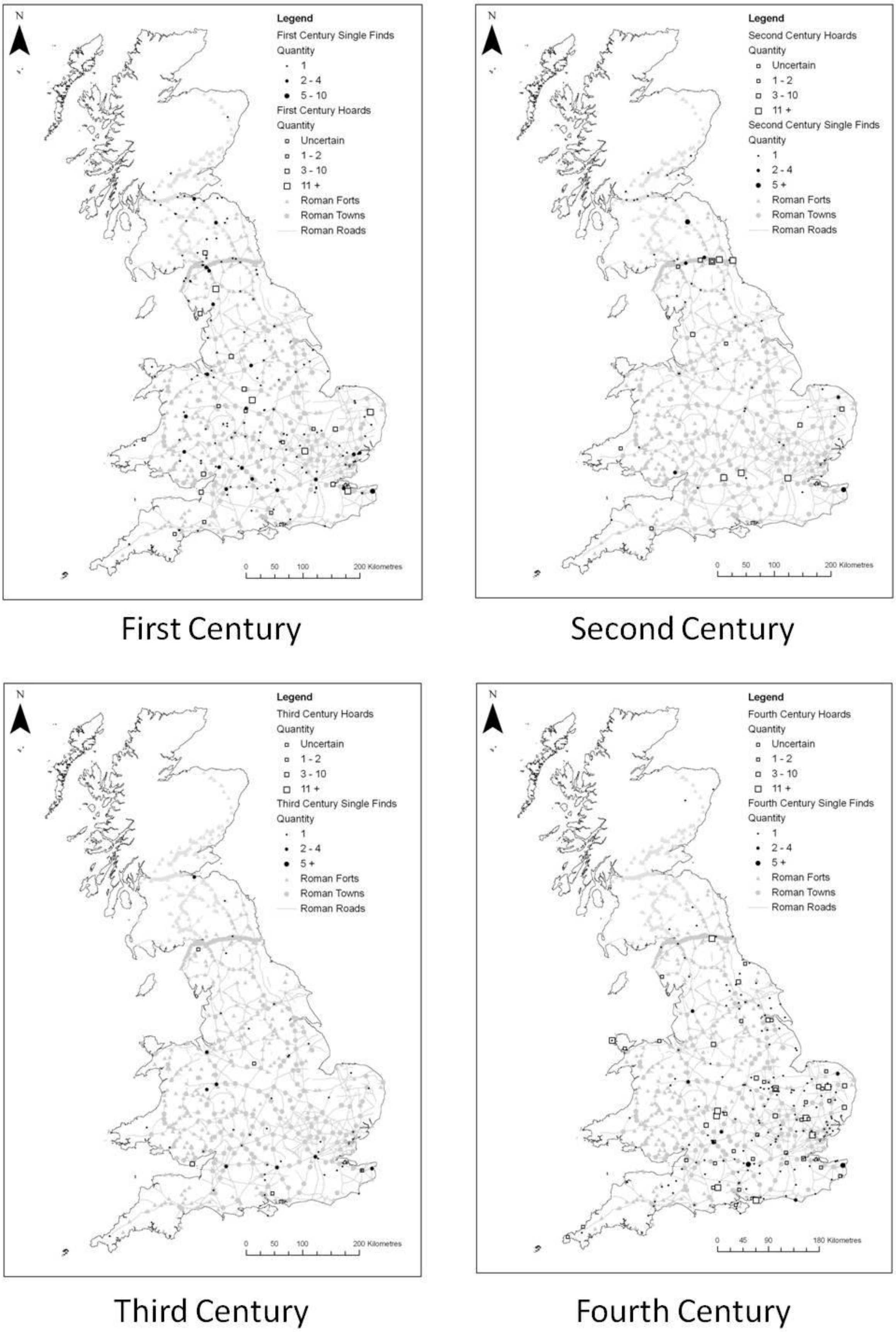

Figure 4.22: Distribution of first to fourth century Roman gold coins across Britain, from Bland and Loriot (2010).

There are just 15 single finds of first and second century Roman gold coins from the East Midlands (including Nottinghamshire), compared to 33 stray finds and 285 hoard coins from the North Thames region. Figure 4.22 shows the scarcity of gold coinage across the East Midlands compared to neighbouring regions, particularly notable for first century issues. Second and third century gold is rare throughout Britain, but even in the fourth century, when gold hoards are relatively common compared to preceding periods, they are missing from much of Lincolnshire. It is possible that this scarcity, particularly of early gold, is due to the same factors as the absence of hoards in the early Roman East Midlands.

In Lincolnshire and Leicestershire, Iron Age coinage may have performed a particular social role associated with conspicuous production and distribution as well as conspicuous consumption. Although communities in the East Midlands were woven into the same bullion prestige exchange sphere as the client kingdoms further south, this material had previously been deployed in a uniquely local sphere of competition and co-operation. In the new post-conquest political sphere, production, distribution and consumption of precious metal objects would no longer have been a suitable vehicle for elite competition, and this seems to have led to a lasting devaluation of precious metals in this region. Neither gold nor silver seem to have been used as a form of wealth storage or votive offering until the Antonine period, when silver hoards reappear. Gold hoards remain absent until the fourth century, perhaps indicating a lingering regional distrust of a metal which was once associated with Iron Age kingship. When the local elites were conquered, their symbols of power lost their value.

4.4 Overview

This chapter has outlined the framework for a new approach to coinage, with a focus on bringing together social aspects of production, use and deposition. Coinage emerges at the nexus of several spheres: a flow of materials and knowledge through shifting social networks driven by (and probably to a certain extent driving) social processes of competition and co-operation. These processes, and precious metals themselves, are an integral part of the colonial encounter between Britain and the Roman world.

In the East Midlands, competitive production and consumption of coinage came to a head around the time of the Roman conquest, as local communities were drawn into Roman social networks, and new forms of relationship (such as clientage and kingship) were being created, negotiated and maintained. Minting would have demonstrated the ability of individuals and communities to tap into prestige exchange networks (and networks of knowledge transfer) and make heavy investments in terms of local labour and resources. Through this practice, and the competitive consumption of coinage at sites like Hallaton, existing power structures could have been challenged, fragmented and renegotiated. It appears that the success of the Roman conquest in the decades after 43 AD caused this local system of competition, collaboration, negotiation and display to collapse, leading to a decline and transformation in the social role of coinage which was reflected in hoarding practices. In the North Thames client kingdom there was an elastic response, with Iron Age coins remaining in circulation or safekeeping, and Roman coins taking on many of the functions of their predecessors, a shift made easier by a shared symbolic language of value. In the East Midlands, the disruption was too great, and there was an inelastic response in the social value and function of precious-metal coinage, revealed in a hiatus in the hoarding evidence of up to a hundred years.

Chapter 5: Metalwork consumption - the spatial distribution of site and single finds

This chapter complements the discussion of hoards in chapter four by exploring the potential of single finds to illuminate the roles of portable metalwork. Coinage is considered alongside other artefact types to integrate numismatic developments into discussions of wider regional exchange networks and changing social practices.

Taking a similar approach in East Anglia, Hutcheson (2004, 2007) explored the distribution of horse-gear, torcs and gold coin hoards across the Norfolk landscape, and Dennis (2006) combined a study of silver coinage with an appraisal of other silver artefacts from the same region. However, both researchers were working with far smaller artefact assemblages. Neither analysis includes brooches, one of the most prolific categories of metalwork, and Dennis deals with coins largely in economic terms.

This study brings together a dataset of over fourteen-and-a-half-thousand objects, to consider how the production and consumption of coins and other objects changed across the Roman conquest, representing changes in social practices. Six categories are considered:

- Brooches
- Horse and chariot gear
- Iron Age coins
- Roman coins (up to and including Marcus Aurelius)
- Toiletry implements
- Miniatures and votive plaques (e.g. curse tablets)

These data are interrogated in terms of spatial distribution across the region, and the metalwork profiles of twenty-five key sites, to investigate changes in consumption.

Brooches and coins have been selected because, as some of the most numerous metalwork finds, they are likely to show trends in deposition. These objects can also be phased to reveal chronological changes in loss and depositional practices. Other object types spanning the conquest period (horse-gear, toiletry implements, and miniatures) are included for comparative purposes, but phasing of these objects is not attempted. Toiletry implements in particular are notoriously hard to date (Crummy and Eckhardt 2008), and miniatures were also in use throughout the Late Iron Age and into the early Roman period, with dating only possible when contextual information is available. Chronological treatment of horse-gear would be possible where level of find-recording allows. Further analysis of temporal patterns for this material, using the database produced for this study, is just one of many avenues of possible future research. These artefact categories also reflect an emphasis on non-ferrous metalworking. Most of these objects were manufactured in either copper alloy or precious metal. This complements extensive existing research on ironworking and the circulation of iron artefacts (e.g. Hingley 1990, 1997, 2006; Salter 1989; Salter and Ehrenrich 1984; Schrüfer-Kolb 2000).

5.1 Gathering the data

Data were collected from a number of sources:

(a) Local Sites and Monument Record offices and Historic Environment Records (**SMRs and HERs**),

(b) **Museum collections**,

(c) **Other sources** including journals, online databases and published corpora.

Objects were included provided they were securely dated to the Iron Age or Roman period (and in the case of brooches or coins could be assigned to a particular phase) and were provenanced to at least a parish or 4-fig NGR (i.e. within 1km^2). The database is included as Appendix 2. The provenance information has been reduced to the 4-fig NGR level to protect the location of sites, but archaeological context is given where available.

(a) **County and Unitary Authority SMRs and HERs**:

- Leicestershire and Rutland HER
- Leicester City HER
- Lincolnshire HER
- North East Lincolnshire SMR
- North Lincolnshire SMR
- Northamptonshire SMR
- Nottinghamshire SMR
- Peterborough City Council HER

(b) **Museums** known to have collected material from the study region:

- British Museum, London
- Ashmolean Museum, Oxford
- Jewry Wall Museum, Leicester
- Collections Resources Centre, Leics
- Grantham Museum, Lincs
- The Collection, Lincoln
- Piddington Roman Villa Museum, Northants
- The Resource Centre, Newark, Notts
- Nottingham Castle Museum
- Rutland County Museum
- North Lincolnshire Museum, Scunthorpe, North Lincs.
- Hull Museum (South Ferriby material)

(c) **Other sources**:

- Published site reports were consulted where available.
- Portable Antiquities Scheme online database[3] (PAS)
- Treasure Annual Reports (1997-2006)[4]
- Celtic Coin Index (CCI)[5]
- Celtic Art Database[6] (which incorporates major published and unpublished corpora such as Jope (2000); Palk (1984; 1992); MacGregor (1976); Spratling (1972))
- Other published corpora consulted include Hobbs (1996) on Iron Age coins, Hull and Hawkes' (1987) corpus of Iron Age brooches, Reece's (1991) 'Roman coins from 140 sites in Britain', Crummy and Eckhardt (2008) on cosmetic implements, and additional horse-gear from Palk (1992).

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3 http://www.finds.org.uk/database/index.php
4 http://www.culture.gov.uk/reference_library/publications/default.aspx
5 http://www.finds.org.uk/CCI/
6http://www.britishmuseum.org/research/research_projects/technologies_of_enchantment/celtic_art_database.aspx

- Several local archaeological societies publish journals with summaries of finds:

  East Midlands Archaeological Bulletin

  Lincolnshire History and Archaeology

  Transactions of the Lincolnshire Architectural and Archaeological Society

  Transactions of the Leicestershire Archaeological and Historical Society

  Transactions of the Leicestershire Architectural and Archaeological Society

  Transactions of the Thoroton Society of Nottinghamshire

  Northamptonshire Archaeology

  Rutland Record

5.2 Potential biases in the dataset

Certain object types, particularly Iron Age coins, are likely to be privileged in the dataset, as there is a long history of recording single finds of these objects through the CCI. Thus raw figures for Iron Age coins in comparison to Roman coinage are likely to be misleading. This problem was resolved by considering the difference between regional or site-based profiles and the calculated regional mean. This is similar to the approach taken by Casey (1988) and Reece (1991, 2002) for Roman coinage, and by Haselgrove (1987, 1992, 1993, 1996) for Iron Age coinage. Creighton (1990) and Haselgrove (1997) used similar approaches for brooches. Since the relative representation of find types should be uniform across the region, this allowed consideration of variation from the 'typical' metalwork profile.

There is also likely to be geographical variation in the quality of the dataset. Figure 5.1 shows the total distribution of catalogued metalwork from the study region, expressed according to the density of finds within each 1km grid-square. Overall, the coverage is good, with the exception of the fens, where metalwork is generally scarce. This may relate to ancient land-use in the fenland region, which was most likely only seasonally occupied for much of the Iron Age, and may have played a more industrial role as a centre for salt extraction in the Roman period.

Across the region, biases may have been introduced by variation in modern land-use (affecting the prevalence of metal detecting and the possibility of archaeological surveys) as well as by historical circumstances such as the length of time the PAS has been working with local metal-detectorists, the level of detail in HER site records, and the interests of local collectors, detectorists and archaeologists. Patterns not explained by these criteria may represent genuine variations in the deposition of ancient metalwork.

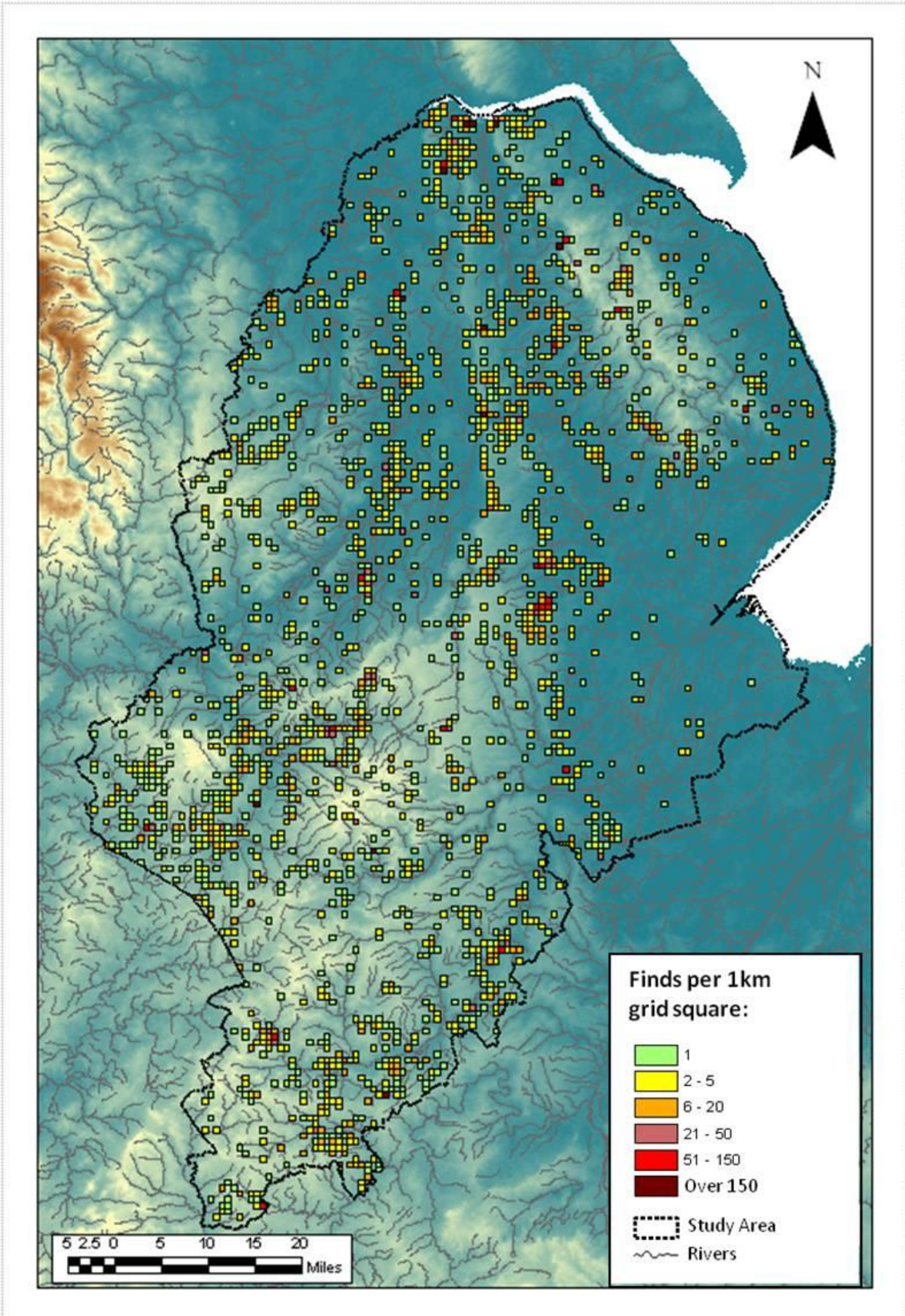

Figure 5.1: Distribution of Iron Age and Roman coins, brooches, horse gear, miniatures and toiletry implements in the East Midlands

Much of the geographical variation may be evident by county, since finds are often reported and recorded at a county level. Figure 5.2 shows the proportions of finds from each county according to the source where they were first encountered by the author (many finds were represented in several different sources).

Figure 5.2: Sources of data, by county

The find types represented in the CCI, corpuses, and published site reports can be considered self-explanatory and hopefully geographically representative, but the variable proportions of HER, PAS and museum data between counties deserves further consideration. Table 5.1 shows the relevant quantifiable criteria. All HERs/SMRs were visited, but level of recording of small-finds varied between counties. PAS data was available for every county, but the scheme has been in operation for different lengths of time in different regions. The main cause of variation in representation of different data sources was accessibility of museum collections. All museums thought to hold relevant collections were contacted, but certain collections were inaccessible due to restraints on staff time. This was particularly problematic in the case of large collections in Lincolnshire and Northamptonshire.

Table 5.1: Factors affecting data gathering, by county

Area	**PAS since**	**% Finds from PAS**	**Museum visits possible?**	**% Finds from Museums**
North Lincolnshire	1997	18	Yes	37
Lincolnshire and North East Lincolnshire	2002	65	Limited	5
Leicestershire and Rutland	2002	24	Yes	60
Northamptonshire and Peterborough	1999	40	Limited	12
Nottinghamshire	2002	76	Limited	3
AVERAGE across East Midlands	N/A	43	N/A	27

Figure 5.3 shows the representation of different artefact types in HER, Museum and PAS records. Unstratified coins from Hallaton (records at Market Harborough Museum) are not included, to avoid skewing the dataset owing to the exceptional nature of this assemblage.

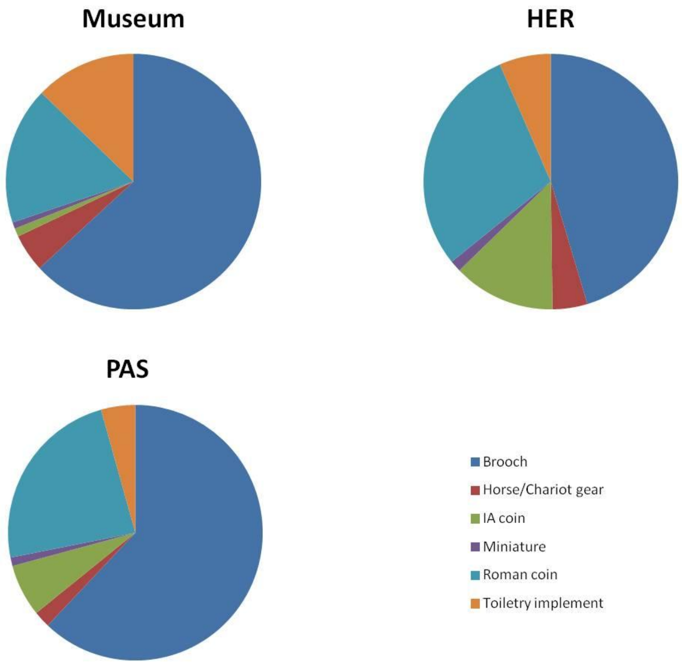

Figure 5.3: Artefact types, by data source

The representation of different artefacts types in these sources is broadly comparable. The only exception is the low proportion of brooches in HER records, where further examination and identification was not possible in the case of an unsatisfactory record. This suggests that brooches may be under-represented in Lincolnshire and Northamptonshire, where access to collections was limited. The sheer number of all find types from these counties may also be under-represented, but this was dealt with by considering finds-per-thousand rather than raw figures.

Aside from these considerations, the data for all counties should be broadly comparable despite the variation in sources. For example, the relative predominance of Colchester and early Colchester derivative brooches in Northamptonshire, or the low occurrence of earlier Iron Age coinage in Leicestershire, are most likely genuine patterns reflecting differential use of these objects in the past.

5.3 Object biographies

Chapters two and four considered the production evidence for coinage. Ideally it would have been desirable to conduct a similar enquiry into the production of other artefact types. However, whilst there is ample evidence for copper-alloy metalworking at a wide variety of sites across the East Midlands, it is not possible to divide production into phases as for coinage. The specific evidence for production of the artefacts in question is given in Table 5.2.

Local production took place at a variety of sites throughout the Late Iron Age and Early Roman periods. The overall picture is of dispersed and distributed production of these objects, almost certainly less controlled than the production of precious-metal coinage. Rather than focusing on production phases, it is easier to consider the consumption of these objects through an examination of their spatial distribution and representation on particular sites. Coins are considered first, followed by brooches and other metalwork.

Table 5.2: Evidence for object manufacture in the East Midlands

Object Type	Site/Location	Reference/ID	Nature of evidence
Brooch	Saltersford (Lincs)	Frere 1983, 301; Bayley *et al.* 2004, 36	Unspecified 'incompletely finished' brooch found during fieldwalking.
	Owmby Cliff Iron Age site (Lincs)	Scunthorpe Museum: SMAG:1969.149.041 Bayley et al. 2004, 36 Whitwell 1982, 133	Unfinished Nauheim derivative brooch from a Late Iron Age centre
	Lenton Keiby and Osgodby Parish (Lincs)	PAS: LIN-25A465	Stray find of a failed casting of a Zoomorphic plate brooch, most likely second century.
	Bosworth, Roman temple site (Leics)	Leics SMR MLE 9186 Fillery-Travis 2008	Large quantities of metalworking debris, and the low quality of some 'finished' pieces suggest that some Horse and rider brooches deposited at the site may also have been produced here, intended specially for deposition. These brooches are later than those considered in this study, most likely post-dating the late second century AD.
	Leicester	Jewry Wall A78.1975	Unfinished one-piece sprung (Nauheim derivative?) brooch.
	Piddington Roman Villa (Northants)	Piddington Museum AE1578/98	Unfinished spring, most likely from the manufacture of a two-piece (e.g. Colchester derivative) brooch, found during excavation.
Miniature	Blankney (Lincs)	LIN-F68BB4	Stray find of a miniature axe with unfinished edges, showing overspill from casting.
Horse Gear	Weelsby Avenue (North Lincs)	Foster 1996 NE Lincs SMR MNL1152	A wide variety of casting debris, mostly clay moulds for producing horse-gear, including terrets, found during excavations at an Iron Age enclosed settlement.
	Kelk (North Humberside)	(Chapman *et al.* 2000)	Just north of the study area, an Iron Age double-ditched settlement enclosure produced mould fragments, slag and crucibles from bronze casting.

5.4 Regional Analysis: Coinage

5.4.1 Spatial distribution of Iron Age coins by period

Thus far, coins have been considered from the perspective of general circulation phases and hoard groups. This section deals with the spatial distribution of these objects. Since the 1990s, many researchers (e.g. Curteis 1996; Dennis 2006; Haselgrove 1987; 1993; 2005a; Hutcheson 2004; Roymans & Aarts 2009) have attempted to place Iron Age coinage back into its archaeological context. For example, Haselgrove (2005a) considers patterns of coin consumption at different categories of Iron Age sites (e.g. *oppida*, religious sites, Roman forts, rural sites) in an attempt to understand the role of these objects in different contexts. Other studies (e.g. Haselgrove 1992, Curteis 1996) compare the distributions of gold, silver and copper-alloy coins to investigate the circulation of different denominations.

Finer chronological resolution is sometimes possible with Roman coinage. Casey (1988) and Reece (1973; 1991; 1995; 2002) pioneered approaches which compare 'loss profiles' for particular sites against a calculated British mean (see Haselgrove 1987, 1992, 1993, 1996 for a similar approach to Iron Age coinage). This technique is adapted for use here. The coin periods used are the same as those in Table 4.1, although Iron Age coins from Haselgrove phases 8-9 (AD 10–45 onwards) are considered separately from Republican and Reece Period 1 coins. The spatial distribution of coins from each period is shown in Figures 5.4-5.9 and 5.12-5.20. The coins are ascribed to the periods in which they were produced, but may have been deposited much later.

As for all the maps in this chapter, the data are displayed using density-distribution maps, showing the number of finds per 1km OS grid-square. Although this reduces provenance information to a 4-figure NGR, for many finds this is the highest accuracy available. The maps were created using ArcMap GIS software in conjunction with map downloads from Edina[7] to plot artefact distribution data over the topography and river networks of the East Midlands. No attempt has been made to distinguish between casual losses and deliberate acts of deposition; all finds are shown. The locations of coin hoards terminating in each period are also displayed.

7 www.edina.ac.uk ©Crown Copyright/database right 2008. An Ordnance Survey/EDINA supplied service. All original maps reproduced here include material from Edina.

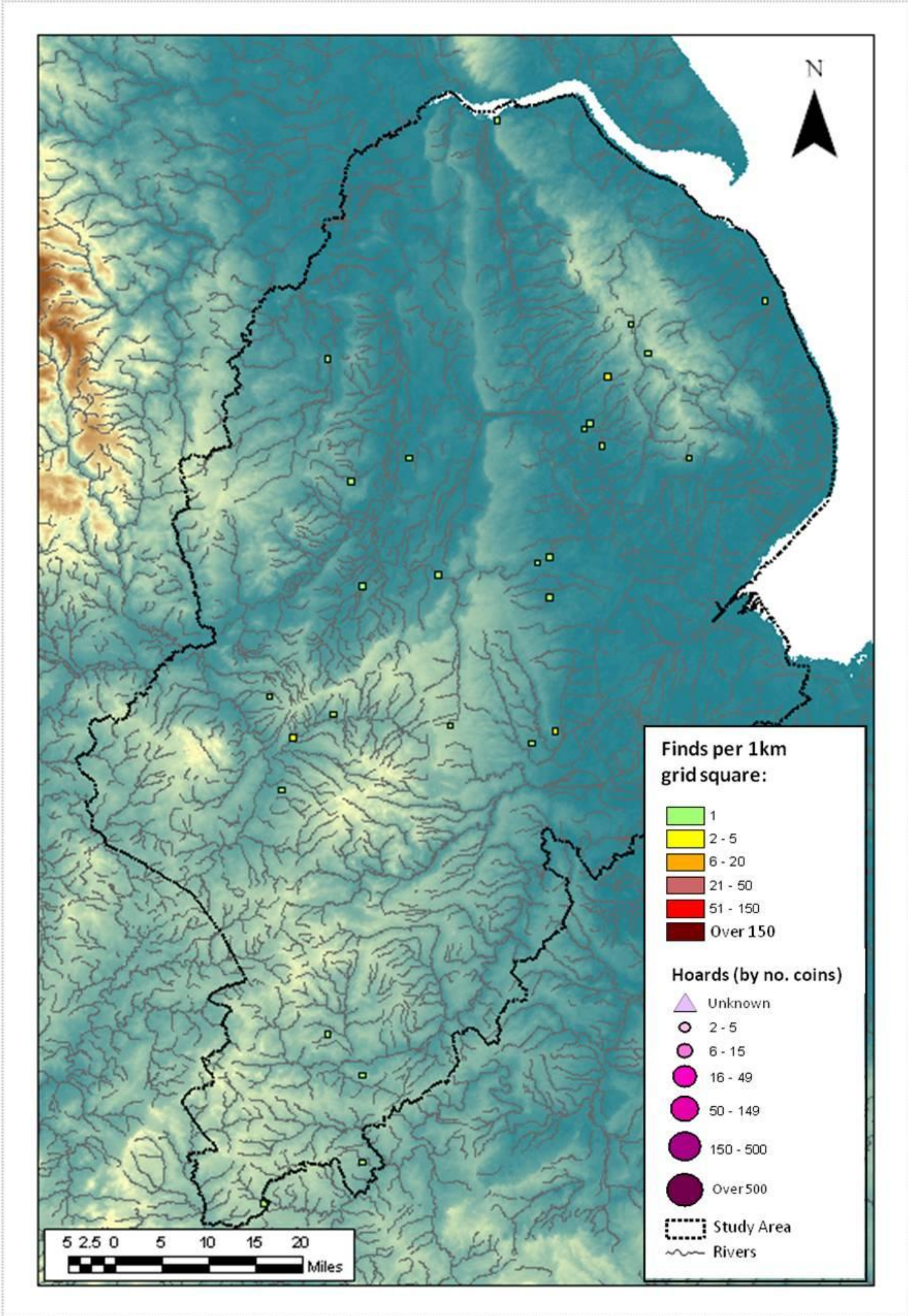

Figure 5.4: Spatial distribution of Iron Age coins produced 150–80BC (Haselgrove periods 1-3)

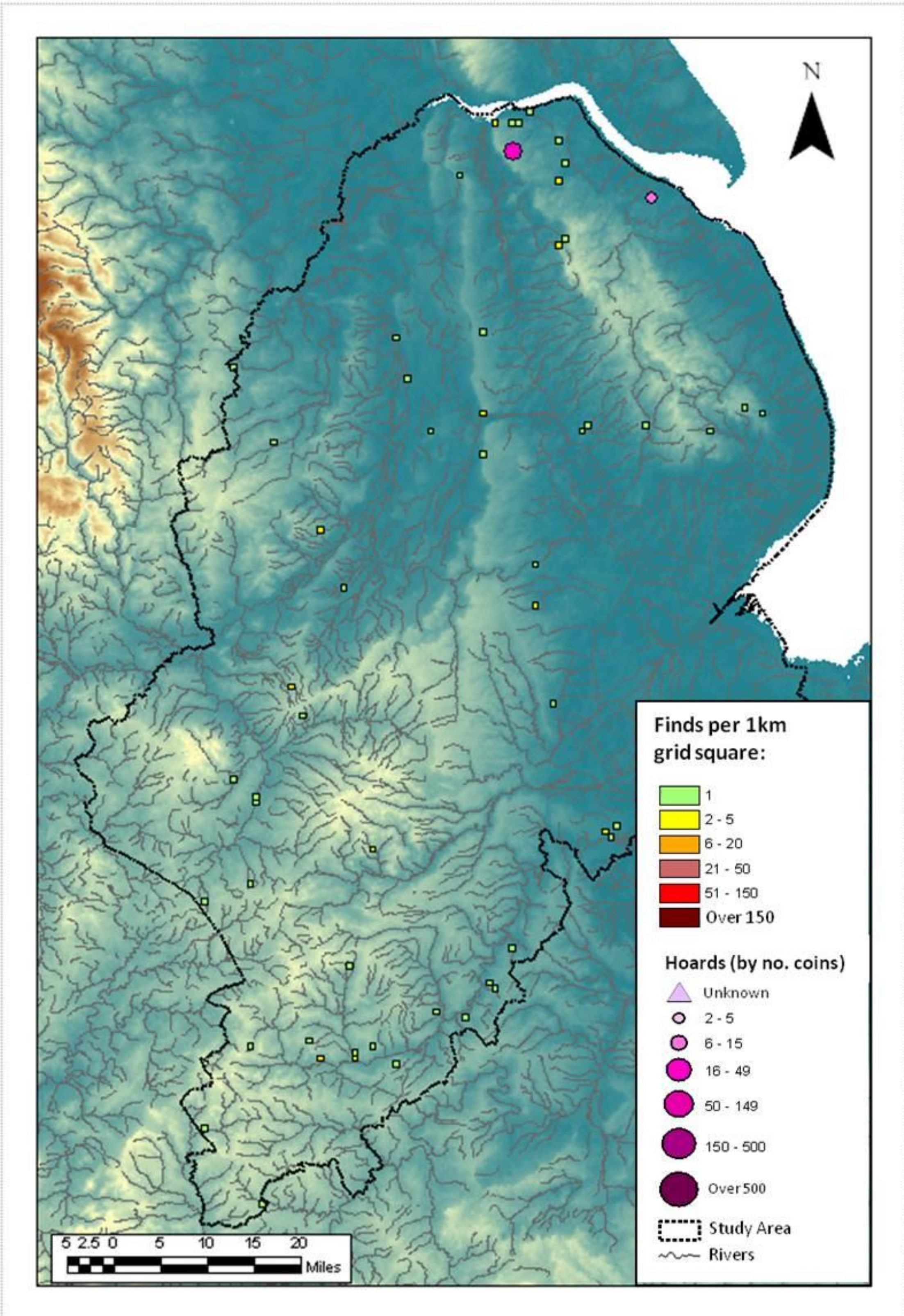

Figure 5.5 Spatial distribution of Iron Age coins produced 80–50BC (Haselgrove periods 4-5)

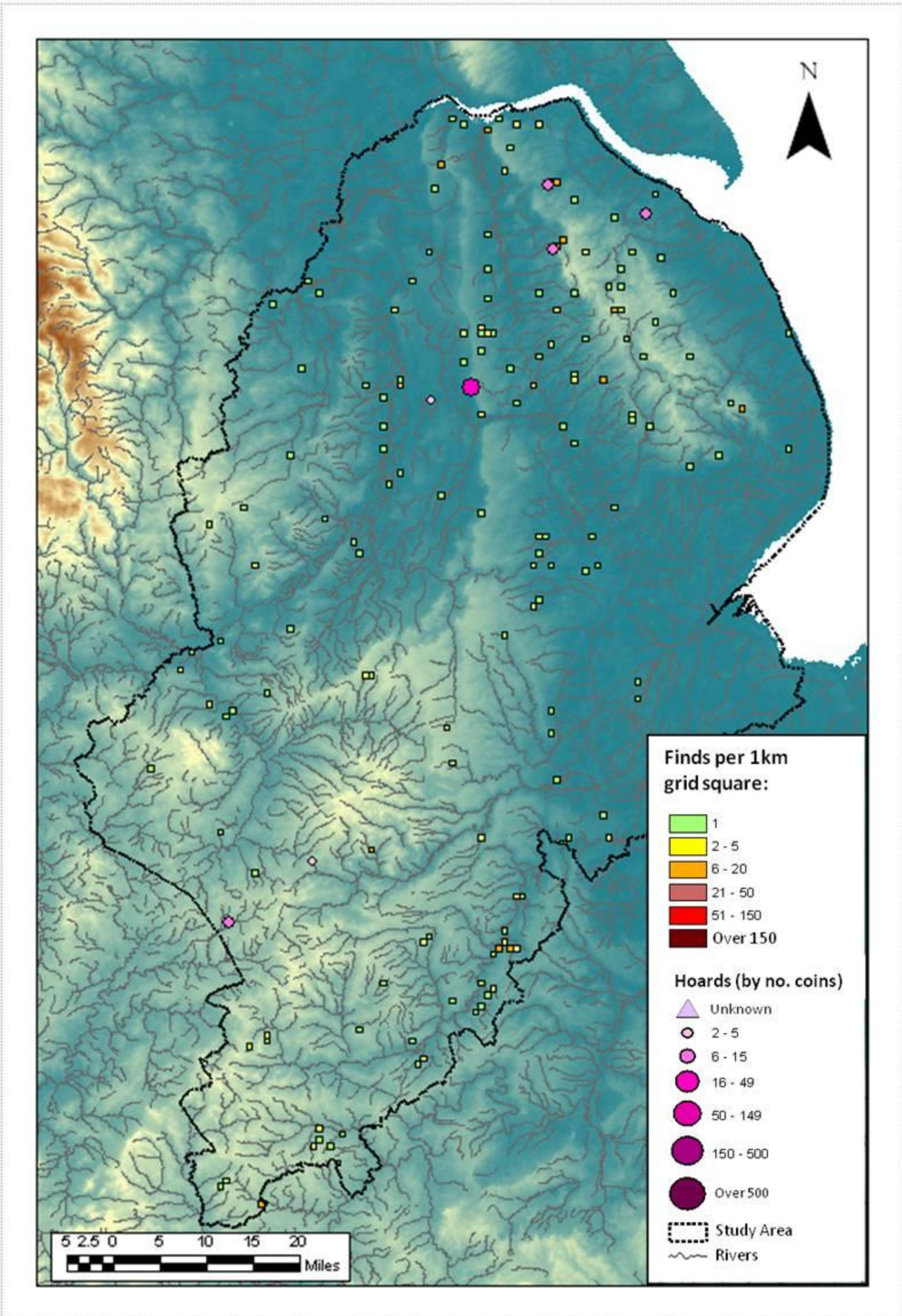

Figure 5.6: Spatial distribution of Iron Age coins produced 50–20BC (Haselgrove period 6)

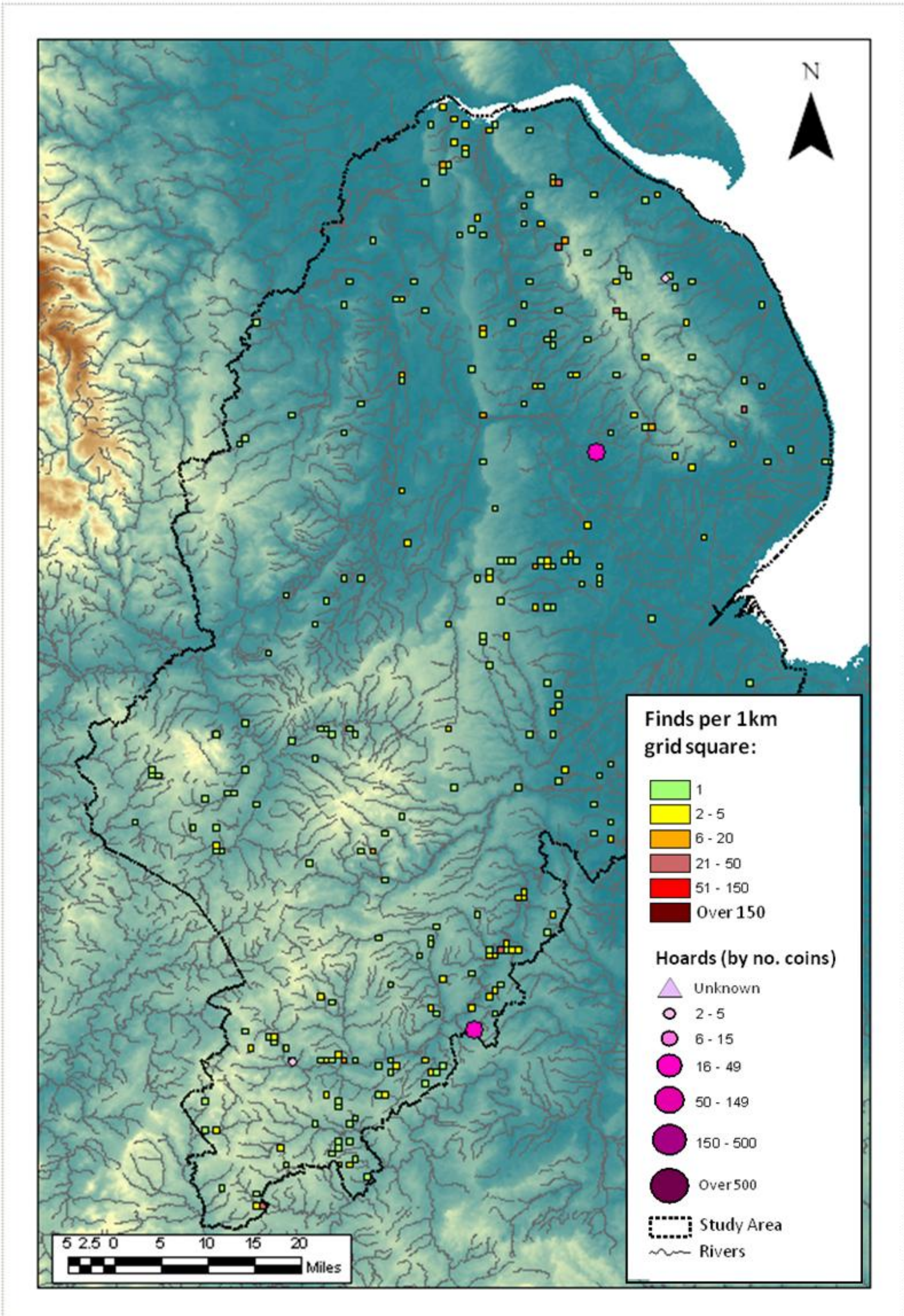

Figure 5.7: Spatial distribution of Iron Age coins produced 20BC–AD10 (Haselgrove period 7)

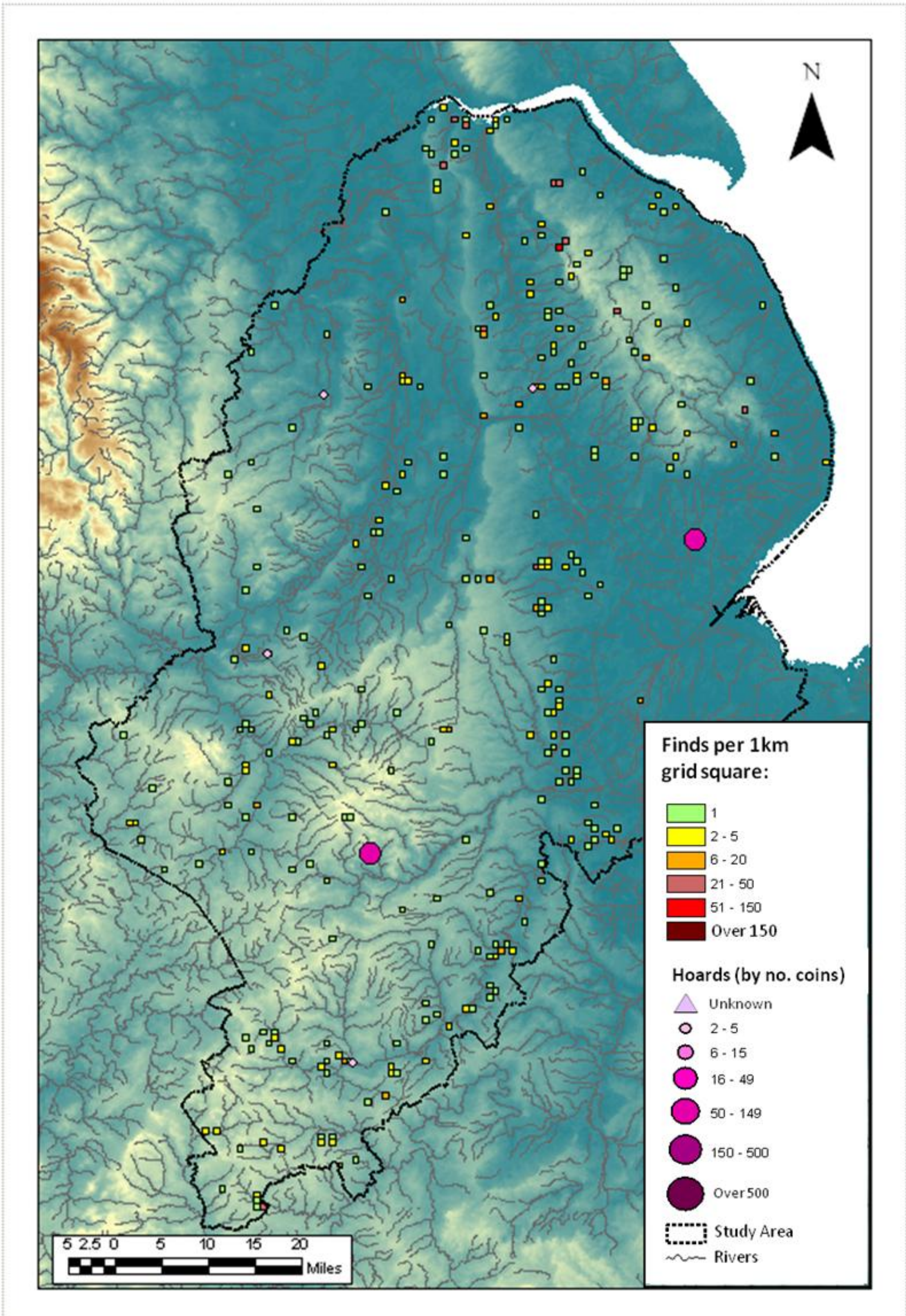

Figure 5.8: Spatial distribution of Iron Age coins produced AD10–40 (Haselgrove period 8)

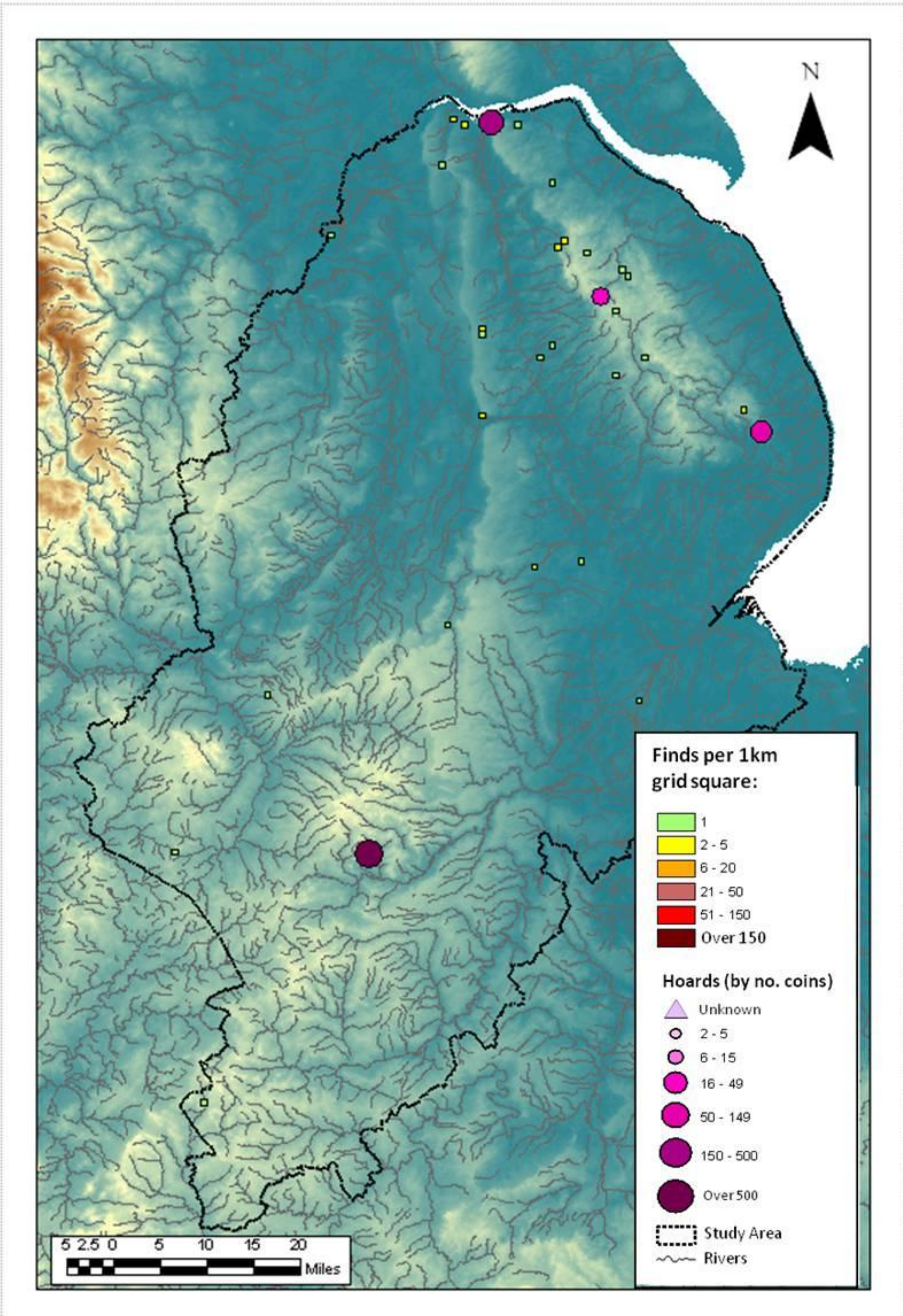

Figure 5.9: Spatial distribution of Iron Age coins produced AD35–45 onwards (Haselgrove period 9)

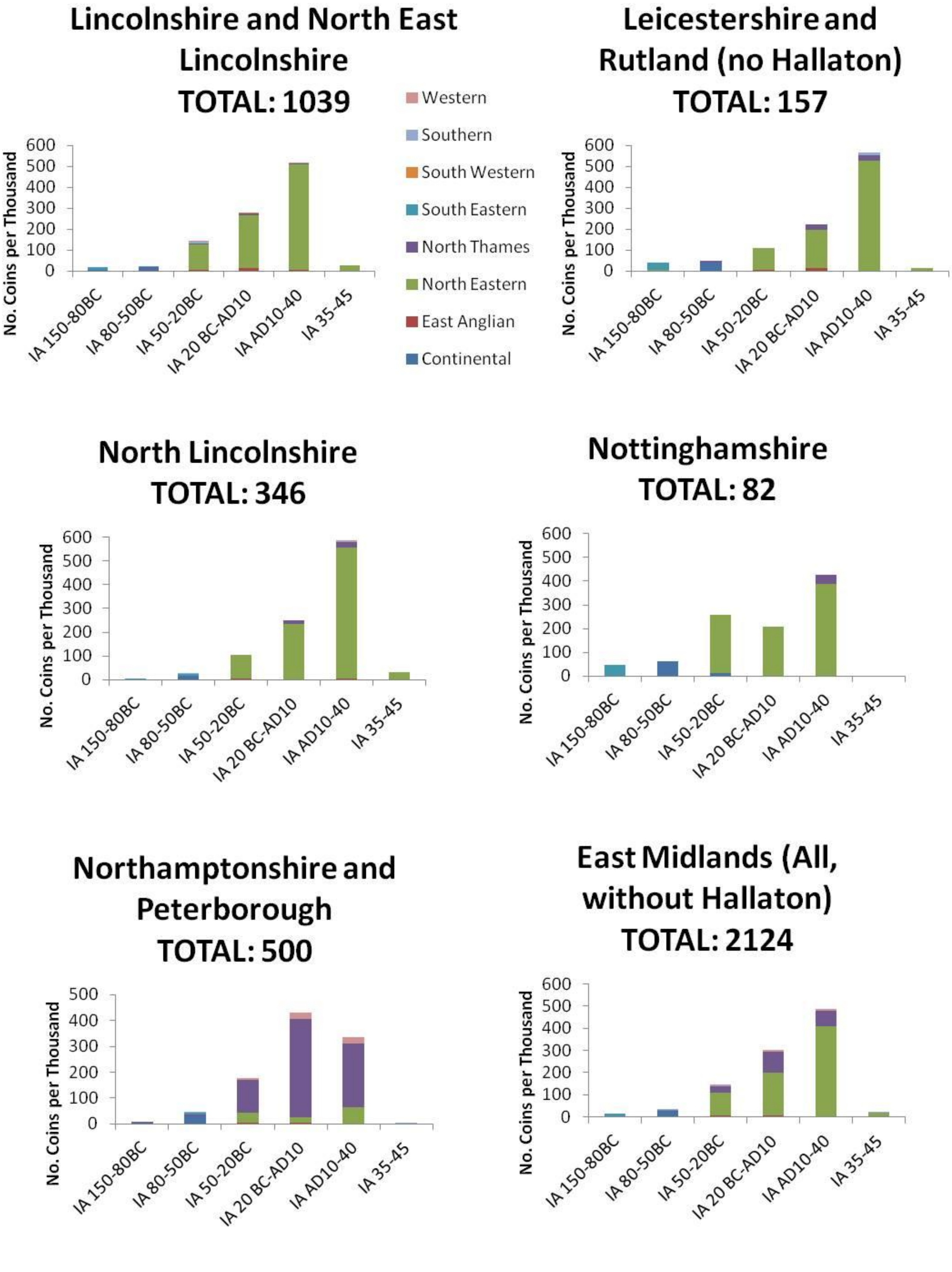

Figure 5.10: Iron Age coins-per-thousand by metal type, for each county

The earliest coins represented in the East Midlands (Figure 5.4, 150–80 BC) are scarce, and generally cluster in the valleys either side of the Lincoln Edge and in northern Leicestershire. They are largely absent from North Lincolnshire. These coins (a mixture of gold and potins) were imported rather than locally produced, and most are southern British rather than continental types (Figure 5.10). Their distribution is consistent with movement of coinage up through lowland Britain, perhaps taking advantage of waterborne transport routes along the Witham and the Slea. Movement of these early coins into the East Midlands appears to have been very limited.

