CHAPTER 3

INTRODUCTION TO THE WROXETER HINTERLAND PROJECT

This chapter consists of two previously published articles which, together, provide the backdrop against which the case studies on land use / land cover bias (chapter 14) and visibility and friction (chapter 16) should be read.

The first article, ‘Extending GIS Methods for Regional Archaeology: the Wroxeter Hinterland Project’, co-written with Vincent Gaffney, was originally presented to the 1995 Meeting of CAA (in Leiden, The Netherlands), and was published the following year in its proceedings (Kamermans and Fennema 1996). The article introduces the project itself, its main research goal of explaining the anomalous existence of Wroxeter itself through a study of both the town and its hinterland, the models for urbanisation and Romanisation that were to be tested with the project data, and especially to detail the geographical approaches that were to be developed and applied for this study.

The second article, ‘Aspects of Romanization in the Wroxeter Hinterland’, co-written with Roger White, was originally presented at the 6th annual Theoretical Roman Archaeology Conference (TRAC, Sheffield 1996) and appeared in its proceedings the following year (Meadows et al. 1997). It provides a preliminary analysis of the evidence and arguments explaining the paradoxical existence of a large and thriving Romano-British town in the middle of a rural landscape almost devoid of any evidence for indigenous wealth, centralisation, or significant acculturation to Roman lifeways. Wroxeter is the only large Roman town in Britain which does not appear to have a substantially Romanised hinterland. Previous hypothetical explanations for this phenomenon have included a hostile stance of the local population, an over-ambitious civilian foundation of Wroxeter, and/or its economic underdevelopment. The second idea could be laid to rest given the results from the aerial photographic and geophysical study of the town itself (Van Leusen 1999b, Gaffney & Gaffney 2000); we argue here that the first and third idea can now be discounted as well because the archaeologically attested success of the town implies that the hinterland must have been wealthy. We conclude that the paradox is mainly due to the near invisibility of the forms of wealth which the native Cornovians would have commanded and to the lack of a systematic study of late pre-Roman Iron Age and Roman patterns of settlement and land use in the Wroxeter hinterland.

The congruence in both the core processes being studied (centralisation, urbanisation, and Romanisation), the general theoretical stance (landscape archaeology), and the emphasis on the use of methods of geographical analysis, suggests that a comparison of the results of the WHP and RPC projects may be fruitful.

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Extending GIS Methods for Regional Archaeology: the Wroxeter Hinterland Project

1 Background
In September 1994 a 3 year research project to study the Roman town of Wroxeter and its hinterland was started at the University of Birmingham Field Archaeology Unit (BUFAU). The project is funded jointly by the University and the Leverhulme Trust, and aims to take forward many aspects of regional archaeological research in Britain, including the application of GIS and remote sensing in both the design and analytical stages, the close involvement of the local community, and the study of urban-rural relations. This paper, the first in a series that will describe the progress of the Wroxeter Hinterland Project, sets out our intentions and preliminary results, concentrating on innovative uses of GIS.

1.1 The Research Area
Wroxeter, located between the modern towns of Shrewsbury and Telford (county Shropshire: see fig. 1), was the Roman Civitas capital (named Viroconium Cornoviorum) of the Cornovii, an Iron Age tribe that is thought to have lacked a centralised structure before the arrival of the Romans in the mid-first century AD (fig. 2). Yet, at 64 hectares, Wroxeter has the fourth largest walled area in Britain and preliminary geophysics results have already shown it to be much more densely settled than was thought previously. How could such a large and, given the splendour of its public buildings, rich town develop and prosper in a region that was both economically and politically peripheral? What was its economic and social basis? These are questions that can only be answered by a study of the towns' hinterland, the area that must have contained some of the pre-Roman tribal elite, and must have formed the main economic basis for day-to-day life in the town. This hinterland must have extended at least as far as the nearest major natural boundaries and the next nearest minor towns - an area of some 30 by 40 km.

1.2 The Archaeological Evidence
A compilation of existing archaeological records has resulted in a database of some 1600 pre-Norman Conquest (AD 1066) 'sites', the bulk of which belongs to the Iron Age and Roman periods. Very little targeted surface archaeological research has been done in the area, the records consisting mainly of reports of chance finds and of crop or soil marks discovered by aerial archaeology (Whimster 1989). Site distributions may be heavily influenced by differential preservation and visibility effects, and reporter bias.

