

# From Pharaohs to geoinformatics: A working week in Cairo



Jim Smith FlnstCES with input from Alan Wright FlnstCES, Andrew Morley FlnstCES, Gethin Roberts MlnstCES and Ed Danson FlnstCES



Headless statues at Karnak. A warning of what would happen if Jim didn't get his report in to CES on time.

**L**AST year, the working week was held in Athens in May. This year, the annual gathering of FIG was held jointly in Cairo with the 8th International Conference on Global Spatial Data Infrastructure (GSDI-8). From 16-21 April, several hundred surveyors from all corners of the world gathered to participate in the meeting. As usual, both of the UK members of FIG, ICES and RICS, were present. The ICES delegates were Andrew Morley (Commission 10), Gethin Roberts (Commission 6), Ed Danson (Commission 4), Jim Smith (History of Surveying) and Alan Wright. Again, as last year, Andrew, Gethin and Jim presented papers and chaired sessions.

Dr Ismail Serageldin, Director of the new library at Alexandria, gave the first plenary paper. This was a brilliant and inspiring

presentation; looking into the future but also reminding us of the exciting possibilities already with us. The second presentation was by Jack Dangermond, Director of the Environmental Systems Research Institute (ESRI), and the third was by Preetha Pulusani, Director of Intergraph Mapping and Geospatial Solutions. These three papers were excellent and set the tone for the conference.

There were 51 technical sessions and 3 pre-conference workshops. Some 330 papers were listed, covering a vast array of survey topics. Naturally, delegates had to be very selective in their choice of which sessions to attend and often found they had clashes of interest in different parallel sessions. However, as always, one of the prime advantages of such gatherings was meeting old friends and making new contacts in one's area of interest. Many very useful leads arise from such casual and unexpected contacts and often lead to future co-operations. The papers can be seen on the FIG website: [www.fig.net/cairo](http://www.fig.net/cairo) and also there is a CD at ICES HQ in Sale with most of the papers on it.

An exhibition provided the valuable opportunity for practitioners to keep up to date with the changes in techniques and instrumentation, and for long retired delegates to study the changes with awe!

## Papers and topics

Obviously, with over 300 papers, the range of topics was wide. However the following topics were prominent:

- **Marketing the profession**

Surveyors have always been bad at this and it seems that there is still much room for improvement.

- **SDI, GPS and tracking systems**

These were very prominent and might be considered as the modern workhorses. Their sophistication over previous techniques seems to lead to an endless stream of papers highlighting the areas that can cause problems with accuracy. Pressing the buttons is the simple part; appreciating all the possible sources of error is quite another.

- **Establishing national cadastres**

This is very much a developing area with the modern approach to positioning assisting in the rapid delineation of property boundaries. But, again, accuracy is a prominent aspect that has to be set against speed.

- **Unified reference system for Africa**

Africa consists of some 40 countries and no doubt 40 different survey departments and almost as many reference systems. It makes sense to endeavour to derive a unified system, but this requires much patience and scientific know-how.

- **Transformations**

A range of transformations are required to convert GPS datum into the variety of existing coordinate systems. Once again, the accuracy of such a process is a very important element.

- **Education**

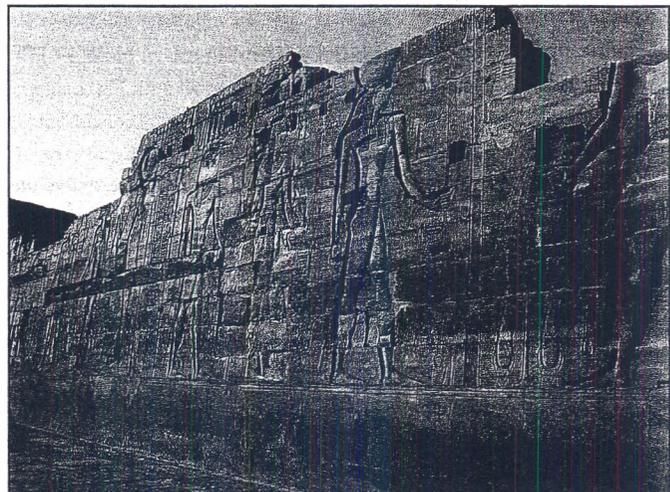
As highlighted elsewhere in this report, there are now some countries where land surveying, geomatics and GIS are having great difficulty staying alive. How this can be, when those countries all have a considerable requirement for qualified survey staff requires serious investigation. Is it that the era of surveyors operating rather as explorers has now gone and what was a traditional healthy outdoor profession has now become to be seen as simply a button pushing operation?

