

# AARGnews

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The newsletter of the Aerial Archaeology Research Group

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*AARGnews* is the newsletter of the Aerial Archaeology Research Group

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Edited by Rog Palmer  
[rog.palmer@ntlworld.com](mailto:rog.palmer@ntlworld.com)

[Cover photograph. Underwater natural fissures. Brioni, Croatia. 24 May 2014]

## Editorial <sup>1</sup>

### Detail

At AARG this year, the debate session will be looking at Detail. It is apparent in all aspects of archaeology and, it seems, our quest for detail increases as technological advances allow its identification and capture. I deliberately mention this session before the meeting to give you time to think about it so that we may have useful discussion and debate at the end of that session. Levels of detail comes into the activity of all of us who work with aerial images and is, for example, affected by flying height and pixel count during image capture, and scale plus on-screen zooming during image examination. Should we seek maximum detail in all aspects of our work? Is one level of detail appropriate for all scales (and themes) of output? Just what information is adequate for each range of purposes? Is it possible that too much detail hinders our understanding of past settlement and landuse? Please think around these points and bring your thoughts for discussion at AARG. See also this issue, Bennett, *et al*, *Books of interest?*

### On camouflage and the integrity of Google Earth (etc)

In July, an email from Irwin Scollar contained the following short note:

*Here's something I found by accident:*

[http://en.wikipedia.org/wiki/Satellite\\_map\\_images\\_with\\_missing\\_or\\_unclear\\_data](http://en.wikipedia.org/wiki/Satellite_map_images_with_missing_or_unclear_data)

If you're interested in contemporary ways of hiding or masking 'secret' stuff, this is a good place to start to see the paranoia, or lack of it, in different countries and how Google Earth and Maps have dealt with it. I remember, a few years ago, reading that the Indian government was upset because new images on GE showed a lot of their military airfields. Google subsequently blurred those and everyone was happy. The Wikipedia site lists a series of 'locations with missing or unclear data' giving coordinates and noting what the hidden object is and what treatment it has been given. Amusingly, there are cases where GE may have been modified but images on Google Maps or Bing show objects clearly. The Wikipedia site doesn't mention the source of the information which made me wonder if Google have provided it or whether there are people with nothing better to do except scour GE for pixelated blobs. Regardless, it's worth checking a sample to see what has been done and how effective or useless it is.

Correspondence with Irwin on this topic provided a couple of stories. He wrote:

It reminded me of the short period before starting on my Ph.D. in Edinburgh when I was briefly connected with the Belgian Soil Mapping service at Ghent in the summer of 1956 and excavated a site for them at Lampernisse near the French border for dating medieval flooding near the coast which later became a type site for stratified dating of 14-15th century finds.

The soil maps were coded in many bright colors at 1:25,000 and were readily available at public map shops. The data was obtained by surface walking and sampling at fairly close intervals with large metal corers, one of which I still have for making holes for posts in our garden.

The Belgian military refused to permit samples to be taken in areas of military importance. So the soil mapping people left those fields in white on the multicolored map sheets. When I pointed out to the military mapping people in Brussels who produced the base black and white maps for

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<sup>1</sup> [rog.palmer@ntlworld.com](mailto:rog.palmer@ntlworld.com)

overprinting by the soil people in colour, and that anyone could obtain a complete atlas of all military installations in Belgium by buying a map set and looking for the white areas, they were highly upset. They had never thought of that possibility, and they told me that this must be remedied immediately. I don't know what happened, but it was fun to tweak the military mind at work.

When I told this story to an RAF officer at Joint Headquarters Rheindahlen, a military base near Mönchengladbach who I met while giving a lecture at the officer's club there about a decade later and who told me that he was one of the suite of Allied inspectors of my early air photos passed on to them by the Germans, he laughed very loudly and said that when they had anything to hide in the UK, they camouflaged it and didn't attempt to hide it on photos or maps. True or not true, it all makes a nice tale of the Cold War. [Irwin Scollar, email, 12 July 2014]

That may be true for military actions on the ground but not for the UK mapmakers. When I was an apprentice at Farnborough, maps of all scales showed the airfield as a large empty space called *Laffans Plain* or *Cove Common* until, perhaps, the 1970s. Also, perhaps in the 1950s, the Ordnance Survey made a series of photo mosaics that followed the quarter sheet system (5 x 5 km squares) and which definitely used ridge and furrow (in those parts where it was common) and clouds to hide 'secrets'. As on GE, the quality of this work varied but it now provides a period view of the state of the art of hiding secrets.

Thinking about this recently reminded me of some of the more ephemeral WW2 camouflage that I have seen in England – grass airfields crossed by painted field boundaries, painted roads running over factory roofs, and so on – which I hope are being recorded by heritage bodies as legitimate components of WW2 legacy, along with the more three-dimensional deception sites (Dobinson 2000).

### **Satellite resolution**

In July, just before the launch of its WorldView-3 satellite – which should capture 25 cm GSD panchromatic images and 1m multispectral – was an announcement from DigitalGlobe offering commercial customers the highest resolution images without the down sampling previously required by the US Government (<http://www.digitalglobeblog.com/2014/06/11/resolutionrestrictionslifted/>). A month later, European Space Imagine were offering 40cm imagery. So with satellites now able to compete with lower level vertical surveys, it can't be long before a country, state, district or county commissions this as its 5- or 10- year update. DigitalGlobe's web site suggests they are using it in US and Canada, but I wasn't able to find any in a brief and random search in Google Earth.

### **Contents**

Most of us are aware that there is a lot of 'exciting' work being done in, or closely related to, the aerial world. Some of it we hear about at our annual meeting, some of it gets into *AARGnews* although this is becoming a lesser amount now that the majority of people doing the interesting work need to be published in those points-earning peer-reviewed journals. A few times in the past the possibility of *AARGnews*, or an offshoot of *AARGnews*, becoming more academically respectable, and so being able to peer review and include 'weighty' contributions, has been raised. But the answer is generally 'no', as may have been mentioned in past Editorials or Chairpieces. Off the top of my head, points in favour of 'no' include our fairly miniscule circulation (at least among members; website statistics show that *AARGnews* is searched by the world at large) and the fact that *AARGnews* was intended to be a newsletter

that carries contributions about work in progress rather than (or as well as) polished and completed ‘results’. The perceptiveness among you may notice that this issue is somewhat thin but, as I’ve said before, this is your doing as much as mine (and I’ve just been told that another contribution can’t be completed in time). If you want fatter issues, please send your contributions.