Figure 5.5 shows the distribution of coins produced c.80–50 BC, encompassing the Gallic War period. These were also imports, consisting predominantly of continental Gallo-Belgic E. Southern British coins are less well-represented than in the previous period (Figure 5.10). The two small hoards in North Lincolnshire both consist entirely of Gallo-Belgic E. The focus on North Lincolnshire suggests a new route for the importation of coinage, perhaps through maritime trade networks along the Humber. I have argued that communities in North Lincolnshire may have been forging their own direct ties with the continent in this period. Coinage also begins to appear in the Nene Valley. Many of these coins are North Thames issues, reflecting the integration of lowland Northamptonshire into North Thames coinage networks. Throughout the Late Iron Age, Northamptonshire shows a very different pattern of coin-use to the rest of the East Midlands (Figure 5.10).

The following period (c.50–20 BC, Figure 5.6) sees the earliest North-Eastern production. This led to a peak in coin-loss and hoarding evidence in northern Lincolnshire, where this early local coinage was probably produced (chapter four). A second focus, showing a more clustered distribution but an absence of hoards, is seen in the Nene Valley. Once again, these are predominantly North Thames issues.

Figure 5.7 shows the distribution for coins produced 20 BC–AD 10. By this time, silver and red-gold issues were in use across the region, and copper-alloy coins were also well established in Northamptonshire. Greater densities are seen in the Nene Valley, with a higher degree of clustering around settlement sites. Coinage also appears in upland regions of Northamptonshire for the first time. In the North-Eastern coinage region, although production was most likely still centred in North Lincolnshire during this period, coin-using networks appear to have become more predominantly south-looking. The distribution of coins extends into southern Lincolnshire and Leicestershire, predominantly around the edge of the Clay Vale and the Soar valley in northern Leicestershire. It is likely that the availability of gold and silver bullion, sourced ultimately from the Roman world, permitted an expansion in coin production. The increased proportion of plated staters suggests that despite this new metal source, demand for gold coinage was outstripping supply. Coin-loss is greater in this period than for all preceding periods, except in Nottinghamshire, where coins produced during this phase are under-represented (Figure 5.10). As southern centres grew and developed, communities in Nottinghamshire may have become marginalised in the circulation of coinage.

A similar trend continues with coins produced AD 10–40 (Figure 5.8). Coins from this and the preceding phase circulated together, and are found together in hoards. The later period includes inscribed coins, many of which were most likely produced at the new southern centres of production: Old Sleaford and Leicester. Continued expansion in production may have been underwritten by gifts of Tiberian silver, channelled through these new southern centres.

The latest coins produced in the East Midlands, IISVPRASV issues, are predominantly found in North Lincolnshire, as are hoards terminating with these issues. Coins from this final period of local production may have circulated predominantly in the old heartland of North-Eastern coinage, and indeed further north, beyond the Humber. Several of the hoards at Hallaton also terminate with these issues, indicating that in addition they travelled more widely to the south.

5.4.2 Spatial distribution of Roman coins by period

Figures 5.12 to 5.20 Show the spatial distribution of Roman coins by period, and Figure 5.11 shows the difference to the mean coins-per-thousand for each period, by county.

The reign of Marcus Aurelius (Reece Period 8) was selected as the chronological limit for Roman coin data. The disappearance of high purity pre-Neronian *denarii* from circulation by the earlier second century makes this a suitable cut-off point. By this stage, Iron Age coins would also have fallen out of circulation. Although there is evidence that a few (perhaps curated) examples were still extant after this date (the mid-third century AD hoard from Ashover in Derbyshire terminates with an issue of Gordian III and contains a single North-Eastern silver coin), it was not practical to extend the chronological limits of this investigation so far.

Since late first and second century Roman coins remained in circulation for a long time after they were minted, many are in fact residual finds from third or fourth century sites. In an attempt to reduce this problem, data gathering for coins from HER and museum collections was restricted to coins of first century date, to the end of the Flavian period (Reece period 4). Coins were excluded if they were associated with a site at which first and second century coins made up less than 5% of the assemblage, and where there was no independent evidence for first or second century occupation. The same data cleaning mechanisms could not be applied to the PAS data, for which all coins were included. All coin finds were also recorded for the twenty-five sites selected for special consideration.

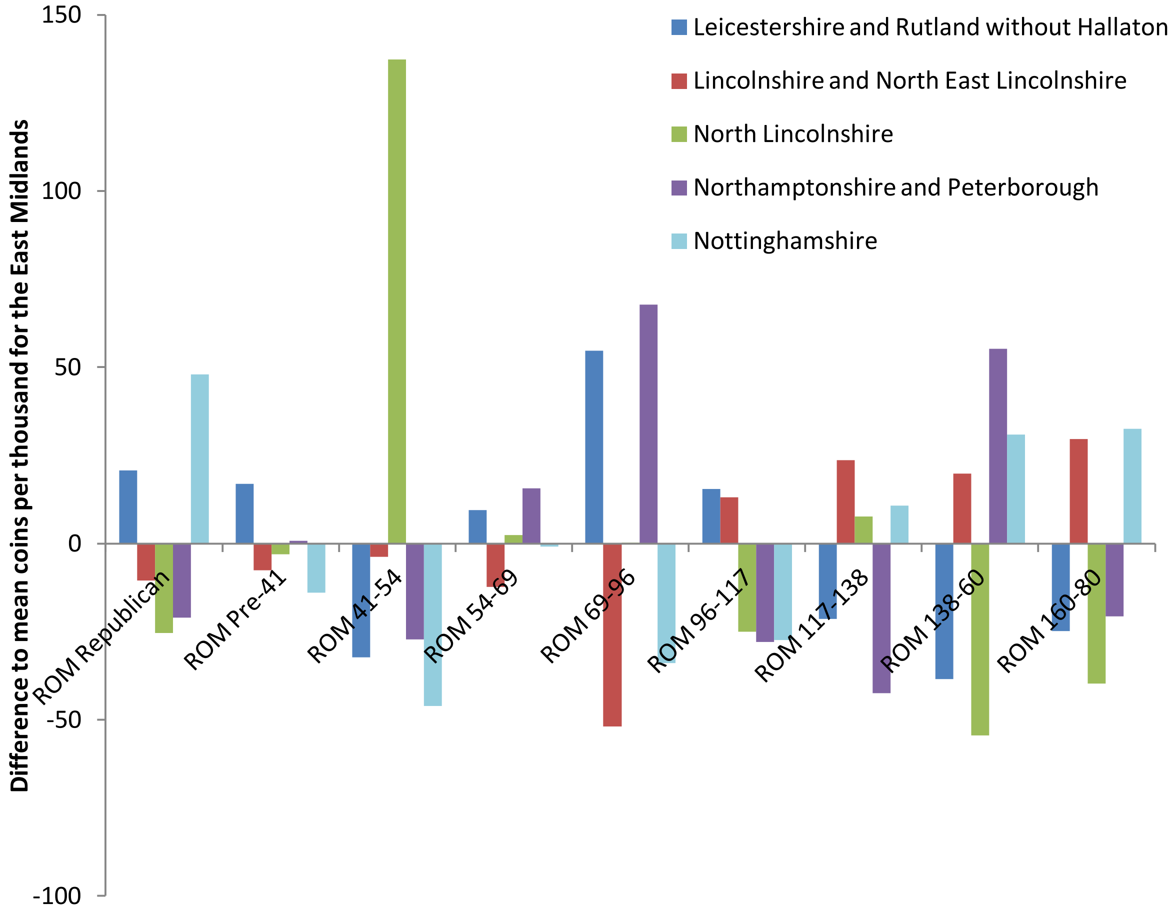

Figure 5.11: Difference between regional mean and no. Roman coins-per-thousand for each county, by period

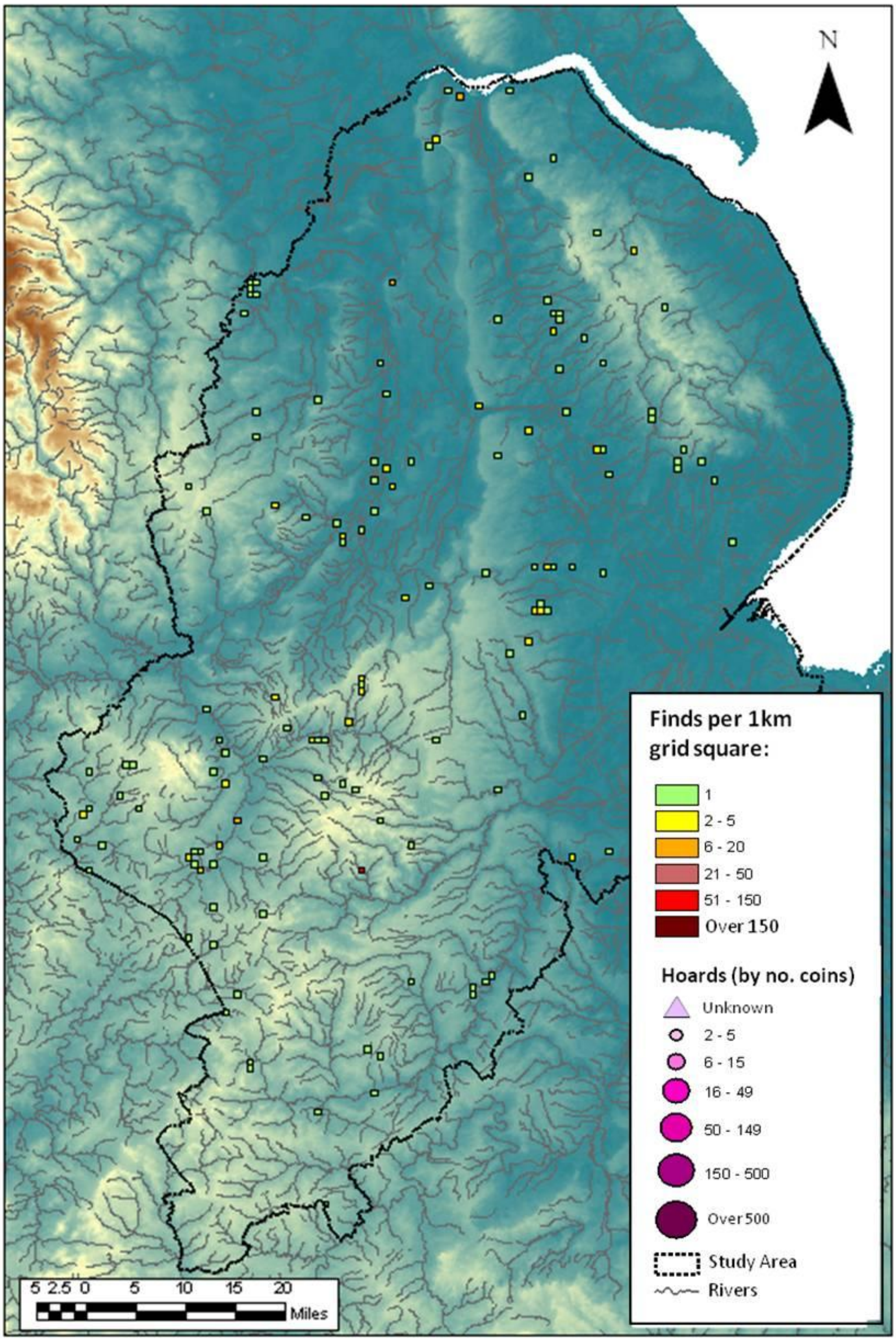

Figure 5.12 Spatial distribution of Roman Republican coinage (and other early Greek and Egyptian coins – 5 finds)

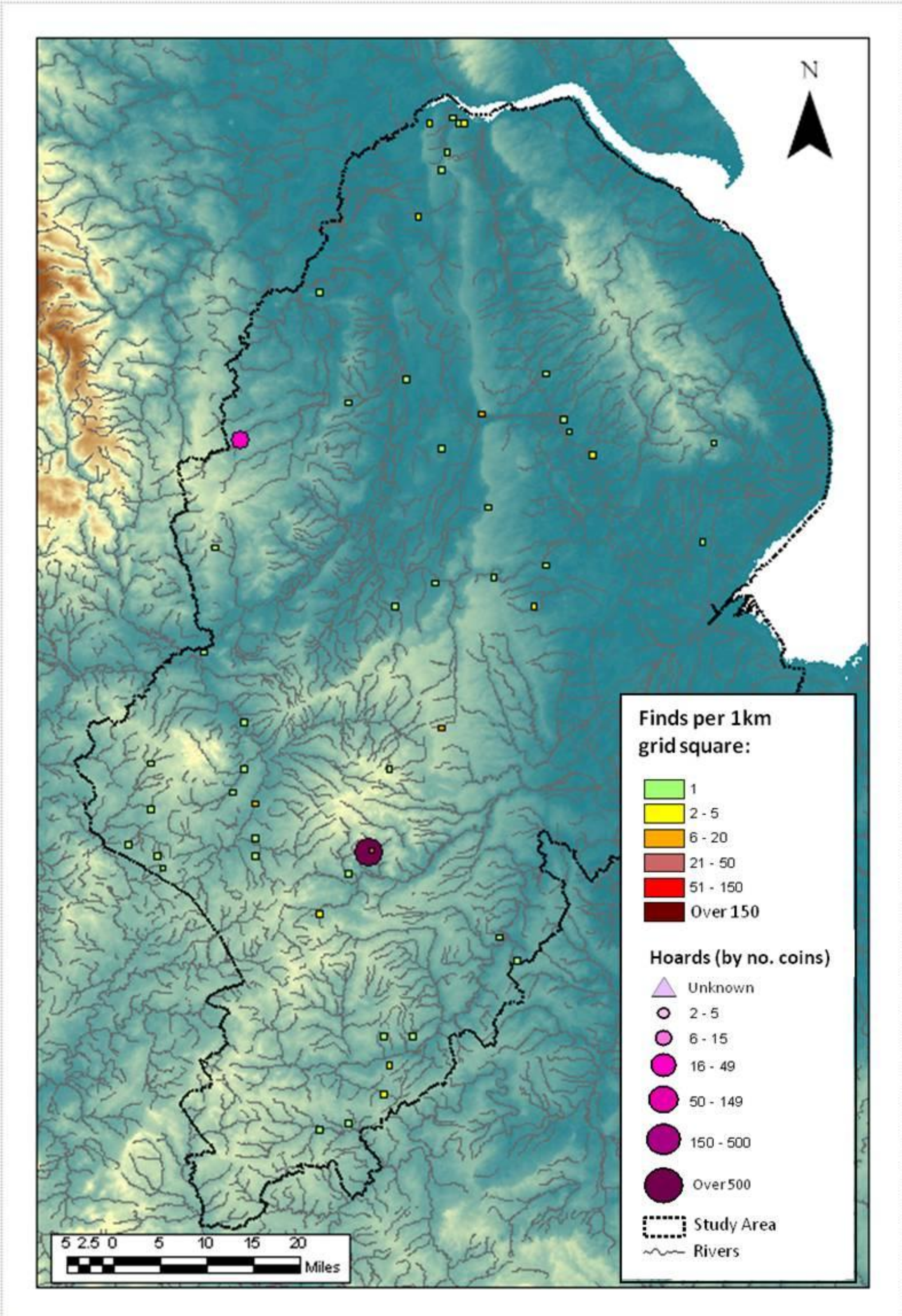

Figure 5.13 Spatial distribution of Roman early Imperial coinage (Reece Period 1, pre-AD 41)

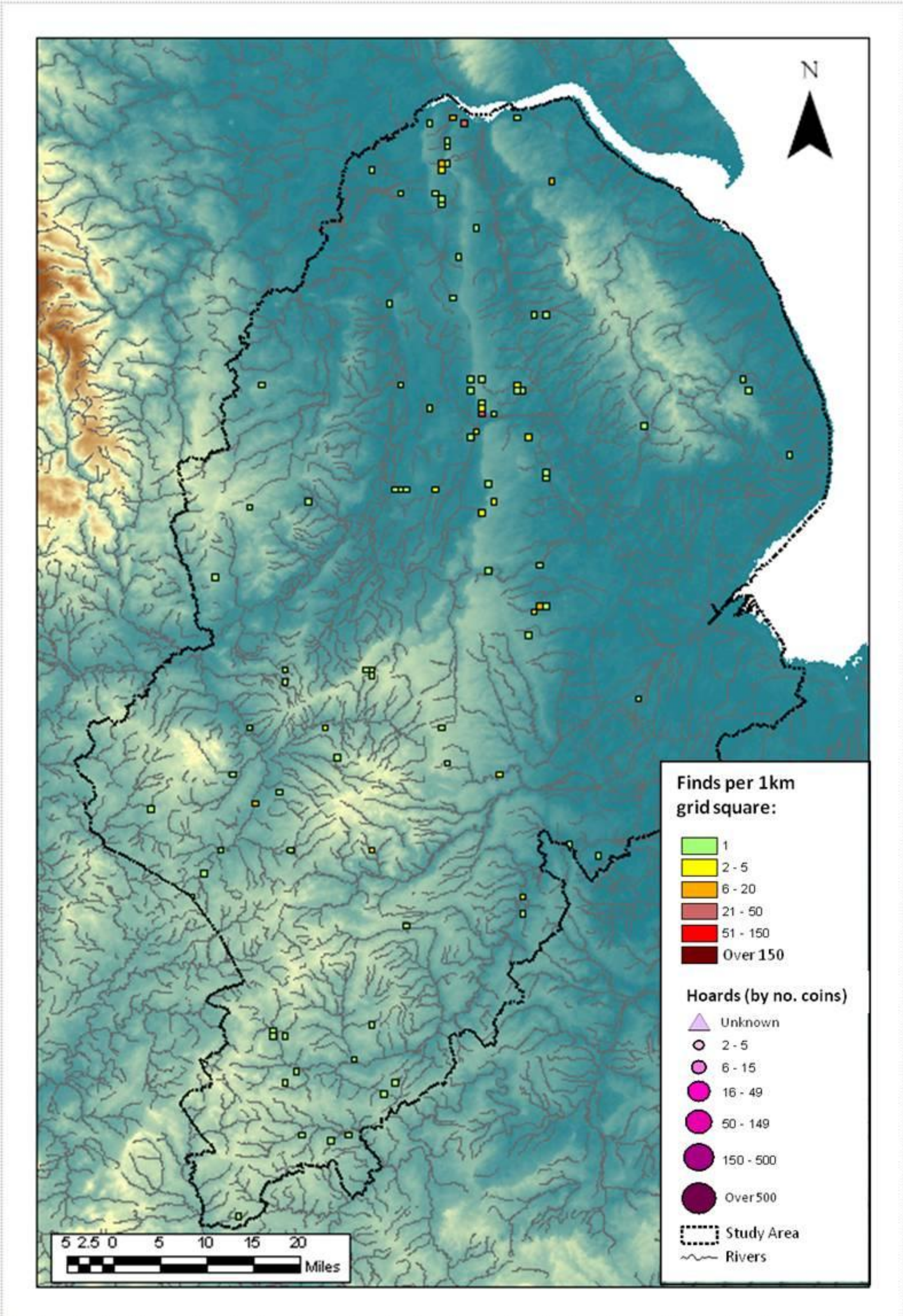

Figure 5.14: Spatial distribution of Claudian Roman coinage (Reece Period 2, AD 41–54)

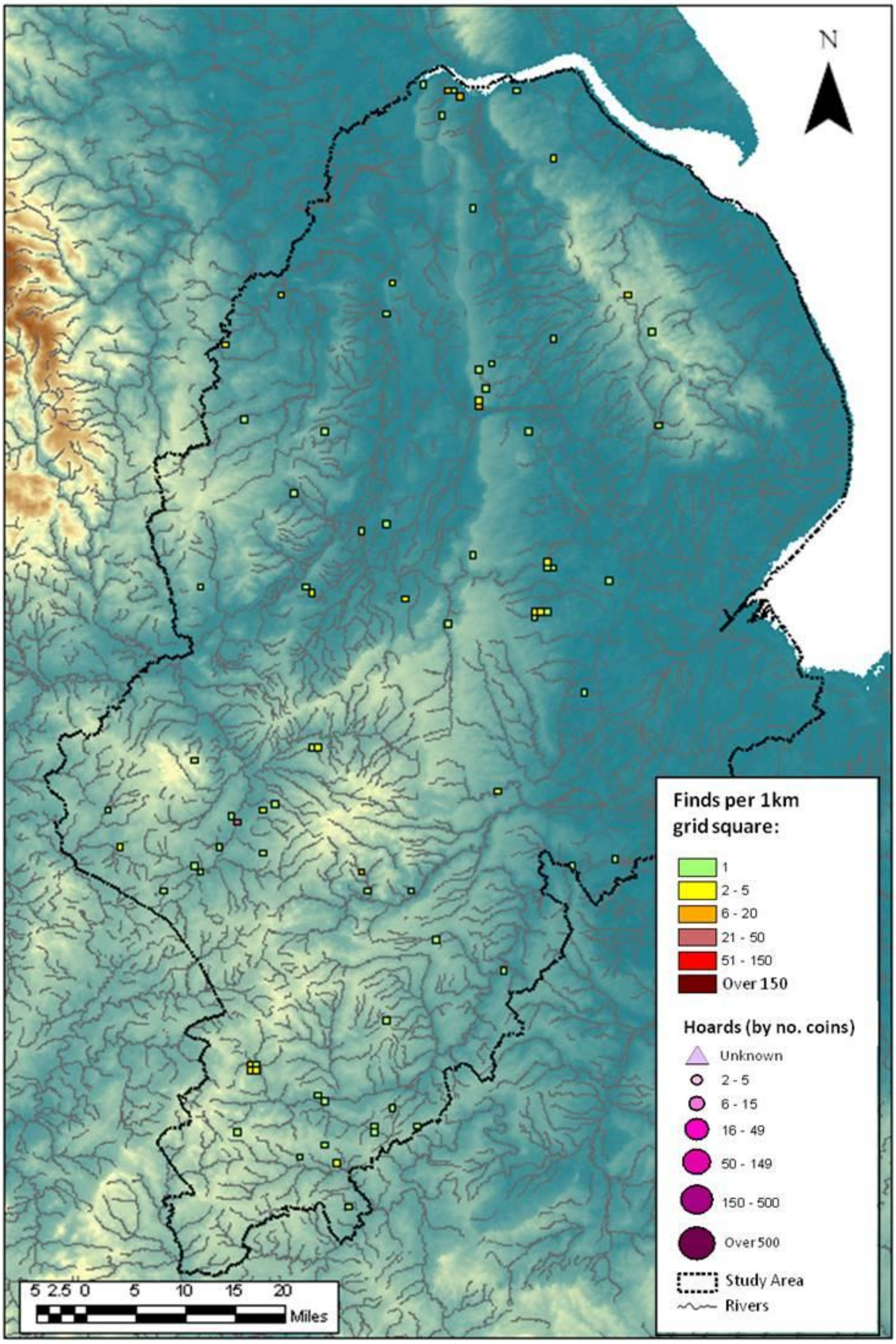

Figure 5.15 Spatial distribution of Neronian Roman coinage (Reece Period 3, AD 54–69)

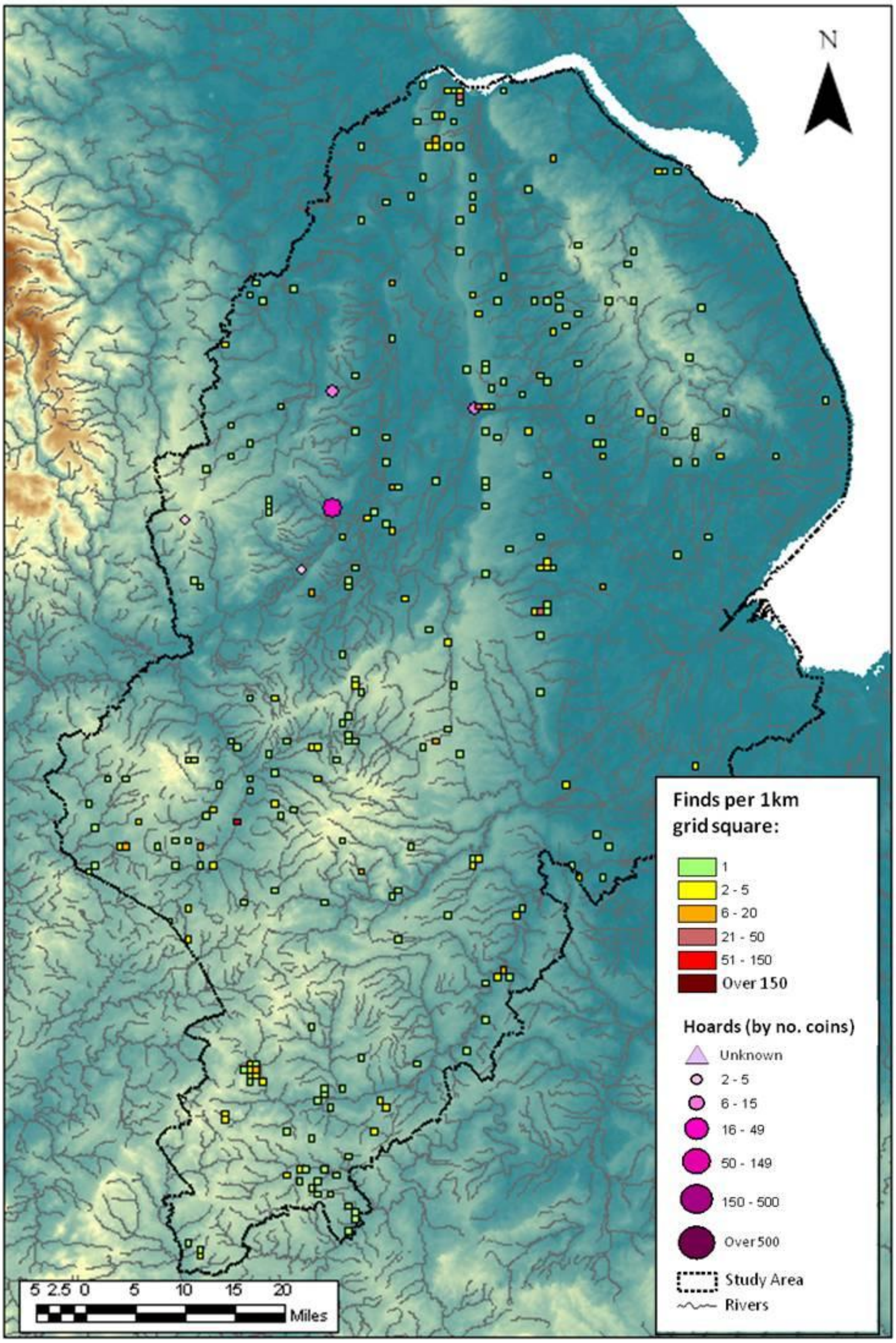

Figure 5.16 Spatial distribution of Flavian Roman coinage (Reece Period 4, AD 69–96)

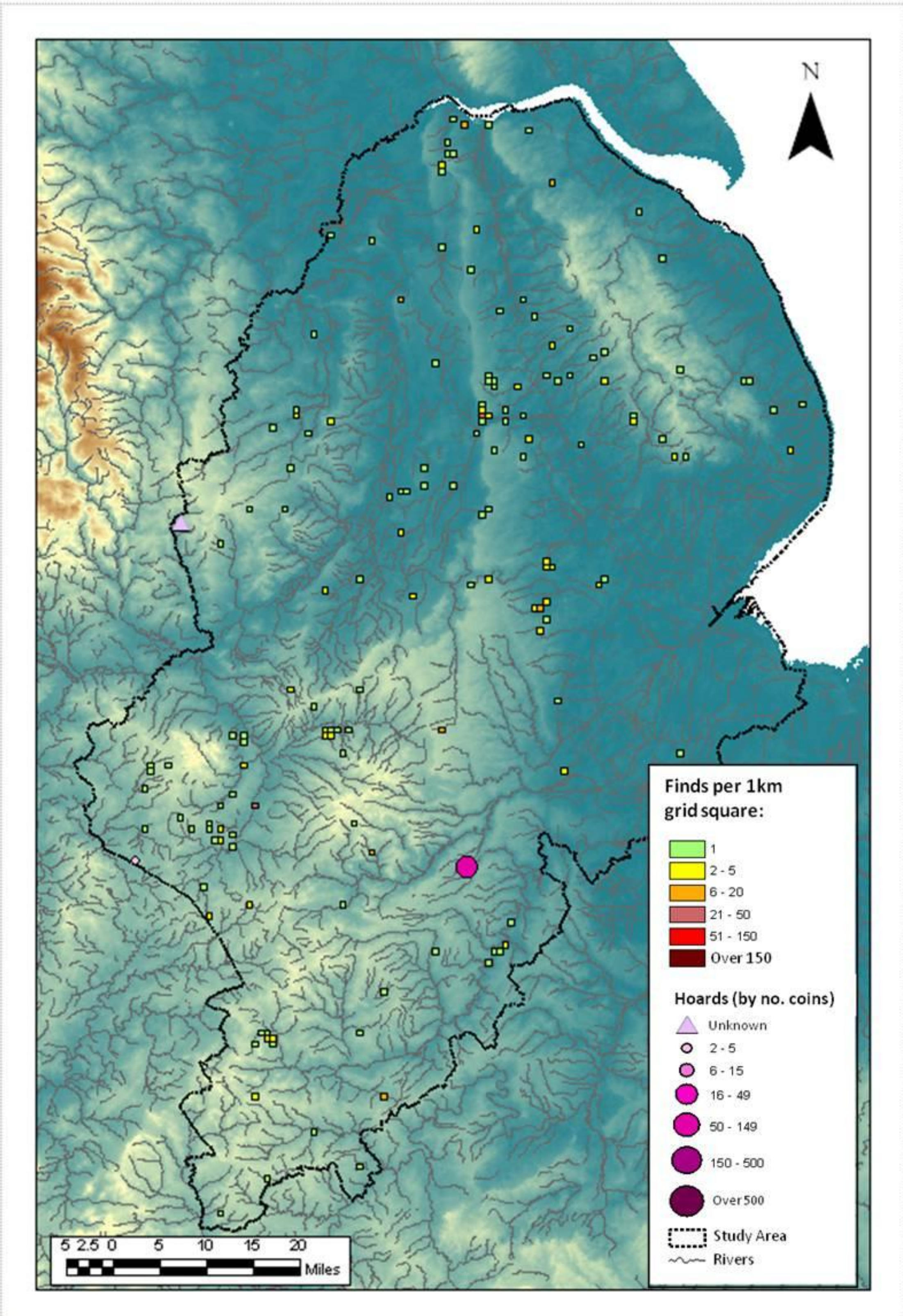

Figure 5.17 Spatial distribution of Trajanic Roman coinage (Reece Period 5, AD 96–117)

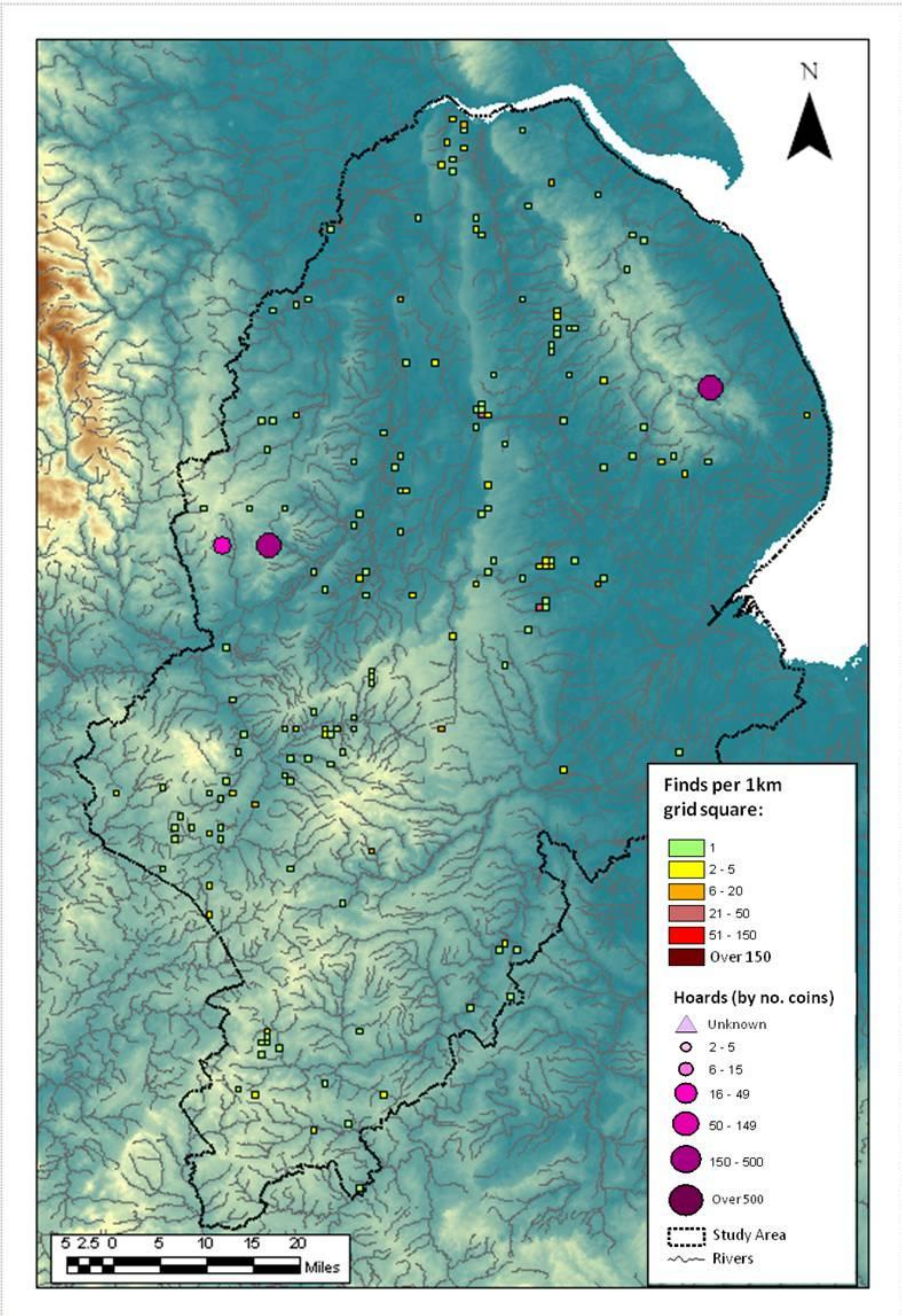

Figure 5.18 Spatial distribution of Hadrianic Roman coinage (Reece Period 6, AD 117–138)

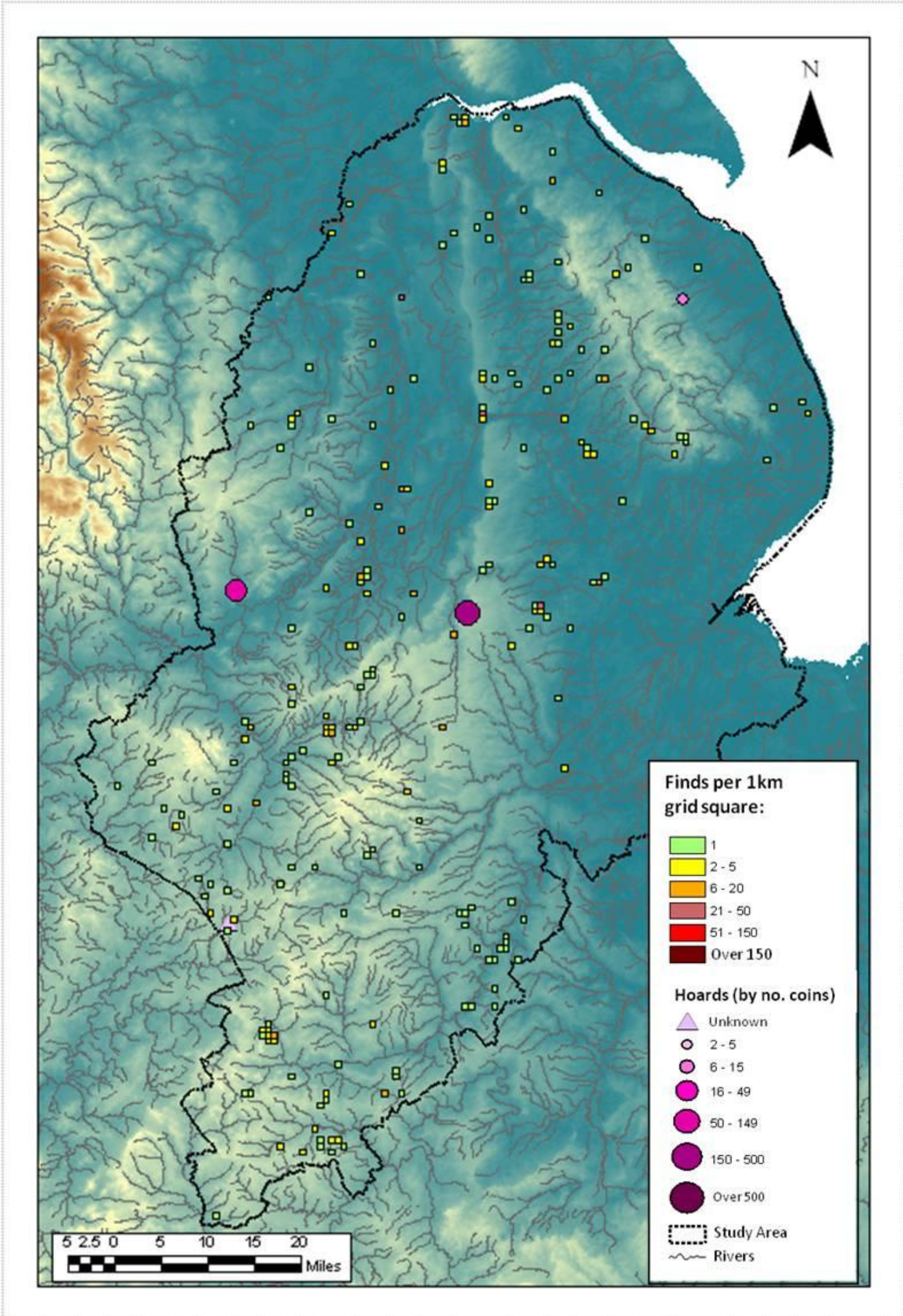

Figure 5.19 Spatial distribution of Early Antonine Roman coinage (Reece Period 7, AD 138–160)

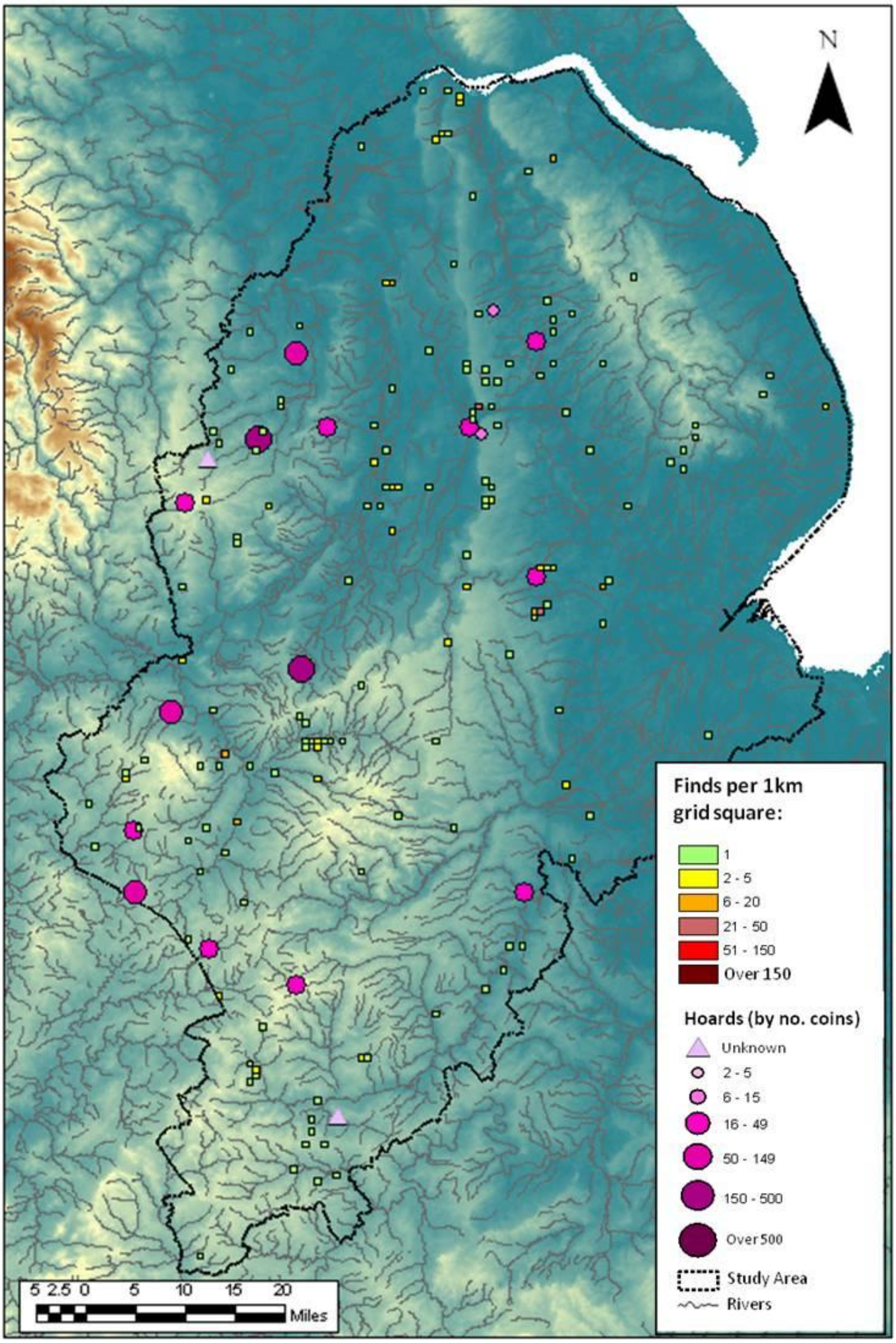

Figure 5.20 Spatial distribution of Later Antonine Roman coinage (Reece Period 8, AD 160–180)

Republican coins (Figure 5.12) are best represented in lowland Nottinghamshire and Leicestershire, with low concentrations in lowland Lincolnshire, and very few in upland regions. This echoes most closely the distribution of Roman coins in the later Hadrianic period. Whilst this might suggest that some Republican coins (largely *denarii*, valued for their high silver content) were deposited long after they were produced, some were certainly early deposits, as they feature in the Hallaton hoards.

