

The Cinderella Service: the Ordnance Survey and the mapping of the Antonine Wall

John Linge*

ABSTRACT

A former archaeology surveyor with the Ordnance Survey describes the recent history of OS involvement with the Antonine Wall, culminating in the far-reaching 1980 Survey which was finally completed before the disbandment of OS archaeological services in 1983. Using the two most recent PSAS compilation articles on the Wall as exemplars (1995 & 2002), the author questions why archaeologists are unaware of, or are not using correctly, the legacy that the OS provided.

INTRODUCTION

Whether Sir George Macdonald can be considered the last antiquarian or first field archaeologist to take an interest in the Antonine Wall is a moot point. Either way, he was certainly the last investigator to pay equal attention both to the exact line of the Wall and to its composition. Given that, even in the earlier part of the 20th century, the greater part of the Wall showed few surface remains over its 58km length, this was no small target or achievement. Since the culmination of his work in the early 1930s (Macdonald 1934), scores more archaeologists have added pieces to the Antonine jigsaw, but none has attempted to fit them together in the same manner. This unenviable task, it seems, had always been the responsibility of the Ordnance Survey (OS) who became the custodians of Macdonald's original work and his esteemed 'line'.

Yet while the line of the Wall that appeared on OS maps from the 1930s onwards has always been synonymous with that of Macdonald, the actuality may be somewhat more complex. His relationship with the OS is properly that of another paper, but at the time of writing it is

simply not known in what form he communicated 'from time to time' to the OS between 1919–33 (ibid, 96). All that is known is that in 1931 the OS produced the first dedicated and large-scale (25 inch) map folio of the Wall, based on 'Documents etc' provided by Sir George (OS 1931). There is no evidence that either he or his (ex-OS) surveyor assistant, John Mathieson, oversaw this compilation, and, pending further research, it must be assumed that the OS faced some difficult interpretations of their intentions. The lack of a specialist team would not have helped matters (the OS Archaeology Division was not formed until 1947), and neither would the fact that Macdonald intended to publish his line at the more practicable mid-scale of 6 inches to the mile.

By the mid-1950s the OS did have specialist teams in place, and it became their task to revise the line as part of the National Grid overhaul of the County Series 25inch maps (Harley 1975, 49). Their 'working sheets' were also compiled into a folio (OS 1954–7), which now forms a valuable and revealing archive. The revision of extant, and formerly extant, areas was extensive and well executed, but it is notable that the existing 'Course of' stretches were

* 11 George Street, Falkirk FK2 7EY

largely untouched and remained dedicated to Macdonald and the 1931 Folio. In the 1960s, almost certainly in preparation for the OS 'Archaeological and Historical' series Antonine Wall map of 1969 (OS 1969), further research had been added to both these and the 1931 sheets, revealing some inescapable differences between the extant line of the OS 1860s First Edition and the existing 'Course of' line. The implications of these factors are that the ghost of Macdonald's line still existed on all pre-1980 maps, and that from the mid-1960s the OS Division was aware that the reliability of the 1931 work was in question.

As has been intimated, at issue here is the concept and use of map scale in conjunction with the physical remains of the Wall. The above anomalies were all relative, and it should not be thought that the doubts that surfaced in the Division's mind from the 1960s had a crippling effect at smaller scales. On the contrary, it was a tribute to all previous investigators, especially Macdonald, that by the 1960s there was an approximate and agreed line among archaeologists that met most working needs. Internal misgivings did not, for example, prevent the OS from producing, in loose collaboration with senior Roman experts, the effective 1969 map at 1:25,000 scale. Considering that by 1973 one landscape analyst (Skinner 1973, 16 chart) had calculated that nearly 75% of the monument showed no intelligible remains on the ground (that is, turf rampart, berm, ditch, outer up-cast mound and Military Way obliterated), it was an achievement that Roman archaeologists still had confidence in the overall line.

Nevertheless, there was a real problem with accuracy that could not be overlooked indefinitely. Nearly all previous, non-OS, works had operated, per force, at a map scale that was small enough to accommodate most judgements in terms of lateral movement and alignments, whereas the OS had not only to operate and maintain basic-scale maps across the central belt of Scotland at 1:2500 (semi-urban/rural), but from the late 1940s had introduced a 1:1250

map for urban areas; by the 1960s more than half of the Wall area was covered at this scale. At these registers every metre of the Wall could be exposed to intense scrutiny, and even the best of previous professional judgements as to position looked vulnerable. Furthermore, the peculiar subtleties of antiquity survey were not always reproduced faithfully by OS draughtsmen out-with the Division's control. Over the decades successive editions and general revisions had resulted in enough sweeping curves and odd bends to bring tears to any self-respecting Roman military surveyor, and it was clear that no partial or piecemeal survey of the Wall would correct the faults which had crept in before and since the 1950s. The only answer was to build on experience and start again.

