Repetition in abundant landscapes: dynamic approaches to Iron Age and Roman settlement in England

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Repetition in abundant landscapes: dynamic approaches to Iron Age and Roman settlement in England

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ABSTRACT
In this paper, we draw attention to several regions of England where the knowledge of Iron Age and Roman settlement has reached a level of ‘abundance’ such that what we can say about the past goes beyond simply creating a gazetteer of ‘sites’, or discussing the presence or absence of particular settlement types. We explore how this level of ‘abundance’ has come about, and what the wider implications are interpretatively and for future work.

Introduction
Cyril Fox’s The Archaeology of the Cambridge Region (hereafter ACR) published in 1923 was one of the first comprehensive regional analyses of archaeology. It was, however, also a time-specific statement on his contemporary archaeological knowledge. While Fox’s archaeological works still has relevance today, he was primarily concerned with cataloguing ‘sites’ and mapping their distribution by conventional periods (1947, 1–2; see also Fox, 1932). Fast forward 100 years to 2023, there is now simply far more ‘past’ to contend with, and this arguably demands a different approach than continuing to amass data and create gazetteers of sites. What we want to suggest in this paper, is that where a saturation in knowledge has been reached – where the evidence for archaeology is abundant and where there has been an exponential increase in information – there should be a correlative shift in interpretative emphasis (cf., Evans, 2008) and in our methodological approaches. In achieving this, we suggest we will be better placed to be agile to the state of knowledge and advance new questions, rather than continuing to adopt static strategies that simply reinforce the accumulation of an ever increasing, and uninterrogated, data ‘mountain’.

Achieving this ambitious mode of practice is, in part, scale-dependent, and as a result we need to be able to assess what abundance looks like across different scales and in different geographical locations. Before carrying this out, we must ask: What has driven the accumulation of archaeological knowledge, in particular about settlement? While acknowledging other mechanisms in the past such as antiquarian pursuits, the
advancement of aerial photography, modern techniques of investigation, and the evolution in the legal protection of archaeology, the mass and continued accumulating state of archaeological knowledge has been largely driven by Planning Policy Guidance 16 (hereafter PPG 16) and its subsequent National Planning Policy Framework (NPPF) in the last 30 years. The government’s planning policy since 1990 is largely responsible for the exponential rise in the number of archaeological investigations, specifically those associated with trenching and excavation, and its resulting data. In regions where development-led archaeology has dominated other kinds of interventions, there has been a corresponding steep increase in knowledge; and where it has not, there has been a much slower rise. In areas where there has been a marked rise in knowledge, such as parts of the Cambridge region, a point of saturation or abundance has been reached (see also the lowland of eastern Scotland but from the accumulation of cropmarking evidence (Cowley 2016)). Due to this, there exists what we refer to as a theoretical knowledge plateau; especially in the numbers and locations evident in site distributions for periods such as the later Iron Age and Roman (see also discussion in Thomas 2013; Morrison, Thomas, and Gosden 2014; Thomas and Darvill 2022). In the context of planning and development-led archaeology and areas of archaeological abundance, we suggest that while the knowledge plateau is poorly understood, further increases in data, especially in terms of settlement, will not significantly redefine or change the interpretation of our understanding of distributional archaeology.

Reaching this kind of knowledge plateau in some areas, and for specific kinds of archaeology such as settlement density where there is a convincing pattern at the sub-regional scale, represents a different kind of archaeological challenge. For example, this might encourage the adoption of new strategies that underpin a research agenda for an area, but also, potentially, a relook at how fieldwork mitigation in advance of development is implemented. As yet, however, this is not happening, and is perhaps due to a delay in recognising knowledge plateaus because the right tools or mechanisms are not in place to make good observations. In other words, there may be a time-lag between the acquisition of data and the decisions to continue to acquire more data, and a lack of understanding about the pattern due to poor assessment and synthesis strategies. In regions where abundance/knowledge plateau has been reached, the time-lag and/or the decision-making processes may be partly a product of the underlying mitigation philosophy in PPG 16 which emphasises ‘preservation by record’ but also due to the reduced funding of local authorities alongside an increased workload. The emergence of responsive regional research frameworks (e.g. Evans 2018) has started to tackle the issue of synthesis using the latest archaeological investigations, but it remains to be seen whether these continue to be responsive going forwards. With respect to those areas where an abundance has not been reached, the challenge is also a matter of adopting strategies to increase knowledge while also preparing for a more responsive research agenda. This shift is already partly supported by the NPPF subtle reworking of the guidance on the ‘preservation by record’ with a focus on ‘understanding’ the record, but it will require more changes to the present system. For instance, this might explore the idea of ‘repetition’ which clearly underpins our understanding of past settlement fabric – the interconnected threads in a landscape setting, such as routes, fields, burial places and the settlements themselves, that appear tapestry-like (C. Evans 2013) – both in terms of the accumulation of knowledge in the same landscape setting, but also in
terms of the rhythmic properties of settlements coming and going out of use as a repeated signal of occupancy, which is almost seen as an anathema (contra Reddé et al. 2018). Perhaps, initially as a starting point, what is required is a method to assess and distinguish areas of abundance, as opposed to those areas where more data collection is needed. This paper begins this much needed discussion.

**Materials and methods**

The basis for this paper is a review study funded by Historic England during COVID-19 *(Dynamic approaches to abundant landscapes: Iron Age/Roman settlement)* which aimed to assess the impact of recent development-led fieldwork on our understanding of Iron Age and Roman landscapes, and build on the existing work conducted by the *Roman Rural Settlement* project (hereafter RRS; Smith et al. 2016, 2018; Allen et al. 2017). The study had three main questions: (1) how to build a wider set of Iron Age and Roman evidence into understandings of landscapes in these periods (pre-PPG 16 excavations as well as recent ones; investigative methods beyond excavation); (2) how to measure change in data volume rather than simply stating that it has changed hugely since PPG 16 (cf., Donnelly 2016; Gosden et al. 2021, 29–54); (3) if/how we need to change the questions we ask and our investigative methods in regions where knowledge plateaus have been reached. The study was necessarily limited in scope. We therefore initially focused on characterising the knowledge plateau in the Cambridge region, then broadened out to include other study regions including some in which other investigative techniques (aerial photography, geophysical survey, and so on) are the primary evidence sources. This also involved testing the cost-effectiveness and identifying interpretatively productive pathways for future landscape research at smaller, local scales.

We were initially inspired by revisiting Fox’s *ACR* from 1923. Fox catalogued, mapped and interpreted for the first time the state of accumulated knowledge in the 1920s, showing the time-specific density and character of occupation in one region from the Neolithic to the Anglo-Saxon period across the Cambridge region. Almost 100 years later, our own review study revealed it is not only the quality of work undertaken over this century but also the extent to which it provides a base-line measurement for assessing the different states of knowledge (e.g. ‘early-days’ (before and up to 1920s), pre- (1920–1990) and post-1990 PPG 16/NPPF (1990–2023)), and thus, to assess the interpretative impact of different knowledge acquisition trends over this era.

