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Nicholas Neocles Ambraseys 1929–2012



Nicholas Ambraseys, Editor Emeritus of the *Journal of Earthquake Engineering*, died 28 December 2012 at his home in London. He was born in Athens in 1929 and lived for most of his life in London, England, completing in 1958 a Ph.D. in the Department of Civil Engineering at the Imperial College of Science and Technology. He was appointed successively to positions of Lecturer (1958), Reader (1968), and Professor in 1974. In 1968 he established a new section in the Civil Engineering Department, the Department of Engineering Seismology. After his retirement in 1994 he was appointed a Senior Research Investigator, and vigorously pursued his research interests until 2012. Almost one third of his 328 articles, and four of his six books were written after his retirement. With the current Editor Amr Elnashai, also a graduate of Imperial College, London and Nick's successor as head of the Engineering Seismology Section, he founded the *Journal of Earthquake Engineering* and was co-Editor until 2011, when he retired from the Journal management team.

Nick Ambraseys will be remembered for his numerous and innovative interdisciplinary contributions to the study of earthquake engineering, tsunami and historical earthquakes. In his first few articles in the 1960's he recognized that the clue to accurate forecasts of future seismicity lay not so much in the instrumental record (then based on post-1900

seismograms of variable quality), but more in the 25-century-long history of damaging earthquakes that had destroyed many of the cities of the classical world. Recognizing that the earthquakes described by historians (and repeated in extant seismic catalogs) were often second-hand, his life career has been to establish new reliable catalogs of earthquakes for Europe, Africa, Central America, India and the Middle East. The new catalogs are based solely on first-hand accounts of earthquakes, supplemented with studies of historical geography, engineering observations, seismology and statistics. They remain as an enduring legacy in the form of six books in which known earthquakes are described in detail, interspersed with entries identified as errors in previous compilations, lest future researches be tempted to re-insert these spurious earthquakes back into future catalogs.

His historical research resulted in several important engineering observations, the most fundamental being that the seismic-productivity constant “a” in the well-known Gutenberg Richter relation, $N = a - bM$, is evidently not constant in certain regions over periods of centuries. The importance of this observation is that not only are seismic catalogs based on a century of instrumental data too short to capture rare large magnitude earthquakes, but that they may be characterizing an exceptionally low (or high) period of seismic activity, a peril if they are used as the sole source of statistical data for probabilistic forecasts. Of the several regions he cautioned where future seismicity, now subdued, will eventually return to historical high levels of damaging activity, he singled out the Dead Sea fault system as especially hazardous.

His perspective on historical and ongoing seismic activity led him to observe that the survival of potentially fragile structures (minarets, columns and ancient temples) to the present day did not necessarily mean that no earthquakes had occurred in a region, but that these were the fittest to survive. Other similar, but more fragile structures had been demolished, and the lesson for the earthquake seismologist lay in the study of these survivors. In his writings and talks he provided numerous examples of the intrinsic wisdom of indigenous earthquake resistant structures, and the increasing evidence for corruption, ignorance and the indifferent enforcement of earthquake construction code in the assembly of recent urban construction. In addition to his numerous publications, he has left us with at least two sound bites that characterize recent catastrophes: “*Earthquakes don’t kill people; buildings do.*” “*The collapse of buildings in earthquakes are not acts of God. All too often nowadays they are acts of criminal negligence.*”

His engineering contributions built on his PhD investigations on the seismic stability of earth-fill dams, and included important publications on quantifying slope stability and the liquefaction of soils in earthquakes. His early articles attracted the attention of Nate Newmark who offered him a visiting Professorship at the University of Illinois at Urbana-Champaign. Discussions in 1963 during Ambraseys’ brief appointment as an Associate Professor of Civil Engineering led to the formulation of Newmark’s sliding block method, which permits first-order calculations of landslide instability. He subsequently wrote numerous articles on the conversion of intensity observations to magnitude, on the quantitative comparison of various magnitude scales, and on the derivation of regional attenuation curves, and played a significant role in the development of a digital data base for strong motion records in Europe.

During his time at Imperial College he led more than 30 United Nations field missions to study earthquake damage throughout the world. These studies established standard procedures for post-seismic investigations using a blend of rupture mapping, intensity

assessments and damage assessments. He also consulted to the design and siting of numerous large dams. The quality of his engineering and historical contributions has been recognized throughout the past thirty years by the award of numerous honors from learned societies: the Busk Medal for Scientific Discovery from the Royal Geographical Society (1975), Fellow of the Royal Academy of Engineering (1985), Honorary Fellowship of the Society of Earthquake Engineering & Structural Dynamics (1986), Honorary Fellowship of the International Association of Earthquake Engineering (1992), Honoris Causa from University of Athens (1993), Member of the European Academy (1997), Award of the Freedom of the City of Skopje (1998), Fellowship of the City and Guilds of London Institute for Outstanding Achievement (2000), the William Smith Medal of the Geological Society of London (2002), the Harry Fielding Reid Medal of the Seismological Society of America (2006), Fellow of the Institution of Civil Engineers, Fellow of the Geological Society of London, and Fellow of the Royal Geographical Society. In 2008 he was elected a Legend of Earthquake Engineering by the Asian-Pacific Network of Centers for Earthquake Engineering Research (ANCER). He gave the British Geotechnical Society's 2004 Rankine Lecture, and in 1987 the First Mallet-Milne Lecture, of the Society for Earthquake and Civil Engineering Dynamics, London. He was a fellow of the Academy of Athens and actively participated in its sessions. A biannual distinguished Lecture Award is named in his honor by the European Association for Earthquake Engineering. He served as editor of numerous journals on soil mechanics and earthquake engineering prior to co-founding the *Journal of Earthquake Engineering*.

His colleagues will remember him for his humor and enthusiasm, and for his encouragement of young scientists and engineers. The world has been changed forever by his insights and by the legacy of the thousands of pages of published materials that now bear his name, and serve as a window into the past two millennia of earthquakes and their effects on urban and rural construction.

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