But it gives me a bit of space to enlarge some recent thoughts.

### **Looking at aerial photographs**

It is interesting, sometimes, to observe ways in which other people perceive aerial photos. Elsewhere in this issue (18-21) is a review by Włodek Rączkowski of *Seeing from Above*, a book that compiles a chronologically-sorted series of lectures by scholars from disciplines such as history (modern), film studies, architecture and art history. In date, it ranges from the pre-balloon age to Google Earth and each essay explores a theme, sometimes an individual, rather than providing a summary of a period. I’m sure that any one of us is capable of writing a few paragraphs of twaddle on something we have experienced only in second-hand form (like looking at a book of aerial photographs and then describing what it’s like to be a bird) but, once the book reached the era of the use of aeroplanes to carry photographers it read to me as if none of the writers had ever been in a light aircraft, let alone tried to take photographs from one. But their prose about it carries hints of elegance and romanticism.

A point of personal interest arose – or didn’t arise – from my reading and that was that in the whole book there is no mention of the use of stereoscopy. In fact, verticals are described as ‘flattening the ground’ whereas, they say, a well-lit oblique can illustrate topography. By the 1920s, aerial survey companies had been founded in several countries and were usually operated by ex-WW1 aircrew. We know that stereo pairs were a basic requirement of a lot of WW1 aerial photographs – so what happened to them after the war? While thinking about this I realised that, from memory, it doesn’t come into Crawford’s early writing either. Is there a mention of it in *Wessex from the Air*? Were the photographs he was given by the RAF in 1922 viewable as stereo pairs? We don’t know. It is a long time since I looked through all the photographs taken by Crawford and Keiller in 1924, but I remember I’m fairly certain that at Hambleton Hill there were three photographs that covered the Iron Age hillfort, or parts of it, so maybe these were a stereo run? It would need re-examination of the prints with that question in mind to answer but I wondered if cost came into play as to get stereo cover of a site requires at least twice as many pictures as are needed for illustrations. In wartime, cost may be of little relevance to achieving a result, whereas even a rich backer may balk at paying out twice as much money for photographic plates and processing, plus extra flying time. So what happened to stereo pairs? They aren’t really necessary for illustration (as in *Wessex from the Air*) but I would have thought they’d be useful for the field investigation work that comprises the bulk of that book. Perhaps they were ignored until vertical photographs began to be used for cartography, when stereo pairs are essential.

### **Conversations**

In the following *Chairman’s Piece*, Oscar mentions one of the conversations that I held with a ‘notable’ from our speciality. I enjoyed making the three conversations that appeared in past issues and they obviously retain their interest. Oscar’s *Piece* reminds me that perhaps more ought to be recorded and transcribed before we all fade away. In Cambridge, Pamela Jane Smith runs a project called *Personal Histories* which have centred on an individual or small

group who give a lecture or seminar which is video-recorded and made available in edited form via the internet (<http://www2.arch.cam.ac.uk/personal-histories/>).

With that in mind, I would throw out two ideas: can any of you suggest ‘notables’ for future conversations – or even volunteer yourself? And is this something that could be included in occasional AARG meetings (or one of our rare one-day events). Or are Rambling Old Farts too boring for an open meeting? We have some interesting personalities in the aerial community, we even have a few people who have done Good Things in the aerial world. Is it worth recording their view of past events and future trends?

### **Verticals and obliques – perhaps a postscript?**

A recent publication by Geert Verhoeven *et al* (2013) includes a section called *The vertical debate* that discusses the way that vertical survey cameras are taken, how archaeological features have been identified on them, and it compares them with targeted obliques. In doing so, it completely misses the point of the oblique-v-vertical debate that echoed around AARG in the late 1990s. I take the blame for this as the use of ‘oblique’ and ‘vertical’ at that time was perhaps never clearly explained and was – certainly by myself – a shorthand form for what results after block flying an area (ie vertical photographs) and what results after an observer records something (oblique photographs). The concept was really to test observers’ powers of observation and to compare their results with the ‘reality’ that verticals would (or could) record. Photographs taken of the same area at the same time – or as close as we could manage – were a means to evaluate the test. When that debate started – and the first mention in *AARGnews* seems to be in 1998 (*AARGnews* 16, 8) – the term ‘observer-directed’ hadn’t been coined so the types of photograph were then a convenient shorthand. Apologies(?) if I have caused 20 years of misunderstanding!

There has been a similar misunderstanding of the terms high- and low-oblique that I noticed again in *Seeing from Above*. Aviators think the term derives from the height of the aircraft whereas the term describes the obliquity of the photograph. So an observer in low flying aircraft takes a photograph with high obliquity – a high oblique. And *vice versa*. The confusion is understandable in much the same way as arises from use of the terms large- and small-scale map as any of you will know if you have tried explaining to someone why a map that covers a large area is called a ‘small’ scale map.

### **References**

- Dobinson, C., 2000. *Fields of Deception: Britain’s bombing decoys of World War II*. Methuen/English Heritage, London.
- Verhoeven, G., Sevara, C., Karel, W., Ressler, C., Doneus, M., Briese, C., 2013. Undistorting the past – New techniques for orthorectification of archaeological aerial frame imagery, in: Corsi, C. *et al* (eds.), *Good practice in archaeological diagnostics. Non-invasive survey of complex archaeological sites*. Natural Science in Archaeology. Springer International Publishing, Switzerland, 31–67.

## Oscar's last AARG Chairman's piece

Oscar Aldred<sup>1</sup>

In my pursuit of finding 'interesting topics' to write about for my last *AARGnews*: *Chairman's piece* – as my time in the 'hot seat' is shortly to expire – I keep returning time and time again to the pre-AARG and AARG archives. The archives make fascinating reading, a limited version of which we hope to upload to the AARG website. The archives are about some of tasks, events and the people we know; what decisions and areas of interest were made during past meetings and conferences. Importantly, for me, the letters and outlines of the early conferences are a very good measure of what AARG is trying to achieve today. This is not because I find fault in what we are doing now in terms of the fundamentals, such as discussing data collection, mapping and interpretation and systems of classification. I am simply interested in continuing to find out where we stand in relation to the original premises that underwrote the shaping of AARG. And it is this that I want to discuss in my final *Chairman's piece*.

