# ACOUSTICAL SOCIETY OF AMERICA

# GOLD MEDAL


## William A. Kuperman

## 2012

The Gold Medal is presented in the spring to a member of the Society, without age limitation, for contributions to acoustics. The first Gold Medal was presented in 1954 on the occasion of the Society's Twenty-Fifth Anniversary Celebration and biennially until 1981. It is now an annual award.

PREVIOUS RECIPIENTS

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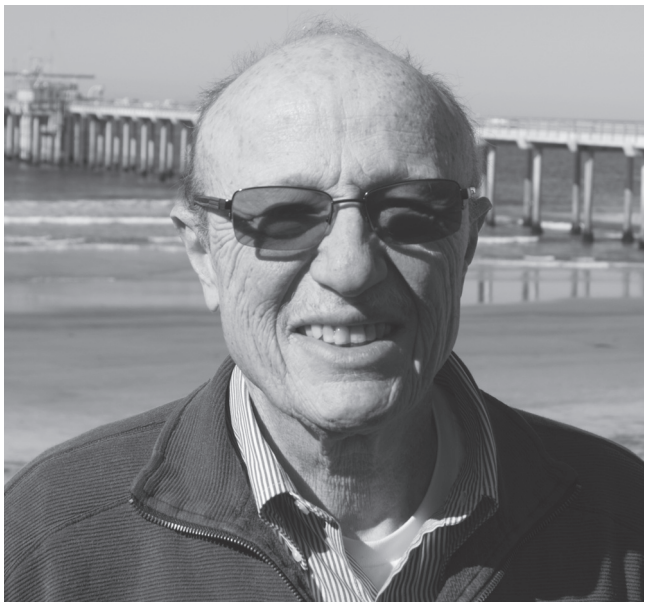
|---|---|---|---|
| Wallace Waterfall | 1954 | Eugen J. Skudrzyk | 1990 |
| Floyd A. Firestone | 1955 | Manfred R. Schroeder | 1991 |
| Harvey Fletcher | 1957 | Ira J. Hirsh | 1992 |
| Edward C. Wente | 1959 | David T. Blackstock | 1993 |
| Georg von Békésy | 1961 | David M. Green | 1994 |
| R. Bruce Lindsay | 1963 | Kenneth N. Stevens | 1995 |
| Hallowell Davis | 1965 | Ira Dyer | 1996 |
| Vern O. Knudsen | 1967 | K. Uno Ingard | 1997 |
| Frederick V. Hunt | 1969 | Floyd Dunn | 1998 |
| Warren P. Mason | 1971 | Henning E. von Gierke | 1999 |
| Philip M. Morse | 1973 | Murray Strasberg | 2000 |
| Leo L. Beranek | 1975 | Herman Medwin | 2001 |
| Raymond W. B. Stephens | 1977 | Robert E. Apfel | 2002 |
| Richard H. Bolt | 1979 | Tony F. W. Embleton | 2002 |
| Harry F. Olson | 1981 | Richard H. Lyon | 2003 |
| Isadore Rudnick | 1982 | Chester M. McKinney | 2004 |
| Martin Greenspan | 1983 | Allan D. Pierce | 2005 |
| Robert T. Beyer | 1984 | James E. West | 2006 |
| Laurence Batchelder | 1985 | Katherine S. Harris | 2007 |
| James L. Flanagan | 1986 | Patricia K. Kuhl | 2008 |
| Cyril M. Harris | 1987 | Thomas D. Rossing | 2009 |
| Arthur H. Benade | 1988 | Jiri Tichy | 2010 |
| Richard K. Cook | 1988 | Eric E. Ungar | 2011 |
| Lothar W. Cremer | 1989 | | |



## CITATION FOR WILLIAM A. KUPERMAN

*. . . for leadership in underwater acoustics, mentoring generations of acousticians, and for service to the Society*

### HONG KONG, CHINA • 16 MAY 2012

William A. Kuperman is an icon of underwater acoustics, in spite of the fact—which he himself often mentions—that he never took a class in acoustics. Bill is widely recognized as the "founding father" of the discipline of Computational Ocean Acoustics, even though we believe he never personally developed any actual modeling code. However, there is no doubt that he was the inspiring force behind the revolution on the wave theory models developed in the 80's and still dominating the field today. Not surprisingly, the textbook *Computational Ocean Acoustics,* published in 1994*,* has often been referred to as "*Kuperman's book*," even though it has four authors listed in alphabetical order. Thus, Bill was the principal mentor of all the model developers during that decade, as well as for most of the model users at the ocean acoustics laboratories that benefited from his inspiring personality.

