The Brunswick Prison
Camp Map Printers

BED
MADE FROM TONGUE & GROOVE OAK FLOOR BOARDS

PRESSMANS HANDLE TO WITHDRAW BED FROM PRESS

CLIP

METAL TYPAN

SLOPED "RUN OFF" TO ALLOW BED TO SLIDE IN & OUT OF PRESS
A Message from the President

I want to tell you about some important discussions that have taken place between the British Cartographic Society and the Society of Cartographers (SoC). As you know, we joined forces with the SoC to present ‘Mapping Together’ in York in September 2015, and building on the success of that superb event, we have continued to work together each year to provide an excellent joint conference for both societies. I am sure you will agree that this has proved to be a very positive move, drawing on the best of what both societies have to offer, and resulting in a series of engaging, exciting and well-attended events. Indeed, both societies have worked hard together to make them so. We are now looking forward to ‘Maps for Changing Reality’, which takes place in County Durham this September, and promises to be the must-attend cartographic event of the year (see booking form in this edition of Miplines or book online).

Although BCS and SoC have joined forces in the past (e.g. in 1979 and 2000 at Oxford and in 2003 at Reading), I believe our recent collaboration over the last few years has been a major step forward, not only for both societies but for the health of UK cartography in general. The joint events have resulted in excellent conference programmes and brought new opportunities for networking and forming friendships, but I think they have also fostered the sense that we are part of a single, broader, cartographic community rather than two independent societies. Those attending one of our joint conferences for the first time have been perplexed to discover that two national cartographic organizations exist whose remit is so closely aligned.

Having been an active member of both societies for over ten years, I have always recognized that each Society has its own strong heritage, identity and unique appeal. Yet we both face the ongoing challenge of staying relevant for our existing and potential members and we both draw on the time and talents of hard-working volunteers to function successfully. Ultimately, both societies exist for the same purpose – to make cartography thrive in the UK – and I believe that there is no better time for us to permanently join forces and work together to fulfil that common objective.

Last autumn, I proposed that a special working group be formed to openly explore the possibility of a joint future for the two societies. This group comprised two senior representatives from each Society: Ken Atherton (Relationships Officer) and Richard Carpenter (Vice President) from BCS, and Steve Chilton (Chair) and Miles Irving (Honorary Secretary) from SoC. Apart from supplying some opening pointers for discussion and a comparative analysis of membership numbers to the group, I stepped aside to avoid any potential perceptions of a conflict of interest and to enable both sides to engage in a full, frank and confidential set of discussions.

The group reported that the meetings had been friendly and productive and had found that there was scope for a merger in some shape or form, but also revealed that several important questions needed to be answered if any real progress was to be made. One view put to both BCS Council and SoC Committee was that a completely new Society should be formed, but as only about 9% of BCS members are also SoC members (and about 42% of SoC members are also BCS members), the idea gained little support. Both BCS Council and SoC Committee agreed that further clarity was needed on the dual status of SoC as a limited company and as a registered charity, together with an identification of the potential risks and costs, before any merger could be made. I therefore suggested to Steve that, as leaders of the two societies, we should meet to discuss the options, and, if possible, agree on a way forward.

Firstly, we reinstated our commitment to exploring a joint...
future of our societies, seeing that there is no better time to proceed for the members of both societies and for cartography in the UK in general. We recognized that good progress had been made in discussions between BCS and SoC to date (thanks to the hard work of all four participants) but decided that the time had now come for us – as leaders of the two societies – to discuss and to establish a common vision for the way ahead.

In exploring how the societies could merge by uniting their similar aims, we agreed that, ultimately, the best way forward would be for the SoC to dissolve and to transfer its assets to the BCS, providing that the BCS can agree to preserve and continue these assets at least for the foreseeable future, i.e. the Bulletin (in whatever name or format it takes), the online archive of the Bulletin, the list-serv Carto-SoC, and copies of the Cartography Reader book. The BCS should commit to safeguarding these valuable resources and to recognizing as being of benefit to the wider cartographic community.

Given the small number of non-BCS members potentially involved in any joint future, we agreed that the BCS would not be expected to change its name or branding as a result of the merger. The BCS should, however, explore the idea of allowing those who are members of SoC but not members of BCS (about 80) to be entitled to BCS membership at the cost of SoC subscription (currently £25) for one year after the SoC is dissolved. As BCS members, they would also be entitled to stand for election to BCS Council following the established process of fair and fair elections. Regarding the SoC’s finances, i.e. clarifying the accounts, establishing that there are no liabilities, and dismantling the SoC as a limited company, Steve acknowledged that the SoC may need external assistance to proceed. While Steve was not aware of any outstanding liabilities for SoC, apart from its commitment to publishing the Bulletin, he recognized that BCS Council will need independent verification before committing to proceed with the merger.

With regard to timing, we both agreed that we will have to happen sooner rather than later and we thought that a proposal could be tabled for both societies’ AGMs this year, with a view to SoC merging with the BCS (thereby dissolving the SoC) in September 2018. I suggested that a ‘roadmap’ be created to lay out what was needed and by when, for this to be achieved. We agreed that the wider working group should be involved in drawing up this roadmap to get the process started and to sustain a good pace.

Now, it is important for me to stress that no decisions have been made at this point; having established a joint vision, a roadmap will be created for discussion at BCS Council and at SoC Committee. With their approval, a proposal for the merger will be tabled for the AGMs this year (SoC on 6th September and BCS on 14th November). I think we have identified the best way forward, thanks to the efforts of all involved, and it will be a considerable achievement to have got there next September!

Steve has just written to members of the SoC for consultation (as you will appreciate, the questions the SoC membership faces have a greater magnitude than those posed to the BCS), and, of course, as BCS Members you are very welcome to share your views with me or to ask me any questions concerning the above. We believe that we have worked out the best possible way forward – it has not been easy – and we hope to bring our vision to fruition next year.

