

International Association of Geomorphologists

Association Internationale des Géomorphologues

IAG/AIG Newsletter No. 27 (1/2011)

From the Editor's Desk

Dear Geomorphologists

I thank you all for your kind help and co-operation in enabling me to publish the newsletter on time. I request that you continue this co-operation in order that future issues of the newsletter continue to be published on time.

Sunil Kumar De

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1. A Message of Sympathy and Support from IAG

On behalf of the International Association of Geomorphologists (IAG), I would like to offer our sincere condolences to all those that have suffered from natural disasters this year. The year 2011 has seen a series of natural events of unprecedented severity, resulting in tragedies that will have impacts lasting for decades. In a globalised world these events have had international ramifications. But they have also seen the good side of humanity emerge, where political and cultural differences are put aside as nations help nations.

Among the many events that have occurred, certain ones are fresh in our minds: the landslides of January in Serra do Mar, north of Rio de Janeiro, Brazil, where 900 people were killed and 20,000 left homeless. The vast floods causing deaths and \$A 30 billion destruction in central and southern Queensland, Australia, between December 2010 and January 2011. Soon after, Australia also had severe flooding in Victoria and then the category 5 tropical cyclone Yasi in North Queensland. In New Zealand, the 11 September 2010 destructive M7.1 Christchurch earthquake was followed on 22 February by a shallow 6.1 earthquake, accompanied by extensive liquefaction, killing166 and crippling much of Christchurch, New Zealand's second largest city. China, still suffering from the M 7.9 Sichuan earthquake of 2008 where 70,000 people were killed, experienced a M 5.8 earthquake on the 11 march, this year in Yingiang County, Yunnan, with 25 dead, 250 injured and 17,000 houses destroyed or damaged.

At the time of writing, a M 8.9 – 9.0 earthquake has taken place (11 March) in Northern Honshu, the largest on record in Japan. It has been accompanied by a 10m high Tsunami, in places travelling 10 km inland - the level of destruction and massive rescue efforts are currently focusing the world's attention. It is clear that there are huge losses and the death toll will be extremely high.

As Geomorphologists we are particularly concerned with these issues, as we believe our science has an important role to play in reducing the loss of life and economic impact from such events. Many of those in our Association work on issues that relate to these dangerous processes. The level of suffering that has taken place around the world as a result of these events will increase our resolve to serve society with our science. We offer our deepest heartfelt sympathy and solidarity to all those affected.

[Reproduced with permission of Prof Ken Gregory (Editor), Sage Handbook on Geomorphology (in press)]

Michael Crozier, President, IAG/AIG

2. Obituary

Stanley A. Schumm (February 22, 1927- April 10, 2011):

The passing of a brilliant mind and a rare human being Stan was born in Kearney, New Jersey; served in the US Navy during World War 2; received his BA in Geology from Upsala College, New Jersey and his Ph.D. in Geomorphology from Columbia University, New York. He was employed by the United States Geological Survey in the 1960s and into the 1970s and then moved on to Colorado State University where he spent 30 outstandingly productive years and established his reputation as one of the world's finest geomorphologists and global thinkers (see his citation as recipient of the IAG's Senior Fellowship in Tokyo, 2001 at www.geomorph.org).

Professor Schumm was honoured by the US National Academy of Science (G.K.Warren Prize), the American Geophysical Union (Horton Award), the Geological Society of America (Kirk Bryan Award), the International Association of Geomorphologists (Senior Fellow), the British Geomorphological Research Group (David Linton Award) and the Japanese Geomorphological Union (Life Fellow) for his seminal research and was cited as Outstanding Educator of America and received the Durrel Award of Colorado State University for his teaching excellence. His books "River Variability and Complexity", "To Interpret the Earth", "Active Tectonics and Alluvial Rivers", "Incised Channels", "Geomorphology" and his magisterial "The Fluvial System" have become standard references in his field.

I first met Stan in Aberystwyth in 1966 when my Ph.D. supervisor, Dick Chorley, brought him to inspect my field area in central Wales. The Schumm and Lichty American Journal of Science paper "Time, space and causality" had recently appeared and I was suitably nervous about what the already world famous geomorphologist might have to say. He quizzed me in the field on the spatial scale problems that I was facing, pointed out (starkly) the limitations of what I was trying to do but by the end of the day had only words of positive reinforcement and encouragement. He was a man of brilliance and a rare human being. The IAG was indeed honoured by his acceptance of its Senior Fellowship. His presence and his constantly renewed insights will be greatly missed by geomorphologists world-wide and most especially by fluvial geomorphologists.