THE 1980 SURVEY

Having more than enough work programmes in hand, the Archaeology Division (Branch from mid-1970s) did not give priority to the Antonine Wall until it was almost too late. With the advent of monetarism and public spending cutbacks in 1976, there were fears among the archaeological community that the Branch and its records had been identified as a non-essential luxury by the OS hierarchy (Cunliffe et al 1977); the Serpell Committee Report on OS services (1979) only confirmed that the days of the Branch and its (now divorced) Field Archaeology Sections (FASs) were numbered.

The in-house decision to carry out a complete revision of the Wall, taken in late 1979, had then something of a swansong and 'now or never' endeavour to it. With other commitments to meet before their demise, the FAS South Scotland was allotted only months, not years, for the task and would have to operate with an average of just 1.5 persons for the duration. If time pressure was, as usual, the bugbear, it was at least fortunate that Scotland retained enough experienced people to make it a viable proposition. It was further decided that,

this time, there would be no half-measures: all existing evidence on the line would stand or fall on its own merits, as would all new information accumulated since the 1950s. All 122 relevant Master Survey Documents (MSDs) at 1:1250 and 1:2500 basic scales, held at local offices, would be called in and used as the only survey base. The work would progress systematically from east to west, as recent convention and original build dictated, would take in all known ancillary monuments (temporary camps etc) and would employ the, then accepted, three standard gauges for all non-extant areas of Wall and Ditch (Keppie 1974, 150–65).

It was known that the effect of these decisions would be far-reaching, not least in terms of smaller scale OS maps (up to the 1:50,000 series), which were derived from these basic scales. Henceforth, anyone purchasing the latest OS Crown large-scale material would receive this survey and none other, leaving all previous information as archive sources. In cartographic terms, at least, all archaeological knowledge, from Macdonald onwards, would be incorporated and superseded, making this the obvious datum to which all subsequent archaeological work on the Wall line could, and should, refer. To aid this, a map Folio would be produced, together with another containing comprehensive field reports and references to all material that effected the survey (illus 1; Table 1).

There were two related factors which were central to the decision to proceed: first was the good working relationships with other organizations in Scotland. In the particular form of David Breeze (Inspectorate of Ancient Monuments), Gordon Maxwell (RCAHMS) and Lawrence Keppie (Glasgow University) the OS had both the goodwill and fund of specialist expertise that could be called on when necessary. From beginning to end, their help and advice proved invaluable. The second factor was the inexorable increase in excavation and aerial photographic (AP) evidence that had accumulated since the 1950s. This had the obvious benefit that more dots of information

could be joined up to form an improved survey at large scale, but it also presented problems which the above experts could not be expected to solve. A map is far more than the joining of separate points into a whole: like the Wall itself, it has to have its own logic and cohesion, and in this case represent and relate to a landscape both ancient and modern. This was not an academic exercise per se; and although all advice and evidence would be respected, no Roman specialist could have the OS advantage of visualizing the Wall as a surveying problem. Certainly, Macdonald did not have this advantage: it was found that his preferred line sometimes neglected the topography and landscape through which the Wall had to progress and that he did indeed overlook vital evidence on previous maps.

An example which brings all these points together, was the attempt to trace the line through the centre and western areas of Falkirk. This was one of the major areas of uncertainty, further complicated by a putative and equally elusive fort that may have dictated the Wall line. The existing line did not look acceptable, topographically, and the FAS team faced the prospect of having to ‘force’ a new line (anathema), because of the sparsity of archaeological evidence. Fortunately however, a coincident excavation to the west of the Callendar Park policies (NS 892 796) (Keppie 1981, 248–62), exposed enough of the Wall base and its orientation to help confirm a nearby Ditch terminus sighting of some years earlier (Breeze 1975, 200). With the added advice that any fort was now likely to lie east of these points (but note Bailey, forthcoming), these finds provided a crucial projection point, in survey terms, from which the intended Roman route, on westerly ridge alignments, almost became self evident. Here, as elsewhere, subsequent excavations have tended to confirm the new OS line (Bailey 1996, 347–69), but despite moving Macdonald’s line up to 50m south at certain points in central Falkirk we can still talk only in terms of relative accuracy.