Pre-Claudian and Claudian imperial coins (Figures 5.13-14) are rare across Britain, including the East Midlands. Many of these coins remained in circulation for a long time, and may have been deposited later. However, it is possible that the distinct concentrations along the Lincoln Edge, leading up into North Lincolnshire, in the Nene Valley and in the river valleys of northern Leicestershire, represent areas of concentrated Roman activity during the immediate post-conquest period, as southern Britain was secured. North Lincolnshire in particular shows levels of coin-loss well above the regional mean for Claudian period coins (Figure 5.11), perhaps reflecting the early establishment of forts such as those at Kirmington (Jones and Whitwell 1991) and Old Winteringham, both pre-existing Iron Age settlement centres which were co-opted for the Roman cause. This pattern is to some extent echoed in the distribution of conquest-period brooches with military associations (Figure 5.37), which supports the hypothesis that the distribution of these coins may represent military activity.

The Neronian pattern is generally similar to that for earlier imperial coinage. In addition, clusters begin to be seen around Winterton, Lincoln, Sleaford and Daventry (Figure 5.15), sites which remained occupied well into the second century and beyond. The relative paucity of Roman coinage across the East Midlands before the Flavian period may reflect a resistance to engaging with this new form of exchange, although coin supply was generally limited across Britain at this time.

Flavian and Trajanic coins (Figures 5.16-17) are far more numerous in their distribution, suggesting a wider adoption of Roman coinage in the East Midlands by the later first century AD, in line with the rest of Britain. Flavian coin distribution in particular tends towards the west of the study region, favouring Leicestershire and Northamptonshire (Figure 5.11). Here, civilian settlements start to eclipse the Roman fort sites in Nottinghamshire and North Lincolnshire as the main foci for Roman coin-loss. There is also an expansion into lowland regions of southern Lincolnshire, away from the main overland communication route along the Lincoln Edge (Ermine Street). Sites which are well-represented include diverse Romano-British settlements, often with indigenous origins, including Lincoln, Leicester, Piddington Roman villa (Northants), Rectory Farm (Lincs), and Old Winteringham (North Lincs), suggesting that communities from different backgrounds were beginning to adopt Roman coinage. Site-based analyses are considered further below. Overall, the trend towards nucleation continues, suggesting that site-based use of coinage was becoming increasingly important. This coincides with an increased number of copper-alloy coins in circulation. Hoards reappear in the archaeological record, suggesting that people were beginning to engage with Roman coinage in new ways, though coin hoards remain absent from the heartland of Iron Age coin hoarding, as discussed in chapter four. North Lincolnshire also shows low concentrations of single finds. There may have been more resistance to the adoption of Roman coinage in this region, which had a long history of Iron Age coin-use and production.

Coins from the Hadrianic period (Figure 5.18) suggest an expansion in the mid-second century AD into upland areas of Nottinghamshire, and a continued focus on the river valleys of Northern Leicestershire. Into the Antonine periods (Figures 5.19 and 5.20), site-finds and hoards become widespread across the East Midlands, though hoards in particular are focused in the west of the region, outside the main areas of Iron Age coin hoarding. Again, nucleation of coins at settlement centres is evident.

The changing use of coins across the conquest is also reflected in the distribution of different metal types.

5.4.3 Spatial distribution of Iron Age and Roman coins by metal type

Figures 5.21-5.27 show the distribution of Iron Age and Roman coins by metal type, including coin hoards which consist predominantly of the metal in question. Figures 5.28-5.33 summarise the data by period for each county.

Very few potin coins (Figure 5.21) are known from the region. These account for the majority of coins produced 150–80BC (Figure 5.4), the distribution of which has already been discussed.

Finds of Iron Age gold coins are far more common (Figure 5.22) than Roman gold issues (Figure 5.23). It was suggested in chapter four that gold might have lost some of its social value after the conquest. Iron Age gold coins show a fairly dispersed distribution, though denser along river valleys and routes such as the Lincoln Edge. Particular clusters are seen in the Lincolnshire Wolds, which would have formed the 'island' of Lindsey, and at the two routes through the Lincoln Edge at Lincoln and Sleaford, which were centres of Iron Age (and later Roman) settlement. Gold coins are also clustered along the Nene Valley, with a more dispersed distribution into the uplands. It is difficult to comment on the distribution of Roman gold coins, given the paucity of finds, but it is clear that they served a different function. The loss or deposition of Iron Age gold coins was apparently relatively common: several Iron Age hoards are known, and many single finds or small scatters of Iron Age gold coins were probably also intentional deposits. In contrast, Roman issues were either very rare, or at least rarely deposited.

Silver Iron Age coins (Figure 5.24) show a sparser and more clustered distribution than gold. Despite the greater number of silver coins, fewer grid-squares are represented, and a higher proportion of grid-squares, or small clusters of squares, have several finds. Iron Age silver finds are also less well-represented in Nottinghamshire and Leicestershire, with a focus on the Lincolnshire Wolds and Clay Vale, and the Nene Valley, areas which had the longest history of coin-use.

Iron Age copper-alloy coins (Figure 5.26) show a similar clustered distribution, though they appear almost solely in Northamptonshire, with only scattered finds in the Lincolnshire Wolds and Clay Vale. Copper-alloy coinage was not produced in the North-Eastern coin region, so this reflects the integration of Northamptonshire into the North Thames coinage network.

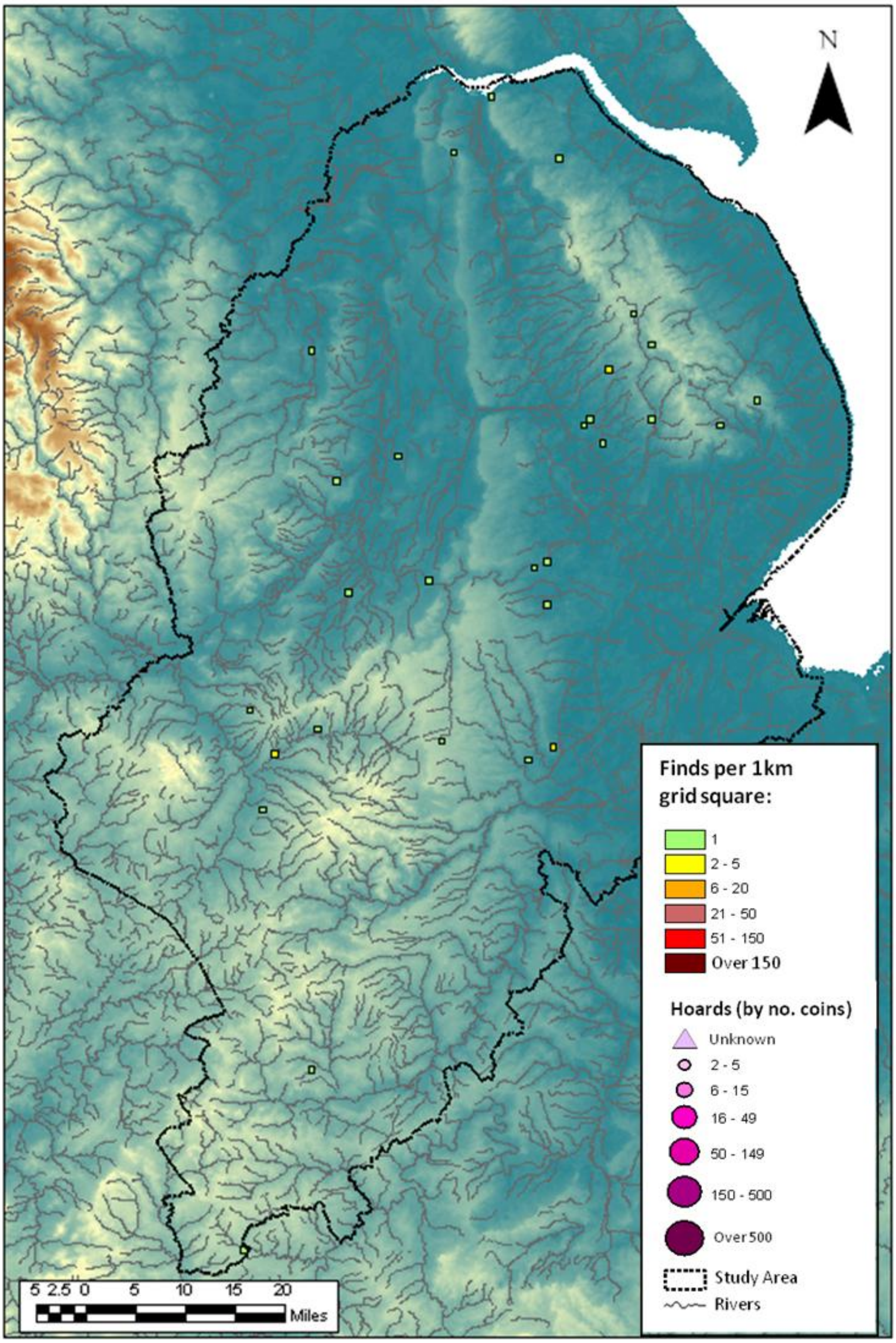

Figure 5.21 Spatial distribution of Iron Age potin coinage (34 coins)

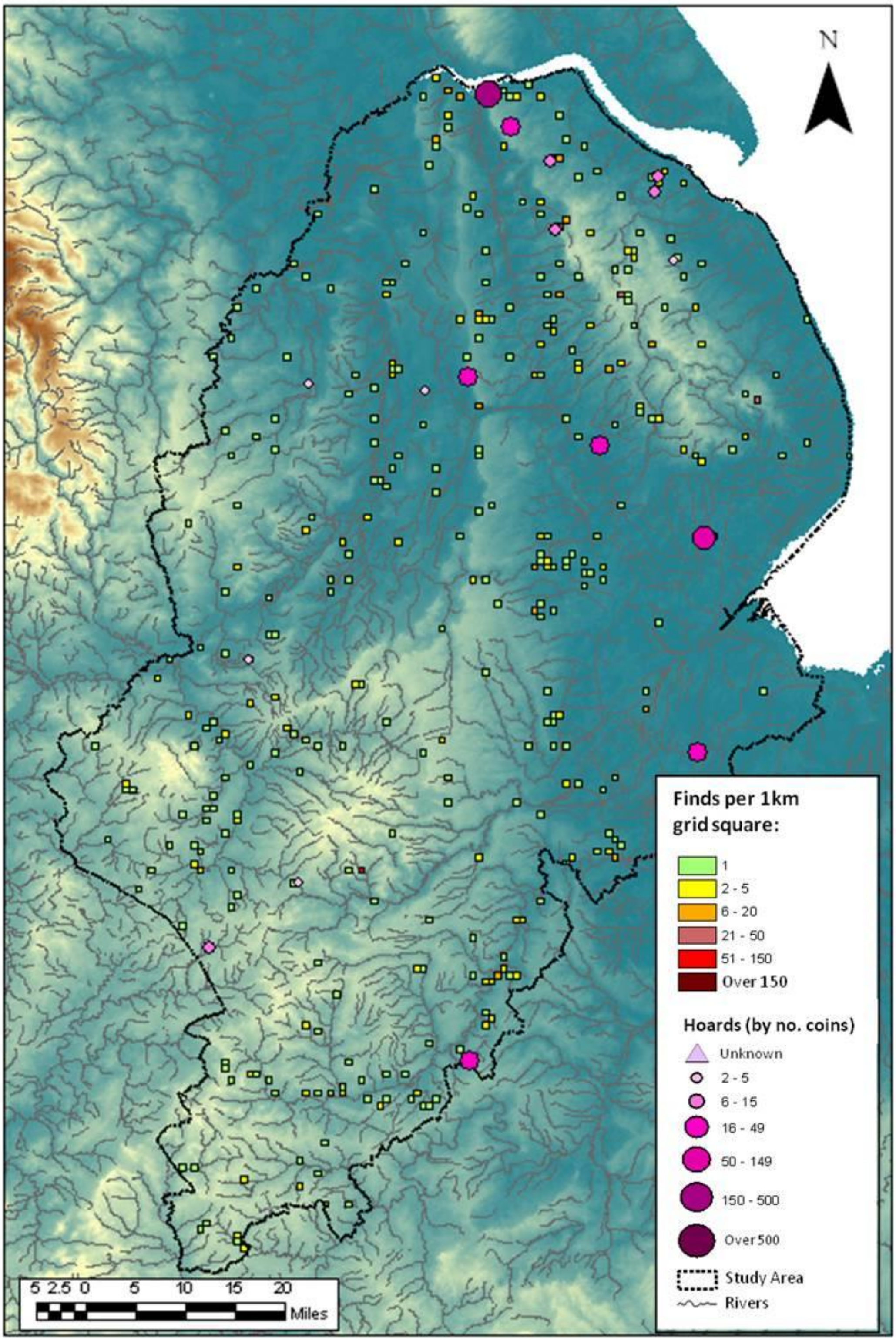

Figure 5.22 Spatial distribution of Iron Age gold coinage, including both solid gold and gold-plated coins (734 coins)

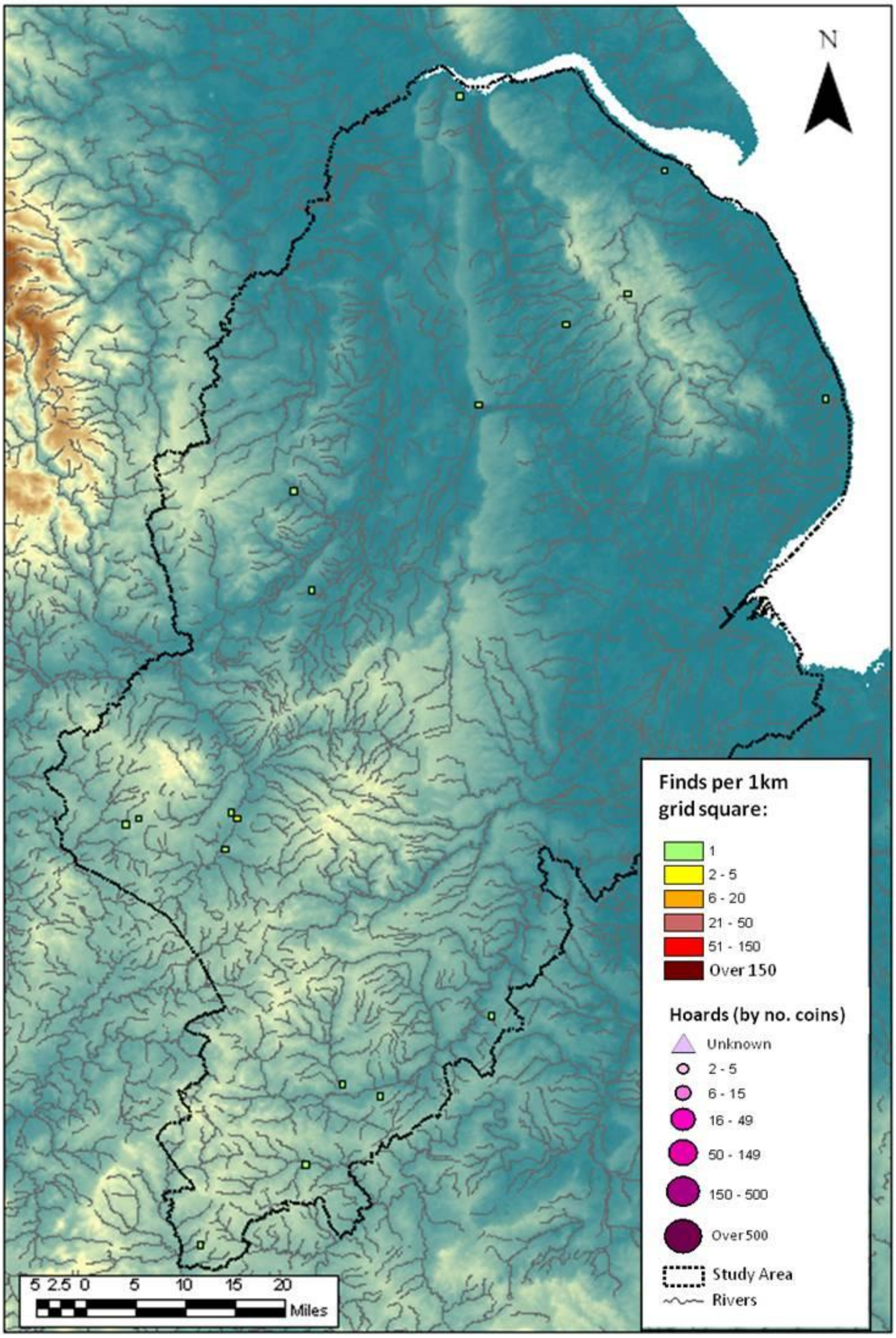

Figure 5.23: Spatial distribution of Roman gold coinage (19 coins)

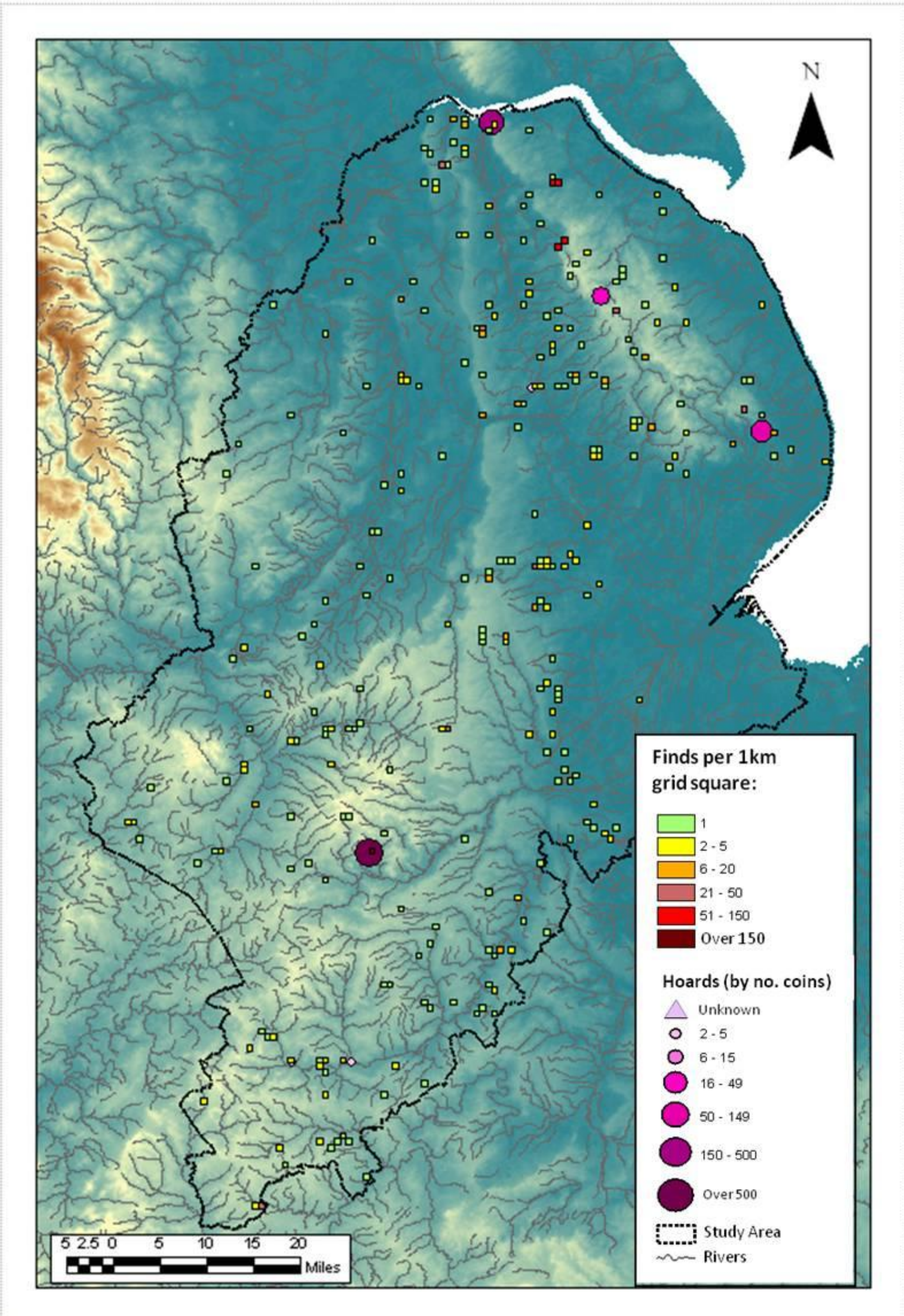

Figure 5.24: Spatial distribution of Iron Age silver coinage (1034 coins, not including unstratified coins from Hallaton)

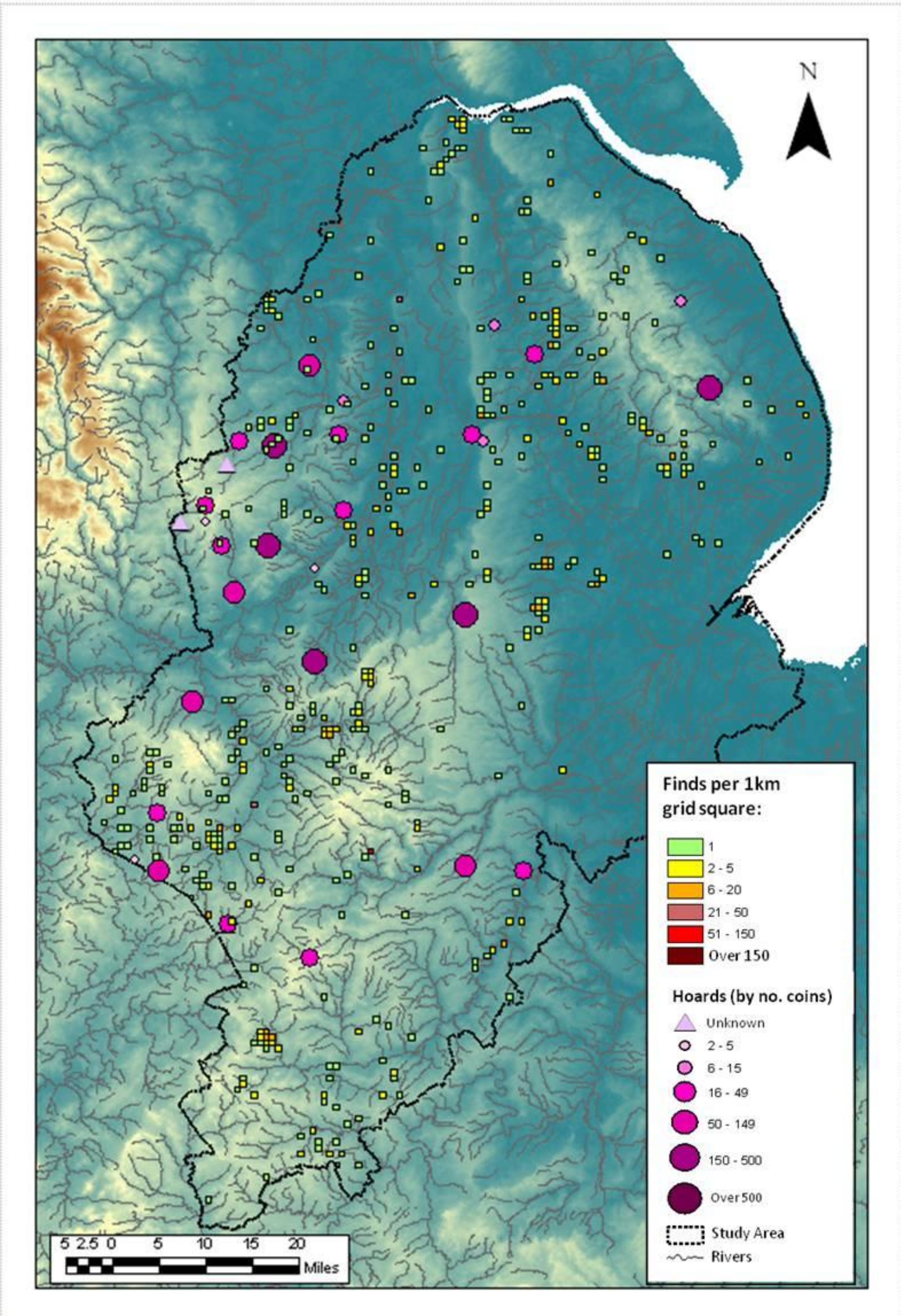

Figure 5.25 Spatial distribution of Roman silver coinage (861 coins)

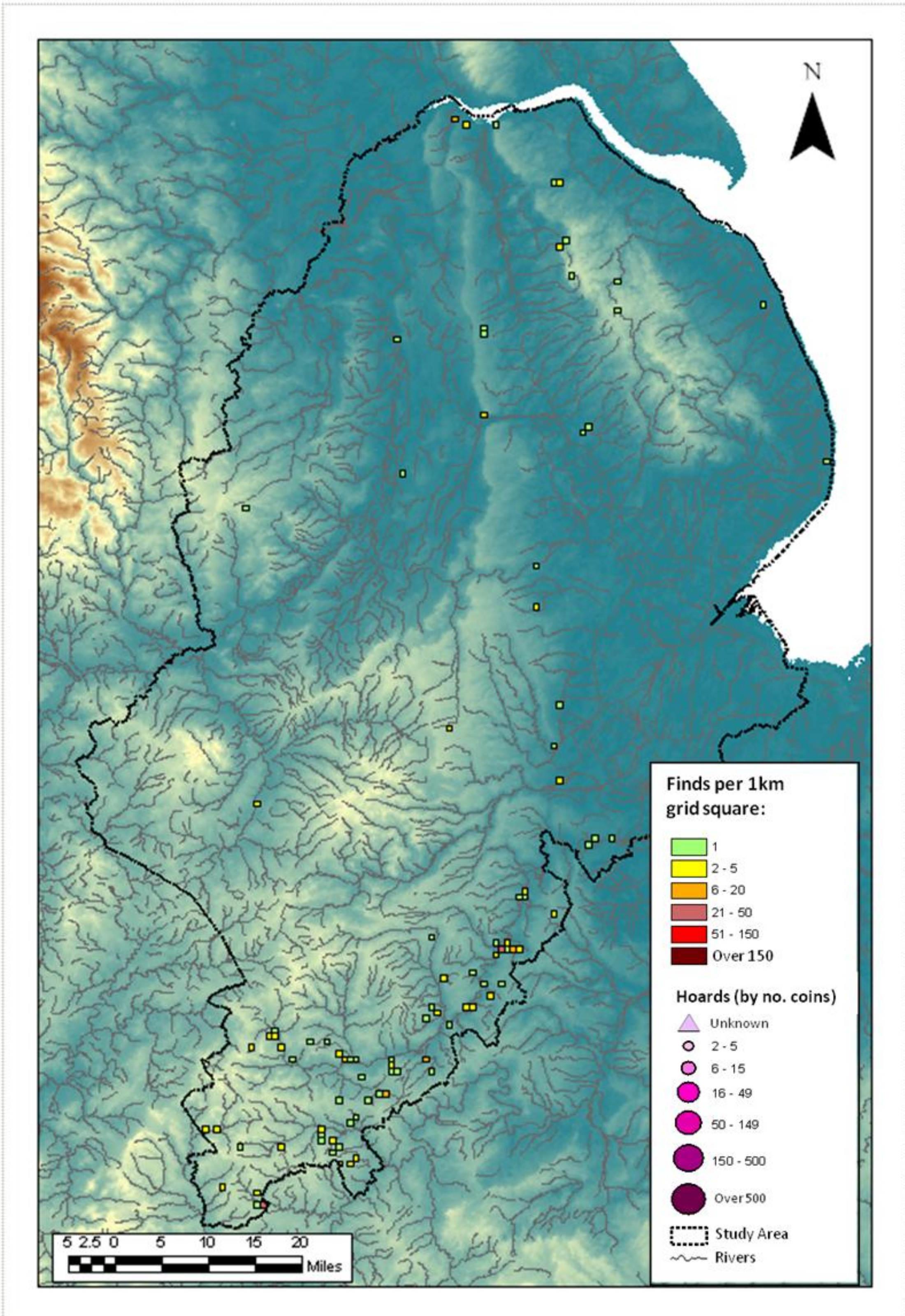

Figure 5.26 Spatial distribution of Iron Age copper-alloy (non-potin) coinage (259 coins)

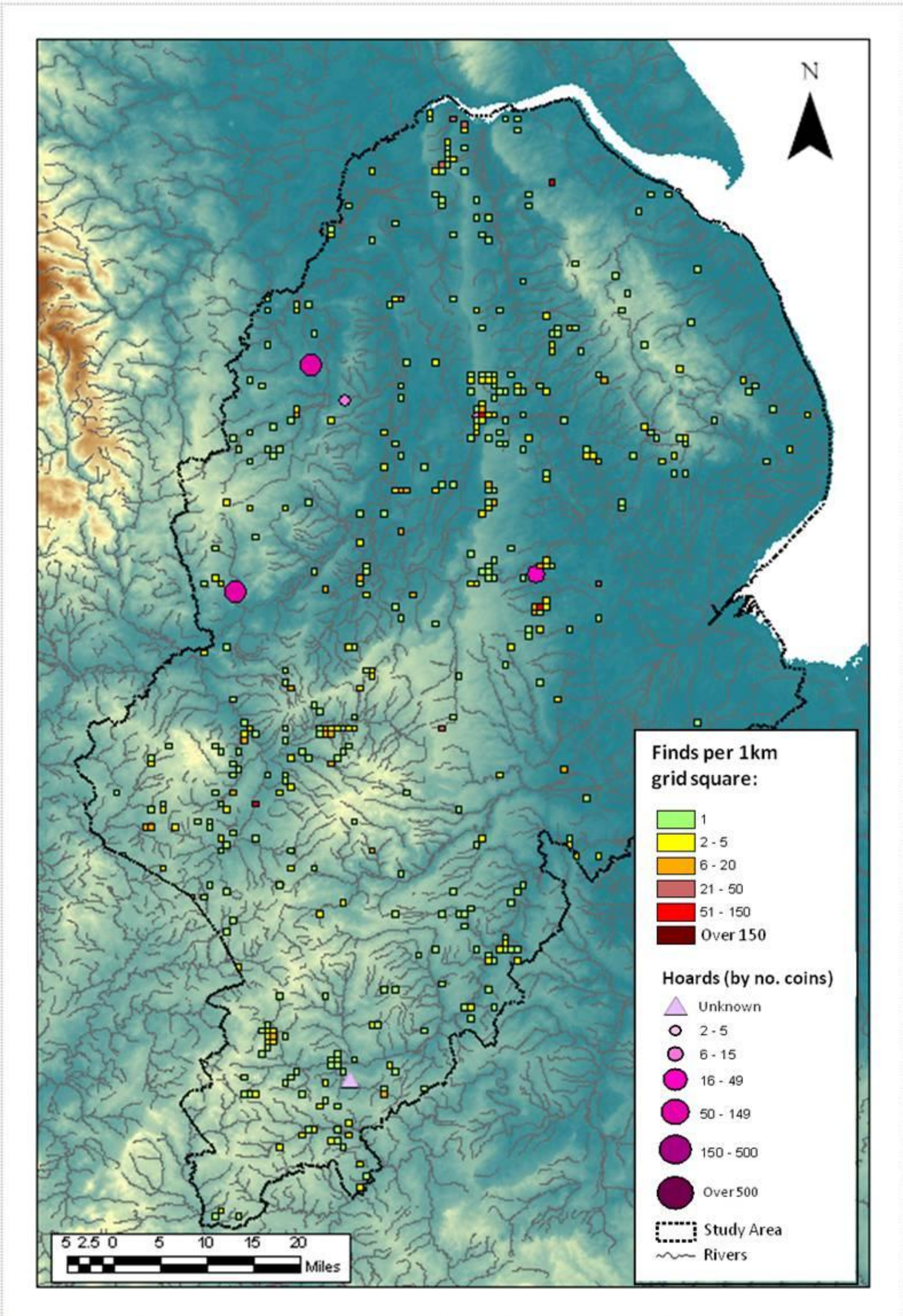

Figure 5.27: Spatial distribution of Roman copper-alloy coinage (1448 coins)

Haselgrove (1987) used a similar pattern in the distribution of gold vs. silver and copper-alloy Iron Age coin finds for south-east England to argue that gold coins may have circulated as 'primitive valuables', whereas silver and copper-alloy coins may have been used as 'early cash'. Collis (1981) has also argued that the even distribution of coinage dispersed over a wide area (but occurring together in hoards) may represent distribution among a particular social class through social and political channels (Collis 1981, 123), although he points out that dispersed production is also a possibility, and may indeed be the case in the East Midlands with early gold coinage in North Lincolnshire. Collis (*ibid.*, 125) argues that the nucleated distributions of copper-alloy coinage at major settlements could represent their use in administrative activities or market exchange. There is not enough evidence from these distribution maps to conclude that the value of Iron Age gold coinage could have been expressed primarily in social terms whereas Iron Age silver and copper-alloy coins represented economic value, but the two groups do appear to have circulated differently in different regions.

Iron Age communities in southern Northamptonshire used a tri-metallic coinage in which copper-alloy units may indeed have functioned as currency or administrative tokens. Copper-alloy coinage clusters on lower ground in the Nene Valley, often associated with nucleated settlements (Curteis 1996). Gold and silver coins circulated more widely in Northamptonshire, and are better represented at upland and rural sites, showing a more dispersed distribution along an axis of higher ground. Hoards are rare (with only four small hoards known), suggesting that coins were not often used as votive offerings or as a means of wealth storage (or at the very least that hoarding practices were different, with hoards more efficiently recovered). Northamptonshire, as Curteis (1996) has noted, lies at the boundary between several different coin-using regions; North Thames, Western and North-Eastern coinage are all well-represented. Different regional issues are also mixed in one hoard (a group from Flore containing two Western coins and one North Thames issue). The appearance of Western coins alongside North Thames issues, in the Flore hoard and at local centres along major rivers, such as Duston, Evenley and Titchmarsh (Curteis 1996, Curteis *et al.* 1998-9), suggests that these coins may have circulated through the same networks as North Thames coinage once they entered the county, perhaps being used in trade or administrative functions at regional centres. The North-Eastern coins from Northamptonshire are unsurprisingly concentrated towards the northeast of the county (Curteis 1996), and most likely represent the activities of communities engaged in more northern-oriented social networks.

In Iron Age Leicestershire, gold coins circulated in the lowland regions. These coins show a dispersed distribution, and may have function as objects of prestige exchange. Several small early gold hoards are known. Gold coins are almost entirely absent from the uplands, but silver coins (although generally rarer in the region than gold) show a more general distribution, appearing sparsely in both lowlands and uplands. Most of these silver coins date to the latest pre-conquest period (Figure 5.29). Very few silver hoards are known, with the exception of Hallaton. This remarkable site demonstrates that silver coinage was certainly considered an acceptable votive offering around the time of the conquest, even if the general circulation of silver coinage in Leicestershire remained low. To a certain extent this may reflect a differential engagement with coinage between lowland and upland communities. In the river valleys coin-use appears to have been relatively well established. In the uplands, general coin-use may have been rare, but this exceptional hoard site accounts for over half of all Iron Age coinage discovered in the East Midlands. It appears that in Leicestershire at least, silver coins may have been favoured as social valuables. This may be partly due to supply, since Leicestershire did not become closely interwoven into coin-using social networks until the latest Iron Age period, when silver production appears to have been at a peak, underwritten by gifts of Tiberian silver bullion that originated in the Roman world.

In Nottinghamshire, whilst Iron Age gold coins appear to have circulated widely, and two small hoards are known, the distribution of Iron Age silver coinage is much more closely restricted to the Trent Valley. Silver coins also do not appear in hoards. This may be due to the fact that as coin supply to Leicestershire and southern Lincolnshire improved, Nottinghamshire may have become marginalised.

Lincolnshire, a region with a long history of coin-use, shows wide distribution of both Iron Age gold and silver coinage, focused on the Northern Lincolnshire Wolds. Like Northamptonshire, this region fits closely with Haselgrove's (1987) model of dispersed gold coinage and more clustered silver finds. This may reflect the use of silver in exchange or administrative functions in areas where a complex system of coin-use had longest to develop (Collis 1971). Both gold and silver are represented in hoards, with early gold hoards followed by later silver hoards in North Lincolnshire (South Ferriby is almost equally split between gold and silver coins) and gold coins predominating in the three more southerly hoards, which span the Late Iron Age period. These patterns suggest that both gold and silver coins could have functioned as social valuables, cementing social and political alliances, even if silver in particular might also have been used in administrative functions at settlement centres. The occurrence of both types of coins together, both in hoards and at settlement sites, suggests that they were not perceived as strictly separate classes of object, and almost certainly circulated within the same sphere of exchange.

Roman coinage show a different circulation pattern, which in some respects is more uniform, particularly for later issues. Roman gold issues have already been discussed. A high degree of clustering is seen in both Roman silver and copper-alloy coins (Figures 5.25, 5.27). Silver coins show the most extensive general distribution, with copper-alloy coins more focused on established regional settlement centres and communication routes in the Nene and Soar valleys, and along the Lincoln Edge. Silver coins are also favoured in hoards. Almost all of these hoards are from the later Antonine period, a phenomenon discussed in chapter four. The predominance of silver coinage suggests that this medium may have been more acceptable as a means of wealth storage than copper-alloy coinage.

Creighton (1992) has suggested that outside of military sites, copper-alloy coins were most readily adopted in regions which had Iron Age copper-alloy issues. Whilst this may be supported by the hoard evidence, more recent PAS data challenges this argument in relation to coins in general circulation (Figure 5.33). Although fort sites are not excluded from Figure 5.33, they represent a small proportion of finds. The pattern noted by Creighton holds only for Republican coinage, where Northamptonshire (which had a tradition of copper-alloy issues) and Nottinghamshire (outside the main area of Iron Age coin circulation) show higher proportions of copper-alloy coinage. After this period, North Lincolnshire (which had no history of pre-Roman copper-alloy coinage) is the only region consistently above the mean for the proportion of copper-alloy to silver issues. This could support the model proposed above for the devaluation of precious metals in the heartland of North-Eastern series coin production.

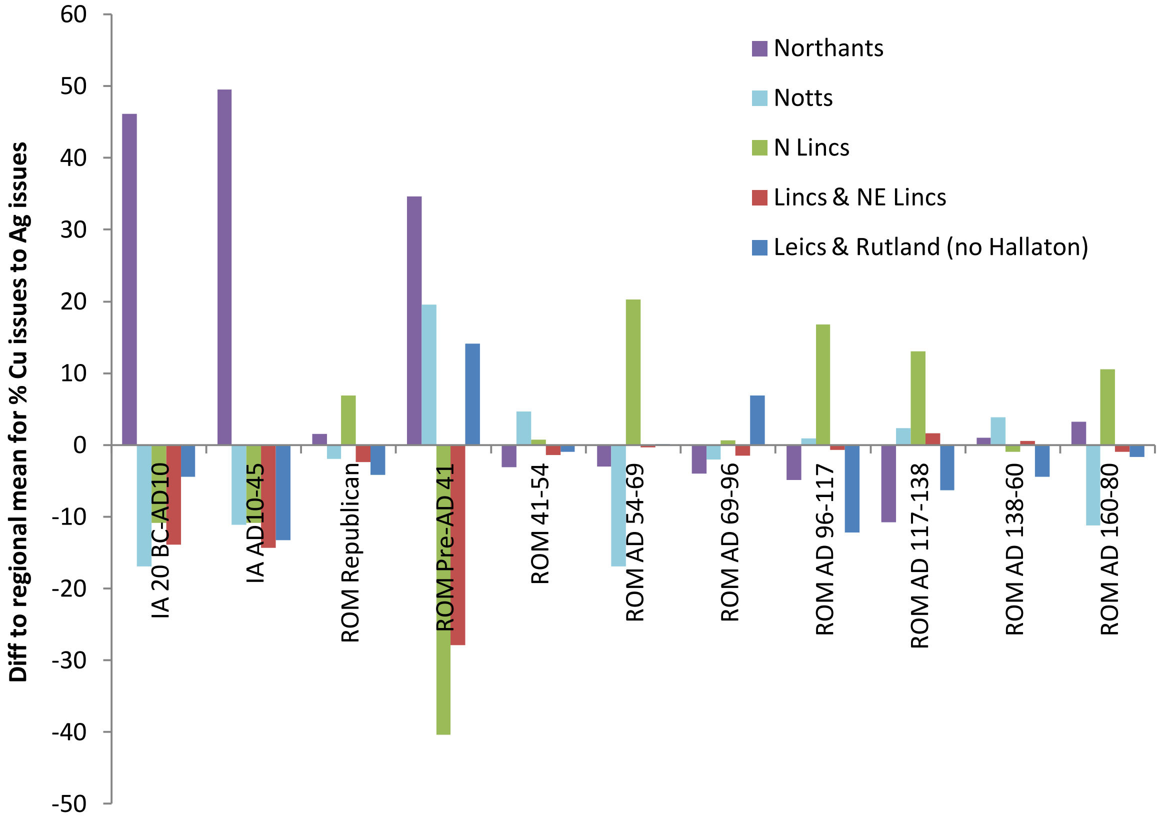

Figure 5.28: Difference to mean %Cu to Ag issues for each county, by period. Positive values show a higher than average proportion of copper-alloy coins.