Before I close, I just want to draw your attention to some other important news in the Society. Firstly, we will miss Alice Gadney as she steps down from her role as Restless Earth Coordinator in September. Alice has tirelessly promoted and managed our programme of workshops for schools over the last two years and has been instrumental to their success. Many people have already worked with her as a volunteer and, like me, you will have been very impressed by her boundless enthusiasm. I’m pleased to say that this is not ‘goodbye’ though; Alice will continue to help with Restless Earth and assist with the wider work of the society, which I see as growing, not shrinking.

Many years later (1954) I was to draw an accurate map (my favourite) as part of my training to be a land surveyor at UCL. The map in question is a portion of the Isle of Wight drawn on a plane-table at a scale of 1:25000. I wonder how many of our younger readers realize just what is involved in such an undertaking? The map was drawn using triangulation control we had already surveyed and computed on an earlier visit. Many of the biggest cartographic challenges had to be conquered: scale restrictions, selection of detail and generalization: choice of colours and symbols and selection of names. A great baptism into the world of cartography.

The following are the processes involved:
1. Hot press Whatman’s paper was wet mounted on the plane-table and allowed to dry.
2. A grid and control points were plotted by hand, using a scale and a beam compass in blue ink, with no discernible error, and scales of metres and fathoms added. (The latter was to be used in the field to plot distances under about 50 metres.)
3. Field points were established in pencil by intersecting and resecting rays, mostly the latter.
4. Details were established by radiation and traverse. The centre lines of linear details were plotted in pencil.
5. Contours were drawn by interpolation from points established by a hand Clinometer. This was the most difficult of all tasks requiring “an eye for country”. (The best tip we were given was to imagine the ground flooded up to the contour level.)
6. The work was only inked in when one was sure of its exactitude. Generalization was adopted, such as moving buildings to allow for road widths way in excess of their true size.

The whole task involved three weeks in the field in generally fine weather. It made us appreciate the enormous work of those Indian Surveyors who had mapped most of their sub-continent in this manner. But the pride at my achievement was instantly and seriously deflated when I viewed the map produced by some of my contemporaries. Alas I have lost the original in all its colourful glory.

But it is still my favourite Map at the age of 86.

By Arthur L. Allan, Following an ecclesiastic education at Hamilton Academy, Glasgow University, and University College London, he was employed as a field surveyor by the Directorate of Colonial Surveys. Tours took him to Botswana, St Kitts, the British Virgin Islands, Anguilla and Kenya. He then moved to the South West Essex Technical College to teach a wide range of subjects including Cartography. At this time he became a founder member of the BCS. On the appointment of the late Greg Cole as a cartographic specialist, Allan’s career led him towards Land and Air Survey and Geodesy. After moving to University College London, he became editor of the Survey Review and also became actively involved in the International Federation of Surveyors, of which he is a Membre d’Honneur. He is now retired but retains his interest in and membership of the BCS.
The Brunswick Prison Camp Map Printers

In the two houses my parents lived in during my lifetime there hung, quite modestly on a landing or in a corridor, a small map and its reverse printing plate. In a desk drawer lain among papers and manilla envelopes containing maps, documents and photographs. When my parents died, the map and plate, and the manilla envelopes, came to me and lay in the same drawer to be infrequently brought out at the request of my children or friends.

My father, Philip Radcliffe-Evans was born in Roby, near Liverpool in 1917, the youngest of three children. By the time he had enrolled at the London School of Printing in around 1937, he had already travelled to China on a merchant ship. In 1939, he and his elder brother enlisted in the Royal Artillery and at 21 he was a captain in command of a gun battery in North Africa.

Like many of his generation, he spoke little of the war. In 1941 his older brother was killed and the following year my father was captured by Italian forces at Tobruk, Libya. He and many other Allied troops were taken first to Chielt in Italy, then to Stalag VII-A, Moosburg, Bavaria; Oflag-VIIIIF Mährisch-Trubeau and finally to Oflag-79, Brunswick.

In August 1944 Oflag-79 was hit by Allied bombing. There was much damage and casualties; the kitchen and shower blocks were partly destroyed. "Late in August we had the big raid which was one of the most horrifying experiences I have had. Wave after wave of bombers came over dropping HE (high explosive) & anti-personnel bombs… three people were killed including poor old Kilkelly".

The prisoners had to use stone tiles from the shower blocks as plates to eat off. "While washing them I noticed that the grease left a pattern on the stone and, wondering at this familiar phenomenon, I tried grinding two tiles together - with sand and water between them. I became more than casually interested in them when I saw that the grease had actually been absorbed into the stone and a definite image had been formed. (This is the principle of lithographic printing)"

He experimented with the stone tiles and margarine mixed with carbon for ink, and established that he could print. Having done so, he quickly saw how the process could be adapted: "One of the prime needs of an escape is a map, and hitherto these had been laboriously traced and (hand) copied by a dedicated cartographer. The originals printed on silk and designed to be concealed 'about the person' had been issued to certain personnel in England and a few had reached our camp in Brunswick. Apart from the increasing number of people wanting to 'have a go' there was also growing concern as to the possibility of the Russians arriving at Brunswick before the Allies, and the even nastier, and apparently unfounded rumour, that the Gestapo were thinking of moving all POWs Eastwards. In either case plans for a mass breakout were being formulated".

He had stumbled upon a response to a need at a time of growing urgency. Now, my father was a printer by trade, not a map maker or cartographer, and so what notes and information I have of his refer almost entirely to the technical problems of building a press from scratch, making inks and maintaining secrecy, though there is a reference to his being given access to two cartographers (fellow POWs) through the "escape committee". There were different maps produced, 1200 in all, so it was a mass-production press with a purpose. They were all printed on thin, utility paper, stolen from German admin. The offices are all roughly similar in size, varying from 280mm x 220mm to 220mm x 190mm.

