VI: An Assessment of the Utility of Supervised Metal Detecting in Development-Led Archaeological Work in Cheshire

by Robert A Philpott*

For some years metal-detector surveys have been a required technique for investigating archaeological potential in commercial developments in Cheshire. The present article assesses the effectiveness of these surveys and looks at the circumstances affecting the success of the methodology. It considers the chronological and functional profiles of finds from the surveys and discusses reasons for the formation of the metalwork assemblages that predominate in the county. Finally, it considers issues such as the question of iron in archaeological surveys and finds retention strategies.

Introduction

Since 2010, and occasionally before then, the Cheshire Archaeology Planning Service has required archaeological contractors to undertake a supervised metal-detector survey to investigate the potential of sites subject to development. 'The identification of archaeological sites in rural Cheshire, in common with much of lowland north-west England, poses particular problems due to the ephemeral nature of the deposits, the scarcity of artefactual material and the masking effects of a predominantly pasture landscape' (Cheshire Archaeology Planning Advisory Service 2013). The potential of metal detecting was expressed thus: 'Structured, supervised metal detecting may, therefore, have a role to play in the location of archaeological sites, either alongside techniques such as fieldwalking and geophysical survey or as a stand-alone approach.' In 2016 the writer was commissioned by Mark Leah of the Archaeology Planning Advisory Service to undertake an assessment of the value of these surveys (Philpott 2017), and the present article is based on that report.

Portable Antiquities Scheme policy

The importance of archaeological finds recovered by metal detecting has long been recognised. The Portable Antiquities Scheme (PAS) was established in England and Wales in 1996 'to advance knowledge of the history and archaeology of England and Wales by systematically recording archaeological objects found by the public.' Amongst its aims

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was ensuring that archaeological finds did not go unrecorded, as 'a great many objects were being found by members of the public which were not "treasure", but which were nonetheless important in building up knowledge of the archaeology and history of England and Wales.' (https://finds.org.uk/about). Chief amongst the sources of new finds were metal-detector users.

Historic England's statement on portable antiquities and surface-collected material 'recognises the potential value of using metal detectors, on land and beneath the sea, where they: extend public knowledge and understanding; and enhance the efficiency of metal artefact retrieval during fieldwork'. (English Heritage 2014)

The value of national schemes such as the Portable Antiquities Scheme as a research tool alongside other techniques has also long been recognised:

> … the primary aim of these recording systems is to collate data to advance archaeological knowledge; thus recognising that finds outside an archaeological context, that is (normally) to say from the plough-zone, are an important source for assessing otherwise undiscovered sites, and amassing data that can be used alongside other sorts of (normally stratified) archaeological information, as well as enabling hitherto unexplored strand of research.' (Deckers *et al* 2016, 426)

The creation of the PAS record is subject to a number of biases, related to access to land, search patterns and finds reporting (Robbins 2013), but despite these limitations there is a growing literature on the value of chance finds and objects recovered by metal detectors for the understanding of the spatial distribution of artefacts (eg Walton 2012). The underlying assumption is that these finds distributions relate directly to past human activity, with the caveat that absence of evidence is not evidence of absence. In the context of land development, the recovery of datable artefacts from the ploughzone at known locations is considered to provide information about the buried archaeological resource within a site.

However, the Portable Antiquities Scheme does not record all finds recovered by metal detectorists and others. In particular, finds from the eighteenth century onwards are far more common than those of earlier periods in most places and are prone to swamp the resources of the network of regional Finds Liaison Officers. Consequently, the scheme 'regularly records all coins issued up to the end of the Commonwealth in 1660, although we have to be more selective thereafter owing to the numbers of coins found. However, we still want to see all post-medieval coins found regardless of date or condition.' (https://finds.org.uk/postmedievalcoins). Since 2015 the standstill in funding and increasing amounts of material offered for recording have led to further selectivity, and the southern and eastern counties have been compelled to state explicitly that PAS will be selective in recording post-1540 items, 'continuing its historic emphasis on hand-made objects over those mass- or industrially produced' (Burnett & Webley 2017, 201). Despite this attempt at justification, the rationale for the selectivity is one of limited resources rather than the lack of intrinsic significance of the finds.

The Cheshire surveys

While the primary aim of the Cheshire surveys has been to establish the existence of archaeological deposits on development sites, a secondary benefit has been to provide a much more comprehensive overview of the quantity, type and date of metal finds recovered from fields than is routinely recorded by PAS. In contrast to the inevitable selectivity of the PAS approach, the current intensive surveys aim to record all metal finds (with some exceptions, such as 'modern junk' and sometimes iron). They provide an opportunity to see complete metalwork assemblages, quantified by date and type and accurately plotted within the landscape. As such they can serve as repositories of fine-grained information on local land use, agricultural practices and the social and economic status of local communities.

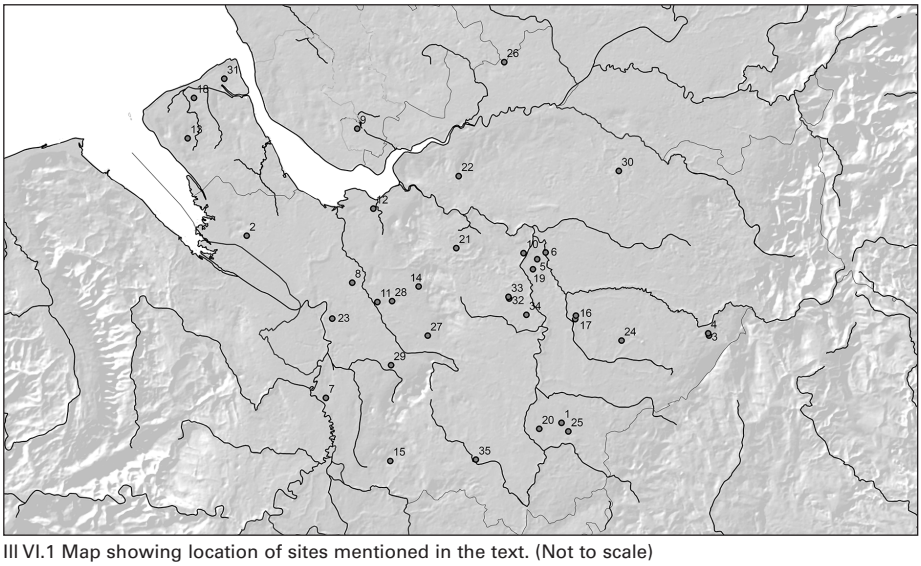
Measuring success

In establishing the effectiveness of metal-detecting surveys in developer-led archaeology, the primary measure of success was considered to be that the results accurately reflected the presence, location and period of archaeological features below ground. However, a correlation, or lack of one, could only be established if all stages of the archaeological process had been followed through. As a minimum the metal-detecting survey should have been followed by evaluation trenching and ideally by extensive stripping of topsoil under archaeological supervision to test the correspondence between ploughzone artefact distributions and subsurface archaeological features. We shall consider the effectiveness of the Cheshire surveys and then examine some of the factors that have an impact on them. A total of twenty-five grey literature reports were available of extensive metal-detecting surveys undertaken as part of the archaeological evaluation process in the pre-or post-determination phase (Ill VI.1).

Aims

The stated purpose of the surveys was often simple and wide-ranging, requiring no previous finds or evidence as a justification. A typical statement on a site investigation at the Moorings, Congleton, reads: 'the objectives of the metal-detecting survey were to provide information about the archaeological resource within the site, including its presence/absence, character, extent, date, integrity, state of preservation and quality' (Cotswold Archaeology 2015b, 6). At Littler Lane, Winsford, the survey aims were to ensure the 'recording of archaeological assets discovered during the survey; place this record in its local or regional context; and make this record available' (Wessex Archaeology 2016c). At Ince the motive was 'collecting material remains with which to identify and determine the character, importance and date of potential archaeological remains present within the application site' (RSK 2010, 5).