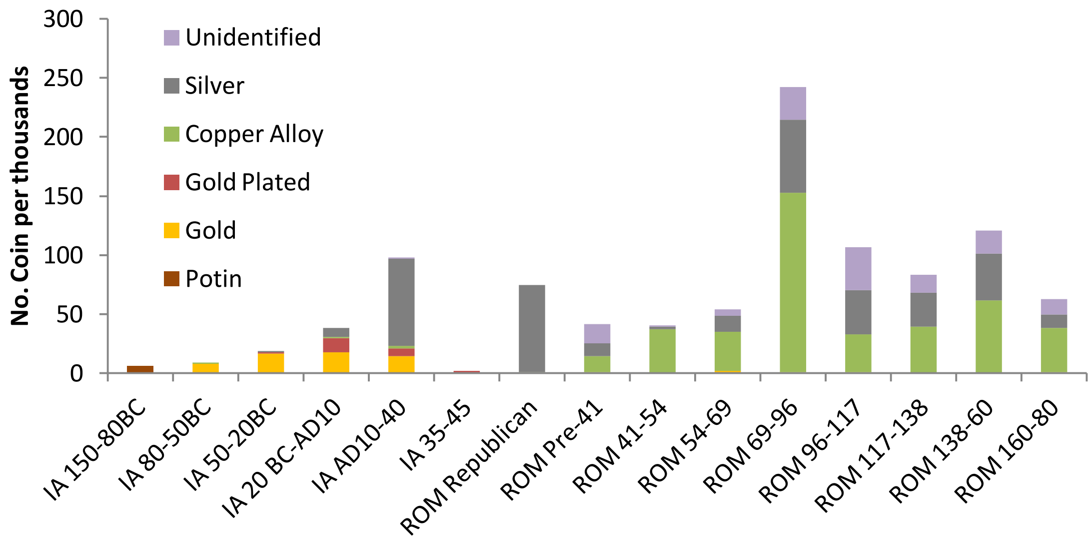

Figure 5.29: Coins-per-thousand by metal type and period, for Leicestershire and Rutland (909 coins, without stray and site finds from Hallaton)

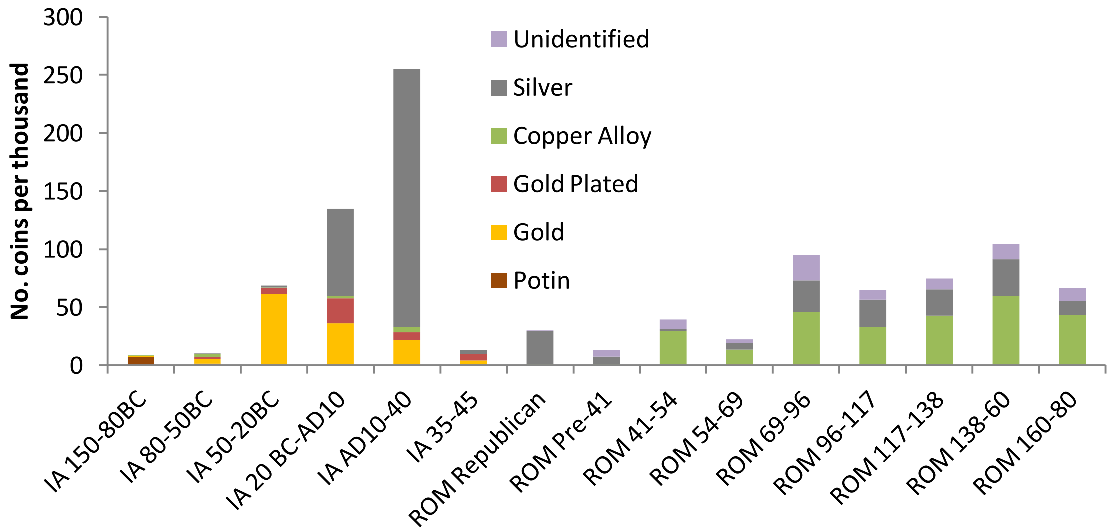

Figure 5.30: Coins-per-thousand by metal type and period, for Lincolnshire and North East Lincolnshire (2120 coins)

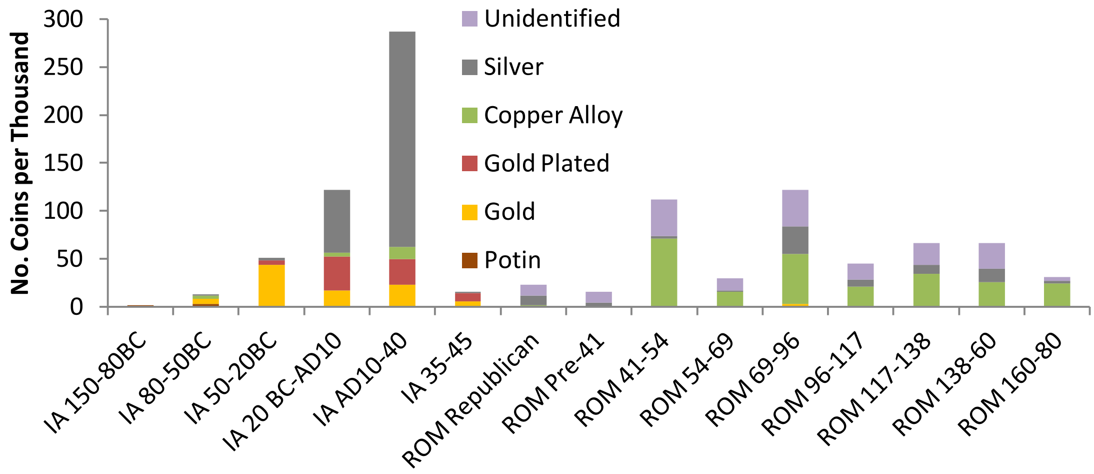

Figure 5.31: Coins-per-thousand by metal type and period, for North Lincolnshire (707 coins)

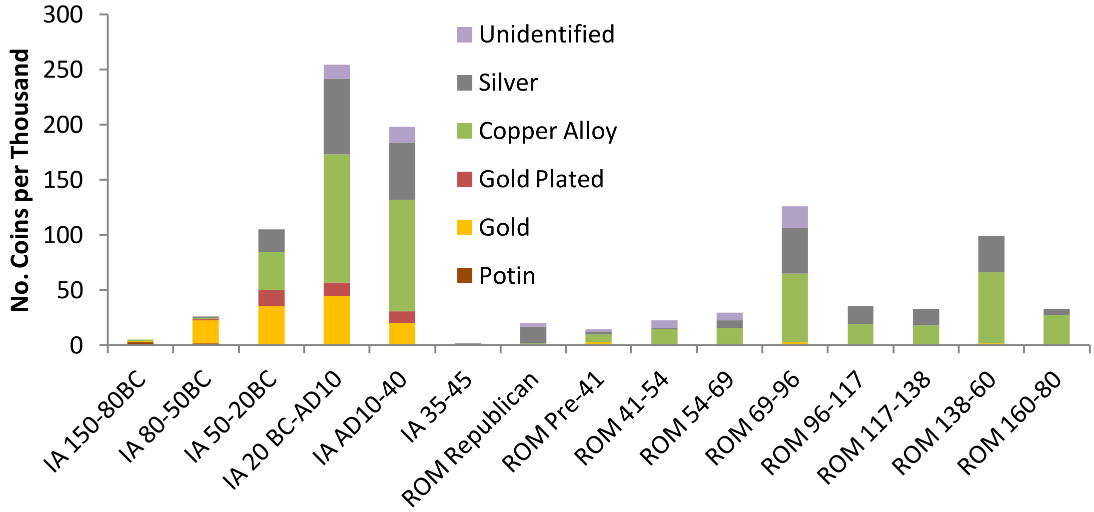

Figure 5.32: Coins-per-thousand by metal type and period, for Northamptonshire and Peterborough (850 coins)

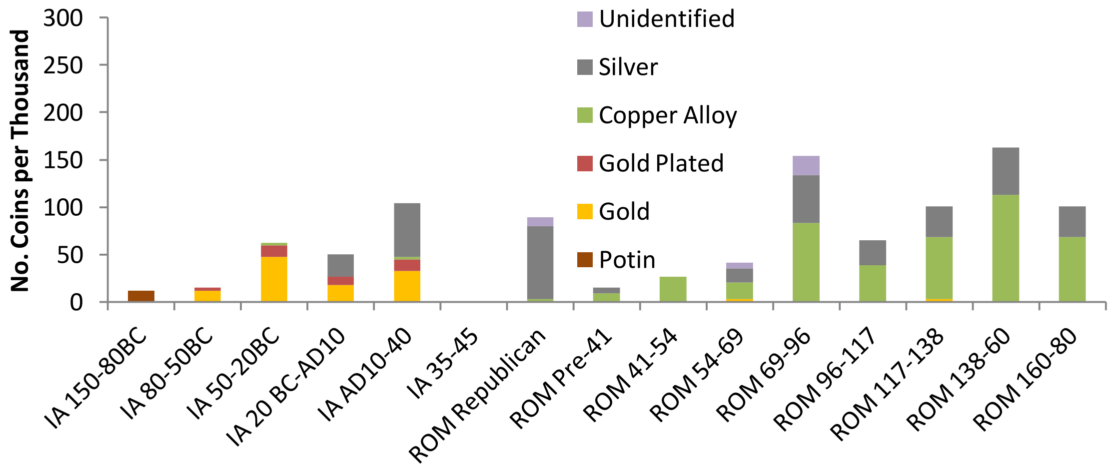

Figure 5.33: Coins-per-thousand by metal type and period, for Nottinghamshire (337 coins)

In the Iron Age, coins may have functioned predominantly as social valuables and for use in votive deposition (with the possible exceptions of copper-alloy coinage in Northamptonshire and perhaps silver coinage in northern Lincolnshire). Social practices associated with coin-use were also highly regionalised, with variations in distributions across the study area. After the conquest period, where early Roman coinage distributions may well reflect military activity, a more uniform engagement with coinage seems to have emerged, reflecting the development of a shared market economy. Under this new system, the fortunes of northern Lincolnshire seem to wane, giving way to new centres for the consumption of coinage in the south and west of the study area, particularly in Nottinghamshire and Leicestershire, which had been more peripheral in the consumption of Iron Age coinage (Figure 5.34). This may represent a resistance to Roman coinage in North Lincolnshire, or a lack of access to the social networks through which Roman coinage was moving. A similar pattern is seen in the case of brooches.

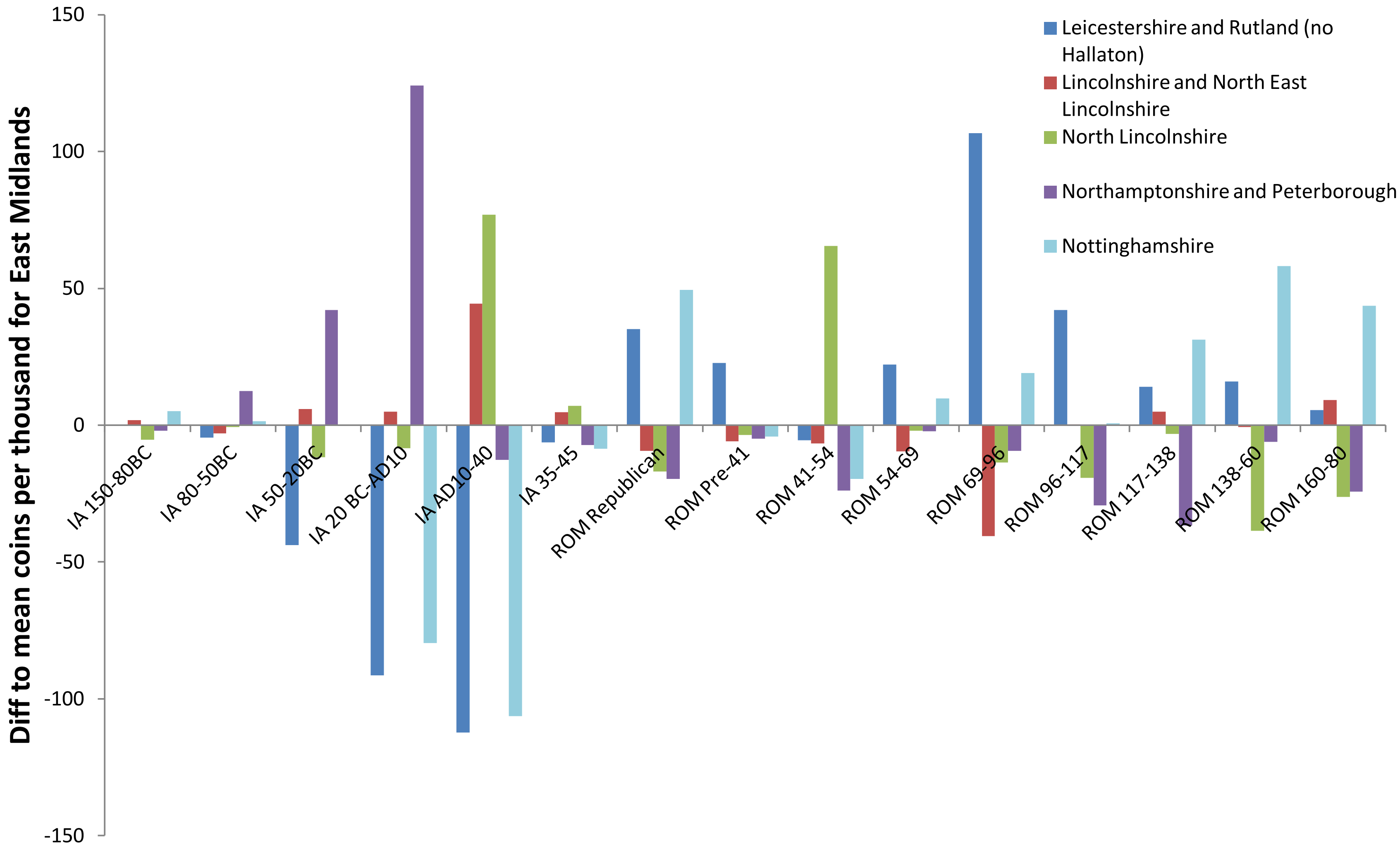

Figure 5.34: Difference between regional mean and no. Iron Age and Roman coins-per-thousand for each county, by period

5.5 Regional Analysis: Brooches

Data on East Midlands brooch finds was also gathered. A number of studies (Collis 1975, 53-66; Bayley *et al.* 2004, Hull and Hawkes 1987, Crummy 1983, Hattatt 2000, Mackreth 2010) have presented evidence for the dating of bow and plate brooch types, and here these are summarised into five chronological phases (Table 5.3). Penannular brooches, which are less easily dateable, are omitted from the phasing and considered as a separate category.

More recent work on brooches has begun to move away from a primary concern with typology and chronology to a more detailed consideration of the technologies used to produce these objects (Bayley *et al.* 2004) and a focus on the role of brooches in the construction of local and regional identities (e.g. Hunter 2007, Jundi and Hill 1997, Pitts 2010). The chronology outlined here is used as a tool to investigate the changes in distribution of brooches through time, which is compared to the model outlined for Iron Age and Roman coinage.

Table 5.3: Brooch Chronology and Typology

Period	Brooch Category	Brooch Type	Hull Type (Hull and Hawkes 1987)	Richborough Cat. No. (Bayley et al. 2004)	CODE	Category
E/MIA 800-100 BC	Bow	Early continental Hallstatt imports	Group C-LX		A	E/MIA
		Early British brooches	Group L			
	Pin	Early imported pins e.g. Swan's neck				
	Bow	La Tène I series (reverted foot, not attached to bow)	T1A-C			
	Pin	British pins (see Dunning 1934) e.g. Ring-headed, humped stem, involuted				
	Bow	La Tène II series (reverted foot, generally attached to bow)	T2A-C			
			T3A-B			
LIA (pre-conquest) 100 BC-AD 50	Bow		T3C-D	32-34	B	LIA Pre-Conquest
		La Tène III series (foot made in one with bow, not merely reverted. No arms to protect the spring nor hook for chord where external) e.g. Nauheim, Drahtfibel	T6-9			
Peri-conquest AD 1–70	Bow	One-piece sprung e.g. Eye, Knickfibel, Flügelfibel, Simple Gallic, Colchester one-piece, Birdlip	T10-12, T18-20, T40, T42, T86, T87, T89	1-30, 35-38, 43-45	C	Conquest-period one-piece
			T88		D	Birdlip
			T90, T91	46-67	E	Colchester & Early derivatives
		Brooches with springs in cylindrical covers	T21, T22A	72	F	Langton Down and related
			T23-28, T29A	73	G	Rosette/ Thistle/Lion brooch
		Hook Norton and related types	T31, T33-35, T37, T37		H	Aesica, Hook Norton and early fantails
		Early hinged brooches	T13-17, T53-59, T80	159	I	Early hinged (strip bow/tapered bow)
		Colchester derivative brooches	T92-3, T112-117	160-201, A6	E	Colchester & Early derivatives e.g. Two-piece double lug
	Plate	Early plate brooches	T224-225, T242A, T238-9, T235, T261, T265, T266B	340-9	J	Other Conquest-period (including plate)
Peri-conquest (possible military associations) AD 43–70	Bow	Early hinged brooches	T51	74-92, A1-2	K	Aucissa
			T52, T60-79	93-153, A3	L	Hod Hill/Bagendon
					M	Other/ Unidentified military

Table 5.3 (cont'd): Brooch Chronology and Typology

Period	Brooch Category	Brooch Type	Hull Type (Hull and Hawkes 1987)	Richborough Cat. No. (Bayley et al. 2004)	CODE	Category
Post-conquest AD 70-170	Bow	Later Colchester derivatives	T94-103 T102, T103, T144	208-215	N	Later Colchester derivative (inc. Polden Hill, Sawfish, Dolphin)
		Trumpet-headed brooches	T153A-D, T158A-C, T158D-F, T154A-B, T155, T156, T159, T157A-F	216-221	P	Trumpet and Trumpet-related
		Trumpet-headed brooches with expanded decoration on bow	T162, T166-8	235-7		
		T-shaped brooches	T104, T118, T121B, T123-5, T130-1, T133-7, T29B, T105-11, T119, T138-40, T146	223, 224, 234	O	T-shape
		Headstud brooches	T143, T145	225-227	Q	Headstud
			T147			
			T148, T149	Cat 228-231		
		Various brooches related to trumpet-headed or headstud series	T36, T150-2, T160-1, T163-4		R	Later fantails and other trumpet/headstud related brooches
		Enamelled continental brooches with tubular hinge cover and expanded decoration on bow	T180-3	154-8	S	Other post-conquest bow brooches
	Plate	S-shaped brooches	T200-202	350	T	Dragonesque
		Zoomorphic brooches (excluding types known to be late e.g. Horse and rider)	T203, T205-12, T222-3	351-3	U	Zoomorphic/Skeuomorphic
		Enamelled peltate and crescent-shaped brooches	T236, T237		X	Other post-conquest plate brooches
		Continental symmetrical plate brooches, usually enamelled, pin usually hinged between two lugs	T226-34, T240	357-67		
		Disc			V	Disc
		British enamelled umbonate brooches, hinged	T267-8, T199	379-83	W	Umbonate (including Chatelaine, with toiletry implements)
Undated	Penannular				Y	Penannular

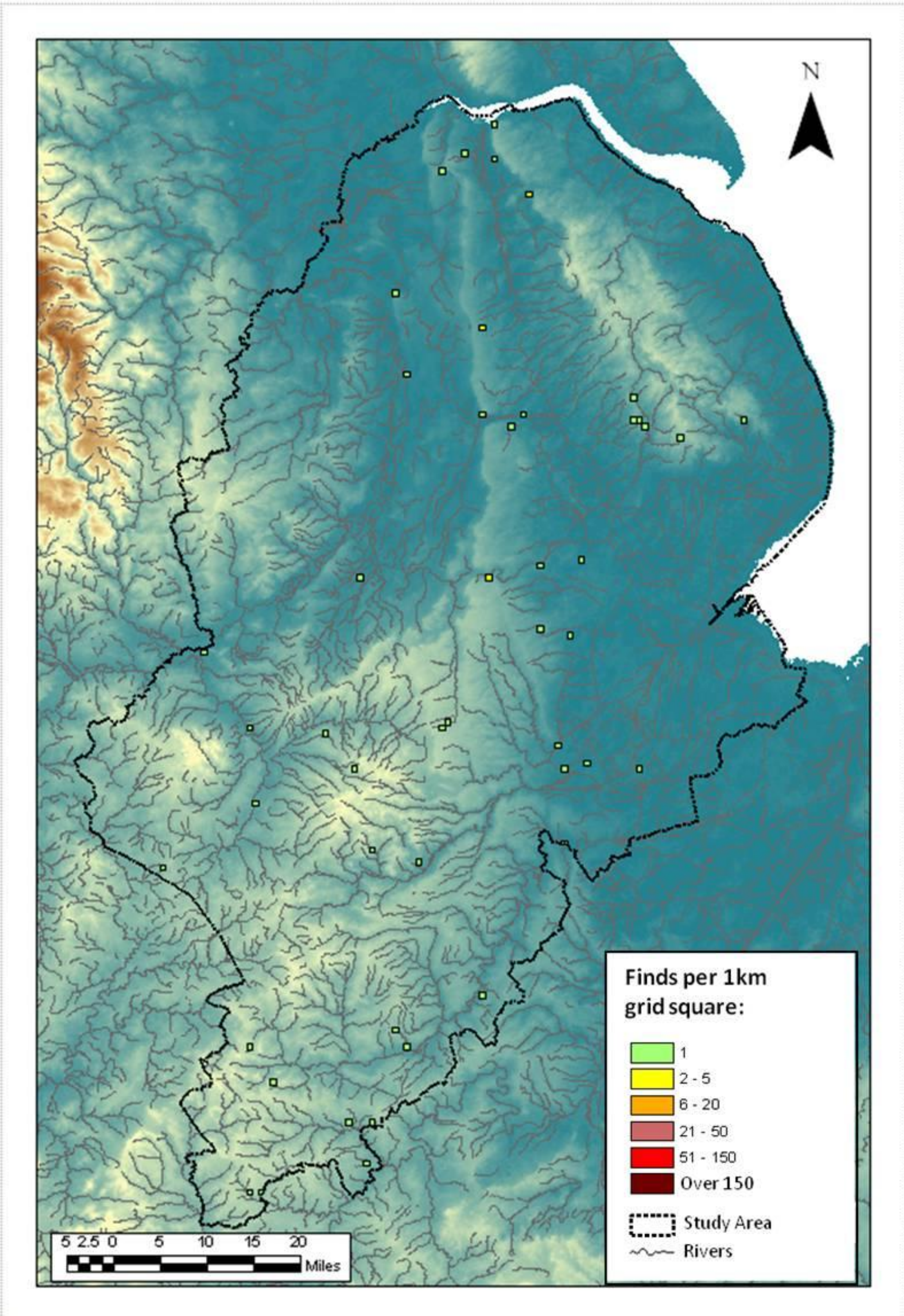

Figure 5.35: Spatial distribution of Early and Middle Iron Age brooch finds (800–100BC)

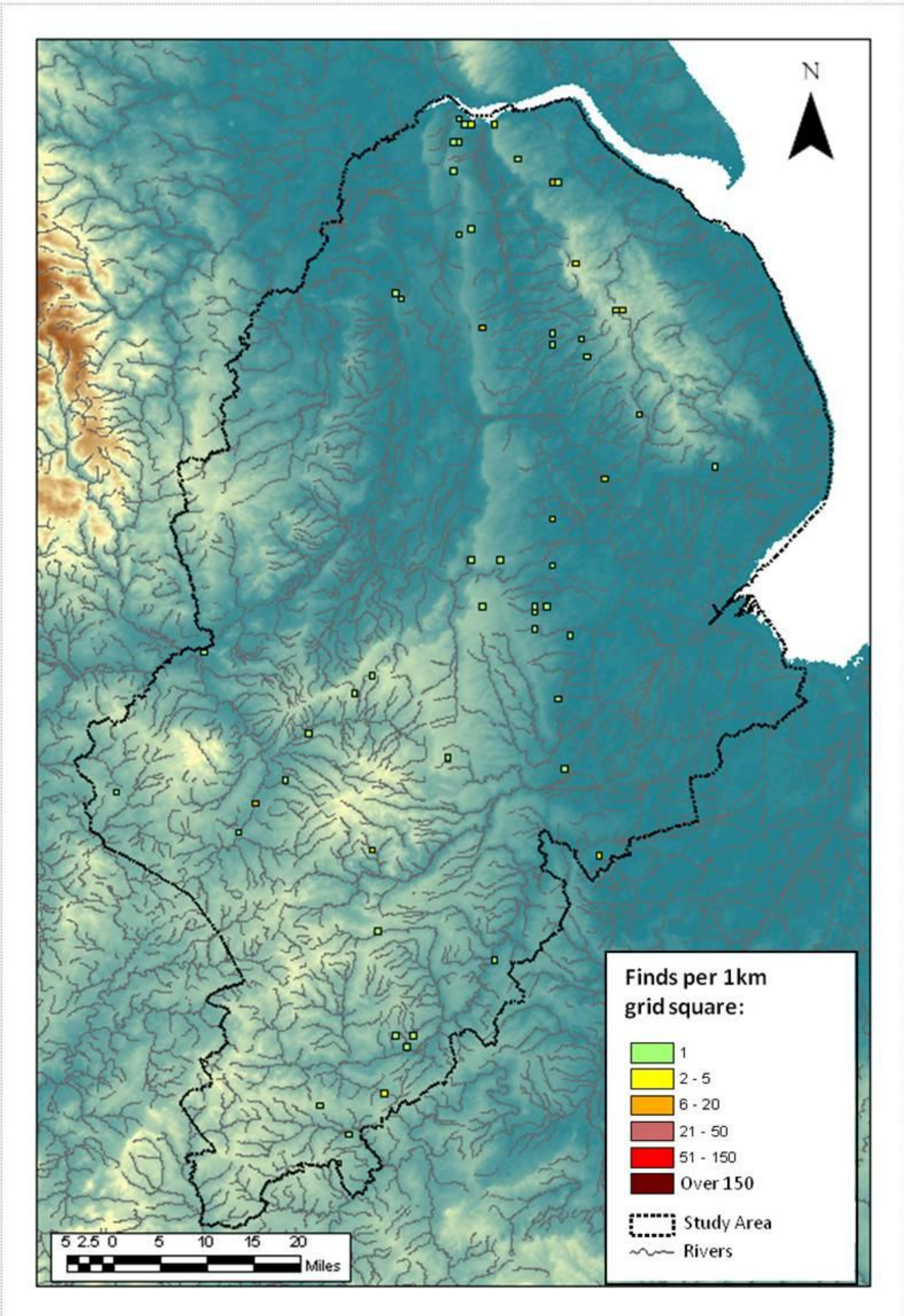

Figure 5.36: Spatial distribution of Late Iron Age (pre-conquest) brooch finds (100BC–AD50)

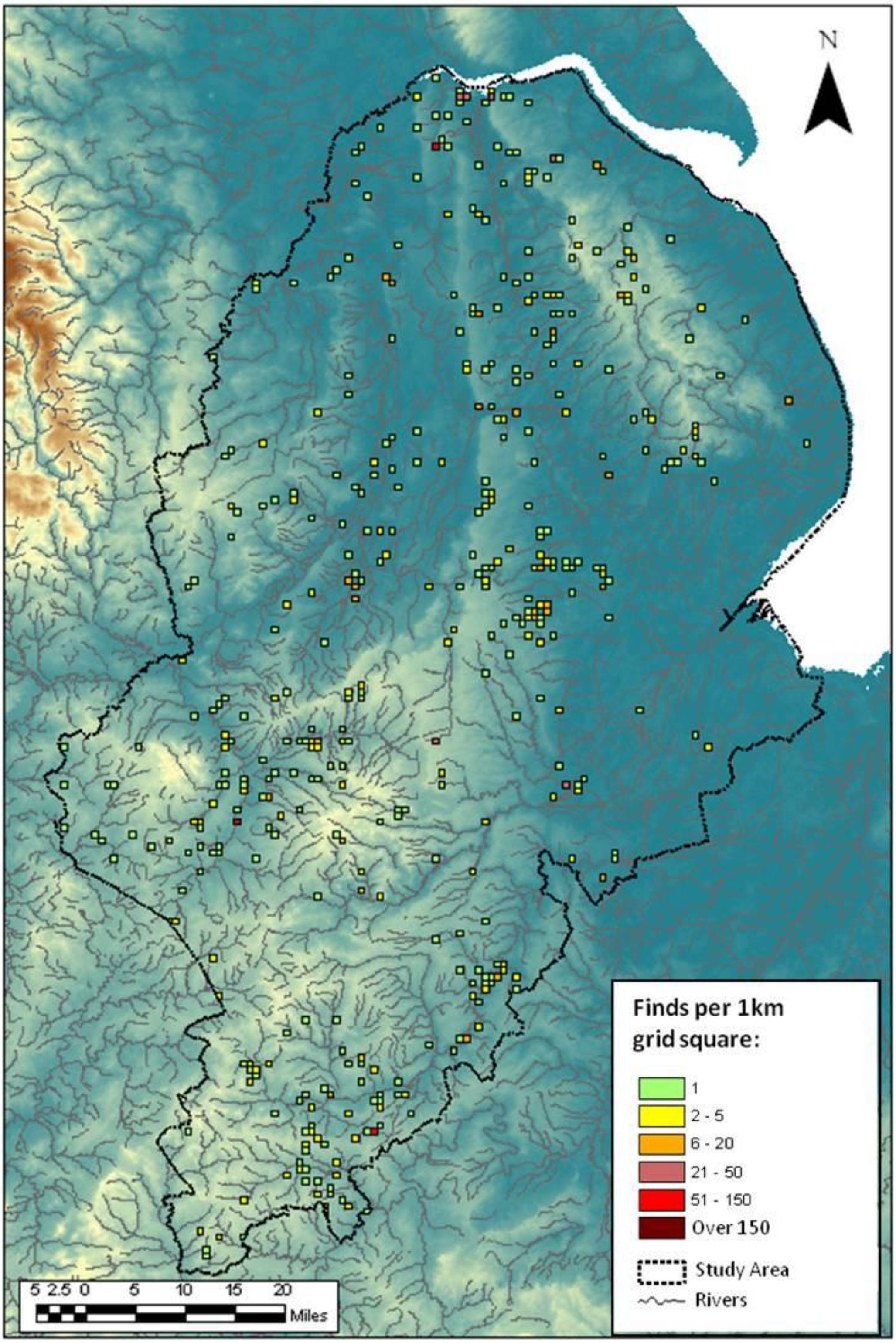

Figure 5.37: Spatial distribution of conquest-period brooch finds (AD1–70)

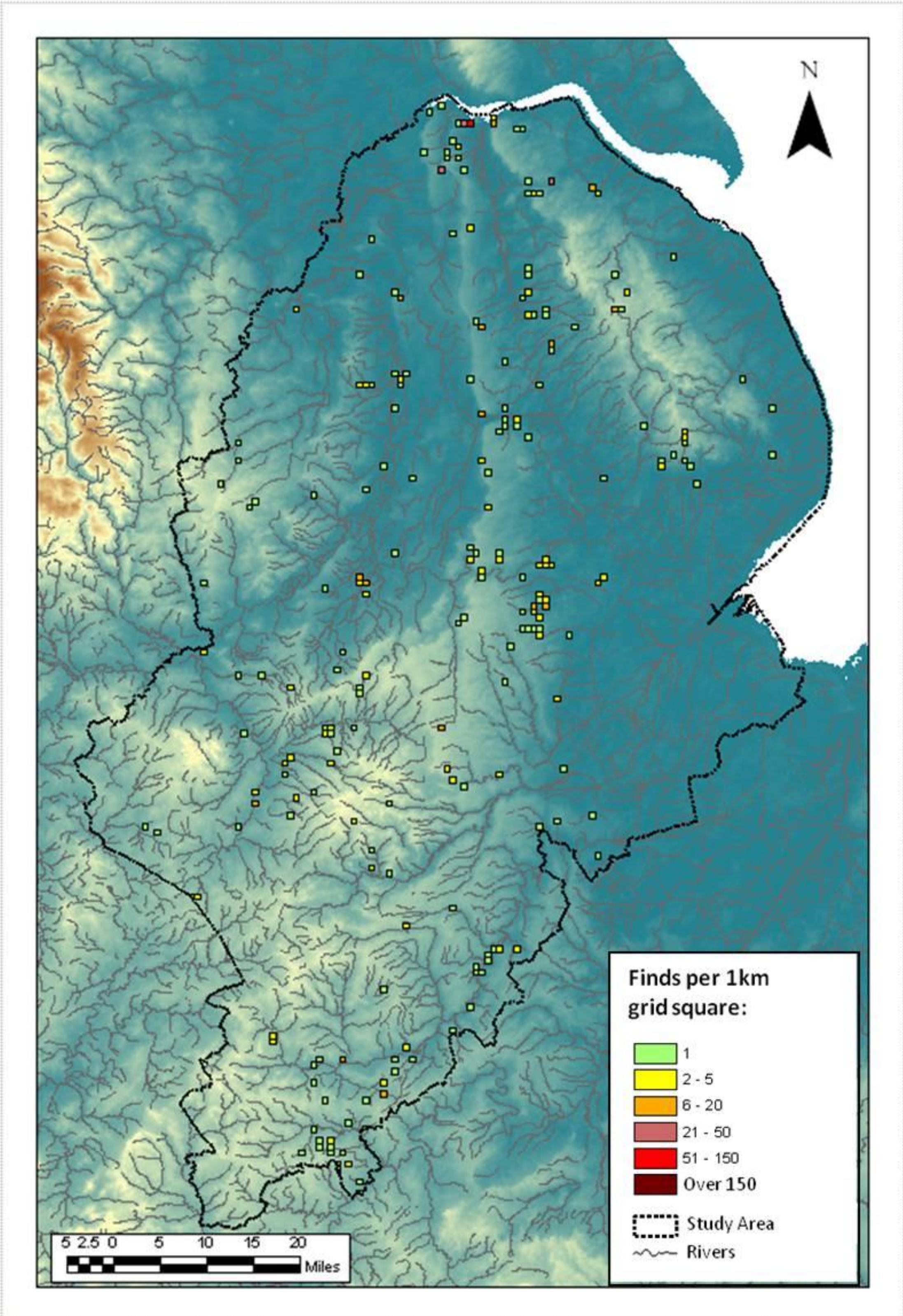

Figure 5.38: Spatial distribution of conquest-period military brooch finds (AD43–60)

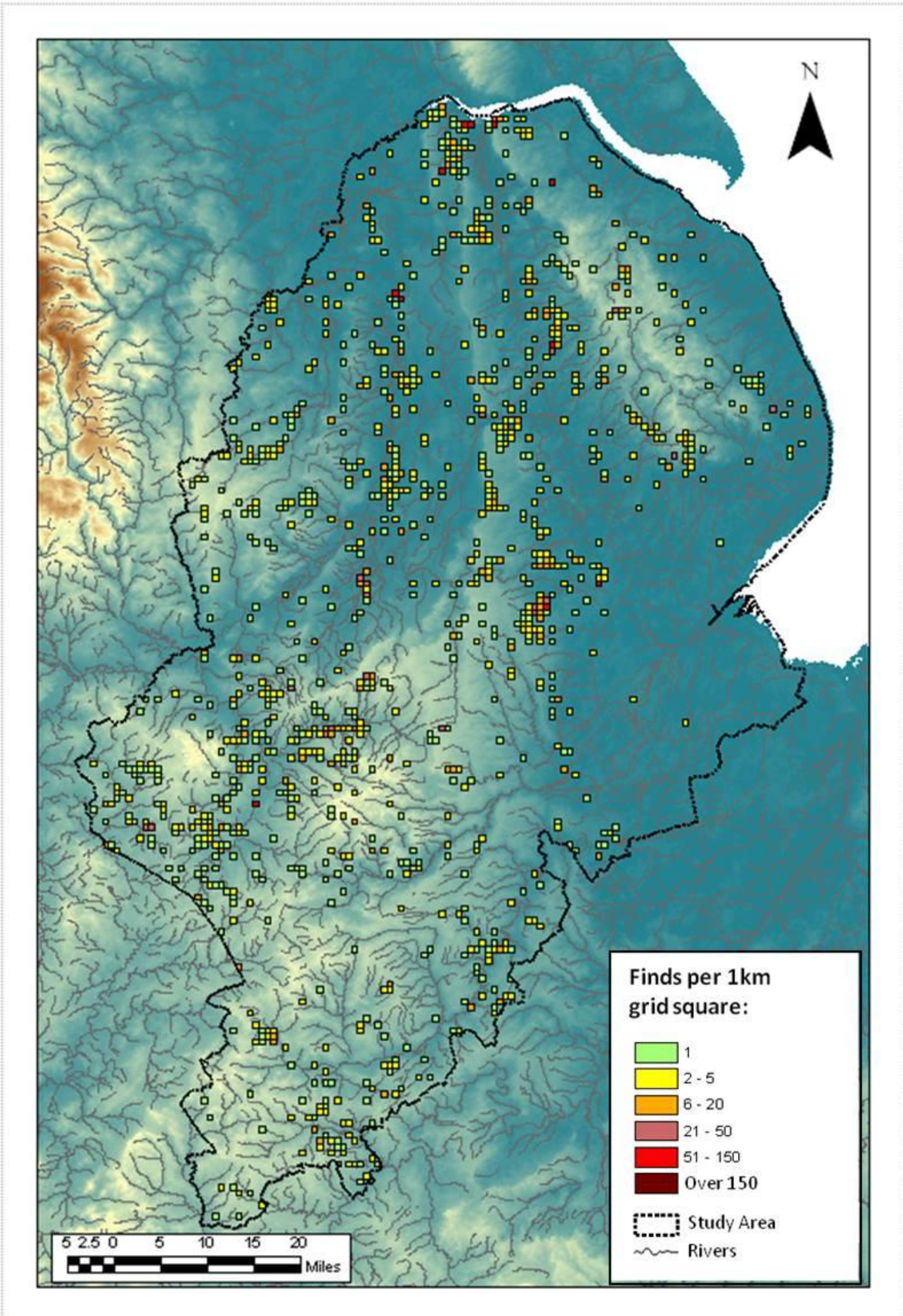

Figure 5.39: Spatial distribution of Post conquest early Roman brooch finds (AD70–170)

Brooches from the Early and Middle Iron Age (800–100BC, Figure 5.35) are rare, and are sparsely distributed throughout the study area, except for the Nottinghamshire uplands, where no finds have been reported. Numbers are low, and all counties show similar values (Figure 5.40), with Lincolnshire and Northamptonshire slightly above the mean, and other counties slightly below. The latest part of this period overlaps with the earliest imported coinage. Most brooches would also have been imports rather than local products. It appears that both brooches and coins could have been moving up through southern Britain, perhaps through similar channels of communication.

From the first century BC onwards, Hill (e.g. Jundi and Hill 1997) notes what he calls a 'fibula event horizon' across Britain. Brooches become more numerous, more varied, and appear in a wider range of contexts, perhaps reflecting their role in negotiating new forms of identity and status. Pre-conquest Iron Age brooches (100BC–AD50, Figure 5.36) show a more recognisable distribution, along river valleys and in the Lincolnshire Wolds. Only Nottinghamshire (Figure 5.40) again shows a proportion of brooches from this period substantially below the mean. These brooches overlap chronologically with the majority of the Iron Age coins considered in the previous section. Like the coins, many of these brooches could have been made locally. Geographically, the clusters of Iron Age coin finds are similar enough to suggest that coins and contemporary brooches could have been moving through similar social networks. Sites producing brooches from this period also often produce Iron Age coinage. The larger numbers of brooches from North Lincolnshire in this period may represent the emergence of this region as a centre for production and consumption of metalwork, connected with the rise of Late Iron Age centres such as Dragonby, Kirmington and Old Winteringham. Many of these sites have produced pre-conquest brooches alongside Iron Age coinage.

Conquest-period brooches with military associations (43–60AD) are mapped in Figure 5.38. Not all of these brooches will have been associated with the passage of Roman soldiers, and it is possible that some could have entered the region before the conquest. Nevertheless, separate analyses have repeatedly reinforced the association of Aucissa, Hod Hill and Bagendon brooches with the Roman military in Britain (e.g. Bayley *et al.* 2004; Mackreth 2010). These objects show a similar distribution to contemporary Claudian coins (Figure 5.14), with a focus on the Lincoln Edge, the Trent Valley and Northamptonshire and Leicestershire lowlands. North Lincolnshire in particular produces above-average levels of brooch and coin finds from the immediate conquest period which may be related to military activity (Figures 5.11 and 5.40).

Conquest-period military imports show a very different distribution pattern to other contemporary non-military brooch types, which may have been locally produced (Table 5.2). There is possible evidence for the production of Colchesters at Piddington (Northants), and one-piece brooches from Leicester and Owmby (North Lincs). These non-military brooches span the pre- and post-conquest horizon. A broad date range is given here (AD 1–70), although in the East Midlands, particularly outside Northamptonshire, these finds tend not to appear in contexts pre-dating the mid-first century AD (Bayley et al. 2004; Mackreth 2010). The overlap with previous periods is reflected in their distribution (Figure 5.37), which emphasises both Late Iron Age North Lincolnshire centres and more southerly and western sites in the Lincolnshire Clay Vale, Northamptonshire and Nottinghamshire, which emerged as key metalwork consumption sites in the early Roman period. Northamptonshire is substantially over-represented in terms of non-military conquest-period brooches, mostly Colchesters and early Colchester derivatives (Figures 5.40, 5.41), reflecting patterns of consumption across eastern England (Haselgrove 1997). This county is only slightly over-represented in terms of brooches with military associations. There is a relative absence of early forts in the region, and coinage patterns (Figure 5.11) suggest that the real peak of Roman activity came in the Neronian and Flavian periods, rather than during the initial conquest. Leicestershire also shows an interesting pattern, being better represented in terms of conquest-period brooches than in terms of Iron Age coinage. Several excavated Iron Age sites in Leicestershire, including Burrough Hill and Humberstone, have produced conquest-period or later brooches, but were not centres for consumption of Iron Age or early Roman coinage. In Leicestershire and Nottinghamshire, conquest-period brooches most likely represent social relationships and practices emerging in the very latest Iron Age or early Roman periods, whereas in North Lincolnshire and Northamptonshire there may be greater continuity with the pre-conquest period.

Regions which had been at the peripheries of networks associated with Iron Age metalwork consumption come to the fore in the final period. Like contemporary Roman coinage, post-conquest brooches (AD 70–170, Figure 5.39) show a distribution more strongly skewed towards the south and west of the study region, with Nottinghamshire, Lincolnshire and Leicestershire showing above-average brooch-loss profiles (Figure 5.40). This is also true of the production evidence (Figure 5.2); no post-conquest brooch production is evidenced in northern Lincolnshire, although the sample of production sites is small. The coinage evidence (Figure 5.11) suggests further nuances to this chronological trend. Coinage in Leicestershire is over-represented in the Flavian and Trajanic periods, Lincolnshire in the Trajanic to Antonine periods, and Nottinghamshire after the Hadrianic period, suggesting that these new networks of supply may have originated in Leicestershire (where the civitas capital was also founded at Leicester by c.AD 70) and subsequently expanded into southern Lincolnshire and eventually Nottinghamshire. This may be reflected in the different brooch types associated with each region. In Leicestershire, Colchester derivatives are common, whereas later types (headstud and fantail) are over-represented in Nottinghamshire. Lincolnshire is closer to the mean in terms of proportions of each brooch type, which would support the longer period of concentrated Roman activity suggested by the coinage.

Variation in later brooch types is dealt with further in the site-based analysis, which follows after consideration of three final categories of metalwork evidence: horse-gear, votives and toiletry implements.

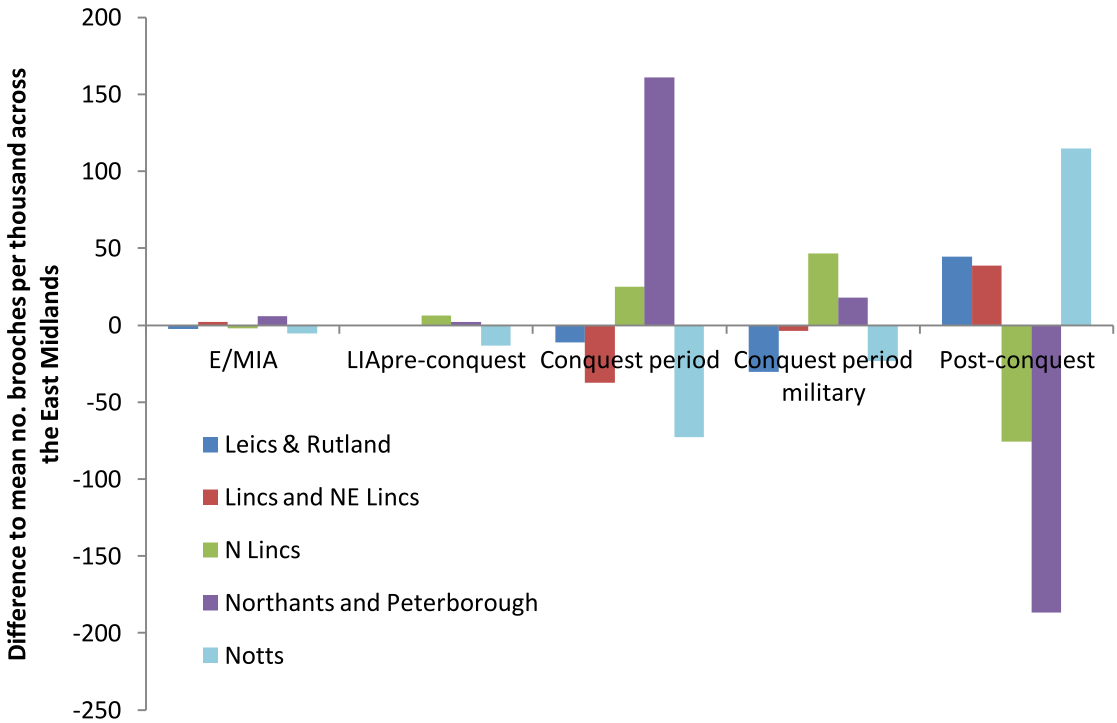

Figure 5.40: Difference between regional mean and no. brooches-per-thousand for each county, by period

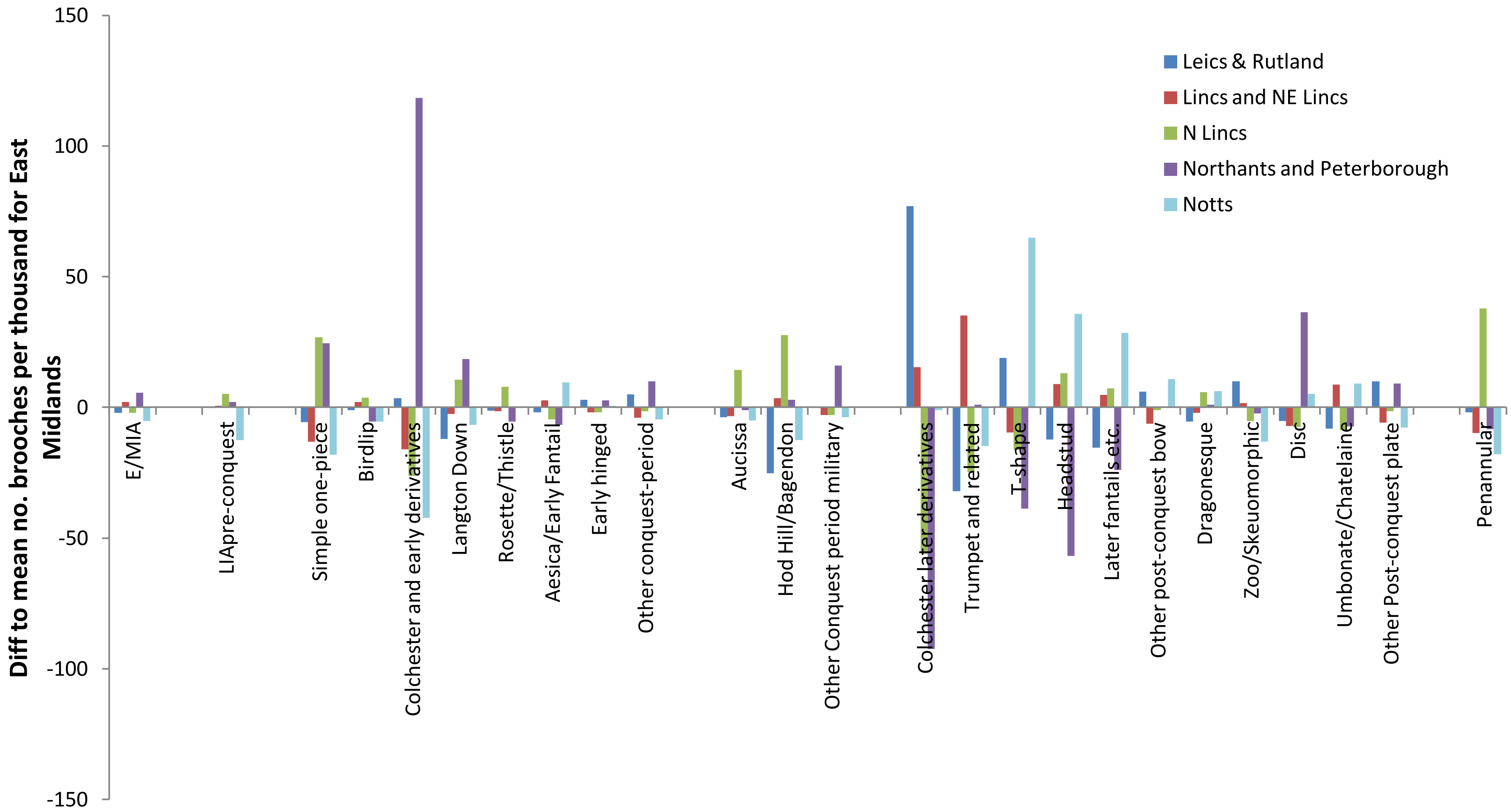

Figure 5.41: Difference between regional mean and no. brooches-per-thousand for each county, by brooch type (grouped by period)

5.6 Regional Analysis: Other Object Types

Information was also gathered on toiletry implements, miniatures, and horse-gear. These are rarely considered together, despite similarities in the materials used to produce them and their occurrence in analogous archaeological contexts. Only a brief consideration of this material is possible here, but the data gathered for this study will also provide avenues for future research.