Indeed, even relative accuracy proved impossible when investigating the line through

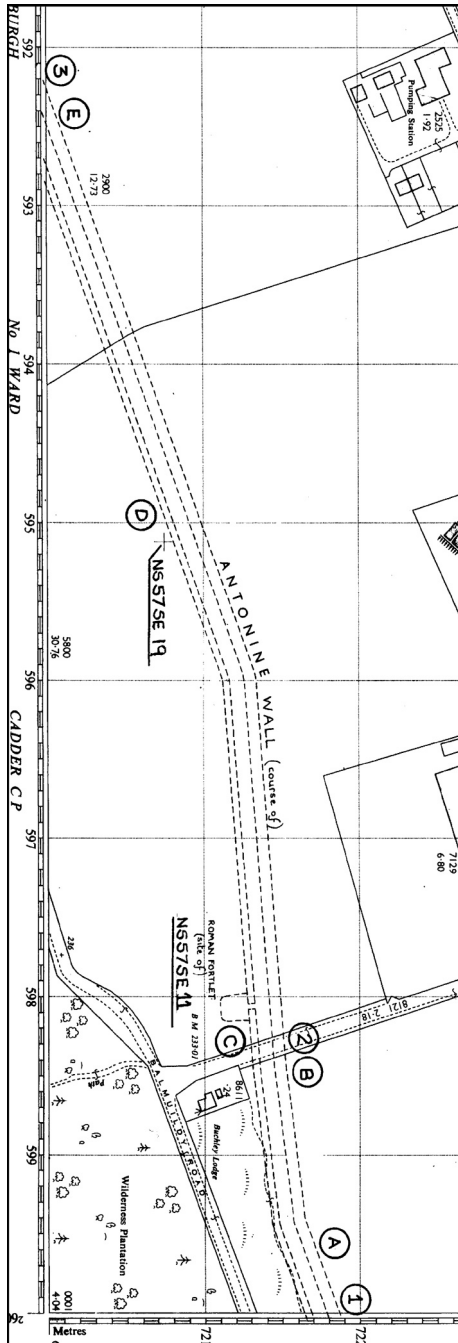
TABLE 1

Extract from 1980 Reference/Field Report Folio (NMRS) NS 5972, relating to the references on illus 1. Note that, for ease of location use, lettering and numerals were used rather than repeated grid references

<i>Selected Record Information</i>	<i>Authorities</i>
A – In 1963, four sections cut over a distance of 400ft by MPBW prior to quarrying, proved Wall and ditch on OS line.	PSAS 97 1963–4 194–5 Plan (A S R)
B – V-shaped Ditch section visible in quarry face near W end of field.	Ibid
C – Wall partially uncovered during excavations of Wilderness Plantation fortlet (NS 57 SE 11) in 1965.	Glasgow Arch J 3 1974 51–65 (J J Wilkes)
D – Wall base exposed during excavation of Wall enclosure. (NS 57 SE 19)	Glasgow Arch Soc Bull 11 1981 5–6 (W S Hanson & G S Maxwell)
E – Large freestones found close to S side of Ditch on Buckley (sic) farm about 1828.	O N B L'nk 1858 15
<i>OS Field Report – 1980</i>	
<p>1–2 – Published course (OS 25" 1968) resurveyed.</p> <p>No trace across disused quarry.</p> <p>Apparent inconsistencies of text 'A' compared with the scaled plan (see NS 6072 for details) are further complicated by an edge comparison error on published plans NS 5972 and NS 6072.</p> <p>Thus, the text of 'A', stating that the OS published line was proved, is misleading. The new line was independently assessed from extant detail on OS 25" 1897, CUCAP AP's 28Q and 29Q, RCAHM[S] AP LA 1417 and RAF AP F21.58/1453 (31.5.56): 0422. A slight alignment change has been deduced at point '2'.</p>	
<p>2–3 – Published course resurveyed. No trace across arable fields (Ditch noted as a spread hollow some 40m broad as late as 1957 – OS Field Report 1957.) New line based on extant field detail of OS 25" 1897, CUCAP AP's U54 & U55, RCAHMS[S] AP's LA 2031–4, LA 1417 and RAF AP F22.58/2682 (22.1.59):0101.</p> <p>The reports of 'C' and 'D' do not include fixed positions for the Wall relative to detail.</p>	