Three different scale maps were printed; the largest scale map is of the Oflag-79 camp and its perimeter at 1:10,000; 100 were printed and it is the largest in actual size. "Much of the information on which this had been based came from a local map obtained by our ‘fixer’, but a good deal had been observed by temporary, and, as far as I know, unobserved escapees who had been out on reconnaissance". It has a grid lettered on vertical and horizontal axes and unmarked numerical coordinates imagined within each square with a short text instruction. In three colours it shows the camp in relation to the Magdeburg - Hanover autobahn to the North, the River Schunter to the South and its relationship to the village of Querum. It is easily possible to find the exact location of what was Oflag-79 by comparing this map to Google maps and printed Silk and hidden in the cover of a book or Monopoly board, the ones that had previously been painstakingly copied individually by hand one at a time.

The printing press as drawn from memory by my father around 1949 for a talk to a printing society about The Brunswick Printers.

The Brunswic area. It is 230mm x 200mm in size: 100 were printed. It is gridded into six principle squares with numerical coordinates along the top and down the right hand side. Along the bottom it has a scale and a simple key with principle features; rivers, canals, woods, railway lines, windmills, autobahns, main and minor roads. Oflag-79 is central, just south of Braunschweig. This would have been copied from one of the clandestine maps that came into the camp, often printed on silk and hidden in the cover of a historical book.

By Mark R. Evans

Historical Mapping
Visit the BCS website at www.cartography.org.uk
Membership

Thank you to all our Members who have renewed their membership for 2017. If you have not renewed your membership by the end of June 2017, your membership will be suspended - you will no longer receive BCS publications and access to The Cartographic Journal online will be terminated.

Renewal / Joining Methods:
- Through the website: www.cartography.org.uk
- Personal cheque made payable to The British Cartographic Society – please write your membership number on the back.
- Bank standing order
- Debit/Credit card details sent with your renewal form.

New Members
The Society has the pleasure of welcoming the following new Members:
- UK Members
- Associate Members
  Emily Harris, Marcella Cilia
- Educational Members
  Sancion Wood School
- Corporate Members
  National Air Traffic Services, HERE

Small Corporate Members
Axis Maps, Friendly Guides, Dorset Land Surveying Ltd

In other British Cartographic Society News:
On the 1st June 2017 we had a new member joining our team - Deimante Janaviciute - who will now be the main contact for BCS Administration.

As always we are reachable by telephone and email Monday to Thursday, 9:00am – 5:30pm and Friday 9:00am – 5:00pm. We are happy to help any Members with any issues or queries they may have related to the Society.

Email: admin@cartography.org.uk
Phone: 01223 894 870

Deimante Janaviciute,
BCS Administration

Do you want to be involved?
Are you prepared to serve on a committee?
Do you want to shape the future of the BCS?
Can you spare four days each year to attend Council meetings?

NOMINATIONS FOR BCS COUNCIL

Name (Print name): ..........................................................

Proposed by (Print name and sign): ..................................

Seconded by (Print name and sign): ..................................

I agree to being nominated (Signature of Nominee): ..................................

Extract from the By-Laws: 45. Any two or more Members may nominate one or more Members for election either as Officers or Members of the Council by duly signed nominations which are endorsed with the written agreement of the nominee to serve if elected and which shall be delivered to the Honorary Secretary by the first* day of September preceding the normal November election of Council.

Officers and elected Members of Council automatically become Trustees of the Society. To learn more about the responsibilities of a Trustee visit the Charity Commission’s website (www.charitycommission.gov.uk) and download the publication CC3 – “The Essential Trustee: What you need to know”.

Please return completed form by 22 September 2017 to: Mr D Sherren, BCS Hon. Secretary, Map Librarian, University Library, University of Portsmouth, Cambridge Road, Portsmouth, PO1 2ST

*Extended by BCS Council

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The Cambridge Conference organised by the Ordnance Survey has this year, unusually, taken place at Keble College, Oxford from 2-6 July. The origins of the Conference go back to 1928 and subsequently meetings have taken place every four years although latterly the event has become bi-annual by popular request. The conference enables Chief Executives and Senior Leaders from National Mapping Agencies, Geospatial and Cadastral Organisations from around the world to get together and discuss issues of common concern. The theme at this year’s conference was, ‘Mapping Nations: The Next Decades’, consideration being given to: our changing world, changes in the geospatial environment and how those challenges might be met, culminating with a visit to Ordnance Survey in Southampton.

A small part of the programme for delegates involved a visit to the Bodleian Library on the Monday evening. Delegates were welcomed to the Bodleian by Nick Millea, the Map Librarian, at a reception in the Divinity School which was built between 1427 and 1483. Delegates were taken in small groups to visit other parts of the Library, in particular, the Duke Humphrey’s Library and Convocation House which adjoins the Divinity School and was used as the House of Commons during the English Civil War and later in 1660s and 1680s. In Convocation House we set up a small exhibition of maps submitted by our Members, in recent years, for BCS Awards emphasising the wide variety of mapping products and the international nature of the work being done. The exhibition provoked lively conversation and fascination with the many ways of portraying geographical information in both traditional and more innovative styles. Both methods, of course, can and do result in beautiful and informative maps.

I’m sure, that on returning home when delegates reflect, one of the highlights of the conference will have been the visit to the Bodleian Library and sight of some excellent maps produced by our BCS Members.