Olav Slaymaker, IAG/AIG Senior Fellow

3. The 2011 Regional Conference of the International Association of Geomorphologists (IAG-2011), in Addis Ababa, Ethiopia, 18 - 22 February 2011

The 2011 Regional Conference of the International Association of Geomorphologists (IAG-2011) organized by the Ethiopian Association of Geomorphologists, was held on 18-22 February 2011 in Addis Ababa, Ethiopia at the Ghion Hotel. The Conference held under the theme "Geomorphology for human adaptation to changing tropical environments" has been a forum of fruitful deliberations which led to better understanding of the factors and mechanisms responsible for our changing environments, particularly tropical environments, and their implications to the development of human societies. The Conference was officially opened by his Excellency Ato Tolosa Shagi, State Minister of the Ministry of Mines of the Federal Democratic Republic of Ethiopia, and attended by official delegates including Prof. Mitiku Haile, President of the Mekele University, Prof. Masresha Fetene, Vice President for Research and Dean of the School of Graduate Studies of the Addis Ababa University, Prof. Michael Crozier, President of the International Association of Geomorphologists and most members of the Executive Committee of the IAG.

The conference has been attended by 151 participants from 30 countries representing 6 continents. 83 oral and 51 poster papers were presented under sub-themes ranging from Environmental Change and Human Impact to Planetary Geomorphology. Six keynote lectures on issues including the geomorphic evolution of the Nile; the research challenges for soil erosion and conservation in tropical environments; the drivers of landscape change during the present century; past, present and future environmental changes in Africa; the evidences of major changes in Earth's surface processes; variety in rift valleys and passive margins; and on the locational controls of landslides, by prominent

scholars in their respective fields. A lecture on the challenges and opportunities of international cooperation with African countries with the aim of enhancing scientific excellence through mobility and training was also delivered by an IAG representative.

The Conference was preceded by two Pre-Conference Excursions and one intensive course program for young geomorphologists. The Pre-Conference excursion to the Main Ethiopian Rift (MER) was conducted between 15 and 17 February 2011 and was attended by 40 participants. The main theme of the excursion was understanding the geological, tectonic and climatic evolution of the MER as well as understanding the current geomorphologic





processes as well as their implications to human adaptation. Participants were also able to visit the open air archaeological museum of Melka Kunture, the World Heritage site of Tiya as well as most of the rift lakes. The Pre-conference excursion to the Southern Afar Rift was conducted between 13 and 18 February 2011 and was attended by 36 participants. It was conducted with the theme of understanding the volcano-tectonic evolution of the Afar rift geomorphological and associated processes. The "Landmap Intensive Course on Landslide Mapping" was conducted in Dessie town, Northern Ethiopia between 14 and 18 February 2011 and was attended by thirteen young geomorphologists, six of whom were sponsored by the IAG. The Post-conference excursion to Northern Ethiopia (NEH) was conducted between

February 23 and March 2, 2011 under the general theme "Geomorphological hazards, land degradation and resilience in the northern Ethiopian highlands" and was attended by 50 participants. A wide range of themes including structural geomorphology of the plateau-rift margins and the marginal grabens, landslide and seismic hazards, repeated photography studies, hydro-geomorphology, land degradation and resilience, gully processes, catchment hydrology, land degradation and resilience, palaeo-climate archives (tufa dams, speleothems), geology and structural geomorphology of the highlands of Tigrai, and some aspects of geoarchaeology and military geomorphology, have been discussed during the excursion. Nine participants extended their excursion to the Danakil Depression between 1-4 March 2011 and nineteen other participants extended their excursion to the Simien Mountains, Lake Tana and Lalibela between 3-9 March 2011. One-day Mid-conference excursions to the Blue Nile Gorge, attended by 85 participants, and to Melka Kunture/Tiya attended by 15 participants were greatly appreciated by participants. All the excursions were successfully completed as per schedule.