Some surveys had specific aims related to previous discoveries in the vicinity or to other evidence for archaeological potential. Thus both at Kelsall and Shurlach Lane, Davenham, there were several finds of Roman date nearby, together with early medieval finds at the latter site, while a Bronze Age find had been previously identified at Ince. A further reason for a survey over the extensive site at Ince was the place-name evidence for a potential Viking site at the former Grinsome Farm, while the site also had potential to shed light through artefact distributions on World War II decoy sites known in the vicinity that were yet to be accurately located.



Ill VI.1 Map showing location of sites mentioned in the text. (Not to scale)

Key	*Site*	*Report*	*ECH no*
1	A500 Basford–Hough–Shavington Bypass	Dodd *et al* 2001	3850
2	Burton	Philpott 2013	
3	Congleton, Goldfinch Close and Kestrel Close	Cotswold Archaeology 2015a	6049
4	Congleton, The Moorings	Cotswold Archaeology 2015b	6050
5	Davenham, Church Street	Hayes 2017; Adams 2018	
6	Davenham, Shurlach Lane	Aeon Archaeology 2013	5648
7	Farndon, Churton Road	Wessex Archaeology 2016b	6238
8	Guilden Sutton, School Lane	Tong & Fletcher-Cutts 2015	6127
9	Halewood, Court Farm	Philpott 2008, 45, fig 3	
10	Hartford, School Lane	Wessex Archaeology 2012	5381
11	Hockenhull Hall Lake	Headland Archaeology 2013	6122
12	Ince Resource Recovery Park	RSK 2010	4701
13	Irby	Philpott 2015	
14	Kelsall, Flat Lane	Wardell Armstrong 2015b	6037
15	Malpas, Chester Road	Wessex Archaeology 2015	6151
16	Middlewich, Sanderson Way	Cooke 2017	
17	Middlewich, Warmingham Lane	Wessex Archaeology 2014b	5913
18	Moreton	Philpott 2015	
19	Moulton, Beehive Lane	L-P : Archaeology 2015	6130
20	Nantwich, Stapeley Water Gardens	WYAS 2010	4747
21	Norley	Cooper & Speed 2009	
22	Preston on the Hill, Hill Top Farm	A Towle *in litt*	4812
23	Saighton Camp	Wood & Griffiths *forthcoming*	
24	Sandbach, Congleton Road	Wardell Armstrong 2015a	6066
25	Shavington, Newcastle Road,	Dodd 2015	6073
26	Southworth	Moore 2014	
27	Tarporley	Fairburn *et al* 2002	
28	Tarvin, Tarporley Road	Wardell Armstrong 2013	5623
29	Tattenhall, Harding Avenue	Wessex Archaeology 2014a	6018
30	Tatton	Higham 1999	
31	Wallasey	Adams 2012	
32	Winsford, Littler Lane	Wessex Archaeology 2016c	
33	Winsford, Oakmere Road	Wardell Armstrong 2014	5991
34	Winsford, Swanlow Lane	Williams & Matthews 2017	
35	Wrenbury, Cholmondeley Road	Wessex Archaeology 2016a	6235

Methodology

The transect intervals for systematic survey varied from 5m up to 30m, while one survey was conducted by random walking. In regions where metalwork is scarce, the closer the transect interval the greater the likelihood of recovering a sample of the sparse finds present. In practice, a transect interval of 10m was adopted as standard for most surveys, matching common practice in extensive fieldwalking surveys. At Goldfinch Close, Congleton, the methodology was explained in detail:

> The two fields were split into a series of parallel transects set out 10m apart, ensuring approximately 10% sample coverage of the ground surface. The transects were set out using GPS and were marked on the ground using temporary markers that were removed from site at the completion of each survey day. Metal detecting was undertaken along each transect by sweeping the search head as close to the surface as possible and allowing for approximately 30% overlap in order to produce a consistent sample. Each sweep covered a width of c 2m (1m each side of the centre of the transect). (Cotswold Archaeology 2015a, 8–9)

The survey methodology has varied from site to site in other ways. Strategies for sites suspected of being the location of a Civil War skirmish or of World War II aircraft and anti-aircraft weapons have been explicit in including retrieval of iron objects to ensure that items such as cannon balls, gun parts or other ordnance were recovered. One that focussed on recovery of Bronze Age metalwork might reasonably exclude iron. Such decisions should be taken on a case by case basis but should be made explicit. The question of iron will be considered in more detail below.

Finds assemblages

The size of the finds assemblages recovered by systematic metal-detector surveys varied considerably (Table VI.1). Goldfinch Close, Congleton, produced only ten items but the area was small at only 1.8ha and the survey excluded iron and what it termed 'junk', including modern finds such as aluminium. The majority of the surveys (fifteen of the total) produced between seventy and 400 finds. The largest group was 621 finds from School Lane, Hartford**;** however, this extended over six fields and the total area was not stated.

Chronological patterns of finds recovery

Some clear chronological patterns emerge from the surveys. No prehistoric metal finds were recovered, and prehistoric flint was recovered by eye in only one survey, a flake at Littler Lane, Winsford. Only a few surveys identified Roman material, and it was present in only small quantities, comprising three possible Roman coins at Hartford, and a brooch and two other possible Roman finds at Ince. At Congleton Road, Sandbach, two certain and one possible coin together with a statuette arm were taken as strong evidence of Roman activity, given their location in the same area of the site. Wrenbury, only 150m from a known Roman site, produced a bow brooch dated between the first and second centuries AD, which was considered as a stray from the known site.

No certain diagnostic early medieval finds were recovered from any of the surveys. Datable later medieval finds are dominated by lead items, mostly spindle whorls of decorated or

Site	*Report ref or ECH no*	*Prehistoric*	*Roman*	*Early med*	*Late med*	*Post-med/ modern*	*Undated*	*Total finds*	*Area in ha*
A500 Basford–Hough–Shavington Bypass	3850	0	0	0	1	70		71	
Congleton, Goldfinch Close	6049	0	0	0	0	9	1	10	1.8
Congleton, The Moorings	6050	0	0	0	0	7	0	7	1.7
Davenham, Shurlach Lane	5648	0	0	0	7 +1 poss	174		182	
Farndon, Churton Road	6238	0	2	0	2	320		324	
Guilden Sutton, School Lane	6127	0	1	0	7	80	29	118*	0.52
Hartford, School Lane	5381	0	4	0	1 +3 poss	613		621	Not stated
Hockenhull, Hall Lake	6122	0	0	0	0	137		137	3.2
Ince Resource Recovery Park	4701	0	1(+2 possible)	0	1	354	35	392	58 (partial survey)
Kelsall, Flat Lane	6037	0	1	0	1+2 poss	77	45	126	3
Malpas, Chester Road	6151	0	0	0	2+1 poss	32	55	90	
Middlewich, Sanderson Way	Cooke 2017	0	0	0	3+1 poss	16	35	55	1.8
Middlewich, Warmingham Lane	5913	0	0	0	0	221		221	7.37
Moulton, Beehive Lane	6130	0	1?	0	4?	263	55	323	-
Nantwich, Stapeley, Water Gardens	4747	0	0	0	4	298		302	8.2
Preston on the Hill, Hill Top Farm	A Towle *in litt*	0	0	0	0	22		c 22	3
Sandbach, Congleton Road	6066	0	2+4 poss	0	8	212		226	7.89
Shavington, Newcastle Road	6073	0	0	0	0	7	0	7	-
Tarvin, Tarporley Road	5623	0	0	0	0	42	0	42	5.34
Tattenhall, Harding Avenue	6018	0	0	0	0	160		160	
Winsford, Oakmere Road	5991	0	0	0	7	64	0	71	6
Winsford, Swanlow Lane	Williams & Matthews 2017	0	0	0	0	276		276	Not stated
Wrenbury, Cholmondeley Road	6235	0	1	0	?	270?		271	8.8

Table VI.1 No and period of finds from surveyed sites (some figures approximate because of uncertainty of dating)

diagnostic form (Standley 2016), although they also include an ampulla from Stapeley and another from Chester Road, Malpas, and a late medieval/early post-medieval lead 'bird-feeder' from Ince. Medieval coins are scarce but hammered silver coins were recovered from Congleton Road, Sandbach. Medieval (or late medieval/early post-medieval) buckles are present at Stapeley, Congleton Road, Sandbach, School Lane, Hartford, and Flat Lane, Kelsall.

