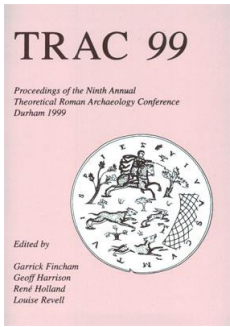

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The application of GIS to the study of settlement patterns: Silchester, a case study

by Devon Tully

Introduction

Over the last twenty years there has been a move away from site-centred archaeology to off-site archaeology and a wider regional approach, in order to understand the changing Late Iron Age and Roman landscape. Site-centred archaeology has been a rich source of information on the Late Iron Age and Roman period in southern Britain, but offers limited evidence for the elucidation of the social and economic structure. Off-site archaeology provides information on the local context and function of the site, and a regional approach can attempt to place all the components within their contemporary landscape. This allows for a greater understanding of the interrelationships of sites, as well as their socio-economic organization. All levels of the settlement pattern from the individual site to the local region and broader landscape should be considered.

Much research has, however, been hampered by a concentration on certain site-types, such as towns, villas and *oppida*, which have largely been viewed in isolation. All of these site-types are components of the settlement pattern of Iron Age and Roman Britain and cannot be fully understood on their own. A number of regional studies, also examine the Iron Age and Roman periods in isolation, with sometimes little regard to the chronological developments occurring within each broad time span. Other works involve a piecemeal examination of sites and general trends, rather than an assessment of the interrelationships of sites.

This paper will examine the settlement changes occurring in Britain from the Late Iron Age to the Middle Roman period, that is 100 BC to AD 200. In particular, it will look at the changing settlement pattern within a 30 km radius of Silchester and the relationships between Silchester and its hinterland. The approach taken will be to examine the settlement pattern in a very descriptive and subjective way, followed by a more objective approach using a Geographical Information System (GIS) as an analysis tool.

Methodology

In order to understand the changing settlement pattern and the relationship between so-called *foci* and other settlements, the study region was centred on a *civitas* capital. Silchester was chosen because of the extensive excavation of the site and as its hinterland offered a variety of environments. The area studied (2827.8 km^2) includes a large number of excavated sites, at least one small town and the regions examined in the surveys of the Middle Thames and Kennet (Gates 1975; Lobb & Rose 1996), but excludes further *civitas* capitals. The data for this study were derived from published excavation reports and surveys recording sites dating roughly to the Late Iron Age and Early to Mid-Roman period. Information was also obtained from Hampshire County Council and BABTIE.[1]

The data for the sites of the Late Iron Age and Roman period (e.g location, site-type, morphology, pottery types, coin evidence and so on) were then recorded in a relational database, so that it could be queried for patterns and be reproduced in tabulated form. The data were examined descriptively and subjectively before being incorporated into a GIS: "a computer-based information system that enables the capture, retrieval, analysis and presentation of geographically reference data" (Worboys 1995: 1), especially of settlements in their environmental context. GIS are being incorporated into research methodologies more and more each year, but have been criticised for environmental determinism, a functionalist approach, empiricism and reducing the real world to simplistic variables (Gillings 1997). Yet environmental factors are important, and analysis must be reduced to a limited number of variables in order to elucidate the factors affecting the settlement pattern. Social and cultural factors are also increasingly prevalent in GIS (Gillings 1997).

A GIS was set up using ARCVIEW and containing the following themes: geology, rivers, Late Iron Age sites, Roman Roads and Early to Mid-Roman sites. The attributes attached to the sites within the database were brought into the GIS and this system could be queried to search for patterns and models.

The potential of the database and the GIS itself are, however, limited by the nature of the available evidence. Significant limitations include the difficulty of not only obtaining dating evidence, but of identifying continuity, distinguishing between immediate pre and post conquest finds, and so on. The extent of excavation and the information provided in the archaeological reports also varies greatly. Furthermore, there is bias in the archaeological research of the region, with a concentration on the river gravels of the Thames and Kennet, and on the Hampshire chalk. A small proportion of these sites have been excavated and of those many were rescue excavations.

The Late Iron Age

The subjective analysis of this region begins with Silchester itself, which lies around 90 m above sea level, on the eastern end of a spur of plateau gravel (SU 640 623) (Boon 1974: 36; Fulford 1987: 271). The earliest structural remains from Silchester (round houses, a well and rubbish pits) date from the mid-first century BC. At this time Silchester is thought to have been densely occupied, extending over 32 ha. In the later first century BC, the settlement became more organized, as evidenced by rectangular building plots aligned along two roads, which intersect at right angles (Fulford 1987: 272-7). Finds associated with this Late Iron Age occupation included bronze and iron brooches, imported pottery, baked clay coin moulds and other evidence of metalworking (Fulford 1987: 275).