The early letters and communications were pivotal in facilitating the establishment and structure of AARG. In several letters between David Wilson, Paul Ashbee, and Rowan Whimster, and communications to potential AARG participants, the shape of AARG was forged. For instance, in one of the letters, by Paul Ashbee to David Wilson (in 1980), which was based on a chat they had in Cambridge dated to the 3<sup>rd</sup> October 1980, the idea to hold a meeting that had 'the intellectual respectability ... together with some measured ideas', with an aim to demonstrate an 'analytical archaeological air photography' as a 'mode of research with its own models'. This resulted in another letter from David Wilson inviting a select band of speakers to the first one-day seminar on *Archaeology and aerial-photography* on 12<sup>th</sup> February 1981.

A condensed summary of the seminar was made by Rowan Whimster. Within the summary that has relevance to this *Chairman's piece*, is the emphasis offered by Paul Ashbee on calling for an aerial archaeology technique to recognise and explain the pattern and organisation within the landscape. And we see this occurring later on too, for instance, in an interview between Rog Palmer and John Hampton published in *AARGnews* 12 (March 1996). There is something quite revealing about how to 'look' at air-photographs with archaeology on them that relates to the emphasis in understanding what the pattern and landscape mean. For example, John Hampton imparted his experience saying when looking at an oblique photograph of a Roman area in Lincolnshire 'that we're actually looking at people, we're not looking at just ditches, but we're looking at people and what they actually did' (*AARGnews* 12: 37-8).

Not only does AARG need to continue to remember that its subject matter is first and foremost archaeology – not just crop marks and features, although these are part of the pattern –It also needs to build on the value of looking beyond just the empirical evidence and asking what something means. Later on in the same interview there is another comment which is just as revealing of John Hampton's years of experience. He suggests that aerial archaeology is as much a spatial interrogation as a temporal one: 'We're looking now at horizontal stratigraphy

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<sup>1</sup> [oscar.aldred@newcastle.ac.uk](mailto:oscar.aldred@newcastle.ac.uk)

– if you can use that term – and the relationship and the sequence of development of a pattern, of one pattern on another.’ (AARGnews 12: 41)

There is also the circulated letter written by David Wilson and Rowan Whimster, inviting attendees to the second one-day seminar on *Archaeology and the post-reconnaissance use of air photographs* and the summary of the seminar (1982). And through this seminar an aerial archaeology research group was proposed for its first meeting in 1983 - *The interpretation of archaeological air photographs: how and why?* The focus of the research group was three-fold: on mapping and cartographic standards (led by John Hampton); on improving the academic and professional working standards within aerial archaeology, especially on post-reconnaissance work for the interpretation and mapping of air photographic evidence (also John Hampton); and helping to connect people with others that have particular skills (Dennis Harding). The subsequent letter from Rowan Whimster about the first AARG meeting led to another on *The interpretation of archaeological air photographs: how and why?* (1984) which has produced the way ahead for the subsequent series of yearly meetings that we’ve enjoyed since.

Speaking of enjoyment, my time as Chairman of AARG – or should it be Chair or Chairperson? – has been a steep learning curve, and there have been many memorable moments. Probably the favourite moment, besides sitting on Dave Cowley’s lap at the Poznan meeting, was the picture of Włodek, Dave and I imitating the three wise monkeys – hear, speak, see no evil. The ability to overcome some unique challenges that AARG faces for any future ‘hot seat’ contenders is characterised by manoeuvring AARG away from potential pitfalls – not ignoring them. On a more professional note, the most enjoyable moment was the introduction of the *Debate Session* at our meeting/conference in Budapest, its continuation in Amersfoort, and soon to be in Dublin. Through these I have hoped to bring to light some of the important areas that continue to shape how we examine archaeology from the air, how we conduct our practices, although there are many, many more to explore: for instance, the role of landscape – whether describing a physical entity or thinking about the heuristics of interpretations; the role of vision and seeing in mapping and understand; and, this year, the issue of scale and levels of detail. I encourage my successor to continue these and hope for the very best of luck with the handling of AARG – especially in meeting Rog’s deadlines.

Cheers.

## **Oldie but goodie. Patterns, Processes and Understanding: Historic aerial photographs for landscape studies, 24-26th April 2014, Będlewo, Poland**

Adam Lokś<sup>1</sup>

At the end of April this year, scientists associated with the use of archival aerial photographs met in Będlewo to hold a conference titled *Patterns, Processes and Understanding: Historic aerial photographs for landscape studies*. The event was organized by the Institute of Prehistory, Adam Mickiewicz University in Poznan, AARG, ArcLand, Department of Archaeology University of Szczecin, RSPSoc and RCAHMS. The aim of the conference was not only to collect archaeologists associated with the use of historical aerial photographs, but trigger a discussion between representatives of different fields of science. Did it happen? From our point of view: yes, but let's start from the beginning...

After the final registrations and official welcome on the morning of April 24<sup>th</sup>, the first session was begun by Bill Hanson who drew our attention to the potential of archival aerial photographs and satellite imagery. He discussed the advantages of archival photos as comparative material to new (observer-directed) reconnaissance, and noticed their great role for monitoring the state of preservation of monuments during the twentieth century. Considerations supported his case study of Dobrogea where he and Ioana Oltean had discovered hundreds of burial mounds and other remains of Roman date. After that, opportunities and challenges from the technical side of work with the resources of large archives were discussed by Dave Cowley.

The next session focused on problems of interpretation and was started by Rog Palmer who was dealing with the problem of the perception of archival photographs as 'something special'. This was followed by Grzegorz Kiarszys whose talk focused on the archaeological heritage. Through the comparison of topographic maps with ALS data and both historic as well as modern aerial imagery, he asked the question why are these maps often misleading about archeological sites? One of the funniest moments of the conference was the proposal of Lidka Żuk, who compared the achievements of Polish cartographer W. Grygorenko with non-published archival verticals and concluded her speech saying: do not trust professors!