The continued support we have received from many quarters helped the Organizers in planning, conducting and completing the conference and the excursions successfully. The financial, logistic and moral support of the following organizations has been crucial: the International Association of Geomorphologists (IAG) for giving Ethiopia the chance to organize its 2011 regional Conference and for its continued support including financial support, the Addis Ababa University, particularly the Research and Graduate Studies Office, the Department of Earth Sciences, and the Palaeoanthropology and Palaeoenvironment Program, the Mekele University, the University of Roma Tre, Italy, the Gent University, Belgium, the National Museum of Ethiopia, and the Ghion Hotel.

Asfawossen Asrat, Mohammed Umer, Francesco Dramis and Jan Nyssen

4. Geomorphology and Society

A defining trait of mankind is its thirst for knowledge and its ability to communicate and record its findings. Originally, those endeavours were directed at the day-to-day needs of survival - shelter, and the means to locate, gain, and protect resources; no doubt aspects of what we now know as geomorphology formed an important part of that accumulated knowledge. But the prosaic needs of survival, as today, were also accompanied by the bigger 'supernatural' questions on the origin of mankind and the origin of the earth its home. From the earliest times, gathering information about the terrain and its processes was an essential and integral part of social survival. As the ability to travel great distances and explore the world became widespread in the 18th and 19th centuries, the natural sciences became part of a rapidly expanding frontier, represented by scientific expeditions such as those of Cook, Agassiz, Humboldt, Darwin and Wallace, to name a few. As with other philosophies, those concerned with geomorphology compiled detailed observations, descriptions and classifications. New theories emerged, many of which sorely tested strongly held conventional beliefs of the time. Scientific discoveries were therefore not only a source of wonder and social advancement but also a challenge to the established beliefs of society.

As the flood of new information became increasingly difficult to master, the age of the polymath, represented by the early global explorer, inevitably gave way to a plethora of specialists. For instance, the geographer ultimately became either a human or physical geographer, the physical geographer became a climatologist, biogeographer, hydrologist or geomorphologist. In turn, geomorphologists began to identify themselves with components of their discipline such as rivers, tectonics, coasts, glaciers and the Quaternary, and more recently, by subdivisions such as, modelling, dating, paleoenvironment, etc. In many cases, this sectorisation spawned an esoteric technical language that obscured research findings from society's view.

This increase is specialisation has demanded and been driven by the replacement of observation by measurement and the consequential quantification which allowed new and sophisticated ways of establishing and verifying relationships. In geomorphology, from the 1950s, measuring devices diversified and multiplied. Initially manpower requirements and expense meant that research was confined to small catchments and specific processes, rather than the large scale features which had occupied the energies of earlier geomorphologists. The advent of automatic electronic recording (e.g., pressure transducers and data loggers) extended the duration and intensity of both laboratory and field studies. Processing of increasingly large amounts of data was facilitated by expanding computer capacity. The perspective of geomorphology has also been influenced by capabilities to digitise, rectify and geo-reference aerial photography, increasing precision of Global Positioning Systems, the advent of remote sensing capabilities, such as satellite multi-band imagery, surface and airborne radar and laser technology. These advances, together with the expanding use of Geographic Information System (GIS) platforms, have seen a re-widening of the geographic scale of interest. The shift from small catchment and plot-scaled studies to GIS driven regional studies has been mirrored by the increased focus on the temporal/historic spectrum. In particular, this has been stimulated by the increasing range and precision of dating techniques and techniques to unravel paleoenvironmental conditions (for example, exposure dating, and isotope analysis).

This increased specialization and technological sophistication has placed much of geomorphology beyond the reach of society - science has in some quarters been seen as self indulgent and only marginally relevant to society. Government research support in a number of countries has reacted by defining the category of 'public good science' and funding it to a greater extent than 'blue sky ' (curiosity driven) research. The adaptive response of some researchers has been to re-orient their research goals or at least re-label their endeavours to make their research more socially relevant. Polar research and paleoenvironmental research have found relevance by informing the climate change debate while process studies are readily adapted to hazard issues. Scientific ethics are also being promoted - even my current Hydrological Society subscription contains an amount directed to 'water for survival'

There is a rubric that says 'there is not such a thing as "applied geomorphology", only geomorphology to be applied.' Whatever construct you place on this statement, geomorphologists, as with other scientists, are currently confronted with increasing opportunities, if not an ethical prerogative to apply their science. The reasons for this are the dramatic contemporary changes in two of the most important drivers within our environment, climate and human population. Geomorphologists have long studied the role of climate and humans in controlling process behaviour and landform development. Furthermore, increases in population, urbanization, social infrastructure and economy are accelerating the risk and impacts on the human condition, irrespective of the threats from accelerated climate change.