All the Cheshire surveys have produced a high proportion of eighteenth- and nineteenth-century finds as well as later material, a pattern which can be observed in any metal-detectorist's assemblage from the region. Such finds are routinely regarded as relatively unimportant by archaeologists and they were not the primary target of the surveys. However, it can be argued that these assemblages have some archaeological significance, as they provide a sound quantifiable basis for the phenomenal rise in later metalwork. This is discussed further below.

Correlation of metal-detector survey results with field evaluation reports

In only a small proportion of the sites has the metal-detector survey yet been followed by further field investigation. Such investigation is crucial to assessing the reliability of the surveys as an indicator of the presence or absence of archaeological remains below ground.

Most sites subject to further investigation produced no certainly early archaeological features. Predominant were field boundary ditches. At Newcastle Road, Shavington, where the finds recovered by metal detector were all of post-medieval or later date, the excavated features consisted of ditches open in the post-medieval period. At School Lane, Guilden Sutton**,** apart from a possible Roman weight, the only finds were thought to date to the Civil War period. However, the subsequent intervention, which included an archaeological strip, map and sample exercise, 'confirmed that there were no significant below-ground archaeological remains within the proposed development area' (Tong & Fletcher-Cutts 2015). At The Moorings, Congleton, only seven metal finds were located, all of post-medieval or later date. Evaluation trenching led the archaeologists to conclude that quarrying had removed any archaeological features or deposits predating the post-medieval period that might have been present.

At Flat Lane, Kelsall, metal-detecting and geophysical surveys were undertaken over the same 3ha site. Finds were inconclusive: a single possible Roman tack was found, a late medieval/early post-medieval buckle, a pot-mend and lead weight of general medieval or post-medieval date, but no concentration of finds was evident (Wardell Armstrong 2015b, 16, 23). The report notes: 'the geophysical survey did not detect any distinct archaeological features. Some very ephemeral geophysical anomalies were detected, which are likely to be agricultural features.' At Harding Avenue Tattenhall, where 'all of the identified objects [from metal detecting] are post-medieval/modern in date', the archaeological features revealed by seven evaluation trenches were almost all boundaries visible on early maps; the only exceptions were two undated intercutting pits (Wessex Archaeology 2014a, 4, 6–7). On the A500 Basford–Hough–Shavington Bypass the metal-detector survey produced seventy-one finds. Where datable the majority of the metal objects broadly date to the post-medieval period, with a single medieval dress fitting but no objects of prehistoric or Roman

date. A sample of the overall area was intensively examined archaeologically with three extensive survey methods – fieldwalking, metal detecting and magnetometry – followed by trenching to validate the discoveries. The features identified in the trenches consisted of a post-medieval field boundary ditch, an infilled pond and a group of undated postholes (Dodd *et al* 2001).

Overall, identification of areas of potential archaeological significance from the metal-detector surveys has been limited. Only a small number of surveyed sites, those which produced significant groups of Roman or medieval metal finds, were recommended for further investigation. At Oakmere Road, Winsford, a group of seven lead objects formed a sufficiently tight concentration for the archaeologists to state:

> The medieval artefacts have been recovered along the southern boundary of Field 1, which could be of significance. The finds lie within a northwest–southeast aligned parcel of land, therefore the recovery of these spindle whorls provides evidence of domestic activity on and in the vicinity of the site. (Wardell Armstrong 2014, 18)

The most unequivocal statement of archaeological importance from metal-detector finds alone occurs in a report on Congleton Road, Sandbach:

> The finds recovered during the survey are of high archaeological potential, particularly the artefacts of Roman, medieval and Civil War date. Their recovery provides evidence of domestic and military activity in the vicinity of the site. The recovery of Roman finds is of particularly high archaeological significance, as there is little recorded Roman activity in and around Sandbach. (Wardell Armstrong 2015a, 5)

The Sandbach site is the only case where a small group of finds identified as of 'high archaeological significance' was then subject to further investigation. This judgement proved correct and the below-ground evidence from field evaluation produced an extensive series of archaeological features of Roman date in the same part of the development area. The report noted:

> The archaeological work has confirmed the presence of previously unknown Romano-British remains in Sandbach. These remains comprised enclosure ditches, and some possible limited evidence of a structure within Area 8. There were the possible remains of a sheep race in Area 10, which indicated a local economy which included animal husbandry, as did the environmental evidence from Romano-British ditches in Areas 5, 7 and 14. The relatively small quantity of Romano-British artefacts from Congleton Road, would suggest that the main focus of settlement was elsewhere. (Wardell Armstrong 2015c, 1)

The overall survey results show that there is a good correlation between the absence of medieval or earlier metal finds and the absence of archaeological features which can be reliably dated to the same broad period. However, an important exception is a small number of undated features. Although it is difficult to assess their significance, it is precisely features such as these that will represent the archaeology of periods which lack

metal and ceramic finds. It might be argued that they merit further careful investigation and should not be dismissed too readily.

The industrial revolution and finds explosion

All the Cheshire metal-detector assemblages are heavily dominated by items dating from the eighteenth century onwards (Table VI.1 *above*). Dress fittings such as buttons and buckles, mounts, personal ornaments, predominantly in copper alloy, and, by the end of the century, copper coins, become common.

Most finds assemblages have a strong showing of late copper or bronze coins and tokens, which form over 25% of some assemblages. They often begin with an occasional late seventeenth-century piece from the large issues of copper coinage under William III but increase rapidly from the mid-eighteenth century onwards, with a considerably higher number of later Georgian and Victorian coins. At the end of the eighteenth century provincial tokens minted by private companies (from 1787 to 1795, beginning with the Parys Mine Company) began to fill the demand for small change which official copper coinage had failed to meet. The majority of coins at most sites are Victorian or later low-value bronzes. On occasion a context may be suggested, as at Beehive Lane, Moulton, where many of the ninety-nine coins from a total of 323 finds (30%) may have been lost along a footpath across the land shown on the early Ordnance Survey maps (L-P : Archaeology 2015, 11).

A number of factors may have led to the massive rise in the loss or discard of metal items from the eighteenth century onwards. The single most important factor is the rapid industrialisation during the later part of the century, which saw the development of mass production methods for the manufacture of metal items (under the generic label of 'toys'), that were now available cheaply in large quantities. The technological innovation was driven by Boulton and Watt at their Soho works in Birmingham from the 1770s onwards, and the period saw the vast expansion of consumerism – the '"toys" in protean variety, from the costly "exclusives" of Matthew Boulton to the cheap buttons for the mass market' (McKendrick 1982). The greater availability of manufactured goods went hand in hand with a rapid increase in population, the growth of a newly affluent middle class and the permeation of greater disposable income through the social scale. New fashions for decorative items – shoes with buckles, cheap mass-produced buttons and buckles, watches and watch keys, chatelaines and other metal goods – led to new expressions of social status through visible markers of affluence.

The rise in the quantity of manufactured metalwork is, however, not by itself sufficient to account entirely for the increase in deposition; changes in the way the land was utilised increased the potential routes by which the material found its way into fields. New, efficient methods of drainage brought areas of marginal land into cultivation for the first time. The expansion of farms onto the outer margins of townships that is evident in the post-medieval period likewise brought new land into cultivation, which for the first time was subject to extensive manuring. The process of piecemeal private enclosure was followed in the late eighteenth and throughout the nineteenth century by enclosure through Acts of Parliament (Sue Stallibrass *pers comm*). These changes coincide broadly with the steep rise in deposition of metal items in the fields.