The session titled *Landscapes through historical aerial photographs* was started by Rafal Zapłata who focused on acquiring archival aerial photographs, analysis of their quality and potential use for understanding the cultural landscape. Maria Ruiz de Arbol then presented a key role in the use of historical aerial photographs for 30 years of a case study of the north-western Iberia. From Spain we moved back to Lower Silesia in Poland. There, Agnieszka Latocha presented a detailed case study of the evolution of the cultural landscape through analysis of old topographic maps and historic aerial photographs. The role of aerial photographs to study urban climate was the topic of Wojciech Mania who described depopulation, loss of function and the declining role of small towns.

The following day, Stephanie Verplaetse opened the session *Landscapes of conflicts*. She characterized the two case studies which deal with the landscape of World War I as seen from the air. Her talk ended with presentation of a research project involving the use of geophysics

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<sup>1</sup> [loksfly@gmail.com](mailto:loksfly@gmail.com)



**Będlewo, 2014.**

Our palace with (partial) group photo;  
Presentations and posters;  
Rowing or cycling the trains on the excursion;  
Waiting patiently for the final conference dinner.

as well as archived data. From Belgium we moved to Scotland, where Allan Killpatrick carried out landscape analysis of Scotland's Home Front on the basis of the Aerofilms collection and operational photographs taken by the RAF. One more case study of the islands, this time from the south-east coast of England was presented by Cathy Stoertz who discussed training grounds and the front line that can be identified on the pictures from the 1940s held by English Heritage.

The last session concerned rural landscapes and was began by Elżbieta Raszeja approaching the topic a bit more methodologically. Through the interpretation of archival aerial photographs she had made an assessment of the character of the landscape in spatial planning of rural areas. A final presentation was given by Dawid Rajmund Soszyński who used aerial photographs from World War II to show the binding part of public spaces along the Bug river.

In addition, two poster sessions took place. Aleksandra Wilgocka presented the changing landscape of a few places in Szczecin during the second half of the twentieth century. Jerzy Miałdun demonstrated methods of filtering aerial photographs for archaeological prospection. On his second poster he showed the preliminary results of non-invasive research on a fortified settlement in north-eastern Poland. A poster by Catalin I. Nicolae showed his meticulous analysis of the urban development of Bucharest. Can you use archival aerial photographs to reconstruct buildings? Yes, said Grzegorz Szalast, who had provided 3D glasses through which we could view his poster and reconstruct buildings that had since been demolished. The only case study from the Middle East was the poster by Grzegorz Kiarszys who proposed two interesting ways to interpret the Babylon complex. A poster prepared by Wojciech Mania told a complicated and interesting story about a missing manor house and two old photographs with mysterious signatures on them.

After two days of talks, Wlodek Rączkowski the main organizer, invited all participants for an excursion. To the end he held in secret where we will go. After a short coach journey we arrived at the train tracks in Mosina. It turned out that we will continue to travel in trolleys! We rode on an abandoned railway to stop at Osowa Góra. Before the war, this charming place (now owned by the Wielkopolska National Park) was a place of rest for visitors from the whole country. During the ride we were able to admire the nice cultural landscape. Unfortunately now a decaying landscape...

During coffee breaks and in the final discussion, the great value of historical aerial photographs for landscape studies was confirmed and dialogue between scientists from different fields was established. It was observed that the rural landscape in Poland is not under protection. This implies, in turn, that there is probably a low level of public awareness. So another issue is to find what can be done to popularize this topic in local communities. We should encourage other researchers to the use of extensive archival collections in Europe. To do this we need further meetings such as this in a beautiful neo-Gothic palace in Będlewo.

## **AARG notices**

### **The Derrick Riley Bursary**

The Derrick Riley Bursary still exists. It is £500 a year, usually a single award, but sometimes is split and given to two people.

There should be an application form on the Sheffield Archaeology Department website and a Riley Bursary page on the Sheffield website where potential applicants will be able to find information and download the application form.

Finding the relevant page represents the first challenge, but if you can't please contact Bob Johnston ([r.johnston@sheffield.ac.uk](mailto:r.johnston@sheffield.ac.uk)) who administers the bursary.

### **Information for AARGnews contributors**

*AARGnews* is published at six-monthly intervals. Copy for *AARGnews* 50 needs to be with me by **February 14, 2015**. Editorial policy (for want of a better word) tends to be that if I am sent interesting contributions they go in unless there's a danger of an issue overflowing. Vague instructions for contributors are on the AARG website and please do not use any 'clever' formatting.

And please remember to send me your nominations for future AARG conversations.

Address for contributions: [rog.palmer@ntlworld.com](mailto:rog.palmer@ntlworld.com)

## Cropmarks

Harvested by Rog Palmer<sup>1</sup>

### UAVs in New Mexico

Use of an advanced drone that was programmed to fly a precise, GPS-guided path, with a thermal camera systematically imaging the ground surface. Images were processed using specialized software into an accurate 'heat map' of the ground. Results pinpointed buried masonry structures and identified a number of circular "cool" signals that may be kivas, ceremonial structures where people would meet.

Based on the abstract in:

Casana, et al, 2014. Archaeological aerial thermography: a case study at the Chaco-era Blue J community, New Mexico. *Journal of Archaeological Science* 45, (May 2014), 207–219.

<http://dx.doi.org/10.1016/j.jas.2014.02.015>

See also:

<http://www.livescience.com/44679-drone-images-reveal-buried-archaeological-ruins.html>

<http://www.history.com/news/can-drones-revolutionize-archaeology>

<http://www.sciencedaily.com/releases/2014/05/140507095311.htm>

### UAVs at Leicester, UK

An article in Heritage Daily misleadingly used a photo of a Predator-type UAV to headline an article about research at Leicester University (Dept of Geography) that will fly a lightweight GPR unit to 'uncover Britain's heritage'. Lovely, I thought, proper survey ... until checking Leicester's own release on this, the UAV turned into one of the small multi-prop machines and it looks as if they will be testing it on a series of known sites. Still, perhaps of interest.

