This year’s competition: Guess the bedrock on which this excavation is sited. Photographed 3 August 2005 somewhere in England.
### AARGnews 31

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Editorial

Books
During summer 2005 two books were published that may be of interest to AARG members. The first, In Volo nel Passato: aerofotografia e cartografia archeologica (perhaps better known to many of you as the Bloody Book), was originally intended to be a simple handbook for our Italian students. Chris Musson’s love of aerial photos and Italy led him to produce much more than that and the BB is a beautifully designed (by Chris) and printed volume that should bring pleasure to any of you who like pretty (and informative) colour aerial photos regardless of the fact that the text is in Italian.

The reason I mention it here rather than in (or maybe as well as) Books of interest? is that Toby and a few others have suggested that something of the kind is just what is needed in Britain. Is it really? The BB was written in three main parts: working in the air to take oblique photos, using air photos, and examples of various things seen on (oblique) air photos. For Britain (and therefore for much of temperate Europe) the last part has been comprehensively covered by David Wilson albeit using mostly black and white pics. Various books and papers have made use of aerial photos in the UK – and for years I’ve been trying to write something pulling all that together and moving on. And you know my feelings on continuing to promote observer-directed photography as our main means of data collection. Antiquated!

So that’s a Rog-view which I throw at you for comment or to open discussion on just what should be taught in Britain. This may be relevant in view of the fact that Culture 2000 – which is likely to equal English Heritage in this case – will be running an English training school in 2006. Is the EH approach the right one or the only one..?

The second book, From the Air: understanding aerial archaeology, is a volume of 13 papers edited by Kenny Brophy and Dave Cowley. In these you’ll find some discussion of those aspects in what is the first collection of essays that begin to analyse what we do in the air and on the ground. I’m not quite sure who From the Air is aimed at but it should be compulsory reading for anyone taking or using air photos for archaeological purposes. To help you make up your minds, Tempus are offering the volume at a reduced price for AARG members (see the enclosed leaflet and find more details in this issue).

Thoughts
This issue includes thoughts by Lidka Žuk about what we are doing, not doing, and could be doing. Her paper is derived from those given at the Cropmarx session at TAG 2004 (see review last issue) and pursues the question how ‘aerial archaeology’ may become part of real archaeology. Some of the papers given at TAG are in From the Air and so her ideas can be back-tracked by anyone interested. To repeat myself yet again, some kind of discussion about ‘where we are’ seems vital if we are not going to remain stuck up this cul-de-sac of oblique photo worshippers, and I suggested that Lidka offers to organise a questioning session at AARG 2006. Hopefully this will be allowed an equal amount of time for discussion as for formal presentations.

Culture 2000 training schools
Three (I think) courses have been run between issues of AARGnews. At a ground school in Romania we were part of a week that continued into use of GIS. Our students there ranged from real students to directors of regional museums and everyone seemed to enjoy themselves and take part in all the exercises and discussion. Our short week ended with a presentation by Bob Bewley to an assembly that included the relevant minister (himself an ex-archaeologist). We think we got our point across although one person in the audience waved a few photos at us and seemed to give the impression that they already had all the information they needed.

A short course was held at Barth on the Baltic coast to enable Otto Braasch to fly students over the water while Dave MacLeod managed to teach them something useful in between.
Yet another course was held in Italy at Grosseto and was, according to Pete Horne, one of the most successful to date – possibly because neither I nor Otto was there! Damian Grady managed the flying side of things and no student was allowed near an aircraft until they had been taught how to use a camera and shown what things looked like from the air. With everything done digitally there was smooth transition from ground to air to ground and students were easily able learn from and work with their own photographs. A pictorial web diary was kept of the week and can be found at [http://www.lapetlab.it/](http://www.lapetlab.it/)

...and on teaching

Two points have become obvious from my involvement in Culture 2000 teaching and responses from ex-students. These need to be emphasised in future teaching. The first is to describe and/or illustrate the types of features that existed in the past (there are enough modern replica villages, etc to illustrate this) and to talk through what may be and what will not be visible from the air some 2000 years after their abandonment. It seems essential that this is understood before they are shown the standard picture of ‘how a crop mark is made’ and then confusing them with unnecessary terms for different types of these botanical marks. Second is to make it very clear that sub-surface features are unlikely to be visible at all times of year. Many of us have been asked to photograph crop marks in November and this may be partly due to bad teaching and partly because of the misleading use of the term ‘crop mark’ to mean ‘archaeological site visible on air photos’.

I’ve been teaching both of these for years now (but I don’t do this introductory talk in C-2000 sessions) and illustrate the latter with photos of the same field from the same viewpoint. One taken when nothing is showing (yes, we don’t usually take those) and another when there is good crop-marked evidence. Teaching for C-2000 needs to include more really basic introductions than I’ve heard lately in which it seems that the ability to juggle in PowerPoint has over-ridden the need to convey simple messages.

Nag, nag….

This issue

I am pleased to be able to include Francesca Radcliffe’s brief ‘biography’ of John Bradford. To most of us he is known only through his pioneering work in Italy and a handful of publications. He was perhaps the first person to consider the potential of aerial survey on a world-wide basis. There are plans to republish her piece (or perhaps a modified version of it) in Derek Edwards’ digital newsletter which, I believe, will include more aerial photos.

Apologies to Martin Fowler for ‘forgetting’ to include his evaluation of the new digital CORONA products in the last issue. But it’s here now and the high-resolution scanning looks very good. Satellite interest continues in my short note on Google Maps for which I thank Google for permission to publish.

At AARG in Munich (or was it somewhere else?) we were told about the alpine work being undertaken in Austria and Michael Doneus and Katharina Rebay (who he has just lost to Cambridge – not my uni, the other place!) have written it up for AARGnews. This is a new landscape for most of us and it is interesting to see the potential of aerial photography and problems of site recognition. I’m sure that we will be kept updated on this interesting project.

Thanks to Toby Driver, our exiting (sic) Chairman, for using AARGnews in the way that I intended when it started 15 years ago – as a place to make comments and begin discussion. More from the rest of you please...

And the cover photo..?

...is by way of an advert for our Clayday on November 12. The site is at St Neots, Cambridgeshire (the railway station is on the left side of the pic) and is on boulder clay. I’ve used it simply to illustrate the wealth of archaeological information that can be found on clay and note that some (but not many) of the features visible were recorded on the Bedfordshire 1996 verticals but never by an archaeological observer.
Chairman’s Piece

Toby Driver

Having been Chairman of the Research Group for nearly three years now, and with the handover to a successor imminent, I hope that we in the committee have moved the group on a bit from the point at which it stood late in 2002.

Chairing AARG is a little like sitting in a Cessna prospecting for cropmarks in Wales during any July since I started flying in 1997; long periods of reflectiveness with a trickle of duties, punctuated by exhausting episodes of frantic, non-stop work. It is probably fair to say that when Davy handed me the reins during the Canterbury conference in 2002, AARG was beginning to emerge as a more relevant group for its broad membership; assisting with or organising an increasing number of European ventures; inviting a broader spectrum of speakers from further afield to its UK-based annual conferences. These circumstances were a product of AARG’s origins and its development from an eclectic UK research group to a more rounded, confident network of interested people during the 1990s.

After I took over, the structure and indeed the entire role and purpose of the Research Group received a number of jolts; one of these was the resignation of the Continental Correspondent, but there were others including an invitation to talk directly to the European Archaeological Council about AARG’s role in the wider world and pressing issues for aerial archaeology. More recently the European Landscapes initiative has drawn together a new and strong network of different participants to address aerial archaeology concerns in many different countries. Increasingly, entire sections of the membership are becoming fiercely proactive, including the loose team who pull together and run the highly successful workshops and training seminars in various countries.

This September we will hold our second non-UK conference at Leuven, once again tightly packed in between high-profile, busy meetings of the European Association of Archaeologists and the International Society for Archaeological Prospection. Whilst working as closely as we can with these two organisations, AARG is also able to hold its ground in this busy arena and promote the values of aerial archaeology. Each year, of my three years of conference organising, conference programmes have become increasingly over-subscribed. It is pleasing to me that the sessions are now full of new, different faces from different countries, rather than just the more familiar acts. This is a good thing for us all. All the changes and developments, and in some ways the reawakening of a far more international group than that of a few years ago, have rapidly educated me and kept me busy; and I wish an equally interesting future three years to my successor.
Chairman’s Piece part two:
Cropmarks in south-west Wales – ephemeral traces of the prehistoric landscape?

I thought it would be useful to show the ongoing results of an excavation currently (early August 2005) in progress on a square later-prehistoric enclosure discovered as a cropmark in 2003. The site is Troedyrhiw (Tre-cefn-isaf), near Cardigan in south-west Wales. Ken Murphy for Cambria Archaeology, working with the University of York (based at the Castell Henllys project), is directing excavations as part of a wider, comprehensive study of rectangular cropmark enclosures in south Ceredigion (see the excellent dig diary at http://www.acadat.com, and download a copy of last year’s project report under Projects > Regional projects > Rectangular cropmarked enclosures…).

The reason why I include this example is that ideas still persist in Wales that cropmarks represent damaged or ephemeral parts of our archaeological landscape, almost always second best to an upstanding, unploughed example. Even worse, one still encounters those who honestly doubt the correct interpretation of a ‘cropmarked site’ on the basis of an air photo alone, preferring instead to trust geophysics or the spade.