- **Vertical datums**

Height information is now becoming more and more critical and the geoid is a surface that requires increasing study. One paper discussed moving towards a centimetre geoid in Dubai. A standard vertical datum is becoming important in hydrographic areas.

- **Laser scanning in engineering surveys**

This technique has found increasing applications.



Making the most of a working week in Egypt. One of the stunning ancient carvings at Kom Ombo, City of Gold, still visible today.

Triangulation point "01" (lat 29° 51' 33", long 31° 20' 31") is the terminal station of a chain of triangles measured along the 30th meridian. This chain extends from Cape Town in South Africa to Cairo in Egypt.

The purpose of the measurements was to determine the size and shape of the Earth. The project was initiated by David Gill in South Africa in 1879 and the final measurements were completed in Sudan in 1954.

The arc is branching from Cairo to the east and west. The branch to the west was used for the connection across the Mediterranean Sea to Crete Island.

This plaque was unveiled during FIG ww by Eng. M. Hisham Nasr, the chairman of the Egyptian Survey Authority in April 2005.

#### • Spatial information systems (SIS)

These were discussed in both a regional and an international context. They were particularly referred to in the context of infrastructure management.

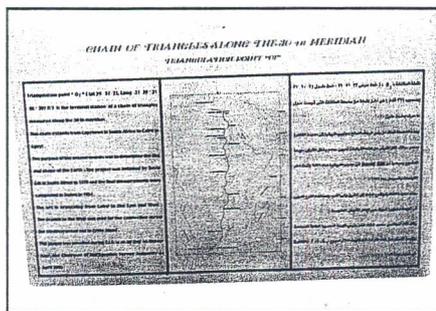
#### • Deformation measurements

More and more surveying techniques are being used in earthquake areas, landslide and similar disaster zones, both for predictions and for the measurement of actual movements. Dams and bridge deformation received particular mention.

#### President's meeting

The president's meeting was held on the last day, prior to the 2nd general assembly and the closure. It gave all member organisations the opportunity to comment on the working week and on the progress of FIG. The main comments this year were:

- The need to involve more students and young people in FIG.
- It would be helpful to have a list of delegates available early on during the week.
- Each day, the list of actual papers to be presented on that day should be updated.
- Several sessions clashed so that papers of interest had to be missed.
- More papers from practitioners would be of interest rather than many of research or academic background.
- More papers needed from developing countries.
- Help is needed in training in many of the developing countries.
- More professional and political papers needed rather than technical papers.
- Two or three comments were made on the need to associate surveyors with information technology rather than with construction or civil engineering.
- French translation would be welcome.



The new plaque to mark the arc of the 30th meridian and the inscription (!). [Jim Smith has written a letter to the editor regarding the wording on the plaque, published in this issue. Ed.]

- Coffee breaks and lunches should be held in the exhibition area to give more time to see the exhibition and to encourage more exhibitors.
- Next year, in Munich, each member organisation will be asked to give a report on recent activities.

#### International Institution for the History of Surveying and Measurement

JR Smith

There was a one-day workshop held at the beginning of the conference. This workshop had three sessions with eight papers. The topics covered were:

- History of technology with presentations on survey art
- The history of angle measurement
- Alexandria — the native town of the natural sciences
- Ancient Egypt with presentations on four surveyors of the Gods [Not a bad job title. Ed.]
- Surveying in ancient Egypt
- The Belgian input to the arc of the 30th meridian

The last session had two papers on the arc of the 30th meridian; one discussing that section of it north of the equator and the other chronicling the Cape Geodetic Standards and their impact on Africa. Attendance at these papers varied from 25-80 during the day.