[http://www.heritagedaily.com/2014/08/space-age-technologies-aim-to-uncover-britains-heritage/104471?utm\\_source=feedburner&utm\\_medium=email&utm\\_campaign=Feed%3A+HeritageDaily+\(](http://www.heritagedaily.com/2014/08/space-age-technologies-aim-to-uncover-britains-heritage/104471?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+HeritageDaily+()  
<http://www2.le.ac.uk/news/blog/2014-archive-1/august/uncovering-britains-heritage-through-space-age-technologies>

### Remote sensing?

For an (American) explanation of remote sensing for archaeology, see: <http://asorblog.org/?p=7217>

### ALS and the Cahokia mounds

Short movie showing ALS results and its use to make contour models of the mounds and their immediate environs. <http://vimeo.com/quantumspatial/quantum-spatial-blog-videos/video/85303907>

This may result from work undertaken by Sarah E Bains that was recently published in *Midcontinental Journal of Archaeology* (Vol 39, Issue 2 (Summer 2014), 145-162).

Summarised at: <http://westerndigs.org/ceremonial-axis-road-discovered-in-heart-of-ancient-city-of-cahokia/>

### WorldView-3

DigitalGlobe have released a first batch of images from tests made over Madrid. These have been resampled to 40cm. Download from: <http://www.digitalglobelog.com/2014/08/26/worldview-3-first-images/>

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<sup>1</sup> [rog.palmer@ntlworld.com](mailto:rog.palmer@ntlworld.com)

## Military UAVs

For those that are interested in the capabilities of military UAVs, this is a good overview once you get past the stirring introduction: <http://youtu.be/IOzCiCl05Ec>

(thanks to Geert Verhoeven)

## Laser scanning using UAS

Riegl, one of the developers and manufacturers of Lidar scanners, has made a couple of lightweight sensors (one – the red-white-blue thing in the picture – at 3.85 kg, the other at 7.5) that are light enough to be flown using a ‘professional’ UAS. The web link is to slideshare.net where you can read and see a lecture, given on 16 April 2014) that includes some planned integration with various UAS – as below.

[http://www.slideshare.net/esperu/introducing-a-new-class-of-surveygrade?fb\\_action\\_ids=10152630459588749&fb\\_action\\_types=slideshare%3Adownload](http://www.slideshare.net/esperu/introducing-a-new-class-of-surveygrade?fb_action_ids=10152630459588749&fb_action_types=slideshare%3Adownload)



(thanks to Nina Heiska)

## Walter Mittelholzer

Who? you may ask, and I confess that I hadn't heard of him before reading *Seeing from Above* (see review by Wlodek Rączkowski elsewhere in this issue). In brief, after WW1 he was a Swiss pilot, aerial photographer and writer who, in 1919, founded an aerial photography and passenger company that was later to become Swissair. His photographs seem mainly to be oblique shots – sometimes ‘horizontal’ of mountains – and he seems to have been the Swiss equivalent of Aerofilms. As well as Switzerland and other European countries he travelled widely; for example, to Cape Town (1926-27) and Abyssinia (1934) and his expeditions are documented with aerial and ground shots. Swissair are making these (and possibly other archive photographs) available in the ETH Bibliothek (the library of the Swiss Federal Institute of Technology, Zurich) at: <http://www.library.ethz.ch/en/>

It looks as if the on-line archive documenting the early years of civil aviation, including some of Mittelholzer's photographs, currently hold more than 5,500 images (25 August 2014).

A brief biography of Mittelholzer is at: [http://en.wikipedia.org/wiki/Walter\\_Mittelholzer](http://en.wikipedia.org/wiki/Walter_Mittelholzer)

and a longer version in German: <http://photobibliothek.ch/seite007n.html>

## Javad's Triumph-F1: a UAV with a brain

A pre-production note about a programmable UAV with five integral cameras. No in-flight human intervention is necessary. Looks good. Looks expensive. Looks very vulnerable to the wind. Looks potentially useful. No price yet.

<http://www.javad.com/jgnss/javad/news/pr20140818.html>

(thanks to Irwin Scollar)

## Google Earth for Archaeology

Spatial Tech is a web site run by Patricia Murriera-Flores, a landscape archaeologist at the University of Chetster, UK. She currently offers six on-line GIS-based courses of which one is *Google Earth for Archaeology*. This could be a basis for teaching the masses if ever anyone is brave enough to create a crowd-sourced recording project. However, there is a lot to do as, from a very rapid glance, the GE course seems to deal entirely with known

upstanding sites, how to navigate and view in GE, and how to make good records of these in your own desktop. Still, it's probably useful to someone and a good idea to get the basic uses documented. <http://spatialtech-humanities.com/google-earth-archaeology/>

(thanks to Darja Grosman)

### **Community and aerial photographs**

... on which thought, there is a nice collection of video reminiscences compiled – if I've worked through things properly – by freelance writer, Emily Dodd. The result is a series of tales spoken by people who are involved in a Heritage Lottery-funded community project that records memories that have been evoked by the photographs in the Aerofilms Collection. 'Memory' is something that really need to be added to those lists of what aerial photographs are used for. The collection is at: <https://www.youtube.com/channel/UCCcxdMoB0I0ODO7Utn0qNHg>

(thanks to Dave Cowley)

### **NCAP**

Apparently a new website for TARA photographs – now known as NCAP – RCAHMS National Collection of Aerial Photography (photography? bah). Users can browse in various ways and I chose Map, which shows 'bull's eyes' of targets that spread as you zoom in to make your selection. Chosen photos are displayed as thumbnails with metadata giving placename, lat-long coordinates, date, sortie number, scale, etc. There are two subscriptions – one that allows users to zoom images and the other that adds use of finding aids to the zoomability. But available to all is the *Features* page that includes some good comparative examples of bombing decoys in Romania. <http://ncap.org.uk/>

(thanks to Dave Cowley)

### **Hyperspectral camera**

Comar Optics (<http://www.comaroptics.com/>) have developed a prototype hyperspectral DSLR camera that has a bandwidth of 25nm, and can be tuned continuously from 1100nm to 360nm with output that can be a cube of images or a video. A selection of videos taken with the prototype camera are at <https://www.youtube.com/playlist?list=PLvFbOufD4QNACYpMPkRgZRYDtucC-mgdZ> and the company is seeking collaborators interested in developing the camera for specific applications.

(thanks to Ant Beck)

### **UAVs in Peru**

There are about 200 legally-registered sites in Peru and an estimated 100,000 unregistered of which many are threatened by development (building, change in land use, etc).

Archaeologists have begun a programme to record their extents using UAVs in order to register them and (hopefully) stop development from erasing them. This is faster and easier than traditional ground survey.