There is, therefore, no doubt that during the Late Iron Age from the mid-first century BC, Silchester was the site of a very large, expanding, organized, wealthy, and prosperous settlement. Numerous domestic residences must have existed here, as well as workshops. Silchester is traditionally interpreted as an *oppidum* of the Atrebates and may have begun as an élite residence, with other élite settlements located in the countryside. Then gradually, with the increasing importance of the tribe and consolidation under one ruler, Silchester may have taken on the role of tribal centre (Millett 1990: 20-21, 25-28).

Yet the soil in the immediate vicinity of Silchester is of poor quality for agriculture and is subject to seasonal flooding, owing to the underlying heavy clays. The land is more suited to pasture (Anon. 1983; Mackney et al 1983). This is supported by pollen analysis, which tells us that the landscape was very open and that there was much pasture around the amphitheatre in the Pre-Roman and Roman period (Scheepen 1989: 159). Certainly the region had been

sparsely populated in the earlier Iron Age (Lambrick 1992: 80, 83), a situation which was perhaps owing to the poor quality of the land. This supports the suggestion that Silchester was the *oppidum* established by *Commius* and his followers when they fled to Britain around 50 BC (Cunliffe 1984: 36; Fulford 1987: 277).

Despite the shortcomings of Silchester's location, the occupants of Late Iron Age Silchester must have exploited the immediate landscape. On the above evidence and the limited amount of pottery found outside the Inner Earthwork (Corney 1984: 249-253), there is little indication of manuring and cultivation at this time. Thus, the main landuse was probably grazing. It is likely, however, that cultivation did take place on the well-drained gravel soils to the north and north-west, as well as on the fertile sloping soils south of Silchester (Boon 1974: 243). But it is not necessarily the case that all or even most of the inhabitants of Late Iron Age Silchester were engaged in farming practices. Industry may have been more important than previously acknowledged (Fulford 1982: 406-408).

Those excavated sites within 30 km of Silchester provide much information and have led to the recognition of certain trends in the region. At the beginning of the first century BC there were a number of changes occurring in the landscape. Not only were a number of previously abandoned sites reoccupied, but there was a move away from those sites occupied in the Middle Iron Age (Lambrick 1992: 83). It was at this time that, a number of hillforts were abandoned, and *oppida* began to appear in the landscape. An intensification of arable and pastoral regimes also occurred (Fulford 1992; Lambrick 1992), and there was a general move to valley-side sites. In fact, survey data suggest there was an increased use of the river gravels of the Middle Thames and Kennet, and of the floodplain of the Kennet Valley (Ford 1987: 78; Lambrick 1992: 86, 99; Lobb & Rose 1996: 84). This points to a very organized landscape and parallels the increasingly organized arrangement at Silchester. In contrast, the Hampshire and Berkshire chalk may have been more sparsely settled than the gravels, especially the Berkshire Downs (Richards 1978: 47).[2] This may be similar to the model propose by Hingley (1984, 1988) for the Upper Thames Valley, with dense largely unenclosed settlements in the Clay Vale and sparse predominantly enclosed settlements in the Cotswold uplands.

Most of the Late Iron Age excavated settlements within 30 km of Silchester (of which there are few), appear to have been farmsteads, with evidence of agriculture, animal husbandry and other domestic activities. Many of these settlements are situated around 100 m above sea level, lie within enclosures (30-50 m long) and are surrounded by field systems and droveways. Such settlements have been considered typical of Hampshire (Cunliffe 1984: 34). A preference has also been noted for the light soils and the south facing slopes of the chalk (Richards 1978: 38). Cattle and sheep appear to have been of the utmost importance and pollen analysis from many sites points to much open grassland (e.g. Oakbridge and Pingewood).

Other types of settlements, especially nucleated ones, are much harder to identify in this region, owing to the limited extent of many excavations, the piecemeal recognition of sites and the difficulty of recognizing unenclosed settlements. It is also difficult to suggest the proximity of enclosures making up a village or hamlet. The supposed complex at Blagdon Copse contains enclosures linked by trackways, yet the structures are located over 250 m apart (Corney 1989: 112-116). It is more likely to be a wealthy estate. Its high status is shown by the numerous coins and imports found associated with this complex. No Late Iron Age villages or hamlets have, thus far, been identified in this region, as is the case in the Upper Thames Valley (Miles 1989: 65), although the concentration of finds around Newbury and Reading may suggest some sort of nucleated settlement. Villages have been identified outside this region, however, and it

has been suggested that they may be more prolific than they appear at present (Dark & Dark 1997: 54).

It should also be noted that although industrial activity was being undertaken within the region, only very small-scale industry, such as ironworking and domestic pottery kilns, can be identified. The site or vicinity in which Silchester ware (originating towards the end of the Late Iron Age) was made has not been identified. All that can be said is that it must have been manufactured near Silchester (Charles 1979; Fulford 1982: 411).