This site was discovered with a handful of others by RCAHMW during July 2003. The original parchmark in grass was clear, showing not only the ditch of the main enclosure but the faint ancillary enclosure alongside. However, this was not a stunning cropmark in itself, and could such a faint cropmark site ever be considered of national importance and thus worthy of statutory protection? The assessment of this site, through excavation in 2005, has quite comprehensively demonstrated the buried potential of superficially ‘plough-levelled’ monuments in south-west Wales. Excavations have revealed a considerable rock cut ditch, infilled with a variety of artefacts including Iron Age pottery, and a 1st century Roman coin – unheard of riches for a later prehistoric site in mid Wales. If the ditches of other plough-levelled enclosures in the region contain similar quantities of artefacts, coupled with environmental evidence, then they must be recognised as integral, and very fragile, survivors of the prehistoric landscape worthy of statutory protection as repositories of buried data, rather than as poor cousins to upstanding monuments.
The Troedyrhiw rectangular enclosure as discovered in July 2003, showing the main enclosure and a more ephemeral ancillary enclosure to the right. The gate lies on the far side of the main enclosure. (Crown Copyright RCAHMW, 2003-cs-1451)

Troedyrhiw enclosure. Excavations in progress on 3rd August 2005, showing the left-hand terminal of the (fairly formidable) rock-cut ditch under excavation (and not bottomed), with the interior of the enclosure beyond. Note the thin topsoil over the site. (T. Driver)
Chairman’s Piece part three:
The sad loss of Ty’n y Waun moated site, Cowbridge

In the winter of 2003, I photographed the isolated moated site at Ty’n y Waun, west of Cardiff, in excellent lighting conditions. This interesting earthwork had long provided a useful navigation point in the improved grasslands of the Vale of Glamorgan and had been variously attributed to the Medieval, or Roman, periods. It was originally discovered by H Owen John of the Glamorgan-Gwent Archaeological Trust and surveyed by Howard Thomas of RCAHMW in 1983. Because of its exceptional preservation, I forwarded prints to Cadw as a potential candidate for scheduling.

Whilst engaged in a cropmark recce this summer I overflew the site and had to look twice; it had been entirely removed from the landscape, apparently by bulldozing or heavy ploughing, and other earth moving was still in progress. One is used to seeing occasional examples of the obliteration of fine earthworks in earlier, post war, books teaching us the value of aerial archaeology as a recording tool. To see such activities still happening in the 21st century is very sad. Hopefully increased identification and recording of rare surviving earthworks in the more heavily improved agricultural lowlands of Wales, can be coupled with increased site visits and more proactive protection to prevent a repeat of such an event in the future.

The Ty’n y Waun moated site, Cowbridge, Vale of Glamorgan, on 10th January 2003 showing the exceptional – and presumably unploughed – survival of earthworks in an otherwise heavily plough improved lowland setting (Crown Copyright RCAHMW, 2003-Cs-0192)

The Ty’n y Waun moated site on 11th July 2005 either bulldozed or ploughed, and virtually eradicated as a surface earthwork, (Crown Copyright RCAHMW, AP_2005_1247).
J. S. P. Bradford 1918 –1975

Francesca Radcliffe

The brief biographical notes at the end of this article illustrate how little is known of the life of John Bradford, whose book *Ancient Landscapes* is still well thumbed by all with an interest in aerial photography and archaeology. My special fascination with Bradford arose appropriately enough in Puglia where I went in 2003 while attending the Summer School of Aerial Archaeology organised by AARG, Foggia University and English Heritage. It seems therefore appropriate to write something about Bradford and his work as this year is the 30th anniversary of his death.

It was in 1943 that Bradford had arrived in Puglia as a young officer in the Intelligence Corps. He was posted probably at San Severo, where the Mediterranean Allied Photographic Reconnaissance Wing had been transferred in December 1943 from La Marsa in Tunisia to Puglia, in southern Italy. Bradford was working with the Air Photography and Reconnaissance Unit where a number of Intelligence officers, many of them archaeologists, were stationed with RAF photographic Units. His work involved looking through thousands of vertical aerial photographs taken by the RAF since 1943 for military purposes. These photographs were immediately developed and interpreted on the spot by specialised photo-interpreters. In the same group was his friend and fellow officer Peter Williams-Hunt, who was also a pilot. Both officers had a keen interest in archaeology and knew the pioneering work - in aerial photography and archaeology - done by Major Allen and O.G.S. Crawford in England. They had discussed the possibility of applying these principles in other countries and in Puglia they saw and took their golden opportunity. Having examined thousands of verticals for military purposes it is only natural that they also looked for their archaeological potential. Their suspicions that the plain of the Tavoliere would make a good objective for aerial archaeology - because of its geology - were more than rewarded. The war was hardly over when they took the opportunity to check and photograph the most important sites they had seen in the RAF verticals. The story and the techniques used were related by Bradford in his book *Ancient Landscapes*¹, and before that in his papers published in *Antiquity*². They discovered more than 200 new crop-marked sites, (more than double the number of officially recorded sites for the whole of southern Italy at that time). The late-spring season was perfect and their excitement can be only guessed while observing the exceptional landscape revealed to their astonished eyes. Their enthusiasm must have been catching as they persuaded the RAF not only to allow extra “training flights” to take more photographs, but also to do some test excavations which “were carried out efficiently and enthusiastically by men of our Unit as an aspect of its scheme of Army Education”³. This must have been welcome by all as at the end of the war and before demobilisation there was little to occupy the men who had only recently stopped fighting. These test trenches revealed that the crop marks indicated ditches of Neolithic villages, of Roman centuriation, roads and villa-sites, as indeed Bradford had foreseen! They had also identified a number of medieval earthworks which then still stood to a good height, but have since been flattened by the enormous increase in agricultural activity

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¹ *Ancient Landscapes*, p 91
³ *Ancient Landscapes*, p 97
in that region of southern Italy which for centuries, perhaps since Roman times, had not been subjected to deep ploughing. Bradford had foreseen that this would happen. It is unfortunate that not more was done to record all his discoveries before the modern agricultural revolution obliterated many sites.

At the end of the war Bradford came back to England with the firm intention of pursuing his discoveries from the air photographs in Europe, and Puglia in particular.

As a member of the Sub-Commission for Monuments, Fine Arts and Archives of the Allied Commission in Italy, he was also instrumental (with Ward Perkins) in making sure that most of the RAF vertical aerial photos taken for military purposes remained in Italy. His “sensitivity and foresight” was recognised by Giovanna Alvisi in her introduction in the catalogue that accompanied the exhibition, L’Aereofotografia da materiale di Guerra a bene culturale, le fotografie aeree della RAF, held at the British School of Rome in 1980. Now this important archive is stored in the Aereofototeca in Rome and lovingly looked after by Dr Boemi.

Bradford’s enthusiasm persuaded and convinced many important archaeologists of the time to help him in his research work. Christopher Hawkes advised him and greatly supported him, and with Mortimer Wheeler, was instrumental in establishing the Apulia Committee under the auspices of the Society of Antiquaries of London, the Ashmolean Museum and other cultural Institutions both English and Italian. In 1949 and 1950 two seasons of excavations in the Tavoliere were carried out by the John and Patience Bradford under the sponsorship of the Apulia Committee and with the help of two assistants. In 1949 they were helped by Dr Kaftal and Christopher Musgrave and in 1950 by Lord William Taylour and Colin Kraay. One of these assistants according to Bradford, was “fluent in Italian” (one of the stipulations set out by the Apulia committee) “and very good to deal with the Italian nobility(!!).” This is related in one of his letters. His letters (some exceedingly long), dated from the Albergo Sarti in Foggia and addressed to Ward Perkins and to the Secretary of The Society of Antiquaries, make riveting reading. They are not only interesting but also delightful letters. One gets the impression of an intelligent and cheerful young man, with a touch of arrogance perhaps? But with a good measure of sense of humour, much needed in the circumstances. The results of the first season are summarised in the Antiquity XXIV article “The Apulia Expedition: Interim Report”. He relied heavily on the help provided by the British School of Rome and Ward Perkins in particular, especially to navigate among the Byzantine Italian bureaucracy of the many government offices, permits etc. The expedition endured various mishaps especially with their car: it twice suffered a broken axle, once due to the fact that the car (which belonged to Patience) was taken by an Italian friend, without the Bradfords’ permission, who crashed it into a wall and then failed to pay fully for the damage. They also experienced torrential rains at the end of the first season which quickly filled the excavated ditches and turned the site into a quagmire, delaying their departure. The quantity of finds was impressive, some 12,000 sherds were recovered from the excavations of the two seasons. Some of the surface finds (4 boxes) followed the Bradfords to Oxford to be studied and drawn, while the great majority were stored in the Taranto Museum. They also surveyed the sites seen in the aerial photographs and carried out test excavations. It is most unfortunate that Bradford failed to leave proper written records of all his work, especially the very important excavations and surveys of the second season. He very often promised that they were on the point of being published and in Ancient Landscapes he wrote “I shall not anticipate here in
any way the details, or conclusions, derived from the systematic test-excavations and field survey conducted by the official expeditions sent out in 1949 and 1950. These are embodied in my definitive account now in preparation as a Report of the Research Committee of the Society of Antiquaries.” This was in 1957. I have not found any such document (or notes) among Bradford’s archive at the Pitt Rivers Museum. It is hoped that these notes may turn up one day somewhere. Things did not go too well on the second season either, although the relationship with the Italian authorities was always very friendly, especially with Professor Drago, Sopraintendente alle Antichita’ per la Puglia, and his assistant Signor Campi who was always present during the excavations. In one of his letters5, at the end of the first season, Bradford wrote: The news is both grave and gay. Archaeologically it is very promising with good progress… but financially we have suffered heavily from the devaluation of the pound.” He goes on to say “generally speaking my air photos sites can be clearly seen on the ground, and identified without difficulty. The details shown by weed-growth are especially interesting and are an important addition to the study of vegetation marks. Thus we can see clearly on the ground the parallel trenches dug for a Roman vine-yard, pits for olive trees and a centuriated roadway…. But the face of the Tavoliere is changing rapidly, as the region is developed. Deep ploughing to 3 feet or more, going well down to the rock itself, has destroyed some of my finest crop-mark sites, visible in 1945. And the extension of the area under vines, whose trenches wreck all evidence in the soil, is engulfing areas of crop-marks as well. The Tavoliere has changed much in the last generation – and the process is still continuing rapidly”. And “One of the best results of our work has been to identify a large number of medieval earthworks, many mentioned in the documents as having been ‘hunting castles’ of Emperor Frederick II in the mid 13th cent. The Sopraintendenza, and their local Inspettore (sic) are sublimely unaware of their existence.” He continues his rhapsody on sites like Lucera’s castle, the abandoned medieval village of Salpi and many fine motte-and bailey sites. The letter is 18 pages long!