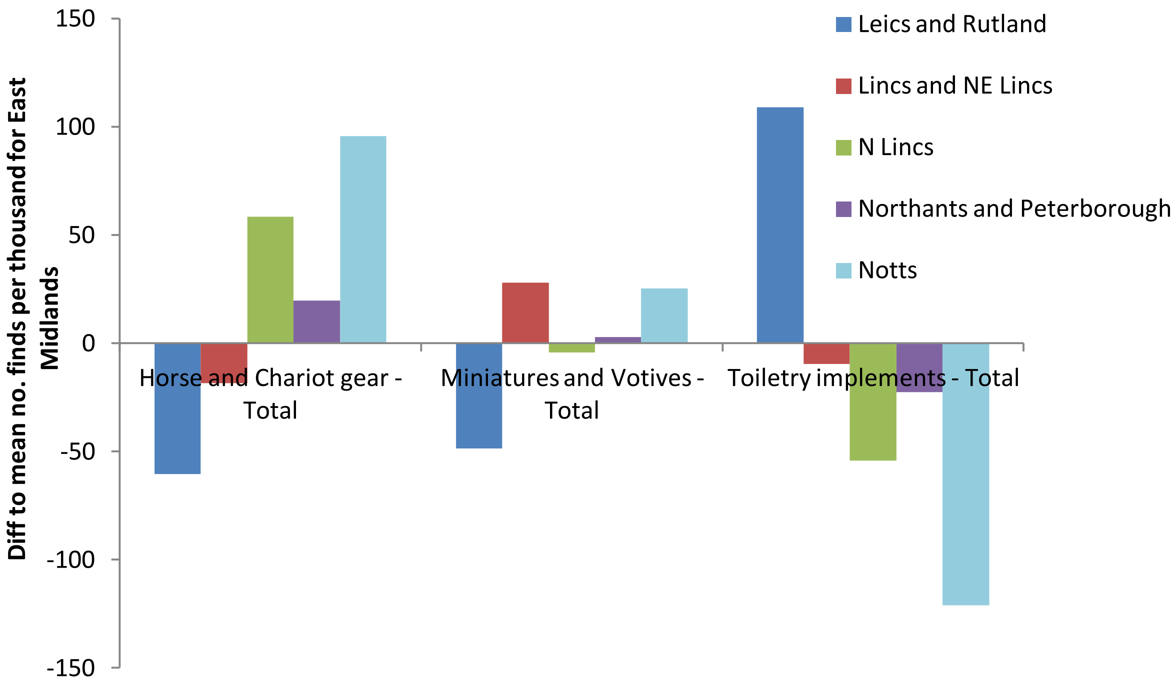

Figure 5.42: Difference between regional mean and no. other artefact type finds-per-thousand for each county, by object type

These artefact types have not been assigned to dated periods, but are considered in functional groups. There are a few clear regional trends (Figure 5.42), with North Lincolnshire and Nottinghamshire over-represented in terms of chariot-gear, but under-represented in terms of toiletry implements. Northamptonshire is most closely related to this group. These parallels may mask different underlying causes, with the Late Iron Age settlement centres in North Lincolnshire perhaps placing a stronger emphasis on horse equipment than toiletry implements, and Nottinghamshire's profile reflecting the fact that this region remained more sparsely-settled into the early Roman period. Leicestershire is very well-represented in terms of toiletry implements, suggesting that (in a region where less emphasis had historically been placed on the use of objects such as coins to negotiate status) new techniques of the body which emerged in the conquest period may have been of particular social importance.

5.6.1 Horse gear

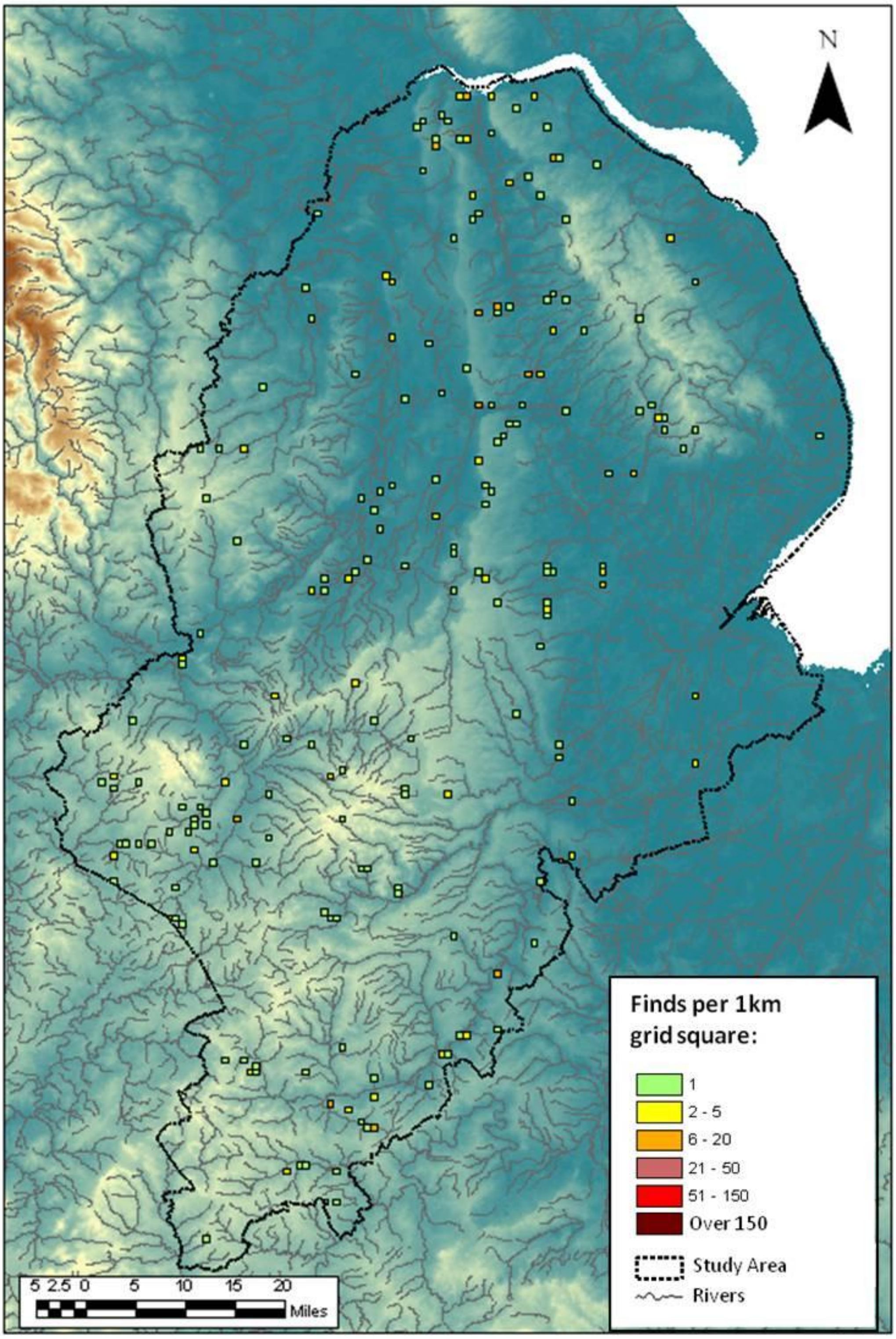

Figure 5.43: Spatial distribution of Iron Age and Roman horse and chariot gear (405 finds)

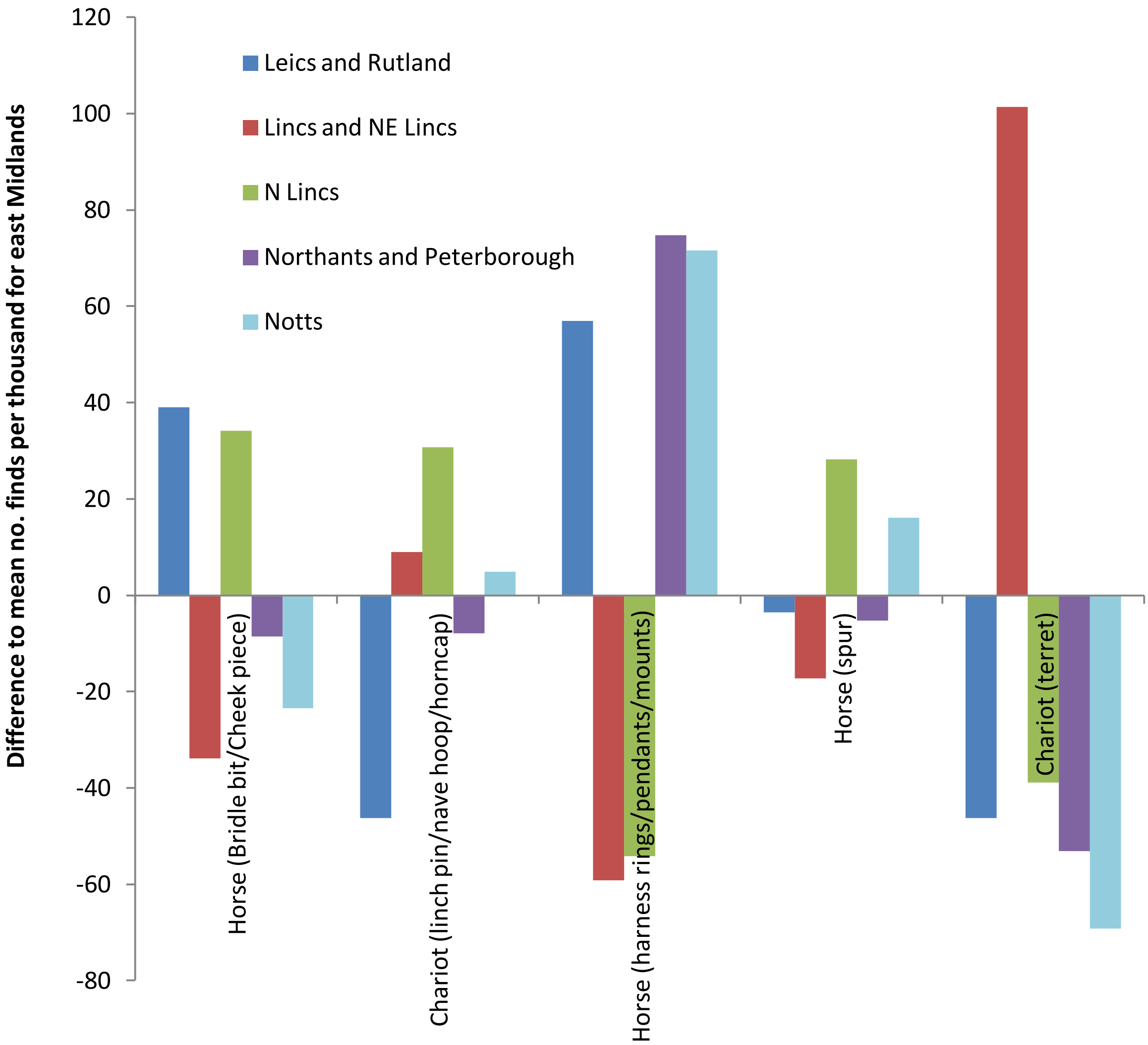

Figure 5.44: Difference between regional mean and no. horse gear finds-per-thousand for each county, by find type

When horse gear is considered as a group, the differences between North Lincolnshire and Nottinghamshire become clearer. Overall the material is reasonably well-distributed across the region (Figure 5.43), but the emphasis on harness rings, pendants and mounts in Nottinghamshire and Northamptonshire, and the under-representation of terrets (Figure 5.44), is most likely to represent post-conquest Roman influence on the assemblages; many of the harness mounts from these counties are thought to have military associations, and finds securely dated to the Iron Age are rare. Figure 5.44 also shows a predominance of terrets in Lincolnshire, while bridle and harness fittings predominate in Leicestershire. This may represent different social practices relating to the design and construction of horse and chariot equipment in these regions, or it could suggest differences in depositional practices.

Almost all horse-gear finds were single or site finds which could represent accidental losses, but one hoard is attested. This is the Late Iron Age group of three copper-alloy bridle fittings from Ulceby in North Lincolnshire, which were found in association with three gold torcs and a gold bracelet. Some apparent stray finds could also represent intentional deposits: in 2006, a group of five terrets, a strap fitting and a Langton Down brooch (dating from the Late Iron Age to early Roman period) were found across two fields, separated by a stream, near Sudbrooke in northern Lincolnshire. Although at inquest these finds were declared not to be Treasure (2006 T187), it is possible that they could represent a hoard group. In the northern part of the study region, horse-gear may have held high status associations, making it suitable for use in votive deposition. This is also the only area to have produced definitive evidence for horse-gear production (at Weelsby Avenue and at Kelk, a similar site north of the Humber: Table 5.2). This reinforces the possibility that some of the regional variation in types of horse-gear represented could be due to distinct local depositional practices.

5.6.2 Votive items

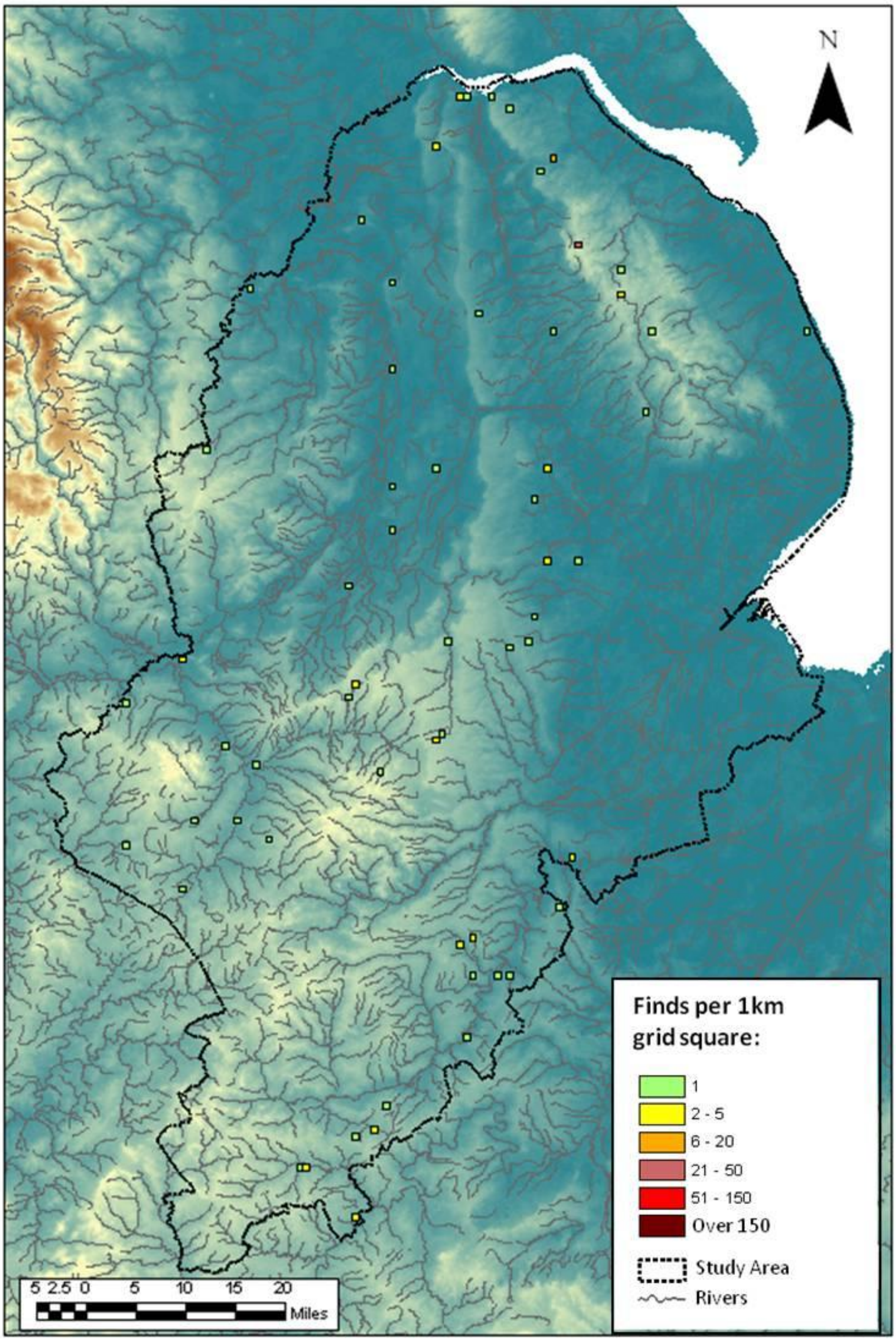

Figure 5.45: Spatial distribution of Iron Age and Roman miniatures and votive items (126 finds)

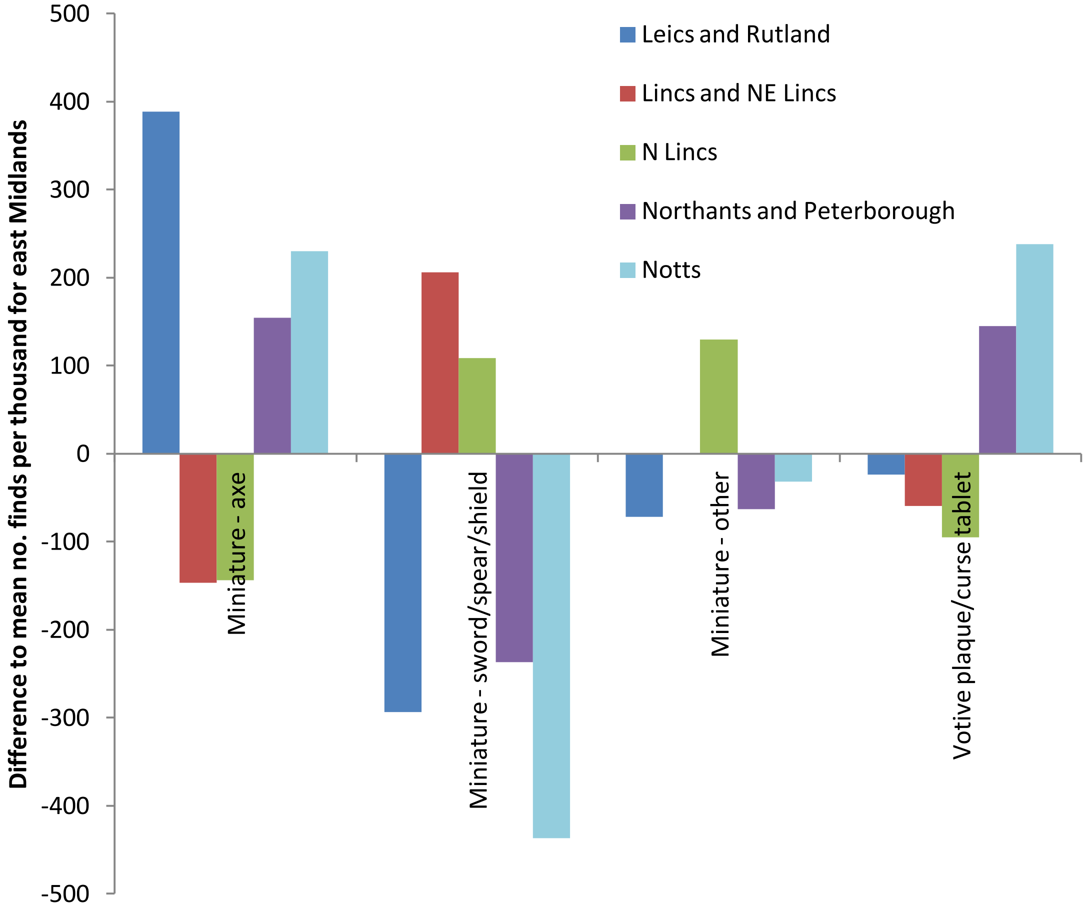

Figure 5.46: Difference between regional mean and no. miniature and votive finds-per-thousand for each county, by object type

Included in this category are miniature objects such as weaponry, vessels or furniture fittings, but not statues and mounts in human and animal forms, since overlap with furniture mounts and vessel fittings was problematic. Inscribed lead 'curse' tablets and similar 'amulet' plaques were also catalogued. These objects are brought together because they have all been found incorporated into structured depositional practices on sites which may have served some sort of religious function. Although the relationship between coins and miniatures is not well understood, these objects sometimes occur together, and there are suggestions that coins may initially have been produced for use as votive objects (Haselgrove & Wigg-Wolf 2005).

Miniatures show a wide distribution across the study area, excluding upland regions of Nottinghamshire and Leicestershire (Figure 5.45). These finds are more clustered than horse-gear, with the majority concentrated at a handful of sites. Between them, eight Lincolnshire Late Iron Age centres (Dragonby, Kirmington, Ludford, Nettleton Top, Old Winteringham, Owmby, Old Sleaford and South Ferriby) account for 45% of finds and 85% of martial miniatures, mainly shields. I have argued elsewhere (Farley 2011) that this may represent a transformation of earlier Iron Age practices involving the deposition of full-size weaponry in rivers. Miniaturisation distilled this practice into a more controlled and manageable form, better suited to densely populated Late Iron Age settlement centres where ostentatious displays involving martial metalwork may have been considered inappropriate. The creation of more bounded sacred spaces, often at high points or associated with settlements and communication routes, is also seen in East Anglia (Hutcheson 2004, 2007). This region may have had strong connections with North Lincolnshire, with an easy waterborne communication route across the Wash.

In the southern and western counties (Nottinghamshire, Leicestershire and Northamptonshire) there were no such well-established Iron Age traditions of martial metalwork deposition (although some weaponry is known from the Trent). The only miniature shield from outside Lincolnshire comes from a very different context, a burial at Breedon hillfort (Leics), suggesting that these objects were deployed differently (and may have held different associations) outside the main area of their deposition. Outside Lincolnshire, votive finds are dispersed across rural sites and small settlements (Figures 5.45). These regions favoured the deposition of miniature hafted axes (sometimes associated with military activity: Green 1981), and curse tablets (e.g. at Red Hill, Notts: Elsdon 1982). This reflects the stronger influence of Roman votive traditions in these counties, where some sites (e.g. Thistleton & Bosworth, Leics; Brigstock & Stony Stratford, Northants) may represent Romano-British temples similar to those found in the heavily Romanised landscapes of the south-east (Rudling 2008).

5.6.3 Toiletry Implements

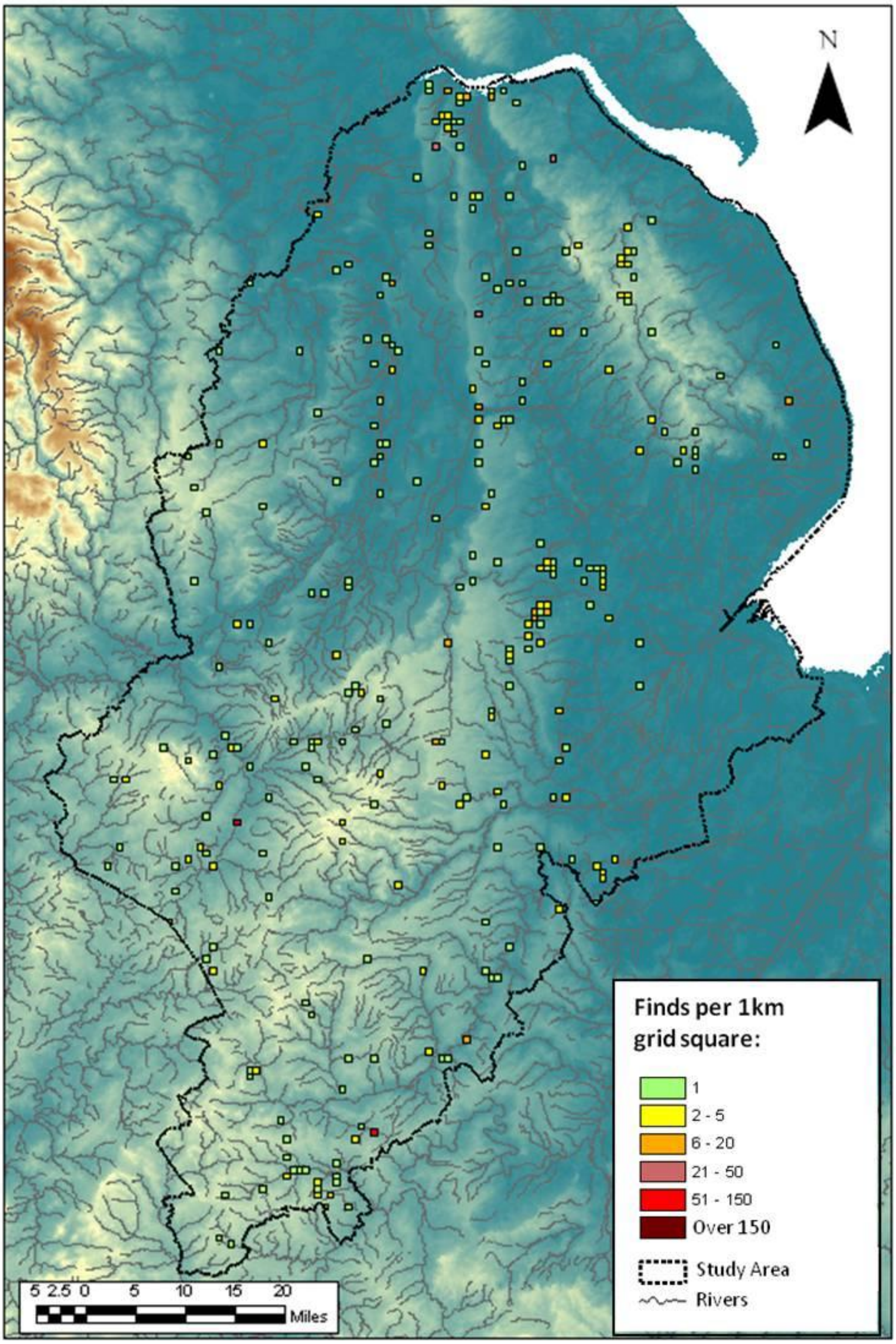

Figure 5.47: Spatial distribution of Iron Age and Roman toiletry implements (777 finds)

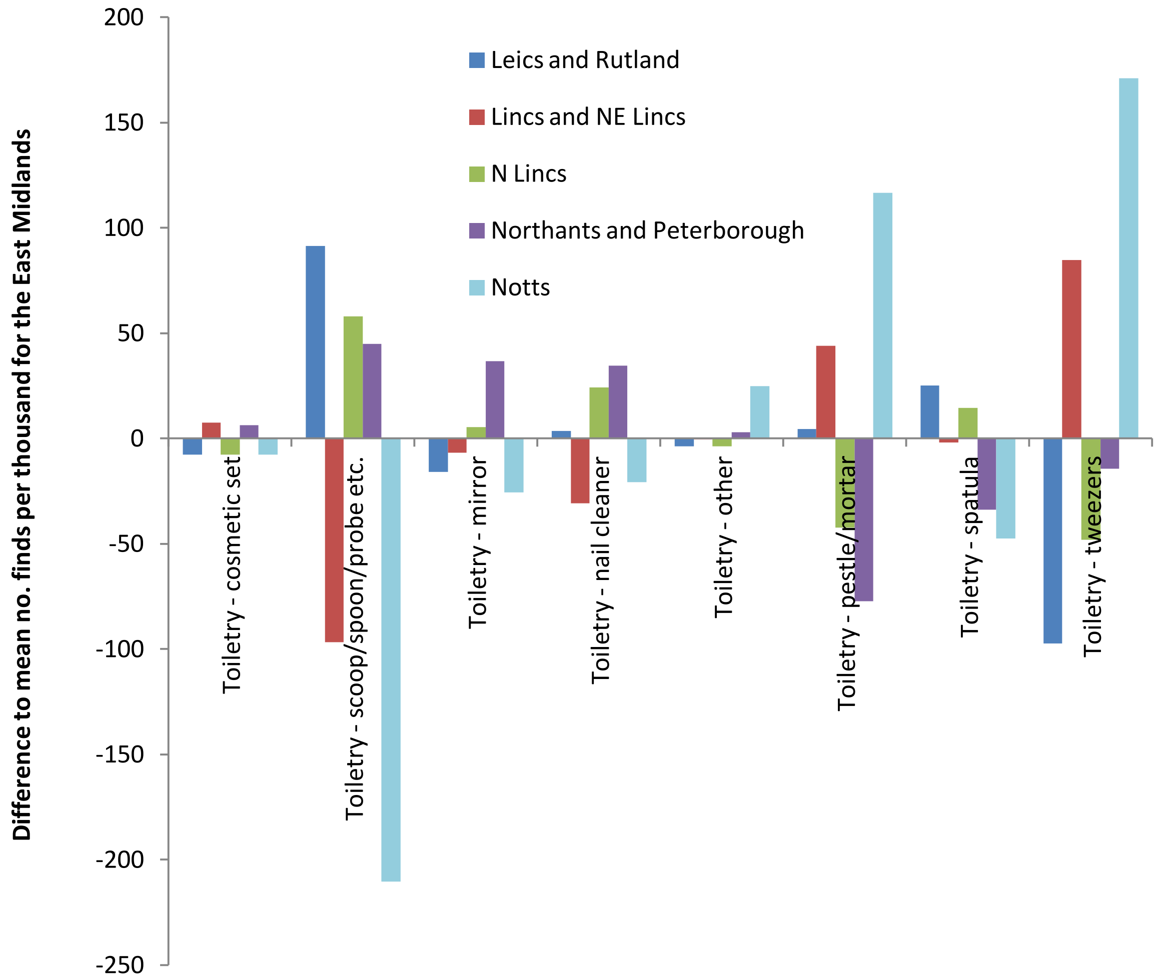

Figure 5.48: Difference between regional mean and no. toiletry item finds-per-thousand for each county, by find type

Toiletry items are the most numerous and most clustered of the other artefact types considered here (Figure 5.47). Like brooches and Roman coinage, they cluster strongly around settlement centres. In national terms, the East Midlands forms a transitional zone in the distribution of Late Iron Age and Early Roman toiletry implements. These objects are most common south of a line from the Wash to the Severn (Crummy and Eckhardt 2008), where they are frequently found in towns and rural settlement sites. North of this axis, they are more often associated with military contexts (*ibid.*, 98-99).

Crummy and Eckhardt (*ibid.*, 101) argued that military sites often showed an above-average predominance of unusual toiletry implements and tweezers, with lower-than-expected numbers of nail-cleaners. This fits well with the assemblage from Nottinghamshire, where finds also cluster in the main area of military activity. This may also be true of Lincolnshire, which shows a similar pattern. Here, finds cluster along Ermine Street, which served as a military supply line in the first century AD.

Whilst Nottinghamshire and Lincolnshire fit well with the northern, military-associated model, North Lincolnshire and Northamptonshire (Figure 5.48) show a different pattern. These counties are closely allied in terms of their toiletry implement assemblages, with above-average proportions of cosmetic spoons, mirrors and nail-cleaners. In Crummy and Eckhardt's study, nail-cleaners predominated at towns and small settlements, while above-average finds of ear-scoops (included with 'cosmetic spoons' here due to low-detail recording in some datasets) were most common at small settlements and rural sites. This pattern might be expected in Northamptonshire, where there is evidence for dense rural civilian settlement. The pattern is more surprising in North Lincolnshire, which in terms of coins and brooches showed a more recognisably military profile. Eighty percent of the North Lincolnshire finds come from one of four Late Iron Age centres: Dragonby, Kirmington, Old Winteringham and South Ferriby. The fact that these sites seem to show more typically 'rural' toiletry implement assemblages probably reflects a shared regional tradition of grooming practices based on the Iron Age origins of these sites. North Lincolnshire appears to have become marginalised in later Roman networks of urban metalwork consumption, so it is unsurprising that large settlements here do not show a conventional 'Roman town' pattern. Northamptonshire was also a centre for Iron Age metalwork consumption, and similar practices may have emerged here, explaining some of the similarities between the assemblages from these counties.

Leicestershire shows a predominance of scoops/spoons but is otherwise close to the mean (Figure 5.48). Over 70% of these cosmetic spoons are from Leicester itself, rather than surrounding rural settlements, so this may represent a local preference for particular object types and associated practices.

5.7 Analysis by Concentration Zone

One of the benefits of taking finds, rather than sites, as a starting point is the possibility of moving beyond traditional site categories. Twenty three 'concentration zones' were identified, each showing over 100 finds within a group of neighbouring grid-squares. Two smaller sites, Margidunum and Rectory Farm, were also included, since they provided examples of evidence from excavation. The zones are listed in Table 5.4, and Figure 5.51 shows their locations. Figures 5.49 and 5.50 summarise find types and information sources.

The following sections divide the sites into groups based on the proportions of coin and brooch finds from each period. This reverses the approach taken by Haselgrove (2005a), who attempted to understand the circulation of Iron Age coinage by comparing and contrasting coin finds from known types of site (e.g. *oppidum*, Roman town, rural settlement, production site, sanctuary complex or military site). The method proposed here is preferable for this study, since it gives primacy to the metalwork evidence, rather than existing site classifications.

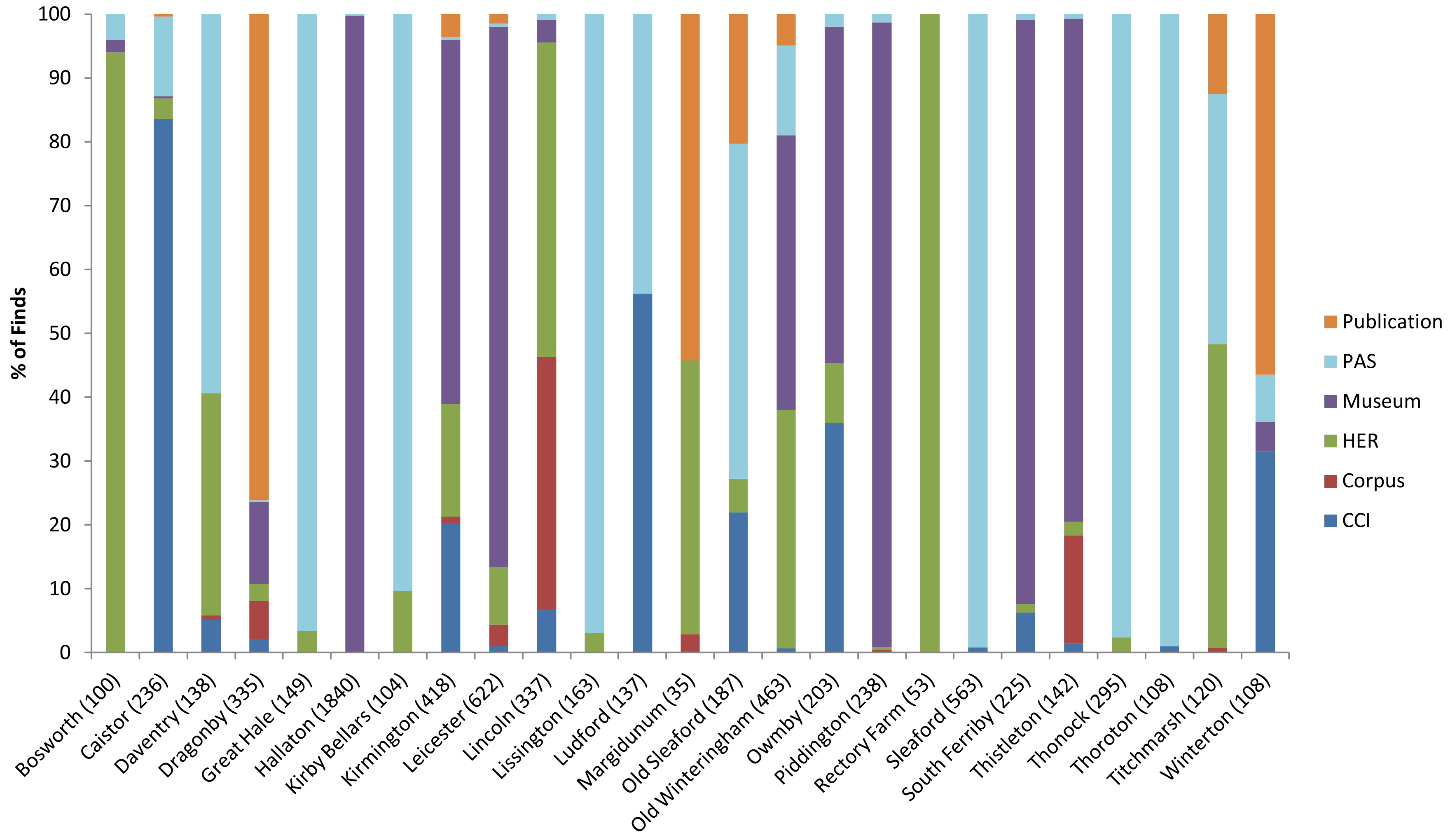

Figure 5.49: % of finds from different data sources for each concentration zone (numbers in brackets denote total no. finds)

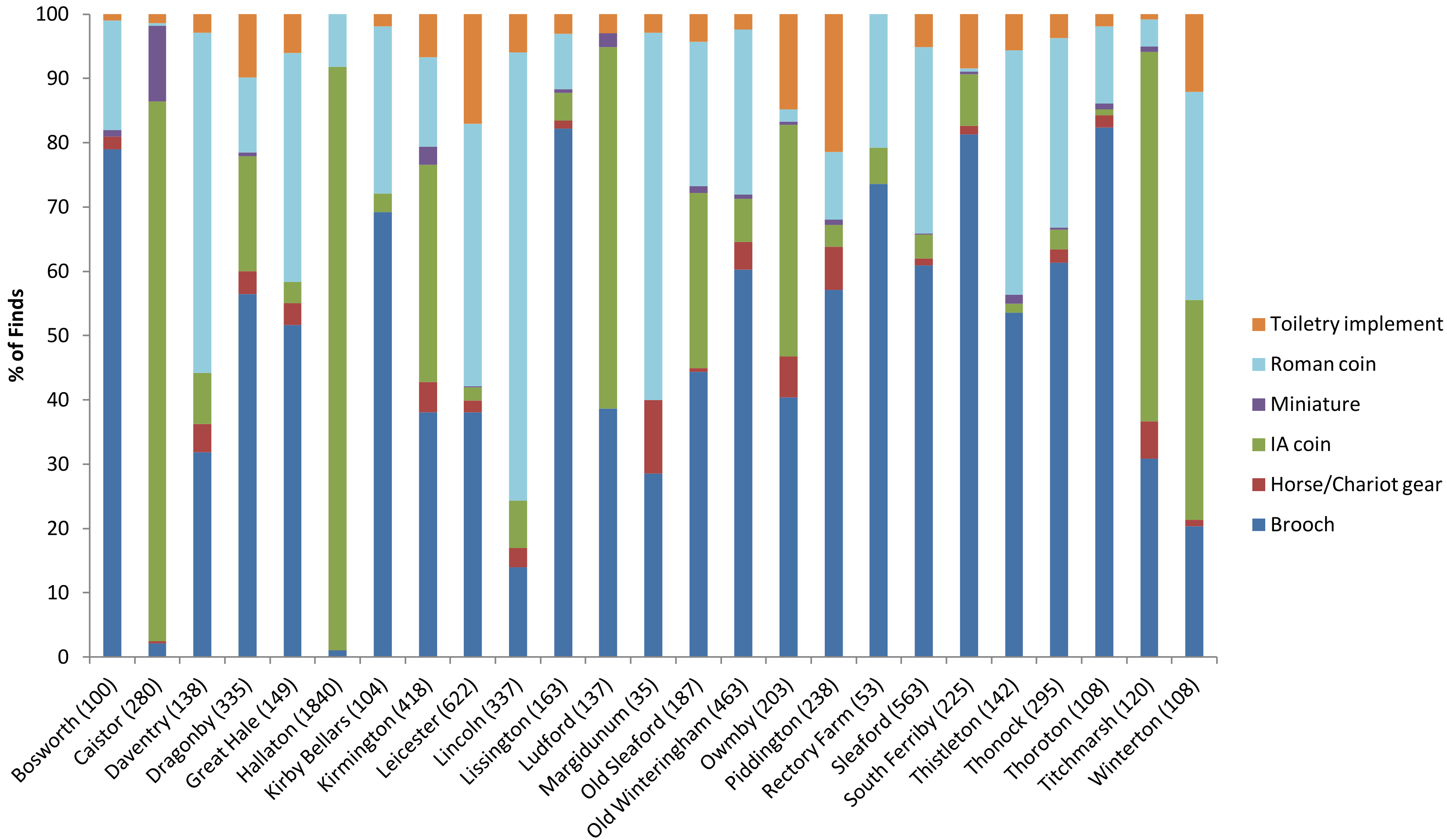

Figure 5.50: % of different find types for each concentration zone (numbers in brackets denote total no. finds)

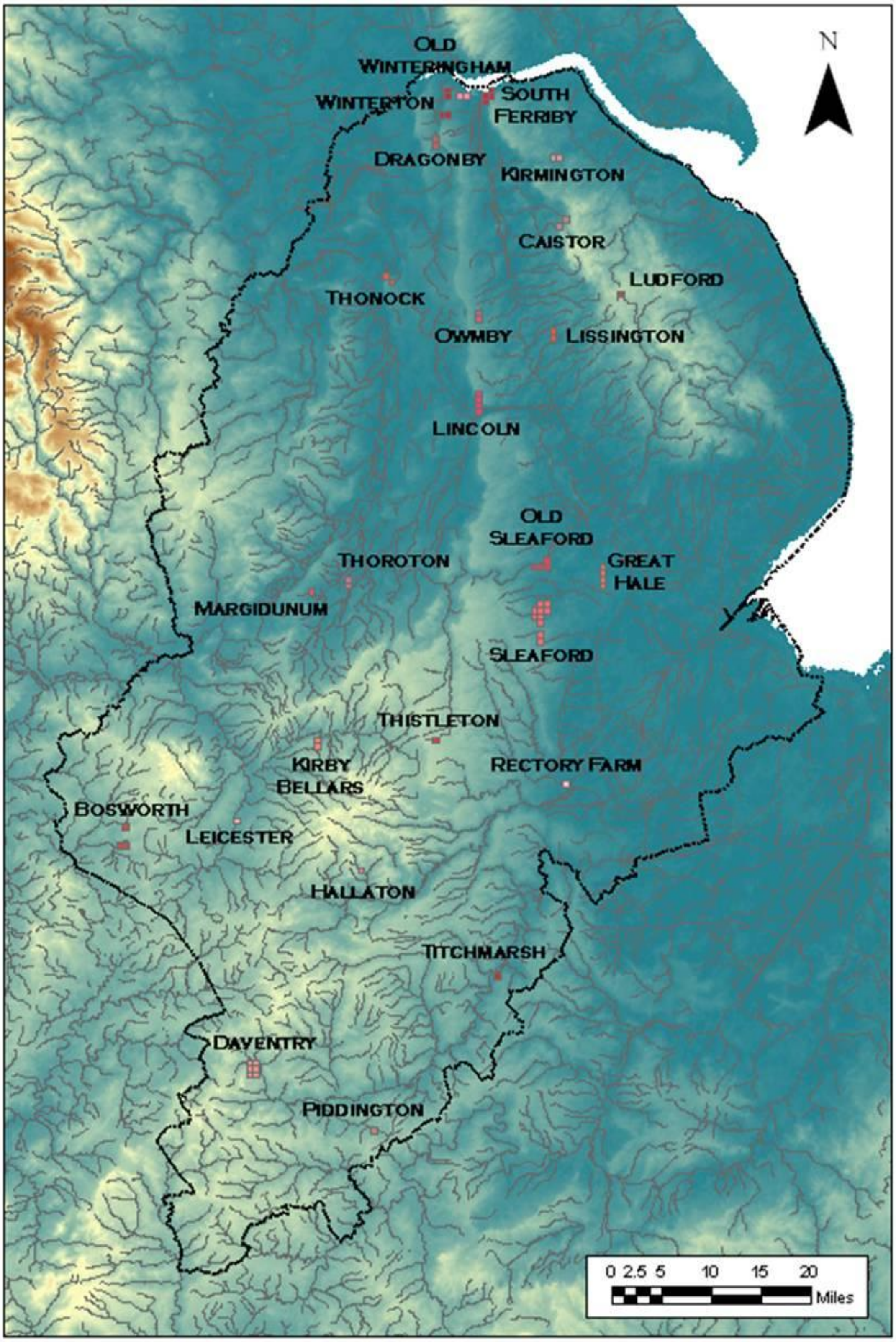

Figure 5.51: Location of the concentration zones

Table 5.4: Details of areas with dense concentrations of finds

Area / Site	County	1km grid-square(s)	Site Description	Landscape Location
Bosworth	Leics	SK3900, SK4000, SK4003	Roman temple and possible settlement, known through metal-detector finds and geophysical survey. Suggests a peak of activity in the second and third centuries.	Just off the brow of a hill in the uplands of southern Leicestershire. Close to the road linking Leicester and Mancetter.
Caistor/ Nettleton Top	Lincs	TA1000, TA1101, TF1397	Late Iron Age centre, with possible conquest-period shrine. Known from metal-detected finds and excavation (Willis and Dungworth 1999, Willis 2002, Farley 2011)	Reports from local metal-detectorists (Leins 2007) suggest that the coins came from the brow of the hill, close to the Late Iron Age sanctuary site at Nettleton Top. The site is located at the highest point in the Wolds, with good views of the surrounding landscape, along a major communication route.
Daventry	Northants	SP6063-6 SP6163-6	Extensive find scatter known from HER and PAS. Suggests second and third century Roman occupation. Possible villa.	Situated in a river valley in the western Northamptonshire uplands.
Dragonby	N. Lincs	SE9013, SE9014	Late Iron Age centre, consisting of a complex ditch settlement of about 8 hectares. Occupation perhaps begins from the second century BC, and continues into the early Roman period. Known through excavation (May 1996) and metal detected finds.	This site occupies "an elevated position on the saddle between the headwaters of the Winterton and Bottesford Becks" (May 1996, 634). Just below the Lincoln Edge/Ermine Street.
Great Hale	Lincs	TF1742-6	Find scatter known from HER and PAS reports, suggests second and third century Roman occupation.	Lowland site at the edge of the Lincolnshire fens.
Hallaton	Leics	SP7896	Conquest-period hilltop shrine with a possibly contemporary settlement downslope. Known through excavation (Score 2012).	Hilltop site in the uplands of central Leicestershire. Located just off the brow of the hill, with good views of the surrounding landscape.
Kirby Bellars	Leics	SK7116-7	Find scatter known from HER and PAS reports. Suggests second and third century Roman occupation.	Situated in a river valley in the northern Leicestershire lowlands
Kirmington	N. Lincs	TA0911, TA1011	Late Iron centre with early Roman fort. Known from metal-detected finds and aerial survey (May 1976, 1984, 1996; Jones and Whitwell 1991).	Low ground, on the floor of an east-west gap through the Wolds.
Leicester	Leics	SK5804	Late Iron Age and early Roman settlement known through stray finds and excavation (Cooper and Buckley 2003). In the Roman period, Leicester was the location of the civitas capital, *Ratae Corieltauvorum*.	Lowlands of central Leicestershire. Located at a crossing point on the River Soar, along the Fosse Way.
Lincoln	Lincs	SK9771	Late Iron Age settlement and Roman fort, *Lindum*, perhaps founded 50—60 AD, which was converted into a Colonia during the reign of Domitian and remained an important city throughout the Roman period (Jones *et al.* 2003)	In the Lincoln gap, with access east into the fenland basin and west into the Trent Valley. This point was a node in a network of probable prehistoric trackways, including the Jurassic Way which ran along the Lincoln Edge, later a Roman road, Ermine Street.
Lissington	Lincs	TF0982-3	Find scatter known from HER and PAS reports. Suggests first and second century occupation.	Lowland site in the Lincolnshire Clay Vale.