<http://www.nytimes.com/video/arts/design/10000003042696/the-race-to-record-the-ruins.html?playlistId=1194811622313>

(thanks to Dave Cowley)

Are we in danger of becoming *UAVnews*...?

## Review article: *Flights into the Past*

Cathy Stoertz<sup>1</sup>

Chris Musson, Rog Palmer & Stefano Campana, 2013. *Flights into the Past: Aerial photography, photo interpretation and mapping for archaeology*. ISBN: 978-3-00-044479-1.

This is the first ArcLand eBook, available free of charge from the Apple iBook Store and also as PDF, subject to copyright, as a free download from these websites:

<http://archiv.ub.uni-heidelberg.de/propylaeumdok/volltexte/2013/2009>  
<http://www.univie.ac.at/aarg/php/cms/Occasional-Publications/>

*Flights into the Past* is an English translation of *In Volo nel Passato: aerofotografia e cartografia archeologica*, first published in 2005. Anybody who crossed paths with Chris, Rog and Stefano during the years 2003-2005 will know this as “the Bloody Book” – now, perhaps, the Blood eBook...? (Rog’s suggestion!)

When Rog asked me to report on this partially updated, electronic version, my first discovery was that, although the book is available free of charge from the Apple iBook store, the actual eBook can only be read on Apple devices. This is not much use for those of us with no Mac, iPad or iPhone – I am, alas, unable to report on the full eBook experience.

Feeling slightly disgruntled, I resorted instead to the PDF version – and was delighted to discover a very high-quality presentation (not always the case with PDF publications). Clear photos, easily zoom-able, with very little loss of resolution when enlarged on my laptop. In fact, because of the enlargement facility, the PDF is an improvement on the printed original. A possible disadvantage of the PDF over the eBook is that there appear to be hyperlinks within the text, to take the reader directly to the relevant illustrations, but they don’t do anything. The PDF user must navigate manually whereas, I assume, eBook readers would reach the cited figure with a simple click. Also, in the PDF version (don’t know if this is true of the eBook) there are places where the order of headings and text seems to have become scrambled, and a couple of linguistic and grammatical oddities that made me wonder whether the text, originally translated from English into Italian, had then been translated back again...? A pedant might suggest closer attention to editing or proof-reading if future e-ventures are planned.

*In Volo nel Passato* began life as a handbook for Italian students, and evolved into something much farther-reaching (AARGnews 31, September 2005). In its final form, it is an exhaustive “how-to” manual covering every aspect of aerial archaeology, providing very detailed descriptions of, advice upon, and principles behind each process, from survey planning and camera selection to multidisciplinary survey. It explores the philosophy behind the development of current approaches to aerial archaeology and encourages the reader towards a developed, mature use of aerial photographs. The book describes all the considerations necessary when setting up a program of survey, interpretation, mapping, archiving, research and integrated survey from scratch. Inevitably, with an interval of nearly a decade between the original Italian publication and this English version, parts of the text are out of date (e.g.

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<sup>1</sup> [cathy.stoertz@gmail.com](mailto:cathy.stoertz@gmail.com)

the section on cameras and film), but this is acknowledged by the authors and addressed to a limited extent.

*Flights into the Past* is, in many respects, a print version of the training courses developed by various teams of AARG members over several years and in several countries – but without the interaction, laughs and beer (all of which are important to the learning experience)! The methodological sections are very detailed and each chapter is beautifully illustrated with clear and well produced photographic examples, mainly from Italy (Tuscany and the Tavoliere) and Britain, supported by excellent explanatory captions. Much of the material will be very familiar to experienced practitioners, so this book will probably have greatest application as a sort of primer. Nevertheless, the case studies will be of interest on many levels – and old lags can enjoy the pictures, even if they do not rely on the “handbook” aspects. The latter chapters comprise reports on projects incorporating lidar, declassified satellite imagery and other methods of survey, and will be of interest to beginners and experienced practitioners alike. This is a production of high quality, which will be useful and accessible to many in the aerial archaeological community – and it can be downloaded free of charge.

## Review article: *Seeing from Above*

Włodek Rączkowski<sup>1</sup>

M. Dorrian, F. Pousin (eds) 2013, *Seeing from Above: The aerial view in visual culture*, London, New York: I.B. Tauris & Co. Ltd.  
ISBN 978-1-78076-461-0. £62 (hb), £17 (pb)

Aerial archaeologists have long since moved away from a purely collector, documentation and typological approach to aerial photographs, and cultural contexts of taking and using aerial photographs are increasingly frequently coming under discussion. It is not surprising therefore that the search for inspiration enabling a wider perspective on the use of aerial photographs extends far beyond archaeology (e.g. Roland Barthes, Martin Heidegger, Michael Foucault, Paul Ricouer, etc.). The fact that aerial photographs (aerial survey) provide a view of the reality which surrounds us from a unique angle gives the photographs, the photographers and those who use them a particular emotional and cognitive context. For a long time 'seeing from above' was the preserve of a select few. Today, thanks to web portals this is a common everyday experience, though surfing above the earth does not provide quite the same experience as a flight in a hot-air balloon or a glider. Nonetheless, 'seeing from above' is currently a broad cultural phenomenon worth critical consideration.

*Seeing from Above: The aerial view in visual culture* edited by Mark Dorrian and Frédéric Pousin discusses questions surrounding the presence of this form of representing the world in culture. The book contains 16 essays which were presented in a series of seminars and conferences organised in Edinburgh and Paris under the general title *The Aerial View: Spatial Knowledge and Spatial Practices*. The entire enterprise was jointly-funded by the British Academy and the Centre national de la recherche scientifique (CNRS). Both the subject matter of the book and the reviews on the cover encouraged further reading and a search for fresh inspiration in these reflections on aerial photography in archaeology.