Kirkintilloch, where Anne Robertson disproved Macdonald's (and therefore the OS) line in a series of negative result excavations as early as the 1950s (Robertson 1964, 180–201). Given that the uncertain geography of this area had confounded General William Roy in 1755 (Roy 1793), it was hardly surprising that all later investigators would be further confused by the development of the town. With the knowledge that the eastern sector of Macdonald's 1934 town route was based on little more than distance slab calculations (Macdonald 1934, 152), the 1980

team was faced with a technical and ethical dilemma: when even relative accuracy proved impossible, did the OS have the right to retain knowingly false information on its maps? Again the question of perception and scale arises: if a blind eye might be turned at 1:25,000, in order to maintain the continuity and tidiness of the 1969 map, was the same true for the exacting scale of 1:1250? Alternatively, was the 'spirit' of the Wall's existence more important than technical veracity, especially when it helped frame an associated fort, which itself had not been proven



ILLUS 1 Extract from 1980 Map Folio (NMRS). Wilderness Plantation. NS 5972 (25 inch). Note that sites and finds which had an individual entry in the OS Non-Intensive Record were identified (facsimile map (not to scale)/annotations Crown copyright © Ordnance Survey/RCAHMS)

(but see Keppie et al 1995, 651). The decision to delete the entire line through the town (bar a new found section of Robertson’s at NS 650 739) was not taken lightly and was not held to be the final word. If nothing else, this episode proved that there was, and remains, no room for complacency when regarding the linearity of this monument.

There is of course no such thing as a totally accurate or up-to-date map. Moreover, it is inevitable that a project on the scale of the 1980 survey will have introduced its own unintended biases which future investigators, in their turn, will correct. Just as the exact format of the Antonine frontier will never be known, so it is that any representation of the same will never be other than approximate to original intentions. The whole point is to reduce the overall deviation from true position: in terms of the time and effort expended in watching briefs and excavation in advance of development, this is no small matter.

The majority of the research and basic survey was completed by September 1980: after lengthy interruptions, both the map and reference Folios were finally completed in April 1982. The OS took full responsibility for the Survey, but did not seek to claim the credit other than in name. Although far from perfect, it was a skilled task and rewarding experience to bring cartographic cohesion to so many disparate sources, while ensuring that, through the reference Folio, the two elements could be distinguished. The determination to finish what was seen as an indivisible record was a testament to how the Branch, at least, viewed it as a permanent reference work, open to all, that was to be updated periodically with overlays as and when a new batch of evidence became available. Thus a vital datum/control was maintained until the weight of new material warranted another complete revision.

None of this was to happen: within the year OS archaeological services were disbanded and their duties transferred to the RCAHMS; all its Scottish records, including the Folios, were

transferred to the National Monuments Record (NMRS) in Edinburgh. In the turmoil of the time, it was enough that the Folios had gone to a secure home and had a seemingly bright future. The Scottish archaeology establishment had examined and applauded the contents and it appeared just a matter of time before its historical and practical potential was realized in field operations and subsequent reports.

THE POST-SURVEY EXPERIENCE

With the relevant OS staff scattered to different areas and careers, it has been only in recent times that the author, qualified as a modern historian, has had the chance to review the fate of both Survey and Folios with any degree of concentration and objectivity. Casual inspection of Wall excavation reports in the late 1980s gave indications that things were amiss, but it was not until the mid-1990s that it became clear that, despite seeming assurances, the unique relevance of the 1980 Survey had been forgotten. Concentrating on the last two major compilation articles in these *Proceedings* (Keppie et al 1995, 601–72 & Dunwell et al 2002, 259–304) the reader will search in vain for any specific mention of OS archaeological material (other than the 1969 map) or final acknowledgement/reference. Indeed, there is no evidence that a modern generation of Wall archaeologists has ever heard of the 1980 work, this despite its ubiquitous presence in their own work. Of the 60 illustrations in these two articles, some 24, with associated text, relate (or *should* relate) directly to this Survey. The fact that it would be used, and often, was never in doubt: the frequency of Wall investigations means that OS location maps are more in demand here than in any other area of archaeology, and anyone requesting the latest large-scale detail on GIS or other systems will, given that the RCAHMS has undertaken no subsequent revision, receive the 1980 work.