2 Use of GIS in the Project
The Wroxeter Hinterland Project is designed to study the settlement history and the various processes of Romanisation in the study area from the Later Pre-Roman Iron Age down to the sub-Roman period. The design incorporates GIS at a number of levels:
- as a data management tool, to hold data sets originating at multiple sources (from County records to satellite imagery) as a georeferenced map 'stack';
- as an image processing and mapping tool, to process and interpret non-invasive prospecting data ranging from surface geophysical surveys to airborne remote sensing;
- as a modelling tool for describing both the archaeological landscapes in the study area and our imperfect knowledge of those landscapes;
- as a spatial analysis tool, to study the contributions made to archaeological knowledge by a variety of non-invasive prospecting methods.

2.1 Data Management
To keep on top of the data collected and generated by the project, GIS is used to collect, hold, and analyse all available archaeological records, vertical and oblique aerial coverages, a variety of geophysical and remote sensing data sets, and a number of maps representing environmental variables. This use of GIS is non-controversial and is now beginning to be accepted as the standard for regional archaeological research.

2.2 Image Processing
The WHP will have remotely sensed data covering the whole (Landsat TM) or part (airborne TM and CASI) of the study area, vertical and oblique air photographic data covering large parts of the study area, and surface
Figure 1. Location of the Wroxeter Hinterland Project research area.

Figure 2. Map showing approximate pre-Roman tribal territories in Britain (after Millett 1990: fig. 16).
geophysics data covering sample areas. Whereas the data for the hinterland will be used as a control on existing records, special high resolution imagery will be acquired for the town of Wroxeter itself in order to produce high quality mapping. Existing maps of the town (fig. 3) have been produced almost exclusively on the basis of air photographic evidence, and have not had the benefit of modern photogrammetric techniques for accurate mapping.

Evidence taken from vertical and oblique APs, from ground-based geophysical measurements and aerial remote sensing, and from excavations can now be collated, using GIS technology, to produce a georeferenced graphical database of Wroxeter and its direct environs (stretching approximately 500 meters outside the town defences). Processing this imagery with the GIS in preparation for mapping will involve algorithms ranging from stereo-DTM generation to orthorectifying transformations and enhancements in the spatial and frequency domain. The processed imagery will then be ready to be digitally mapped off screen.

By interpreting and mapping the archaeological features present in the resulting georeferenced and enhanced image database in both a topological, a functional, as well as a chronological sense, digital vector maps can be produced that represent the spatial structure, the functional structure, and the chronological development of the site. These might form the basis for a Digital Interactive Atlas of Viroconium, allowing users to query any of the Project data layers and to display the results.

2.3 MODELLING
The authors, having written earlier about the pitfalls of current GIS applications (Gaffney/Van Leusen 1995; Van Leusen 1996), intend to develop innovative GIS solutions to the problems of modelling archaeological landscapes, both in the environmental and in the cognitive vein. We feel that GIS models should derive most of their use from either confirming or refuting theoretical constructs, and previous applications were lacking in that respect. Even more importantly, any model that is based on real archaeological data should explicitly deal with the biases that are inherent in such data, and we intend to use GIS to model such biases.

2.3.1 Linking Archaeological Theory and GIS
GIS modelling will be applied to our main research question, which concerns the impact of Romanisation on the late Iron Age tribal society of the Cornovii. Taking current models of this process by Millett (1990) as our starting point, we intend to extend GIS methodology into the largely uncharted territory of non-environmental data.

The problem of urban-rural relationships in archaeological research is a general theme within many periods and areas of study. Such analyses have a specific resonance within Roman studies where urbanisation, twinned with Romanisation, has long been a suitable topic for research. The reasons for this are not hard to discern, especially in those provinces — including Britannia — where there is an apparent lack of urban traditions or where pre-Roman trends towards urbanisation were weak, and the development of towns and cities is interpreted as only one variable in the process of Romanisation. The study of Wroxeter and its hinterland is just one example of this research theme in action, but it can also be neatly grouped with the recently growing number of regional or ‘landscape’ studies in archaeology.

There is a complex web of interactions between any urban centre and its (normally directly adjacent) rural hinterland. This complexity extends into the functional, geographical, and chronological domains: which activity grew up when and where, and why? Even modern towns are notoriously difficult to study as living organisms, and a dead town such as Wroxeter, for which evidence of any sort is patchy at best, would seem to present insurmountable problems. However, we should measure our efforts not against an ideal, but rather against current archaeological practice. Hypotheses about the origins of Roman towns in general should be tested against the evidence generated by the project, and refined.

Millett (1990; see tables 1, 2) has presented such hypotheses. In particular, his models of early Roman impact on native society and of settlement dynamics during the later Empire should be amenable to testing. In order to avoid a lapse into brute force implementations of environmental models, we will attempt to extract culturally significant and spatially referenced information from the existing archaeological records and compare this with the more traditional economic indicators.