In tracking the acquisition of Iron Age/Roman knowledge in the Cambridge region from 1923–2023, our study built on other notable large-scale (data) synthesis studies in the UK. We have already mentioned the significance of the RRS project to our study (Smith et al. 2016, 2018; Allen et al. 2017). Other key inspirations include: *An atlas of Roman rural settlement in England* (Taylor 2007); *English Landscapes and Identities* project (hereafter EngLId - Gosden et al. 2021; Green and Creswell 2021); *Fields of Britannia* (Rippon, Smart, and Pears 2015); and *Kingdom, Civitas and County* (Rippon 2018). These synthesis projects gathered large amounts of data, alongside using large-scale prospection and research approaches to settlements and landscape, but they also facilitated some recasting of our understandings of Fox’s representations of settlement densities across Cambridge, and also other parts of England (see Bradley 2006; Fulford...
inside region 2000 settlement, different of which portrayed At Results of might 'character' standing from region, knowledge scape-scale research highlighting and (see also Fulford and Holbrook 2011, 2018).

This paper is also a collaboration between the Universities of Cambridge, Lincoln and Oxford, as well as Albion Archaeology and Oxford Archaeology (see Figure 1), highlighting the significant benefits of cross-sector working between commercial and research archaeological institutions, and between the different modes of practice that come with this, setting out important methodologies and pathways for future landscape-scale research and the potential reassessments of regional policies and strategies. A companion study specifically of the Cambridge region (contextualised by a transect that connects Cambridge to Rome across Europe), that has emerged from the same study, is published elsewhere (Evans, Aldred, and Cooper 2023).

As we will detail in the subsequent sections, through texts, tables and maps, our knowledge of the Cambridge region, Berkshire/Oxfordshire or Upper Thames Valley region, and Bedford/Kempston, East Kent and East Yorkshire, is far more than a distribution of ‘dots on a map’. The approach we have taken in this paper shifts along a series of spatial tiers to identify where abundance is most visible and what the impact of different investigation techniques are on archaeological knowledge and its production. In this paper, we investigate: (Tier 1) the Cambridge region and sub-regional analyses; (Tier 2) the Upper Thames Valley and Bedford case studies derived from development-led trenching evaluations and excavations; and (Tier 3) case studies which illustrate other archaeological techniques (Figure 1). By reflecting on the pattern of sites, and settlements in particular, we have strived to examine (1) where and how ‘abundance’ is defined, (2) what the appropriate scale of analysis is, say, for understanding settlement patterns, (3) how the ‘appropriate scale of analysis’ is affected by different techniques of investigation, and (4) especially in areas where knowledge plateaus have been reached, what is the ‘network inside out’? Examining the ‘network inside out’ shifts the perspective away from the aggregated focal points of sites or settlement, towards the spaces and patterns in-between these focal points (after Riles 2000). The networks of information that are created also lead to reflections on the ‘character’ of the archaeological record, and where new lines of archaeological enquiry might be established.

In the following results section, we will examine the case studies associated with each of the three tiers, drawing initial discussion points along the way, before summarising our findings in the discussion.

**Results**

**Tier 1 - Large-scale investigations**

At Tier 1, or what we might consider a ‘regional-scale’, the Cambridge region as portrayed in ACR (Fox 1923) provides a base-line framework (i.e. a temporally specific ‘state of knowledge’) with which to examine subsequent trends in archaeological knowledge production; and a context for the subsequent nested studies within the region (see below). Comparing Fox’s study of the Cambridge region with our
Figure 1. Abundant landscapes study areas, showing the various Tiers (1–3).
understanding of its modern state – and its state in-between these two – provides a rare glimpse into the processes of knowledge production, and is, therefore, our first calling point (see also Evans, Aldred, and Cooper 2023).

At the regional-scale for Cambridge, we have mapped the Iron Age and Roman ‘site’ distributions that Fox produced on two of his 1923 maps: Maps 3 (Iron Age) and 4 (Roman). The regional study area defined by Fox was c. 5,050 sq km in size. By visually comparing Fox’s distributions with the distributions of ‘sites’ as an aggregation of the post-PPG 16 knowledge for the Iron Age and Roman periods (Figure 2; Table 1), it is possible to show how much increase in knowledge there has been; i.e. addressing the ‘volume’ of knowledge production.

By comparing pre-PPG 16 and post-PPG 16 knowledge ‘assemblages’ on a map of the same area (Figure 2), the state of knowledge of archaeology, settlements, other sites and finds distributions shows areas of radical difference. What is particularly noticeable (Figure 2 – both Fox’s pre- and post-PPG 16) is a general absence of settlements and related sites (e.g. production and funerary and religious sites) in some sub-regional

Figure 2. Fox’s (1923) (left) and OS Roman Britain, RRS and EngLaid’s (right) ‘site’ distribution for Iron Age and Roman periods.

Table 1. Fox and EngLaid data compared for the Iron Age and Fox, with OS Roman Britain map data, and RRS compared for the Roman.

<table>
<thead>
<tr>
<th>Iron Age</th>
<th>Total records</th>
<th>Settlement</th>
<th>Finds</th>
<th>Burial</th>
<th>Production</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fox (1923)</td>
<td>222</td>
<td>11</td>
<td>174</td>
<td>37</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>EngLaid (2012)</td>
<td>1309</td>
<td>225</td>
<td>764</td>
<td>135</td>
<td>18</td>
<td>167</td>
</tr>
<tr>
<td>Roman</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fox (1923)</td>
<td>559</td>
<td>37</td>
<td>392</td>
<td>122</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>OS Roman Britain</td>
<td>876</td>
<td>44</td>
<td>818</td>
<td>8</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>RRS (2015)</td>
<td>390</td>
<td>231</td>
<td>0</td>
<td>105</td>
<td>48</td>
<td>6</td>
</tr>
</tbody>
</table>
areas. Taking the National Character Areas (NCA) that cover Fox’s study area, we can start to say something about the presence and absence of settlement sites and to identify potential ‘blank’ or less intensively occupied areas in cultural landscapes (Thomas and Darvill 2022). For example, in the northern part of South Suffolk and North Essex Claylands (NCA 86), north and east of Haverhill to Bury St Edmunds, there is a general absence of settlement. This absence is most likely a function of a lack of research on the clay (see Clay 2002). While villa and farm settlements are abundant in the other areas, there are just two (villa and farm) north and east of Haverhill to Bury St Edmunds. There may be something about the landscape here, and its upland-like character. Alternatively, the lack of development in this part of rural Suffolk may give the impression of an underdeveloped Roman landscape. Similarly, the Bedfordshire and Cambridgeshire Claylands (NCA 88) area, in the zone between the River Ouse to the west and the River Cam to the east, bordered to the north by the via devana and to the south to Biggleswade, suggests another undeveloped Roman landscape. This may be a product of survey bias, rather than an absence of a Romanized landscape. However, a ‘real’ gap in the Roman settlement pattern was noticed by John Bromwich on the surface and buried peat areas south of and along the Great Ouse or Old West river (Bromwich 1970, 114–115). In Bromwich’s words, there was a ‘contour’ at approximately 2 m OD that marked the limit of the Roman fen-edge settlement activity (see below within Tier 3). Thus, a key observation to take forwards is that gaps in the distribution of sites, especially in areas thought to have reached abundance, need to be assessed; are absences genuine or reflect a lack of investigation? While many areas of the Cambridge region show an abundance where a theoretical knowledge plateau has been reached, it is clear that some areas need further assessment. Identifying and distinguishing these different areas is a key strategy for future research designs.