After the second season things did not go according to plan. The third season which was to have followed in 1951 never happened. The reason why was a bit of a mystery, at least to me. In my research a letter found in a box in the Archive of the British School of Rome, did throw some light on the episode. Towards the end of the 1950 excavations Bradford faced a few problems and at the beginning of 1951 John Ward Perkins, Director of the British School of Rome, did not hide from some members of the Apulia Committee his doubts about Bradford’s competence to carry out the programme he had proposed. His are strong words : “a) that the results could have been much better if Bradford had been prepared to listen to the School’s very clearly expressed advice to tackle one job at a time, and do it thoroughly, b) that he had better stop altogether unless he can command better assistance in the field…..and if Bradford is temperamentally incapable of taking good advice and insists on learning the hard way, I feel we should seriously consider whether we wish to be represented any more in the committee.”

So there was a basic divergence of opinions (and vision) between Ward Perkins and Bradford on how to carry out the research in the Puglia’s landscape. Catherine Delano-Smith in her

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4 Ancient Landscapes, p 86
5 To Mr Conder, Secretary to the Society of Antiquaries on 24th September 1949, Society of Antiquaries of London Archive.
paper *A Perspective on Mediterranean Landscape History*\(^6\) tells us how Bradford had known and picked up the theory on the landscape expressed in the 1930s by the French historian Marc Bloch. “In both his insistence on a holistic approach to the study of the landscape history and on seeing its changes as an amalgam of tiny local details, Bradford was several decades ahead of his time. The holistic approach lies at the heart of modern landscape studies, but it was Bradford who placed archaeology midway between the ‘poles of experimental science and humanism’ and who observed that ‘the concept of ‘ancient landscapes’ as organic topographical wholes...involves geology at one end and poetry at the other end of the spectrum’.” Bradford also believed that the most important condition for the study of the landscapes is in its totality. This conviction was stated by Bradford quite clearly, firmly and repeatedly in his *Antiquity* articles. For Ward Perkins Bradford should instead have concentrated his research on one period only, perhaps the Neolithic for which Bradford seemed to have had a particular and propriatorial fondness. It was a clash between two strong personalities, John Ward Perkins was senior to Bradford and as Director of the British School of Rome felt he was responsible for excavations carried out by English teams in Italy. And so the third season of excavations and survey planned by Bradford never took place. From now on Bradford dedicated all his time to the research and writing *Ancient Landscapes* and to his work as University Demonstrator and Lecturer at the Pitt Rivers Museum.

In 1957, after almost ten years in preparation, *Ancient Landscapes* was finally published and it received very good reviews. From one review in particular I would like to quote: “By appreciating to the full the immense potential value of aerial survey and, further, by seeing that it works just as well abroad as it does at home, Bradford has surely made one of those great steps forward in his subject which it is granted to but few to make. Bradford’s lead deserves a wide following; if it is forthcoming, no branch of archaeology could have more to contribute to the intelligibility and coherence of archaeological knowledge, especially in the Mediterranean”\(^8\). It was written by Dr Hector Catling who was for many years Director of the British School at Athens.

In 1953 when Bradford asked Sir Mortimer Wheeler for an opinion on his Chapter II of his forthcoming book, Wheeler wrote back “Since you ask my opinion, let me say that I think your Chapter II very good indeed. It states your dramatic results clearly, and indicates the principal problems. It will certainly long be the basis of research in this and other regions. I am particularly glad that it is being prepared in anticipation of the definitive report - the one, as you say, is the proper sequel to the other. I only hope that when these two works are done, you and Patience may be back and tackle more of the details. It is splendid. Thank you for allowing me to see it. Yours” etc.

This letter also underlines the big problem Bradford was facing. It may have been the beginning of his illness, which took a bad turn in 1957. Finally, in 1960, he was certified and hospitalised in Kent. I believe he was suffering from a degenerative hereditary disease; I am still researching this very sad aspect of his life.


\(^7\) *Ancient Landscapes*, p 3

\(^8\) H.W. Catling, *Journal of Hellenic Studies*, 81, (1961), 204-05
After Bradford’s untimely exit, at the suggestion of Ward Perkins, the Apulia Committee was resuscitated and entrusted to his wife Patience, who had been a close aid to her husband. She was asked to take over the research on the medieval sites in Puglia. Patience accepted with enthusiasm. She loved Puglia, and I believe she remembered with fondness the time spent there with John. She was particularly interested in the Medieval period and had a special fascination for Frederick II, his love for the Murge, the Tavoliere and falconry! Barri Jones was to look after the Roman period and the study of the centuriation, Dr Trump to continue the research on the Neolithic, while to Catherine Delano-Smith, a geographer, was allocated the task of reconstructing the changing physical environment in Neolithic, Roman and Medieval times.

So in 1963 Patience returned to southern Italy and stayed at the same Hotel Sarti in Foggia where the Bradfords used to stay when in Puglia. With the help of local workers and in agreement with the local authority she started digging at Il Casone (the medieval site of Casalnuovo) near San Severo. In particular she had found the site of a kiln with the help of a magnetometer lent to her (with a technician) by the Fondazione Lerici. One evening, perhaps after a long and sweltering day, she went back to the excavation, a deep trench. She may have suffered a slight stroke and lost her balance, she fell backwards into the trench, her back hitting a large stone. She was alone and it took some time before she was found, rescued and taken to San Severo hospital. John Ward Perkins and his wife, alerted in the middle of the night by a telephone call, drove straight to Puglia and with Barri Jones’ help managed to take Patience back to England. And so Patience’s career in archaeology also came to a very sad end. After a long stay at Stoke Mandeville Hospital she remained wheelchair-bound for the rest of her life. She went on living in Oxford, looked after first by her father and then by faithful friends. She never had the strength to go back to her beloved studies of the medieval times and the emperor Stupor Mundi. She died in 1985.

On 12th August 1975, after 15 years in hospital, John Bradford died, forgotten by many but not by Patience. In The Times’ obituary John Bowle, one of his Oxford tutors, said: “John Bradford was one of the ablest archaeologists of his generation, and though cut off in his prime by incurable and incapacitating illness, he achieved much”. And from the obituary in Antiquity: “John Bradford was one of the tragedies of our generation, a brilliant scholar at Westminster and Oxford. Dead to his friends and scholarship for fifteen long years.”

Thirty years after his death, I have found few people who remember him, thus I quote from the tutorials of this brilliant undergraduate to get a glimpse of the personality hidden beneath an enigmatic man:

“He is very able, efficient, and agreeable and has done thoroughly good work this term. I sometimes wish he was more genuinely humble minded: his acceptance of criticism is sometimes so ready as to make me feel that he is indifferent to its significance. But he has a very good intelligence. He is also an archaeologist and digs (with success) at Frilford.” … “He works and reads intelligently, and writes well. He suffers rather from trying to be too impressive: but one can always see that he is genuinely keen on his work, and it has been very pleasant to teach him” … “A real scholar whose instinct it is to base his essays on the original rather than on the secondary sources” … “... incurably longwinded: always good in discussion, able to summarise the effective point of his effusions: has a love of the obscure for

9 Antiquity XLIX, 1975, 246-7
its own sake: has a great deal of knowledge and considerable understanding: it is only his ability to handle it that I am not quite sure of. He may just be an antiquarian sort of person”.

If he did not archaeologise so much he may have achieved a First in History, so said one of his tutors. Perhaps he should have read Archaeology instead!

I end by quoting the forgotten verses written by John Kenyon (1784-1856) on the subject of Silchester’s street plan. Bradford found them and described them as “naïve but apt” in Ancient Landscapes, here they are:

Yet eyes instructed, as long they pass,
May learn from crossing lines of stunted grass
And stunted wheatstems that refuse to grow,
What intersecting causeways sleep below.
And ploughshare, deeplier delving on its path,
Will oft break in on pavement quaint or bath……

My thanks for their help to:
Derek Andrewes, Cinzia Bacilieri, Dr Hector Catling, Judith Curthoys, Catherine Delano-Smith, Jocelyne Dudding, Alessandra Giovenco, Philip Kenrick, Chris Musson, Bernard Nurse, Roy C. Nesbit, Rog Palmer, Alastair Small, Eddie Smith, Valerie Scott, Dr D. Trump, Ruth Whitehouse, Cathy Wright.

Biographical notes

John Spencer Purvis Bradford was born on August 28th 1918 in “Ashley”, Queens Walk, Ealing (Middlesex). He was the only son of Arthur Montagu Blackie Bradford and Violet Mary, daughter of the Revd John Louis Spencer, Rector of Ashley, Staffs. On 21st January 1932 he was admitted as a dayboy at Westminster School where in the summer of 1936 he was awarded a private Westminster Scholarship, the Hinchcliffe, to Christ Church College, Oxford. There he read Modern History from 1936 to 1939, graduating with a 3rd. Between 1936 and 1943 he dug with Major G.W.G. Allen in a Thames gravel pit near Dorchester (Oxon), and as an undergraduate excavated with Dr Nowell Myres (and Richard Goodchild) at the Frilford Temple. He later organised “single-handed, the Memorial Fund, to finance the Myres Memorial Lecture at New College, Oxford10.

1943 January. Commissioned 2nd Lieutenant Royal Intelligence Corps.
1943-5 During WW2 was with the Mediterranean Allied Photographic Reconnaissance Wing stationed in Puglia, probably at San Severo. In his own words he “was in charge of military intelligence for regions in many countries. One region was North-West Italy”. See his “Report on results of (i) archaeological field-work on foot in Italy, combined with (ii) research in the general Staff H.Q. on the Italian Air Ministry in Rome and the air photograph collections which I helped to establish in the American, British and Swedish Academies in Rome, and also in the University of Oxford, in 1945-46” (original in the PR 1998.296 Box V).
1945 June. With Peter Williams-Hunt took aerial photos of the Tavoliere on behalf of the RAF.