We have argued elsewhere that patternning in ‘cultural’ data should be as amenable to GIS analysis as is economic patternning (Gaffney/Van Leusen 1995: 370-371). For example, we can conceive of Romanisation as the combination of a wide variety of spatially variable cultural markers distributed across the landscape. On this basis we should be able to use architectural, morphological and artefactual data to construct maps depicting the spatial dispersal of status and degree of Romanisation across the landscape. These can then be compared with maps derived on a purely economic/environmental basis, and the differences between them should provide us with pointers to the social processes at work in the town/hinterland relationship. Inversely, we will construct models of status distribution based on archaeological theory, and test these against existing and newly acquired data.
Figure 3. Topographic and archaeological features at Wroxeter, as mapped from air photographic evidence by D. Wilson (after Barker 1990: Fig. 3).
The seeming lack of highly romanised buildings ('villas') in the hinterland and the contrast with the relative opulence of the urban area is a case in point. It seems reasonable to assume that the Roman urban elite was essentially a continuation of the existing Iron Age elite. However, where are the original settlements associated with such groups? Emerging evidence for LIA activity within the town area indicates that the primary conduit for social display and development even then was via the urban centre. What conditions both prompted and allowed such development? The lack of similar change in the countryside is intriguing given that we must assume that agricultural productivity supported urban advancement. Will these contrasts permit us to isolate the pre-existing social relations that allowed one part of the community to invest in the town, apparently at the cost of other groups or, alternatively, are we seeing a 'resistance' to Roman culture by some indigenous groups? Or are we just being wrongfooted by the limited visibility of 'villa' structures in the current Shropshire landscape?

### 2.3.3 Bias modelling
Since both theoretically derived and data-driven models in archaeology are ultimately based on our knowledge of the archaeological record, keeping control over the quality of our basic data is of prime importance in the Wroxeter Hinterland Project. This control is achieved in two ways:

- by assessing and then compensating for biases in the text based and mapped data; and
- by providing independent mechanisms of control with which to test the validity and power of the models we develop.

The sources for our archaeological data — national and county records, previous studies and surveys — are of wildly varying quality. The archaeological record is 'filtered' by formation processes, visibility and reporting biases, and past and current recording practices. For example, enclosures identified from aerial photographs (largely undated but generally ascribed to the Iron Age on morphological grounds), give us high-quality mapped data, but at the same time we may be sure that differential visibility and recording are biasing the distribution of these data to such an extent that they cannot be used prima facie to build or test models on. By modelling the biasing factors (differential soil responses, geological processes, land use both past and present, accessibility) and using them to compensate for the bias, we hope to arrive at a more credible distribution map for these and other data.

To further assess the quality of our mapped archaeological data (acquired from both existing records and our own field work) we have instituted a programme of fieldwalking based around 3 transects centred on Wroxeter and cutting
Early Empire
Concentration of élite power at civitas centre
Villa development near these centres
Social competition at centres
Taxation collected at centres
Production concentrated near centres
Trade concentrated on centres

Late Empire
Social control continued at centres, stifling economic growth
Competition moved to villas which surround centres
Taxation collected at various places, causing decentralization
Peripheral areas showed economic growth
Producers at boundaries fed goods into several civitates

Table 2. Simplified model of the influence of taxation on settlement centralisation (after Millett 1990: Table 6.3).

across the study area’s dominant topographic features (fig. 4). The choice of transect and orientation was dictated by the need to study the variation of activity (as opposed to simply settlement) with distance from the urban centre (Gaffney et al. 1985). Using a continuous grid retrieval system based on the UK national grid it will be possible to sample circa 10% of the transects’ area. This should allow the team to study distance dependant site and non-site activity within the transects.

Equally, the mapped environmental data which is normally used in regional GIS models and which is largely based on the availability of printed map sheets of variables such as soil types, geology, hydrology and land use, suffers from a number of flaws including ignoring small-scale variation in the landscape, and employing cartographic conventions such as choroplethe mapping to represent data that vary continuously across the landscape. These biases we hope to compensate for by returning to the original field observations on which the maps were based, and constructing higher-quality maps from these.

2.3.3 Project management
GIS models will also be used to steer project development, for instance in determining our programme of test excavations of enclosures — the major archaeological feature in the area, about which little is known for certain. Several hundred enclosures exist in the project area, over one hundred of which have been classified on morphological grounds by Whimster (1989). We expect these features to reflect some of the upheavals caused by the advent of the Romans and the growth and eventual decline of Wroxeter, and will use GIS to study their distribution and to target specific enclosures for excavation.