In addition to the overall Cambridge region investigation, two further studies were also carried out. The first of these examines the accumulation of knowledge derived from multiple sources of information embedded in the Cambridgeshire HER; while the second examines the impact of large-area trenching and excavation programmes in increasing knowledge of Iron Age and Roman settlement.

In the first additional study – the second overall investigation within Tier 1 – the density of HER records is expressed in two ways: (1) as event records (such as fieldwalking, geophysics, trenching, excavation etc.), (2) as monument records (cohesive sites evidenced by archaeological data) (T. Evans 2013). In a small area within the Cambridge region, of just 38,314 hectares, or 383 sq km (see Figure 3), there were 414 Iron Age HER sites and 589 Roman sites. In real terms, this probably underestimates the site density; 1 site per sq km for the Iron Age, and 1.5 sites per sq km for the Roman, which are relatively low numbers compared to other areas (see Evans, Aldred, and Cooper 2023). It is also possible to indicate which of these HER sites are settlements: just 63 Iron Age settlements, and 66 Roman (giving respective densities of < 1 settlements per sq km).

The settlement number is low, partly because the intensely settled fen-edge area was not included within the case study area; it may also mean that there is a lack of commensurable integration of different data into central repositories such HERs, or that there is an information lag between the creation of new knowledge and its archive deposition (certainly a challenge for integrating development-led archaeology through
Figure 3. Cambridge study area (middle left) with Cambs HER site density (top) & large-scale trenching and excavation projects (bottom) (Wiseman).
its reporting). This can be assessed to some degree by considering other independent data, such as Historic England’s National Archaeological Identification Survey (NAIS) airborne mapping project for South-West Cambridgeshire (Knight et al. 2018). The NAIS project mapped in detail all positive and negative features that could be seen on oblique and vertical photographs, alongside newly collected material derived from satellite imagery and lidar. For example, the two settlements that lie on the northern side of the A428 close to Caxton Gibbet, near Cambourne are not included in the HER at the time the data was acquired. As well as airborne sources, other kinds of investigation types such as fieldwalking under the right conditions also have the potential to add new information (e.g. Haselgrove, Millett, and Smith 1985; Hall 1996), as discussed later in the paper, though trench evaluation, excavation, and large-scale geophysics (geotechnical qualities permitted) are more likely to have a bigger impact on the number of known settlements.

Taking just the spatially continuous data for the Iron Age and Roman period across the Cambridge region, it has been possible to show how much change in knowledge there has been from 1923 to 2022 (see above, twenty-one fold increase in the Iron Age, and seven-fold increase in Roman period settlements; Figure 2; Table 1; see Evans, Aldred, and Cooper 2023). As we further discuss in the final section of this paper, the pattern of Iron Age and Roman settlement shows not only where settlements were (in terms of the presence or absence), but also some regional trends in the connections between different places and spaces. However, to further assess this at a different intervention scale, we examined several medium-scale investigations areas (see Tier 2 below).

In the second additional study – the third assessment within Tier 1 - six large-scale development-led projects were examined within the Cambridge study zone area (see Figure 3). The six large-scale projects covered an evaluated area of 4,074 hectares which includes a mix of evaluation as well as open area excavations. The six projects were also carried out at different levels of intensity, such as Longstanton/Oakington/Northstowe between 2004–2007, and then 2014–2020 (Aldred and Collins, forthcoming), and those such as North-West Cambridge excavations that occurred over twenty years (Evans and Lucas 2020; Evans, forthcoming). What we want to examine here is the density of interventions, as defined by trenching (evaluation and excavation) and other intrusive investigations such as watching briefs and borehole surveys, but excluding fieldwalking

As observed in Figure 5, these intrusive interventions were weighted by site area. What the results show is the potential impact large archaeological projects have had on re-shaping the understanding of the Iron Age and Roman periods; the majority of these projects have been conducted in the last ten years, and some of the more recent ones will be published in the next couple of years (e.g. North-west Cambridge, Longstanton/Oakington/Northstowe, and A14).

While these large-scale developer-led investigations have significantly added to our knowledge of the Iron Age and Roman periods in the region there are still gaps in knowledge where large-scale developer-led investigations take place. For example, there still remain a general absence of dateable later/late Iron Age period settlements, which is partly due to difficulties in dating settlement sequences precisely, and a failure to C14 date them at all (see Brudenell 2018). As a result, because the pattern and timing of, say, Middle Iron Age colonisation processes are difficult to articulate when the dating is not
refined enough, this may inevitably lead to some wrong conclusions on a site-by-site basis. So, to discuss abundant landscapes and the challenges associated with establishing fit-for-purpose research questions, we must still be mindful of the existing challenges in our present-day archaeological knowledge, and highlight where further refinement is required. This may be the next stage after assessing the state of knowledge, say, in the pattern of sites and/or settlements, with a calibrated metric, say, derived from projects such as Northstowe and North-West Cambridge development-led investigations.\(^6\)

**Tier 2 – Medium-scale investigations**

Whereas the Cambridge region is a baseline with which to assess the history of knowledge acquisition in a single area, principally in terms of settlement knowledge acquired over a hundred years, Tier 2 encompasses two additional settlement studies that is broadly comparable to the third case study in Tier 1. The first case study in Tier 2 is associated with the Oxford/Berkshire or Upper Thames Valley (based on a synthesis carried out by Alex Davies (Oxford Archaeology); and the second is associated with the Bedford/Kempston investigations (based on a synthesis carried out by Mike Luke (Albion Archaeology)). Like Tier 1, this group is also driven by new knowledge derived principally from development-led archaeology.

Whilst a selection of the large-scale trenching projects over 50 hectares around Cambridge was chosen for Tier 1, the Upper Thames Valley study examined all projects within a c. 7,920-hectare study area bounded by Didcot and Wallingford to the east and west, the Thames to the north, and the Berkshire Downs to the south (see Figure 4).

![Figure 4. Upper Thames Valley study area showing project events (Davies).](image)
Ninety-four projects were recorded in the HER, with each project encompassing one or more phases of work on the same development site. The total trenched evaluated and excavated area investigated from these 94 projects was c. 1,140 hectares. The largest four projects assessed by the Upper Thames Valley were North-East of Didcot (CA 2017; Keevil Heritage 2021; OA 2013, 2018a, 2019) at c. 145 ha; Fullamoor Farm at c. 153 ha (Booth, Boyle, and Keevill 1993, 106–115; TVAS 2013); Valley Park at c. 178 ha (CA 2016); and Great Western Park at c. 184 ha (Davies et al., forthcoming; Hayden et al., forthcoming). The Upper Thames Valley study was also able to show that 44 (47%) of the projects did not uncover any Iron Age or Roman remains. These ‘blank’ projects totalled 113.8 ha; approximately 10% of the entire investigated area. About 60% of the blank projects were less than 1 ha in size, with the two largest projects – the evaluations of Long Oat Lands (OA 2018b) and New Barn Farm (OA 2016) – respectively c. 15 ha and c. 33.8 ha in size. Further results on the Didcot and Wallingford area are forthcoming (Davies, forthcoming; Chadwick, forthcoming), but the initial analysis from the 1,140 hectare investigated area suggested a settlement density at its peak in the Early Iron Age period, with 2.3 settlements per km², and least dense in the Late Iron Age at 0.6 per km². In the Early and Middle Roman periods the settlement density was approximately 1 per km², with 1.3 per km² in the Late Roman period.