A related visit was arranged during the week for the unveiling of a plaque on one of the northern stations of the arc of the 30th meridian to the south east of Cairo. This was to complement the unveiling ceremony last year on the southernmost station at Buffelsfontein in South Africa. Both events were to celebrate the 125th anniversary of when the arc was first mooted by David Gill in 1879, and the 50th anniversary of its completion by the US Army Map Service in 1954.

#### Commission 6: Engineering Surveys

GW Roberts

Gethin Roberts, a senior lecturer at Nottingham University's Institute of

Engineering Surveying and Space Geodesy (IESSG) attended the working week as the UK's Commission 6 delegate, through the ICES. In addition to this, Gethin is chair of working group 6.4 'Engineering Surveys for Construction Works and Structural Engineering' and taskforce 6.1.1 'Measurements and Analysis of Cyclic Deformations and Structural Vibrations' both within Commission 6. Three specific sessions were organised for the working week, these being; new measurement technologies and their application to archaeological and engineering surveys, using laser scanning in engineering surveys and deformation measurement and analysis

At the laser scanning session, Gethin presented the paper 'Deformation monitoring and analysis of structures using laser scanners' written by himself and Laura Hirst, also from Nottingham University. The paper details some preliminary research the IESSG has been carrying out in this area. The paper will be published in a near future edition of CES, but basically illustrates and discusses a variety of trials conducted to assess the application and possible precision obtained by such a laser scanner as the Leica HDS3000.

There were five other papers presented at the session discussing various applications and techniques using laser scanning technology. Even though this technology is relatively new, its potential applications are very exciting and even though such equipment is costly, this is bound to come down making such a useful tool affordable in the future.

Further to this session, Gethin was co-chair in the session on deformation monitoring and analysis, where six papers and four posters were presented. This session was organised through working group 6.1, 'Deformation monitoring and analysis', which is a very active working group and holds meetings every two years. The next meeting is in Baden, Austria, 22-24 May 2006. Further details will be available soon on FIG's website, but Gethin can be contacted for more information about this group. WG6.1 meetings are well attended and present a variety of practical techniques and ideas.

The session on new measurement technologies and their application to archaeological and engineering surveys was jointly organised by commissions 6 and 5, and detailed a variety of techniques to aid the accurate survey of archaeological sites and engineering

surveys. In addition to Commission 6 activities, Commission 5 'Positioning and Measurement' held seven sessions on:

- GNSS I
- GNSS II
- Reference frames
- The state of the art in positioning and measurement of SDI
- New measurement technology and its application to archaeological and engineering surveys
- Remote sensing and photogrammetry
- Vertical reference frame

These sessions were also of interest to engineering surveyors.

Commission 6 has the following meetings planned, in addition to the working weeks and congress: From 3-5 October in Vienna, Austria, the 7th International Conference on Optical 3D Measurement Techniques. Co-sponsored by FIG Commission 5 and Commission 6 WG 6.2 and WG 6.4, and from 22-24 May in Baden, Austria, the 12th International Symposium on Deformation Measurement and 3rd Symposium on Geodesy for Geotechnical and Structural Engineering. Organised by FIG WG 6.1 and IAG.

### Round table on surveying and GIS education in Africa

**Ed Danson**

President Holger Magel opened the meeting and welcomed the participants

to this very important round table on surveying education in Africa and Arab countries. 30 people representing 16 countries were present at the meeting.

Professor Magel noted that FIG is very concerned about the problems faced by African, and some Arab countries, due to lack of students and the closing down of programmes.

The participants openly expressed their concerns and discussed the problems they face. After lively debate, and some harrowing accounts of the difficulties faced by surveyors in sub-Saharan Africa, President Magel summed up, concluding that in northern Africa, Tanzania and Kenya the situation is fairly good as it is in west Africa. Central Africa and southern Africa he described as "very problematic," while the educational situation in the Middle East was generally quite good.

To better understand the problems of central and southern Africa, a full day Commission 2 seminar will be organised at the FIG regional conference in Ghana next March.