2.4 Spatial Analysis
One of the aims of the Wroxeter Hinterland Project is to provide a laboratory for research into non-invasive prospection methods. In general, not much is known about the precise relations between non-invasive prospecting data, such as magnetometry, and the underlying archaeology, or
about the relative contributions to archaeological knowledge of the plethora of non-invasive techniques that are currently available (David 1995). We intend to explore these questions in collaboration with Dr Kenneth Kvamme (currently at Boston University), by conducting extensive testing and multivariate analysis of techniques ranging from ground based resistivity, gradiometer, GPR and seismic to airborne photography, multispectral scanning, and thermal imaging. We expect multivariate analysis of properly georeferenced data to tell us how various techniques are correlated to each other, and how much information they contribute to the final picture. This should allow us to make some practical decisions as to which technique will be the most efficient in the given circumstances.

3 Regional Archaeology and the Local Community

It is an unfortunate fact that, in Britain at least, it has become increasingly difficult to allow the close involvement of the local community in major archaeological research projects. Places for field work are generally taken by students that need the experience, and requirements of efficiency and planning have made it increasingly difficult to use volunteers for any but the most circumscribed
work. The Wroxeter Hinterland Project is changing that by stressing the importance of involving the local community, not only in field work, but also in finds and computer processing and generally assisting the research team. Since all its field work is funded by charities, it is remarkable that, one year into the project, we have over 200 volunteers working for us as field workers, map digitisers, office staff, geophysics teams, and even as a pilot. These people are mostly untrained but are very keen to learn, and it is possible to work with them throughout the year — not just when term time has ended.

We try to keep these volunteers up-to-date by issuing a bimonthly newsletter and by organising regular meetings and open days at which volunteers mix with project staff and each other. The success of this strategy leads us to think of extending volunteer involvement to conduct a full scale Parish Survey of the area, a huge task which would be impossible to contemplate with just two project staff available.

4 Concluding remarks
The Wroxeter Hinterland Project is an ambitious undertaking and is unusual in a number of ways. It is attempting to study one of the more arcane, and hotly debated, social processes — Romanisation — using technological and theoretical approaches in a manner never previously attempted. The project incorporates a complex group of data sources within a single ‘critical’ database, some of which have never been used in an archaeological context before, whilst others have rarely been integrated in such a comprehensive manner. Finally, the project, despite its highly technical and academic base, is being carried out with the explicit aim of encouraging public participation and aims to involve local communities at every level.

There is obvious risk in such an innovative approach, and we cannot expect to be fully successful on all counts, but preliminary results have been extremely promising and we hope to be able to confirm this at the 1996 CAA conference.

5 Envoy
The project team maintain World Wide Web pages at http://www.bham.ac.uk/BUFAU/Projects/WH/ which provide an up-to-date review of activities and a means of directly contacting the authors.

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M. Tingle
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Millett, M.

Whimster, R.

Vincent Gaffney and Martijn van Leusen
University of Birmingham
Field Archaeology Unit
Edgbaston
Birmingham B15 2TT
United Kingdom
e-mail: v.l.gaffney@bham.ac.uk
p.m.vanleusen@bham.ac.uk
15. Aspects of Romanization in the Wroxeter Hinterland

by R. H. White & P. M. van Leusen

Wroxeter's Paradox

The common perception of Wroxeter is that it occupied an anomalous position as the fourth largest Roman town in Britain set within a landscape apparently practically devoid of any of the normal accoutrements of Romanized rural society (figure 1). This creates a paradox in that, in all other Roman towns, there seems to be a direct relationship between the size of a town and the degree of Romanization in its hinterland. Ray Laurence has recently highlighted this perception in his study of Pompeii, concluding that “we cannot divide the city from the countryside, nor the countryside from the city. They are both part of the Roman conceptual landscape.” (1994:139). If this is so, then Wroxeter, apparently uniquely among Roman towns, seems to be a successful town within an unsuccessfully Romanized area. Archaeologists have developed a number of theories to deal with this apparent paradox. Some have envisaged a hostile rural population resistant to the idea of urban life (Richmond 1963); others have implied or asserted that the success of the town was more apparent than real, allowing them to invoke the deus ex machina of an over-ambitious Imperial foundation (Webster 1993); while others have stressed the apparent economic isolation of the territory prior to the conquest and the supposed relative economic underdevelopment of the town, despite its large size (Stanford 1991:95–8).

The Wroxeter Hinterland Project, a three year GIS-based research project specifically designed to test models relating to the Romanization of the heartland of Cornovian territory, is beginning to highlight that these theories have been based on low quality data, since so little systematic work has been done in the region. For example, comparison of the database of aerial photographs of the town centre to the recent geophysical surveys carried out within the town, under the aegis of the Wroxeter Hinterland Project, indicate that settlement was more dense than the photographic evidence would suggest (figure 2). Wroxeter was clearly much more successful than most archaeologists have suspected heretofore. Thus, without a systematically assembled and verified database of sites, analysis of the density and nature of the settlement in and around Wroxeter can only be partial, and at worst misleading.