As mentioned above, the third case study in Tier 1 can be compared with the Upper Thames Valley’s study to show the qualitative impact of development-led archaeology on knowledge. For example, the density of trenching events weighted by the size of the area investigated is a kind of knowledge-density map (see Figure 5 but compare with
Figure 3 (bottom)). What Figure 5 illustrates is the potential impact this type of intervention has on archaeological knowledge. Principally, development-led archaeology in the form of evaluation trenching and open-area excavation, undoubtedly show there has been a huge increase in the information about the number and density of Iron Age and Roman settlements, but can the same be said of an understanding of how these settlements were networked together in the past? To attain this kind of understanding it is important to assess the quality of that information, such as determining whether this is derived from evaluation, of the whole area, and not just the areas of open excavation. This is because targeted open area excavations are usually, but not exclusively, settlement-focused, and so may miss smaller settlement localities in-between larger settlements and sites such as fields and tracks that filled in the spaces between larger settlements. And these tend to be under represented in the archaeological record. However, the landscapes under investigation and the decision making process of calling for mitigation and what is not called (for some kinds of investigations such as housing developments) may be biased towards settlement remains rather than field systems, for example. Whereas infrastructure projects, such as the A14 and A428 projects that run through the Cambridge region, might identify large and smaller settlements, they may not be representative of the settlement densities that they go through. As infrastructure projects are often linear transects and not particularly wide in their investigative reach, these types of interventions tend to ‘characterise’ the settlement landscape rather than give fully verified de facto densities. As suggested in Table 2, some caution is required in accepting the overall value of settlement density derived from linear intervention covers; see for example the difference between A14’s gravels and clays. Furthermore, a comparison between the Cambridge’s large-scale investigations and those of the Upper Thames Valley also suggest the mitigation bias centred on ‘settlement’ with high-density numbers for settlement compared to the overall regional density number. Thus, an aggregated density in terms of period and location may well omit knowledge about

Table 2. Relative densities of settlement between the Cambridge and Upper Thames Valley study areas. *Based on figures derived from the Cambridgeshire study and the Berkshire/Oxfordshire study, as well as A14 and A428. For the Iron Age the EngLaid density mapping shows that there were 25 settlements in the Cambridgeshire study area (covering an area of 38,314 hectares), and nine settlements in the Berkshire/Oxfordshire study area (covering an area of 7,920 hectares). For the Roman period the RRS shows that there were 53 settlements in the Cambridgeshire study area, and nine settlements in the Berkshire/Oxfordshire study area.

<table>
<thead>
<tr>
<th>Iron Age</th>
<th>Investigated area (ha)</th>
<th>No. settlements *</th>
<th>Density (per sqkm)</th>
<th>Whole study area density (per sqkm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambridgeshire</td>
<td>4074</td>
<td>106</td>
<td>2.6</td>
<td>0.7</td>
</tr>
<tr>
<td>Upper Thames Valley</td>
<td>1140</td>
<td>27</td>
<td>2.3</td>
<td>1.1</td>
</tr>
<tr>
<td>A14</td>
<td>c. 1200</td>
<td>22</td>
<td>2.3</td>
<td></td>
</tr>
<tr>
<td>A14 Gravels</td>
<td>c. 540</td>
<td>16</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>A14 Clay</td>
<td>c. 660</td>
<td>6</td>
<td>0.9</td>
<td></td>
</tr>
<tr>
<td>A428</td>
<td>482</td>
<td>20</td>
<td>4.1</td>
<td></td>
</tr>
<tr>
<td>Roman</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cambridgeshire</td>
<td>4074</td>
<td>56</td>
<td>1.4</td>
<td>1.4</td>
</tr>
<tr>
<td>Upper Thames Valley</td>
<td>1140</td>
<td>22</td>
<td>1.9</td>
<td>1.1</td>
</tr>
<tr>
<td>A14</td>
<td>c. 1200</td>
<td>15</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>A14 Gravels</td>
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</tr>
<tr>
<td>A14 Clay</td>
<td>c. 660</td>
<td>4</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>A428</td>
<td>482</td>
<td>10</td>
<td>2.1</td>
<td></td>
</tr>
</tbody>
</table>
settlement stability (numerically and locationally). But this type of inquiry only emerges once a theoretical knowledge plateau has been observed and the data assessed. To examine reaching this kind of variation, we turn to Bedford/Kempston (Mike Luke – Albion Archaeology).

Since the mid-1990s, the c. 13 sq km of urban expansion to the west of Bedford/Kempston has revealed much about the late Iron Age and Roman settlement patterns of the area. Geographically it includes the River Great Ouse and a tributary, the Elstow Brook, to the south; there are gravel terraces near the rivers and clay elsewhere. It is likely that, apart from the pre-existing urban areas, we now know the location of all late Iron Age and Roman settlements within the meander of the Great Ouse that contains the modern village of Biddenham (Figure 6). The majority were located adjacent or close to the modern floodplain and those to the south near Marsh Leys were in the vicinity of the Elstow Brook. The eight late Iron Age settlements are all located within 50 m of the modern floodplain. They are typically less than 1.5 ha in extent and feature both enclosed and unenclosed elements e.g. Marsh Leys (Luke and Preece 2011, 142, fig. 9.1) Biddenham Loop (Luke 2016, 241–2, fig. 5.23) and north of Biddenham (Luke and Barker 2022, 11–12, fig. 2.5). At least half of the 15 Roman settlements originated in the late Iron Age, but the number is certainly higher as four of these settlements lie outside the principal areas of investigation and have, therefore, only been subject to limited work.

Apart from the roadside settlement at Kempston Church End, all the known settlements can be described as farmsteads, although they exhibited some variety. Apart from the one in the southern part of the Biddenham Loop, the known farmsteads were located 350–700 m apart. There is a suggestion that the farmsteads around Marsh Leys between the Elstow Brook and the tributary to the north were more regularly spaced. The extensive boundaries extending between these two watercourses may delimit the land utilised by each of these farmsteads. The farmsteads comprised rectangular enclosures often with an integral trackway which extended beyond the settlement area. They typically contained 4–5 main enclosures and were 1.5–2.5 ha in extent (Luke 2008, 56–58; Luke and Preece 2011, 142–152; Luke 2016, 241–251; Luke and Barker 2022, 12–13, fig. 2.6). One of the largest (6 ha) and with a higher number of enclosures (ten) was located centrally in the southern part of the Biddenham Loop (Luke 2016, fig. 5.26). The layout of the trackways associated with this settlement, the way they connect with an E – W boundary ditch which appears to ‘cut off’ part of the Loop, and the absence of contemporary farmsteads within that area make this farmstead stand out from the others – suggesting some social stratification (Luke 2016, 337).