Area / Site	County	1km grid-square(s)	Site Description	Landscape Location
Ludford	Lincs	TF2089	Possible Late Iron Age centre (May 1984), and early Roman fort (known through aerial survey). Artefacts are metal-detected finds reported to the CCI and PAS.	On high ground in the centre of the Wolds, close to the headwaters of the river Bain, at an intersection of probable prehistoric trackways (May 1976).
Margidunum	Notts	SK7041	Probable Roman fort, founded c.AD 50–60, known through excavation (Todd 1969). This may have been an important iron-working site rather than a purely military installation (McWhirr 1969-70).	On high ground along the Fosse Way, close to ironstone producing areas at Belvoir, Knipton, Eaton and Goadby Marwood.
Old Sleaford	Lincs	TF0645, TF0745, TF0845-6	Late Iron Age complex ditch settlement of unknown extent, known through stray finds and excavation (Elsdon and Jones 1997). Signs of dense occupation, including metalworking evidence in the form of crucibles and coin pellet trays.	East of the Ancaster gap, with access to the fens, and the Trent Valley. The site straddles Mareham Lane, at the point where it crosses the River Slea, which may have been navigable up to this point (Elsdon and Jones 1997, 1-2).
Old Winteringham	N. Lincs	SE9421, SE9521	Late Iron centre with early Roman fort. Known from metal-detected finds and excavation (May 1984, Stead 1976).	Low ground, at the north end of the Lincoln Edge/Ermine Street, at a crossing point on the Humber. Probably provided Dragonby's access to Humber trade routes.
Owmby	Lincs	SK9785-6	Late Iron Age centre known primarily from metal-detected finds. Aerial photography has revealed enclosures and other features of unknown date (May 1984).	On the dip slope of the Lincoln Edge, close to the headwaters of the River Ancholme, with views across the Ancholme Valley.
Piddington	Northants	SP8054	Early Roman villa site, founded in the first century, possibly on a pre-existing Late Iron Age settlement site. Known from excavation (Friendship-Taylor 1989, 1997, 1999).	In the Nene Valley.
Rectory Farm	Lincs	TF1110	An excavated (but unpublished) site of Late Iron Age and Roman settlement.	Low ground at the edge of the southern Lincolnshire fens.
Sleaford	Lincs	TF0637-8, TF0733-9, TF0838-9	Roman settlement site known predominantly from metal detected finds reported to the PAS.	On low ground at the edge of the fens in the area near the Ancaster gap. Just a few km south of Old Sleaford.
South Ferriby	N. Lincs	SE9820-1, SE9921-2	Late Iron Age centre, known predominantly from stray finds (May 1984). At least one Iron Age coin hoard (Allen 1963) was also found nearby. Later, Roman settlement also attested.	At the north end of a probable trackway, along the eastern flank of the Wolds. On a low scarp near the mouth of the River Ancholme, overlooking the Humber estuary, probably controlling a Humber crossing.
Thistleton	Rutland	SK9017	First to third century Roman settlement and temple site, known from stray finds and excavation (Greenfield 1963).	At the head of a river valley in the Northern Leicestershire uplands.
Thonock	Notts	SK8292, SK8391	Find scatter known from HER and PAS reports. Suggests second and third century Roman occupation.	Low ground in the Trent Valley.
Thoroton	Notts	SK7642-3	Find scatter known from HER and PAS reports. Suggests second and third century Roman occupation.	River valley close to the Trent.
Titchmarsh	Northants	TL0079	Find scatter known from HER and PAS reports. Analysed by Curteis *et al.* (1998-9). Suggests Iron Age settlement and a possible Roman small town.	At a Roman road junction, near a bridging point along the Nene (Curteis *et al.* 1998-9).
Winterton	N. Lincs	SE9118 SE9218 SE9221-2	Roman villa, occupied from the second century. Known from metal-detected finds and excavation (Stead 1976).	North end of the Lincoln Edge. Close to the Humber shore, between Dragonby and Old Winteringham.

5.8.1 Concentration Zones: Coins

The zones were divided into six groups, based on the proportion of coins from each period. The groups are summarised in Table 5.5, and loss profiles are shown in Figures 5.52-5.57 (numbers in brackets denote total no. coins from site). Hoard coins were excluded, so sites such as South Ferriby and Hallaton which have produced large hoard assemblages are represented by their unstratified coins, some of which may be site finds.

Table 5.5: Coinage groups, based on proportion of coins from each period (+ = above regional mean; - = below regional mean; ELIA = earlier late Iron Age; LIA = latest Iron Age; ER = early Roman; LER = Later early Roman)

Coin period emphasis?	ELIA (150-20 BC)	LIA (20 BC-c. AD 45)	ER (Republican - AD 68)	LER (AD 69-180)	Concentration Zones
ELIA/LIA	+	+	-	-	Ludford, Caistor, Titchmarsh, South Ferriby
LIA	-	+	Close to mean	-	Hallaton, Kirmington, Old Sleaford, Owmby
LIA/ER	-	+	+	-	Dragonby, Winterton
ELIA and ER/LER	+	-	+	+	Lissington
ER/LER	-	-	+	+	Sleaford, Leicester, Bosworth, Lincoln, Thistleton, Old Winteringham
LER	-	-	-	+	Rectory Farm, Thoroton, Great hale, Thonock, Margidunum, Piddington, Daventry, Kirby Bellars

Sites are considered on the basis of brooch, coin and other finds in the discussion below.

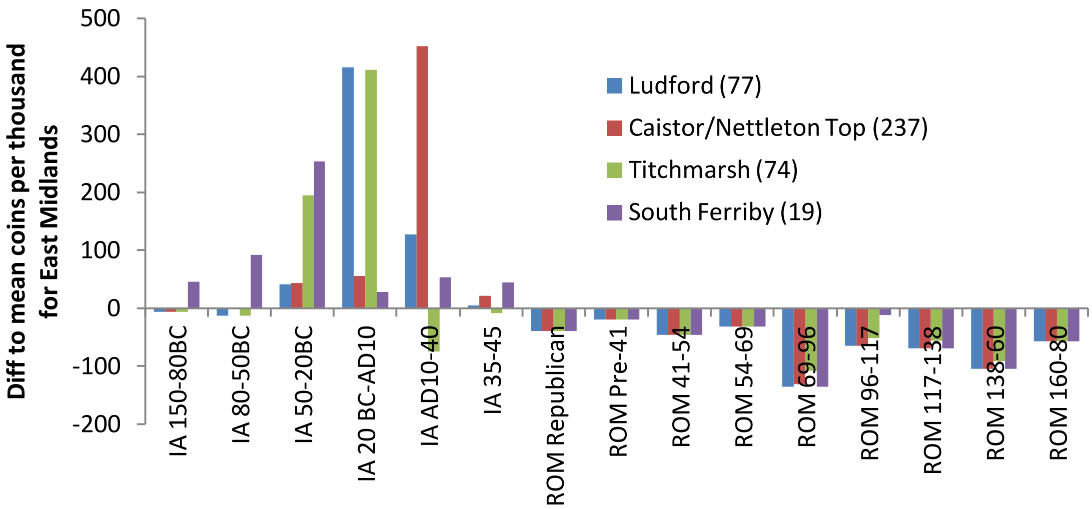

Figure 5.52: Difference between regional mean and no. coins-per-thousand for each ELIA/LIA coin group site, by period

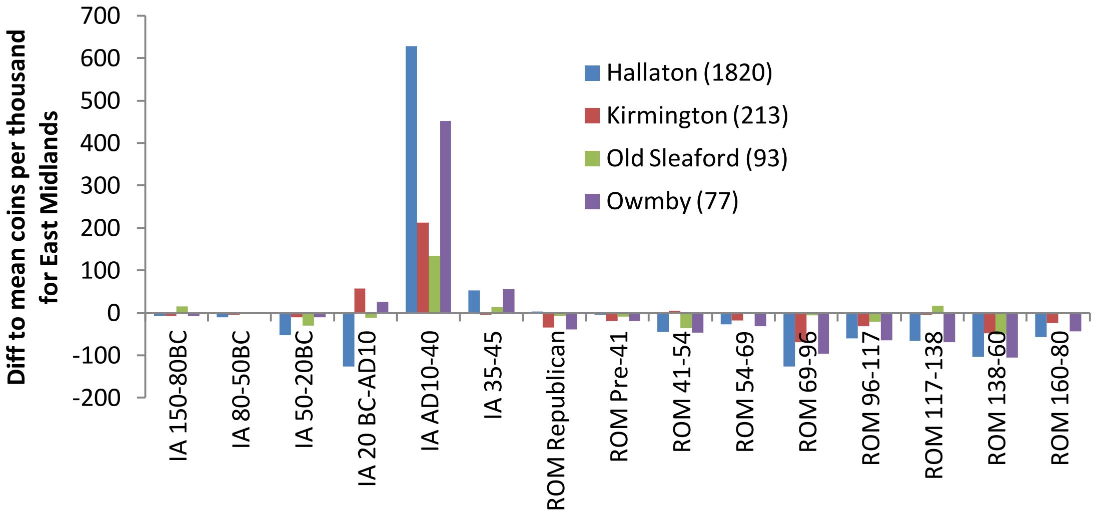

Figure 5.53: Difference between regional mean and no. coins-per-thousand for each LIA coin group site, by period

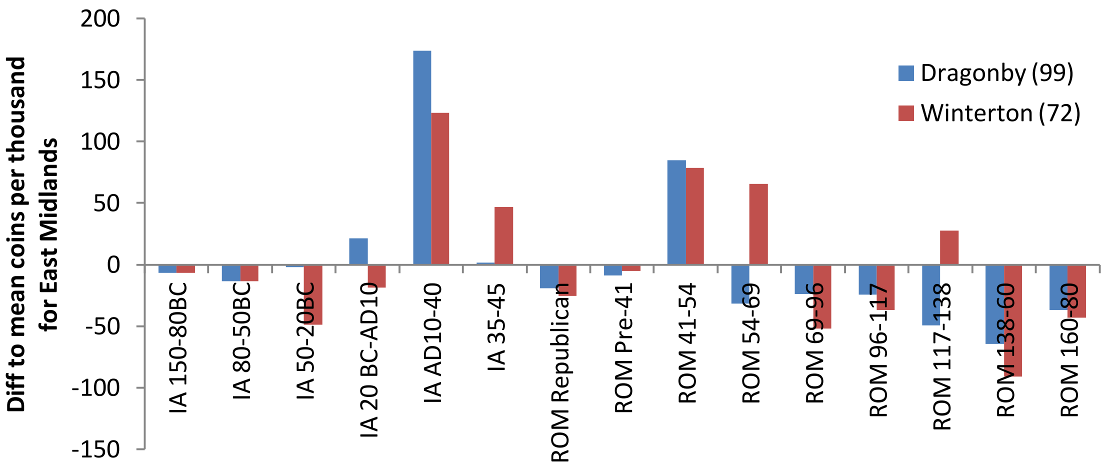

Figure 5.54: Difference between regional mean and no. coins-per-thousand for each LIA/ER coin group site, by period

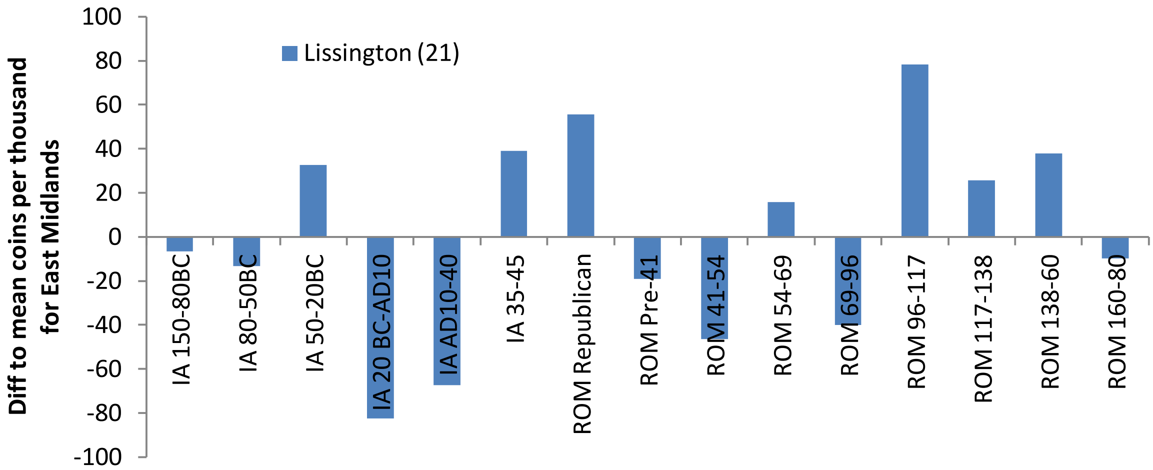

Figure 5.55: Difference between regional mean and no. coins-per-thousand for the ELIA/ER/LER coin group site, by period

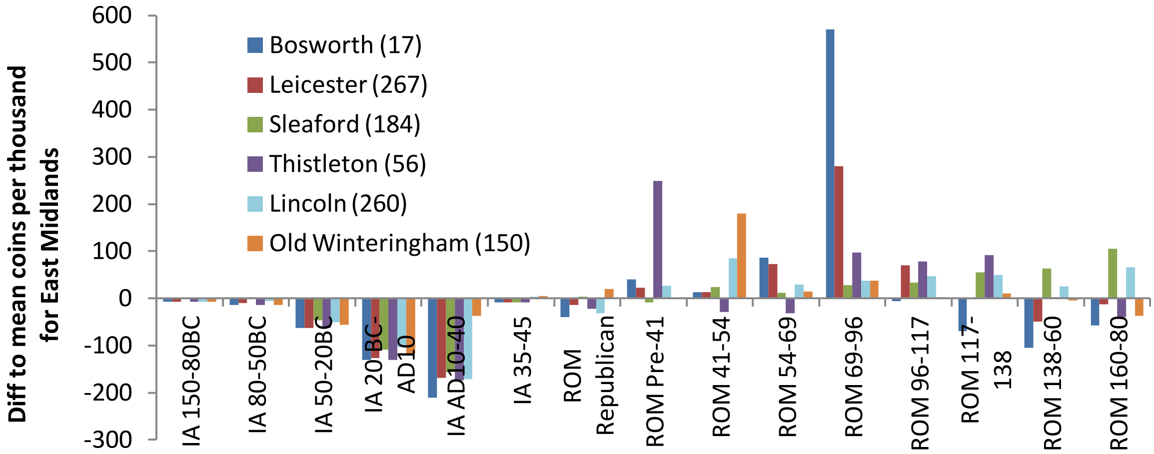

Figure 5.56: Difference between regional mean and no. coins-per-thousand for each ER/LER coin group site, by period

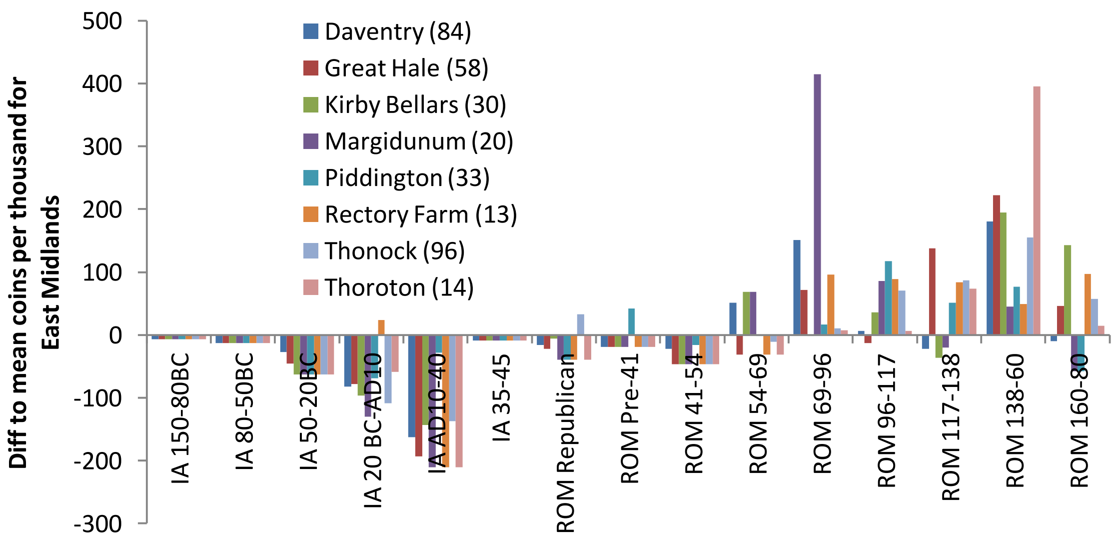

Figure 5.57: Difference between regional mean and no. coins-per-thousand for each LER coin group site, by period

5.8.2 Concentration Zones: Brooches

Zones were divided into seven groups, based on the proportions of brooches from each period. The groups are summarised in Table 5.6, and loss profiles for each group are shown in Figures 5.58–5.64 (numbers in brackets denote total no. brooches from site). Creighton (1990) has attempted a similar phasing for brooches from North Humber sites, but uses a very different approach to dating. Creighton's model assigns specific date ranges to each brooch type to produce charts of brooch-loss per decade. This was not pursued here, due to the difficulties of close dating for brooches.

Table 5.6: Brooch groups, based on proportion of brooches from each period (+ = above regional mean; - = below regional mean; Pre-C = pre-conquest; C = Conquest-period (non-military); CM = Conquest-period with military associations; ER = Early Roman post-conquest)

Brooch period emphasis?	Pre-C	CM	C	ER	Concentration Zones
Pre-C/C	+	-	+	-	Caistor/Nettleton Top, Leicester, Hallaton, Rectory Farm
CM	Close to mean	+	-	-	Ludford, Lincoln
C/CM	close to mean or below	+	+	-	Titchmarsh, Dragonby, Thistleton, Old Sleaford, Old Winteringham, Margidunum, Piddington
Pre-C/CM/C	+	+	+	-	Kirmington, Owmby
C	close to mean or below	-	+	-	Kirby Bellars, South Ferriby
CM/ER	-	+	-	+	Sleaford, Lissington, Daventry, Thoroton
ER	-	-	-	+	Bosworth, Thonock, Great hale, Winterton

Whilst the broad periods used to group sites by coin finds gave good agreement at a more detailed chronological level, the same agreement is not always seen between broad chronological brooch groups and the types represented, highlighting the more nuanced role of brooches in reflecting local traditions and identities. Some sites assigned to the same brooch group (e.g. Kirmington and Owmby, both Late Iron Age centres in northern Lincolnshire) show very good agreement of brooch types, but others show more variation. For example, Lincoln and Ludford show similar early and military assemblages, but diverge in the early Roman period. Whilst pre-conquest brooches may be a reasonably reliable chronological indicator, variation in the types represented at different sites is often greater in the peri-conquest and post-conquest periods. A wider range of brooches were available at this time, many locally produced, and brooches may have become a more flexible way to engage with local fashions and display social connections or personal taste.

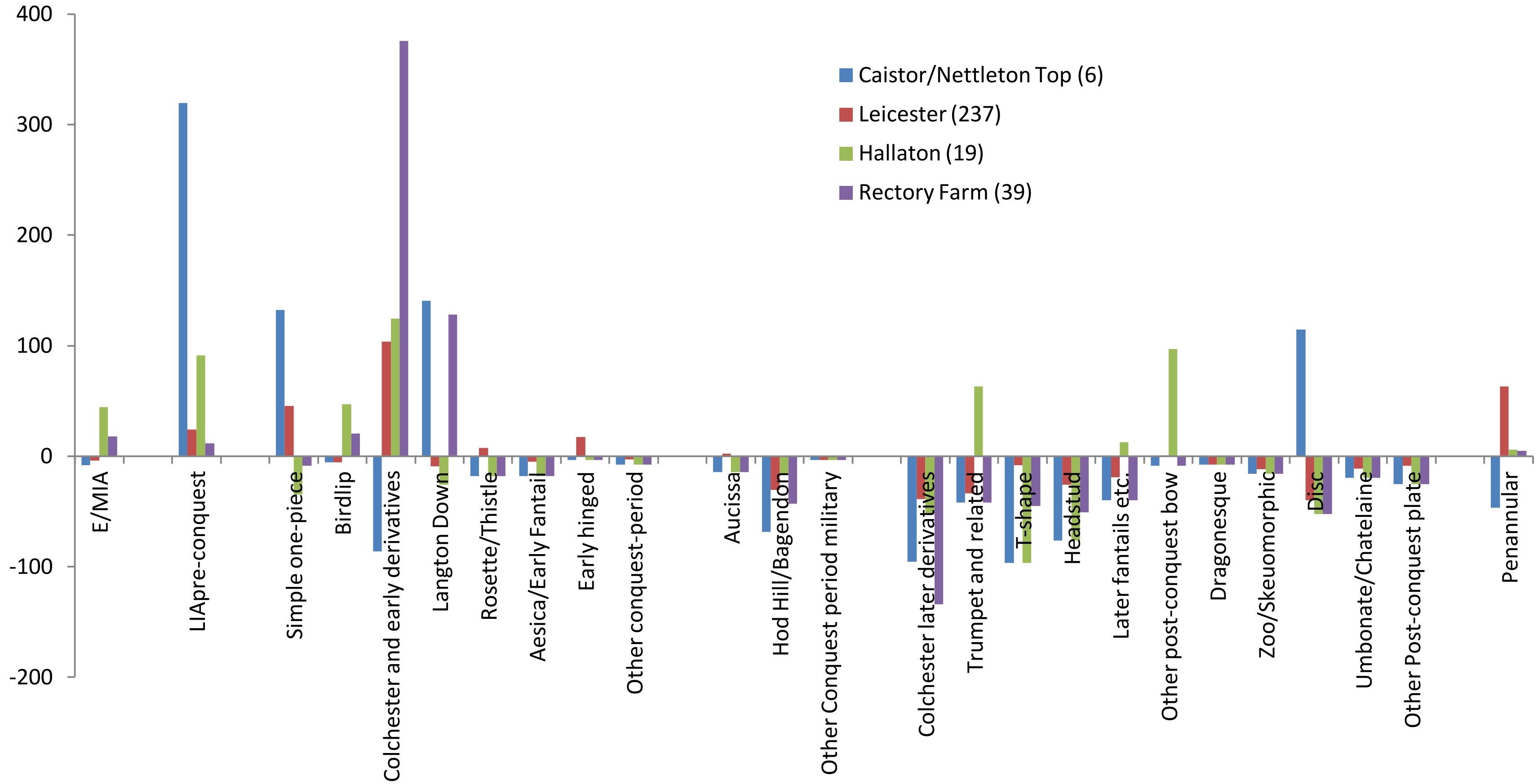

Figure 5.58: Difference between regional mean and no. brooches-per-thousand for each Pre-C/C brooch group site, by period

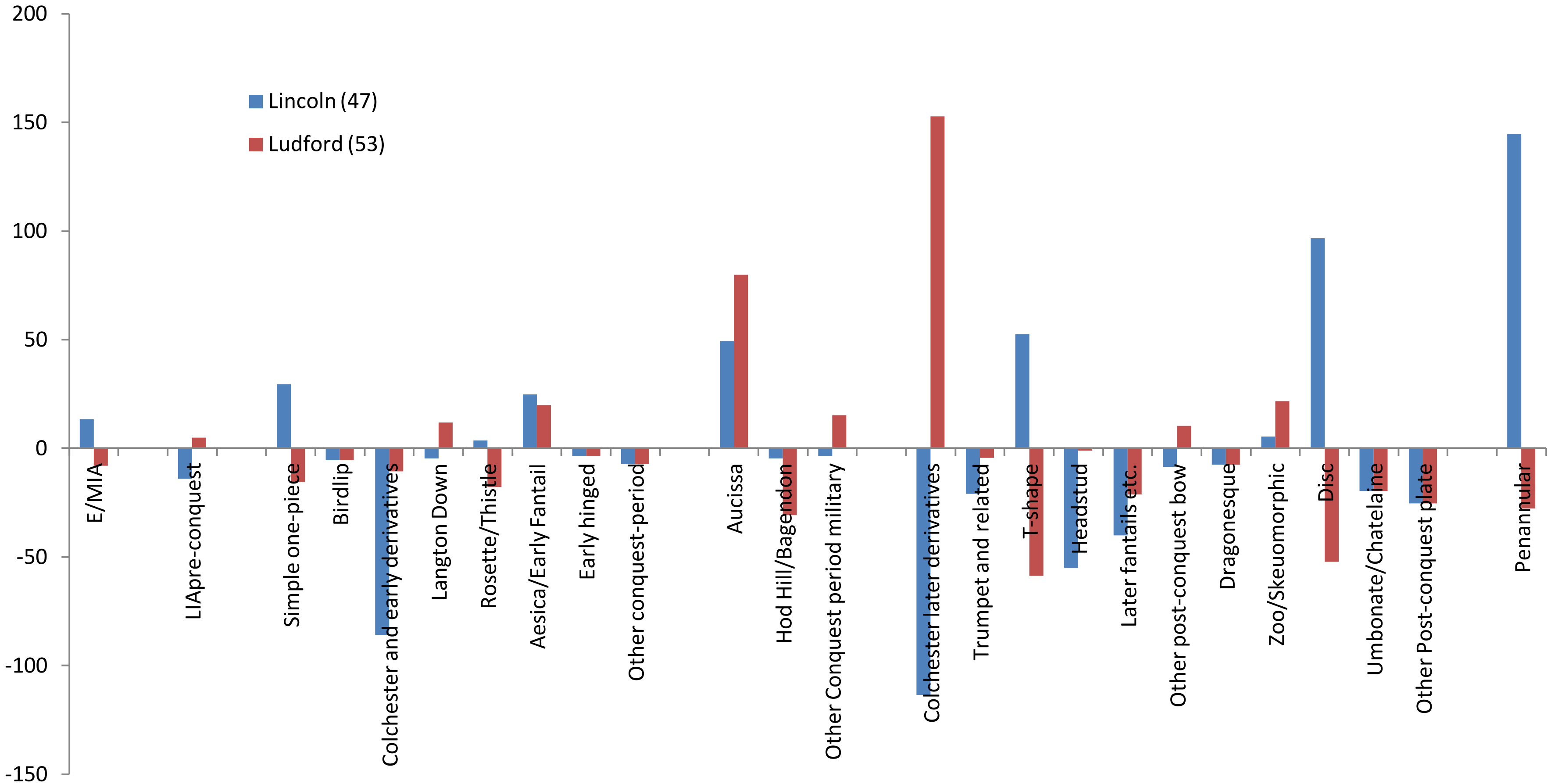

Figure 5.59: Difference between regional mean and no. brooches-per-thousand for each CM brooch group site, by period

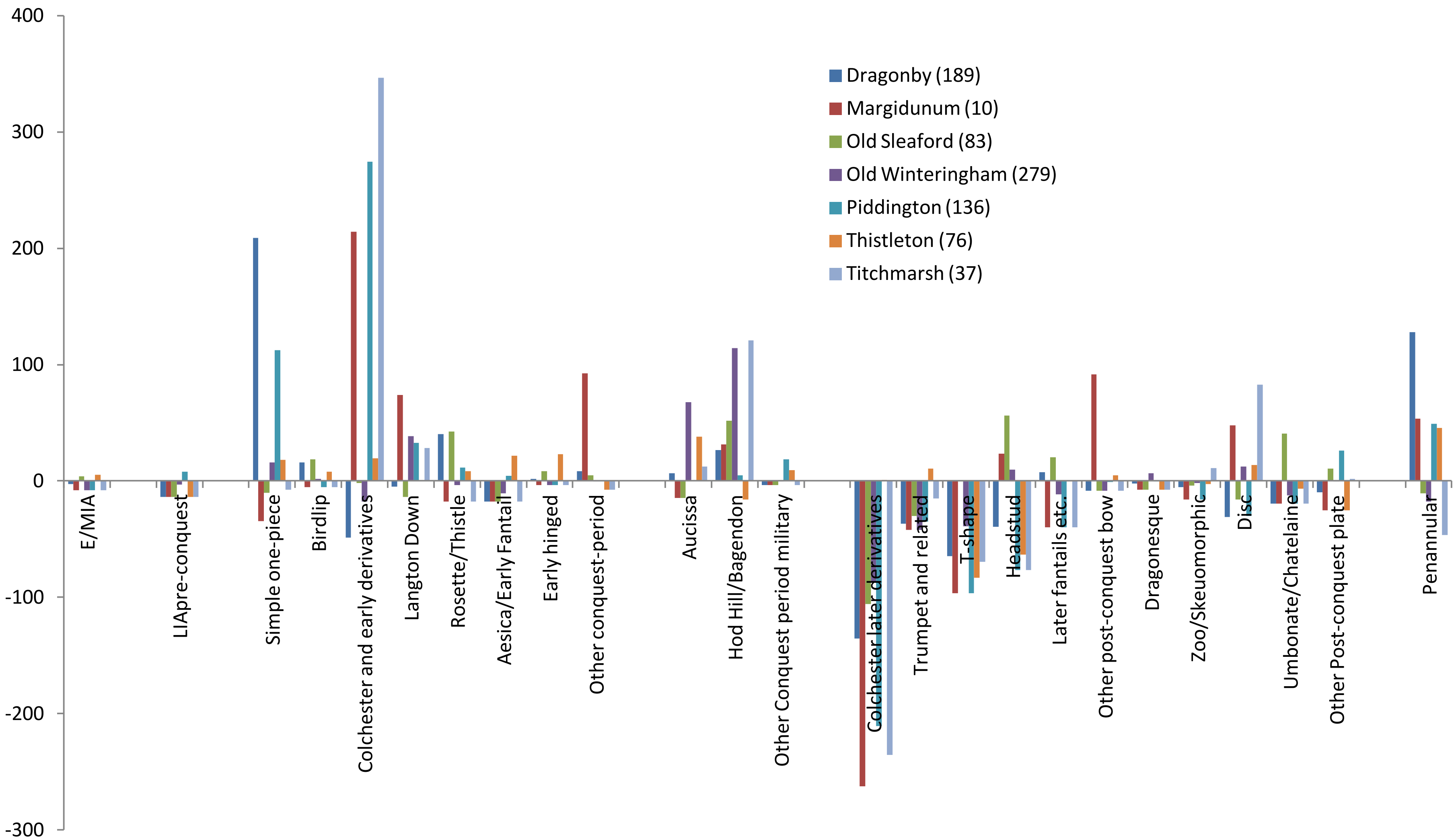

Figure 5.60: Difference between regional mean and no. brooches-per-thousand for each C/CM brooch group site, by period

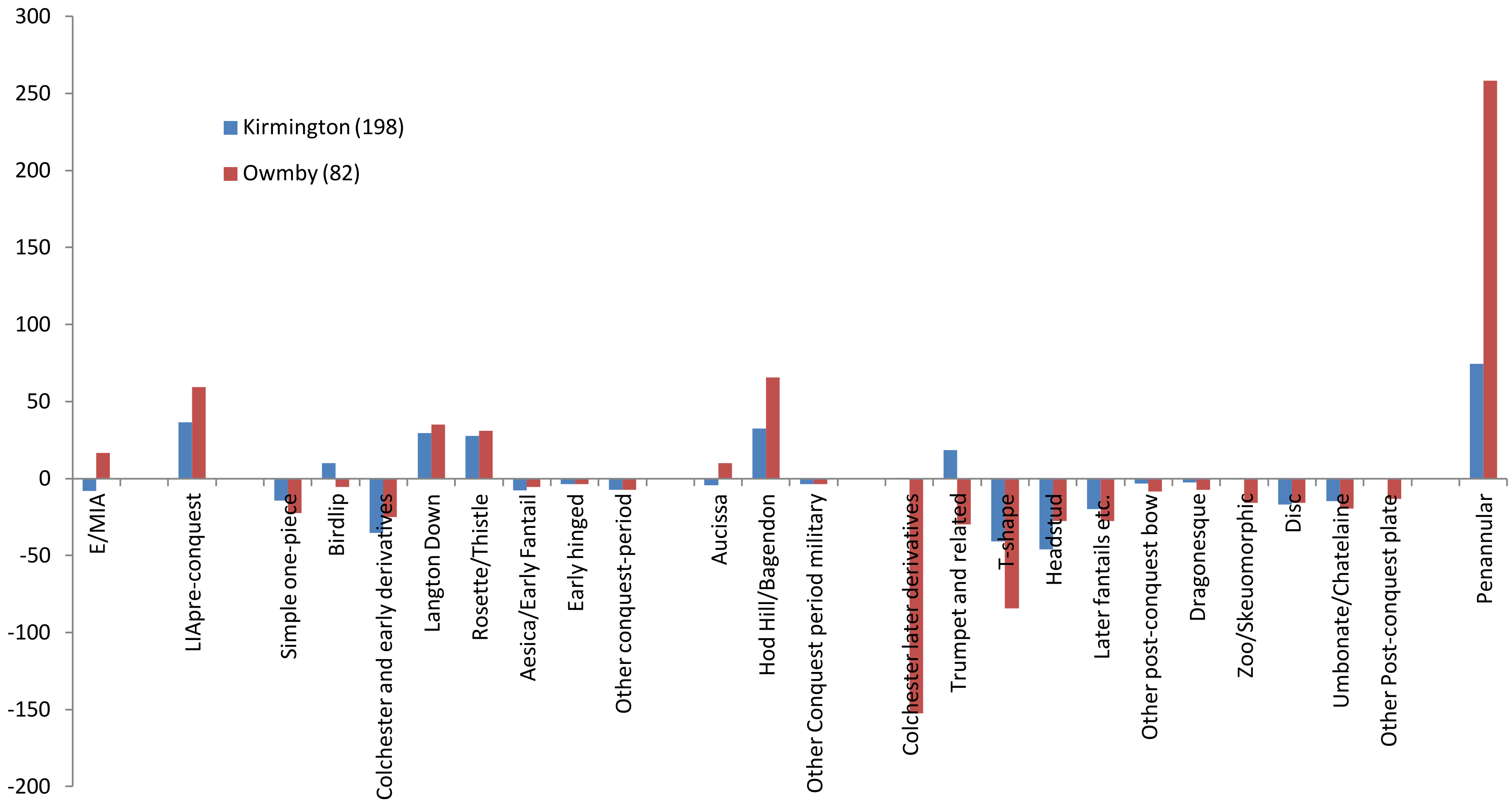

Figure 5.61: Difference between regional mean and no. brooches-per-thousand for each Pre-C/CM/C brooch group site, by period

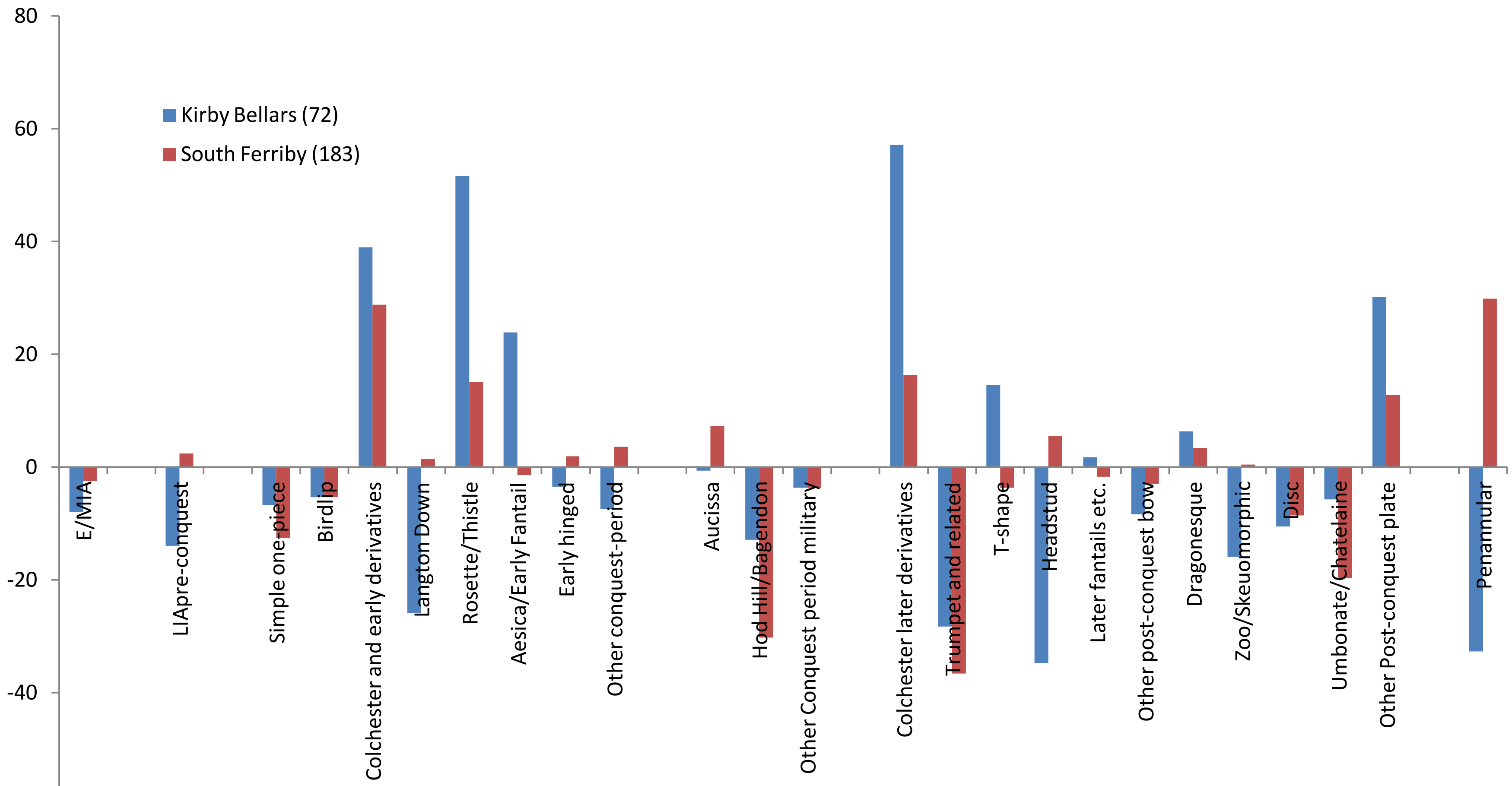

Figure 5.62: Difference between regional mean and no. brooches-per-thousand for each C brooch group site, by period

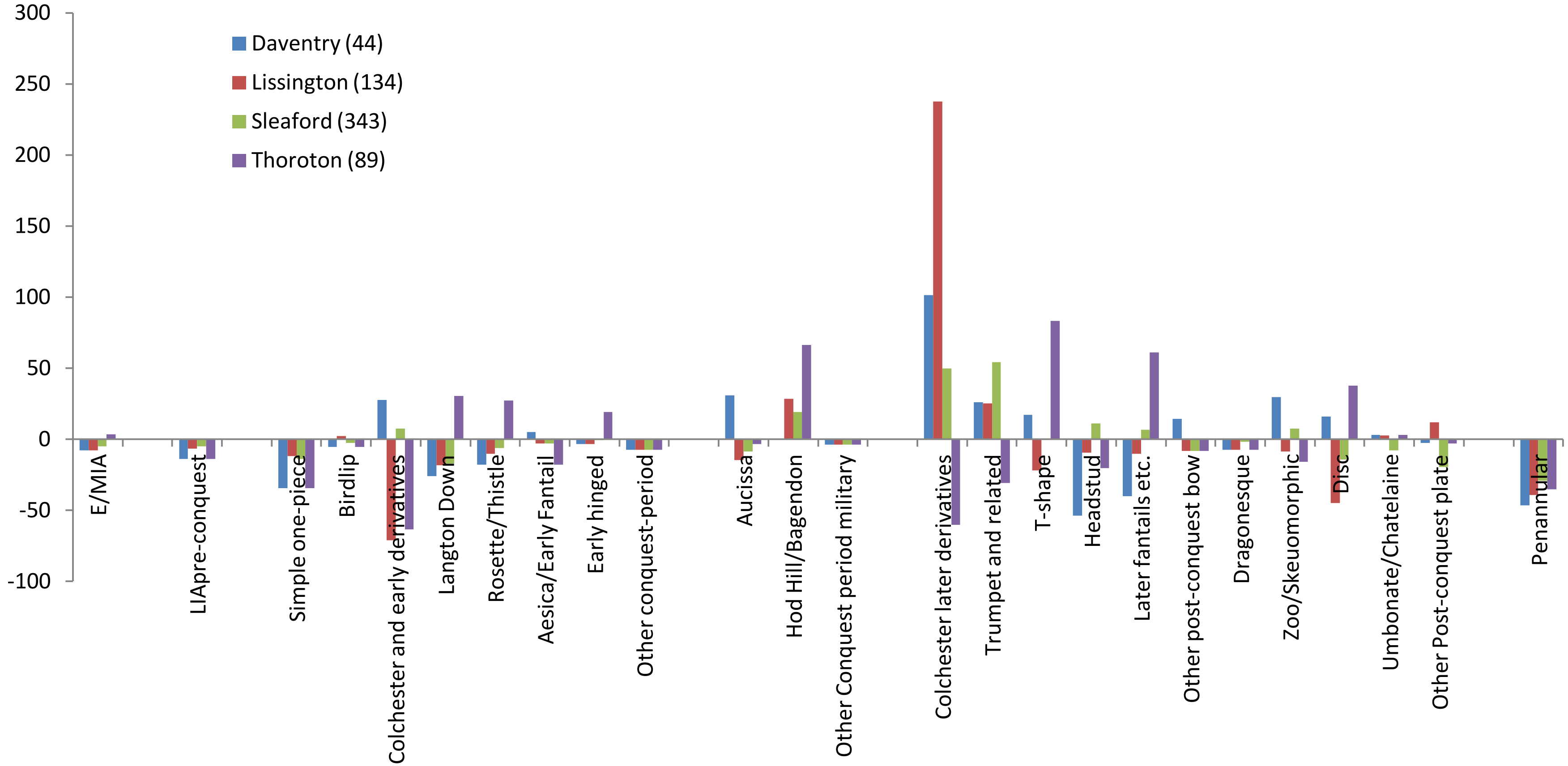

Figure 5.63: Difference between regional mean and no. brooches-per-thousand for each CM/ER brooch group site, by period

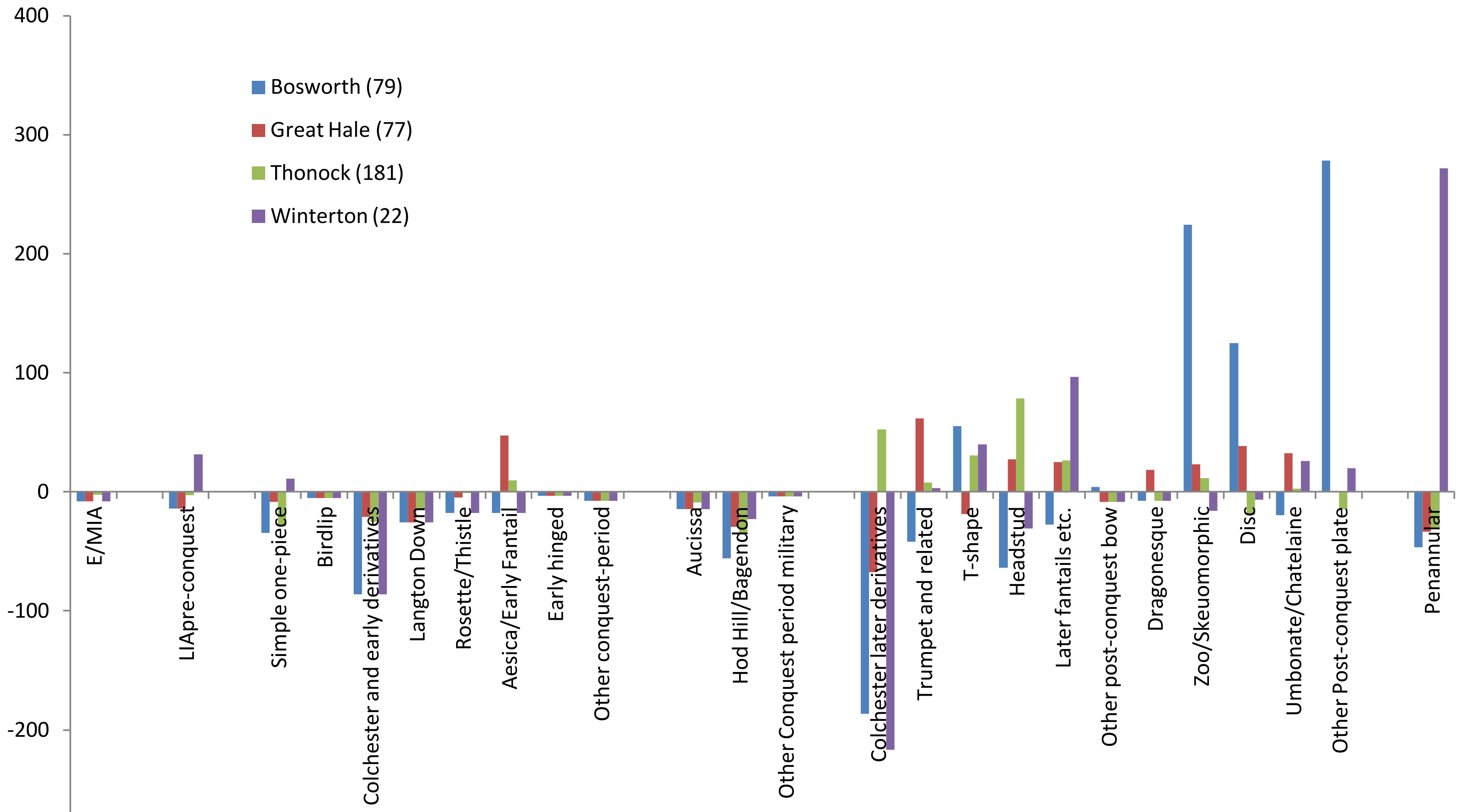

Figure 5.64: Difference between regional mean and no. brooches-per-thousand for each ER brooch group site, by period

5.8.3 Discussion

Table 5.7: Summary of predominant coin and brooch periods represented in each zone

Concentration zone	County	Coin group	Brooch group
Caistor/Nettleton Top	Lincs	ELIA/LIA	Pre-C/C
Titchmarsh	Northants	ELIA/LIA	C/CM
Ludford	Lincs	ELIA/LIA	CM
South Ferriby	N Lincs	ELIA/LIA	C/ER
Hallaton	Leics	LIA	Pre-C/C
Old Sleaford	Lincs	LIA	C/CM
Kirmington	N Lincs	LIA	Pre-C/C/CM
Owmby	Lincs	LIA	Pre-C/C/CM
Dragonby	N Lincs	LIA/ER	C/CM
Winterton	N Lincs	LIA/ER	ER
Lissington	Lincs	ELIA and ER/LER	CM/ER
Leicester	Leics	ER/LER	Pre-C/C
Thistleton	Rutland	ER/LER	C/CM
Old Winteringham	N Lincs	ER/LER	C/CM
Lincoln	Lincs	ER/LER	CM
Sleaford	Lincs	ER/LER	CM/ER
Bosworth	Leics	ER/LER	ER
Rectory Farm	Lincs	LER	Pre-C/C
Margidunum	Notts	LER	C/CM
Piddington	Northants	LER	C/CM
Kirby Bellars	Leics	LER	C/ER
Daventry	Northants	LER	CM/ER
Thoroton	Notts	LER	CM/ER
Great Hale	Lincs	LER	ER
Thonock	Notts	LER	ER

There appears to be no direct link between the brooch period best represented at a particular site/zone and the coinage profile (Table 5.7), particularly for later coin periods. This strongly suggests that the mechanisms leading to the loss or deposition of coins and brooches were different at each site; these finds should not be viewed merely as chronological indicators. It is likely that the supply of coins to communities, sites and regions was influenced by different patterns of interaction to those which affected the production and supply of brooches. The resulting patterns reflect the integration of communities into different social networks, which may have changed and transformed over the lifetime of the site. Concentration zones are considered below in order of coin group.