Agricultural improvement was a major economic theme of the later eighteenth century onwards, not only in machinery for cultivation but also in the measures to improve crop and grass yields by experimentation in fertilisers, and these changes in farming practice may have played a part in the increased level of metal finds from arable and pasture fields. Up to the end of the eighteenth century the principal fertilisers in Cheshire were lime, marl (which had been used since the medieval period) and farmyard dung (Wedge 1794, 22). However, by that time, progressive landowners were experimenting with improvements to increase soil fertility and crop yields through the application of a wide range of substances to the soil. In Cheshire, materials as diverse as 'foul' salt, sea mud, gypsum, sand and soot were tried, with varying success. Bone dust, rape dust, soap lees, waste leather and woollen rags were highly rated (Holland 1808, 235). Manure was not confined to arable fields. An important new development at the end of the eighteenth century saw Cheshire leases specifying that tenants should 'lay dung' upon pastures (Wedge 1794, 14).

The farmyard midden heap was a common route by which household items could reach the fields during manuring. Middens are likely to have been a rich source of all kinds of rubbish such as broken pottery, domestic fittings and fixtures, some clearly from broken-up furniture, door handles, padlocks and keys, as well as cutlery, which is found in small but significant quantities and which was probably disposed of accidentally along with food waste.

There were also changes in the methods of the disposal of rubbish from the towns of the region with their growing populations, which can be seen operating at their most extreme extent in the hinterland of the major urban centres. The systematic, large-scale export of urban waste to use as fertiliser can be seen around Liverpool, Manchester and no doubt other towns. In Merseyside and west Lancashire the practice of depositing what was known euphemistically as 'night soil', and more accurately as human and animal excrement, on the fields as fertiliser (Coney 1995) can be detected in the high level of small metal items presumably lost in privies or swept up from the streets and transported in the waste to be dispersed across the fields. Carrington Moss in Cheshire was purchased by Manchester Corporation in 1886 as much for a place to dispose of refuse from the city as for agricultural improvement (Coney 1995, 22).

Additionally, the development of the canal system across north-west England from the later eighteenth century provided an opportunity for Cheshire farmers to gain easier access to some of the more 'exotic' fertilisers mentioned above (Holland 1808, 312). The practice of 'shoddying', spreading poor-quality clothing or rags ('**s**hoddy') on fields, has been cited as one reason for the large number of post-medieval buttons found there (Robbins 2014 citing Wheeler 1913). Memory of this practice has been preserved in the oral testimony of a resident of Rainford, near St Helens, Merseyside (Ray Wareing *pers comm*), who reports that the high level of post-medieval metal finds around the village resulted from the spreading of 'Bolton shoddy' as fertiliser on the fields. By the late nineteenth century other substances used as fertiliser included phosphatic slags from steel production and guano (Wheeler 1913, *passim*).

The highly labour-intensive nature of agriculture until the mechanisation of the mid-twentieth century saw large numbers of workers involved in all the processes of cultivation – ground preparation, weeding and harvesting – and the management of livestock (eg Wedge 1794, 24–5; Holland 1808, 296–7). At the end of the eighteenth century a small army of agricultural labourers spent long periods working in the fields, creating countless opportunities to lose buttons, belt and strap fittings and decorative mounts, or mislay small personal items, loose change or cheap trinkets. Tattenhall produced a heterogeneous range of items which may come into this category, including the back of a silver watch, a dress weight, a penknife, a decorated silver thimble and a decorative pendant.

Another well represented category of metal fitting is the large strap fittings and buckles which presumably became detached from animal harnesses during agricultural activity and which account for much of the common class of animal equipment found in fields. Horseshoes are commonly found where iron has not been discriminated out; thus Hockenhull Hall Lake produced no fewer than forty-two horseshoes, with another thirteen at Tarporley Road, Tarvin (Headland 2013, 2, ill 2; Wardell Armstrong 2013, 23).

Most sites have produced a background scatter of scraps or offcuts of lead of uncertain function and date and, while many are probably relatively recent, the use of lead pans in the Cheshire salt industry during the Roman period urges caution in dismissing these without careful examination. Significant numbers of other lead items are present in many fields, including bag- or bale tags from seed bags (sometimes with inscriptions recording the merchant), probably discarded by farmworkers either on the fields or on the farmyard midden. Lead weights of simple disc form often conforming to a weight of about one ounce are increasingly being reported across the North-West (eg Harding Avenue, Tattenhall) and, although sometimes interpreted as Roman, it is likely that in the absence of any accompanying diagnostic Roman material many are post-medieval (eg Tattenhall: Wessex Archaeology 2014a, 5). Rolled lead strips are occasionally found at waterside sites, where they have been interpreted as net weights, as finds from Meols or Burton, Wirral attest, with parallels in London and elsewhere (Griffiths *et al* 2007, 284).

Musket- and pistol shot form a consistent low level of find. A few surveys that have recovered lead shot have been claimed as possible sites of Civil War skirmishes (eg Cholmondeley Road, Wrenbury; Churton Road, Farndon; Stapeley (Wessex Archaeology 2016a; 2016b; WYAS 2010 respectively), although without corroborative documentary evidence or distinct concentrations in most cases they could as well represent fowling or recreational shooting. At Davenham, no fewer than 110 of 182 items were lead bullets or spherical shot, readily explained as strays from a military target in the adjacent field recorded on the first edition 25-inch Ordnance Survey map (Aeon Archaeology 2013, pl 02).

A thread here is that most finds were lost in or deposited on the fields rather than derived from archaeological deposits below the ground. This is consistent with the practical advice given to metal detectorists on profitable places to search, which emphasises those that were regularly frequented, such as footpaths and stiles, fairs and meeting places (often unregulated), or locations visited for leisure pursuits where items could be mislaid.

Some potential biases in metal-detector surveys

In addition to eighteenth- and nineteenth-century finds often reflecting extensive agricultural activity rather than intensive occupation of a site, there may be other reasons why the metal artefact assemblage from the ploughsoil does not represent accurately the presence of below-ground archaeological features. Recent contamination of the ploughzone soil may provide false positives by importing objects from elsewhere. This may be expected in parks or playing fields, where soil is often introduced to level the ground, but may be harder to detect in agricultural fields. However, such contamination was identified at Ince, where dumped modern soil masked earlier deposits, skewing the artefact distributions, while at Stapeley Water Gardens imported soil and landscaping had disturbed the topsoil. Modern refuse spread on the fields was thought to have impeded recovery of metalwork at The Moorings, Congleton.

Conversely, on heavily cultivated sites ploughing may have removed shallow archaeological features cutting into subsoil, leaving all the cultural material in the ploughsoil. Finds in the ploughzone may thus represent the only surviving evidence for sites (Sue Stallibrass *pers comm*; Spandl & Jones 2014, 12). In this case, the recovery of finds by metal detecting or other means such as fieldwalking may yield valuable evidence of settlement, land use or other activity for which there is little or no surviving component below the surface.

Finally, previous metal detecting may have removed significant finds without record, introducing a potentially serious bias into the archaeological record. Fields which now produce few or no significant finds may have subsurface archaeological remains that are no longer reflected in the ploughzone material. Metal detecting is an important aspect of land use that has profound implications for the identification of archaeological sites, and it is important to record areas where it has occurred and how intensively. For completeness, it is also highly desirable to record areas that have been detected but which produce no significant objects, just as systematic fieldwalking surveys record absence as well as presence of material.