There is general agreement that during the Late Iron Age a prestige goods economy operated (Millett 1990: 38). In such an economy, wealth and status is assumed to be indicated by goods, such as imported pottery and wine *amphorae*. When one looks at the sites individually, it can be seen that not all sites located in close proximity to Silchester appear to have been wealthy or of high status. Sites such as Oakbridge, around 9 km from Silchester, revealed evidence of an expanding settlement, although not necessarily a wealthy one. At Blagdon Copse, around 29 km away, there was a large and prosperous estate, with many signs of wealth.[3] The lack of wealth close by may suggest that Silchester drained the resources of the nearby farmsteads (perhaps occupied by the dependants of the social élite at Silchester), and so prevented them from becoming very wealthy. Those sites located further from Silchester may have had a better chance of obtaining wealth and may have been settlements of the aristocracy. If the élites originally resident at Silchester controlled a large area close to the town, perhaps other élites could only control land further afield. It is also possible that the distribution of wealth was affected by sub-tribal divisions or the pull of other *foci* such as Winchester to the south-west and Dyke Hills, Dorchester-on-Thames, to the north.

Other than points such as these, little else can be said of the settlement pattern on a purely descriptive level, unless one starts quoting the number of sites which show continuous occupation from the Late Iron Age to the Roman period, the dates of occupation, the sizes of enclosures and the like. It would seem more profitable, therefore, to examine site location using a GIS.

Within the GIS, when the distribution of those sites exhibiting evidence of Late Iron Age occupation (thirty-seven) was considered, the sites initially appeared to concentrate along the river valleys (fig. 1), a pattern seemingly supported by earlier survey work (Ford 1987; Lobb & Rose 1996). Yet, when a query was run on the data, it was discovered that only thirteen sites lay within 500 m of a river, although twenty-five were situated within 1 km of a river. This distribution is accounted for by the fact that only the more extensive river gravels were occupied. It would certainly be a valuable exercise to examine the proximity of sites to rivers and their location in the valleys, using a Digital Elevation Model (DEM), which could examine the relation between elevation and settlements.

It is also revealed that, with regard to geology (Fig. 2), the Late Iron Age sites concentrated on the Upper Chalk, where fifteen of the sites were located, while nine others lay on London Clay and five on the Reading Beds. Few sites were located on any other geological type. Although the chalk is more extensive than other types of geology, survey work supports this as an accurate distribution (Lobb & Rose 1996: 18).

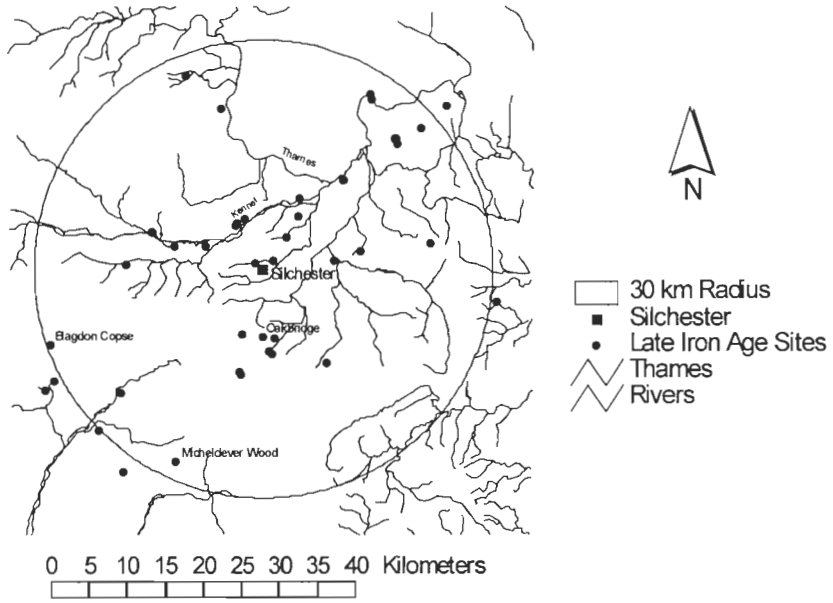

Figure 1 Late Iron Age sites and their relationships to rivers *(Reproduced from Ordnance Survey maps with the permission of The Controller of Her Majesty's Stationary Office, ©Crown Copyright NC/99/205).*