While sympathy can be extended to the *PSAS* contributors for the appalling and distancing effect of digitized mapping on antiquity detail, this cannot fully excuse the ignorance of a vital source. Inspiring no more curiosity than a car park or factory outline, the OS Wall line is evidently seen as anonymous detail that acts as a convenient control; but it is meaningless to annotate the 1980 line as (typically) ‘Line as shown on OS map(s)’ unless it is known precisely where it originates. What appears to cover everything in fact covers nothing. Similarly, such bald statements as ‘The area had been identified as archaeologically sensitive because the Ordnance Survey had mapped the line of the Antonine Wall within the garden’ (Dunwell et al 2002, 287) almost demand qualification and reference. In the harsher world of pure science, the findings in most of these reports could be deemed invalid simply because the control system used has been neither described nor understood.

But there is more at stake here than professional discourtesy and procedural carelessness. If the recent history of OS Wall mapping is unknown or regarded as peripheral, it follows that one OS line is much the same as another in terms of providing ‘background’ control. In the articles concerned, this has led to errors of fact and omission that will have repercussions for future investigators. In 1999 Headland Archaeology conducted watching briefs and excavations in the area of Auchendavy fort (Dunwell et al 2002, 274–9). The illustration used (275, illus 12) is OS- and site-plan based, with a control line comprising, what appears to be, a free-drawn adaptation of a pre-1980 edition: this line bears the perfectly vague title ‘Assumed location of Antonine Wall’. Inspiring no confidence, it does not help when the excavators then record a significant deviation to the Ditch line (NS 674 749) with the solitary explanation that ‘It was recorded further south than expected’. By what criteria are we expected to evaluate this information?

This is exactly the type of situation the 1980 Survey was designed to prevent, and it is as well that it can still be used as an arbiter. Had those involved been familiar with the latter, they would have noticed, at a glance, that it represents a sum of knowledge and can act as a shortcut to required research. Thus they would have found that not only was the Ditch extant in this area in the late 19th century (OS 25 inch, 1898), but that, in an almost identical location, a professional excavation in 1978 confirmed the OS position (Goodburn 1979, 275; Keppie 1981, 241). Having taken both points into account, the 1980 work can therefore be said to be as accurate as possible. However, rough calculations still suggest that the 1999 excavations place the Ditch some 20m south of the 1980 (and proven (?) 1978) line. Whatever the explanations for this difference, and there could be several of technical interest to science, it was surely the case that this variance had to be considered in the report on the work. While their position is far from refuted, it is compromised by the failure to account for essential information.

The same can be said for a series of geophysical surveys and trial trenches conducted between 1998–2001 in the Shirva area (NS 6875) by the Centre for Field Archaeology, University of Edinburgh, and AOC Archaeology Group (Dunwell et al 2002, 271–4). This example is of interest not only because of the number of professionals and organizations involved, but also because it is one of the more extensive and speculative research projects on the Wall in the last decade. On one level this report can only be applauded, in that the findings are used to project a new course for the Wall over a 500m plus length (272, illus 11). It is rare for Wall archaeologists to consider the frontier as more than a series of discrete excavations, and rarer still for them to experiment with linearity. The evidence used to support the new line is, by the report's own admission, hardly conclusive, and there are enough honest caveats to suggest that the difficult, wet, conditions may have produced false interpretations. Nevertheless, there is no

ostensible reason to claim that this is other than a worthy and well executed project.

The problem comes when it is realized that the control used is probably a 1950s OS edition (we should not have to guess) and that no participant appears to have been aware that the 1980 Survey existed. Indeed, the report actually holds (as do others by inference) that 'The previously proposed line of the Wall in this area was suggested by Sir George Macdonald' (Dunwell et al 2002, 272). In fact there were significant and well founded alterations made to the latter's line in 1980 (illus 2; Tables 2 & 3) and there remain notable (if again relative) differences to the above line. It is not suggested that the OS team's conclusions were any more correct, merely that their findings, including physical evidence, demanded to have been debated and analysed. We will never know how knowledge of the 1980 work would have influenced the initial strategy for this Shirva project, but we do know that the premise on which it was based and presented is false and misleading.

How is it possible that so many archaeologists appear ignorant of one of the more important contributions to the Wall's history in the last 70 years? The question becomes the more potent when it is understood that the immediate remedy for these failings is not complicated. If all composite and specific articles on Wall excavations were to include, within the general statement of methodology, a mandatory section on the control system used, the basic scientific and contextual requirements would at least be met. This would not guarantee that individuals either understood or cared about the control, but it would certainly concentrate minds far more than at present. Having said this, however, it is not exactly clear from where the hierarchic impetus for this guideline might come. When it is considered that the composite articles central to this study must have undergone an overview refereeing process without anyone spotting the (to some) obvious, it is not safe to assume that there remains a deeper understanding of OS involvement at any level of the profession.