The aim of this paper is to suggest that Wroxeter, like other Roman towns, was completely integrated with its landscape and, furthermore, concludes that the very success of Wroxeter indicates that previous estimations of the wealth of its hinterland have been grossly under-estimated.

Reconstructing the Iron Age Background

In order to gauge the effect that the imposition of Viroconium had on the environment, it is essential
Figure 1. Location map of the Wroxeter Hinterland Project study area and key to the place-names mentioned in the text.
Aspects of Romanization in the Wroxeter Hinterland

Figure 2. A comparison of air photographic (Wilson 1984) and geophysical evidence gradiometer data courtesy of EH-AML) for the south-east quadrant of Wroxeter highlights the 3-fold increase in settlement density which upsets current views of Romanization in the area.
first to attempt a reconstruction of the existing prehistoric landscape. The Iron Age settlement pattern consisted of two main elements: hillforts and enclosures. The evidence from the Bromfield enclosure suggests that unenclosed settlement sites also existed, but these have only been detected through excavation (Stanford 1995:101–3). There are nineteen known hillforts within the study area and six of these have provided evidence for Iron Age and/or Roman occupation. They vary considerably in size, complexity and situation, suggesting that there was no single strategy for the exploitation of the territory. The hillforts at Baschurch and Wall Camp, for example, lie within marshland which must have determined an economic strategy based on exploitation of wildlife and, possibly, of livestock. In contrast, the economies of the Bredden and the Wrekin, with their easier access to arable resources, were presumably based on a mixed strategy of cereal production and livestock exploitation (Musson 1991:186–7; Stanford 1991:48–50). The profusion of hillforts within Cornovian territory generally has been interpreted as evidence that the Cornovii were cantonalised, with no overt progress towards centralisation before the Roman conquest (Davies 1996:694). The relationship of these hillforts with the enclosures, if in fact there was any, is still obscure.

Hundreds of enclosures have been identified through aerial archaeology within the Wroxeter hinterland. A recent analysis subdivided the enclosures on morphological grounds into three basic shapes: curvilinear, hybrid and rectilinear, with bi- and multi-vallate examples of each. In the same study, it is suggested that rectilinear enclosures cluster around Wroxeter and other Roman military sites and thus represent sites of the Roman period (Whimster 1989:35–47). This might lead one to conclude that curvilinear enclosures were Iron Age but excavation does not appear to support this; multi-period occupation has been detected on many sites of all morphologies. This would appear to rule out chronology as a determinant of morphology. What then does the shape of enclosures mean? Clearly, single interpretations are not likely to be adequate and an assessment of social, cultural and economic factors should be taken into consideration.

Figure 3. The Cross Houses-Berrington archaeological landscape, among others in the Wroxeter Hinterland, shows evidence of pre-Roman organisation, with the Roman road network cutting across a field system dated to the Iron Age (after Whimster 1989, figure 38).
On current excavated evidence, it would seem that multi-phase occupation is common on enclosed sites which would indicate that the landscape was probably heavily organised and settled before the conquest. Further evidence for this may be detected in the ancient landscape preserved at Cross Houses-Berrington which apparently shows a wide droveway with attached fields and enclosures (Whimster 1989:62–3; Watson & Musson 1993:49). This landscape is clearly cut by the Roman road leading from Wroxeter to Craven Arms, proving it to be of pre-Roman origin (figure 3). The relationship of the fields to an extensive Bronze Age cemetery in the same area is unclear, but it is likely that the cemetery is earlier (Gwilym Hughes pers. comm.). If this is so, it would indicate a move towards an organised landscape in this area during the Iron Age or perhaps the later Bronze Age, at a date consistent with similar processes in other areas of lowland Britain (Cunliffe 1991:531–6). Hints of further areas with a pre-Roman organised landscape have also been suggested around Wroxeter itself, which may indicate a developing centralisation of settlement there in the pre-Roman period (see below; Bassett 1990).