10 Nowell Myres, letter to the editor, Antiquity L, 1976, 4.
He was appointed a member of the Sub-Commission for Monuments, Fine Arts and Archives of the Allied Commission for Italy and his work put him in close touch with Italian archaeologists, among whom were Professors Baroncelli, Fraccaro, Lugli Mancini, and Patroni. Director of the Sub-Commission was Lt. Col J.B. Ward Perkins, who later became Director of the British School of Rome from 1947 to 1974.

Wrote with Peter Willliams-Hunt a little booklet of aerial photographs taken in Puglia in April/May. He was also briefly Assistant Curator at the London Museum at Lancaster House, while Mortimer Wheeler was Curator.

1946 At the end of the year was “very ill” for a month (letter to John Ward-Perkins 16.1.47)

1947 He was appointed University Demonstrator and Lecturer at the Pitt-Rivers Museum Oxford, where he held regular lecture-courses on aerial archaeology among other subjects.


First drafts of his book "Ancient Landscapes."

Autumn. He became engaged to Patience Felicity Andrewes, only daughter of Hugh Andrewes, of Bude, Cornwall described by Bradford to John Ward Perkins as being “a specialist in medieval art and archaeology”. She had attended a course at the Courtauld Institute and during the war was in the F.A.N.Y. Corps. They were married in December in Oxford and lived in 34 Warnborough Road.

1949 Autumn. First season of excavations in Puglia sponsored by the Apulia Committee, created in 1948 under the chairmanship of Mortimer Wheeler and sponsorship of the Society of Antiquaries, Oxford University and other English and Italian cultural societies.

1950 2nd Season of excavations and survey in Puglia from end of July to 12 October.

1953 Visit to Sicily to assess the potentialities for air archaeology there. Peter Williams-Hunt, a friend and fellow officer during WW2, with whom Bradford shared his great interest in Air photography and Archaeology died in a tragic accident in the Malayan jungle. He was 35 years old. He had married Wa Draman, one of the daughters of a chief in Perak and had planned to remain in the Far East.

1955 Visited Cyprus as part of his trip to Greece and Rhodes with Patience to take photographs and to survey the ground for material which appeared in "Ancient Landscapes."

1956 Travelled extensively all over Italy for over two months. Bradford spent ten days in Taranto Museum drawing a final selection from the 12,000 Neolithic, Roman and Medieval finds from his excavations in Apulia. He also spent ten days at the Italian Air Ministry air photo library, drawing the City of Arpi and ten days at the air photo library at the American Academy in Rome.

1957 Mostra della Fotografia Aerea per la Ricerca Archeologica in Milan, promoted by the Fondazione Leric to which Bradford contributed a number of aerial photographs. "Ancient Landscapes" was published after almost 10 years in preparation. From now on his health started to deteriorate, his behaviour became strange at times and more eccentric than usual.

1960 Hospitalised for hereditary degenerative illness

1975 23rd August, died aged 57 having spent the last 15 years of his life at the Oakwood Hospital in Maidstone, Kent.
A sample of air photos taken by Bradford between April and June 1945
Aerial archaeology above the tree line

Michael Doneus and Katharina Rebay

1. Introduction
The initial idea of working with aerial archaeology above the tree line was embedded in a new project on prehistoric and antique roads crossing the eastern Austrian Alps. In Austria, the interpretation of aerial photographs from alpine regions has never been carried out before. The project was started in August 2004 and is financed by the Austrian Academy of Sciences and conducted by Otto Urban, head of the Institute of Prehistoric and Medieval Archaeology of the University of Vienna, in cooperation with the Institutes Aerial Archive. As ancient roads are difficult to trace, aerial photographs will help to reconstruct the exact course of prehistoric routes and showing them in their topographical context. In most cases, however, the usage of the roads in former times can only be proved indirectly via single finds and settlements on the way. Here, aerial archaeology can help to find new sites. One of the most interesting single aspects of the project is finding the prehistoric route between the well known Iron Age sites of Hallstatt and Strettweg, where the crossing and utilisation of the Dachstein massive in prehistoric and antique ages is a topic of special interest. Dating antique roads is a challenging task. Most of the ancient routes and roads are in use even today either as a hiking track or a modern road follows exactly the same track. A GIS-based archaeological database, including all the previously known and published sites, is necessary to reconstruct archaeological settlement, trade and traffic patterns as well as to sort them in a chronological order.

2. Methodology
The long-term objective of the project is creating an Archaeological Alpine Land Register with all the available data on each single site of the project area, which can be used for answering archaeological questions. The first step, in achieving this, is mapping the distribution of all the known and published sites within the provinces of Upper Austria and Styria, locating them precisely with the help of GPS if necessary. The main focus of the project is detecting and documenting unknown sites with the help of aerial prospection. Aerial Archaeology in high alpine regions above the tree line has never been carried out before in Austria. Therefore we have to perform basic research. Since initially we had only a rough idea about the kind of marks and structures to look for, we decided to develop a methodology to use both, oblique and vertical photographs. First, we wanted to fly systematically to known sites taking oblique aerial photographs in order to get familiar with the general appearance of archaeological sites in alpine conditions. At the same time, all the vertical photographs available from the project area should be scanned and printed. The Aerial Archive at the Institute for Prehistory of the University of Vienna stores about 200,000 aerial photographs from the 60s onwards, about 5000 from the project area. In addition a contract with the Austrian Air Force enables us to acquire vertical photographs. This allows us to carefully choose the region and the best time for the additional vertical reconnaissance. During the next step, a desk-based analysis of the vertical and oblique imagery has to be carried out to identify further potential archaeological sites. Interpretation is a subjective process and confidence in the interpretation will vary from site to site. Many natural and recent features can affect the interpretation of aerial images. Hence, we may identify non-sites...
as potential archaeological sites or on the other hand give a natural meaning to features which are in fact of archaeological relevance.

To evaluate the accuracy of this identification process these potential sites will need closer inspection to ascertain whether they are archaeological sites or not and if not, what led to the misinterpretation. These verification surveys are essential to the production of an image interpretation key. During the surveys other site information will be collected for our database including information about the level of threat and a representative sample of any dating material. This may help dating archaeological features, as the age of the discovered remains is usually not known from the photographs. Unfortunately, surveying in the Alps is limited to late spring and summer due to the difficult weather conditions with long winters. Despite modern techniques, the danger of mountaineering must not be underestimated.

In addition, local museums need to be visited or locals who know about finds and sites have to be interviewed.

With the knowledge gained from the first interpretation and the added information from the field surveys, sites can be reinterpreted and added to the AERLOC database. The database used for the project is self-developed and programmed in the Aerial Archive in a GIS-environment based on Arc View. The basic components of the database are a film information file, with information on the date of flight, the cameras, lenses, films and formats used, a picture information file with the exact location and an outline of the photographs, scanned maps and the database of archaeological sites, with all the available archaeological data such as dating, interpretation, and literature. In our database, a site is defined as a geographic area with archaeological content, bounded by a polygon that marks the minimum extent of the site as seen from the air or gathered from other sources. Each site is usually divided into a number of subsites, which stand for different chronological phases or functions. The extent and function of a site can usually be seen in the aerial image already, further information, especially on chronology, is input after ground survey. In that way, distribution maps of chronological phases are made possible.

![Figure 1: Austria and the core region of the project (including the key sites Hallstatt and Strettweg).](image)
In the next stage of the project, we will rectify vertical and oblique photographs using the department’s facilities. The rectified and georeferenced orthophotographs will then be interpreted in detail using a GIS environment. During this process, each identified archaeological structure will be assigned a meaning by the interpreter. The aim is to produce a detailed map of the project area, which will be the basis for further archaeological analysis and possible additional prospecting (e.g. geophysical, chemical, extensive surveys). During analysis, the information should be linked with digital terrain models, geological maps, as well as bio-diversity and vegetation databases to discuss matters in a larger context.

3. Landscape
Flying in alpine conditions means flying in a difficult, dangerous environment with extreme weather conditions that can change from one minute to the other. Therefore, only very experienced pilots can fly during a limited period of time in the year, when the usually intensive snow cover opens and archaeological structures become visible.

The core region of the project area, located in the Eastern Austrian Alps, is surrounded by the Hallstatt lake as well as the rivers Traun and Enns and includes the Dachstein Plateau (Fig. 1). The highest peak of the Dachstein is 3012 m above sea level and covered with glaciers, but most of the plateau is between 1500 and 2000 m (Fig. 2). The Dachstein plateau was the project’s starting point, because it is already well investigated. Systematic surveys have been carried out and the sites are well published, thanks to the Anisa Association.

Apart from bare rock, in altitudes above 1000 meters, alpine meadows, shrubs, and single trees can be found. Other than in the alpine valleys, neither erosion nor accumulation played an important role for the visibility of archaeological structures. Therefore we can expect archaeological remains above the soil to be indicated by shadow and vegetation marks. Stone structures are sometimes easy to detect because they are not covered by accumulated layers, on the other hand they are not easy to distinguish from the intact bedrock, in our case consisting of limestone.

![Aerial photograph from July 2005. View from the Enns river valley towards the Dachstein plateau. In the back, the snow covered “Hoher Dachstein” (altitude 3012 m) dominates the region.](image)
4. Archaeological remains in the Austrian Alps
The usual concept of settlements with nearby cemeteries and working places does not work above the tree line. Due to the specific climate, vegetation and soil the economic basis of the inhabitants of the alpine region was quite different to the non alpine regions. Therefore, different types of archaeological structures can be expected. The motivation for settling in alpine regions in prehistoric times can surely be found in economical reasons. Since in central Europe scarce raw materials such as salt, copper and gold are mainly found in alpine regions, prehistoric people were forced to prospect and exploit regions where they would normally not settle. Industrial sites like furnaces, day falls (extraction holes for copper or iron ore: in German called Pinge) and slag heaps can be found from the Bronze Age onwards. Mining villages were built in the vicinity of resources. Seasonally-used houses, herdsmen’s huts and old pastures underline the importance of dairying as a component of the food production (Fig. 3).