In addition, certain types of past activity may never have resulted in subsurface archaeological deposits. As discussed above, many of the eighteenth-century and later objects seem to have been deposited during agricultural or recreational use of the land. Again, the physical evidence for battlefields of Civil War or other date may consist entirely of ploughsoil assemblages. In these cases, the accurate plotting of the metal finds may yield crucial and irreplaceable information on the disposition of armies, the types of soldiers involved and the progress of battle, as was achieved for the Battle of Towton through artefact distributions (Sutherland & Holst 2005, 33–6). Removing lead bullets or shot from their context without proper recording loses this information (Foard 2009; Sutherland & Holst 2005). Similarly, fairs or rural markets may have created concentrations of finds lost on or close to the ground surface but have created no below-ground archaeological features.

Regional and chronological patterns in the use of metal objects

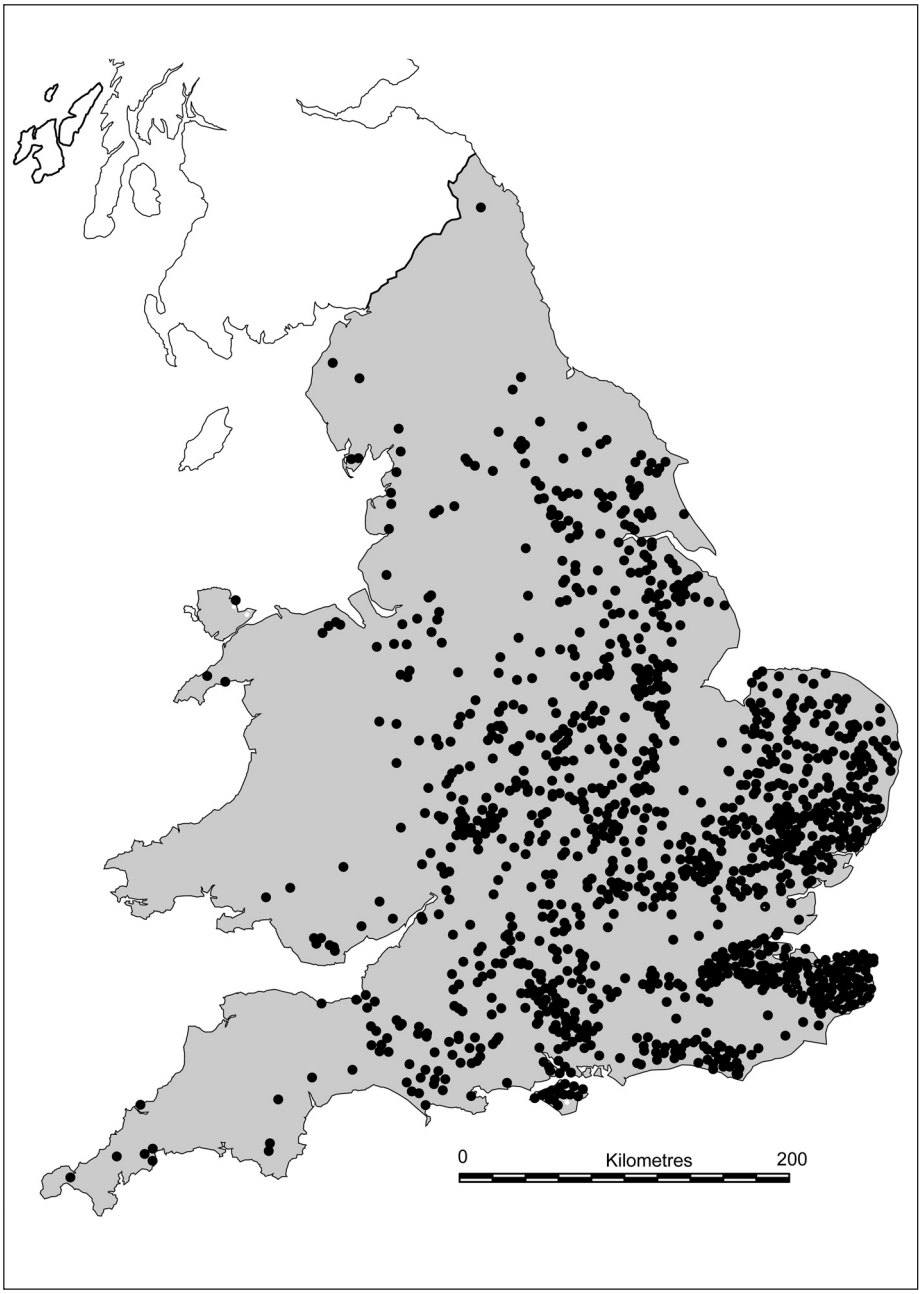
Another way to consider the effectiveness of the metal-detector surveys is to look at the growing evidence for finds distributions, both by period and by region, and to assess how effective systematic metal-detecting is likely to be in finding sites of those periods. The

question might be framed thus: do the Cheshire sites produce sufficient metalwork to make it likely that they will be identifiable from metal detecting alone? A related question, which flows from the first, is how many finds constitute a significant assemblage or a site?

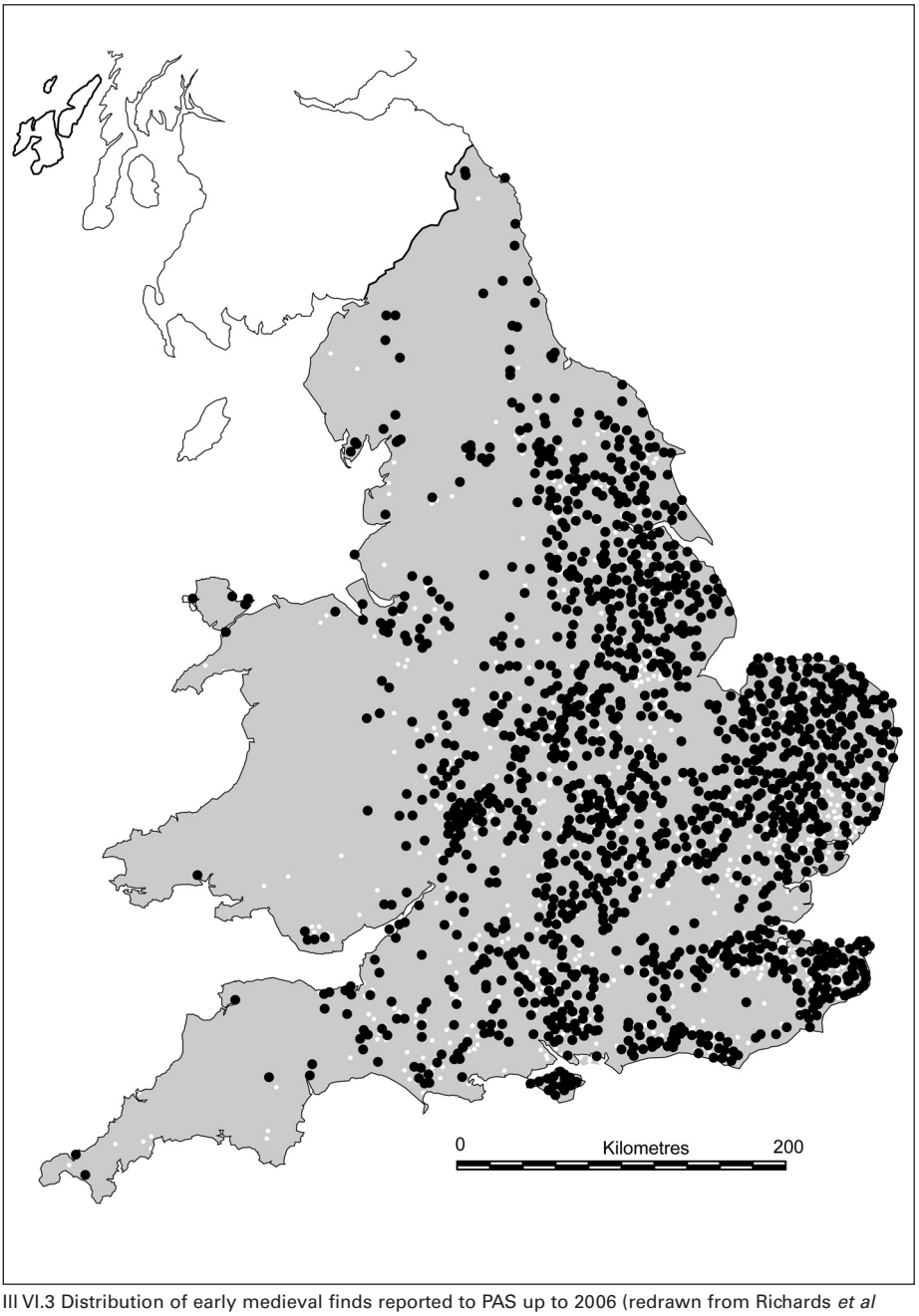
The usefulness of metal detecting as a prospection tool is, of course, determined by how much metal there is to find. The volume of metal artefacts in circulation has varied considerably both through time and by region. In Cheshire, and more widely in the lowland North-West and western Britain as a whole, the quantity of metal items in use was relatively low from the Bronze Age to the later medieval period.