The settlement at Kempston Church End was located adjacent to the Great Ouse, between two tributary streams (Luke 2016, 217). It comprised a large number of enclosures laid out along a well-built, SE – NW road. At 17 ha in extent, it is the largest settlement in the Bedford area. The nearest ‘small towns’ are Irchester c. 20 km to the north-west and Sandy c. 16 km to the east. Before the size and nature of the settlement at Kempston Church End were fully understood, it had been suggested that ‘local’ roads from Irchester and Sandy passed through the Bedford area (Simco 1984, 65–6). It now seems more likely that those roads were routed through Kempston Church End. The influence of the roadside settlement on the distribution and number of farmsteads in the vicinity is indicated by the absence of farmsteads between it and those at Marsh.
Figure 6. West Bedford and Biddenham Loop (Luke – created by Mike Luke and Joan Lightning, Albion Archaeology).
Leys to the south – a gap of c. 1.8 km. There is a similar gap to the north, on the west side of the Great Ouse, although this may reflect the limited amount of investigation in this area. It may also be significant that the unusually large farmstead within the southern Biddenham Loop (described above) was on the opposite side of the Great Ouse to the Kempston Church End settlement. This kind of intensive study allows for other questions to be asked; such as how much pre-Late Iron Age settlement was there, and did they influence later phases? And how many of the Late Iron Age settlements cease to continue into the Roman period, and what was the process of settlement consolidation?

**Tier 3 – Other investigations**

Some answers to these questions at the end of the previous section come from looking closer at the evidence. But they may also emerge from examining different techniques besides large-scale trench evaluation or focused open air excavation. The Tier 3 investigations are situated at the local scale, which considers the landscape topography of a site and its relationship with others. Unlike Tiers 1 and 2 which assessed the variation in settlement densities across several larger-scale schemas, the Tier 3 case studies are tied to the specific landscape area under investigation, and generally use investigation techniques that do not involve evaluation trenching (Table 3). The Tier 3 case studies we discuss are connected with East Kent and East Yorkshire.

A case study of an inland rural area in East Kent (by Lacey Wallace) between Canterbury (to the northwest), Dover (to the southeast), and Richborough (to the northeast) combines information from the Historic Environment Record, site reports, and the surveys associated with the Canterbury Hinterland Project (e.g. Wallace and Mullen 2019). Within this area, the RRS project (Smith et al. 2016) which was based only on excavated sites, included just four of the 15 Roman period sites shown producing a map that reflects a bare countryside (Figure 7). Instead, Kent County Council’s online HER interface presents a dense cluster of dots representing the thousands of monuments, events, and finds in their database. What is clear, is that the impact of Iron Age settlement in the Roman period is evident through the presence of ‘hillforts’ and a major trackway between Dover and Canterbury. The concentration of religious and burial sites in this area is related to visibility, with the significance of the hillfort enclosures related to local communal memory, and the continuity in communal activities maintained by the temples, burial areas, and larger nucleated settlement at Goodnestone. The low-lying land between Canterbury and Richborough (Figure 7), in

<table>
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<th>Table 3. Local landscape investigations and settlement densities.</th>
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Figure 7. East Kent study area (Wallace). Features and anomalies have been digitised from vertical aerial photographs, satellite images, LiDAR, geophysical survey, and excavation. HER records where objects have been found alone without features or an associated burial have been excluded. Features that have been dated to earlier than the Iron Age and later than the Roman period have been excluded. The digital terrain model and streams show the present-day landforms (green is lower ground, dark brown is higher ground), using Ordnance Survey data.
contrast has fewer Iron Age features which may be influenced by differing geologies and land utilisation patterns. The industry, large-scale agricultural storage/processing, and 1st century bathhouse with continental-style mosaics in this area indicate a separate zone, perhaps more easily used for activities related to the military and/or imperial administration.

Many archaeological investigations have taken place in the Yorkshire Wolds, many of which have been considered pioneering in the field of archaeological landscape studies. The NMP’s aerial photographic study of the Wolds conducted by Cathy Stoertz (1997), for example, and the large-scale geophysical and aerial remote-sensing surveys centred on the Vale of Pickering to its north (Powlesland 2003, 2009; Powlesland, forthcoming), not only transformed our understanding of archaeology in this region but contributed substantially to reconceptualising approaches to ancient rural landscapes more broadly (see, for example, the Stonehenge Hidden Landscapes project (Gaffney et al. 2012) and the Emptyscapes project in the Mediterranean (Campano 2016)). The Heslerton Parish Project, in particular, showcased the potential of an integrated remote-sensing approach to large areas of the landscape, revealing a density of settlement and landscape exploitation far beyond anything previously imagined – at the time combining the largest contiguous geophysical survey in Europe with an aerial photographic campaign spanning decades. More recent work on the Yorkshire Wolds has demonstrated that the scale and density of Iron Age and Romano-British settlement in this region is often underestimated (see, for example, Ferraby et al. 2017; Wrathmell 2012). Figure 8 highlights the potential of geophysical surveys particularly for revealing the full extent of such sites – often far greater than the aerial photographic evidence suggests. The 2019 survey at Harpham illustrated here, revealed that the villa was situated at the heart of a substantial Iron Age and Romano-British settlement (Maw 2021), uncovering a complex array of hitherto undiscovered buildings, enclosures, field boundaries and trackways. Two of these trackways formed a significant crossroad junction next to which the villa complex was situated – demonstrating the limitations of the earlier aerial photographic study of Stoertz (1997) and the limited 20th-century excavation of the villa itself.

Contextualized within more recent aerial remote-sensing data, further settlement appears to occur at least every 200 m along the major north-south routeway identified by the 2019 geophysical survey. Multiple potential settlement enclosures have been added from 2018 satellite imagery along this route, whilst a slightly larger concentration of features in the vicinity of a further crossroads can be seen c. 800 m to the north of the Harpham junction. A high density of surface finds in this area indicates another high-status Roman site, located equidistantly between the known Harpham and Rudston villas. As in the case of the Vale of Pickering, evidence for these linear settlements (or ‘ladder settlements’) extends across the Yorkshire Wolds landscape, with strong evidence to suggest many stretched practically uninterrupted for kilometres (see, for example, Thwing (Ferraby et al. 2017)). Although there has been some hesitancy in assuming the settlements were all occupied at the same time, geophysical survey evidence at both Harpham and Thwing suggest large-scale reorganisation in which its sections were laid out contemporaneously. Whilst evidence for such large-scale settlement in the Vale of Pickering was initially considered exceptional, ongoing research in
Figure 8. East Yorkshire Wolds case study showing Harpham villa and the remote sensing context (Maw & Millett).
these landscapes is effectively demonstrating that this degree of Iron Age and Romano-British settlement density is perhaps more of the rule.