By Peter Jolly
Meaningful Maps

This autumn sees the launch of the ‘Meaningful Maps’, a project which aims to assemble a collection of maps drawn by children and young people in Britain and Ireland of places they value or find meaningful in their local area. The project was in part inspired by maps produced by children at Lenham Primary School in Kent during International Map Year (2016). An independent initiative endorsed by the British Cartographic Society and the Geographical Association, the project will be launched as a trial this autumn with the long term aim of creating an archive which can be used for research and educational purposes. If BCS members would like to know more, go to http://meaningfulmaps.org/ for the latest updates.

By Dr Stephen Scoffham, Dr Paula Owens and Professor Peter Vujakovic

These maps by students at Lenham Primary School, Kent, were drawn to celebrate International Map Year (2015-16). Reproduced with kind permission of the children and their parents. Thanks to Mrs Sarah Howell and Mrs Victoria Travis of Lenham School for their help.

By Mary Spence

All in all, a totally exhilarating experience to be part of such a hi-tech event and satisfying to be reminded that cartography has its place in the world. After all, the principles of good cartographic design are relevant to all and the BCS is here to share its expertise and help modern mapmakers achieve the best possible results.

There were plenty of visitors to our stand who wanted to take advantage of this knowledge and it was a pleasure to meet so many interesting people from different backgrounds. So, next time there is a call for volunteers to man the stand at an exhibition, don’t be shy. It’s great fun - and keeps you on your toes!

S o there we were in the conference booth that would be our home for two days - diagonally opposite our Corporate Member, Ordinance Survey, next door to a hi-tech hexacopter used for small-format aerial imagery and within striking distance of the RGS (with IBG) Chartered Geographer stand. So not quite as lonely as you might expect at a geospatial show with an emphasis on survey and data capture! I can’t believe it is a year since we gathered here to launch our

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3D Map Printing for Restless Earth

Printing of maps in 3D has been around for the last few years. There are three main technologies: Liquid resin printers, resin powder printers and fused filament printers.

The liquid resin printers can only print in one colour, while resin powder printers can make 3D models in full colour by using a technology similar to desktop inkjet printers to print the map. Fused filament printers are normally used to print in one colour, since these printers use a hot extruder to add layers of one colour fused filament and make the final object. One extruder printers are cheaper and easier to use, so they are most common, but there are some with up to three extruders!

Last year at EOSGIS, I bought a fused filament (FF) printer with one extruder. I bought it because of its low price about bespoke 3D mapping.

The learning curve was not easy - it required integrating cartography, elevation data, GIS and 3D programs. Sometimes it was a real headache!

Around April 2016, when I was in the last steps of defining the manufacturing process to make 3D printed maps quickly and reliably, Alice Gadney contacted me asking if I could make two maps of Japan for her Restless Earth classes. The maps were a challenge since the maps Alice asked me to prepare needed to be waterproof without any holes, since she was going to spill water on them to illustrate the Tsunami effect on the landscape.

It was not just about printing the 3D maps in a plain colour. It required preparing the 2D maps to be used as a texture overlay, preparing a frame so that the spilled water does not get over the tables and to ensure it is all waterproof.

The first steps were about compiling all the required data to make the 3D models and the 2D maps. For the bathymetry, I used the GEBICO data available from URL. This dataset contains the topographic data too, but from the first tests I made, I decided to use the topography from the global SRTM data (URL). I was not going to use the full 30 metres resolution of the SRTM dataset, but it did allow me to generalize the data in such a way that I could conserve the most characteristic features (mountains, valleys, ridges, etc.).

Since the models where at a small scale (1:1 million and 1:500k), the relief data required some post-processing. For both the topography & bathymetry, a first generalization was completed using SURFER, maintaining the main terrain features, but with a resolution of 5m. This new Digital Elevation Model (DEM) was added later to a higher resolution DEM. The resulting DEM can now be used to prepare the models with a high vertical exaggeration (up to 10x).

Since the models were going to include the bathymetry and the topography, I decided to apply different vertical exaggeration ratios to the sea and land elevations (10x for the sea and 4x to the land). This is due to the fact land elevations on the coast are normally less steep than land ones. This way, when the water was spilled it will make a “real” sea.

The next step was about preparing the 3D models to be printed at a cartographic scale. For this task, we used QGIS export to 3D object plugins.

The object was then imported into a 3D program where new post processing tasks were done: a new generalization (3D programs consume lots of RAM) and a scale transformation from metres to millimetres (3D printers work in mm). The last task was to cut the whole DEM into 20cm pieces, since the printer I used for the work has this size limit when printing and making these objects manifold (a requirement for the 3D printing software).

Previewing the 3D maps helps to determine if the look of the map will be correct once finished: vertical scale and 2D map texture help to make the final decisions.

The 2D maps were created using several data sources. I asked Alice if she preferred a cartographic look or a satellite look. She selected a satellite look, with a saturated natural colour image. So I downloaded the Landsat 7 bands (all of them). Consider that a 3D printed map has its own shadows and the shadows of the 3D model under a light. If I used any downloaded satellite imagery, it will have the natural sun shadows of the mountains.

These shadows will be there even when searching for scenes with the sun near the nadir. So, then I processed the Landsat bands in GRASS GIS to eliminate the shadows and create a natural colour sat image. Since GRASS is not perfect, not all the shadows were removed, so a last Photoshop process was needed to clean the image, adjust the tones, colours, saturation, brightness and contrast.

With my custom 3D printer, I use nozzles of up to 1.2mm, so I used a 0.8mm nozzle that I found that was the optimal one in this case.

At EOSGIS I designed a custom 3D printer with the possibility to use between 1 and 4 extruders with different sizes, or a mixing extruder. This allows me to use several nozzle sizes at the same time and several materials or colours. In a simple example, I can print the inner part of the object with a huge nozzle using a cheap plastic to have a hard final object, and a thinner nozzle for the outside with a material as ABS that can be later manipulated to have a smooth surface.