In the period between 1650 AD and 1850 AD, world population doubled from 550 million to 1,200 million. But in half that time, from 1900 AD to 2000 AD the world population increased fourfold to almost 6 billion and economic activity increased forty-fold. While population increase is placing huge demands on food production, the capacity to produce is being severely limited by anthropogenic and climate driven soil degradation and erosion. Recent research indicates that during the 40 years between 1955 and 1995, nearly one third of the world's arable land had been lost by erosion and losses continue at a rate of 10 million hectares per year.

Population increases together with increased urbanisation and increased standard of living have created unprecedented levels of intervention within the geomorphic system. Spiralling demands for resources such as aggregates are impacting river and coastal systems, while demands for hydropower and irrigation affect the quality and quantity of surface and subsurface hydrological systems. Mineral, timber, and soil resources are also being exploited at unprecedented rates, in many cases with unanticipated and disastrous results.

It is against this background that the geomorphologist has an important social role to play. Collectively and individually we can inform society of how systems will respond to human intervention and enhanced climate activity. We can identify the outcomes and risks and communicate them effectively to resource managers, planners, industry, government and the public. In jurisdictions where resource management legislation exists there are frameworks such as environmental impact assessment procedures that are well suited to geomorphological input.

Environmental and resource law has also inadvertently spawned what might be referred to as 'forensic geomorphology'. Some examples from New Zealand illustrate the nature of the geomorphic challenge. Recently

the agency responsible for the national hazard insurance scheme refused a multi-million dollar payout to a community; because it deemed that the damage was caused by a flood (their schedule excludes flood damage but not mass movement damage). Expert geomorphological opinion was sought and resolved that the damage was in fact caused by a debris flow - the decision was reversed. Similar issues are confronted by coastal geomorphologists. In some jurisdictions, foredunes are protected from development, resulting in protracted legal debates as to what actually constitutes the real foredune. In property law, ambulatory property boundaries, often defined by the centre line of a river, allow conjoint property owners to gain or lose valuable land as the river shifts course. But this rule applies only if the migration is 'natural' (slow and imperceptible) and does not apply if the migration is rapid and event related. Robust resolution of such issues is the realm of forensic geomorphology and requires expert geomorphic evidence to resolve.

The effectiveness of the geomorphological contribution however, ultimately relies on the integrity and rigour of our science and continued exercise of curiosity. My conclusion therefore is that there is 'geomorphology to be applied' and that its application is desperately needed by society. Given the immensity of current global change and its impact on the wellbeing of mankind, perhaps we should learn from our hydrology cousins and institute an initiative of 'geomorphology for survival'.

Michael Crozier, President, IAG/AIG

5. Young Geomorphologists Section

a. IAG/AIG GRANTS for the FORMOSE Post-graduate Training School "Costal hazard assessment and management", Caen, France, 19-25 June 2011

The International Association of Geomorphologists (IAG/AIG) offers **1** grant of 300 (three hundred) Euros to post-graduates and PhD students in Geomorphology (under 35 yrs old) from EUROPE (except France) who are willing to take part in the FORMOSE Post-graduate Training School on *Costal hazard assessment and management* (Caen, France, 19-25 June 2011).

The Training School is organized by the *European Centre on Geomorphological Hazards* (CERG, Strasbourg, France) - which is one of the centres of the *EUR-OPA Agreement* of the Council of Europe - in close collaboration with the *Euro-Mediterranean Centre on Insular Coastal Dynamics* (ICoD, Valletta, Malta) and the *European Centre on Coastal Risks* (CerCo, Biarritz, France). The aim of the course is to provide the participants with updated knowledge on traditional and innovative multi-disciplinary methods and techniques for the analysis of geomorphological coastal instability processes and related hazards and risks.