These studies within Tier 3 have shown just how useful non-invasive prospection, such as aerial photography and large-scale geophysics prospection, is in filling in the gaps that lie in-between trenched areas. However, as suggested above, it will routinely underestimate settlement densities. Therefore, where an area’s archaeological knowledge is mainly derived from non-destructive interventions, it is unlikely to have reached abundance. For instance, with Iron Age period sites, there is the possibility of a ‘hidden’ Iron Age underneath Roman settlements in the same location. The same, of course, can also be discussed in the context of medieval settlements lying on top of earlier Roman (and Iron Age?) settlements. As demonstrated by the East Yorkshire study, airborne mapping vs large-scale geophysics shows that greater numbers of archaeological features can be reached by using the latter; but the advantage of airborne mapping approaches is a much larger area of the landscape can be assessed relatively quickly. However, while trenching can advance an even greater number of ‘sites’, it is a slow and expensive process to uncover large areas e.g. Longstanton/Oakington/Northstowe, and North-west Cambridge. But how close can these numbers match the reality (see Table 3)? Perhaps what is needed is to find examples of areas that have had large-scale excavations but where work has progressed via different techniques, such as from fieldwalking, to aerial survey, to geophysics, to evaluation, to excavation, so that we can compare the number of sites known at each investigative stage. In this way, the creation of the ‘knowledge plateau’ can be fully assessed. Another approach is to take all of the information to hand, and identify trends in the data to produce a ‘prediction’ of sites based on a configuration of different parameters.

The detail of information gathered from ‘site’ identification strategies, such as excavation, fieldwalking, aerial survey and large-scale geophysics, all contribute to a wider sense of the ‘local’ but do they also give an insight into how contemporary settlements and land uses were connected and extended across the landscape? How settlements and the spaces in-between connect was also a concern that emerged out of the RRS project. Utilizing the RRS project, another called the Roman Landscape Characterisation and Prediction Project (RoLCAP) is building on good access to the RRS data, creating new insights that investigate the landscape beyond the local (Chadwick and Green 2020). The main data for RoLCAP is derived from the RRS data, supplemented with additional evidence for the Roman period from the EngLaD project which includes HER, PAS, recent grey literature, aerial photographic transcriptions, geophysical and fieldwalking results. Unlike the RRS’s national-wide survey, RoLCAP focused on several smaller case study areas in the Midlands and Southern England. Furthermore, the project explores the relationship between different soils, geology and other landscape characteristics to generate character zones with which to predict the nature and extent of Roman settlement, farming and landscape exploitation (Figure 9). This follows similar work in places such as Belgium, Germany and the Netherlands (de Kleijn et al. 2018; Joyce 2019; Van Dinter et al. 2014).

What is important for the discussion here is the project’s central question that asks whether these observed patterns were created by hidden but consistent biases in archaeological data, or if they reflect ‘actual’ patterning. Again, this is a question of being able to distinguish between a distribution that reflects a real pattern, or one that is derived from differential intervention biases. In exploring the pattern, in this and other contexts, it is important to understand the data, and
what the different underlying biases are, in this example, to characterise the Roman landscape. The initial observation is that the predicted distribution of farms and fields across the study areas is uneven, with the same unevenness being produced with other archaeological distribution maps for the period. However, only by fully answering this question will it be possible to understand Roman settlements and their field systems, and determine what value there will be in predicting the Roman landscape using machine-based learning and model building techniques. But it will be important to assess whether the predictive models will replicate the existing biases in archaeological data. RoLCAp explores these issues, but the preliminary results suggest that a predicted model of Roman settlement and fields fits well with the evidence base and that HER and other archaeological data, despite being ‘characterful’ (Cooper and Green 2016), can be used to model Roman farming regimes and their wider landscapes at varying scales.
**Discussion**

This paper is the start of a process of asking what more we can say, and what the different qualities in techniques are needed, to advance a better understanding of the data currently amassed on Iron Age and Roman settlements and landscapes (see Fulford and Holbrook 2011, 2018 for a different view on this).\(^1\) For instance, in bringing together different data sources to tell the story of regional archaeology, we can now reach further into our explanatory interpretations of ‘how things worked’. Thus, we can look at the state, quality and advancement in our archaeological knowledge about regions, such as the Cambridge region since Fox (1923), as well as in other comparable areas, and can track potential knowledge pathways before and since PPG 16, also, crucially, identifying where we might go next in the analysis of pattern. In this way, we consider abundant landscapes like the Cambridge region, as ‘laboratories’ for studying a range of different issues. Some of these might be:

- The post-PPG 16 impact of development-led fieldwork and how this is shaping our understanding of Iron Age and Roman landscapes across England;
- The socio-economic implications of – where present – high-density past land-use levels. For example, identifying where technological knowledge and material culture ‘style’ transfer occurred, and how this may have shaped resource allocation and use (i.e. sustainability);
- Future investigations of Iron Age and Roman landscapes so that archaeologists, developers and the wider public alike can reap the maximum gains from archaeological work undertaken.

It seems clear to us that archaeology needs to be better at defining where abundance exists, what abundant landscapes are (archaeologically-speaking), and what the appropriate scale to map out these definitions is. In our study we have taken a multi-scalar approach, but it would be most appropriate to view abundance through the lens of regional settlement densities, especially, in areas such as the Cambridge region where those densities can be temporally calibrated to track the accumulation of knowledge through time. In doing so, the ‘network inside-out’, so to speak, can be elucidated by identifying where further work is needed on the absences in the distribution, and whether these represent ‘real’ gaps or ones that show a deficit in investigation. It also seems clear that we need to contextualise before we can fully assess what we are calling ‘abundant landscapes’. Thus, there are three areas to explore.

Our first concern is that it is perhaps not so much the size of the dataset amassed since the 1920s that defines abundance – an obvious and slightly inevitable process in the ‘natural’ accumulation of archaeological knowledge that comes from the avalanche of knowledge following the transformative planning policy PPG 16 in the UK – but rather the type of knowledge that has been accumulated. The ‘type’ of knowledge also creates an increasing possibility of knowledge overload, by which we mean that as we continue to amass more data without realising its analytical potential or the conditions of its production, we limit the opportunities that this knowledge has to move disciplinary questions on. Thus, if we scrutinise further what impact comes with reaching a knowledge plateau, and what this does to our existing knowledge structures, this may
lead to a rethink about the research strategies associated with our knowledge of past landscapes and settlements (cf. Evans 2018). As a consequence, we might reassess what our notions of landscape sampling processes are for development-led investigations, and what precisely an understanding of settlement totalities in a landscape context means. For instance, is it an achievable goal to know everything about a defined area in certain periods of the past (we think not)? In some regions what we can say about past inhabitation is more than representing settlement sites, say, in terms of their presence and absence. Instead, it is in understanding what these acquired knowledge assemblages are, such as those on Fox’s maps and the subsequent modernisation of them. This might involve the analysis of settlement distribution by forming a view of the ‘historic’ processes involved in establishing settlement across swathes of a landscape, or in forming a metric for wider comparisons of the pattern and timing of settlement development.

Second, while the presence and absence of sites, and perhaps of settlements, are still, and will remain, important baselines to operate within, where we have reached a knowledge plateau, it is arguably more important to address the specific concerns of what these patterns represent. This is not to suggest that we should no longer acquire more data or more knowledge, but only that it is likely that any new knowledge will reinforce some of the conclusions we are now reaching, for example, in terms of settlement histories, as we move towards a more complete social history of inhabitation.

And third, because of this, new opportunities arise with increased confidence in the knowledge that we now have for synthetic studies and in creating future research strategies, and which may lead to a well-needed increased experimentation in excavation methodologies in commercial archaeology (e.g. Evans 2012; Evans, Tabor, and Vander Linden 2014). While part of this paper is paving a way forward for future work on so-called abundant landscapes, it is not a task we have addressed fully.