The sites with an above-average occurrence of both earlier and later Iron Age coins are all in North Lincolnshire, Lincolnshire or Northamptonshire, areas with a longer history of coin-use than Nottinghamshire or Leicestershire. Ludford, Caistor/Nettleton Top and South Ferriby are all probable Late Iron Age centres in northern Lincolnshire (Table 5.5), while Titchmarsh could represent a similar site (Curteis *et al.* 1998-9). Titchmarsh is closest in its coin and brooch assemblage to Ludford, with a predominantly Iron Age coin assemblage accompanied by above-average representation of conquest-period brooches with possible military associations. Caistor and South Ferriby appear to show different brooch assemblages, with Caistor favouring pre-conquest and conquest-period brooches, and South Ferriby showing a stronger tendency towards conquest-period and later types. This is most likely due to the small number of brooches from Caistor skewing the analysis. In reality all of these sites were most likely Iron Age settlement centres where occupation continued into the Roman period, with a military component at Ludford (a known fort site), and perhaps also Titchmarsh. All of these sites have produced miniatures, and Caistor/Nettleton Top appears to have been a particular focus for votive deposition, with an assemblage of over thirty miniature swords, spears and shields (Farley 2011). At least one Iron Age coin hoard in known from South Ferriby (Allen 1963), and it is possible that some of the stray finds here and at Caistor represent scattered hoards. Curteis *et al.* (1998-9) also emphasise possible ritual functions at Titchmarsh. The high levels of earlier Iron Age coinage at all these sites could be due to some level of votive deposition in the Late Iron Age.

Hallaton, Old Sleaford, Kirmington and Owmby all show a larger than average predominance of latest Iron Age issues, and around an average proportion of the earliest Roman coins. (In the case of Hallaton, these are unstratified coins only). All these sites also produced brooches. The three Lincolnshire/North Lincolnshire Late Iron Age centres (May 1996) all have an above-average predominance of conquest-period and military brooches, reflecting their key role in the Roman conquest. A Roman fort has been discovered at Kirmington (Jones and Whitwell 1991), and Owmby and Old Sleaford also occupy key points on transport routes along the Lincoln Edge which might have been exploited during Roman military campaigns. Owmby and Kirmington in particular have very similar coin and brooch assemblages, which would strongly support the argument that they were similar sites, enmeshed in the same social networks. Hallaton, an exceptional conquest-period shrine site, is the only site with this coinage profile to have produced below the average proportion of military brooches, in this case a single Hod Hill brooch. This may reflect a lack of military activity at Hallaton, which is a very different type of site to the contemporary North Lincolnshire centres.

Dragonby and Winterton produced above-average proportions of both latest Iron Age and the earliest Roman period coins. In the case of Dragonby the brooch assemblage is conquest period with possible military associations, while Winterton shows a predominantly post-conquest brooch assemblage (see also Creighton 1990). The different brooch signatures highlight the different nature of activity in these zones: Dragonby was a Late Iron Age centre in North Lincolnshire with settlement continuing into the early Roman period, similar to Old Sleaford, Kirmington and Owmby, discussed above. Winterton is a later Roman villa, and it is possible that many of the Iron Age coin finds from this site are residual, or represent an earlier phase of settlement at the same location.

Lissington has produced a particularly unusual coin assemblage, with above-average levels of both earlier and later Iron Age coinage and a predominance of military and post-conquest brooches. It is likely that this confused signature represents two phases of activity at the same site, one Iron Age and one early Roman.

Subsequent coinage group sites begin to show a trend away from the North Lincolnshire Late Iron Age centres, towards locations in the south and west of the study area, which seem to have risen to prominence after the conquest. Only one Late Iron Age centre falls into this group: Old Winteringham in North Lincolnshire, where a Roman fort was later constructed, shows a predominance of Roman coinage and both conquest period and military brooches. This metalwork signature may emphasise its civilian origins, and later co-option into the Roman military system. Several other sites also show higher than average representations of both the earliest and later Roman coins. These include Roman settlements with early foundation dates: the civitas capital at Leicester and the fort and colonia at Lincoln. Leicester has a predominance of early and conquest-period brooches but no over-representation of military brooches. Lincoln, unsurprisingly, is most strongly represented in the category of military brooches, a factor shared only with Ludford, which is also a known Roman fort. This pattern suggests that whilst Lincoln and Ludford may have been predominantly military in their Roman occupation, there was a higher proportion of civilian activity at Leicester. Other sites in this coinage group include Thistleton, a shrine site in Rutland, and Bosworth, a shrine site in Leicestershire. Both have periods of use which most likely extend from at least the first to the third century. Based on the brooch assemblage, there may have been a greater degree of conquest-period activity at

Thistleton. The main period of activity at Bosworth appears to fall in the third century AD, including the deposition of a large number of horse-and-rider brooches, which are excluded here due to their late date. The final site in this coin group is the Roman civilian settlement at Sleaford, which shows the expected conquest period and early Roman brooch assemblage, in keeping with its coin profile.

The final coin-period group, sites showing an above-average predominance of late first and early second century Roman coinage, can be broadly divided into two groups. The areas with early brooch profiles (Rectory Farm, Margidunum and Piddington) are known from excavation to have conquest-period activity. Rectory Farm was a civilian settlement with Iron Age origins, represented in its early brooch assemblage. Margidunum is a possible fort, and displays an above-average proportion of conquest-period and military brooches, as does the early villa at Piddington in Northamptonshire. The other five sites with later coinage profiles (Kirby Bellars, Daventry, Thoroton, Great Hale and Thonock) are all in the south and west of the study region, representing the new forms of metalwork-rich sites which predominate from the second century onwards, and were probably in occupation well into the third century, influencing their heavily late brooch and coin assemblages. All of these sites are known predominantly or solely from artefact scatters recorded through the PAS and HER.

The variation in metalwork signatures discussed here implies diverse local responses to the conquest. In the regional analysis, a chronological shift in emphasis was noted, from northern Lincolnshire towards Leicestershire and Nottinghamshire (previously marginal areas in terms of metalwork consumption and deposition). This pattern also emerges from the site profiles. The trends noted here are summarised in the overview which follows.

5.8 Overview of Spatial Analysis

5.8.1 Pre-conquest

Up until the early first century BC, coins and brooches appear to be entering the East Midlands in small numbers through contact with southern British communities. After the mid-first century BC, communities in northern Lincolnshire, perhaps centred on the network of Late Iron Age centres along the Humber shore, may have forged their own direct connections with southern and continental groups, leading to the beginnings of local coinage production. Northern Lincolnshire sites such as Dragonby, Owmby, South Ferriby, Kirmington, Nettleton Top and Ludford became centres of metalwork consumption: pre-conquest brooches and horse-gear also appear at these sites in large quantities, and there is evidence for brooch production at Owmby. The frequent occurrence of martial miniatures at these centres (including Nettleton Top, Kirmington, Old Sleaford, Dragonby, Ludford, Old Winteringham and Owmby) suggests the emergence of distinctive local votive practices as nucleated settlements developed (Farley 2011).

Northern Lincolnshire remained the heartland of metalwork production and deposition throughout the Late Iron Age. The other main focus for pre-conquest metalwork consumption was the Nene valley. In some respects, northern Lincolnshire has more in common with this part of Northamptonshire than with neighbouring regions. Northamptonshire, like North Lincolnshire, shows evidence for nucleated, coin-using Late Iron Age settlements (e.g. Duston, Evenley, Titchmarsh: Curteis 1996, Curteis *et al.* 1998-9). The counties also share a predominance of horse equipment over votive and toiletry items, and a very similar pattern of toiletry item types. Nevertheless, the metalwork signatures of Nene valley sites such as Titchmarsh (a probable high-status Late Iron Age centre with ritual associations) are in some respects different to the contemporary Lincolnshire centres. Titchmarsh shows a predominance of copper-alloy (rather than gold and silver) coins, reflecting the integration of Northamptonshire communities into the North Thames coinage network, using a tri-metallic coinage system in which copper-alloy coins may have served exchange or administrative functions. The Titchmarsh brooch assemblage is also typical of an eastern England site. Although Titchmarsh and Dragonby fall into the same brooch-period group, Titchmarsh shows a far greater preponderance of the early Colchester types, while Dragonby favours one-piece brooches. Votive objects are also different at Titchmarsh: miniatures are limited to two model axes, rather than the shields, spears and swords which were preferred in northern Lincolnshire.

Leicestershire and Rutland show very little earlier Iron Age coinage, but during the latest Iron Age some communities in Leicestershire became interwoven into coin-using networks as North-Eastern coinage began to be exchanged and produced further south. The increasingly south-looking orientation of these networks may reflect connections with the Roman client kingdoms, as the raw materials for coin production began to be sourced through the Roman rather than the Gallic world. Although many Late Iron Age hillfort sites and agglomerated settlements in Leicestershire never appear to enter into Iron Age coinage networks, metalwork consumption increased over the conquest period in emerging southern centres such as Leicester and Old Sleaford. Coins also appear in unprecedented numbers in votive deposits at Hallaton, the only site in the East Midlands where Iron Age and Roman coins were hoarded together. The additional presence of other objects such as a Roman cavalry helmet suggests connections between Rome and Leicestershire around the time of the conquest. This unusual deployment of North-Eastern coinage (Hallaton is by far the largest known hoard site, and surrounding settlements have not produced site-based finds) highlights the disjuncture between Iron Age coin-use in northern Lincolnshire and the west of the study area.

5.8.2 Post-conquest

After the conquest, locally produced coinage was largely replaced by imported Roman issues, but local production of other objects such as brooches increased. The distribution of these objects illuminates post-conquest social dynamics.

In northern Lincolnshire, the metalwork evidence emphasises military associations in the conquest period, with Claudian period coins and Hod Hill/Aucissa brooches clustered at fort sites and along communication routes such as Ermine street. This may reflect early military activity as southern Britain was brought under Roman control and a militarised frontier zone was established. Several Late Iron Age sites (e.g. Old Winteringham and Kirmington) were co-opted by the Roman military for the construction of early forts. Whilst Iron Age coinage may have persisted longest in this region, with a dense concentration of the post-conquest ISSVPRASV issues, the adoption of Roman coins and other objects seems to have been slower outside of the militarised zone along Ermine street. Post-conquest brooches in northern Lincolnshire are also predominantly clustered along the Ermine Street, rather than the Wolds, which had previously been a centre for metalwork consumption. It remains open to debate whether the post-conquest decline in northern Lincolnshire brooch and coin finds reflects the marginalisation of a region that was previously a key player in Late Iron Age social networks, or active resistance to Roman currency and dress.

Northamptonshire remained a predominantly civilian area after the conquest. The conquest may have been less socially disruptive here, with continuity from the Iron Age through the Roman period evident at sites such as Weekley and Piddington (where Iron Age coins occur alongside early Roman issues). Northamptonshire remained a centre for metalwork consumption throughout the early Roman period, rather than showing the apparent decline seen in North Lincolnshire and the Wolds.

Aside from northern Lincolnshire, a fairly standardised pattern of Roman brooch and coin distribution emerges across much of the study area after the Flavian period, particularly focused on areas to the west which showed little metalwork in the Late Iron Age. After the conquest, Leicestershire continued to develop as a centre of Roman metalwork consumption, with communities widely adopting Roman coins, brooches and toiletry implements. The pattern of coin and brooch finds supports the suggestion that new networks of metalwork consumption originating in Leicestershire subsequently expanded into southern Lincolnshire and eventually Nottinghamshire. Nottinghamshire, like Leicestershire, was marginalised in earlier Iron Age coinage networks, but rose to prominence in terms of metalwork consumption in the post-conquest early Roman period.

The conclusion draws together the evidence presented here and in preceding chapters, to summarise the findings of this project.

Conclusions

This thesis has explored the encounter between Iron Age communities in the East Midlands and the Roman world (150 BC – AD 150) through the study of coins and other small portable metalwork. Three forms of evidence were combined: scientific analysis, comparison with historical colonial encounters, and spatial distribution of objects and production evidence. My approach focuses on the interaction of systems of value, and the flow of knowledge and materials through social networks.

Chapter two highlighted the technological aspects of Iron Age coin production in the East Midlands. Three main phases of coin production were discerned:

- Pre-50 BC – 20 BC: *Early yellow-gold production*, with Gallic contacts most strongly in evidence, and Gallic coins probably providing the metal source. This was a period of dispersed production.
- 20 BC – AD 20: *uninscribed bimetallic (gold and silver) production*, showing a broader range of influences, including southern British and East Anglian. Cold-striking techniques were used, and production was probably still fairly dispersed.
- AD 20 – AD 43 onwards: *inscribed bimetallic (gold and silver) production*. This final phase saw a re-organisation of production, with more centralised control of the minting process, devolution to two southern mints, and the introduction of hot-striking. There may have been an injection of Tiberian silver bullion into local coin production networks during this period.

The coins tested as part of this study were produced in the second and third production phases. The results suggested that the alloys seen in majority of North Eastern silver coins were produced by the dilution of high purity silver bullion with a non-standard copper alloy. This bullion was most likely Roman in origin, sourced either through direct contacts with Rome, or British client kingdoms to the immediate south. Gold coinage from the same period as silver production (after 20 BC) also shows the use of bullion, which may have been sourced through the same channels.

Chapter three used case studies from colonial North America to explore the role of gifts and exchange systems in the encounter between Iron Age communities and the Roman world. In particular it focused on the shift from the translation of ideas through 'mutually-misunderstood' boundary objects towards the creation of a more coherent 'middle ground', with shared and to an extent co-created symbolic languages of power and diplomacy. A key theme which emerged from this comparative study was the importance of access to raw materials and prestige goods for determining both individual and regional autonomy and status.

Returning to the evidence presented in chapter two, I argued that the period after 20 BC in Britain saw the emergence of a prestige exchange system based on the circulation of Roman gold and silver objects and bullion. This may reflect the Roman subversion of a pre-existing Gallic cross-channel exchange network; Gallic gold had previously supplied both the model and the raw material for insular coinage. During this period, new and distinct regional coinage systems developed across much of southern Britain, supplanting the Gallic-style yellow-gold issues. In most cases, the socially accepted production route for this new coinage involved the debasement of high purity bullion. The change in metal source was marked by a shift from yellow to red-gold alloys, and the introduction of silver issues. Local variations on this theme may reflect the unique interaction of Iron Age and Roman systems of value in each region.

The South-East and North Thames regions adopted silver and bronze alongside established gold coinage, at the same time that gold *aurei* were increasing in importance in the Roman economy. New institutions of power and authority were being negotiated in both Iron Age Britain and the Roman world in this period. Just as early client kings in Britain drew on Augustan iconography to articulate their own power, so the decision of Caesar and later Augustus to issue the first standardised Roman gold issues may have been influenced by the association of gold with kingship in the northern provinces. In this light, the development of a tri-metallic coinage system can be understood as a creative response to the colonial encounter, emerging in what Homi Bhabha terms the 'Third Space.' All sides contributed to the mutual creation of this new language of power and value. In the East Midlands, there was not so close an articulation with the Roman value system, and it appears that this may have affected the response to the subsequent introduction of Roman coinage after the annexation of Britannia in AD 43.

In chapter four, I returned to the evidence from the East Midlands to consider the social aspects of Iron Age coin production, in light of the model for colonial interaction developed in chapter three. I argued that in many cases the process of producing an issue of coins may have been as important as the final product, showing an ability to command large quantities of labour, resources, raw materials, and technical expertise. Transfer of knowledge is implicated at three points in North Eastern coin series, tying in with the three phases defined in chapter two and in each case accompanied by a shift in precious-metal source: the beginnings of local production, the shift to red-gold alloys, and the introduction of inscriptions and hot-striking, when production appears to become more centrally controlled.

These transformations in production practices and sources of raw materials are also reflected in the ways in which coinage was deployed as a social medium. Hoarding evidence appears to peak at times of flux, when coinage became a suitable medium for displaying and negotiating political allegiances. Different patterns in hoard evidence can be seen in regions with different histories of coin use and production, explored in chapter four through the case studies of the North Thames region and the East Midlands.

In the North Thames, a peak in hoarding evidence is seen in the mid first century BC, probably connected to the founding of a Roman client kingdom in this region, and the recall and reminting of existing coinage. The centralised dynastic tri-metallic coinage system which subsequently emerged shows close connections with Rome, and was part of a shared language of value and power. Here, the response to the introduction of Roman coinage was elastic, with a small increase in peri-conquest hoard evidence, and subsequent continuity in hoarding practices. It appears that (at least in terms of hoarding) the social functions of Iron Age coinage were readily transferred to Roman issues. In the East Midlands, Iron Age coin production appears to have remained fluid and fragmented, perhaps indicating a more distributed power system and unstable hierarchy in which production of coinage was connected with competition for social status. Here, the first notable peak in coin hoard evidence is in the final phase of local production, dropping off with the introduction of Roman coinage, which would have been less familiar as a medium than in the North Thames region.

Bullion and coins were just one part of a complex exchange system which also involved other objects and materials. This was explored in chapter five, through an analysis of the spatial distributions of coins alongside other object types, including brooches, horse-gear, miniatures and toiletry items. Conquest-period and post-conquest changes in the distributions of these objects highlight the shift in regional networks of exchange which occurred as a result of the Roman colonial encounter. As prestige networks became less focused on Gallic contacts (perhaps accessed predominantly through Humber trade routes), Roman-oriented networks emerged, and systems of metalwork circulation developed a more southern orientation. In the Late Iron Age, the North Lincolnshire centres along the Humber and the Wolds had been the predominant centres for the production and consumption of portable metalwork objects, but this changed over the conquest period. Whereas a thriving civilian community developed in the south and west of the study area, North Lincolnshire appears to have become more heavily militarised and subsequently marginalised, certainly in terms of metalwork consumption.

The section which follows summarises these changes chronologically, bringing together the findings from the different chapters:

Pre-80 BC

It appears that up to the early first century BC, the East Midlands was primarily woven into networks of metalwork exchange with southern British communities. Coins and brooches entering the region probably came through these channels. There is little evidence for local production, and only small numbers of these objects have been recovered.

80 BC – 20 BC

During this period, communities in North Lincolnshire may have begun to independently engage with Gallic prestige exchange networks, perhaps through Humber maritime trade routes. The northern Lincolnshire centres identified by May (1984) emerge as a distinctive group, accounting for the majority of East Midlands metalwork consumption before the first century AD. Northern Lincolnshire was also the first centre of North-Eastern coin production (and perhaps also early production of brooches and horse-gear). Coin production appears to have been dispersed at this time. Gallic influence is apparent in the design of the first local gold coinage, the weights of these early issues, and possibly also the production techniques used. It seems likely that knowledge of coin production techniques was acquired through direct contact with the Gallic world, perhaps even through participation in continental minting projects.

Until the mid-first century BC, there was a broadly shared discourse on the nature of coinage across much of Britain, including the East Midlands. Although a range of issues were produced across many regions, all were standardised yellow-gold coins, most likely drawing on Gallic gold as a raw material. This began to change from around 50 BC. Coin hoard evidence remained at a low level in the East Midlands during this period, where upheaval in coin production remained minimal. However, in the North Thames region, coinage was recalled and re-minted at this time, perhaps in line with the creation of a Roman client kingdom in this region. Here, there is a corresponding peak in the number and variety of unrecovered coin hoards.

20 BC – AD 20

After the conquest of Gaul, and particularly after the Augustan re-organisation of the 20s BC, Gallic exchange networks would no longer have provided access to prestige goods such as precious metals. After this time, a new source of refined bullion began to be exploited across much of southern Britain to produce red-gold and, later, silver coinage. I have argued, following Creighton (2000, 2006a), that the raw materials for this phase of coin production were Roman gifts of bullion to southern British client kings.

In south-eastern England, a tri-metallic coinage system emerged in parallel with the development of a similar system in the Roman world, and I have suggested that this represents the creation of a shared value system through the process of colonial interaction. The North-Eastern series did not develop into a tri-metallic system, but shows a unique combination of characteristics. This distinctive regional coinage shows influence from a number of sources, including East Anglia and the southern British client kingdoms. Knowledge of the alloying techniques used to produce the new red-gold and silver coinage appears to have spread from southern Britain, but the precise process used varied in each region. Unlike in southern Britain, standardisation of bullion content does not seem to have been essential to maintaining the value of coinage in the East Midlands, but nor was coinage gradually debased as in East Anglia.

20 AD – AD 50

Increasingly close contact with Rome affected regional power relationships in the East Midlands. In chapter three, I considered the question of whether Roman diplomacy reinforced or undermined existing indigenous hierarchies. Power structures in the East Midlands appear to have been altered, rather than strengthened, by Roman influence (whether direct or indirect). Leicestershire was initially peripheral in the local coinage system, but this changed in the first century AD, with the shift to Roman bullion. Access to the prestige exchange networks through which bullion circulated may have played a part in mediating this shift in local power relationships. The North-Eastern coinage network became more south-orientated. Two new mints eventually emerged at Old Sleaford and Leicester, with production at these sites appearing closer in line with the dynastic mints (showing closer control of the minting process and the introduction of hot-striking). This expansion in coin production, and the creation of new, more centralised southern mints, may have been underwritten by an injection of Tiberian silver bullion. It certainly seems that a greater diversity of silver sources were being exploited in this latest period of North-Eastern coin production.

These changes seem to suggest closer contact with the Roman client kingdoms to the south. Chapter three described how the availability of copper through English settlers at Jamestown initially reinforced the local ruler Wahunsenacawh's authority by freeing him from dependence on hostile groups to the west. Similarly, the ability of communities in Leicestershire to control access to exchange networks with the southern client kingdoms may have boosted the status of the region. The devaluation of copper seen in early colonial Virginia does not as a rule seem to have occurred in the case of gold and silver in Iron Age Britain (although I have argued that post-conquest Lincolnshire may be an exception). This suggests that local elites maintained control of precious metal circulation, and were able to use access to bullion as a source of power.

This shift in regional power relationships in the East Midlands is also reflected in other forms of material culture. For example, pre-conquest brooches are predominantly clustered in North Lincolnshire, but conquest period brooches show a more southerly distribution. The inclusion of Roman and southern British precious metal objects in votive deposits at Hallaton also highlights the close engagement between communities in Leicestershire and the Roman world around the time of the conquest.

AD 50 – AD 70

There are significant changes in post-conquest patterns of metalwork deposition in the East Midlands. High levels of coin hoarding around the time of the conquest give way to a subsequent hiatus. Particularly in Lincolnshire, coinage appears to have lost some of its social value and significance after local production ceased. Post-conquest hoards are very different in both form and composition, with gold perhaps becoming permanently devalued. Whilst local coin production continued even after the Roman conquest, the hiatus in hoarding evidence may reflect an inelastic response to the disruption in prestige exchange networks which began in the pre-conquest period. It appears that after the conquest, producing and depositing precious-metal coinage was no longer considered an appropriate way to display and negotiate status.

This is very different to the pattern seen further south. In the North Thames region, the social value and functions of Iron Age coins were readily transferred to Roman coinage, perhaps because these regions already shared the concept of a centrally-issued tri-metallic coinage, a mutually intelligible and to an extent co-created language of value and power. Here, the social value of both gold and silver was maintained, with an elastic response to the introduction of Roman coins in terms of hoarding practices.

Whilst Leicestershire and Northamptonshire saw the emergence of high-status Romano-British civilian settlements in the early Roman period, including the *civitas* capital at Leicester, northern Lincolnshire became more heavily militarised. A military presence is suggested in the patterns of both brooch and coin distribution. Several indigenous sites in northern Lincolnshire (including Old Winteringham and Kirmington, and possibly also Ludford and Owmby) were co-opted by the Roman army. Amongst the indigenous population, the uptake of Roman material, including coinage, appears to have been slowest in this northern militarised zone. This could be due to local resistance, or restricted access to Roman civilian supply networks.

AD 70 – 180

In the hundred years following the conquest, northern Lincolnshire, previously a centre for regional metalwork production and consumption, became increasingly marginalised. Regions that had been at the fringes of Iron Age networks (Leicestershire and later Nottinghamshire) emerged as new centres of activity.

With the exception of northern Lincolnshire, where Roman coinage remains sparsely represented, a fairly standardised pattern of coin use appears to develop across the study region. Whereas the patterns of Iron Age coin deposition varied even within the East Midlands, Roman coinage became a more widely shared medium of exchange, which was probably used in a similar way across much of Britain. At the same time, greater diversity emerges in the deployment of other forms of material culture, including brooch types. The site-based analysis of brooch assemblages suggested that the post-conquest period was the most varied in terms of the production, use and deposition of different brooch styles. Personal adornment may have become an increasingly important factor in creating and maintaining distinct local identities.

The conclusions drawn here highlight the value of approaching the study of objects such as coins and brooches from the perspective of flows of knowledge and materials through social networks. For example, one question posed in chapter three was whether Roman material culture moved into Britain predominantly through a single supply network, or whether multiple production and supply networks were involved. As might be expected (and as has elsewhere been found to be the case – e.g. Pitts 2010, Roymans 2009), it appears that the latter is closest to the truth. Pitts argued for four major networks for the supply of continental material to southern Britain: pre-Roman Gallic exchange networks, Roman military supply chains, independent Roman traders, and Roman diplomatic gifts. All of these are probably also represented in the East Midlands evidence. Gallic networks appear to have waned in importance in the pre-conquest period, but there is clear evidence for Roman contacts. Some objects showing distinctive distributions (e.g. Claudian coinage and Hod Hill/Aucissa brooches) probably reflect Roman military supply chains, whilst the different pattern in the south of the region perhaps suggests the presence of civilian traders. Unusual objects such as the Hallaton helmet may represent diplomatic gifts.

This study moves beyond Pitt's work to further illuminate the nuances of supply networks within Britain. The discrepancy between the chronological signatures of the coin and brooch assemblages at the twenty-five sites considered in chapter five suggest that times of maximum coin deposition do not accord directly with periods of above-average brooch loss. These objects should not be viewed as straightforward chronological indicators. Whilst all officially-issued early Roman coinage was produced outside the province, many brooch types were locally made. Access to these objects, and selection of particular types, will have been dependent on engagement with different social networks. Supply will have been mediated through different mechanisms and contacts, fluctuating between sites and over time.

There is potential for much further analysis of the material presented here, and this study highlights the importance of small portable metalwork in both marking and mediating the incorporation of indigenous groups into the Empire. Objects such as coinage were a field of discourse through which local power relationships and changing attitudes to value were negotiated. This is further reflected when coins are considered as just one aspect of wider networks of exchange and production, all of which were transformed through the process of the colonial encounter.

Appendices

Appendix 1:

Video of replica coin production, produced for Market Harborough Museum

Appendix 2:

Artefact database and hoard lists

Bibliography

Classical sources

Caesar, *De Bello Gallico*

Strabo, *Geographica*

Suetonius, *De vita Caesarum, I, Divus Julius*

Tacitus, *Historiae*

Tacitus, *Annales*

References

Aarts, J., 2005. Coins, money and exchange in the Roman world: A cultural–economic perspective. *Archaeological Dialogues*, 12, 1–28.

Abdy, R., I. Leins and J. Williams (eds.), 2002. *Coin hoards from Roman Britain, Vol. XI*. London: Royal Numismatic Society Special Publication No. 36.

Adams, J., 1999. *The Indian peace medals of George III, or, His Majesty's sometime allies*. Crestline, Calif.: G.F. Kolbe.

Ainsworth, K. and J. May. 2003. An Iron Age coin die from near Alton, Hampshire. *Current Archaeology*, 188, 326.

Allason-Jones, L., 2003. A Roman coin hoard from Longhorsley. *Archaeologia Aeliana*, 32, 189–191.

Allen, D.F., 1944. The Belgic dynasties of Britain and their coins. *Archaeologia*, 90, 1–46.

Allen, D.F., 1960. The origins of coinage in Britain: A reappraisal. In S.S. Frere (ed.), *Problems of the Iron Age in Southern Britain*. London: Institute of Archaeology occasional paper 11. 97–308.

Allen, D.F., 1961. A study of the Dobunnic coinage. In E.M. Clifford, *Bagendon, a Celtic oppidum: A record of the excavations of 1954–1956*. Cambridge: Heffer. 75–149.

Allen, D.F., 1963. *The Coins of the Coritani*. London: Oxford University Press, for the British Academy.

Allen, D.F., 1975. Cunobelin's gold. *Britannia*, 6, 1–19.

Allen, D.F., 1976. Wealth, money and coinage in a Celtic society. In J.V.S. Megaw (ed.), *To illustrate the monuments: Essays on archaeology presented to Stuart Piggott*. London: Thames and Hudson. 199–208.

Allen, D.F., and C. Haselgrove. 1979. The gold coinage of Verica. *Britannia,* 10, 1–17.

Anthony, I.E., 1961. Evidence of a Belgic mint found at *Verulamium,* 1957. *St Albans and Hertfordshire Architectural and Archaeological Society Transactions*, 1961, 31–35.

Appadurai, A., 1986. Introduction: Commodities and the politics of value. In A. Appadurai (ed.), *The social life of things: Commodities in cultural perspective*. Cambridge: Cambridge University Press. 3–63.

Artioli, G., 2007. Crystallographic texture analysis of archaeological metals: Interpretation of manufacturing techniques. *Applied Physics A: Materials Science and Processing*, 89, 899–908.

Auberson, A.F. and A. Geiser. 2001. Les trouvailles monétaires et le coin de l'oppidum du Mont–Vully. *Revue Suisse de Numismatique*, 80, 58–107.

Axtell, J., 1997. *The Indians' new South: Cultural change in the colonial Southeast*. Baton Rouge: Louisiana State University Press.

Barbour, P.L., 1972. The earliest reconnaissance of the Chesapeake Bay area: Captain John Smith's map and Indian vocabulary. *The Virginia Magazine of History and Biography*, 80 (1), 21–51.

Barlowe, A., 1584–5. Discourse of the first voyage. Reprinted in D.B. Quinn (ed.), *The Roanoke voyages, 1584–1590: Documents to illustrate the English voyages to North America under the patent granted to Walter Raleigh in 1584*, 2 Volumes. London: The Hakluyt Society, 1955. Vol. I, 91–115.

Bayley, J., S. Butcher, J. Dobie and J. Vallender. 2004. *Roman brooches in Britain: A technological and typological study based on the Richborough Collection*. London: Society of Antiquaries of London.

Bayley, J., D. Crossley and M. Ponting (eds.), 2008. *Metals and metalworking: A research framework for archaeometallurgy*. HMS Occasional publication No. 6. London: Historical Metallurgy Society.

Beauchamp, W.M., 1880. *Wampum belts of the Six Nations*. Washington.

Becker, M.J., 2002. A wampum belt chronology: Origins to modern times. *Northeastern Anthropology*, 63, 49–70.

Belden, B.L., 1966. *Indian peace medals issued in the United States*. New Milford, Conn.: N. Flayderman.

Bhabha, H.K., 1994. *The location of culture*. London: Routledge.

Bland, R. and X. Loriot. 2010. *Roman and early Byzantine gold coins found in Britain and Ireland*. London: Royal Numismatic Society Special Publication.

Bland, R. and J. Orna-Ornstein. 1997. *Coin hoards from Roman Britain, volume X*. London: Royal Numismatic Society Special Publication No. 36.

Bohannan, P. and L. Bohannan. 1968. *Tiv Economy*. London: Longmans.

Bone, A. and A.M. Burnett. 1986. The 1986 Selsey treasure trove. *The British Numismatic Journal*, 56, 178–180.

Bradley, R., 1990. *The passage of arms: An archaeological analysis of prehistoric hoards and votive deposits*. Cambridge: Cambridge University Press.

Bradley, R., 2005. *Ritual and domestic life in prehistoric Europe*. London: Routledge.

Bryant, S., 2007. Central places or special places? The origins and development of 'oppida' in Hertfordshire. In C.C. Haselgrove and T. Moore (eds.), *The later Iron Age in Britain and Beyond.* Oxford: Oxbow. 62–80.

Budd, P. and T. Taylor. 1995. The Faerie smith meets the bronze industry: Magic versus science in the interpretation of pre–historic metal–making. *World Archaeology,* 27, 133–143.

Burnett, A.M., 1990. Celtic coinage in Britain III: The Waltham St. Lawrence treasure trove. *The British Numismatic Journal*, 60, 13–28.

Burnham, B. and H.B. Burnham. 2005. *Dolaucothi–Pumsaint: Survey and excavations at a Roman gold–mining complex, 1987–1999*. Oxford: Oxbow Monograph.

Butcher, K. and M. Ponting. 2005. The Roman *denarius* under the Julio–Claudian emperors: Mints, metallurgy and technology. *Oxford Journal of Archaeology*, 24 (2), 163–197.

Buttrey, T.V., 1993. Calculating ancient coin production: Facts and fantasies. *Numismatic Chronicle*, 153, 335–351.

Callister Jr., W.D., 1993. *Materials science and engineering: An introduction*. 3rd ed. New York: John Wiley and Sons Inc.

Carlile, P.R., 2002. A pragmatic view of knowledge and boundaries: Boundary objects in new product development. *Organization Science*, 13 (4), 442–455.

Carrier, J.G., 1994. Alienating objects: The emergence of alienation in retail trade. *Man*, 29 (2) n.s., 359–380.

Casey, P.J., 1988. The interpretation of Romano-British site finds. In R. Reece and P.J. Casey (eds.), *Coins and the archaeologist*. London: Seaby. 37–51.

Castelin, K., 1960. Keltische münzformen aus Böhmen. *Germania*, 38, 32–42.

Ceci, L., 1990. Native wampum as a peripheral resource in the seventeenth-century world-system. In L.M. Hauptman and J.D. Wherry (eds.), *The Pequots in Southern New England: The fall and rise of an American Indian nation*. Norman: University of Oklahoma Press. 48–64.

Chapman, H., W. Fletcher, H. Fenwick, M. Lillie and G. Thomas. 2000. The archaeological survey of the Hull valley. In R. Van de Noort and S. Ellis (eds.), *Wetland heritage of the Hull valley, an archaeological survey*. Kingston upon Hull: Humber Wetlands Project, University of Hull.

Cheesman, C., 1994. The coins. In M.G. O'Connell and J. Bird, The Roman temple at Wanborough, excavation 1985–1986, *Surrey Archaeological Collections,* 82, 1–168.

Cheyfitz, E., 1991. *The poetics of imperialism: Translation and colonization from The Tempest to Tarzan*. New York: Oxford University Press.

Clay, P. and J. Mellor. 1985. *Excavations in Bath lane, Leicester,* Leicester: Leicestershire Museums, Art Galleries and Record Service, Archaeological Report No. 10.

Cleere, H. 1976. Some operating parameters for Roman ironworks. *Bulletin of the Institute of Archaeology, University College London*, 13, 233–246.

Collis, J., 1971. Functional and theoretical interpretations of British coinage. *World Archaeology,* 3, 71–84.

Collis, J., 1974. A functionalist approach to pre–Roman coinage. In P.J. Casey and R. Reece (eds.), *Coins and the archaeologist*. Oxford: BAR 4. 97–104.

Collis, J., 1975. *Defended sites of the late La Tene in Central and Western Europe*. Oxford: BAR Supplementary Series 2.

Collis, J., 1981. A typology of coin distributions. *World Archaeology*, 13 (1), 122–128.

Collis, J., 1985. Iron Age 'coin moulds'. *Britannia*, 16, 237–238.

Comaroff, J. and J.L. Comaroff. 1990. Goodly beasts and beastly goods: Cattle and commodities in a South African context. *American Ethnologist,* 17, 195–216.

Comaroff, J. and J.L. Comaroff. 2006. Beasts, banknotes and the colour of money in colonial South Africa. *Archaeological Dialogues,* 12, 107–132.

Cooper, J., M. Martínon-Torres and R.V. Rojas. 2008. American gold and European brass: Metal objects and indigenous values in the cemetery of El Chorro de Maíta, Cuba. In C.L. Hofman, M.L.P. Hoogland and A.L. van Gijn (eds.), *Crossing the borders: New methods and techniques in the study of archaeological materials from the Caribbean.* Tuscaloosa: University of Alabama Press. 34–42.

Cooper, N.J. (ed.). 2006. *The archaeology of the East Midlands: An archaeological resource assessment and research agenda*. Leicester: University of Leicester.

Cooper, N.J. and R. Buckley. 2003. New light on Roman Leicester (Ratae Corieltauvorum). In P. Wilson (ed.), *The archaeology of Roman towns: Studies in honour of John S. Wacher*. Oxford: Oxbow. 31–43.

Corkran, D.H., 1967. *The Creek frontier, 1540–1783*. Civilization of the American Indian series, Vol. 86. Norman: University of Oklahoma Press.

Cottam, G., 2001. Plated Iron Age coins: official issues or contemporary forgeries? *Oxford Journal of Archaeology*, 20, 377–390.

Council of Virginia. 1610. *True declaration of the estate of the colonie in Virginia: With a confutation of such scandalous reports as have tended to the disgrace of so worthy an enterprise*. London: William Barret.

Cowell, M., 1992. An analytical survey of the British Celtic gold coinage. In M. Mays (ed.), *Celtic coinage: Britain and beyond*. Oxford: BAR 222, 207–233.

Cowell, M., W.A. Oddy and A. Burnett. 1987. Celtic coinage in Britain: New hoards and recent analyses. *British Numismatic Journal,* 57, 1–23.

Craddock, P.T., 1995. *Early metal mining and production*. Edinburgh: Edinburgh University Press.

Crawford, M., 1970. Money and exchange in the Roman world. *Journal of Roman Studies,* 60, 40–48.

Crawford, M., 1974. *Roman Republican coinage*, 2 volumes. Cambridge: Cambridge University Press.

Creighton, J., 1990. The Humber frontier in the first century AD. In S. Ellis and D. Crowther (eds.), *Humber perspectives: A region through the ages*. Hull: Hull University Press. 182–198.

Creighton, J., 1992. *The circulation of money in Roman Britain from the first to third century*. Unpublished Ph.D. dissertation, University of Durham.

Creighton, J., 2000. *Coins and power in late Iron Age Britain.* Cambridge: Cambridge University Press.

Creighton, J., 2006a. *Britannia: The creation of a Roman province*. Oxon: Routledge.

Creighton, J., 2006b. Cattle, community and corrals. *Archaeological Dialogues,* 12, 132–135.

Crumley, C.L., 1995. Heterarchy and the analysis of complex societies. *Archeological Papers of the American Anthropological Association*, 7 (1), 1–5.

Crummy, N., 1983. *The Roman small finds from excavations in Colchester, 1971-79*. Colchester Archaeological Report 2. Colchester: Colchester Archaeological Trust.

Crummy, N. and H. Eckardt. 2008. *Styling the body in late Iron Age and Roman Britain: A contextual approach to toilet instruments*. Monographies Instrumentum No. 36. Montagnac: Editions Monique Mergoil.

Cunliffe, B.W., 1984. Iron Age Wessex: Continuity and change. In B. Cunliffe and D. Miles (eds.), *Aspects of the Iron Age in Central Southern Britain.* Oxford: Oxford University Committee for Archaeology Monograph 2. 12–45.

Cunliffe, B.W., 2005. *Iron Age communities in Britain: An account of England, Scotland and Wales from the seventh century BC until the Roman conquest*. 4th ed. London: Routledge.

Cunliffe, B.W. and D.R. Brothwell. 1995. *Danebury: An Iron Age hillfort in Hampshire. Vol.6, A hillfort community in perspective.* London: Council for British Archaeology.

Curteis, M., 1996. An analysis of the circulation patterns of Iron Age coins from Northamptonshire. *Britannia,* 27, 17–42.

Curteis, M. And G. Burleigh. 2002. Shillington A and B, Bedfordshire. In R. Abdy, I. Leins and J. Williams (eds.), *Coin hoards from Roman Britain, volume XI.* London: Royal Numismatic Society Special Publication No. 36. 65–74.

Curteis, M., D. Jackson and P. Markham. 1998–9. Titchmarsh late Iron Age and Roman settlement, *Northamptonshire Archaeology*, 28, 164–174.

Dalton, T., 1977. Aboriginal economies in stateless societies. In T.K. Earle and J.E. Ericson (eds.), *Exchange systems in prehistory*. London: Academic Press.191–212.

Deegan, G. and A. Foard. 2007. *Mapping ancient landscapes in Northamptonshire.* Swindon: English Heritage.

De Jersey, P., 1997. Mint sites of Celtic Britain. *Chris Rudd list,* 28, 1–2.

De Jersey, P., 2001. Where and when? *Chris Rudd list,* 56, 2–7.

De Jersey, P., 2009. Some experiments in Iron Age coin production and some implications for the production of Gallo–Belgic E. In J. Van Heesch and I. Heeren (eds.), *Coinage in the Iron Age: Essays in honour of Simone Scheers*. London: Spink and Son Ltd. 257–269.

De Monberaut, H.M., 1765. *The Memoire Justicatif of the Chevalier Montault de Monberaut. Indian diplomacy in British West Florida, 1763–1765*. Translated by M.B. Howard Jr. and R.R. Rea. Alabama: University of Alabama Press, 1965.

Dennis, M., 2002. Die alignments in Celtic coins? *Chris Rudd list*, 62, 2–5.

Dennis, M., 2006. *Silver in late Iron Age and early Roman East Anglia.* Unpublished PhD Thesis: Oxford University.

Dembski, G., 1995. Ein keltischer prägstempel von der Gurina (Kärnten) *Numismatische Zeitschrift*, 103, 19–22.

Derks, T., 1998. *Gods, temples and ritual practices: The transformation of religious ideas and values in Roman Gaul.* Amsterdam: Amsterdam University Press.

Dietler, M., 1998. Consumption, agency, and cultural entanglement: Theoretical implications of a Mediterranean colonial encounter. In J. Cusick (ed.)*, Studies in culture contact: Interaction, culture change and archaeology*. Carbondale: Southern Illinois University Press. 288–315.

Dolley, R.H.M., 1954. The speculum ('tin') coins in hoard C. In R. R. Clarke (ed.), The early Iron Age treasure from Snettisham, Norfolk. *Proceedings of the Prehistoric Society,* 20, 72–86.

Douglas, M., 1966. Purity and danger: An analysis of concepts of pollution and taboo. London: Routledge & Kegan Paul.

Duncan-Jones, R., 1992. *Structure and scale in the Roman economy*. Cambridge: Cambridge University Press.

Dungworth, D., 1997. Iron Age and Roman copper alloys from Northern Britain. *Internet Archaeology,* 2.

Edwards, G. and M. Dennis. 2006. The Silsden hoard: Discovery, investigation and new interpretations. In P. de Jersey (ed.), *Celtic coinage: New discoveries, new discussion*. Oxford: BAR 1532. 249–260.

Ehrenreich, R.M., 1985. *Trade, technology, and the ironworking community in the Iron Age of Southern Britain*. Oxford: BAR 144.

Elsdon, S.M., 1982. Iron Age and Roman sites at Red Hill, Ratcliffe on Soar, Nottinghamshire: Excavations by E. Greenfield, 1963, and previous finds. *Transactions of the Thoroton Society*, 86, 14–48.

Elsdon, S.M. and M. Jones. 1997. *Old Sleaford revealed: A Lincolnshire settlement in Iron Age, Roman, Saxon and Medieval times; excavations, 1882–1995.* Oxford: Oxbow Books.

Esty, W., 1986. Estimation of the size of a coinage: A survey and comparison of methods. *Numismatic Chronicle*, 146, 185–215.

Evans, J.S. and F.W. Fairholt. 1864. *The coins of the ancient Britons.* London: J. R. Smith.

Evans, J.S., F.W. Fairholt and P. Sellier. 1890. *The coins of the ancient Britons*. London: B. Quaritch.

Farley, J., 2011. Transformations of scale: The deposition of miniature weaponry in Iron Age Lincolnshire, *Pallas: Revue d'études antiques*, 88.

Farley, J., 2012. Analysis of silver and other metal objects. In V. Score (ed.), *Hoards, hounds and helmets: A conquest period ritual site at Hallaton, Leicestershire*. Leicester Archaeological Monograph 21. Leicester: University of Leicester Archaeological Services. 88–99.

Fell, V., 1988. Iron Age metalworking tools from *Gussage All Saints*, Dorset. *Proceedings of the Dorset Natural History and Archaeological Society,* 110, 73–76.

Fillery-Travis, R., 2008. *Looking for meaning: A multidisciplinary study of variation in Roman horse-and-rider brooches*. Unpublished MSc dissertation: University of London.

Finley, M.I., 1973. *The ancient economy*. Berkeley: University of California Press.

Fitzpatrick, A.P., 1984. The deposition of La Tène Iron Age Metalwork in watery contexts in Southern England. In B.W. Cunliffe and D. Miles (eds.), *Aspects of the Iron Age in Central Southern Britain*. Oxford: Oxford University Committee for Archaeology Monograph 2. 178–190.

Fitzpatrick, A.P., 2005. Gifts for the golden gods: Iron Age hoards of torcs and coins. In C. Haselgrove and D. Wigg-Wolf (eds.), *Iron Age coinage and ritual practices*. Studien zu Fundmünzen der Antike, Bd. 20. Mainz am Rhein: Von Zabern. 157–182.

Fontijn, D.R., 2002. *Sacrificial landscapes: Cultural biographies of persons, objects and 'natural' places in the Bronze Age of the Southern Netherlands, C. 2300–600 BC*. Leiden: University of Leiden.

Foster, M.K., 1985. Another look at the function of wampum in Iroquois-White councils. In F. Jennings (ed.), *The history and culture of Iroquois diplomacy: An interdisciplinary guide to the treaties of the Six Nations and their league*. Syracuse, N.Y.: Syracuse University Press. 99–114.

Foster, J., 1996. Metalworking in the British Iron Age: The evidence from Weelsby Avenue, Grimsby. In B. Raftery (ed.), *Sites and sights of the Iron Age*. Oxford: Oxbow Monograph 56. 49–61.

Fox, C., 1958. *Pattern and purpose: A survey of early Celtic art in Britain*. Cardiff: National Museum of Wales.

Frank, T. (ed.), 1933–40. *An economic survey of ancient Rome. 5 volumes*. Baltimore: Johns Hopkins Press (reprinted 1975).