TABLE 2

Extract from 1980 Reference/Field Report Folio (NMRS) NS 6875, relating to the references on illus 2 (left-hand half)

NS 6875

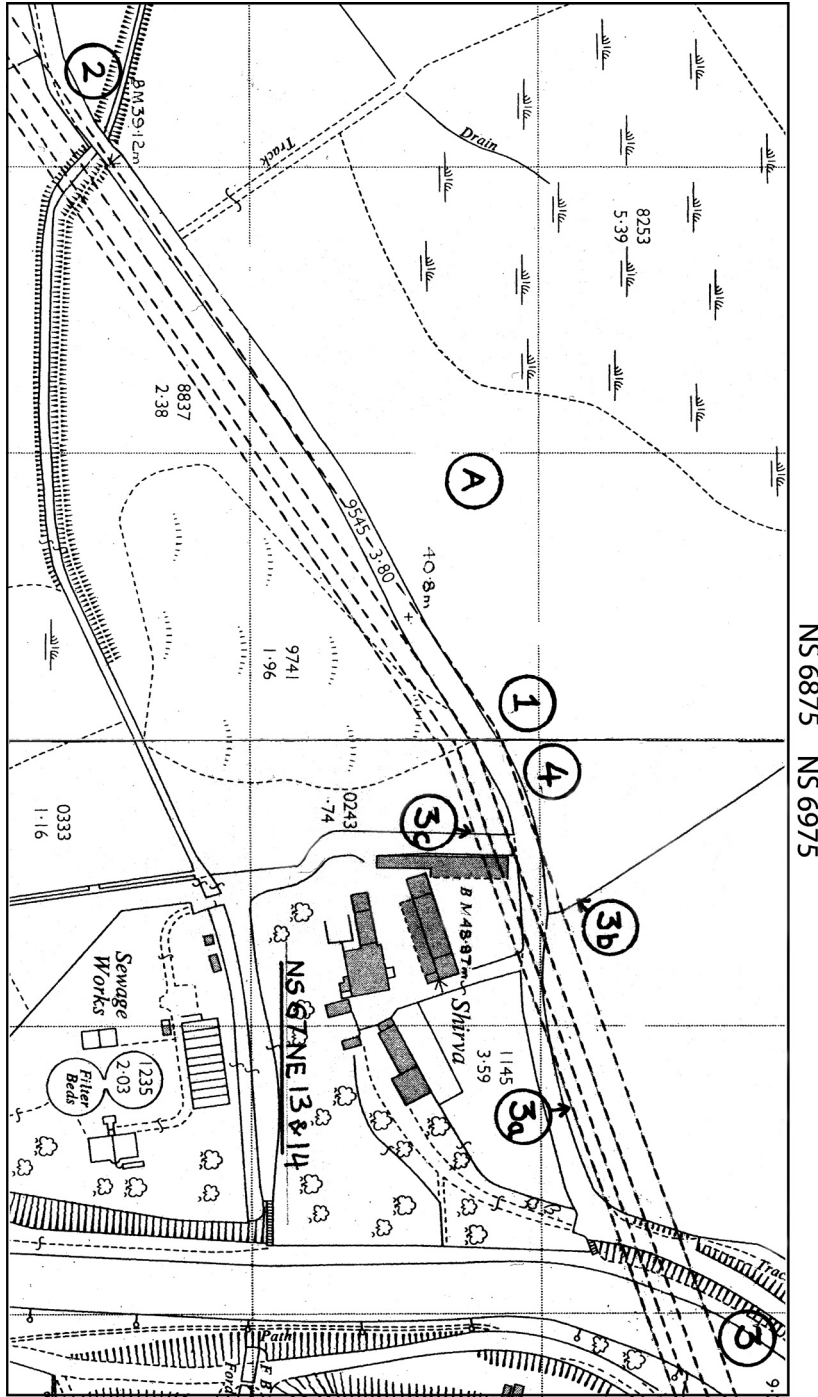
<i>Selected Record Information</i>	<i>Authorities</i>
A – Macdonald suggests the line swings N to this point to avoid low marshy ground to the S, and the modern road probably overlies the Military Way here.	Ro Wall in Scot 1934 149 PI XXIV(B) (G M)
B – Wall base and edge of Ditch located in pipe trench about 1973.	PSAS 107 1975–6 64 (L J F K)
<i>OS Field Report – 1980</i>	
1–2 – Published course (OS 25" 1968) resurveyed. No evidence has been found to support Macdonald's conjectured 'dog-leg' course (as formerly published). It would seem that part of a natural land fold was followed, but the angle is impracticable for alignment sighting, and would not avoid the low marshy ground N of the Board Burn at '2', typical of an obstruction detour. The straight between these points forms the most direct and efficient crossing of this difficult ground.	
2–3 – Published course resurveyed. The conspicuous remains of the Ditch and Rampart as shown on OS 25" 1898 (Stirl 28/15) are now almost obliterated. In pasture, no intelligible remains of the Rampart survive and the Ditch now exists as a broad terrace.	
3–4 – Published course resurveyed. There are no ground remains apart from the spread profile of the Ditch and Outer Mound preserved at hedge lines 3a and 3b. The modified line is based on re-examination of the OS 25" 1898 (Dum 33/3) survey, and the evidence of 'B'. The repositioned alignment angle W of 3a was deduced from the 1898 survey in conjunction with the ground topography and CUCAp APs GN 67–80 (1951).	
No reliable indications of the Military Way are reported from this sector. Macdonald's line at the E end is untenable (see 1–2), but it is feasible that the straight line of the B8023 overlies the Military Way W of Wester Shirva farm.	