The study presented here has focused on incorporating intrusive fieldwork-related evidence for settlement alongside non-intrusive prospection to gain a better sense of the pattern and density of late Iron Age and Roman archaeological sites. Furthermore, to establish credible interpretations we need to understand the ‘character’ of the data being used to assess abundant landscapes, showing and understanding how it has been created, and under what kinds of conditions and techniques (Cooper and Green 2016). Such an approach is not only focusing on the present-day data but also incorporates older, legacy data (which in this context we take to mean pre-PPG 16). This has allowed greater depth of insight into the pattern and the character of the data far beyond the reaches of just looking at post-PPG 16 data. In doing this, we begin to understand better where the states of knowledge and the internal (and external to some extent) biases in knowledge lie, addressing questions such as what site-type wise are we seeing most of in the pattern, and is there a reason for this? The potential in this is that we also begin to see the ‘real’ impact of development-led archaeology, such as its tendency to examine settlement over other kinds of archaeology such as field systems and trackways. And in a way, what we need to do is, as Annelise Riles suggests in another context, ‘to see the gaps in the figure through field work’ (Riles 2000, 22). Thus, while there is a specific partiality in adding more and more settlement information, leading to abundance in the settlement archaeology at particular locales, the same cannot be said of the attending field systems and trackways, especially in the spaces
away from and in-between settlements (which are often successfully mapped and identified from aerial sources). After a moment for reflection, and only then, are we able to identify specific biases and gaps in our knowledge, where these might reflect gaps that existed in the past, and thereafter we able to use the data critically to examine the varying trends and correlations to derive new ways of thinking and types of investigations to address any imbalances.

A critical next step that we propose is moving from a simplified translation of fieldwork to dots on maps (after Yarrow 2006) to an understanding of what the pattern is telling us. Also, we begin to attribute settlement or site patterning to larger-scale behavioural processes (i.e. to locate a settlement at this place, and not that place), from where we can start to understand how people inhabited/dwelt in the landscape (e.g. Ingold 1993). Additionally, we begin a process of understanding knowledge creation that is less abstract by following the various translation processes that occur between the different stages of circulation and translation between fieldwork to map representation to the work we do in the ‘office’ (Latour 1999, 24–79; see also Yarrow 2006). Another discussion point for future work focuses on the observations we have made amongst the case studies, say in comparing the varying patterns of settlement. This is connected with intensely studied areas, areas with pattern and density, such as the Cambridge region, the Upper Thames Valley, and the Bedfordshire case study. Within these studies, we can ask what the effect of scale and perspective is on the understanding of the pattern, and how exactly sub-regions compare with one another. What the results of our different studies show is a certain amount of compatibility when grouped by the largest temporal common dominator and a spatial metric that reflects settlement density (see Table 2). One of the outstanding questions, though, is to what degree can (sub-)regional variation be captured in an analysis such as this? Does a study area need to include a large area, like the Upper Thames Valley study which looked at all interventions, or, like the Cambridge study, be selective of what is considered in the analysis (i.e. evaluations or excavations over 50 ha threshold)? Unlike the RRS project, we have shied away from settlement classifications as points of comparison; settlement classes are often amalgamations of several different types, and rarely ‘fit’ specific classifications. Therefore, while we acknowledge a degree of significance and usefulness in assigning categories, a settlement through its history will often outgrow an assigned classification connected with one period. A comparison of settlements cannot be made between ‘types’ but rather on emergent categories which are dependent on certain kinds of spatial and temporal renderings. It is better, as demonstrated by the RoLCAP project, to ‘characterise’ settlement to assess the different regional characteristics in the composition of settlements, rather than determine what it is at a specific time and locale, and apply this to a whole raft of other settlements in different locales. By adopting a characterisation approach in the first instance, what we begin to see across the different scales are regional trends. These might be associated with the presence/absence of settlement, as well as the possible connections between them (at the scale of the region). As well as with associated with variations in settlement densities between regions (at the scale of the sub-region) in which more localised patterning is revealed (at the scale of the local), where a greater emphasis could be placed on an analysis of the pattern and timing of settlement. The latter is an important concern, especially with further comparison outside of the UK in Europe, where the synthesis of the pattern, timing,
rhythm and duration of settlement is a much more common mode of analysis (e.g. Reddé et al. 2018, 543 - fig 15).

What we have seen across each of the studies are the different qualities in data. For instance, trenching of large areas may identify greater numbers of Iron Age and Roman settlements than say fieldwalking, aerial survey and large-scale geophysics in terms of settlement numbers per hectare. However, this is all dependent on preservation conditions, but also the techniques being used during data collection. For example, the Cambridge Archaeological Unit’s Northstowe trenching across the development area, covering an area of 1160 hectares, produced 23 Iron Age settlements and six Roman. Whereas John Bromwich’s fen-edge Roman settlement study (Bromwich 1970) identified 59 Roman settlements across an area of 19,095 hectares. This is a difference of 0.52 Roman settlements per sq km from the trenching at Northstowe, compared with 0.31 Roman settlements per sq km for fieldwalking across the fen-edge study. Qualitatively, while the area covered by the fieldwalking is much greater, it has a lower return in the depth of knowledge about the settlement forms in this instance. The trenching (along with the excavation) differentiated better and had more chances of identifying a more or less complete coverage of settlements across an area (with systematic trenching, and relatively good preservation). Furthermore, it may be that fieldwalking as a methodology in the UK is underdeveloped compared to other regions (see Haselgrove, Millett, and Smith 1985). However, in this example, we can say that the number of sites is far higher when an area is trenched than in recently ploughed fieldwalking areas (and even less for identifying prehistoric sites because the pottery that may come to the surface is often not well preserved and is dispersed quite quickly). And this is a status quo that will probably remain in place for the foreseeable future with the increased tendency for drilling as opposed to ploughing crop in the region.

Having reached a knowledge plateau point, theoretical or otherwise, it is necessary to reflect on the implications of what an archaeological abundance gives us, and what is possible thereafter. As a way of an ending to the paper’s discussion, but not a conclusion, we signpost some future ways that we might ask for much more of the data we have. This might include further analysis of the patterns of settlement that gain a better sense of population numbers (Hassan 1978, 2007; Chamberlain 2006). Or possibly to help shape a more precise, and useful predictive model of settlement from different periods e.g. following the RoLCAP project and other predictive modelling approaches in the US and Netherlands (cf., Kvamme 1983; Verhagen 2007; Verhagen and Whitley 2020). Furthermore, we might begin to reveal and further understand temporal relationships between settlements and land uses. For example, the often-observed hiatus in settlement patterns between the Middle to Late Bronze Age compared to those that come in the middle to later 1st millennium BCE in the Cambridge region (Knight and Brudenell 2020). And we are also probably at a stage where we can reflect on the structure of the later Iron Age and Roman landscapes, and how they ‘worked’; aspects such as how arable farming practices were aligned with grazing in the seasonal rote, the kinds of economic and social exchanges taking place between communities, and in what ways they were connected both physically along routes, as well as socially in terms of the various social networks and contracts that were entered into. So, perhaps, archaeology is now at a point where it can move the types of questions being asked on? Such an acknowledgement of abundance, and the increasing accumulation of
new data and thus, knowledge, allows us to do much more, leading perhaps to experiment in our field work and analytical methodologies. Where we appear to have a situation in which even with the new accumulation of evidence, our knowledge appears to be unchanging, perhaps new questions need asking, or the same evidence needs to be considered from a different viewpoint (after Riles 2000).