The resulting georeferenced geospatial objects were printed with a high quality, to print these maps was not trivial (a quite time consuming process). The final printed 3D map objects were mounted within a 3D printed blue box that is nearly the height of the terrain. That way, the students can dip water up to the higher mountain heights.

All the objects, once mounted in their 3D printed boxes, were varnished with water resistant varnishes and with a UV protective varnish. Then they were tested by spilling water inside for any leaks. The maps are completely readable in full colour.
Restless Earth Report 2016-2017

By Fernando J. Sanchez Menendez

Fernando is a Freelance cartographer and consultant. He founded EOSGIS (Earth Observation Sciences & Geographic Information Systems) in 1998 once he studied the Astronomy and Geodesy specialty at the Mathematics faculty in Madrid (UCM). The concept was to fill the gap between geosciences data and the general public or publishers (Multimedia) maintaining all the scientific data within eye catching maps, graphics or 3D views.

He has completed consulting jobs for Engineering companies, but his best known works are for book and magazine publishers such as History National Geographic, GEO, Viajar, Oxford University Press, Random House, Visit Scotland... http://www.eosgis.com or several map examples at http://www.cartography.me

By Alice Gadney

Alice has been the Restless Earth Coordinator for the British Cartographic Society for 2 years and is now stepping aside to help in the Education Committee. A new RE Coordinator will be announced soon. admin@cartography.org.uk

GCSE Geography Curriculums in the UK, the section for Restless Earth and Geographic Skills (Cartographic Skills) are covered. As the Exam boards update their papers and information, the Restless Earth information is kept up to date in line.

The visit numbers are down on last year due to the work completed on the New Scenario of Flooding Workbooks.

The Workshop Flooding Scenario trialled in Kendal in February was an enormous success and work is continuing to see when these can be available from September to schools though the BCS. Keep your eyes on the website www.cartography.org.uk for more information.

Volunteers are always needed and your expertise in the cartographic field is much appreciated. More information is on the website for volunteers to download. We will be needing you again this year, but also as a presenting role! If you have any questions about volunteering, please don’t hesitate to contact us. There is a letter which can be downloaded from the website or emailed to you to present to your employer, highlighting the benefits and structure of the day.

Volunteering for Restless Earth Workshop is part of the AGI Chartered Geographer (GIS) Accreditation scheme getting 4 CPD points.

Corporate Members can use the day as a Corporate Responsibility or Volunteer/ Charity Day. It is not just a team building exercise for the children – I often feel us volunteers are a team with our own strengths and expertise to help in the workshop. And it’s great to meet the BCS Members and see what you all do!

If you feel your Company could support Restless Earth – please contact me at the address below and I would be more than happy to discuss!

Please see the website for dates, they are coming in thick and fast.

Restless Earth 2016-17 was completed with a last visit to my old School in Cambridge: Sanction Wood, where I chose to become a Geographer!

During this year, there have been wonderful maps produced, from a very challenging Workshop scenario! So well done to all the winners and second places that are now in the folders. The Final Awards for 2016-17 have been judged and the Winners will be announced at the Conference in September!

Restless Earth started in 2011, initially with the Haiti disaster but soon after the Japan disaster came into the limelight and a scenario was created. Based on the current...
When GIS Meets the Rural World

Myself and a colleague were asked to attend a rural event on behalf of our company and GIS team called ‘Cereals’. We joined forces this year for the first time with our rural team to demonstrate the importance of GIS and mapping in the rural world.

With this being our first experience of an event like this and our first chance to promote our GIS work to potential rural clients, we had to deliver something that would draw people into the Fisher German marquee to speak to us about GIS and mapping work.

So, how could we do this? How could we let people coming in to the event know where we were and what we did? With very little time and funding we came up with the idea of an interactive web map where users could search for their own land holdings. Using the Environmental Stewardship layers, they could search for something that would draw people closer to home and at what is actually growing in the fields and which crops are being harvested that day across the country. As the idea began to take shape it seemed to make sense. We were going to an event called ‘Cereals’, these cereals are consumed by most of us each day. Could we use this to show some different interactive maps based around the cereal end-product. Farmers already use software to give them statistics on the type of crop yield best for their land. Perhaps we could show them something different with some facts about the end-product instead.

Cereals for Cereals

Cornflakes, Weetabix and porridge are all eaten every day for breakfast by many people and they are all made from cereals. As the idea began to evolve, visions of colourful plans showing our favourite cereals draped over field boundaries emerged and work began on preparing the mapping so it would be ready for the day.

We prepared a stand for our table so we could display a board about GIS work showcasing our services. Displaying information about our partnership with the Ordnance Survey and the layers we have access to and can re-sell along with our relationship with the Land Registry would help viewers understand our services offered. The fun mapping showing cereals had to be created based on some statistics so we began gathering figures based around the area of land and how many boxes of cornflakes or Weetabix would be made from the crop harvested. We didn’t want to get too carried away with displaying an eye-catching plan and wanted to ensure that we showcased how we could work with different types of information and add value to it by analysing and displaying it in different ways.

We began collating some layers together and looking at display techniques we had used before along with layers we could make use of to perform analysis that could be beneficial to clients. Lidar data began to come into play to create contour layers and digital terrain models that we could display on a 3D PDF. This could be used to show where low spots fell, potentially this might help with growing crops and knowing where drainage would be best placed. After speaking with a colleague who comes from a family of farmers, other ideas, such as including information on hedgerows (for environmental reasons) and storing information on nitrogen levels that could be shown annually on sliders (to show differences in the soil content and how it affects the crop yield) came into play and a layered map began to take shape.