Frere, S.S., 1983. The Belgic mint. In S.S. Frere, *Verulamium excavations II*. London: Society of Antiquaries Research Report 41. 30–32.

Frere, S.S., M.W.C. Hassall and R.S.O. Tomlin. 1985. Roman Britain in 1984. *Britannia*, 16, 252–332.

Friendship-Taylor, R.M., 1999. Piddington, *South Midlands Archaeology*, 29, 20–24.

Friendship-Taylor, R.M. and D.E. Friendship-Taylor. 1989. *Iron Age and Roman Piddington: An interim report on the excavation of a late Iron Age settlement and Romano-British villa in Northamptonshire*. Piddington: Upper Nene Archaeological Society.

Friendship-Taylor, R.M. and D.E. Friendship-Taylor. 1997. From round house to villa. Piddington: Upper Nene Archaeological Society.

Fulford, M.G., 1978. Coin circulation and mint activity in the later Roman Empire. *Archaeological Journal,* 135, 67–114.

Fulford, M.G., 1984. *Silchester defences, 1974–1980*. Britannia monograph 5. London: London Society for the Promotion of Roman Studies.

Furger–Gunti, A., 1987. Ein Keltischer münz–stempel vom Oberrhein und bermerkungen zu schüsselformigen münzen aus diese region. In C. Bémont (ed.), *Mélanges offerts au Docteur J.-B. Colbert de Beaulieu*. Paris: Leopard d'or. 371–378.

Gallivan, M.D., 2003. *James River chiefdoms: The rise of social inequality in the Chesapeake*. Lincoln, Neb.: University of Nebraska Press.

Gallivan, M.D., 2007. Powhatan's Werowocomoco: Constructing place, polity, and personhood in the Chesapeake, C.E. 1200–C.E. 1609. *American Anthropologist*, 109 (1), 85–100.

Garrow, D., 2008. The time and space of Celtic art: Interrogating the 'Technologies of Enchantment' database. In D. Garrow, C. Gosden and J.D. Hill (eds.), *Rethinking Celtic art*. Oxford: Oxbow. 15–39.

Gebhard, R., G. Lehrberger, G. Morteani, C. Raub, U. Steffgen and U. Wagner. 1998. Melting and alloying techniques of Celtic gold in Central Europe. In A. Oddy and M. Cowell (eds.), *Metallurgy in numismatics 4*. London: Royal Numismatic Society Special Publication 30. 518–525.

Gitler, H. and M.J. Ponting. 2003. *The silver coinage of Septimius Severus and his family (AD 193–211): A study of the chemical composition of the Roman and Eastern issues*. Milan: Ennerre.

Gleach, F.W., 1997. *Powhatan's world and colonial Virginia: A conflict of cultures*. Studies in the anthropology of North American Indians. Lincoln, Neb.: University of Nebraska Press.

Gold, R.L., 1969. *Borderland empires in transition: The triple–nation transfer of Florida.* Carbondale, Southern Illinois University Press.

Gosden, C., 2004. *Archaeology and colonialism: Cultural contact from 5000 BC to the present*. Cambridge: Cambridge University Press.

Gowland, W., 1915. Report on the metal and metallurgical remains from the excavations at Hengistbury Head. In J.P. Bushe–Fox, *Excavations at Hengistbury Head, Hampshire, in 1911–12.* Oxford: Society of Antiquities. 72–83.

Green, L.C. and O.P. Dickason. 1989. *The law of nations and the new world*. Edmonton, Alta.: University of Alberta Press.

Green, M., 1981. Model Objects from Military Areas of Roman Britain. *Britannia*, 12, 253–269.

Greene, K., 1986. *The archaeology of the Roman economy*. London: Batsford.

Greenfield, E., 1962. Thistleton. *Journal of Roman Studies*, 52, 172–173.

Gregory, C.A., 1980. Gifts to men and gifts to God: Gift exchange and capital accumulation in contemporary Papua. *Man,* 15, 627–652.

Gregory, C.A., 1982. *Gifts and commodities*. London: Academic Press.

Gruel, K., 1981. *Le trésor de Trébry (Côtes–du–Nord)*. Etudes de Numismatique Celtique I. Centre de Recherches d'Histoire Ancienne 41.

Gruel, K., 1989. *La monnaie chez les Gaulois*. Paris: Editions Errance.

Gruel, K. and E. Morin. 1999. *Les monnaies celtes du Musée du Bretagne*. Rennes: Musée du Bretagne.

Hall, J.M., 2009. *Zamumo's Gifts: Indian-European exchange in the colonial Southeast*. Philadelphia: University of Pennsylvania Press.

Hamor, R., 1615. *A true discourse of the present state of Virginia*. Reprinted in A.L. Rowse (ed.), *A true discourse of the present state of Virginia*. Richmond: Virginia State Library, 1957.

Hantman, J.L., 1993. Powhatan's relations with the Piedmont Monacans. In H.C. Rountree (ed.), *Powhatan foreign relations: 1500–1722*. Charlottesville: University Press of Virginia. 94–111.

Harl, K.W., 1996. *Coinage in the Roman economy, 300 BC to AD 700*. Baltimore: Johns Hopkins University Press.

Harriot, T., 1588. *A brief and true report of the new found land of Virginia*. Reprinted in Paul Hulton (ed.), *A brief and true report of the new found land of Virginia*. New York: Dover Publications Inc., 1972.

Harris, W.V., 2008. *The monetary systems of the Greeks and Romans*. Oxford: Oxford University Press.

Haselgrove, C., 1976. External trade as a stimulus to urbanisation. In B. Cunliffe and T. Rowley (eds.), *Oppida, the beginnings of urbanisation in barbarian Europe: Papers presented to a conference at Oxford, October 1975*. Oxford: BAR Supplementary Series 11. 25–49.

Haselgrove, C., 1984. Warfare and its aftermath as reflected in the precious metal coinage of Belgic Gaul. *Oxford Journal of Archaeology,* 3, 81–105.

Haselgrove, C., 1982. Wealth, prestige and power: The dynamics of late Iron Age political centralization in South–East England. In A.C. Renfrew and S. Shennan (eds.), *Ranking, resource and exchange*. Cambridge: Cambridge University Press. 79–88.

Haselgrove, C., 1987. *Iron Age coinage in South–East England: The archaeological context.* Oxford: BAR 174.

Haselgrove, C., 1988. The archaeology of British potin coinage, *Archaeological Journal*, 145, 99–122.

Haselgrove, C., 1992. Iron Age coinage and archaeology. In M. Mays (ed.), *Celtic coinage: Britain and beyond*. Oxford: BAR 222. 123–137.

Haselgrove, C., 1993. The development of British Iron Age coinage. *Numismatic Chronicle,* 153, 31–63.

Haselgrove, C., 1996. Iron Age coinage: Recent work. In T. Champion and J.R. Collis (eds.), *The Iron Age in Britain and Ireland: Recent trends*. Sheffield: J.R. Collis Publications, Dept. Of Archaeology and Prehistory, University of Sheffield. 67–86.

Haselgrove, C., 1997. Iron Age brooch deposition and chronology. In A. Gwilt and C. Haselgrove (eds.), *Reconstructing Iron Age societies: New approaches to the British Iron Age*. Oxford: Oxbow. 51–72.

Haselgrove, C., 2005a. A new approach to analysing the circulation of Iron Age coinage. *Numismatic Chronicle,* 165, 1–45.

Haselgrove, C., 2005b. A trio of temples: A reassessment of Iron Age coin deposition at Harlow, Hayling Island, and Wanborough. In C. Haselgrove and D. Wigg-Wolf (eds.), *Iron Age coinage and ritual practices*. Mainz am Rhein: Von Zabern. 381–418.

Haselgrove, C., 2006. The impact of the Roman conquest on indigenous coinages in Belgic Gaul and Southern Britain. In P. de Jersey (ed.), *Celtic coinage: New discoveries, new discussion*. Oxford: BAR S1532. 97–115.

Haselgrove, C., 2006b. Early potin coinage in Britain: An update. In P. de Jersey (ed.), *Celtic coinage: New discoveries, new discussion*. Oxford: BAR S1532. 17–27.

Haselgrove, C. and D. Wigg-Wolf. 2005. *Iron Age coinage and ritual practices*. Mainz am Rhein: Von Zabern.

Hattatt, R., 2000. *A visual catalogue of Richard Hattatt's ancient brooches*. Oxford: Oxbow.

Havis, R. and H. Brooks. 2004. *Excavations at Stansted Airport, 1985–1991*. East Anglian Archaeology, 107.

Hawkes, C.F.C. and M.R. Hull. 1947. *Camulodunum: First report on the excavations at Colchester, 1930–39*. Reports of the Research Committee of the Society of Antiquaries of London, 14. Oxford: Society of Antiquaries.

Hawkins, 1885, *Medallic Illustrations of the History of Great Britain and Ireland*, London

Helms, M.W., 1988. *Ulysses' sail: An ethnographic odyssey of power, knowledge, and geographical distance*. Princeton, N.J.: Princeton University Press.

Hill, J.D., 1995. How should we understand Iron Age societies and hillforts? A contextual study from Southern Britain. In J.D. Hill and C.G. Cumberpatch (eds.), *Different Iron Ages: Studies on the Iron Age in temperate Europe*. BAR International Series 602, 45–66.

Hill, J.D., 1999. Settlement, landscape and regionality: Norfolk and Suffolk in the pre–Roman Iron Age of Britain and beyond. In J. Davies and T. Williamson (eds.), *Land of the Iceni: The Iron Age in Northern East Anglia*. Norwich: Centre of East Anglian Studies.

Hill, J.D., 2006. Are we any closer to understanding how later Iron Age societies worked (or did not work)? In C. Haselgrove (ed.), *Les mutations de la fin de l'âge du Fer*. Glux–en–Glenne: Collection Bibracte 12/4. 169–180.

Hill, J.D., 2007. The dynamics of social change in later Iron Age Eastern and South–Eastern England c. 300 BC–AD 43. In C. Haselgrove and T. Moore (eds.), *The later Iron Age in Britain and beyond*. Oxford: Oxbow Books. 16–40.

Hingley, R., 1984. Towards social analysis in archaeology: Celtic society in the Iron Age of the Upper Thames Valley. In B.W. Cunliffe and D. Miles (eds.), *Aspects of the Iron Age in Central Southern Britain*. Oxford: OUCA Monograph 2. 72–88.

Hingley, R., 1990. Iron Age 'currency bars': The archaeological and social context. *Archaeological Journal,* 147, 91–117.

Hingley, R., 1997. Iron, iron–working and regeneration. In A. Gwilt and C. Haselgrove (eds.), *Reconstructing Iron Age societies*. Oxford: Oxbow. 9–18.

Hingley, R., 2005. Iron Age 'currency bars' in Britain: Items of exchange in liminal contexts? In C. Haselgrove and D. Wigg-Wolf (eds.), *Iron Age coinage and ritual practices*. Mainz am Rhein: Phillipp von Zaberg. Studien zu Fundmunzen der Antike. 183–206.

Hingley, R., 2006. The deposition of iron objects in Britain during the later prehistoric and Roman periods: Contextual analysis and the significance of iron. *Britannia*, 37, 213–257.

Hingley, R. and D. Miles. 1984. Aspects of Iron Age settlement in the Upper Thames Valley. In B. Cunliffe and D. Miles (eds.), *Aspects of Iron Age settlement in Central Southern Britain*. Oxford: Oxford University Committee Archaeological Monograph 2. 52–71.

Hobbs, R., 1996. *British Iron Age coins in the British Museum*. London: British Museum Press.

Hodder, I. (ed.), 2006. *Symbolic and structural archaeology*. Cambridge: Cambridge University Press.

Hodder, I. and C. Orton. 1976. *Spatial analysis in archaeology*. Cambridge: Cambridge University Press.

Holman, D.J., 2000. Iron Age coinage in Kent: A review of current knowledge. *Archaeologia Cantiana*, 120, 205–233.

Hopkins, K., 1980. Taxes and trade in the Roman Empire (200 BC – AD 400). *Journal of Roman Studies,* 70, 101–125.

Hopkins, K., 1983. Introduction. In P. Garnsey, K. Hopkins and C. R. Whittaker (eds.), *Trade in the ancient economy*. London: The Hogarth Press. ix–xxv.

Howgego, C., 1992. The supply and use of money in the Roman world, 200 BC–AD 300. *Journal of Roman Studies*, 82, 1–31.

Hull, M.R. and C.F.C. Hawkes. 1987. *Corpus of ancient brooches in Britain: Pre-Roman bow brooches (PBB)*. Oxford: BAR 168.

Hulme, P., 1993. Making no bones: A response to Myra Jehlen, *Critical Inquiry*, 20 (1), 179–186.

Hulton, P.H. and D.B. Quinn. 1964. *The American drawings of John White, 1577–1590: With drawings of European and Oriental subjects*. Chapel Hill: University of North Carolina Press.

Hunter, F., 2007. Artefacts, regions, and identities in the northern British Iron Age. In C. Haselgrove and T. Moore (eds.), *The later Iron Age in Britain and beyond*. Oxford: Oxbow. 286–296.

Hutcheson, N.C.G., 2004. *Later Iron Age Norfolk: Metalwork, landscape and society*. Oxford: Archaeopress.

Hutcheson, N.C.G., 2007. An archaeological investigation of later Iron Age Norfolk: Analysing hoarding patterns across the landscape. In C. Haselgrove and T. Moore (eds.), *The later Iron Age in Britain and beyond*. Oxford: Oxbow Books. 358–370.

Hutchinson, S., 1992. The cattle of money and the cattle of girls among the Nuer, 1930–83. *American Ethnologist,* 19, 294–316.

Hutchinson, S., 1996. *Nuer dilemmas*. California: University of California Press.

Jehlen, M., 1993. History before the Fact; or, Captain John Smith's Unfinished Symphony. *Critical Inquiry*, 19 (4), 677–692.

Jennings, F., 1975. *The invasion of America: Indians, colonialism, and the cant of conquest*. Chapel Hill: Published for the Institute of Early American History and Culture by the University of North Carolina Press.

Jennings, F. (ed.), 1985. *The history and culture of Iroquois diplomacy: An interdisciplinary guide to the treaties of the Six Nations and their league.* Syracuse, NY: Syracuse University Press.

Jones, A.H.M., 1974. *The Roman economy: Studies in ancient, economic and administrative history*. Oxford: Blackwell.

Jones, D. and J.B. Whitwell. 1991. Survey of the Roman fort and multi-period settlement complex at Kirmington on the Lincolnshire Wolds: A non-destructive approach. *Lincolnshire History and Archaeology*, 26, 57–62.

Jones, M J., D. Stocker, and A. Vince. 2003. *The city by the pool: Assessing the archaeology of the city of Lincoln*. Lincoln Archaeological Studies 10. Oxford: Oxbow.

Jope, E.M., 1971. The Witham shield. In G. Sieveking (ed.), *Prehistoric and Roman studies commemorating the opening of the Department of Prehistoric and Romano-British Antiquities*. London: British Museum Press. 61–69.

Jope, E.M., 2000. *Early Celtic art in the British Isles*. Oxford: Oxford University Press.

Jundi, S. and J.D. Hill. 1997. Brooches and identities in first century AD Britain: More than meets the eye? In C. Forcey, J. Hawthorne and R. Witcher (eds.), *TRAC 97: Proceedings of the 7th annual theoretical Roman archaeology conference, Nottingham 1997*. Oxford: Oxbow. 125–137.

Kardulias, N., 1997. Fur production as a specialized activity in a world system: Indians in the North American fur trade. *American Indian Culture and Research Journal*, 14, 25–60.

Kardulias, N., 2007, Negotiation and incorporation on the margins of world-systems: Examples from Cyprus and North America. *Journal of World-Systems Research*, 13 (1), 55–82.

Kipling, R. and D. Parker. 2009. *An archaeological evaluation on the site of the former Merlin Works, Bath Lane, Leicester*. Unpublished ULAS site report.

Kockelmann, W., S. Siano, L. Bartoli, D. Visser, P. Hallebeek,R. Traum, R. Linke, M. Schreiner and M. Kirfel. 2006. Applications of TOF neutron diffraction in archaeometry. *Applied Physics A: Materials Science and Processing*, 83, 175–187.

Kopytoff, I., 1986. The cultural biography of things. In A. Appadurai (ed.), *The social life of things: Commodities in cultural perspective*. Cambridge: Cambridge University Press. 64–91.

Lane, R., 1585. Letter to Richard Hakluyt the elder and Master H- of the Middle Temple. Reprinted in D.B. Quinn (ed.), *The Roanoke voyages, 1584–1590: Documents to illustrate the English voyages to North America under the patent granted to Walter Raleigh in 1584*, 2 Volumes. London: The Hakluyt Society, 1955. Vol. I, 204–207.

Lane, T., E.L. Morris and U. Albarella. 2001. *Millennium of saltmaking: Prehistoric and Romano–British salt production in the Fenland*. Heckington: Heritage Trust of Lincolnshire, Fenland Management Project.

Langdon, M., 2009. Making a mint. *Current Archaeology*, 234.

Laws, R., 2005. *Indian peace medals and related items: Collecting the symbols of peace and friendship*. Harrah, Okla.: Online Only.

Leins, I., 2007. East Leicestershire: Coinage, ritual and society in the Iron Age East Midlands. *British Numismatic Journal,* 77, 22–48.

Leins, I. 2008. Broadholme, Lincolnshire, October 2007. *Numismatic Chronicle*, 168, 383.

Leins, I., 2012. The coins. In V. Score (ed.), *Hoards, hounds and helmets: A conquest period ritual site at Hallaton, Leicestershire*. Leicester: Leicester Archaeological Monograph 21. 39–60.

Leins, I., Forthcoming. *A reassessment of the use of coinage in the reconstruction of the societies in late Iron Age Britain*. Unpublished PhD thesis. British Museum/Newcastle University.

LeRoux, J., 1892. *Le Médaillier Du Canada*. Montreal: Canadian Numismatic Pub. Institute.

Lyman, T. (ed.), 1973. *Metals handbook, 8th edition, Vol. 8: Metallography structures and phase diagrams*. Ohio: The American Society for Metals.

MacGregor, M., 1976. *Early Celtic art in North Britain*. Leicester: Leicester University Press.

Mack, R.P., 1975. *The coinage of ancient Britain.* 3rd ed. London: Spink and Seaby.

Mackreth, D., 2010. *Brooches in late Iron Age and Roman Britain*. Oxford: Oxbow.

Malacher, F. and J. Collis. 1992. Chronology, production and distribution of coins in the Auvergne. In M. Mays (ed.), *Celtic coinage: Britain and beyond.* Oxford: BAR 222. 189–207.

Mallios, S., 2006. *The deadly politics of giving: Exchange and violence at Ajacan, Roanoke, and Jamestown*. Tuscaloosa: University of Alabama Press.

Mallios, S. and S. Emmett. 2004. Demand, supply, and elasticity in the copper trade at early Jamestown. *The Journal of the Jamestown Rediscovery Center*, 2.

Mancall, P.C., J.L. Rosenbloom and T. Weiss. 2005. Indians and the Economy of Eighteenth Century Carolina. In Peter Coclanis (ed.), *The Atlantic economy during the seventeenth and eighteenth centuries: Organisation, operation, practice and personnel*. Columbia: University of South Carolina Press.

Mattingly, D., 2004. Being Roman: Expressing identity in a provincial setting. *Journal of Roman Archaeology,* 17, 5–25.

Mattingly, D., 2006. *An imperial possession: Britain in the Roman Empire, 54 BC–AD 409*. London: Allen Lane.

Maurer, B., 2006. The anthropology of money. *Annual Review of Anthropology*, 35, 15–36.

May, J., 1976. *Prehistoric Lincolnshire. History of Lincolnshire, Vol. 1.* History of Lincolnshire Committee. Lincoln: Cox and Wyman Ltd.

May, J., 1984. The major settlements of later Iron Age Lincolnshire. In N. Field and A. White (eds.), *A Prospect of Lincolnshire: Being collected articles on the history and traditions of Lincolnshire in honour of Ethel H. Rudkin*. Lincoln: F.N. Field and A.J. White. 18–22.

May, J., 1992. Iron Age coins in Yorkshire. In M. Mays (ed.), *Celtic coinage: Britain and beyond.* Oxford: BAR 222. 93–111.

May, J., 1996. *Dragonby: Report on excavations at an Iron Age and Romano-British settlement in North Lincolnshire*. Oxford: Oxbow Books.

May, J., 2006. An Iron Age coin weight from Rotherwick, Hampshire. In P. de Jersey (ed.), *Celtic coinage: New discoveries, new discussion*. Oxford: BAR 1532. 243–248.

McDowell, W.L. (ed.), 1955. *The colonial records of South Carolina: Journals of the Commissioners of the Indian Trade, September 20, 1710–August 29, 1718*. Columbia, S.C.: South Carolina Archives Department.

McDowell, W.L. (ed.), 1958. *The colonial records of South Carolina: Documents relating to Indian affairs, May 21, 1750–August 7, 1754*. Columbia, S.C.: South Carolina Archives Department.

McDowell, W.L. and L. William (eds.), 1970. *The colonial records of South Carolina: Documents relating to Indian affairs, 1754–1765*. Columbia, S.C.: South Carolina Department of Archives and History.

McWhirr, A., 1969–70. The early military history of the Roman East Midlands. *Transactions of the Leicestershire Archaeological and Historical Society*, 45, 1–15.

Meltzer, J. and R. Weiller. 1977. Beiträge zur archäologie und numismatik des titelberges 'Schrötlingsformen und Schrötlinge*'. Publication de la section historique Luxembourg*, 91, 137–141.

Merrell, J.H., 2006. 'Our bond of peace': Patterns of intercultural exchange in the Carolina Piedmont, 1650–1750. In G.A. Waselkov, P.H. Wood and T. Hatley (eds.), *Powhatan's mantle: Indians in the colonial Southeast*. Lincoln: University of Nebraska Press. 267–304.

Mickelson, G.E., 1973. Notes on French medals. *The Museum of the Fur Trade Quarterly*, 9 (3), 2–7.

Miller, C.L. and G.R. Hamell. 1986. A new perspective on Indian-White contact: Cultural symbols and colonial trade. *The Journal of American History*, 73 (2), 311–328.

Millett, M., 1990. *The Romanization of Britain: An essay in archaeological interpretation*. Cambridge: Cambridge University Press.

Mitchell, L., 1990. *Wapapi Akonutomakonol, the wampum records: Wabanaki traditional laws, as recounted by Mitchell Lewis*. Revised, annotated and edited together with a new translation by R. Leavitt and D.A. Francis. Fredericton: Micmac–Maliseet Institute, University of New Brunswick.

Montault de Monberaut, H., 1965. *Mémoire justificatif: Indian diplomacy in British West Florida, 1763–1765*. Trans. M.B. Howard and R.R Rea. Southern historical publications no. 3. University of Alabama Press.

Moore, H.L., 1982. The interpretation of spatial patterning in settlement residues. In I. Hodder (ed.), *Symbolic and structural archaeology*. Cambridge: Cambridge University Press. 4–79.

Moore, T., 2007. Life on the edge? Exchange, community, and identity in the later Iron Age of the Severn–Cotswolds. In C. Haselgrove and T. Moore (eds.), *The later Iron Age in Britain and beyond*. Oxford: Oxbow. 41–61.

Morris, E., 1997. Iron Age artefact production and exchange. In T. C. Champion and J. R. Collis (eds.), *The Iron Age in Britain and Ireland: Recent trends*. Sheffield: Sheffield Academic Press. 41–65.

Morris, M., 1999. *The bringing of wonder: Trade and the Indians of the Southeast, 1700–1783*. Westport, Conn.: Greenwood Press.

Mouer, L.D., 1981. Powhatan and Monacan regional settlement hierarchies: A model of the relationship between social and environmental structures. *Quarterly Bulletin of the Archaeological Society of Virginia*, 36 (1), 1–21.

Murray, D., 2000. *Indian giving: Economies of power in Indian–White exchanges*. Amherst: University of Massachusetts Press.

Nash, D., 1978. Plus ça change: Currency in central Gaul from Julius Caesar to Nero. In R. Carson and C. Kraay (eds.), *Scripta nummaria Romana: Essays presented to Humphrey Sutherland*. London: Spink & Son. 12–31.

Nash, D., 1981. Coinage and state development in Central Gaul. In B. Cunliffe (ed.) *Coinage and society in Britain and Gaul: Some current problems*. London: Council for British Archaeology Research Report 38. 10–17.

Northover, P., 1987. Non–ferrous metallurgy. In B. Cunliffe, *Hengistbury Head, Dorset, Vol. 1: The prehistoric and Roman settlement, 3500 BC–AD 500*. Oxford: OUCA. 186–196.

Northover, J.P., 1992. Material issues in the Celtic coinage. In M. Mays (ed.), *Celtic Coinage: Britain and Beyond*. Oxford: BAR 222, 235–299.

Orna-Ornstein, J., 1997. Early hoards of denarii from Britain. In R. Bland and J. Orna-Ornstein (eds.), *Coin hoards from Roman Britain*, Vol. 10. London: British Museum Press. 23–29.

Palk, N., 1984. *Iron Age bridle bits from Britain*. Edinburgh: Department of Archaeology.

Palk, N., 1992. *Metal horse harness of the British and Irish Iron Ages*. Unpublished DPhil thesis, University of Oxford.

Parry, J.P. and M. Bloch. 1989. *Money and the morality of exchange*. Cambridge: Cambridge University Press.

Peacock, D.P.S., 1987. Iron Age and Roman quern production at Lodsworth, West Sussex. *Antiquaries Journal*, 67, 61–85.

Perdue, T., 1979. *Slavery and the evolution of Cherokee society, 1540–1866*. Knoxville: University of Tennessee Press.

Philip, L.B. (ed.), 1986. *The complete works of Captain John Smith (1580–1631).* Chapel Hill: Published for the Institute of Early American History and Culture, Williamsburg, Va. by the University of North Carolina Press.

Pitts, M., 2008. Globalizing the local in Roman Britain: An anthropological approach to social change. *Journal of Anthropological Archaeology*, 27 (4), 493–506.

Pitts, M., 2010. Re-thinking the Southern British oppida: Networks, kingdoms and material culture, *European Journal of Archaeology*, 13 (1), 32–63.

Polanyi, K., 1944. *The great transformation*. New York: Octagon Books [Reprint: 1975].

Polanyi, K., 1957. The economy as instituted process. In K. Polanyi, C.M. Arensberg and H.W. Pearson (eds.), *Trade and market in the early empires: Economies in history and theory*. Free Press, New York. 243–270.

Polanyi, K., 1968. *Primitive, archaic, and modern economies: Essays of Karl Polanyi*: Garden City, N.Y.: Anchor books.

Pollard, A.M., C.M. Batt, B. Stern and S.M.M. Young. 2007. *Analytical chemistry in archaeology*. Cambridge: Cambridge University Press.

Ponting, M., 2003. Fingerprinting of Roman mints using laser ablation MC–ICP–MS lead isotope analysis. *Archaeometry,* 45, 591–597.

Potter, S.R., 1993. *Commoners, tribute, and chiefs: The development of Algonquian culture in the Potomac Valley*. Charlottesville: University Press of Virginia.

Potter, S.R., 2006. Early English effects on Virginia Algonquian exchange and tribute in the tidewater Potomac. In G.A. Waselkov, P.H. Wood and T. Hatley (eds.), *Powhatan's mantle: Indians in the colonial Southeast*. Lincoln: University of Nebraska Press. 217–241.

Potter, S.R., 1993. *Commoners, tribute, and chiefs: The development of Algonquin culture in the Potomac Valley*. Charlottesville: University of Virginia Press.

Prucha, F.P., 1994. *Indian peace medals in American history*. Bluffton, S.C.: Rivilo Books.

Pryor, F.L., 1977. The origins of money. *Journal of Money, Credit and Banking*, 9, 391–409.

Quarcoopome, N.I., 1987. The Indian peace medal of King George I. In A.M. Stahl (ed.) *The medal in America*. Proceedings of the Coinage of the Americas Conference No. 13. New York: American Numismatic Society. 1–18.

Quinn, D.B., 1974. *England and the discovery of America, 1481–1620*. New York: Alfred A. Knopf.

Quinn, D.B., 1977. *North America from earliest discovery to first settlements: The Norse voyages to 1612*. New York: Harper and Row.

Quitt, M.H., 1995. Trade and acculturation at Jamestown, 1607–1609: The limits of understanding. *The William and Mary Quarterly*, 3rd Series, 52 (2), 227–258.

Raub, C.J. and G. Fingerlin. 1984. Untersuchung keltischer schrötlingsformen von Breisach–Hochstetten. In G. Grassman, W. Janssen and M. Brandt (eds.), *Keltische numismatik und archaeologie*. Oxford: BAR International Series 200. 309–313.

Reece, R., 1973. Roman coinage in the Western Empire. *Britannia*, 4, 227–251.

Reece, R., 1979. Roman monetary impact. In B.C. Burnham & H.B. Johnson (eds.), *Invasion and response: The case of Roman Britain*. Oxford: BAR 73. 211–217.

Reece, R., 1991. *Roman coins from 140 sites in Britain*. Cirencester: Cotswold Studies.

Reece, R., 1995. Site-finds in Roman Britain. *Britannia*, 26, 179–206.

Reece, R., 2002. *The coinage of Roman Britain*. Stroud: Tempus.

Richter, D.K., 1993. Whose Indian history? *The William and Mary Quarterly*, 3rd Series, 50 (2), 379–393.

Richter, D.K., 2001. *Facing east from Indian country: A native history of early America*. Cambridge, Mass.: Harvard University Press.

Riha, E. and W.B. Stern. 1982. *Die Romischen loffel aus Augst und Kaiseraugst: Archaologische und metallanalytische untersuchungen*. Augst: Forschungen in Augst.

Robertson, A.S., 2000. *An inventory of Romano–British coin hoards*. London: Royal Numismatic Society.

Rostovtzeff, M.I., 1957. *The social and economic history of the Roman Empire*. Oxford: Clarendon Press.

Rountree, H.C., 1989. *The Powhatan Indians of Virginia: Their traditional culture*. The Civilization of the American Indian series, Vol. 193. Norman: University of Oklahoma Press.

Rountree, H.C., 1990. *Pocahontas's people: The Powhatan Indians of Virginia through four centuries*. The Civilization of the American Indian series, Vol. 196. Norman: University of Oklahoma Press.

Rountree, H.C. (ed.), 1993. *Powhatan foreign relations, 1500–1722*. Charlottesville: University Press of Virginia.

Rountree, H.C., 2005. *Pocahontas, Powhatan, Opechancanough: Three Indian lives changed by Jamestown*. Charlottesville: University of Virginia Press.

Rountree, H.C. and E.R. Turner III. 1994. On the fringe of the Southeast: The Powhatan paramount chiefdom in Virginia. In C.M. Hudson and C.C. Tesser (eds.), *The forgotten centuries: Indians and Europeans in the American South, 1521–1704*. Athens: University of Georgia Press. 355–372.

Rowlands, M.J., 1980. Kinship, alliance and exchange in the European Bronze Age. In J.C. Barrett and R. Bradley (eds.), *The British later Bronze Age*. Oxford: BAR 83. 15–56.

Roymans, N., 1990. *Tribal societies in Northern Gaul: An anthropological perspective*. Cingula 12. Amsterdam: Universiteit van Amsterdam, Albert Egges van Giffen Instituut voor Prae- en Protohistorie.

Roymans, N., 1996. The sword or the plough: Regional dynamics in the Romanisation of Belgic Gaul and the Rhineland area. In N. Roymans (ed.), *From the sword to the plough: Three studies on the earliest Romanisation of Northern Gaul.* Amsterdam Archaeological Studies 1. Amsterdam: Amsterdam University Press. 9–126.

Roymans, N., 2004. *Ethnic identity and imperial power: The Batavians in the early Roman Empire*. Amsterdam: Amsterdam University Press.

Roymans, N., 2009. Becoming Roman in the Rhineland frontier zone: The impact of ethnic recruitment and returning veterans on the Romanisation of rural populations. In O. Dräger (ed.), *Proceedings of the 13th International Congress of Celtic Studies*. Bonn: Beihefte Bonner Jahrbücher.

Roymans, N. and J. Aarts, 2005. Coins, soldiers and the Batavian Hercules cult: Coin deposition at the sanctuary of Empel in the lower Rhine region. In C. Haselgrove and D. Wigg-Wolf (eds.), *Iron Age coinage and ritual practices*. Studien zu Fundmünzen der Antike, Bd. 20. Mainz am Rhein: Von Zabern. 337–360.

Roymans, N. and J. Aarts. 2009. Coin use in a dynamic frontier region: Late Iron Age coinages in the Lower Rhine area. *Journal of Archaeology in the Low Countries*, 1, 5–26.

Rudd, C., E. Cottam, P. de Jersey and J. Sills. 2010. *Ancient British coins*. Norfolk: Chris Rudd.

Rudling, D. (ed.), 2008. *Ritual landscapes of Roman South-East Britain*. Oxford: Oxbow.

Sahlins, M.D., 1972. *Stone Age economics*. Chicago: Aldine-Atherton.

Said, E.W., 1978. *Orientalism*. New York: Pantheon Books.

Sainsbury, N. (ed.), 1890. *Transcripts of records in the British Public Records Office relating to South Carolina, 1663–1782*, 36 Volumes. Columbia, S.C.: South Carolina Department of Archives and History.

Salter, C.J., 1989. The scientific examination of the iron industry in Iron Age Britain. In J. Henderson (ed.), *Scientific analysis in archaeology and its interpretation*. OUCA Monograph No. 19. Oxford: Oxford University Committee for Archaeology, Institute of Archaeology. 250–273.

Salter, C.J. and R. Ehrenrich. 1984. Iron Age metallurgy in Central Southern England. In B. Cunliffe and D. Miles (eds.), *Aspects of the Iron Age in Central Southern Britain*. Oxford: Oxford University Committee for Archaeology Monograph 2. 146–161.

Salter, C.J. and P. Northover. 1992. Metalworking at Hengistbury Head, Dorset and the Durotrigan coinage: A reinterpretation of an Iron Age and Roman industrial site. In P.B. Vandiver, J.R. Druzik, G.S. Wheeler and I.C. Freestone (eds.), *Materials issues in art and archaeology III: symposium held 27 April – 1 May 1992, San Francisco*. Pittsburgh: Materials Research Society. 651–658.

Scarry, J.F. and M.D. Maxham. 2002. Elite actors in the protohistoric: Elite identities and interaction with Europeans in the Apalachee and Powhatan chiefdoms. In C.B. Wesson and M.A. Rees (eds.), *Between contacts and colonies: Archaeological perspectives on the protohistoric Southeast*. Tuscaloosa: University of Alabama Press. 142–69.

Ščasnár, V., V. Kliment, M. Červeňanský and L. Zachar. 1984. Zlomky dávkovacích platničiek na výrobu keltských mincí – nálezy zo Šaština – Stráží a Bratislavy. *Slovenská numizmatika*, 8, 121–145.

Scheers, S., 2000. Les moules à alveoles de Bavay, témoins d'un atelier monétaire? *Revue du Nord,* 82, 35–40.

Scheidel, W., 2005. From monetization to culture change. *Archaeological Dialogues,* 12, 35–37.

Schrüfer-Kolb, I., 2000. *Roman iron production in the East Midlands, England.* Unpublished PhD thesis: University of Leicester.

Score, V. (ed.), 2012. *Hoards, hounds and helmets: A conquest period ritual site at Hallaton, Leicestershire.* Leicester: Leicester Archaeological Monograph 21.

Scott, D.A., 2011. *Ancient metals: Microstructure and metallurgy, Vol. I*. Ware: Conservation Science Press.

Seaford, R., 2004. *Money and the early Greek mind: Homer, philosophy, tragedy*. Cambridge: Cambridge University Press.

Sellwood, D., 1963. Some experiments in Greek minting technique. *Numismatic Chronicle*, 7, 217–231.

Sellwood, L., 1984. Tribal boundaries viewed from the perspective of numismatic evidence. In B.W. Cunliffe and D. Miles (eds.), *Aspects of the Iron Age in Central Southern Britain*. Oxford: OUCA monograph 2. 191–204.

Shannon, T.J., 2008. *Iroquois diplomacy on the early American frontier*. New York: Viking.

Sharples, N., 1990. Late Iron Age society and continental trade in Dorset. In A. Duval, J.P. LeBihan and Y. Menez (eds.), *Les Gaulois d'Armorique : Le fin de l'age du fer en Europe tempérée. Actes du XIIe colloque de l'A.F.E.A.F.* Rennes: Association pour la diffusion des recherches archéologiques dans l'Ouest de la France, 299–304.

Sharples, N., 2003. From monuments to artefacts: Changing social relationships in the later Iron Age. In J. Downes and A. Ritchie (eds.) *Sea Change: Orkney and Northern Europe in the later Iron Age AD 300–800*. Balgavies: Pinkfoot Press. 151–165.

Sharples, N., 2010. *Social relations in later prehistory: Wessex in the first millennium BC*. Oxford: Oxford University Press.

Siebert, F. 1975. Resurrecting Virginia Algonquian from the dead: The reconstituted and historical phonology of Powhatan. In J. Crawford (ed.), *Studies in Southeastern Indian languages*. Athens: University of Georgia Press. 285–453.

Sills, J., 2005. Identifying Gallic war uniface staters. *Chris Rudd list*, 83, 2–6.

Simmons, B., 1979. The Lincolnshire Car Dyke: Navigation or drainage? *Britannia*, 10, 183–196.

Simmons, B., 1980. Iron Age and Roman coasts around the Wash. In F. H. Thompson (ed.), *Archaeology and coastal change*. London: Society of Antiquaries Occasional Paper 1, 56–73.

Smith, J., 1608. A true relation of such occurrences and accidents of noate as hath hapned in Virginia. Reprinted in P.L. Barbour (ed.), *The complete works of Captain John Smith (1580–1631)*, 3 Volumes. Chapel Hill: Published for the Institute of Early American History and Culture, Williamsburg, Va., by the University of North Carolina Press, 1986. Vol. I, 3–118.

Smith, J., 1612a. A map of Virginia. With a description of the countrey, the commodities, people, government and religion. Reprinted in P.L. Barbour (ed.), *The complete works of Captain John Smith (1580–1631)*, 3 Volumes. Chapel Hill: Published for the Institute of Early American History and Culture, Williamsburg, Va., by the University of North Carolina Press, 1986. Vol. I, 119–190.

Smith, J., 1612b. The proceedings of the English colonie in Virginia [1606–1612]. Reprinted in P.L. Barbour (ed.), *The complete works of Captain John Smith (1580–1631)*, 3 Volumes. Chapel Hill: Published for the Institute of Early American History and Culture, Williamsburg, Va., by the University of North Carolina Press, 1986. Vol. I, 191–290.

Smith, J., 1624. The generall historie of Virginia, New-England, and the Summer Isles. Reprinted in P.L. Barbour (ed.), *The complete works of Captain John Smith (1580–1631)*, 3 Volumes.

Chapel Hill: Published for the Institute of Early American History and Culture, Williamsburg, Va., by the University of North Carolina Press, 1986. Vol. II.

Snyder, G.S., 1999. Wampum: A material symbol of cultural value to the Iroquois peoples of Northeastern North America. In J.E. Robb (ed.), *Material symbols: Culture and economy in prehistory*. Carbondale: Center for Archaeological Investigations, Southern Illinois University. 362–381.

Snyderman, G., 1954. The Function of Wampum. *Proceedings of the American Philosophical Society*, 98, 469–494.

Speck, F.G., 1919. *The functions of wampum among the Eastern Algonkian*. Lancaster, Pa.: American Anthropological Association.

Spelman, H., 1609. A relation of Virginia. Reprinted in E.W. Haile (ed.), *Jamestown Narratives*. Champlain, VA: Roundhouse, 1998.

Spratling, M., 1972. *Southern British decorated bronzes of the late pre-Roman Iron Age*. Unpublished PhD thesis, University of London.

Stahl, A.M., 1991. American Indian peace medals of the colonial period. In J.M. Kleeburg (ed.), *Money of pre-federal America*. Proceedings of the Coinage of the Americas Conference No. 7. New York: American Numismatic Society. 159–180.

Star, S.L. and J.R. Griesemer. 1989. Institutional ecology, 'translations' and boundary objects: Amateurs and professionals in Berkeley's Museum of Vertebrate Zoology, 1907–39. *Social Studies of Science*, 19, 387–420.

Stead, I.M., 1976. *Excavations at Winterton Roman Villa and other Roman sites in North Lincolnshire, 1958–1967*. London: Her Majesty's Stationery Office.

Stead, I.M., J. Lang and C.R. Cartwright. 2006. *British Iron Age swords and scabbards*. London: British Museum.

Stead, I.M. and V. Rigby. 1989. *Verulamium: The King Harry Lane site*. London: English Heritage Archaeological Report No. 12.

Still, L., B. Vyner and R. Bewley. 1989. A decade of air survey in Cleveland and the Tees Valley and a strategy for air survey in County Durham. *Durham Archaeological Journal*, 5, 1–10.

Strachey, W., 1612a. *The historie of travell into Virginia Britania*. Reprinted in L.B. Wright and V. Freund (eds.), *The historie of travell into Virginia Britania*. London: The Hakluyt Society, I953.

Strachey, W., 1612b. *A Dictionary of Powhatan*. American language reprints, Vol. 8. Merchantville, N.J.: Arx Publishing (reprinted 2005).

Strathern, M., 2003. *Commons and borderlands: Working papers on interdisciplinarity, accountability and the flow of knowledge*. Oxon: Sean Kingston Publishing.

Strong, D.E., 1979. *Greek and Roman gold and silver plate (reprint)*. London: Taylor and Francis.

Taylor, J., 2006. The Roman period. In N.J. Cooper (ed.), *The archaeology of the East Midlands: An archaeological resource assessment and research agenda*. Leicester: University of Leicester, 137–160.

Temin, P., 2001. A market economy in the early Roman Empire. *Journal of Roman Studies*, 91, 169–181.

Thwaites, R.G. (ed.), 1896–1901. *The Jesuit relations and allied documents: Travels and explorations of the Jesuit missionaries in New France, 1610–1791*, 73 volumes. Cleveland, OH: Burrows Bros.

Todd, M., 1969. Margidunum excavations 1966–8. *Transactions of the Thoroton Society*, 73, 7–104.

Todd, M., 2003. The Iron Age material from Charterhouse on Mendip. *Proceedings of the Somerset Archaeology and Natural History Society*, 145, 53–55.

Tournaire, J., O. Buchsenschutz, J. Henderson and J. Collis. 1982. Iron Age coin moulds from France. *Proceedings of the Prehistoric Society*, 48, 417–435.

Turner, R., 1976. *An Archaeological and Ethnohistorical Study on the Evolution of Rank Societies in the Virginia Coastal Plain*. Unpublished PhD dissertation, Department of Anthropology, Pennsylvania State University, University Park.

Tylecote, R.F., 1962. The method of use of early Iron Age coin moulds. *Numismatic Chronicle*, 125, 101–109.

Van Arsdell, R.D., 1989. *Celtic coinage of Britain*. London: Spink.

Van Arsdell, R.D., 1993. Coin scales in late pre–Roman Iron Age Britain. *Oxford Journal of Archaeology*, 12, 361–365.

Van Arsdell, R.D. and P. Northover. 2004. Ancient British coins. In R. Havis and H. Brooks (eds.), *Excavations at Stansted Airport, 1986–1991, Vol. 1: Prehistoric and Romano–British*. East Anglian Archaeology Report 107, 115–120.

von Reden, S., 2003. *Exchange in ancient Greece*. London: Duckworth.

Wainwright, G. and M. Spratling. 1973. The Iron Age settlement of Gussage All Saints. *Antiquity,* 57, 109–130.

Waselkov, G.A., 2006. Indian maps of the colonial Southeast. In G.A. Waselkov, P.H. Wood and T. Hatley (eds.), *Powhatan's mantle: Indians in the colonial Southeast*. Lincoln: University of Nebraska Press. 435–502.

Wells, P.S., 1999. *The Barbarians speak: How the conquered peoples shaped Roman Europe.* Princeton, N.J.: Princeton University Press.

Wells, P.S., 2001. *Beyond Celts*, *Germans and Scythians: Archaeology and identity in Iron Age Europe*. London: Duckworth.

Wheeler, R.E.M. and T.V. Wheeler. 1936. *Verulamium: A Belgic and two Roman cities*. Reports of the Research Committee of the Society of Antiquaries, No. 11. Oxford: Printed by J. Johnson, for the Society of Antiquaries.

White, R., 1991. *The middle ground: Indians, empires, and republics in the Great Lakes region, 1650–1815*. Cambridge studies in North American Indian history. Cambridge: Cambridge University Press.

Whitehead, N.L., 1992. Tribes make states and states make tribes: Warfare and the creation of colonial tribes and states in Northeastern South America. In R.B. Ferguson and N.L. Whitehead (eds.), *War in the tribal zone: Expanding states and indigenous warfare*. Santa Fe, New Mexico: School of American Research Press. 127–150.

Whitwell, J.B., 1982. *The Coritani: Some aspects of the Iron Age tribe and the Roman Civitas*. Oxford: BAR 99.

Wigg, D.G., 1999. The development of a monetary economy in N. Gaul in the late La Tène and early Roman periods. In J.D. Creighton and R.J.A. Wilson (eds.), *Roman Germany: Studies in cultural interaction*. Journal of Roman Archaeology, supplementary series No. 32. Portsmouth, R.I.: Journal of Roman Archaeology, L.L.C., 99–124.

Williams, J.H.C., 2000. The silver coins from East Anglia attributed to King Prasutagus of the Iceni: A new reading of the obverse inscription. *Numismatic Chronicle*, 160, 276–281.

Willis, S., 1996. The Romanization of pottery assemblages in the east and northeast of England during the first century AD: A comparative analysis. *Britannia*, 27, 179–221.

Willis, S., 2002. Interim report on archaeological fieldwork north of Mount Pleasant House, Nettleton and Rothwell. *Lincolnshire History and Archaeology*, 37, 25–33.

Willis, S., 2006. The later Bronze Age and Iron Age. In N. Cooper (ed.), *The archaeology of the East Midlands: An archaeological resource assessment and research agenda*. Leicester: Leicester Archaeology Monograph 13. 89–136.

Willis, S. and D. Dungworth. 1999. *Excavation and fieldwork at Mount Pleasant, Nettleton, Lincolnshire, 1998*. University of Durham Department of Archaeology, Unpublished site report.

Woods, P.D., 1980. *French–Indian relations on the southern frontier, 1699–1762*. Ann Arbor, Mich.: UMI Research Press.

Woodward, A.B., 1997. Size and style: An alternative study of some Iron Age pottery in Southern England. In A. Gwilt and C. Haselgrove (eds.), *Reconstructing Iron Age societies*. Oxford: Oxbow Monograph 71. 26–35.

Woolf, G., 1998. *Becoming Roman: The origins of provincial civilization in Gaul*. Cambridge: Cambridge University Press.