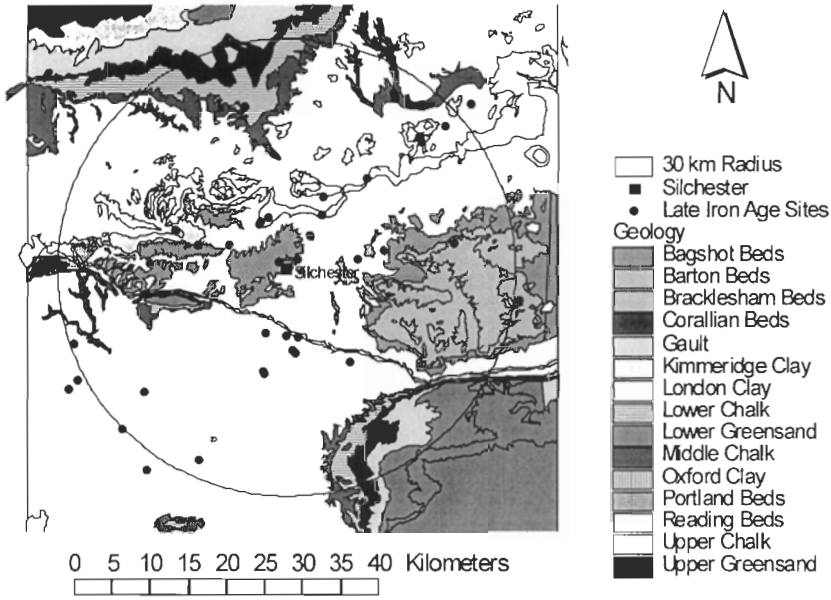

Figure 2 Late Iron Age sites and their relationships to geology *(1:250,000 Solid Geology, Licence 2000/03, British Geological Survey. © NERC. All rights reserved).*

The GIS was also queried on the proximity of Late Iron Age sites to Silchester and it revealed that there were two sites within 5 km, three within 6 km and fourteen within 10 km of Silchester. A field which calculated the distribution of each site from Silchester was then created (using the field calculator), revealing a mean distance of sites from Silchester of approximately 17 km. This supports the suggestion that the inhabitants of Silchester directly exploited a large area. Otherwise the mean distance of sites may have been smaller.

As mentioned above, the sites lying closest to Silchester exhibited little evidence of wealth, despite their proximity to a settlement which some may consider a market centre (Lobb and Rose 1996: 85). Some light is shed on Silchester's role when the distribution of the earliest Silchester ware and imported pottery from the Late Iron Age sites is examined. While Silchester ware (fig. 3) does appear to concentrate around Silchester, it is not found at all sites lying close to the town. Few of the thirty-seven sites actually yielded evidence of early Silchester ware. Those sites that produced imported pottery (Fig. 3), though, again, few in number (nine), tended to be located further afield. This is indicative of different methods of distribution, with Silchester ware perhaps being marketed from the settlement itself and the imported pottery being distributed along social lines. Furthermore, when the distribution of the Late Iron Age coinage of the region is examined, it appears that Silchester is not the only site exhibiting a concentration of coins (Fig. 4).[4] The larger concentrations represent hoards and are unlikely to indicate settlement sites. Yet even with these sites removed from the equation, the number of coins found at Silchester by no means greatly exceeds that at other sites. Coinage is, in fact, found dispersed throughout the whole region. It does not concentrate in and around Silchester. All of this argues against the idea of a market economy, with Silchester acting as a market centre. Rather, it supports Hodder's (1979) suggestion of an embedded economy.

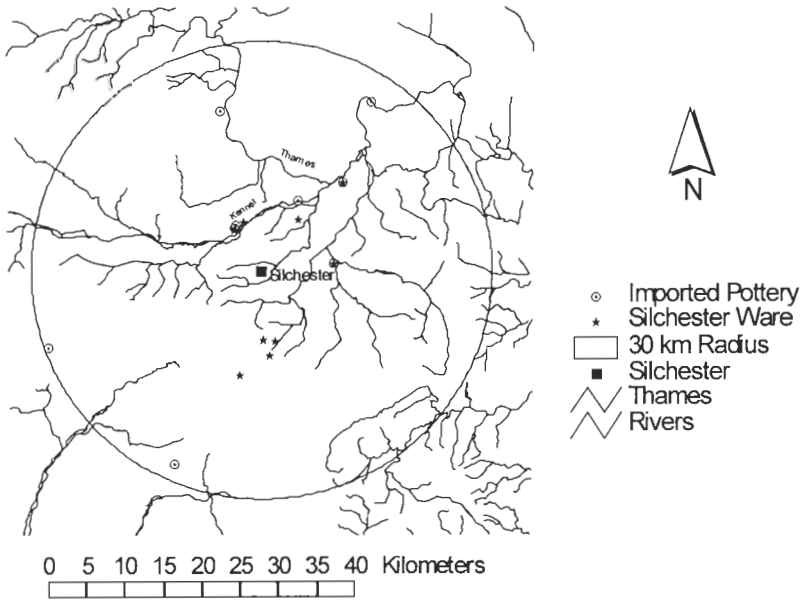

Figure 3 Late Iron Age sites at which Silchester ware and imported pottery were found (Reproduced from Ordnance Survey maps with the permission of The Controller of Her Majesty's Stationary Office, ©Crown Copyright NC/99/205).