So, would we be successful in our endeavour to bring our GIS services and mapping to the rural world? A world where tractors and large machinery get admired as you and I might admire a well-crafted plan, or a sand model with lighting and affects to show how rain might fall on different levels of land (yes you know what I mean if you have ever visited the British Geological Survey, Environment Science Centre in Nottingham!)

After the Event

It is safe to say that we had a great day out, the sun was shining, the company hog roast was roasting alongside the drinks and cakes that we had to offer to ensure that we showcased how we could work with different types of information and add value to it by analysing and displaying it in different ways.

We did have some people interested to see that Fisher German marquee was very well attended by clients, rural colleagues and new faces. As for our GIS stand, we did have a few visitors, but not as many as we hoped. We watched expectantly each time the marquee opposite emptied hoping someone might have picked up our flyer and head over to see us. We did have some people interested to see that Fisher German had a GIS team and a few that watched us pan around our maps of their land, though they were mostly interested in the novelty of seeing their land on a screen.

In conclusion, our first time in attendance was always going to be a learning curve for us. We came away with some new ideas for things to work on and realised that in order to attract potential clients we needed to be more visible, not just externally but also within our own company. Plans are already underway for next year...

Look out cereals, we will be back and we will be armed with increased knowledge and more visibility; attendees will struggle to resist visiting us!

By Joanne Ziemsels, Associate GIS Technician
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The well attended Fisher German marquee.

The desk where attendees could use the interactive map.
Bedrock Geology of the UK and Ireland

The British Geological Survey (BGS) has launched a new map showing bedrock geology of the United Kingdom and Ireland at 1:1,250,000 scale. BGS already publishes a wide range of geological maps, but there was a noticeable gap in the product range. Geology has shaped our landscape and has played an important role in our industrial past. The identification of natural resources and the sustainable use of them is an important lesson, and so there was clear need for a new geological map to satisfy the needs of teachers in educating geology especially to satisfy the needs of teachers in educating geology.

Designing

Most geological maps require good topography and for this map the excellent Ordnance Survey (OS) MiniScale OpenData was used. This proved to be great, as features that would work well on the map were easily picked out and styled. Results from the consultation process showed that a limited number of places should be included and there was no need to show roads, contrary to the 25 miles to one-inch map. The geologists were keen to see that the river network plus some other significant water features were displayed. Ordnance Survey styles the MiniScale data clearly and this was replicated with the Irish topographic data, sourced from EuroGeographics. We were able to ensure consistency across the map.

A digital terrain model (DTM) was incorporated to accentuate how the ground is shaped and how this reflects the geology underneath. The Copernicus DTM enhances the geographical data for Great Britain and Northern Ireland. The 1:500,000 scale GSI data for the Republic of Ireland was agreed that three cross sections should be used showing geology across England, a section zig-zagging across the complex geology of Scotland, and one section across Ireland. These had to reflect the geology represented on the map face, but at the same time display what is underground using an appropriate vertical exaggeration to amplify the geological units present, making them visible but avoiding distorting them beyond their realistic scale.

Another new addition is the geological sites of interest, where clear examples of geological features have been identified and, perhaps a pointer to specific geological detail could be arranged.

Production

Once we were happy with the map we took it to Dennis Maps, Frimley, to offer a sneak peek preview at the new map and it has proved to be the most liked and retweeted post BGS has ever made!

The Bedrock Geology Map of the United Kingdom and Ireland (1:1,250,000) is available to purchase at £5.95 (+p&p) from the BGS online bookshop (https://shop.bgs.ac.uk/Bookshop).

By Henry Holbrook,
Henry is a Graphic Cartographer at the British Geological Survey (BGS). He specialises in communicating science using graphic and illustrative techniques. His involvement with cartography at BGS began in 2006. Current research interests include the use of infographics and the visualisation of uncertainty in a geological context. Email: hholbo@bgs.ac.uk Website: www.bgs.ac.uk
In June, to mark the Bard’s 400th anniversary, we published Jane Tomlinson’s colourful schematic map of where Shakespeare’s plays took place, which covered from Scotland (Macbeth) and Denmark (Hamlet) in the North, to Egypt (Anthony & Cleopatra) in the East. In between the map touched on plays set in the Mediterranean (The Tempest). The map touched on plays set in places which covered from Scotland to the British Isles. Amongst the many tribulations which assailed the world last year was the Zika virus. It disrupted the Olympics in Brazil and caused widespread worry for women in pregnancy. Drawing on US Census data, Esri’s map tracked the spread of the virus across the states and counties of mainland US to help health agencies target response.

In the August issue, Mesayo Moshi’s topical map of the islands of Remain in the Brexit Sea revealed how the UK voted in an intriguing way by showing those for Remain as islands. Unsurprisingly Scotland suddenly dominated Britain’s topography.

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L ast year GIS Professional ran a series under the title Big Map Feature. We begin in February with Dr Michael Iazzì’s map of how oil in the Middle East is distributed according to Islam’s ancient schism between Sunni and Shia.

The website Brilliant Maps (www.brilliantmaps.com) has published many interesting maps and far more than we can cover. Their 16 best maps for 2016 are worth mentioning however (http://brilliantmaps.com/best-maps-of-2016). They are:

- In top spot was the not-too-snappily titled If “Did Not Vote” Had Been A Candidate In The 2016 US Presidential Election, It Would Have Won By A Landslide. A surprising choice perhaps, given that most informed people on both sides of the Atlantic are aware that voting turnouts have been falling in the US and the UK for several decades; the recent referendum in the UK may have begun to stop the slide with a 72% turnout against 66% for the previous year’s general election.

- In second place was England vs Great Britain vs United Kingdom Explained. Anna Debenham’s deceptively simple map explained to a confused world beyond these isles the difference between Britain, the UK and the British Isles (also known as the British-Irish Isles).