Thus, the evidence points towards a much more developed and stable landscape than is usually perceived for this area. Models of pre-Roman Cornovian society tend to suggest that it was generally impoverished and under-developed (Webster 1991; Stanford 1991). This perception no doubt arose from the lack of systematic archaeological work in the region and closer analysis of the evidence suggests a different interpretation. It is generally accepted that the Cornovii inhabited territory roughly equivalent to modern-day Shropshire and Cheshire, with the exact borders probably coinciding with the natural boundaries of rivers, such as the Mersey and Teme, or with watersheds, such as that between the Severn and Trent. In the Welsh foothills, the border is less certain, but given the large number of hillforts, it may well have been relatively unstable. This is a large cohesive block of territory, and one that is rich in both agricultural and mineral resources. Besides salt, which was exploited in the ‘wich’ towns of Cheshire and exported widely throughout the north-west and Wales (Morris 1985), mineral resources included lead and copper. (Although there is no positive evidence of these metals being exploited in the Iron Age, it seems unlikely that mines such as the copper mine at Llanymynech remained unexploited, sitting as it does within the ramparts of the hillfort.) In terms of agricultural resources, Shropshire and Cheshire are even today noted as being rich in pasture and, given the evidence for the establishment of co-axial field systems around Wroxeter and elsewhere, there is no reason why such lands could not have been exploited in the Iron Age and Roman periods.

The distribution pattern of known enclosures shows significant clusters within the river valleys, often with a low frequency of settlement in the surrounding areas. This might suggest that lowland settlement was confined to the valleys while large tracts of heavier soils remained unexploited. However, a recent intensive aerial survey of the Mersey, Dee and Weaver valleys in north Cheshire points to insensitive crop responses rather than a genuine dearth of settlement (Collens 1996); detailed analysis of the region around Wroxeter indicates that crop- and parch-marks can appear on a variety of soils, including stagnogleys, depending upon local conditions and topography (Whimster 1989:12–9). The blank areas may, therefore, be no more than areas which are resistant to showing crop-marks except in the most abnormal conditions. If the clay lands were in fact exploited, then the population and wealth of the Cornovii must have been considerably greater than evidence of their material possessions alone would imply. Given that the Cornovii had access to substantial natural resources, why is there so little apparent participation in typical late pre-Roman Iron Age trends such as increased trade with the continent, the centralisation of settlement, and the use of coinage?
Continental trade: It seems clear that the only direct access the Cornovii had to external markets was at Meols on the northern tip of the Wirral. The port was almost entirely washed away in the 19th century, but it is clear from isolated finds of billion coins of the *Coriosolitae* that there was a strong Irish Sea trade there (Warhurst & Chitty 1977), although this may have been severely disrupted after the destruction of the *Vnetii* and the re-direction of Roman trade to the south-east (Cunliffe 1991:434–42).

Centralisation: while there is no real evidence for general centralised lowland settlement, there are hints, albeit slight, that there was a trading point at Wroxeter suggesting the development of a central place (White 1993). The suggestion rests on a number of points:

1. The name *Viroconium* itself (the place of *Viricio*), suggests there was a settlement there before the Romans arrived.
2. Excavations beneath the *macellum* detected substantial ditches possibly relating to an enclosure (Webster 1988: figure 6.12*).
3. Wroxeter’s position as a natural trading point, in respect of both the river and trackways (Pannett 1989; Bassett 1990)
4. Dobunnic coins and a sherd of *Arretine* ware from within the area of the later town and other Iron Age metalwork from its immediate hinterland (White 1993).

In the wider context, the laying out of extensive field systems and the possible concentration of resources under the control of individuals may point to the first stages of the development of a centralised society.

Use of coinage: there is no evidence for any indigenous use of coin by the Cornovii but coins of the *Coriosolitae* and of the *Dobunni* from Meols and Wroxeter respectively suggest that coins were used for trading purposes.

From the evidence above, it seems clear that the Cornovii had the resources to become a centralised society similar to the more developed late pre-Roman Iron Age societies seen further to the south and east, but this process had only just begun when the Romans arrived. The transition towards a centralised economy could have been impeded by the assumed confederate structure of the tribal society, but such a structure is unproven, the assumption being based only on the large number of hillforts in the area, many of which are undated. Other explanations may be more viable. In theory, centralisation could have taken place through the control of key resources, such as salt, copper and agricultural products by a number of individual petty chieftains. These chieftains could then have used their greater power to extend their territories and influence. Trade would have played an increasingly important role in this development since resources concentrated in such a way would have had to be marketed. Such trends would, however, be constrained by the poor access the Cornovii had to adequate trading facilities since their territory was substantially land-locked. The only port, at Meols, lay exposed at the very tip of the territory. Trade would have been possible along the Severn at least up to the area of Wroxeter, but imported trade goods brought along this route would have been under the control of the Dobunni who may well not have been inclined to allow many of the prestige imported goods out of their own territory. Substantial trade to the west is highly unlikely given the difficulties of access of that region, while to the east, there is little evidence of an established trade into the Midlands. The difficulty of moving goods into and out of the tribal territory may, therefore, be the principal reason why so little material wealth has been discovered in the area. The picture that is established is of a largely self-sufficient society which had little access to the outside world despite its hypothesised wealth. If this is the case then the wealth and surpluses created by Cornovian society must have been disposed of in other ways, such as conspicuous consumption at ritual feasts or through the construction of the numerous hillforts and enclosures known in the area.
The Foundation and Impact of Wroxeter