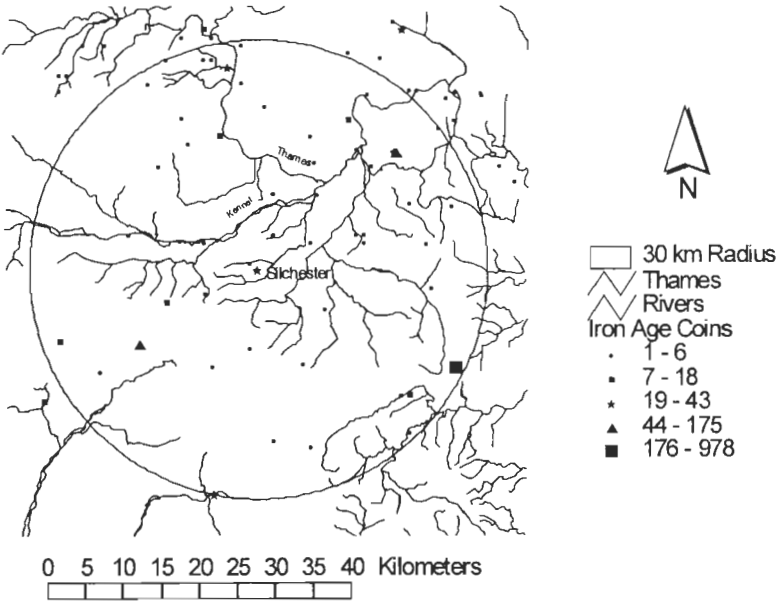

Figure 4 Distribution of Late Iron Age coinage *(Reproduced from Ordnance Survey maps with the permission of The Controller of Her Majesty's Stationary Office, ©Crown Copyright NC/99/205).*

The extent of analysis that could be undertaken here is limited by the themes within the GIS and the nature of the evidence. Nevertheless, the use of a GIS, placing the sites spatially within the landscape, can be seen to extend the assessment of such sites beyond the mere description of their attributes and a static distribution map.

The Early to Mid-Roman Period

The data for the Roman period were analysed in a similar way to those for the Late Iron Age, again beginning with a look at Silchester itself. The Late Iron Age occupation underneath the basilica continued into the pre-Flavian era, when two buildings or two wings of a courtyard house were constructed, possibly for administrative purposes (Fulford 1985: 56-57). A number of other structures were also dated to this early period, such as the bath house in *insula* XXXIII, the temples in *insula* XXX (possibly on sites sacred in the Late Iron Age) and XXXV, buildings in *insula* XXIII and IX, and the amphitheatre (Boon 1974: 46-47, 153,155).

During the Flavian period a new street grid was constructed and the timber forum-basilica was built. It was also from the Flavian period on that the settlement greatly expanded, as indicated by the occupation and finds outside the eastern gate of the later Roman wall, and by the excavations at Manor Farm (Corney 1984: 257, 288; Fulford 1984: 37-40).

The timber forum-basilica was then replaced in stone in the second century (Fulford 1985: 56-58). In fact, most of the excavated structures within the Roman town were masonry buildings and probably date no earlier than the second century AD (Bates 1983: 134). These buildings form a distinct pattern, with each square *insula* containing a couple of major structures and much open ground; this has been interpreted as evidence of the agricultural basis of the settlement (Boon 1974: 53). It was also during the second century that a number of mosaics, hypocausts and courtyard houses appeared, indicative of the greater investment of

wealth in the town and of the prosperity of the inhabitants (Bates 1983). A number of shops have also been recognized and there is much evidence of industry, such as tanning and metalworking (Boon 1974: 53-54, 267-295). Silchester was, therefore, a large, expanding, increasingly organized and prosperous nucleated settlement, which was progressively invested with visible wealth in the Early to Mid-Roman period. These developments at Silchester can be accounted for by the new role of the settlement as an administrative centre, from which taxes were collected. The *civitas* capital was still administered by the native élite, who now displayed and maintained their status and power through the administrative system and access to Roman goods and styles (Millett 1990: 68).

Despite the changes occurring at Silchester, the hinterland of the Roman period was probably used in much the same way as it had been in the Late Iron Age. Such use was determined by soil types and geology. Yet, the expanding nature of the settlement probably indicates the exploitation of a hinterland larger than that of the earlier period. Farming pursuits may not have been the only focus of the occupants, however, since those Early to Mid-Roman sites located closest to Silchester appear to have been largely industrial sites, as suggested by kiln evidence (Corney 1984: 246, 283).

A range of site-types similar to that in the Late Iron Age existed during the Early to Mid-Roman period, and a few new site types appeared, such as villas and small towns. The same distribution of sites existed, although there was a greater number of them (forty-nine). There was certainly a fair degree of continuity from the Late Iron Age and into the Roman period, even if not all Roman sites revealed evidence of Late Iron Age occupation. The river gravels were still densely settled, although there was a move towards heavier soils and increasing use of the floodplain in the Kennet, perhaps owing to an increasing population (Lobb & Rose 1996: 86, 88; Fulford 1992). The distribution of Silchester ware and imports found at these sites, while found at a greater number of settlements, is similar to that of the preceding period, supporting the idea of the continuation of an embedded economy (Millett & Graham 1986: fig. 103).

