Compte – Rendu of the ISPRS WG VI/3 High Level Tutorial in Bandung

Fahmi Amhar, Tutorial Chairperson

In February 1997, during the business session of the first ISPRS WG Meeting, in Padua (Italy), the ISPRS WG VI/3 Chairperson, with the agreement of the ISPRS Working Group, proposed to the past President of the ISPRS TC VI, Dr. Klaas Villanueva, a High Level Tutorial. It should be held in Bandung (Indonesia), in the two days immediately before the ISPRS TC VI Mid – Term Symposium, originally scheduled in August 1998.
The spirit of this tutorial was international cooperation and transfer usefully of mature and innovative technologies, with the positive aim of their peaceful use. Indeed the market, as well as some academic affairs, are able to transfer technologies, but often in conflict with the spirit of the international cooperation which implies co-generation of scientists, technicians and users, in a peaceful world, independently on their country of origin.
Furthermore during the preparation of this tutorial, it was easy to recognize that Prof. Shunji Murai, of both the University of Tokyo and the Asian Institute of Technology in Bangkok, could play an important role, in its promotion. Therefore he was kindly invited to be the Convenor of the tutorial itself, helping in both the selection of topics and lecturers. The preliminary program of this tutorial looked very interesting.

Unfortunately unpredictable and undesirable difficulties and troubles, in Indonesia, imposed a delay of eight months, to the ISPRS TC VI Mid – Term Symposium. It imposed some modification in the program of the tutorial, because some lecturers had evident conflicts of dates, due to the spring semester (in Europe and North America) and some other previously scheduled meetings. Anyway a new satisfactory program was set up.
Moreover, in this framework, also the ISPRS TC VI President changed. Therefore the ISPRS Council appointed Dr. Teuku Lukman Aziz, as its successor. The ISPRS WG VI/3 Chairperson wrote immediately to the new President, confirming the great interest in the preparation of the High Level Tutorial, and he agreed with this proposal, putting the tutorial in the preliminary program of the ISPRS TC VI Mid – Term Symposium.
Consequentially a circular letter of the working group was spread out to around 600 people (around 100 only, among them, in Italy), kindly inviting all people to do all the best to attend both the Mid – Term Symposium and the High Level Tutorial. The spirit of this invitation was to urge people, both contributing directly with a high level participation and spreading out the information, as much as possible, increasing the success of this event.

The High Level Tutorial was held, in the two mornings on Tuesday and Wednesday, April 12 – 13, 1999, in Bandung (Indonesia), at the Institute of Technology Bandung (ITB). Between forty and fifty people, mostly young, from Indonesia and few other neighbor countries attended it. The tutorial was opened by the ISPRS TC VI President, Dr. Teuku Lukman Aziz and chaired, in the two days, by Dr. Fahmi Amhar and Purbandomo respectively.
Bandung is a modern city, of medium size, in a hilly area surrounded by mountains, in the center of Java, the most important island of Indonesia. The equatorial position of Java gives to the landscape and panorama the evidence of green of the vegetation. Flowers, gardens and some ancient buildings make nice the city, even if modern. Moreover the relative altitude offers a comfortable weather, absolutely not humid, but for some big sudden showers.
The cultural climate is interesting too. Indonesia, especially Java, is a country of long history and tradition. Starting from an interesting popular theater and arriving to a remarkable good cuisine, one can say that the cultural climate is of high level, because it is easy to recognize that popular culture is also the base for the high one.

The first lecture was given by Prof. Alessandro Carosio (carosio@geod.ethz.ch), of the IGP of the ETH – Zurich (Switzerland). It dealt with Map Based Automatic Reconstruction and Visualization of Country – Wide Landscape Models using Techniques of Artificial Intelligence. The principal topics of this lecture were data – map acquisition, 3D data modeling, AI inference rules, 3D data visualization, GIS operability.
The second lecture was given by Prof. Luigi Mussio (luigi@ipmtf4.topo.polimi.it), of the DIIAR of the Polytechnic of Milan (Italy). It dealt with Mathematical Aspects of Spatially Referenced Data Analysis. The principal topics of this lecture were statistics, spatial analysis, temporal aspects, integrated approach, discrete mathematics, texture and pattern recognition, and parsers, furnishing a suitable mixture of theory and practice.
At the end of the two lectures, in the afternoon and in the following day, some students caught the lecturers, with the aim to discuss about specific problems of their interest. Therefore the use of a GIS in the planning of the mobile – telephone antennas and the application of aerial photogrammetry to model the terrain deformation after a landslide were taken into account, deeply discussed and brought to practical and useful suggestions.

The following three lectures were given by three Indonesian scientists: the first one concluded the morning, whilst the remaining two ones opened the next day. Dr. Bambang Setyadij (setyadji@gd.itb.ac.id), of the Department of Geodetic Engineering of ITB in Bandung (Indonesia), gave a lecture on the Role of GPS for Supporting the Information Technology Back – tone. The keywords of his lecture were obviously devoted to GPS, DGPS and GIS.
Dr. Fahmi Amhar (famhar@hotmail.com), of the National Mapping Center in Bakosurtanal (Indonesia), gave a lecture on 3D Building Model in Conjunction with a Conventional DTM for a True Orthophoto Generation. The main topics of his lecture were displacements and double mapping in conventional orthophoto, fusion approach to build 3D infrastructure, and integrated visibility analysis in true orthophoto generation.
Finally Dr. Riadika Mastra (mastra@indo.net.id), the ISPRS TC VI Secretary for the period 1996 - 2000, of the National Mapping Center in Bakosurtanal (Indonesia), gave a lecture on Geo – information Infrastructure for Satellite – Data in Indonesia. The keywords of his lecture, especially focussed on Indonesia, were telecommunication, networks, transport protocols, databases, remote procedures, metadata, inter – operability.