Figure 3: Decaying herdsmen’s huts in the Lackenofen pasture.

In most of the pastures, modern buildings as well as the ruins of previous buildings can be seen. They are usually oriented in the same direction. Most of the visible sites might not be very old, but there are ancient buildings on the Dachstein plateau, where it was possible to obtain charcoal remains for carbon dating. Some of the carbon dates indicate that the sites go back as far as the Bronze Age, the Roman Period or the Middle Ages. The architecture of the buildings, however, usually rectangular stone basis for log houses, has not changed much during all these periods. Questions of chronology have to be answered by field surveys, as the sites cannot be dated by aerial photographs. We register and document all conspicuous structures, regardless of their dating.
5. Realisation and examples
The first reconnaissance-flight to the Dachstein was carried out in August 2004. At the same time, a vertical coverage of this area using IR false colour film was conducted by the Austrian Air Force. The knowledge gained from the oblique documentation of already known sites helped to interpret the vertical aerial photographs. Further flights followed in June 2005. One of the newly-discovered sites shows possible buildings on the Dachstein plateau. The image clearly shows the difficulties of performing aerial reconnaissance in the Alps, since the structures are extremely difficult to find and not easy to distinguish from the surrounding bedrock (Fig. 4). The left arrow points towards a building on the left side of a footpath. The right arrow highlights an area with several rectangular structures of various sizes, some of them presumably inner house divisions. The site still needs ground verification.

Figure 4: Hardly-identifiable rectangular structures in the limestone bedrock.

But even in known sites, new houses and structures could be found, that were unidentifiable from ground view. Lackenofen is one of the archaeological sites where excavations have already taken place. In 1984 a building interpreted as a herdsmen’s hut or a shelter for people taking the passage from Ramsau to Hallstatt was documented in the western part of the area. The building has a dimension of 10 x 5 m, and consists of dry walls with a thickness of 80 cm. The north - south oriented wall can be interpreted as a boundary wall that marks the border between Lower Austria and Styria, but can also be interpreted as a shed to protect pack animals from the wind. Pottery from the 12th to the 15th century dates the site. In addition to the excavation results, interpreting the aerial photographs reveals more structures. Of note is the water supply on the pasture, which is provided by a little lake (Augensteinseelein). Quite obvious are the paths leading to the area, and the remains of further walls and buildings. The eastern terrace is dotted with clearly-visible archaeological structures (Fig. 5). The first sketch
indicates that the buildings belong to different chronological phases, because they lie above each other and are oriented in different directions. The interpretation of the sites in their topographical context is much easier using a 3D view enabled by vertical overlapping photographs.

Another example of a seasonally-used settlement site is the Langkaralm, where archaeological remains show very clearly. In most of the pastures there are modern buildings as well as the ruins of previous buildings, usually oriented in the same direction as the new ones. The architecture of the buildings, however, did not change much during the Bronze Age, the Roman Period and the Middle Ages. Since it cannot be dated from the air, the ruins therefore might not be very old. Different kinds of stone footings for log houses, rectangular (1) and round (2) buildings can be spotted. Some stone structures attached to the bedrock might have been used to store fresh milk (3) before it could be processed or brought away (Fig. 6).

One of the best-preserved examples of alpine roads is the Sölkpass site (Fig. 7). It is situated a little outside the Dachstein region 1788 m above sea level and is one of the passes over the Lower Tauern, between the two main routes, the Radstädter pass and the Triebener pass. Next to the modern road two older roads are visible, one dating back to the late Middle Ages, one to the First World War. Although locals call the roads Roman, traces of Roman roads could not be found. Archaeological excavations and measurements have been carried out on this site. Apart from the roads a Middle Age demarcation wall and a late Bronze Age cult-site were documented. The oldest finds date back to the late Neolithic. Further finds from the
Bronze- and Iron Ages, the Roman Period, the middle Ages and the Modern Age emphasize the importance of this passage.\textsuperscript{vi}

Figure 6: Langkaralm (1: rectangular structures, 2: round structures, 3: structure attached to the bedrock).

Figure 7: Sölkpass: modern and formerly-used roads winding up to the pass.
Taking aerial pictures of famous sites such as the world heritage region of Hallstatt are additional benefits. Documentation of the current state of the monuments helps preserving the sites, and will detect construction works near the monuments that might endanger them. Flying during different seasons can make different parts of the monuments visible, which leads to a greater knowledge about the sites themselves, and topographical as well as geological surroundings of the sites, that are usually ignored, can easily be recorded and visualised. In the picture (Fig. 8) the topographical situation of Hallstatt becomes visible. The altitude difference between the lake and the upper Salzberg valley, where the cemetery is situated, is about 500 m, the little mountain creek, the Mühlbach, created a small depositional estuary, on which the village of Hallstatt was built.

![Figure 8: Topographical situation of the world heritage site Hallstatt.](image)

### 6. Perspectives

In the next stage of the project, we will rectify vertical and oblique aerial photographs from the Dachstein plateau and do an interpretation in GIS. The aim is to prepare a detailed map of the whole plateau which will be the basis for further analysis to identify possible routes that would lead from Hallstatt across the plateau towards the south. During the next project years several new flights will be made to acquire vertical and oblique photographs. Newly discovered archaeological sites will be verified and localised precisely, the incoming data will be mapped and stored in the AERLOC database. Results of the field walks will influence and – in the best case – clarify our interpretations of the aerial photographs.

We hope that as a result, the Archaeological Alpine Land Register will cover all known and published sites as well as the new ones within the countries Upper Austria and Styria. A catalogue of criteria will help classifying the sites to answer various specific questions and the
information can be linked with digital terrain models as well as bio-diversity and vegetation databases to discuss matters in a larger context.

The reconstruction of a network of prehistoric and antique routes as well as the closely related settlement and economic structures give hints on the development, cultivation and exploitation of the alpine region. Since the landscape is currently changing, the project is important to rediscover old structures and systems concerning economy, commerce and traffic and to save the knowledge for the future before the last traces are destroyed. The Archaeological Alpine Land Register will be the basis for historical and archaeological research as well as for regional studies and spatial planning, in order to protect the historical landscape of the Austrian Alps.

7. Conclusion

In Austria, aerial archaeology above the tree line is a completely new field of research. Even though final results are still forthcoming, we already clearly demonstrate the potential of aerial archaeology in alpine conditions. Embedded in a project on prehistoric and antique roads, aerial archaeology contributes to detecting, documenting and preserving sites in the Alpine Regions. The sites detected differ a lot from what is usually found in the lowlands. Herdsmen’s huts, pastures as well as structures connected to the exploitation of raw materials were documented. We hope that the project will be further funded in the next years in order to expand the area under investigation.

FROM THE AIR: UNDERSTANDING AERIAL ARCHAEOLOGY

Edited by Kenneth Brophy and David Cowley

Aerial photography has provided some of the most enduring images of the archaeology of the British Isles. However, despite being a long established technique, the process of taking and interpreting aerial photographs is still shrouded in mystery.

Contributors to this book aim to demystify these processes, exploring underlying issues and providing authoritative but readable insights into how aerial archaeology works. Contributors cover the physical and psychological demands of being in the air, the uses of aerial photographs in archaeology, and the role of a small group of practitioners in creating a sizeable proportion of the archaeological record.

1 Kenneth Brophy & David C. Cowley
   From the air – an introduction
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12 Włodek Rączkowski
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13 Andrew Baines
   Using photography in archaeology


There is an offer for AARG members, which is included as a flier in the September 2005 edition of AARGnews:

£17.50 with free postage & packing for UK

€25.50 + €3.50 postage & packing for Europe
At a crossroad

The following comments originated in my somewhat melancholic reflection that ‘theoretical aerial archaeology’ is a term per se oxymoronic – neither accepted by aerial archaeologists nor welcomed by theoreticians. The aerial session, which was held at Theoretical Archaeological Group’s conference in Glasgow was anticipated as a groundbreaking attempt at a dialogue with the non-aerial world. This is a result of growing self-awareness on the state of aerial archaeology, its isolation, and its absence in ongoing debates (hence ‘hermetic circle’), a condition which was recognised some time ago (Rączkowski 2002). However, in their review of the session, Tessa Poller and Rebecca Jones rightly underlined that many attendees were aerial archaeologists and “if there were any theoreticians in the audience, few made their presence felt” (Poller, Jones 2005: 33). I felt similar disappointment – the supposed dialogue turned once again into a monologue which was delivered exclusively within aerial archaeology: preaching to the converted as summarized by one of the participants (Frances Griffith pers. comm.). Does it mean that aerial sessions, even if organized outside, can only attract the interests of aerial archaeologists? Sceptics would probably argue that we simply missed the target because aerial archaeology, a ‘practically driven process’ is inherently theory-resistant. But, to rephrase Griffith’s credo, ‘I like aerial archaeology and I like theory’, I cannot see much point in ‘either... or...’ questions. Thus the modest success of the session prompted the following questions: what kind of debate is necessary within aerial archaeology, what can we offer for archaeology in general and will non-aerial archaeology be ever interested in our offer?

Dialogue: participants and themes

A successful dialogue demands two parties who share similar interests and are willing to solve or discuss a particular problem. It would be untrue and unfair to suggest that aerial archaeologists have never undertaken any effort to communicate with the ‘outside’ world as several books and articles strongly emphasize the impact of aerial data on landscape studies. However the ‘input’ effort rarely brings back the expected results. We may ask why aerial arguments bash against a wall of silence? In order to understand such a ‘state of impasse’ Włodek Rączkowski analysed two competing interpretations (aerial and excavator’s) of the same monument. Both opponents used ‘hard facts’ but despite a wide range of arguments the discussion was inconclusive – there was no definite answer. Rączkowski attempted to understand this dilemma through the concept of hermenutic pre-understanding (analysing the role of cognitive and narrative schemes). Pre-understanding embraces the argument that we approach our data with a set of concepts, judgements and expectations which determine further choices. From this perspective neither side could ‘win’ because the opponents used two incompatible schemes of reasoning.