For further information on the Course, please download the Training School flyer: http://eost.u-strasbq.fr/omiv/Cerg documents/Flyer-FORM-OSE-Course-2011.pdf

The selection of candidates will be carried out by a Commission appointed by the IAG/AIG Executive Committee. For further information on the IAG/AIG Grants, feel free to contact <soldati@unimore.it>.

b. IAG/AIG GRANTS for the International Symposium on Geosite Management, Savoie – Mont-Blanc, France, 5-10 September 2011

The International Association of Geomorphologists (IAG/AIG) offers **3 grants** of 300 (three hundred) Euros each to YOUNG GEOMORPHOLOGISTS (under 35 yrs old) from EUROPE (except France) who are willing to take part in the International Symposium on Geosite Management (Savoie – Mont-Blanc, France, 5-10 September 2011).

The Symposium, promoted by the IAG/AIG "Geomorphosites" Working Group, aims at providing a state-of-the-art view of recent research in the field of geosite management, especially considered within the proactive framework of sustainable management applied to protected areas.

The Symposium will provide the opportunity to explore how new information technologies can impact geosites and their management. An **Intensive Course** will be dedicated to this topic as the first event of the Symposium, followed by an **International Conference** – second event of the Symposium –, which will include a special session on this topic.

For further information on the Course, please visit the Symposium website: http://edytem.univ-savoie.fr/ISGM2011

The selection of candidates will be carried out by a Commission appointed by the IAG/AIG Executive Committee. For further information on the IAG/AIG Grants, feel free to contact <soldati@unimore.it>.

Mauro Soldati, IAG/AIG Training Officer

Report on the IAG supported LANDMAP Intensive Course on Landslide Mapping, Dessie 14 – 18 February, 2011

The Landmap Intensive Course on Landslide Mapping for Young Geomorphologists was organized in the Dessie Graben (Wollo, Ethiopia) during the IAG/AIG Regional Conference on Geomorphology "Geomorphology for human adaptation to changing tropical environments", held in Addis Ababa on February 18-22, 2011.

A total of 13 young geomorphologists from Africa, Europe and Asia (6 of which with an IAG Grant) attended the course.

On February 14, 2011, on the way from Addis Ababa to Dessie, two stops have been held: the first at the 'Afar Window', a panoramic view point on top of the eastern margin of the northern Ethiopian plateau from which the Afar lowlands can be seen; the second in the southern sector of the Borkena marginal graben, where the ground effects of the 1961 earthquake can be observed.



The participants on the crown of a rock slide in the southern part of the Dessie graben.



Mapping session in the afternoon

From February 15 to 17, 2011, the training course in geomorphological survey, landslide mapping, air-photo interpretation and GIS porting has been carried out. It included three morning sessions on field work (geological and geomorphological mapping, discrimination between different types of landslide, predisposing factors assessment) and three afternoon indoor sessions (including aerial photo interpretation and mapping in GIS). The first day afternoon session included also a lecture on the nature and typology of mass movements with real-time films of several cases of landslide events.

The instructors were Giandomenico Fubelli (Department of Geological Sciences, Roma Tre University, Italy) and

Jan Moeyersons (Geomorphology Division, Royal Museum for Central Africa, Belgium).

Giandomenico Fubelli, Roma, Italy

d. Call for SEDIBUD Grants for the 6TH SEDIBUD WORKSHOP – ZAKOPANE, Poland 5-8.09.2011

The International Association of Geomorphologists (IAG/AIG) Working Group on Sediment Budgets in Cold Environments – SEDIBUD offers **two grants of 250.00 € each for young geomorphologists** (under 35 yrs old) **from Scandinavian countries, Canada and Russia**, to attend the scientific meeting of SEDIBUD Working Group *Sedimentary fluxes dynamics in the changing mountain and polar environment – monitoring, record & consequences* in Zakopane – Poland (5-8 September 2011).

For more details please visit the IAG website: http://www.geomorph.org

The selection of candidates will be carried out by a commission with participation of SEDIBUD Steering Committee members.

Achim Beylich (Chair of the IAG/AIG WG SEDIBUD) & **Grzegorz Rachlewicz** (Chair of the Local Organizing Committee)

6. XXXII Annual Meet of the Indian Institute of Geographers' (IIG) and International Conference, January 17-21, 2011.

Organized by the Department of Geography, University of Rajasthan, Jaipur - 302 004.

A total of 231 abstracts but 196 papers were presented by the delegates in seven technical sessions. Each session was conducted at three venues simultaneously - two in the same department and one in the Seminar Hall of CDPE.