Despite the self-evident fact that the 1980 work would have 'live' consequences for the foreseeable future, it seems to have been quietly forgotten in the years after the 1983 handover. Admittedly, OS archaeology was itself often guilty of under-publicizing its achievements, but in this instance it was far from being entirely responsible for its own misfortune. For its part, it should be noted that the NMRS has treated all the mentioned Folios in exemplary fashion, and it is not its duty to promote everything in the Record or chase archaeologists to perform basic research.

As was said at the beginning, for decades Scottish archaeologists were only too willing for the OS to take on the mapping duties of the Wall. With the OS Branch placed comfortably outside the system, the former appear to have

forgotten that what became mere background detail, to be mentioned or used only as a tool, was in fact an essential component in the process of archaeology for which they might one day have to take full responsibility. This evolved mindset, which evidently clings to the belief that OS archaeology was simply there to represent Macdonald and add flattery to 'real' archaeology, should have received a wake-up call in 1983: as yet no one has set the alarm.

Almost by definition, mindsets cannot be changed by the writing of a single article, no matter that the consequences of this particular folly have been demonstrated; but they can be changed by direct experience. The 1980 Survey is now 25 years old, and in the intervening period hundreds more points of isolated evidence and information have accumulated. Sooner or later



ILLUS 2 Extract from 1980 Map Folio (NMRS); elements of two maps have been joined to create this image. Shirva. NS 6875 & NS 6975. The site references are explained in Table 2 (NS 6875) and Table 3 (NS 6975) (*facsimile map/annotations Crown copyright © Ordnance Survey/RCAHMS*)

TABLE 3

Extract from 1980 Reference/Field Report Folio (NMRS) NS 6975, relating to the references on illus 2 (right-hand half)

NS 6975

<i>Selected Record Information</i>	<i>Authorities</i>
A – Macdonald quotes a witness as to the old mineral railway, during its construction, partly overlying the Military Way and at one point touching the Rampart itself.	Ro Wall in Sco 1934 149 (G M)
B – Ditch appears along the stretch as ill-defined hollow.	ibid
<i>OS Field Report – 1980</i>	
1–2 – Published course (OS 25" 1968) resurveyed. No surface traces across developed area. The line has been slightly modified in sympathy with the known straights to E and W. The alignment angles at '1' and '2' are at the optimum changes of slope.	
2–3 – Published course resurveyed. The amorphous spread of the Ditch and Outer Mound is just discernible in pasture along most of this length. A banked hedge-line is on the course of the Rampart, and a road and housing development have long since replaced the old railway line. The former published alignment angle at '3' cannot be substantiated and has been adjusted. Given the probable topography prior to the cutting of the Forth and Clyde canal, no alignment change would have been required, and there is no ground evidence to support it. See also evidence for 3–4 below.	
3–4 – Published course resurveyed. There is no recorded evidence for extant remains here, though there are pointers to the probable course. At '3a' is an amorphous linear swelling in front of the hedge line that should indicate the Rampart, while beyond this a narrow terrace indicates the line of the Ditch. A distinctive swelling on the hedge-line at '3b' is consistent with the profile of the Outer Mound, while another swelling, against a farm wall at '3c', may be the Rampart line. At '4' the Ditch is preserved as part of a hollow-way now carrying the road (see also NS 6875), and this also the optimum position for a significant alignment change (ie sighting and change of slope).	
Nowhere in this sector is the line of the Military Way evident. The evidence of 'A' is insufficient to project a course.	

the archaeological community in Scotland will have to collate all this new material within some recognizable map form (in effect revising the 1980 line) or face the charge that they are merely stamp-collecting. A new generation will have the benefit of computer technology to aid them, but the author is in no doubt that the sobering experience of having to bring a cohesive unity to their own work will help them appreciate the importance of this activity and hone a new respect for what was done for them by impartial OS surveyors over so many years.