Like any town, the civic population of Wroxeter, which may have been in the region of 5,000 – 8,000 at its high point, had to be fed, demanding that its immediate suburbs be devoted to market gardens such as those identified through excavation at Duncote farm (Ellis et al 1994:67–8). These would need high-quality soils and a field morphology of relatively small, perhaps gridded, fields. Less productive or seasonally flooded land might be given over to seasonal activities, such as tile-making or potting (Houghton 1961). Further out from the immediate area of the town, farms might be practising a more mixed agriculture in areas of poor quality soils, or for those on good quality land, such as the freely-draining alluvium, arable farming might predominate. Those wishing to take advantage of the town’s market would have had to settle close to the roads or river Sabrina (Severn) so that produce could be easily transported. These farms would also have been able to participate in the redistribution of produce from Wroxeter to outlying trading settlements, such as Meole Brace, and to the possible markets or mansio sites at Rutinium, Red Hill (Uxacona) and Craven Arms.

Roman Settlement Pattern as Understood to Date.

Three non-urban settlement forms are known around Wroxeter: enclosures, villas, and unenclosed roadside settlements.

As noted previously, the dating of enclosures in the Wroxeter hinterland is a particular problem since relatively few have been excavated. There is no apparent correlation between the morphology

Figure 4. Distribution of villas in the Wroxeter Hinterland. Closed symbols: confirmed villa sites. Open symbols: unconfirmed villa sites.
of the enclosures and their date, and many that have been excavated show prehistoric as well as Roman occupation. This strongly suggests that there was no great dislocation of settlement after the conquest.

Villas appear to be notably absent from the archaeological record, but this may be more illusory than real. A significant cluster of three villas has been found spaced at approximately two mile intervals along the Rea Valley, south-west of Shrewsbury, while further work is showing that other examples may well exist in the Cound valley at Pitchford (Stanchester) and Conover. Two others are known in the Much Wenlock area at Yarchester and possibly at Much Wenlock itself. Isolated sites are also known south of Craven Arms at Acton Scott and Linley and it has been suggested that others lay at Rushbury and at Berwick, north of Shrewsbury. Further, there is an instance of an enclosure site which has also produced cropmark evidence for a contemporary or later villa (Ashford Carbonnel); while excavation on an enclosure at Chilton Farm, Atcham has produced evidence for a substantial Roman building. Interestingly, only one possible villa site is known in the immediate vicinity of Wroxeter (Hugh Hannaford pers comm). What is known of the distribution of the villas suggests they were focused along the courses of the tributaries of the Severn and the Roman road network, not clustered around the town (figure 4). This would suggest that villas were being established within the existing territorial organisation, strengthening further the hypothesis that there was little dislocation of settlement after the conquest. Where excavations have been carried out, the villas seem quite impoverished with few portable goods, although they are well furnished with mosaics (Yarchester) and substantial buildings (Whitley, Yarchester, Acton Scott), suggesting that they are fully Romanized establishments (Webster 1991:97–103). There is little evidence for great wealth and it is possible that these establishments were run by bailiffs for absentee landlords.

Only three unenclosed settlement sites are known, all of them apparently beginning within the Roman period. The first, on Heath Road, Whitchurch, is more properly understood as suburban ribbon development associated with the town of Mediolanum (Whitchurch) rather than as an independent settlement. Another, at Meole Brace, was an unenclosed roadside settlement which has been interpreted as a secondary market for the re-distribution of goods from Wroxeter (Ellis et al 1994:52–5) while the third settlement is an unverified site at Ellerton on the Shropshire/Staffordshire border. These sites presumably show the penetration of a full market economy into the rural hinterland but the extent of their influence beyond the road system may well have been negligible.

Moving Towards a Synthesis

There is no doubt that the conquest of Cornovian territory in the late 40s AD had a profound impact on tribal society. There are some signs of resistance (White & Webster 1994) but the conquest may have been largely peaceful and swift, suggesting a degree of co-operation from the tribe, probably including the elite. In the initial stages some land, such as the settlement of Viricio, will have been seized by the military authorities for their numerous forts and fortresses (Webster 1988; Welfare & Swan 1995) and it may be that the displaced hillfort populations would have settled around the more permanent of these establishments, as Webster has suggested (1991:47–8). It is certainly true that there was a huge increase in the import of manufactured goods of all kinds into the area which, although largely for the benefit of the troops, would also have been used by the indigenous population.