On 17th January two technical sessions were held on the theme of Climate change, contemporary thinking in geography and remote sensing and GIS techniques in which 18 papers were presented on the climate change, 6 on the contemporary thinking in geography, 14 papers were related with applied geography, while 11 research papers presented on remote sensing and GIS techniques.

On 18th January three technical sessions were held at three venues simultaneously on the theme of disaster management, applied geography, remote sensing and GIS techniques, urban geography, geomorphology and hydrology, economic geography and environment-Vulnerability and Human health. A total of 85 papers were presented in these three sessions, in which 21 papers on applied geography, 17 papers on urban geography, 14 on economic geography, 9 papers on disaster management, 8 papers on geomorphology and hydrology and 7 papers each on remote sensing & GIS and environment vulnerability and human health.

On the last day (19th January) two technical sessions were on the theme of urban geography, agriculture and food security, agriculture and environmental degradation, voice of concern for geography teaching and population geography. There were 27 papers on population geography, 13 on urban geography and 12 papers on agriculture & environmental degradation while two deliberations dealing with the voice of concern for geography teaching along with 8 papers related with agriculture and food security. Young scholar award was awarded to Miss Shubra Sharma from Shimla on 19th January, in which she was only the contestant.

In addition of these technical sessions there were two plenary sessions held on 17th and 18 th of January on the Topic of "AT THE HEART OF DARKNESS - INDIAN DEVELOPMENT STORY AND THE LAND QUESTION OF CENTRAL INDIAN TRIBES " delivered by Prof A C Mohapatra, Shilong and "CLIMATE CHANGE, DESERTIFICATION AND WATER MANAGEMENT IN INDIA" by Prof H S Sharma, Jaipur respectively.

R. D. Gurjar, Convener and S. C. Doi, Organizing Secretary, 32nd IIG Conference

7. **Upcoming Seminars/Conferences/Workshops/Trainings Programmes**

i. France

FORMOSE Post-graduate Training School "Costal hazard assessment and management", Caen, France, 19-25 June 2011. School flyer. http://eost.u-strasbg.fr/omiv/Cerg documents/Flyer-FORM-OSE-Course-2011.pdf

ii. Singapore

REMOTE SENSING, NATURAL HAZARDS AND ENVIRONMENTAL CHANGE, 28-29 July 2011, Centre for Remote Sensing and Processing (CRISP), National University of Singapore, Singapore. Conference website: http://www.crisp.nus.edu.sq/conferences/RSNHEC/index.html.

iii. Poland

Sixth IAG./AIG. SEDIBUD Workshop on "Sedimentary fluxes dynamics in the changing mountain and polar environment - monitoring, record & consequences". Zakopane, Poland, September 3-11, 2011

iv. France

International Symposium on Geosite Management. Savoie–Mont-Blanc, France, 5-10 September 2011. For more details please visit the IAG/AIG Website: www.geomorph.org

v. Germany

MODELCARE2011, Models- Repositories of knowledge. UFZ Conference, Leipzig, Germany, 18-22 September, 2011. Conference Website: www.modelcare2011.org

vi. Italy

THE SECOND WORLD LANDSLIDE FORUM, **3-9 October 2011**, **FAO Headquarters**, **Rome**, **Italy**. Conference website: http://www.wlf2.org/home/home-page

vii. China

The 8th East Asia International Workshop on "Present Earth Surface Processes and Long-term Environmental Changes in East Asia - Earth Surface Processes and Natural Hazards". Chengdu, China, October 10-14, 2011. For more details please visit the IAG/AIG Website: www.geomorph.org

viii. Czech Republic

International Scientific Carpatho-Balkan-Dinaric Conference on Geomorphology. Ostravice, Czech Republic, October 17-20, 2011. For more details please visit the IAG/AIG Website: www.geomorph.org

Editor's Note

The success of the IAG/AIG Newsletter depends upon the contributions that we receive. On behalf of IAG/AIG, I would request you to assist us by supplying information related to the forthcoming activities and innovations in geomorphology in your respective countries (commentaries, reviews of regional or national meetings and field trips, summaries of issues pertinent to geomorphology and announcements of future meetings and workshops. Your contributions should be forwarded to the IAG/AIG Publications Officer.

Published by

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