In general this can be used as a metaphor to describe the current position of aerial archaeology. More specifically there are two morals from this analysis. First, the difficulties in communication derive from the adoption of different theoretical positions. Elsewhere

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* Theoretical Aerial Archaeology Research Group
Matthew Johnson argued that we are all theorists (whether we like it or not) “in the sense that (we) all use theories, concepts, ideas, assumptions in (our) work” (Johnson 1999: 6). Thus if we wish to be productive we need to be aware of the assumptions behind our arguments.

Second, a dead-end situation may require the application of fresh ideas which may help to look at the practice of aerial archaeology from new perspective and offer different solutions. How do these theoretical stands look in practice? I am deeply convinced that all contributors at TAG considered thoroughly the practice of aerial archaeology. However, the propositions that were offered to ‘improve’ the practice of aerial archaeology varied considerably. While I do not intend to label anyone some ‘fancy theoretical thing’ (Rog Palmer pers. comm.) it is perhaps worth noticing that the main differences run along the line of accepting or rejecting the post-modern (hermeneutic) attitude that interpretation is embedded in the whole process of aerial practice – from the decision on reconnaissance through cataloguing, mapping and final presentation. Let’s consider some examples:

a) aerial survey
Two suggestions were offered on improvement in aerial survey. Jessica Mills argued that the transformation of aerial archaeology into modern discipline is hampered by methodology little altered from 1930’s. Thus ‘geographically unbiased’ vertical cover may eliminate its apparent weaknesses. Conceptually these arguments explore ideas which were discussed in 1970’s, namely that archaeology could become more ‘scientific’ through the advancement in its techniques (Johnson 1999: 35) which could help, it was argued, eliminate the ‘weakest link’ in scientific enquiry i.e. the subjectivity of a researcher. But is ‘geographically unbiased cover’ indeed so unbiased? We may ask who will undertake decisions which areas ought be covered – shall we ‘redo’ each county or focus exclusively on hitherto ‘neglected’ places? Also, how shall we organize coverage – including for example whole ‘archaeologically unpromising’ areas (e.g. densely wooded)? Or, who will decide how often the coverage ought to be taken – every year, including wet summers? I am not advocating here ‘for or against’, the point I am making is that we cannot remove the subjectivity (unless we attempt physical elimination) because it is inherent in every process of decision-making. However we may consider factors which influence the practice of aerial survey. These issues were at heart of a paper delivered by Dave Cowley and Simon Gilmour. Although focused on slightly more ‘biased’ oblique photographs, in my view this self-critical approach could be applied to both methods. A thorough analysis of the whole survey process: reasons for undertaking reconnaissance, pre-flight planning, weather conditions, observer’s disposition etc. demonstrated that final results depend on many intertwined factors. Thus a thorough assessment of procedures involved and a dialogue between participants (supported by ‘flight biographies’) may facilitate mutual understanding and can help overcome the apparent weakness in aerial practice and develop more reflexive approach.

b) applications of aerial photographs
Aerial archaeology has already supplied the discipline with more data than any archaeologist can consume. Why are the results still widely unacknowledged? Helen Winton argued that aerial archaeology could have a valid contribution to landscape studies, but despite its potential it is misunderstood and marginalised ‘precisely because of disrespect of theorists, academics and other survey specialists’. My question focused on the source of this ‘disrespect’. Is it indeed ignorance, misunderstanding or perhaps different aims? In fact ‘theorists and academics’ use aerial photographs and maps (e.g. Hodder 1999: 34, Bender et al 1997: 165), but not in a manner that aerial archaeologists are happy to accept. At some
point during our map-making from air photos we realise that the majority of sites lack any information from ground survey. Consequently we expect other specialists to answer questions which were raised during mapping and which can help us better understand the record. These may not necessarily be the aims of academic archaeology. In fact, a closer look at current debates reveals that the rejection of aerial photographs and maps results from a successive application of theoretical concepts. It is argued that aerial photographs and maps, as relatively modern techniques, provide a view of landscape which was inaccessible to prehistoric people. Maps are used to locate individual monuments and indeed there are signs of their appreciation (Bender, et al 1997: 165), but at the interpretative level they are unable to provide information required to assist contemporary research (e.g. local topography, intervisibility between monuments∗∗) and consequently their use is rejected. Thus if aerial archaeologists want to persuade others of the usefulness of aerial photographs and/or maps, their arguments must include alternative interpretations of prehistoric and historic landscapes. We cannot simply expect that academics will sort out our problems. In this case we can still learn a good deal from the great father of aerial archaeology, O.G.S. Crawford, who simply demonstrated the contribution of aerial photographs to archaeological understanding while remarks on a method which he applied took few sentences at the end of the paper (Crawford 1923).

c) understanding past landscapes
Were there any alternative propositions to understand past landscapes offered at TAG? I would rather say that there were attempts to demonstrate that the acceptance of post-modern concepts of landscape does not necessarily imply an automatic rejection of aerial photographs or maps. Andrew Baines considered thoroughly the reasons behind ‘discriminating’ against aerial photographs in post-modern (interpretative) discourses. I took a similar ‘starting point’ for maps. In both cases it was suggested that there is no reason, other than personal preferences (pre-understanding), to reject aerial photographs or maps. This may indeed release a sigh of relief from those aerial archaeologists who are interested in pursuing landscape studies from an interpretative perspective. Yet, because we cannot ‘force’ or expect anyone to accept our viewpoint, these arguments were further supported by short case studies, which could indicate how aerial archaeology may forge new understanding of landscapes. However none of the papers was explicitly dedicated to past landscapes. Perhaps this says something more about practice of aerial archaeology?

Theoretical aerial archaeology: a glimpse from outside
Undoubtedly the contributors to the session made considerable efforts to understand the practice of aerial archaeology. This self-reflection touched upon a wide range of topics encouraging reconsideration of some assumptions that are usually taken for granted. We may ask then, why the session did not receive any response from the ‘non-aerials’ to whom it was after all addressed? To understand this problem we must look at the aerial session in the wider context of contemporary debates. I will suggest some points for further consideration:

a) for aerial archaeologists the session was ‘delayed’ and they are joining the theoretical debate at a point where it was approximately 20 years ago. We still argue whether we ought to eliminate subjectivity or embrace it, applying arguments which have already been formulated, discussed and concluded elsewhere. I would like to emphasize that similar discussions are

** Although this can, and has, been done with aerial information using GIS (Lock 2000, Brown, et al 2002)
inevitable within aerial archaeology and if we move towards dialogue with non-aerial world, then we can only intensify them. But for now we must expect no other response than ‘we already know this’.

b) there is a tendency to focus on subjects which, despite their great potential to contribute to general archaeological understanding, still require wider recognition. It is beyond doubts that aerial archaeology can add considerably to critical reflection on field survey. However this issue has been raised only recently and judging from the relevant publications (a few papers and two books: Hodder 1999, Lucas 2000) has not yet received much attention. In that sense we may feel in sympathy with Ian Hodder’s attempts “to encourage debate about archaeological field method” (Hodder 1999: xi) but unlike Hodder, aerial archaeology itself needs wider acknowledgement.

c) consequently we marginalized themes which currently attract archaeological attention. While aerial archaeologists are willing to discuss thoroughly various aspects of survey, there is clear inability to get beyond the stage of recording and mapping to apply the data to interpretations of past landscapes. On the other hand a short glimpse at the content of other TAG sessions reveals that these were dominated by interpretations of past realities. Three aerial case studies (interpretation of Winterbourne Stoke Crossroads barrow cemetery and Keiss Brochs offered by Andrew Baines and my insight into organisation of prehistoric landscapes around Rudston) may not be enough.

d) but, to keep balance, pre-judgements regarding aerial archaeology (irreflexive, techno-heavy and elitists) may be too powerful to expect that one session will alter this image. If there were no theoreticians at the session this was probably due to the fact that many of them decided in advance that nothing inspiring could be offered and chose instead sessions organized by their theoretical gurus.

The way forward?
Is aerial archaeology sentenced to stay closed in its hermetic circle? In my view this depends entirely on our vision of the role of aerial archaeology. If we are content with incidental usages of aerial photographs and/or maps then perhaps there is no need to change anything in our attitudes. However any attempt to participate actively in current (not only theoretical) debates in archaeology will demand a thorough consideration of “our reasons, approaches and biases, rather than trying to conceal them or pretend that they do not exist” (Johnson 1999: 5). This will be inevitably a critical self-reflection on the practice of aerial archaeology, but always attempted from new perspective (Rączkowski 2002: 324). The title of my paper referred to the concept of the hermeneutic spiral, a metaphor for the back-and-forth nature of any interpretative processes. The TAG session started with a definition of the problem of ‘aerial isolation’. Thorough consideration of its current state from different theoretical perspectives, but also the lack of expected responses, may lead to a further reflection on how we can change our approach to meet our expectations in future. This is an ongoing process and there is no return to the state of ‘theoretical innocence’ because each time we will look at our practice from this newly acquired perspective. This is demonstrated by the trend of theoretical debates within aerial archaeology. A recent three-day conference in aerial archaeology encouraged presentation of literally one ‘theoretical’ paper (Rączkowski 1999; 2002; Brophy 2002). Now, only a few years later, similar issues gather enough participants to organize a full-time session.
The TAG session also demonstrated that aerial archaeology can contribute an original approach in every aspect of archaeological practice thus we should not feel discouraged by the ‘first spoiled pancake’. However, what may need to be done is a wider participation in debates outside aerial archaeology, rather dispersed among other participants than bearing some inflexible labels. This may require a greater effort on our part to understand the arguments of the other side and we must develop our ability to ‘translate’ narrowly-defined aerial problems into a language understandable for a broader archaeological public. But, as Frances Griffith and Eileen Wilkes demonstrated, we can reshape our schemes of thinking and language entirely if there is a will to do so (e.g. call our beloved crop marks ‘Mrs Pearce’s field’ if it can help raise the interests of local community). The first “TAARG’s” step was made. What will be next?