With the establishment of Viroconium, there was an undoubted boost to the level of Romanization, reflected in the construction of impressive public buildings in the centre of extensive defences
enclosing sixty-four hectares. Recent geophysical surveys have indicated that within the town, there was a dense pattern of buildings and streets indicative of fully developed urban life (Gaffney et al. forthcoming; van Leuven forthcoming). Considerable quantities of imported and locally-produced goods recovered from excavations within the urban core are unequivocal about the scale of Romanization witnessed at Wroxeter. This strongly suggests that the tribal elite took on the trappings of Romanization with enthusiasm, as did substantial elements of the population. This being so, it is reasonable to conclude that the surrounding *territorium* which supported the town should have been densely settled and tied in with the Romanized economy. Current interpretations suggest, however, that rural development was stunted. Hypothetically, it should be possible to detect the degree of acculturation around Wroxeter by studying artefacts associated with the settlement sites in the hinterland. For example, the density of some material should correlate with the intensity of agricultural activity in the area.

The Wroxeter Hinterland Project is specifically designed to test such hypotheses through GIS analysis of existing, as well as newly-created, databases, and a number of specific hypotheses have been put forward for investigation in the initial analysis:

1. Settlement around Wroxeter will be distance-related since the inhabitants of the hinterland would have an interest in marketing their produce either at Wroxeter or at their nearest market. This relation would be modified to some extent by factors such as the position of the settlements, the nature of their produce, and their ease of access to the town. Any models of this kind must therefore take into account transport via the roads and river systems.

2. Cornovian settlement sites may well be materially impoverished since the Iron Age pattern suggests a degree of resistance to the acquisition of traded goods. This was presumably overcome to some extent during the Roman period as the sheer quantity of material available saturated the markets, as the trading settlements such as those at Meole Brace and outside Whitchurch indicate. It should be possible to establish the existence of resistance by determining whether those sites with ease of access to the primary or secondary markets did or did not avail themselves of the opportunities to acquire material possessions. This could perhaps be reflected through high status materials such as samian ware or mortaria in rural settlements.

3. Although settlement in the Wroxeter hinterland may have been extensive, the visibility of any one particular site through surface collection and excavation will be dependent on the agricultural regime practiced there. If, as seems likely for the heavier glacial soils, agriculture was predominantly pastoral, manuring spreads will not have been incorporated into the landscape to the extent that may be expected elsewhere. Certainly, the excavated bone remains at Wroxeter indicate an important industry in the processing of cattle carcases and its subsidiary industries. On the poorer soils, there may have been a reliance on sheep ranching to produce wool and other by-products. Both trades were important in Shropshire in the medieval and post-medieval periods. Nonetheless, there must still have been extensive areas of arable land around Wroxeter as carbonised cereals, including high quality bread wheats, oats and rye, have been located in excavation. Such areas should be detectable through artefact scatters produced by the normal manuring processes. Mapping manuring scatters, identified through sherd size and abrasion, against specific soils should clarify whether prime arable land was being used for pasture or not. It should also be possible to examine known enclosures in such areas for droveways or other diagnostic features to try to determine what the enclosures were used for.
4. The development of specialisation in pastoral activities throughout Cornovian territory may have been encouraged by the presence of permanent military establishments such as the legionary base at Chester and the smaller forts at Leominster, Whitchurch and Walltown. The troops posted here would have required substantial and regular quantities of foodstuffs, cloth and leather. Some of these food stuffs may have come from the territories of tribes bordering the Cornovii, but it is likely that the Cornovii were expected to provide the bulk of this material. The guaranteed market that this would have provided may well have acted as an important stimulus in the intensification of Cornovian agriculture along pastoral lines. If this interpretation is correct, analysis of the results of hypothesis 3 might well indicate areas of land suitable for arable use which were devoted to pastoral agriculture instead.

5. The pre-Roman landscape was apparently already extensively settled and developed. GIS analysis of field systems surviving as cropmarks will be tested against known elements of the Roman landscape to determine the degree and location of this organisation, and will attempt to detect changes to the landscape in the Roman period. These changes to the organisation of field systems should be particularly marked within the vicinity of the town where market gardening activities should predominate (cf. Duncote Farm).

With over one year of the project still to run, it is too early to reach substantive conclusions about the process and degree of Romanization in Wroxeter’s hinterland. What is becoming clearer, however, is that it is only through the substantial increase in new data generated by the project, allied with the manipulation of existing data sets using GIS technology, that further progress will be made towards understanding the transformation of Cornovian society brought about by Wroxeter’s creation.

End note
* The possible enclosure is labelled as 'pre-Legionary features' on figure 6.12. The evidence has not been fully presented in print but will appear in Webster, forthcoming.

Bibliography
van Leusen, P.M. forthcoming. Integration and analysis of geophysical data sets using GIS. Archaeological Prospection.