The last lecture was very well given by Prof. Shunji Murai (chiwa@shunji.iis.u-tokyo.ac.jp, murai@aic.ac.th), of both the University of Tokyo (Japan) and the Asian Institute of Technology in Bangkok (Thailand). It dealt with Global Geo – engineering Approach using Remote Sensing and GIS: Prediction of Global Deforestation from NOAA AVHRR and Geo – spatial Data.
The principal topics of this lecture were remote sensing, the growth of the population, the deforestation and other geo – disasters, a very well done experiment of correlation of the

TIB
TIB Hannover

two dangerous phenomena by using regression methods and robust procedures. At the end of his lecture, he sincerely hoped better conditions, in the future, under a true international consensus.
Finally according to his role of Convenor of the High Level Tutorial, he apologized Prof. Gottfried Konecny, recently retired from the TU of Hannover (Germany), because of his impossibility to attend the tutorial and to give a lecture. The ISPRS WG VI/3 Chairperson fully agreed with him, recalling the important contribution given by Prof. Gottfried Konecny both to the ISPRS and the theme on mapping from space.

Few words may be added to present a summary of the first and last lectures, because of their relevance and the strong figure of the lecturers. Notice that this summary has been made by the writer of the compte – rendu only, therefore the opinion or statements contained in it don't involve the lecturers themselves. The aim is to complete, as much as possible, this compte – rendu, in order to prove the validity of the tutorial and the benefits achieved.
Prof. Alessandro Carosio showed how it is possible to extract from maps any kind of information, putting them on different layers of a GIS and/or LIS, according to a unsupervised, or only partially supervised, classification. The methodologies involved, in the automatic extraction, belong to the fields of both statistics and artificial intelligence. Furthermore special attention was paid to the actual and interesting problems of 3D data modeling and visualization.
The importance of this job is due to a very large amount of data which often are available today, in form of charts, and can be supplied as computer cartography, avoiding to operate manually or to proceed to new acquisition. It is obvious that, if the whole process is able to run, with a very high level of reliability (ranging from 95% to 98%), it can substitute, in the future, expensive acquisition techniques, with relatively low cost procedures.

Prof. Shunji Murai stressed a lot the linear relation between the growth of the population, in the different parts of the world, and the deforestation. There is a linear dependence (and the classical index, like the linear correlation coefficient, is unfortunately high enough) between the request of wood, in the developed countries, and the acquisition of it in the remaining part of the world, especially where the increasing of the population is remarkable.
The analysis, concerning the deforestation, was carried out, with particular care, starting from the processing and classification of images, taken by the remote sensing satellite NOAA AVHRR. Data, concerning the population, were acquired by geo – spatial data atlas, available on global statistics databases; the population growth was firstly analyzed by countries and successively reassembled by sub – continental regions.
The linear regression was performed using robust procedures, so that outliers (i.e. data with anomalous behavior) were eliminated, increasing the quality and the validity of the explanation itself. As said before, the lecturer, recognizing the difficulties to stop this market and the connected business, sincerely hoped better conditions, concerning the life quality in the underdeveloped countries too, under a true international consensus.

In the following paragraph, also the second lecture is briefly summarized. It involves some methodology problems in the field of the survey and mapping disciplines. Methodology is a longstanding theme which could sometimes appears boring and/or old – fashioned, but it furnishes practical instruments, capable to be applied in different times and at various situations.

The approximation theory, born in the field of the integrated geodesy (in its broadest sense) was presented applied to signal / image filtering, digital terrain / object modeling, deformation monitoring, etc. This approach is classical in the earth sciences and works very well, when models and data are clearly defined, by using an hybrid norm to solve generalized least squares and some other related techniques (e.g. covariance estimation, robust procedures).
On the contrary, data management and processing in the field of the information technology often works with undefined databases and quite poor models. Therefore an attempt, to get order in single experiments, showed to be recommendable. Actually the parsers are the most promising algorithms, able to do texture and pattern recognition problems (e.g. feature extraction and grouping, image understanding / object recognition, scene interpretation, sequence analysis).

The great quantities of presented materials could not be reported in details. Therefore only some general remarks on presentations and some highlights were given. However the topics, related to the lectures of this tutorial, are available in the international literature, mostly in the IAPRS, of the more recent years. Anyway the authors have the possibility to supply more information, in the spirit of international cooperation and technology transfer.
The interest, shown by the audience, to all the lectures was very, very high and interesting discussions were set up. Both the promotion of the growth of basic knowledge and its circulation, in the field of photogrammentry, remote sensing and spatial information sciences, and the collection of real examples of knowledge sharing and technology transfer, encouraging a peaceful use of mature and innovative technologies, obtained a full success.
The tutorial recognized as a bigger danger the restriction of the responsibility and participation to a few number of countries and/or groups. There are two possibilities to overcome these troubles: the foundation of democracy for an elite or to enlarge democracy and participation. The spirit of the international cooperation proved that only the second hypothesis is correct, able to build up a peaceful world and to put the whole humanity under satisfactory life condition.

TIB
TIB Hannover