Acknowledgements
My thoughts are based on papers given at TAG by Andrew Baines, Kenny Brophy, Dave Cowley and Simon Gilmour, Frances Griffith and Eileen Wilkes, Jessica Mills, Helen Winton and Włodek Rączkowski. My special thanks go to Włodek Rączkowski for his patience and conversations which helped overcome the initial difficulties in writing this contribution. Rog Palmer was, as usual, irreplaceable in polishing the final version. However all opinions and any faults are my own.

References:
In what sense is ‘Illustration’ a prime use of air-photographs?

David Wilson

I have been taken to task twice now in print for putting Illustration at the head of a list of uses for air-photographs (Wilson 2000, 24). Once was by Włodek when reviewing the second edition of Air Photo Interpretation for Archaeologists from a specifically Polish viewpoint (Rączkowski 2001): this was not what he needed to give him ammunition in the fight against reactionaries in the Polish archaeological establishment. Now there is Rog (Palmer 2005) in his discussion of the methods of British air-photographers, too often fixated on the ‘illustrative view’. Both critics take it for granted that ‘illustration’ meant taking pretty pictures for use in books and lectures.

I dare say I was unwise to use the word ‘illustration’ in this context, but I did so deliberately, being aware that for many this term had negative associations and wishing to assert instead that, when you came to think about it, it actually held pride of place. You have to see and recognise the archaeological feature before you can study it; it is as simple as that. I could have said ‘visual record’ and have avoided all controversy, but that would have been to say nothing of interest. Everybody knows that any photograph constitutes a visual record. ‘Illustration’ implies that somebody is looking at the photograph. First you look; then you study what you see; and then, we hope, you begin to understand.

Rog has spent a lot of time looking at the CUCAP archive and he must know that, despite St Joseph’s reputation as the master of the ‘illustrative view’, how few of the photos he took fell into that category. There are plenty of photographs of the nasty corner of a field containing a possible cropmark that might eventually prove to be a part of something of more obvious interest. Equally, of course, there were plenty of similar marks that he did not, in fact, judge to be worthy of photography and which therefore remained unrecorded.

Rog is perfectly correct in saying that personal judgement looms large in observer-directed photography. Decisions have to be taken at short notice that are subject to a number factors, many of which have to be taken into account in vertical photography also. I mean such matters as local weather, restricted air space, presence of other aircraft, amount of fuel remaining, priority of the various tasks planned for the particular flight, in addition to a personal assessment of the value of photographing the presumptively archaeological features in question.

I do not mean here to be drawn into the debate over the relative value of oblique and vertical photography for archaeological purposes, but it is fair to observe that reasons for circling round the photographic target are not limited to obtaining the perfect illustrative view. One aim is certainly, and quite properly (given how the appearance of earthworks, soilmarks and cropmarks tends to vary with the direction of view), to obtain the best possible definition in the photographic image. Others are, by photographing from several angles, to give a fuller indication of context, to include more reference points, to provide a more complete rendering of the morphology, all of which can be done more effectively by vertical survey, but nevertheless are not forgotten in observer-directed photography. What costs money is getting there; once you are there, you take as many photographs as are likely to be useful.

I have no doubt that all air-photographers do have something to learn about how to take photographs that will be useful for plotting – and some more than others!

And I still believe that all air-photographs (including those taken in vertical survey) are in a significant sense illustrations of the archaeological features that appear upon them.
References

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AARG special one-day meeting
(in collaboration with Department of Archaeology, University of Leicester)

**Populating Clay Landscapes:**
Recent advances in archaeology on difficult soils

**Leicester University: Saturday 12 November 2005**

‘*But clay soils are very rarely of any use.*’ (J. Bradford 1957, 15)

Contributions at this meeting show how recent work on, in and over clay soils has radically changed the generally-accepted view that the claylands in Britain (and elsewhere) were devoid of pre-medieval settlement.

Contributors (should) include: Patrick Clay, Stephen Coleman, Dave Cowley, Alison Deegan, Amanda Dickson, Bob Evans, Christopher Evans, Damian Grady, Scott Kenney, Jessica Mills, Rog Palmer, Wlodek Rączkowski.

**Price** (including tea/coffee)

£25 with lunch (there are no other places nearby)

£15 without lunch

£11.50 students (without lunch)

If you would like to attend this day conference, please send name, address, and email enclosing a cheque made payable to the Aerial Archaeology Research Group

To: Fiona Small, AARG Meetings Secretary, Aerial Survey, NMRC, Kemble Drive, Swindon, SN2 2GZ, UK.
An evaluation of scanned CORONA intelligence satellite photography

Martin J F Fowler

Introduction

Readers of AARGnews will be well aware of the value of Declassified Intelligence Satellite Photographs acquired by the United States in the 1960s and early 1970s, in particular those from the CORONA programme, as a source of overhead cover for use in archaeological studies (see Fowler 2004a for a recent review). Available for purchase from the US Geological Survey (USGS) at modest cost since 1996, until recently these were supplied as analogue film products. However, in response to a general decline in customer demand for paper prints and film products, coupled with several major suppliers discontinuing traditional photo-processing materials, the USGS ceased providing traditional photographic products from its historical film archive in September 2004 and is now providing only scanned products. In order to evaluate the impact of this change on the archaeological application of CORONA photography, a comparison has been made of the new digital product with the previously available analogue film product and concludes that, despite the change in medium, the new digital CORONA product will continue to be of use to the aerial archaeologist.

Digitising CORONA photographs

Because of the very small scale of the CORONA films (of the order of 1:250 000 for contact prints), it is necessary to enlarge the photographs significantly in order to facilitate their interpretation. Two options have been used in the past: photographic enlargement followed by low resolution scanning (e.g. Palmer, 2002) or, more commonly, scanning at resolutions of the order of 2400 dpi or greater using desk top scanners (e.g. Fowler, 2004b). Whilst the scanning resolutions that have been used are less than the 6400 dpi (4 µm) recommended for loss-less digitisation of CORONA film (Leächtenerau et al., 1998), the digital images produced have nonetheless been found suitable for the detection of a range of medium-scale features.

The new digital CORONA products are available at 3 levels of scanning resolution: 1200 dpi (21 µm), 1800 dpi (14 µm) and 3600 dpi (7 µm). Not surprisingly, as the scanning resolution of the photographs increase, the size of the digital files increase significantly with the highest resolution producing image files totalling some 1.2 gigabytes per single frame. For the purpose of this study, two CORONA frames that had been scanned at 3600 dpi and supplied as uncompressed TIF files were purchased from the USGS for comparison with identical film positives that had been purchased previously and scanned at 3200 dpi using the an Epson Perfection 3200 Photo flatbed scanner.

The two CORONA frames, covering part of Southern England and parts of Israel and Jordan, were chosen because of their differences in exposure and the fact that they contained a number of known features that would permit comparisons to be made. Whilst the frame from Mission 1104 covering part of Southern England is predominantly cloud covered, it does include a number of gaps most notably in the vicinity of the airfield at Farnborough, Hampshire. Other than providing an overhead view of the Royal Aircraft
Establishment at the height of the Cold War, this area is of limited archaeological significance but does provide a range of features of varying size and tone that are suitable for comparison purposes. In contrast, the frame from Mission 1115 covering part of Israel and Jordan is virtually cloud-free but is of a lower contrast being slightly overexposed because of the higher reflectance from the desert surface. The frame includes coverage of the Roman Legionary Fortress at El Lejjun, Jordan, which was chosen as the target for comparison purposes.

As can be seen from Figures 1 and 2, in both cases the new digital CORONA product is superior in quality to the analogue film positives when scanned at 3200 dpi using a flatbed scanner with finer detail being discerned on both images. In particular, the markings on the runway at Farnborough are clearer on the digital product and an aircraft can be just discerned near the hanger at the top right hand corner of the image. Similarly, the Legionary Fortress at El Lejjun can be seen more clearly on the digital product as can finer detail of the surrounding landscape.

One limitation of the new product is that, because each CORONA frame is spread over 3 image files, it is not possible to review a whole frame at once as is possible using the film product. Totalling some 1.2 gigabytes, the image files for each frame can also present a problem for modest specification personal computers. However, through the use of suitable image compression, such as ER Mapper’s freeware Enhanced Compression Wavelet (ECW) compressor (http://www.ermapper.com), it is possible to reduce the sizes of the image files of a frame by a factor 15-20 with only a relatively minor loss of quality (see Figure 3).

Figure 1 Farnborough Airfield, Hampshire. Comparison of CORONA film positive scanned at 3200 dpi using a flatbed scanner (left image) with the new digital product scanned at 3600 dpi (right image). Mission 1104-2, Forward looking camera, Pass 156D, Frame 017 acquired on 17 August 1968. Data available from US Geological Survey, EROS Data Center, Sioux Falls, SD, USA.
Figure 2. El Lejjun Roman Legionary Fortress, Jordan. Comparison of CORONA film positive scanned at 3200 dpi using a flatbed scanner (left image) with the new digital product scanned at 3600 dpi (right image). Mission 1115-2, Forward looking camera, Pass 300D, Frame 052 acquired on 29 September 1971. Data available from US Geological Survey, EROS Data Center, Sioux Falls, SD, USA.

Figure 3. Farnborough Airfield, Hampshire. Comparison of uncompressed digital CORONA product (left image) with the ECW compressed image (right image). Mission 1104-2, Forward looking camera, Pass 156D, Frame 017 acquired on 17 August 1968. Data available from US Geological Survey, EROS Data Center, Sioux Falls, SD, USA.