The essays within the book present a wide spectrum of perspectives on the 'birds-eye-view' from a travel-espionage angle (e.g. Marina Warner, *Intimate Communiqués: Melchior Lorck's Flying Tortoise*) through geographical-cartographical (e.g. Michael Bury, *The Meaning of Roman Maps: Etienne Dupérac and Antonio Tempesta*, or Marie-Claire Robic, *From Sky to Ground: The Aerial View and the Ideal of the Vue Raisonnée in Geography during 1920s*), architectonic (e.g. Nathalie Roseau, *The City Seen from the Aeroplane: Distorted Reflections and Urban Futures*) to artistic visions (e.g. Christina Lodder, *Transfiguring Reality: Suprematism and the Aerial View*). Clearly, archaeology is not present in this discourse. Barely mentioned in only a few articles, it certainly is not an important research field within visual culture and this in fact reflects the editors' definition of visual culture. Such a situation should lead us to consider our current position, the cultural role we play.

The diversity of the essays and perspectives certainly makes it difficult to place them in any order and through their content and arrangement so is the presentation of a new, different concept of visual culture. I must admit, I did find this aspect of the book disappointing. The editors were unable to propose an original approach to the concept of visual culture and what is worse – did not refer in any way to existing current ideas or concepts. This is visible on two

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<sup>1</sup> [wlodekra@amu.edu.pl](mailto:wlodekra@amu.edu.pl)

planes: the construction of the book and the contents of the *Introduction*. The articles have been ordered chronologically which implies evolutionary thinking. This impression is furthered by the fact that some of the pieces discuss technical issues and highlight the category of 'progress'. In contrast, in no way do the editors refer in the *Introduction* to the discussion 'about' and 'in' visual culture studies. The Introduction has been reduced to a short description of particular essays and... in this way a Heideggerian cover-up of their content. But as they do not build a new perspective on visual culture in this discussion the book does not inspire critical consideration.

The chronological order of the essays means the first two concern the 'bird's-eye-view' from ground level (buildings and hills) as they refer to Melchior Lorck's journey to the Ottoman empire in the 16<sup>th</sup> century and the methods used by Etienne Dupérac and Antonio Tempesta to illustrate maps of Rome. The analysed examples show how the cultural context of their creators (the era in which they worked, how the world was perceived, as well as the system of metaphors operating in relation to the authorities and presenting the world) had a deciding influence on how the world was read and the form of its presentation. It must be acknowledged however, that the essays are dominated rather more by narrative in an event-history style than by in-depth cultural analysis.

The 18<sup>th</sup> century brought about the invention of the balloon and allowed man to ascend up in the air and look down upon the earth. For most of us, the image of the earth's surface is something normal, nothing particularly special. On reading Marie Thébaud-Sorger's essay (*Thomas Baldwin's Airopaidia, or the Aerial View in Colour*) we become aware of just how differently someone operating in another historical reality, with other cultural baggage may perceive the earth's surface. Analysis of Baldwin's narrative and the illustrations based on sensations and emotions experienced during a balloon flight in the vicinity of Chester reveals how diverse the experience of a flight and images of the earth's surface can be depending on cultural context, the uniqueness of such an adventure. Likewise, the intellectual context of such experiences and the verbalisation of feelings which later affect the specific form of narrative of the world is significant. Simultaneously, the problem of the limitations of our language to convey the nature of the emotional experience arises. Thomas Baldwin's narrative is focused on emotions and sensations connected to the physical aspect of moving up in the air. It is interesting that Jonathan Swift's *Gulliver's Travels* was at this time a narrative platform for the description of aerial experiences. *Gulliver* threads its way through several essays referring to the experience of looking 'from above' at the turn of the 18<sup>th</sup> and 19<sup>th</sup> centuries. At the end of the 18<sup>th</sup> century, accounts of the image of the earth's surface seen from a certain height were connected to the construction of a narrative, but actually were probably closer related to the creation of images visualising the viewed landscape (Thomas Baldwin, Alfred Guesdon). The methods applied in the preparation of such pictures were based on those established earlier-16<sup>th</sup> century sketches using perspective which were not completely geometrically correct. These images 'from above' idealised reality and showed the landscape in a form undisturbed by elements which were socially sensitive.

It was only the spread of photography that changed, on one hand, the way in which the world was perceived 'from above' and on the other, the record of an objectified image. The first to be mentioned in this context is Nadar (Stephen Bann, *Nadar's Aerial View*). It is interesting that in his comments on the still then unique experience of a hot-air balloon flight he refers to *Gulliver's Travels* and applies the narrative form and metaphors from this story.

In so far as the story inspired a metaphorical description of reality seen ‘from above’, photographs themselves gave rise to a new approach in painting. It is quite a paradox that it was photography which released painting from the “responsibility” of representing the world, and that, in turn, aerial photographs became the pretext for an abstract visualisation of the world. An example of this movement in painting is Suprematism (Christina Lodder, *Transfiguring Reality. Suprematism and the Aerial View*), the art of the Russian painter and art theoretician Kazimir Malevich, who was fascinated by aerial photography and created a painterly style focused on the creation of flat geometric forms against a white background. For Malevich: “The conquest of the heavens, courageous flying records, and looking at the earth’s surface from the airman’s soaring summits formulated a new love for mathematical idealism, so to speak. This relationship with the infinite space of the cosmos established new values in the psyche of modern man.” Discussion about the relation between ‘bird’s-eye-view’ photographs (including the dramatic landscapes from the First World War period) and painting can make us aware of the wide and complex spectrum of mutual inspiration. And this relation is not foreign to aerial archaeologists. It is worth then taking a closer look at Christina Lodder’s essay and her analysis of the work of Malevich.

Equally intriguing is the study on the work of Marcel Duchamp and his connection with aerial photography (David Hopkins, *The Domain of Rose Sélavy. Dust Breeding and Aerial Photography*). Once again, we are dealing here with photography from the period of the First World War, although the starting point is the extraordinary photograph entitled *Dust Breeding* (1920). The photograph itself is well worth noting for anyone concerned with the interpretation of past landscapes based on aerial photographs (see: <http://www.metmuseum.org/toah/works-of-art/69.521>). And it is this photograph which forms the pretext for a thorough analysis of Duchamp’s work and its connection to aerial photography. It most certainly is a surprising essay but it may also result in varied reflections on aerial photography and art.

The period following the First World War saw an increase in aviation (the use of air planes overtaking balloons) and photography. Pilots and photographers started to make aerial photography of different landscapes possible – both natural and culturally altered, including cities in particular. Photography ‘from above’ could be used as attractive promotional material in tourism, but it also offered new tools for landscape studies (as understood by the geographers of the time) or spatial planning. In both areas it was considered illustration and an objective form by which to represent the world. Therefore realism dominates the treatment of aerial photography as a research tool. And such realism together with objectivism characterise the essays relating to this issue. Their report-like style, though providing a lot of interesting facts regarding the “career” of aerial photographs, do not encourage deeper consideration of the cultural role of ‘bird’s-eye-view’, its changeability. Similarly, this also concerns the essays on the use of aerial photographs following WW 2.