It was not by accident that it turned out this way, but rather due to Bill's unmatched ability to attract young talent to work with him. This trait has been a trademark of his entire career. Bill's scientific contributions were recognized by the Acoustical Society of America (ASA) by awarding him the Pioneers of Underwater Acoustics Medal in 1995. The Gold Medal he receives this year is awarded in recognition of the impact his mentoring has had on the fields of Underwater Acoustics and Acoustical Oceanography, and in turn the ASA. Bill is truly unique in his unselfish promotion and mentoring of the young talent he has attracted to our field. He is truly the 'mentor par excellence' of underwater acoustics and our Society.

After graduating with BS and MS degrees in Physics from the Polytechnic Institute of Brooklyn and the University of Chicago, respectively, Bill joined the US Naval Research Laboratory (NRL). There he was employed as a Research Scientist for a decade, during which time he also received a Ph.D. in Physics from University of Maryland in 1972 as supported through NRL's Edison Scholar Program. In 1976 he was offered a position at the NATO SACLANT ASW Research Centre (SACLANTCEN) in La Spezia, Italy. Bill brought with him a large stack of punch cards from NRL with a brand new computer code for computing sound propagation in the ocean using normal mode theory as developed by Frank Ingenito.

SACLANTCEN at the time was world renowned for their experimental work, but Bill convinced the management about the potential of numerical modeling. Bill was immediately appointed Head of a new Environmental Modeling Group which became the launch pad for his career as the unnamed leader of the field of computational acoustics. He attracted several young scientists to work with him, and by the time he left the Centre in 1981 the Environmental Modeling Group was widely recognized as the world's leading acoustic modeling group. It was known for disseminating user friendly modeling frameworks around the fundamental algorithms developed by others, based on normal mode and parabolic equation theories. He has had immeasurable impact on the development of propagation models such as OASES and KRAKEN, and the geo-acoustic inversion code SAGA developed at SACLANCEN over the following decade and still in widespread use today. After returning to the United States Bill joined the Naval Oceanographic Research and Development Activity (NORDA) in Mississippi where he established what became the world's leading development facility for new numerical models. Again he did so by recruiting young talent from outside the field, which he inspired and mentored to develop models such as COUPLE, RAM, and NPE, all of which are still among the workhorse models used throughout the world. Following the merger of NRL and NORDA, Bill moved back to Washington where he served as Senior Scientist in the Acoustics Division.

In 1993 Bill became Director of the Marine Physics Laboratory (MPL) at the Scripps Institution of Oceanography, a position he has held ever since. The focus of his group turned towards the solution of acoustic inverse problems, without the use of numerical models. Inspired by the success of the Time-Reversal Mirror (TRM) approach in medical ultrasound, Bill initiated collaboration with the leaders in the field and as a result became the de-facto founder of underwater acoustic TRM, and MPL the undisputed leader in the field. Again he did so by attracting, inspiring, and mentoring young talent who may otherwise never have entered the field of underwater acoustics. Some of the students and young scientists he has advised and supervised are still working with him at MPL, but several have joined faculty positions around the country. However, as has always been the case, Bill has continued to actively engage in their career development, both as mentor and as a reliable and forceful supporter in academic promotion cases. MPL is a very attractive institution for young scientists wanting to make a career in underwater acoustics. Of course the location may play a role, but there is no doubt that Bill's reputation as a mentor and as a catalyst for successful career development is the most important factor.

Bill's service to the Acoustical Society is undisputed. He served as Associate Editor of the *Journal* from 1987 to 1993 and has also served as chair or member of many of the Society's committees. He was chair of the Technical Committee on Underwater Acoustics (1982-85), Member of the Executive Council (1997-2000), and President in 2004. In addition he was the chair of the Fall 2004 meeting in San Diego. When he received the Silver Medal in 1995, Bill stated that "the Acoustical Society of America is my only society," however his impact goes far beyond the ASA. Thus in recent years he has been recognized by the general oceanographic science community, as evidenced by the awarding of the Walter Munk Award in 2011 by the Oceanography Society. There is no doubt that his impact was recognized by Walter Munk himself many years ago. The two have adjoining offices and are known to regularly use each other as sounding boards for new ideas. Also, Bill's induction into the National Academy of Engineering in 2004 is evidence of a wide recognition of his impact, not only on his field, but also on society as a whole. With a long career working on issues of high naval relevance, Bill is obviously held in high regard by the US Navy, and since 2004, he holds one of the prestigious SECNAV/CNR Oceanographic Science Chairs. He has served on a wide range of advisory committees for the US Navy, NOAA, and NSF.

Bill's scientific and societal impact more than justifies the awarding of the Gold Medal of the Acoustical Society of America. But for those of us who have been lucky enough to be taken under his wing, and whose careers would never have materialized if not for his unselfish support and desire to help and promote young scientists, his truly outstanding impact has been his guidance and mentoring of several generations of underwater acousticians. He has done so without ever being guided by his own self-interest. On the contrary, he has continued to mentor and support his 'pupils' when they joined competing institutions. Probably even more important is the bi-product of a long line of true friendships he has developed over the years. Bill is a truly exceptional friend and mentor.

HENRIK SCHMIDT