Much of the continuity can be accounted for by the fact that many of the changes that began in the Late Iron Age continued into the Roman period. Furthermore, if the area around Silchester was within the region ruled by Cogidubnus in the post-conquest period and then administered through the native elite, there was little reason for disruption. It has also been argued that the taxes imposed (a form of which would have existed in the Late Iron Age) would not have been excessive (Millett 1990: 66-67, 73-74) and that the army would not have been a large burden on the native farmers, as they were not in southern Britain for long (Millett 1990: 59, 77-78).

Yet it does appear that those sites which were first occupied in the Early and Middle Iron Age were the ones that were abandoned during the first and second century AD, while those originating in the Late Iron Age/Conquest period display much more continuity of occupation (Fulford 1992: 27).[5] It is probable that many people were attracted to Silchester by trade, luxury items and opportunities offered there and this may account for some discontinuity, but it could merely be a reflection of the high mobility of settlements (Fulford 1992; Lambrick 1992).

It was, in fact, during the Early to Mid-Roman period that villas first appeared, their owners preferring the Upper Chalk and Reading Beds to the London Clay and River Valleys (Ford 1987: 93). Most of these only appeared in the landscape when masonry buildings began at Silchester, although some did develop earlier. The preference for villas on the chalk parallels the preference for villas in the Cotswold Uplands noted by Hingley (1984; 1988). It is perhaps suggestive of large élite estates on the chalk from an early date, with the smaller farmsteads

perhaps indicative of estate workers or dependants. The later adoption of the Romano-British style of villa is merely part of the new means of displaying wealth and status. The lack of villas on the gravels may simply result from limited holdings from which to derive wealth or a lack of stone on the gravels (Fulford 1992: 37; Hingley 1988: 91; Miles 1989: 65).

Other sites also began at this time, for example small towns and industrial sites. It was in the first century AD that a number of small scale industrial sites appeared, largely lying close to Silchester, as well as in the Farnham district.[6] The Farnham potteries must have been situated to exploit the clay of the Lower Greensand and Gault in the south-east, as well as the Reading Beds (Lyne & Jefferies 1979: 11-12). The potteries are connected to the development of one centre: the small town at Neatham originated at this time, probably around AD 70, beginning as a small nucleated settlement, probably acting as a market for the nearby potteries (Millett & Graham 1986: 157). No other small towns have been positively identified in this region, although the Antonine Itinerary does mention a site called *Spinis*, possibly modern day Speen (Lobb & Rose 1996: 86-88). There may also be nucleated sites indicated by concentrations of finds, for example around Reading and Newbury, and it should be noted that the Roman small town at Dorchester-on-Thames lies just to the north of the region. Elsewhere in the study zone the impetus for the development of small towns (e.g. from industry) may have been lacking.

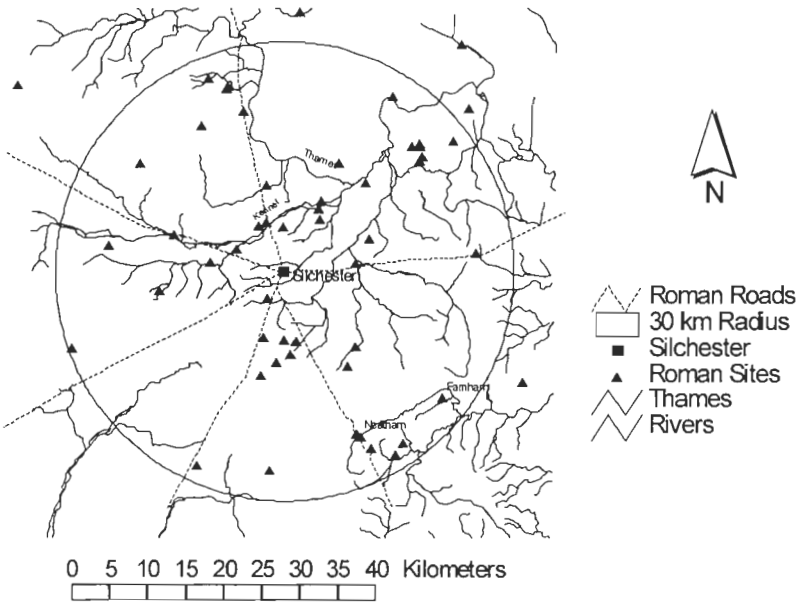

Figure 5 Early to Mid-Roman sites and their relationships to rivers and Roman roads (Reproduced from Ordnance Survey maps with the permission of The Controller of Her Majesty's Stationary Office, ©Crown Copyright NC/99/205).