FIG president, Holger Magel, arranging the fourth regional conference to be held in Ghana with Dr Ben Kwesi Prah, President of the GhIS (above) and enjoying the Egyptian Gala Evening with one of the opening speakers, Jack Dangermond, Director of ESRI (right).



### Commission 10: Construction Economics and Management

**AW Morley**

Andrew Morley attended the working week as chair-elect of Commission 10 and, in Phil Shearer's absence, as chairman. It was a good week with some interesting papers, presentations and useful meetings.

One meeting was with the delegation from the Ghanaian LOC (local organising committee) for the regional conference to be held in Accra, 8-11 March 2006. Andrew intends to 'work on' this conference to achieve a respectable Commission 10 programme of papers at the conference. Ghana and some of its near neighbours (the 'Commonwealth' connection) have active QS institutions and it is hoped to engender their participation for both the conference and the 2006-2010 work plan.

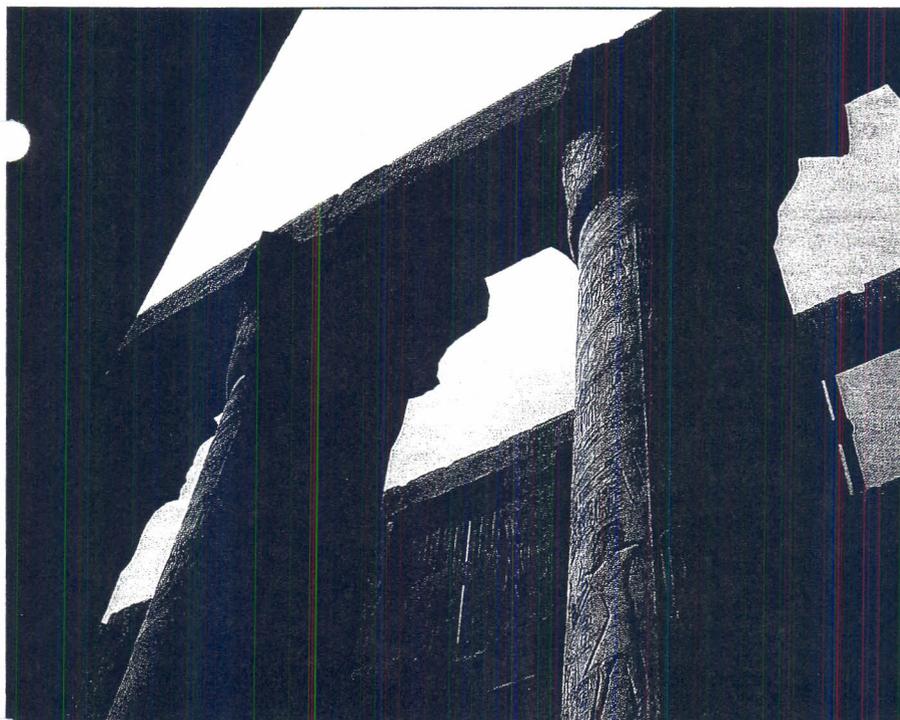
There is also a regional conference in Havana, Cuba, from 26-29 September this year. It is unsure whether or not Commission 10 can achieve a 'showing' at this one, but this will be addressed in the coming weeks.

In May 2006 there is a meeting of all chairs-elect in Denmark to finalise the 2006-2010 work plans for adoption by the Munich Congress. CMPC members may wish to review the Commission 10 web pages: [www.fig.net/comm/wp10](http://www.fig.net/comm/wp10) for the current work plan and to make suggestions for consideration for the 2006-2010 plan.

The programme of future working weeks is:

- 2006: Munich, 8-13 October (and quadrennial congress)
- 2007: Hong Kong, 12-17 May
- 2008: Stockholm, 14-19 June
- 2009: Israel
- 2010: Sydney (and quadrennial congress)

See [w: www.fig.net](http://www.fig.net) for full conference proceedings and more images of Egypt. Thanks to Alan Wright for his excellent photography.



The complex of temples at Karnak were built over 1300 years ago and are believed to date back as far as 1991BC.