This has long been understood by metal detectorists but can now be demonstrated statistically through the Portable Antiquities Scheme database and other projects. These provide a national picture against which to examine regional trends in material cultural use and loss. A decade ago the VASLE project examined inter-regional distribution of early medieval finds across England (Richards *et al* 2009), and although the dataset has now grown considerably the general picture has remained consistent. There is a striking variation between different regions, with far fewer early medieval finds from the western regions of England than from the east and south. A similar pattern for the Roman period has been observed by Philippa Walton, who noted the relative scarcity of Roman coins reported to the PAS in western England by comparison with the south and east of the country (Walton 2012). As Ills VI.2–.3 show, the general level of metal finds from the countryside can be very low by comparison with areas east of the Pennines or in much of southern, central and eastern England. In the Roman period at least this level may in part reflect a lower settlement density in the North and West compared with other regions, although individual excavated settlements also often produce only a small number of metal objects (Smith *et al* 2016, 386–90).

To these regional patterns should be added great variation in metal artefact use and loss over time. In Cheshire, against what is a generally a low baseline, a breakdown by period shows strong peaks in the Roman and later medieval periods, but few finds from the Bronze Age, Iron Age or early medieval period (Ill VI.4). For the Roman period, at best concentrations recovered by metal detector can be correlated with fieldwalking scatters to indicate settlement locations. At one south Wirral site investigated by the writer, a concentration of several dozen metal finds recovered over many years within the area of one modern field closely matches a plot of pottery found by fieldwalking. This site is exceptionally rich, but it illustrates what we consider ought *a priori* to be the case: that groups of metal finds should correlate with concentrations of other occupation material and indicate some kind of settlement. Even so, many excavated Roman rural sites in Cheshire follow the regional pattern and have produced very small metal assemblages. Saighton Camp near Chester (Wood & Griffiths *forthcoming*), a subrectangular enclosure part-excavated at Burton, Wirral (with just two Roman coins in metal detecting), Southworth enclosure (apparently no metal detecting carried out) (Moore 2014), Norley Town Farm Quarry (Cooper & Speed 2009) and Court Farm, Halewood in neighbouring Merseyside (unsystematic metal detecting) have each produced very small numbers of metal items. Levels of Roman pottery use can be similarly low, so even a single sherd recovered in fieldwalking has been taken to be potentially significant. However, single finds, especially

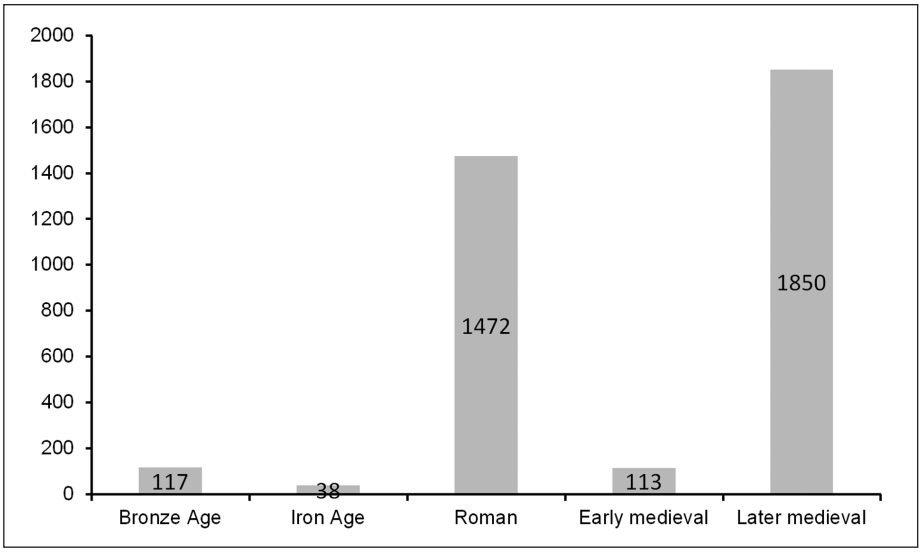


Ill VI.2 Distribution of Iron Age finds reported to PAS up to 2006 (redrawn from Richards *et al* 2009, fig 38). (Not to scale)



Ill VI.3 Distribution of early medieval finds reported to PAS up to 2006 (redrawn from Richards *et al* 2009, fig 42). (Not to scale)

small portable items such as coins or brooches, are routinely dismissed as 'casual losses', as at Cholmondeley Road, Wrenbury (Wessex Archaeology 2016a, 9–10). In the absence of other evidence, such as other metal finds of Roman date, pottery from fieldwalking or distinctive cropmarks, this might be reasonable (although the quantity of other finds may be tiny), but if metal detecting is the only field technique employed, then that assumption cannot be regarded as secure.



Ill VI.4 Finds reported to the PAS in Cheshire by period up to May 2017

The question of how many artefacts make a significant assemblage then becomes an important judgment, as the decision to recommend further work on a site may depend largely or wholly on whether such metal items as have been found are dismissed as 'casual losses' or are considered to point to settlement or other activity. The Historic Environment Record criteria for site classification use artefact scatters that fall within a measured area. Nationally, clusters of five or more coins located within 200m of each other are considered to indicate a 'site', representing human activity (Walton 2012, 26). Carrington's detailed survey of Roman rural settlement in the hinterland of Chester has identified no fewer than ninety possible rural 'sites' on the basis of concentrations of finds but with a bar for inclusion set very low at a minimum of three items or groups (Carrington 2012, 400–2, table 12.25). The regional pattern suggests Carrington's modest level is more appropriate.

Definition of what constitutes a site becomes yet more problematical for periods when metal artefact use was even lower. The PAS figures show that there is a greater prospect of identifying Roman rural sites from metal detecting than sites of the Bronze Age, Iron Age or early medieval periods, as these periods have produced very few metal finds at all. Indeed, Iron Age and early medieval sites have proved particularly difficult to identify on the ground by any method. Few sites are known and even fewer excavated (eg Philpott 2015; Newman 2018). To take the early medieval period as an example, finds assemblages from excavated sites in historic Cheshire (including Wirral) are very limited. Tatton

produced a single sherd of Chester ware pottery and a loom weight fragment and was dated through radiocarbon determination (Higham 1999, 85–6); Irby, Wirral, had a Saxo-Norman spike lamp and an amber bead of uncertain date; Moreton, Wirral, produced a mid-tenth-century silver penny, a lead spindle whorl, a mudstone hone and a very scrappy pottery assemblage including some possible pre-Conquest material (Philpott 2015, 112–15). A further fifth- or sixth-century site at Hilary Breck, Wallasey, Wirral, produced no datable finds and was dated purely on radiocarbon determinations (Adams 2012, 13–14), as was a structure with ironworking evidence at Birch Heath, Tarporley dated to AD 590–720 (Fairburn *et al* 2002, 74–5). Thus, even when examined in detail through excavation, sites of this period produce minimal artefact assemblages at most, and the metal component is either virtually or completely absent, or in the case of Tarporley confined to chronologically undiagnostic metalworking. At best metal detecting would have found only one of these five sites, and even then those finds would probably have been dismissed as chance losses rather than evidence of settlement. For this period a single find may thus be of considerable significance, making it difficult to differentiate between casual loss and a valid indicator of settlement.