Such is the general extent of information to be gained from the distribution of sites from a subjective type of analysis. Yet, as with the Late Iron Age data, this analysis can be extended using the GIS already described, placing the sites in their correct geographical context. Again there appears to have been a large area of hinterland exploited directly by the inhabitants of Silchester (Fig. 5). Only two settlements were located within 7 km of Silchester and twelve within 10 km. Furthermore, a field which was created to calculate the distance of each site from Silchester, indicated that the mean distance of sites was 24 km. This supports the suggestion

that the people of Silchester exploited a larger hinterland than in the preceding period, possibly because of an increasing population. Other people living in the countryside may have moved to Silchester itself or to estates as workers.[7]

With regard to proximity to rivers (Fig. 5), there was a similar distribution to that of the Late Iron Age. Seventeen sites were located within 500 m and thirty-one within 1 km. There was also a similar distribution with regard to geology. As in the Late Iron Age there was a preference to locate the Early Roman sites on the Upper Chalk, London Clay and Reading Beds, but there was also an increased use of other classes of geology, such as the Lower Greensand. This is indicative of the expansion of settlements and the greater use of clays for industrial activity.

The relation between major Roman roads and settlements was also assessed, revealing that only seven sites were located within 500 m of a Roman road. This is to be expected, since the roads were constructed for military purposes and communication between towns, forts, *mansiones* etc. (Dark & Dark 1997: 49-50), rather than for farmsteads and villages.

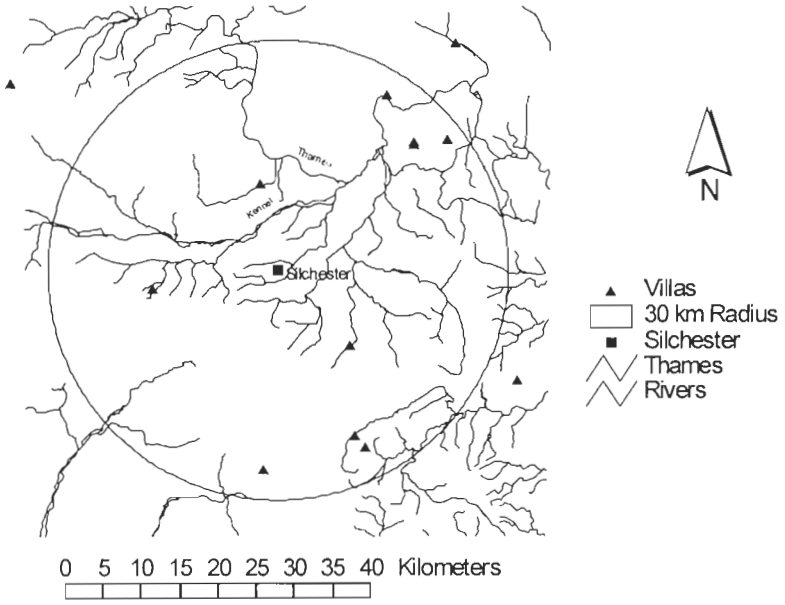

Figure 6 Early to Mid-Roman sites distinguished as villas (Reproduced from Ordnance Survey maps with the permission of The Controller of Her Majesty's Stationary Office, ©Crown Copyright NC/99/205).

By querying the attribute-data, the GIS was also able to reveal trends of site-types and changes over time. For example, the villas appear to have been located a fair distance from Silchester, predominantly on the Upper Chalk, out of range of Silchester's immediate hinterland (Fig. 6). There was perhaps better land and more of it further from Silchester or perhaps this was where the élite residences were located from the Late Iron Age on. With regard to chronology, when selecting those sites which do not appear to have been occupied until the second century AD (Fig. 7), it became apparent that they, too, were situated some distance from Silchester. This may have been a result of the towns expansion. Those sites,

however, with occupation continuing into the fourth century AD were located closer to Silchester (Fig. 8).

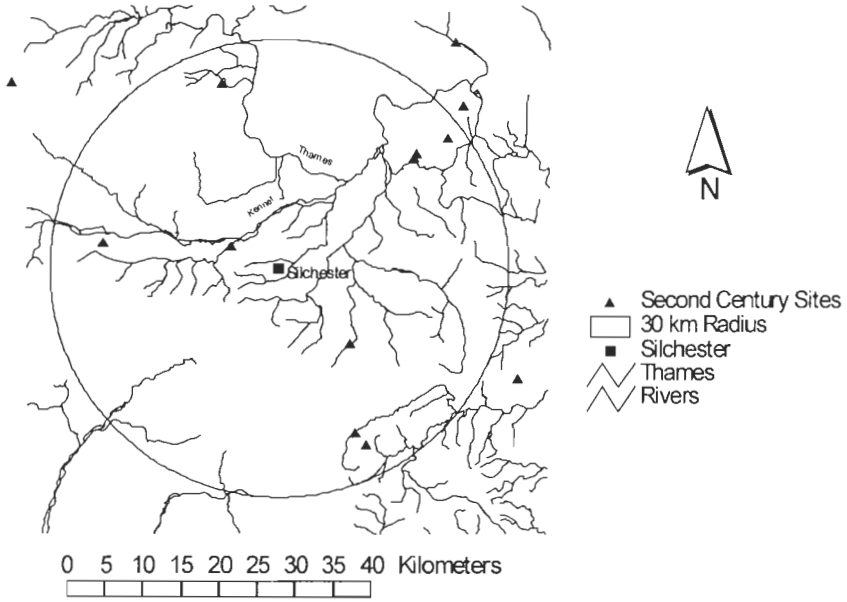

Figure 7 Early to Mid-Roman sites not occupied until the second century AD (Reproduced from Ordnance Survey maps with the permission of The Controller of Her Majesty's Stationary Office, ©Crown Copyright NC/99/205).