Ella Chmielewska (*Vectors of Looking. Reflections on Luftwaffe’s Aerial Survey of Warsaw, 1944*) manages to break away from this style of writing. This essay is an incisive and emotional analysis of the landscape of Warsaw just prior to the catastrophe of the Warsaw Uprising and the destruction of practically the entire city. Chmielewska endeavours to ‘uncover’ micro-histories recorded during the German aerial survey. It is a little reminiscent of Cathy Stoetrz’s paper *US7GR LOC 349 3041: one Saturday afternoon on the Home Front*. The essay on Warsaw however is suffused with knowledge *ex post* – the author knows what happened to the landscape shortly after these photos were taken. Chmielewska’s thoughts are still worth noting and may lead to unconventional analyses. The axis of the analysis is Walter

Benjamin's concept of the subject of memory and differentiating between the "Then of the image" and the "Now of looking at" the image". This concept can provide some interesting points for the discussion about the interpretation process in aerial archaeology.

The evaluation of the book as a whole cannot be unambiguous. It contains essays which may inspire further thought on aerial photography. It is definitely dominated by empirical narrative reporting on events connected to the technological and applicational progress of 'bird's-eye-view'. Apart from the aforementioned lack of a concept of visual culture studies, the articles included show us a rather one-sided image relating to 'seeing from above'. It presents the cultural process from which only 'creators' and 'users' (in a pragmatic sense) emerged. However, there is a clear shortage of analyses relating to the influence of publicly available 'aerial views' on society, on society's understanding of the world. Relational dialectics exist in culture - 'aerial views' arise in response to social needs, on the other hand their presence in popular culture shapes new expectations, new thinking about the world. For certain, access to websites providing various means to take a 'bird's-eye-view' of the earth has made a picture which was once available only to the elite or a narrow group of people far more commonplace. And this is of significant influence in the shaping of visual culture. Unfortunately, that is not something we shall find in this book.

## Books of interest?

Rog Palmer<sup>1</sup>

Rebecca Bennett, Dave Cowley & Véronique De Laet, 2014. The data explosion: tackling the taboo of automatic feature recognition in airborne survey data. *Antiquity* 88, 896-905.

The topic of auto-detection tends to divide archaeological image analysts into two camps separated by a vast gap. But now that image capture has gone beyond a simple film-to-print process that provided us with manageable numbers [sic] of photographs to examine, it is time to re-evaluate what auto-detection may offer.

As usual in the archaeological world, we are able to learn from other disciplines that have not allowed the gap between methods of image examination to become too far separated from the many diverse varieties of image capture – although, as usual when we borrow from other disciplines, we need to find methods that are not inappropriate for archaeological use. It is argued that most archaeologists still use methods of photo examination that have not changed since the dawn of aerial photography [the authors put it more tactfully] while image capture now includes use of multi- and hyper-spectral sensors plus airborne laser scanning and high-resolution satellite images that record a range of spectra.

Our use of automated processes, it is argued, is not to replace the eye-brain combination of the human interpreter but to make its task easier by letting the computer guide the human towards what is worth further examination. Anyone who has examined visually the 4 sq km of a 1:10,000 vertical photo looking for the (perhaps) one field in which there is a responsive crop should immediately see the value of letting a machine find it for you. More so, if that photograph is one of several hundred that cover your area of interest.

The authors conclude by summarising four steps that need to be taken, and developed specifically to tackle the international variations of shape, form, complexity, environment and location that make up ‘archaeological sites’. Three of the steps are computer driven but the fourth raises the possibility of crowd sourcing – in which we substitute the crowd for an untrained computer. In either case – whether we are flagging sites by computer or by crowd – the trained interpreters will be presented with a list of ‘possibles’ rather than having to search everywhere manually. Surely that is a good idea?

This paper should be compulsory reading for anyone who works with images. Not only because of its propositions for automating image analysis but for reminders that we ‘experts’ are not infallible, nor should we expect to be.

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<sup>1</sup> [rog.palmer@ntlworld.com](mailto:rog.palmer@ntlworld.com)

Juan Antonio Pérez, Francisco Manuel Bascon and María Cristina Charro. 2014. Photogrammetric usage of 1956-57 USAF aerial photography of Spain. *Photogrammetric Record* DOI: 10.1111/phor.12048, 1-12.

Flights made by the USAF in the 1950s form an important historical archive in Spain and 15 other countries. This paper includes a brief historical review that lists the countries covered but does not identify where those archives are now held. Background to the *American Flight* over Spain includes notes about planning, navigation and what we would now call metadata that accompanied the resulting films. Lack of information about camera calibration makes photogrammetric use of this survey problematic and this paper outlines work that was done to match the various camera body and lens combinations and to use those results to calculate interior orientations for photographs used in three test cases. Accuracy of those photographs was sufficiently good for them to be matched with maps and with more recent photographs and so allow changes in urban and rural landscapes to be identified and quantified.

## The Aerial Archaeology Research Group

AARG provides an international forum for the exchange of ideas and experience on archaeology and landscape studies using all forms of remote sensing, especially airborne and satellite based techniques.

AARG is actively involved in promoting the collection, interpretation and application of remote sensing data in fostering research, conservation and public understanding.

Since its foundation in the early 1980s AARG has vigorously encouraged discussion and cooperation through its annual conferences, workshops, specialist publications and biannual newsletter, *AARGnews*.

Membership is open to all who have an interest or practical involvement in aerial archaeology, remote sensing and landscape studies.

AARG is a registered charity: number SC 023162.

**AARG homepage.** <http://aarg.univie.ac.at/>

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Anyone wishing to apply should write to AARG's Chairman ([aargchair@gmail.com](mailto:aargchair@gmail.com)) with information about their interests in archaeology and aerial archaeology, as well as their place of study. The annual closing date for applications to the annual AARG conference is 31 May, other meetings for which bursaries may be available will be advertised on an ad hoc basis.