For the current project, one example may be noted. At Ince Resource Recovery Park, a plain lead spindle whorl was recovered and was considered undatable (RSK 2010, pl 8, 17), although the report states, 'it is tentatively noted, however, that two lead spindle whorls located within the survey area may have been in use at this [Viking] period' (RSK 2010, 19). It is in fact a type considered by Penelope Walton Rogers to belong to the late Anglo-Saxon to medieval period, given that the diameter of the central hole (10.8mm) falls within the range of 9–11mm found in a large stratified assemblage at York (Walton Rogers 1997, 1731). Given that one of the specific reasons for the survey at Ince was the existence of two Scandinavian place names (Holme and Grinsome), it might be argued that this find was a reasonable candidate for evidence of settlement at that date. Accordingly, considerably greater weight should be attached to single early medieval or potential early medieval finds as potential markers of settlement.

This places a responsibility on those undertaking finds identification to be aware of the potential significance of metalwork that may not appear to be particularly diagnostic. Furthermore, in judging that significance, we should err on the side of caution and acknowledge that small artefact groups or single items may be the sole indicator of a site's existence. Thus, the requirement of the Chartered Institute for Archaeologists' standard, that a 'suitably qualified and experienced archaeologist' (CIfA 2014, para 3.3.3) should undertake finds analysis, necessitates not only familiarity with the local or regional artefact types but also an appreciation of the regional variation in patterns of metal use and deposition.

Self-evidently, then, metal detecting as a survey technique is not good at recovering sites of periods that produce low levels of metal artefacts and by itself it is unlikely to locate sites of those periods. It is more likely to be an effective and reliable indicator of occupation or activity for periods when people utilised significant quantities of metal artefacts. Despite this limitation, we should not dismiss the technique as wholly ineffective. Certain types of settlement are very difficult to identify at all using conventional archaeological techniques, in particular unenclosed rural settlements that create no cropmark signature detectable in

aerial reconnaissance, and aceramic sites that produce no pottery that can be recovered in fieldwalking or evaluation trenching. In addition, a number of rural settlements display more than one period of occupation when excavated. Most of the known early medieval and several of the Iron Age sites have been discovered through the identification of other periods of occupation, whether Roman or medieval (eg Higham 2004, 310), and so metalwork may provide an indirect method of identifying sites of periods that are hard to find on their own. If the identification of Roman or later medieval sites is one of the key techniques for identifying the sites of other, materially poor, periods, then finds assemblages from them have additional value as a gateway to the less visible periods.

The variation in the level of metal finds deposition across regions in England and Wales means that an approach which is based on a 'national' picture, or which takes its inspiration from regions where material culture is more common for any given period, will not be appropriate or effective in the North-West. Each region requires its own strategy based on the nature of the material culture profile present there. What might be considered as background scatter in one region may constitute the only evidence for settlement in another. While this is recognised by the archaeological curators and contractors who have experience of working within the region, it is a matter of concern that contracting units employing staff unfamiliar with its character may apply inappropriate standards and criteria of significance derived from other regions.

Metal-detector surveys in commercial archaeology

If the purpose of desk-based assessment, field evaluation and fieldwalking is to demonstrate archaeological potential in a given area, any cost-effective technique which supports that aim is to be welcomed. Metal detecting has certain advantages over other field techniques. Unlike fieldwalking, it is not impeded by poor ground visibility due to vegetation or crop cover and it is not dependent on the experience of fieldwalkers to observe and recognise significant material. Nor is it limited to finding what happens to be exposed on the surface but can scan a far greater volume of the ploughsoil. In addition, unlike geophysical methods, the technique often provides material diagnostic of date.

It is not necessary for any given technique always to produce positive results to be successful, but to produce results that accurately mirror the status of the below-ground archaeological resource. If the metal-detector survey fails to recover evidence earlier than the post-medieval period, and subsequent evaluation trenching, or preferably large-scale stripping, fails to change that picture, then the survey has been successful in accurately demonstrating the absence of significant archaeological remains.

The problem of undiagnostic iron, metal-working waste and 'modern' metals

Given the high volume of eighteenth-century and later finds on some sites, a pragmatic approach that applies a degree of selectivity might be appropriate to target resources towards significant material. For most archaeological purposes, relatively modern metalwork can be excluded in a rapid scan of finds. Thus, it would be reasonable to dismiss industrially produced aluminium, dating from 1856 onwards, EPNS (electro-plated nickel silver) from about 1840, and tinplate developed commercially in the 1720s but which became much more widespread in the nineteenth century (Minchinton 1957).

Selective recovery of iron

A more difficult issue arises with iron objects, which often constitute the most numerous group of finds identified in metal detecting. In the slightly acidic soils of north-west England iron often survives in poor condition and tends to corrode heavily, resulting in large concreted masses that can disguise the original form. Without X-radiography or specialist input by a conservator these objects can be difficult to identify. Even when ironwork is in good condition, identification of the form may not assist greatly with dating as many types of utilitarian tools and equipment, such as shears, fish hooks or buckles, altered little through time. As a result, most metal-detector users routinely screen out iron ('discriminating' in metal-detecting terminology), with the further aim of avoiding the swamping effect of large quantities of modern objects. This approach has also been followed in some of the Cheshire surveys, and there are many precedents. A systematic metal-detector survey near Catterick, North Yorkshire, conducted in response to illicit detecting, deliberately discriminated out iron. Hilary Cool observes (2007, 95): 'the loss of iron in a project such as this is probably not to be regretted as much ironwork is not chronologically sensitive, and many items recovered from fields are likely to derive from relatively modern agricultural activity.' As these comments demonstrate, there is a widely held perception amongst archaeological contractors that iron artefacts are of limited use in identifying the archaeological potential of a site.

Some Cheshire surveys record that iron was filtered out (eg the Ince site has only a single ferrous object: RSK 2010). At Goldfinch Close, Congleton the 'survey targeted non-ferrous metals only, due to the potential for a large number of ferrous metal signals across most land. Additional detecting in all-metal mode was not required as no particular concentrations of artefacts were recovered.' (Cotswold Archaeology 2015b, 8)

This was explained further:

> The 'Junk' finds collected during the survey consisted of quantities of modern scrap lead, ferrous nails and agricultural related fittings, … and modern aluminium cans. These finds were collected but not plotted as they had no archaeological value. This moderate presence of modern material recovered from within the site is typical of the 'background noise' that would be expected when conducting a metal-detector survey across much of the country. (Cotswold Archaeology 2015b, 10)

Elsewhere some iron was selectively retained by the archaeologists, while obvious modern material was discarded on site. At Tarvin, for example, a degree of selection was evident for 'modern' iron, including 'agricultural debris' and iron railings, probably associated with road construction nearby (Wardell Armstrong 2013, 22).

A more positive case for recovery of iron was made at Stapeley, where it was suspected that the area had traces of Civil War fortifications. Here some of the iron was considered to be evidence of a Civil War skirmish (WYAS 2010), and further archaeological work was recommended on the basis of a small number of potential Civil War period finds. Another site where iron was actively sought was Hockenhull Hall Lake, where the justification was that 'more prosaic finds are of great value archaeologically' (Headland Archaeology 2013, 2).

The differing attitudes to the recovery of iron raise a number of questions. Is the exclusion of iron by detectorists likely to result in the loss of significant information on the archaeological potential of a site? Would iron objects provide any further indication of the presence and chronology of a site than is already demonstrated by the non-ferrous metal or by other finds such as pottery? Nowhere in the current surveys has iron by itself been shown to be the crucial determinant of activity at a particular period in the past, although it is recognised that some types of site might be identified by the presence of diagnostic iron, such as ironworking sites, while iron objects, along with lead, might play a role in the identification of battlefield sites.