- In third place, The Genetic Map Of Europe showed through a scatter of colourful mini pie charts how our origins are spread. The range is quite remarkable with the outer edges of the continent - UK and Ireland - showing (unsurprisingly) the least genetic diversity.

- Amongst the 16 maps there were several tongue-in-cheek and downright cynical cartographic teasers. European Food According to Italians tracked through radii from “Real Food” which barely went beyond Italy’s borders to “Toxic” at the outer fringes of the British Isles and Iceland. The map was divided by two meridians: muddy coffee in the east and overcooked pasta in the west. Lines of longitude defined the Supersized Coffee parallel, the Culinary Despair Line and the San Umberto Noble Line (a reference to a pioneering Italian aviator and polar explorer). The map comes from the unashamedly named Atlas of Prejudice by Yaniko Tsvetkov.

- Game of Thrones’ Westeros is Really Just Britain & An Inverted Ireland paid homage to the popular TV series. The question is: Which European Country Has The Lowest Drinking Age? revealed that in Germany, Belgium, Luxembourg, Austria, Switzerland and Portugal you can get plastered at 16 but only on beer and wine; you’ll have to wait another couple of years before hitting the hard stuff. For most of the rest, 18 was the legal age though for the abestosium (7) Icelandics it’s 20.

- How North Londoners View The Rest Of The UK Or Why The Rest Of The UK Has London Through Reddit.com’s Mapponn site charted a range of tropes and stereotypes from a line below the River Thames demarcated as “The London” and the south east generally being defined as Watford shoppers (a more upmarket supermarket chain) to most of the rest of the country being defined in generally unprintable descriptions apart from the Lake District, which this writer concurs with as “Miserable walking holidays”. (I have never understood why our TV weather forecasters have a homing instinct for this remote and sparsely populated area in their forecasts – the weather is easily discerned from the region’s title).

- In Holland Is Not A Dense Country. But An Empty City compares Europe’s most densely populated country to the world’s big cities and urban conurbations. Maybe the Dutch have got it right: don’t get too hung up about green belts. Other entries cover the world’s fastest growing religions, the Pan American Highway and the 2016 US presidential election by county and An Incredibly Detailed Map of the Roman Empire At Its Height in 211AD. Check it out.

To enjoy all these and more maps go to www.brilliantmaps.com

By Stephen Booth

First published in GIS Professional February 2017. For more information go to www.gis-professional.com

A year of brilliant maps

As I write this there is only a couple of weeks to go to the International Cartographic Conference. One of the features of the conference for many years has been an exhibition of maps submitted by children from around the world. This is organised by the Cartography and Children Commission and is known as the Petchenik Children’s Map Competition, named in commemoration of Barbara Bartz Petchenik, a former vice-president of the ICA, who devoted much of her career to producing educational maps and atlases. Each ICA member country is encouraged to run a local competition every two years and submit the best entries to the international competition. The theme of this year’s completion is ‘We love maps’ which goes on a UK more than any previous competitions which have tended to focus on world maps.

UK experience with our local competition has been mixed, and in the time I have been involved, entries have varied from zero to well over 60. In 2016, we had some success with occasional winners in the international competition and these maps have featured in the books published by Esri celebrating the competition. This year saw a modest number of submissions, some from schools plus a few individual entries from which five have been selected to represent the four age categories. We had no entries in the under 6 category. In the 6-8 category we submitted 2 entries, by Richard Sawyer from Andover and Jessica Stevens from Jedburgh. In the 9-12 category we selected maps by Jennifer Brown and Erin Mcnicht, both of Stratford School in Aberdeenshire. In the over 12 category we have a jointly produced map by Katie Billinghurst, Lauren Spack and Kay Brown from Beddau in Wales.

Those forwarded to the international competition will receive a certificate from the BCS and a prize in the form of a map or atlas suitable for the age group. If you would be interested in helping to organise the competition in 2019 or sponsorship (such as offering prizes) please do get in touch.

On other matters, the UK Cartographic Committee had its annual meeting at the end of May with 8 members present. Mr Jim Goldsmith has been invited to join the committee to represent the Ordinance Survey, replacing Chris Wesson who has now left OS. Thanks to Chris for his input in recent years. There was some concern expressed that we had received no response from UKHO, DCI or LPSNI. This is of concern as the aim of the committee is to seek input from all the major government mapping agencies, commercial cartography and academia, so the secretary will follow up on this, either to confirm existing representations remain appropriate or to seek nominations for their replacement.

One of the main items of UKCC business was discussion of the ICA Executive’s proposed changes to the statutes and bi-laws to be voted on at a special General Assembly in Washington. I reported on the proposals in my previous column, and I urge all members of the UKCC to support all changes proposed by the Executive. Key changes focus on voting rights, the number of positions and what is required for motions to be accepted.

There was some discussion about the quadrennial national report to ICA, next due in 2019. I am pleased to say that despite the reservations of the previous editor of the Cartographic Journal, the committee were very much of the view that this is part of the national record of cartography in the UK and should continue to be published as a special issue of the Journal. The presence of the current Editor at the meeting was very helpful in this regard.

It will be interesting to see what the overall UK contribution to the International Cartographic Conference ends up being this time around. In Rio, we had a smaller showing than many of our European comparators. Washington is perhaps an easier place to get to, but no less expensive than Rio. Perhaps more than anything it reflects the low status of cartography in UK higher education these days, but hopefully I can report positively from Washington in my next column.

David Forrest,
Chair, UK Cartography Committee
3D Printing - a new Cartographic tool

Cartography has from its earliest times been a two dimensional representation. The map’s purpose is an educational tool storing and passing on information to the viewer. The understanding of the representation is dependent on the skill of the cartographer and the experience of the viewer. One of the first cognitive hurdles on reviewing a map is visualising the terrain. The brain has evolved over millions of years to understand things in three dimensions. Our language also reflects the three dimensional tactile nature of cognition. The verb to grasp is often used when understanding a concept, but it is normally used for an action on a tangible solid object. This concept that the brain most easily understands three dimensional images has been recognised by model makers for centuries, converting terrain maps into models, which although a labour intensive process, removes a major cognition process for the observer trying to visualise contours as terrain, and allows the brain to focus on processing the more subtle information displayed.