These ‘asks’ are speculative in the sense that we are not sure, even now, how we might approach settlement density in areas that are not as well understood as abundant areas such as in some areas of the Cambridge region. And perhaps there is a possibility to examine the inter-connectivities in the areas where we have intense clusters of settlement data, and understand further, perhaps with correlation analysis, or along the lines outlined in this paper, how settlements were connected and extended across the landscape in less tangible means. We might also ask how best to articulate settlement densities going forwards; is the number of settlements per sq km the right approach? In terms of excavation strategies, we might paradoxically evaluate fewer settlements and more of the spaces that lie in-between by examining the ‘network inside out’. Whether or not development-led archaeology can address these wider concerns, or to what extent other kinds of research investigations are required, what is needed is to continue with the study of abundance, but also to expand our understanding of the pattern, timing, rhythm and duration of settlements that have been characterised by repetitive and dynamic patterns of inhabitation.14

Notes

1. In the Cambridge region our knowledge of the Iron Age and Roman periods, in terms of settlement densities, has dramatically increased twenty-one and seven-fold respectively compared with Fox’s 1920s knowledge base (see Evans, Aldred, and Cooper 2023). This increase also ties in well with other approaches that discuss regional identities, such as the RRS project (e.g. Smith et al. 2016), and Stephen Rippon’s studies on fields and territories (Rippon, Smart, and Pears 2015; Rippon 2018). Although this increase varies across different parts of the UK; while the southeast shows a convincing increase from the 1920s to today, the increase in knowledge has been much slower in other areas due to the ‘pace’ of development.

2. Fox’s ACR was the first such study that deepened the archaeological understanding of how different parts of past landscapes connected to one another and ‘worked’ at a sufficient scale of enquiry for patterns to emerge in the distribution. Fast forward a hundred years or so, from Fox’s (1923) publication, and we are at a place in Cambridge and other regions where we have a good grasp of how the different parts of a ‘region’ work (e.g. how settlements, field systems, communication links, industry, burial grounds connect up spatially and through time, and the material and social networks that supported these), following several iterations of regional analyses, using the Cambridge region as an example (e.g. Taylor 1972; Browne 1977; Cambridgeshire 1978; Kirby and Oosthuizen 2000). We are also beginning to understand how communities function at the local level (e.g. Evans and Lucas 2020; Aldred 2021), and how this extrapolates at larger scales, e.g. in terms of the communication and kinds of material transfer and exchange occurring between neighbours, and what constitutes neighbours beyond identifying their groupings (Evans, Aldred, and Cooper 2023; see also Hallam 1970, 51). While elements of our understanding such as settlement distributions have reached a knowledge plateau in several areas in the Cambridge region, there are still areas where new data
has the potential to change the understanding as we have not yet reached a ‘total’
archaeology – if this is ever achievable (contra Taylor 1974, 1983).

3. This is derived from an increased number of investigations and research in the area.
The pre-PPG 16 distribution included information from Fox’s maps and the OS
Roman Britain map (1991 edition), showing the distributions of settlements, funerary
and religious sites, as well as production sites and finds locations. The subsequent
post-PPG 16 distribution was derived from: the EngLald project (c. 2012) that
summarised Historic Environment Record (HER), Portable Antiquities and Historic
England’s (HE) National Mapping Programme (NMP) data into 1 km ‘aggregated’
quares; and RRS data (c. 2015) that looked at all evaluation/excavation events
related to the Late Iron Age to Roman periods; and Cambridgeshire’s HER data
for the Iron Age and Roman periods within a discrete study area (see also Tier 2
below).

4. The data for the Abundant landscape study was acquired on 10/10/2020 and the NAIS
data [https://historicengland.org.uk/images-books/archive/collections/aerial-photos
record/27042_040] accessed on 31/05/2022.

5. These two studies have been discussed and analysed in the companion paper to this one
(Evans, Aldred, and Cooper 2023).

6. Whatever the potential in the patterns of data, and the degree of abundance at the
macro-level, there is further embedded nuance within-the-region where a ‘territorial’
analysis could assess the state of and type of knowledge, and what effect this has on
our understanding of later Iron Age and Roman landscapes, especially on the
relationship between settlements, field systems and routes. However, with the accumu-
lation of new and deeper regional knowledge, in particular about the Roman
period, the impression of ‘sites’ – as defined through the main categories identified
above (settlements, funerary and religious, production and finds) – has also been
studied by other pre-PPG 16 gazetteer and map-based research. For example, The
Fenland in Roman times (Philips 1970) which covered approximately half of the
northern area of Fox’s Cambridge region; the VCH Roman Cambridgeshire
(Cambridgeshire 1978) shows a diachronic development of ‘settlements’ across
a large part of Fox’s study area; and the Fenland Project (e.g. Coles and Hall

7. 40 (43%) of the projects were less than 1 ha in size; 36 (38%) were between 1 ha and 10 ha,
and 14 (15%) were between 10 ha and 42 ha in size.

8. The RRS also include a hexagonal feature at Star Hill in Bourne Park, which is unlikely to
be Roman as it is one of a pair situated symmetrically on either side of an 18th-century
approach to Bourne Park House (see Wallace et al. 2016).

9. Allen, Martyn, Nathan Blick, Tom Brindle, Tim Evans, Michael Fulford, Neil Holbrook,
Julian D Richards, and Alex Smith. ‘The Rural Settlement of Roman Britain: An Online
Resource’. Archaeology Data Service, 2015 (https://archaeologydataservice.ac.uk/archives/
view/romangl/index.cfm (accessed 27/07/2022)).


11. Several projects formed the basis for the RRS project: Evaluation of PPG 16, ‘grey’
literature and the rural settlement of Roman Britain (2012–2015 - RPG-417) and From
Roman England to Roman Britain: rural settlement, society and economy (2015–2017 -
RPG-2014-227).

12. Or perhaps archaeology from any period.

13. What is not often discussed, or acknowledged even, is the role that local authority
decision-making has had on knowledge production beyond the geography of development
(M. Brudenell pers comm.). This is potentially a topic of future research.

14. This kind of work might inform strategic planning decisions, not just academic
study.
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Author contributions

AC (then Cambridge Archaeological Unit, University of Cambridge) initiated the study while CE (University of Cambridge) managed it; AD (Oxford Archaeology) produced the analysis and text for the Upper Thames Valley; PC & CG (University of Oxford) produced the analysis and text for the RoLCAP study; ML (Albion Archaeology) produced the analysis and text for the Bedfordshire study; EM & MM (University of Cambridge) produced the analysis and text for the Yorkshire study; and LW (University of Lincoln) produced the analysis and text for the Kent study. OA (Cambridge Archaeological Unit, University of Cambridge) brought the various strands of the project and texts together into a single paper.

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