A further question arises, whether the cost and effort of X-radiography of iron are justified by the information gained. In the Cheshire surveys, X-radiography was used infrequently. At Harding Avenue, Tattenhall, most of the material was readily identifiable, but three objects that could not be identified by eye were X-rayed. However, this did 'not reveal any useful detail, and the objects remain unidentified'. In the most extensive programme of X-rays, at Guilden Sutton, no fewer than ninety-eight items were X-rayed and subject to conservation assessment, but only in the case of one, a seventeenth-century knife blade, was the X-ray explicitly used to determine the form. Elsewhere the use of X-rays was not seen as likely to produce much in the way of useful information, even for corroded iron (eg at School Lane, Hartford).

A pragmatic solution might be a case-by-case approach, taking into account the suspected nature of the site and the potential archaeological value of iron. For certain types of site, such as suspected battle or ironworking sites, it may be important to recover ironwork. However, discriminating out ferrous metal will render collecting and processing of the finds quicker and easier, and therefore less costly. The downside is the risk of losing an unquantifiable amount of information. As the iron appears not to have been decisive in any survey so far, this may be considered a worthwhile trade-off. A compromise might be reached where the iron is collected but the material is not examined unless the non-ferrous finds or archaeological information from other techniques such as geophysics, fieldwalking, aerial photography or documentary/cartographic sources suggest that the iron may be significant on a given site.

Metal-working waste

One class of finds that should be considered for careful examination is metalworking waste, particularly copper alloy waste such as melted drops and runs. The Cheshire surveys produced few examples, but they are dismissed as undatable at both Ince (RSK 2010, 17) and Harding Avenue, Tattenhall (Wessex Archaeology 2014a, 5). While this may be technically correct on typological grounds, such remains in an otherwise rural location are more likely to be an indicator of ancient than post-medieval or later metalworking. Examination of the alloy composition through XRF analysis may highlight the possibility of medieval or earlier activity, and the material should be examined carefully for part-melted diagnostic artefacts as well as diagnostic details such as casting sprues. Pre-industrial era metalworking by itself is an important indicator of past activity (Dungworth 2015).

Conclusions

Within certain well understood constraints (the experience of the operator, quality of machine, soil conditions, depth and so on: *cf* Robbins 2013), metal detecting is a highly effective method for recovering metal finds. Undertaken systematically, it is a valuable technique for identifying concentrations or scatters of material across the landscape, which in many cases (with the obvious exception of imported soils) can be correlated with past activity. Moreover, it can recover precisely located finds that are often diagnostic in terms of date and function.

The Cheshire surveys have produced one instance, at Sandbach, where metal detecting has been decisive in identifying unsuspected past settlement or activity of the medieval or earlier periods. In only a few other cases has sufficient subsequent evaluation been undertaken so far to test the archaeological deposits. However, it has not been possible within the constraints of the present project to follow up all of the small number of examples where concentrations of finds were thought to point to potential sites. The situation may therefore change in the light of further work.

The discovery of only one new site of Roman date from the Cheshire surveys does not invalidate the principle that metal detecting is an effective tool to recover locational information on the presence of archaeological sites or activity. There may be a rather obvious explanation for the small number of sites coming to light through the surveys – that, with the significant exception of Sandbach, the sites selected for metal detecting fortuitously did not contain significant occupation of the relevant periods. Although the correlation of the absence of medieval and earlier finds in metal detecting with a similar absence in field evaluation may appear to suggest that surveys are accurately reflecting the archaeological potential, the biases identified above strongly indicate that such assumptions cannot be accepted without testing.

In interpreting the results from systematic surveys, it is important that these potential sources of bias are considered. A lack of metal finds may not prove conclusively that activity or settlement at a particular period is not present. Inevitably, the technique is less effective for identifying activity in periods that are poor in metallic objects, which in this region include the Bronze Age, Iron Age and early medieval period. The distinctive regional character of metal use thus needs to be considered; the bar for triggering further investigation should be set low; and in view of their rarity, single finds of Bronze Age, Iron Age or early medieval date should be given considerable evidential weight.

When small quantities of metal items may be the only indicator of settlement, the quality of the results and the effectiveness of surveys will also be dependent on the accurate identification of finds. Failure to recognise or to date accurately certain artefact types may result in the loss of important evidence.

Previous detecting may have removed without record the majority of the metal finds from a site and may thus skew results. Efforts should therefore be made through enquiries within the metal-detecting community and landowners to determine whether sites have been extensively detected before and, if possible, what has been recovered. In these cases, a

small number of significant finds (late prehistoric through to late medieval) might be the residue of what were originally larger assemblages and might be considered sufficient evidence to trigger further archaeological investigation.

On heavily ploughed sites the metal finds and other ploughzone material may represent the only surviving component of the archaeological deposits. The recovery of the archaeological information from the ploughzone is thus an important aspect of understanding the past history and use of the landscape.

The Cheshire surveys have also produced large well documented assemblages of eighteenth-century and later finds. While these may not be perceived as of high archaeological value according to current research themes, they contain much of value in determining past land use and social practices and provide a material component to complement documentary and historical sources.

Retention and recording of finds

Most survey reports have recommended retaining only small selections of items in the archive, usually 10% or less. Given the pressure on archaeological stores in Cheshire, a retention policy should be drawn up that provides archaeological contractors and curators with confidence in the selection of material. The particular difficulties posed by the long-term preservation of iron in collections, with its requirement for low relative humidity and careful packing to avoid decay and damage, make it a low priority for retention unless of proven age or significance. As a guideline, all prehistoric to seventeenth-century material should be retained, broadly in line with the material that is considered worthy of record by the PAS. Selected later finds that are unusual, rare or well preserved might be retained (eg some types of decorated buttons or objects that have local connections). This is inevitably subjective and any policy shaped by current research interests will inevitably require reconsideration and modification in time.

Although current archaeological research themes do not place a high value on mass-produced eighteenth-century or later metalwork assemblages, nonetheless this kind of material, when it has been systematically collected and spatially recorded, has value in forming a record of past land-use activities such as agricultural practices, manuring regimes and livestock management. The assemblages of small metal items and coins also preserve evidence of growing consumerism, the spread of fashion and social display through changing styles of buttons and other personal items, and such varied social practices as the use of love tokens, recreational shooting and coin use that are otherwise very largely undocumented at a local level. As academic interests and research directions change, it is anticipated that such material will provide worthwhile data for further study in the future.

Given the potential academic value, there is a strong case for creating a photographic record of the finds to be discarded, excluding the obviously very recent material. A similar method was used at Hungate, York, where large quantities of medieval finds redeposited in post-medieval pits were recorded as entire groups, with finds of note singled out for more detailed work and retention (Sue Stallibrass *pers comm*). It is of particular importance that a high-quality record is made of uncertain or unidentified finds, or of finds where the

potential date range is wide, such as undecorated lead spindle whorls, uncertain copper alloy 'pot legs', and poorly preserved coins that are not obviously milled issues. Group photographs in good light, with a scale and at high resolution should be adequate. This will enable finds to be re-examined and potentially identified at a later date in the light of further research or after examination by specialists familiar with certain classes of finds.

There are important additional benefits deriving from the surveys not directly related to their primary purpose. They include maintaining positive working relationships between metal detectorists and archaeologists and encouragement of awareness and understanding of the value of finds in their spatial context. In addition, the collective experience and expertise of the metal-detecting community should also be taken into account as a valuable pool of knowledge of artefacts and landscapes from which archaeologists may benefit.

Used sensitively and with a keen awareness of the limitations and potential biases, systematic metal-detecting survey is an important weapon in the armoury of the archaeologist seeking to establish the archaeological significance of land in commercial developments.

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