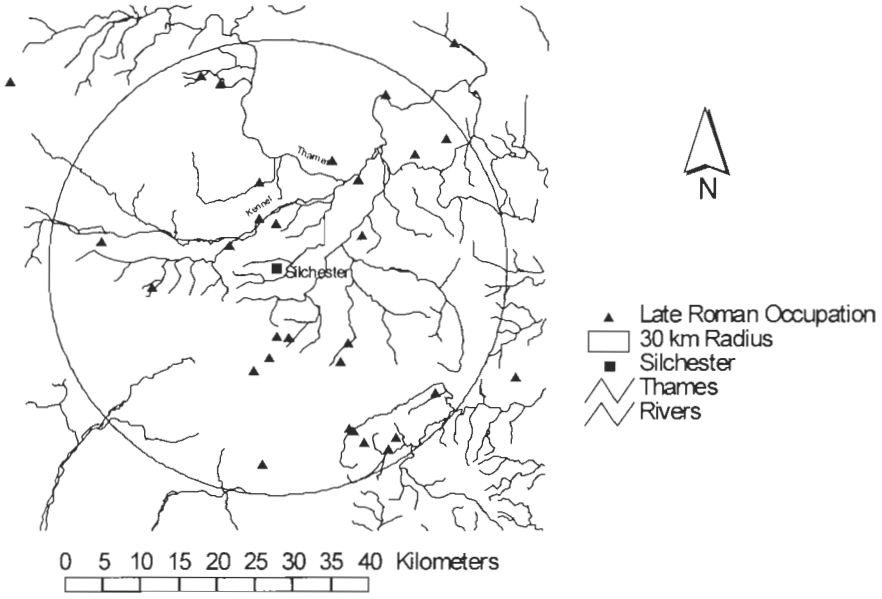

Figure 8 Early to Mid-Roman sites with occupation continuing into the Late Roman period (Reproduced from Ordnance Survey maps with the permission of The Controller of Her Majesty's Stationary Office, ©Crown Copyright NC/99/205).

Conclusion

There were many changes occurring from the Late Iron Age to the Roman period, involving a constant restructuring and increasing organization of the landscape. The major impact of the Roman conquest was perhaps the availability of a new means of displaying and maintaining power through the conspicuous consumption of Roman imports, the use of Roman architectural styles and involvement in Roman administration. This led to the creation of villas and the development of *Calleva*, which acted as an administrative centre. It seems that, as in the Upper Thames region, the river valleys with large gravel terraces supported a dense concentration of sites, although not necessarily exploiting resources in common (Hingley 1984; 1988; Lobb & Rose 1996: 89).[8]

The villas appear to concentrate in the region of the chalk, which was where most of the earlier hillforts lay; and this may indicate a move of the élite in the Late Iron Age from hillfort sites to valley-ward locations on the chalk, where they had large land holdings. There may even have been a continuing relationship between the villa estates, small farmsteads and valley-side sites from the Late Iron Age on.

Few nucleated settlements have been found and, although some may wait discovery, it is possible that they did not develop as the region lacked a market economy. Silchester itself, while an important centre and containing a reasonably large population, did not attract settlements to its hinterland, although it appears to have controlled a large area well into the second century.

Much can be learnt from an approach such as the one demonstrated above. In this case it has provided an insight into the settlement pattern within 30 km of Silchester. A descriptive look at the settlement data can provide much important information and is a good basis from which to begin analysis, allowing for a detailed examination of individual sites and their importance. Yet a descriptive approach on its own is limiting. With the aid of a GIS, the analysis can be taken further and the sites placed in their correct spatial context. A GIS, therefore, provides an objective look at the evidence and has the potential to allow for extensive analysis and modelling beyond the scope of this paper.

University of Queensland

[1] Sites of suspected Late Iron Age or Early Roman date, known solely from aerial photography, will be included in future analysis.

[2] Although there are concentrations of cropmarks in some regions, such as Micheldever, which may suggest dense settlement.

[3] This site is located closer to Winchester (around 24 km).

[4] The data for coinage are derived from Allen 1961; Haselgrove 1978; 1984; 1989.

[5] Fulford (1992: 27) suggests that few sites began their occupation in the Roman period in the Upper Thames Valley.

[6] The Alice Holt kilns lie outside this region.

[7] Fulford (1992: 32) argues for a decline in settlement on the gravels during the Roman period.

[8] Sites similar to Barton Court Farm and Claydon Pike on the gravels of the Upper Thames Valley, have not yet been excavated in the Middle Thames Valley.

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