As described in Nicholas’s articles on 3D Data, (the second of which is published in this issue), 3D data is all around us, the acquisition and storage of this information has expanded exponentially in the last 10 years as data visualisation software has developed and storage costs have been reduced. The cartographer of old is evolving into a data processing expert, converting the 3D formats into virtual reality, within the workstation environment. The comprehension of the images is dependent on the experience of the viewer. For the layman and other stakeholders an option exists to bring the data out from the computer into reality by using another rapidly expanding technology, 3D printing.

3D printing, or additive manufacture, started in the 1980s, the premise being simple, to print layers in silica powder and binder using ink-jet technology to create a 3D model. It has now grown to a multi-billion pound industry and is still evolving rapidly. Models can be made from aluminium, stainless steel, titanium, plastic, Keval, fibre glass, ceramic, and many other materials. The process is steadily infiltrating all aspects of our lives. Examples of 3D printing can be seen in a smile; many crowns and orthodontic devices are now printed. As an aid to building design, 3D printing of the Victoria underground station refurbishment for Transport for London allows the complex system of tunnels, escalators, utilities etc to be visualised and shared with all the stakeholders in the project. Have you been to the cinema recently? Most of the props for “Ghost in the Shell”, starring Scarlett Johansson were printed. Taken a long-haul flight? The Airbus A350 has more than 1000 printed parts.

Maps

The model maker is using this new technology to make faster and more accurate models. A 3D terrain map is in an ideal format for printing, with the latest technology it is possible to print any attribute onto the surface. Figure 1 shows a 3D map of the island of Madeira. The colour attribute is taken from a satellite image. The main roads together with the “levadas” are also printed. Levadas are unique to Madeira and describe the irrigation channels which bring water from the west and northwest of the island to the drier southeast. Building of levadas started in the 16th century and they are still in use today. Mountain walks following the levadas are a key tourist attraction, as they provide a path offering fantastic views and yet are not strenuous, as the channels, similarly to rivers, are constrained by the topography.

Educational tools

Defensive positions are chosen with great care, how often do we see castles which dominate the landscape, designed not only to be impregnable but also to control access and trade routes. The museum at Naters in the Valais region of Switzerland wanted to show how the fortifications in the area were designed to make use of the terrain to produce an interlinked defence network. They commissioned a 3D model showing the major road networks and defence locations on a scale of 1:45000 as shown in figure 2.

Visualisation aids

On a more commercial scale 3D printing is taking GIS data to help in, for example, wind farm design, Figure 2: Fortifications in the Valais region of Switzerland. 1:45000 coordinates on a 10m x 10m x 1m grid. A typical printer can print voxels, which are similar to pixels, except in 3 dimensions on a 0.1mm x 0.1mm x 0.1mm grid. Therefore, to preserve the integrity of the data the minimum scale to use for this particular dataset would be 1:10000 for the horizontal scale and 1:1000 for the vertical scale.

How simple is it?

Would you like a 3D representation of your local area, or anywhere else in the world? A company called Shapework who specialise in converting terrain data into 3D models allows you to select on a 2D map any location on earth and within five minutes a fully 3D rendered image will be available for review on your computer. On top of this can be projected a satellite image. Figure 3 shows an example of Loch Linnhe and Fort William with Aonach Mor, Ben Nevis and the Mamores in the background. This process is free of charge allowing exploration of any area of interest.

By Lawrence Pidssley, Prospect to Reality Manager lawrence.pidssley@gmail.com www.shapework.com

Terrain Mapping

The death of cartography was foretold, satellite navigation systems and walking apps would result in the demise of general cartography and yet there is a constant demand for the enjoyment maps bring in planning an excursion or a walk in the country.

Nicholas Duggan’s articles describe how the cartographer’s world is changing to a 3D virtual environment, yet the viewer is still looking at a flat screen, resulting in a feeling of incompleteness. 3D printing easily converts the virtual image into a confidence building tangible representation.

Technology has bounded ahead leaving the three dimensional human brain struggling to catch up. I have given some examples of how technology is now helping mere mortals to keep up. The next great leap forward is expected to be in Artificial intelligence (AI), it will be interesting to see what processes evolve to keep the stakeholders (you and me) connected.

I will leave you with a quote from Steve Jobs, The Exclusive Biography by Walter Isaacson. “...he wants to see and feel a model. He’s right. I get surprised when we make a model and then realise it’s rubbish, even though based on the CAD (computer aided design) renderings it looked great. He loves coming in here because it’s calm and gentle. It’s a paradise if you’re a visual person.”
May I take this opportunity to welcome our new corporate members.

The BCS has participated in numerous conferences over the last couple of months. I know many of you dropped by our stand at GEO Business 2017 and we also had very successful stands at the ESRI UK Conference and Geographical Association Conference in Guildford. Restless Earth also ran a couple of workshops at the GA Conference that were very well received.

We are always looking to expand the programme of exciting and varied events. Please let us know if you can provide a venue for an event, such as an evening talk, a Special Interest Group (SIG) workshop or a Better Mapping seminar. Your ideas are always welcome.

The combined BCS- SoC Conference is in September. A big thank you to our sponsors, your support is greatly appreciated and I look forward to seeing you in Durham for an exciting programme of talks, workshops and much more.

By Alan Grimwade,
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Corporate Report

We are proud to announce the publication of the second edition of our hugely successful guide to producing professional maps.

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