Cost considerations

The original CORONA products cost $18 for each frame when provided as either a film positive or negative. Based on a nominal coverage of 16 by 217 km, this equates to approximately 0.5 cents per km². The cost of the new digital product is $24 per frame to which the cost of media ($65 per DVD) has to be added. This corresponds to $89 per frame (approximately 2.5 cents per km²) if a single frame was to be purchased or $45 per frame (approximately 1.3 cents per km²) if 3 frames, the maximum that will fit on a single DVD, were to be purchased. Notwithstanding this significant (250-500%) increase in cost, the new digital CORONA products still represent good value for money although there will be many users of CORONA photography who, like myself, would have wished...
they had built up a larger archive of film positives when they were available at the 'bargain price' of $18 per frame!

Conclusions

From this brief investigation it is concluded that, despite the change in medium, the new digital CORONA product is superior to the previously available analogue photographic product when scanned using a desktop scanner. Notwithstanding the significance increase in cost of the new product, it still represents a highly cost effective source of overhead imagery dating from the 1960s and early 1970s and is likely to continue to be of considerable use to the aerial archaeologist.

References


Google Maps
Rog Palmer

Following a phone call from Ioana Oltean I spent a happy couple of hours ‘flying’ over satellite cover that is available from Google Maps (http://maps.google.co.uk/). The site offers basic cover of most of the world from what appears to be Landsat TM images but superimposed on this in places are blocks of much higher-resolution material (Fig 1). As the source/credit is given as DigitalGlobe I imagine this is about 1-2m resolution.

Fig 1. S-central Italy showing blocks of high-resolution images.

Ioana had noticed such a block in Romania and sent me a crop of a known site (Fig 2),

Fig 2. Parta, Romania. Known

meanwhile I’d been ‘flying’ over parts of the Tavoliere, Hungary, the Rhine Valley and into the East Anglian Fenland. Just about all of the high-resolution imagery seems to have been taken at spring time (with a little post-harvest) on dates that are a little too early to for any crops to show archaeological features. However, there is some very detailed natural plus a number of features visible in bare soil and as earthworks (Figs 3 and 4).

Fig 3. Upwell, Cambridgeshire. Turbaries and natural in early spring. Known.

Fig 4. Earthworks at Bullock’s Haste (narrow hedged field SE of centre), Cambridgeshire with levelled features to the north (top). Known.

For any of you studying landscapes, the natural information may be useful and those of you with more time to spare may hunt systematically through the high-resolution blocks looking for archaeological features.
As this began to run to two pages I’ll also include some of the Roman stuff that Ioana hunted out (Figs 5-7). I imagine these are known sites and they may thus allow you to compare them with plans and lower-level photographs.

Fig 5. Aquincum – wherever that is! Known.

Google publish terms for use of the images and the only ways we have found of saving views is either to print a screen or use screen capture software – and everything has translucent ‘© 2005 Google’ overwritten. But it’s there and it’s free and it’s useful. How much longer can you go on ignoring this stuff?

Fig 6. Pompei, Italy. Known.

Fig 7. Pompei, Italy. Zoomed in.
Cropmarks
(defn: snippets of information that require reading and understanding to make sense)

Aerial movies
Davy Strachan recently added nine short aerial movies to the Perth and Kinross Heritage Trust web site (http://www.pkht.org.uk/). Follow the links through Aerial Tour and you’ll be able to fly circuits around upstanding and levelled sites at high- or low-resolution. Each site is described and illustrated using an annotated photograph so that viewers can see and understand what they are ‘flying’ around. The movies, and the way they have been used to educate, make an excellent addition to the web site and, to my knowledge, are a first among the aerial web sites.

Times digital archive
You could have great fun looking at the Times Digital Archive, i.e. the whole searchable text of the paper from the 1790s to 1980s, now on the www. I tried ‘aerial photography’ which yielded over 400 hits of which the first seems to be on 2 Nov 1897 in an advert for Scribner’s Magazine (Nov) which included two articles on ‘Unusual Uses of Photography’ 1. Aerial photography by G.T. Weglom (?) [can’t quite make out the name].

From Dr John D. Pickles

Typo – an exchange between RP and Irwin Scollar
“… they usually surround the area with control but also add a pint near the centre of the archaeological features.”

“Presumably for quenching thirst when you get to the site to look for potsherds. That’s one of your finest typos, truly worthy of a quote in the next AARGnews.”

Wanted
A.A.A.ARG Hon Sec, now with a job (for 6 months) wants desperately a bloke: candidate must be blond, tall and with an interest in farming and sheep (but not too much ‘interest’ in the latter). If you think you meet the above standard, please write to the Hon Sec with photo attached for selection.

[And so that any tall blond blokes can see what they’re getting see opposite: (this edition with volume switched off).]

(photo: PDH_2005-06-8_085CinziaPis.jpg)
Book of interest?


Most AARG members are familiar with Martin Gojda’s PSPB (Prehistoric Settlement Patterns in Bohemia) project through the series of talks he has given at our meetings and his published reports. This book draws together his work and that of his many collaborators and demonstrates how aerial survey can successfully be used as one component of landscape studies. The project aimed in particular to examine, ‘…the application of approaches oriented towards the identification, analysis and interpretation of traces of the settlement behaviour of Man in space.’ (17). To do this the project worked in sample areas of lowland and upland Bohemia to determine a range of key aspects that included date, purpose, division of activities within ‘settlement areas and larger wholes’, relationships between residential and other areas of activity and the relationships to the natural environment. The project also hoped to demonstrate the benefits of non-destructive survey.

A ‘methods’ section briefly describes the processes through which the sites were identified and planned (aerial and geophysical surveys) and then further defined (field walking and small-scale test trenching). This latter was introduced with what seemed to be a degree of trepidation but I agree with the authors that this is a necessary part of understanding the past even though the politically-correct may throw up their hands in horror at the thought of disturbing their precious archaeological contexts. Full marks to the project for having the courage to carry out work in that way to recover more thorough and reliable data.

From this point on I felt slightly disappointed with what seemed to be a fairly traditional approach (or perhaps British-traditional..?). Within a necessary and useful ‘introduction’ to the known archaeology of Bohemia we have examples of types recorded from the air and later classified plus some distribution maps of ‘new’ types of feature. This is followed by the ‘meat’ of the PSPB project – a series of reports detailing work undertaken on a number of individual sites of specific types and functions. These reports contain a tremendous amount of useful data and have provided the PSPB project with dates for previously unknown forms and a certain amount of understanding about activity areas within sites – but each tends to be a typical field investigation report of a single site. There are, where possible, parallels made to other similar features but this too is what would be expected in such a report. Nowhere (unless I missed it) does there seem to be any discussion that aims to pull together these threads of evidence and to comment about their roles in a broader landscape – as would surely be expected in a book with this title. In fact in this book I was expecting at least a whole chapter discussing aspects of landscape use and change and a fairly hefty concluding chapter that reviews the state of knowledge before the project, its main results and suggestions for further work. To me these are a serious omissions especially when one of the sources of data, aerial survey, is capable of providing such a ‘global’ view and I hope that it is the author/editor’s intent to gather this into a ‘popular’ book such as (in Britain) are published by Tempus. The data are published in the present volume but there is a need to synthesise them and to tell the archaeological stories that they could generate.
I know that there are almost as many definitions of ‘landscape’ as there are archaeologists and perhaps because I am able to work with aerial photographs collected during the past 80-years my own definition would require total examination of an area no smaller than several hundred square kilometres. Because of the practical approach of the PSPB project I felt that the results were presented as a series of fairly detached sites, even if these were sites in their local landscape context. There were large and small scale maps – and these showed point distributions of types of site or of ‘settlement activities as evidenced through cropmarks’ - but there was no mapped ‘picture’ of past landscapes and possibly this cannot (?yet) be done in Bohemia. Useful environmental evidence was assembled but I felt that it was written up in its own right and that the conclusions were not fed back into broader discussion of past landscapes and landuse. From the book’s title we definitely were given the settlement dynamics and non-destructive archaeology – but I’m not sure if we had the ancient landscape?

I would have liked to have seen aerial photos used to show the range of landscape types that are mentioned in the text. Published photos tend to be of individual crop-marked features but some near-horizontal views would have enhanced the text and given readers an immediate idea of the topography [yes, use of air photos as illustrations!]. The Doneus-Rebay paper in this issue shows excellent examples of this use.

By publishing the book in English with a Czech summary and dual language captions the book is obviously aimed at a wide readership – and there is no reason why work of this kind should not have rewarding application in many parts of the world. However, the book’s editing and translation does not make for easy reading. I found parts that need re-reading several times to understand, at times I had to force myself to return to the book to read more, and it is this difficulty of reading that may reduce the effectiveness of the book with English-speaking readers. This may account for any misunderstandings that appear in the above paragraphs..? The overall editing could have been a lot tighter with, perhaps, a single chapter outlining the project and describing the nature and role of its components rather than the somewhat repetitive arguments and justifications by authors of each speciality (pp25-90). However, this is a relatively short section that introduces techniques used to produce the results that are presented and discussed throughout the remaining 300+ pages.

All this may read as a fairly negative comment although this is more about the presentation than of the results of the PSPB project. Martin Gojda is the only full-time academic to have run such a huge project that included a large component of aerial survey and this book provides a first example of such a concentrated project to the rest of the archaeological world. A huge amount of valuable work has been done in the PSPB project’s relatively short life and it may be this short life that leaves me wanting more. My comments may be anticipating results that are not yet possible – certainly from the point of view of aerial survey, and perhaps requiring an AZP-type survey to collect extensive surface evidence. Martin Gojda should be encouraged (and funded) to keep working over at least the next 50 years to accumulate more data that may eventually lead to a greater degree of understanding of past settlements and uses of the landscape. Even with a 100% mark-up of the quoted price it is worth buying and reading as an example of a project that uses aerial information to address archaeological problems.
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