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OBITUARY

Nicholas N. Ambraseys 1929–2012

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As Editor-in-Chief of JOSE, I am deeply grateful for the willingness of Prof. Roger G. Bilham to support the tribute we would like to pay to Prof. Ambraseys in this journal.

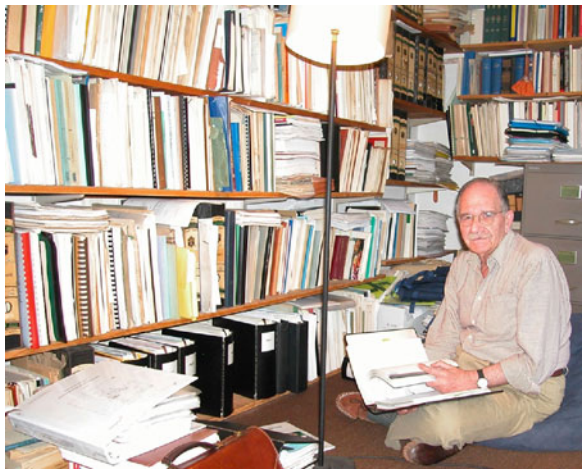
From my office as secretary general of the European Seismological Commission (ESC), I would also like to highlight Prof. Ambraseys' important contributions to the ESC activities, strengthening the cooperation between the ESC and the European Association for Earthquake Engineering (EAEE) communities. He was already involved in the activities of the Subcommission on Sea-Waves (later, on Tsunamis) in the early 1960s (he is the author of a summary report presented at the ESC1964 in Budapest), and from 1996 to 2008, he chaired the joint ESC-EAEE Working Group on Strong Motion, which developed the Internet Site for European Strong-motion Data (http://www.isesd.cv.ic.ac.uk), funded by the European Commission and the UK's Engineering and Physical Sciences Research Council, for the free dissemination of strong motion data and associated parameters from European, Mediterranean, and Middle Eastern earthquakes. Since 2008, one of the joint ESC-EAEE activities is the Prof. Nicholas Ambraseys Distinguished Lecture Award.

MGF, EIC

N. N. Ambraseys: an appreciation

The world of seismology owes an immense debt to Nicholas Ambraseys who died 29 December 2012. He was foremost an earthquake engineer, but his contributions included the quantification of the effects of tsunami and ground liquefaction; scaling relationships between perceived intensities, magnitudes, and surface rupture length; and above all the study of historical earthquakes. Among his earliest contributions was his perception of the need to discard the pre-twentieth century catalogue of historical earthquakes and to start afresh with a new catalogue that included only those earthquakes that could be supported by a meticulous evaluation of contemporary observations. His efforts have established a new discipline—historical seismology—that now has many followers, though few can single-handedly bring the breadth of knowledge that Ambraseys brought to its study. He was neither a historian nor a philologist by training, but he used the tools of both, combining them with a gift for languages, his training as a civil engineer and his immediate familiarity with the destruction wrought on cities and coastlines by twentieth century earthquakes to re-evaluate a 2,500-year history of earthquakes in Europe, Asia, and parts of the Americas and Africa.

Historical earthquake catalogues prior to 1960 evolved through the addition of newly discovered earthquakes to existing catalogues. New compilations were seldom concerned with the accuracy of existing entries, and new compilers seldom had the tenacity to investigate whether their additions were already in those catalogues under a different date or location. In rare cases when a known bogus earthquake was removed from an existing catalogue, it was sometimes re-inserted by a later compiler unknowingly thinking the omission to have been an error. The entries in these early catalogues often lacked the quantitative detail to identify location or magnitude and in particular to assess the credibility of the data used by the compiler. Ambraseys' new catalogues addressed local chronologies, inscriptions, travelers' diaries, administrative reports, and critically evaluated histories. His catalogues also included bogus events with a statement why they must be removed from future consideration. The study of the source materials for these earthquakes took him to research libraries, university archives, and the basements of learned societies all over the world.



Nicholas Ambraseys, Putney, London, 17 June 2003. A rare picture of Nick at work in his study surrounded floor to ceiling with records of 2,500 years of seismicity in a dozen different languages

Ambraseys' historical studies were but part of a much broader consideration of seismicity, faulting, and seismic hazards. He contributed considerably to our quantification of the changes in seismological reporting that occurred from the pre-instrumental period (pre-1900) through the time of heterogeneous seismological reporting 1900–1960, and subsequently to a uniform global seismic network, which have influenced the homogeneity of the catalogues we now use. The change in data acquisition, from felt reports to digital recording, has introduced difficulties in relating historical magnitudes to those currently in use, and this influences the statistical manipulation of catalogues by engineers responsible for calculating future seismic risk. Many of Ambraseys' articles use empirical regression methods to reconcile the different intensity and magnitude scales of the past century, providing us, if not a perfect catalogue, the tools with which to qualify our interpretations of this period of change in our evaluation of earthquake hazards.

His recognition, from historical earthquake distributions in Turkey, the Middle East, and Greece, that long-term fluctuations in seismic productivity have occurred over millennia timescales, has resulted in a new awareness in the limitations of the Gutenberg–Richter relation. This relationship between the cumulative numbers of earthquakes and their magnitude distribution is commonly invoked to characterize future seismicity based on a *b* value slope determined from recent instrumental catalogues. Ambraseys' observations question the assumed stationarity of the *a* value, introducing considerable additional uncertainty into estimates of future seismic risk.

Roughly one third of Ambraseys' 328 articles and 6 books address engineering seismology issues. In particular, his early training in hydraulic engineering led him naturally to author a series of important contributions on the stability of soils and earth-fill dams undergoing dynamic shaking. Following a brief (1954–1956) appointment in the Technical University of Athens following his PhD, he joined the faculty in the Department of Civil Engineering at Imperial College London, where he remained a professor until his retirement in 1994. His lectures have influenced a generation of young earthquake engineers with his insights into earthquake processes and their effects on structures. During his time there, he consulted on the analysis and design of 20 major dams, and led more than a dozen post-seismic UNESCO missions. Fully one third of his published output occurred after his retirement, and he remained actively creative throughout 2012.

His five-decade contribution to earthquake studies has been recognized by numerous academic, engineering, and philanthropic organizations, who have awarded him some of their highest honors in recognition of his achievements. He leaves a legacy of thousands of published pages that are themselves a mine of information for future studies. He will be remembered by the present generation of seismologists and engineers for his kindness, his humor, and his boundless enthusiasm for earthquake studies. He was an inspiration to all those who knew him, and he will be sadly missed.

A bibliography of his many publications can be found at http://www.seismosoc.org/publications/srl/SRL_84/srl_84-2_bilham-esupp/index.htmland and an expanded account of his career can be found in Seismological Research Letters, 84(2), 173–176, March/April 2013 (http://srl.geoscienceworld.org/content/84/2/173).

Some of his least accessible articles are linked to pdfs at the following website (http://cires.colorado.edu/~bilham/Ambraseys.html)

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