It is perhaps an irony that, following all the recent publicity concerning the nomination of the Antonine Wall as a World Heritage Site, the concept of linearity is again on the agenda; the Wall is classed as a single monument, and the planning for this nomination cannot be managed

on the basis that it is a series of discrete frontier sites. This too will help concentrate minds on the central issues that occupied OS Archaeology Division/Branch over the decades, and may spur the above mentioned need for further collation. Whatever the form any new survey or datum system may take in the future, it must be hoped it will gain the recognition and respect that it deserves.

ACKNOWLEDGEMENTS

A debt is owed to the fellow members of the 1980 team: my FAS colleague Martin Fletcher, Edinburgh Branch head James L 'Jimmy' Davidson BEM and his colleague Ian Fleming. The late Arthur 'Nobby' Clarke, Branch Superintendent, inspired the whole enterprise. In particular, I thank Jimmy Davidson for

his advice and comments on this article, although the views expressed remain the sole responsibility of the author. Similarly, Dr David Breeze commented on and encouraged the completion of this work despite the criticisms sensitive to his field of speciality; again, the views expressed are mine alone. Finally, thanks are owed to the staff of the National Map Library, Edinburgh, and to Rebecca Jones and the staff of the NMRS who were more than helpful during the research for this article.

REFERENCES

- Bailey, G B 1996 'Stream crossings on the Antonine Wall', *Proc Soc Antiq Scot*, 126, 347–69.
- Bailey, G B forthcoming 'Excavations at Falkirk Roman Fort'.
- Breeze, D J 1975 'The line of the Antonine Wall at Falkirk', *Proc Soc Antiq Scot*, 106 (1974–5), 200–3.
- Cunliffe, B et al 1977 *The Times*, leading article Nov 12. Other articles and correspondence from Oct 25–Nov 29.
- Dunwell, A J, Bailey, G B, Leslie, A & Smith, A 2002 'Some excavations on the line of the Antonine Wall, 1994–2001', *Proc Soc Antiq Scot*, 132, 259–304.
- Goodburn, R, Hassall, M W C & Tomlin, R S O 1979 'Roman Britain in 1978', *Britannia*, 10, 268–356.
- Harley, J B 1975 *Ordnance Survey Maps: a descriptive manual*. Southampton.
- Keppie, L J F 1974 'The building of the Antonine Wall: archaeological and epigraphical evidence', *Proc Soc Antiq Scot*, 105 (1972–4), 150–65.
- Keppie, L J F & Murray, J F 1981 'A Roman hypocausted building at Falkirk', *Proc Soc Antiq Scot*, 111, 248–62.
- Keppie, L J F & Breeze, D J 1981 'Some excavations on the line of the Antonine Wall, 1957–80', *Proc Soc Antiq Scot*, 111, 229–47.
- Keppie, L J F, Bailey, G B, Dunwell, A J, McBrien, J H & Speller, K 1995 'Some excavations on the line of the Antonine Wall, 1985–93', *Proc Soc Antiq Scot*, 125, 601–71.
- Macdonald, G 1934 *The Roman Wall in Scotland*, 2nd edn. Oxford.
- Ordnance Survey, 1931 'Antonine Wall – Course supplied by Sir George Macdonald', Folio colln, NMRS.
- Ordnance Survey, 1954–7 'Antonine Wall. Ordnance Survey 1954–57 Working Sheets', Folio colln, NMRS.
- Ordnance Survey, 1969 *The Antonine Wall*. Southampton.
- Ordnance Survey, 1980 'Antonine Wall – 1980 Survey', 3 vols, Folio colln, NMRS.
- Robertson, A S 1963–4 'Miscellanea Romano-Caledonica', *Proc Soc Antiq Scot*, 97, 180–201.
- Roy, W 1793 *The Military Antiquities of the Romans in Britain*. London.
- Skinner, D N 1973 *The Countryside of the Antonine Wall: A Survey and Recommended Policy Statement*. Perth (=Countryside Commission for Scotland).