



Noise Control and Acoustics Division Newsletter

Summer 1988

Charles E. Spiekermann

Koopmann Reflects on 1987-88 Year



Gary Koopmann

In composing this newsletter article, I have the feeling that the time for reckoning is here. In reviewing my article in last spring's edition I noted that several new initiatives were promised our division. Among

these were improved communication among the membership in general, our technical committees in particular, and establishing a permanent fund for the Rayleigh Lecture. Beginning with the first of these, I can say that progress has been made. After much discussion, we decided to make several changes in our lines of responsibility within the NCAD organization. An organizational chart for 1988-89 is included in this newsletter which gives the names and telephone numbers of those talented and much appreciated volunteers who head up the various committees. If you want to contact any of them for further information they would be happy to hear from you. Note that two new technical committees have been formed, Industrial Acoustics and Analysis Techniques, which incorporates the former Numerical Methods committee. Along the lines of improving communication, we have prepared a questionnaire for our NCAD membership which is found in this Newsletter. We are interested in establishing a membership profile to help us identify potential leaders and to assist us in planning for future technical committees and paper sessions. The questionnaire is designed to take up as little of

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Akay New NCAD Chairman for '88-89



Adnan Akay

As another year starts we see that a number of significant achievements have taken place during the past year and several new initiatives have been started.

At last year's successful Winter Annual Meeting in Boston, the Rayleigh Lecture was given by Miguel Junger with an illuminating talk on Watson Transformation. A superb symposium was organized on Statistical Energy Analysis by Drs. Hsu and Nefske. The award committee is in place under the chairmanship of C. D. Mote, Jr., for the Bruel Gold Medal, which was established through the relentless efforts of Maurice Sevik. The first award is expected to be given at WAM '90. A separate award is being established in conjunction with the Rayleigh lectures. Gary Koopmann has been instrumental in the development of this award, which is past the half-way mark for the necessary funds.

The Rayleigh lecturer at WAM '88 will be Professor Alan Powell of the University of Houston and the lecture will be given in the afternoon on Wednesday, November 30, 1988.

The goal of the Division is to help develop and disseminate knowledge and technology related to acoustics and noise control. To this extent, the core of our activities are the technical sessions, symposia, workshops and the publications resulting from them. These activities are promoted by the Technical Committees of

the Division and supported by the administrative committees. A major key to continuing success of the Division is the advanced planning of activities and their communication to the membership.

Starting with WAM '90, in addition to the sessions organized by the Technical Committees, the Division will organize at least one symposium around a special topic. Such symposia are intended to draw the critical number of papers and audience to the sessions, and hopefully bring in new members to the Division. The tentative symposia selected for the future years are: Vehicle Noise for WAM '90, Materials in Acoustics for WAM '91, Structural Acoustics for WAM '92, and Aircraft Interior Noise for WAM '93. Those interested in organizing any of these symposia or any session please contact Alan Hersh, the Program Chairman or any one of the Executive Committee members.

The diversity and depth of the topics covered in the sessions and publications of the Division during the last several years have led to discontent among the authors who preferred to publish in a more discipline-specific publication than the *Journal of Vibration, Acoustics, Stress, and Reliability in Design*. Thus, we welcome the possibility of focusing the subjects covered and changing the title of *JVASRD* to cover only Vibration and Acoustics. Discussions are underway and we hope to see the change take place in the near future.

Additional plans for the next year include establishment of a best paper contest for students and completion of fund raising for the Rayleigh lecture award. A warm welcome and invitation to join the Division activities are extended to you, your colleagues, and your students.

ADNAN AKAY

Technical Committee On Experimental Acoustics and Instrumentation

The new committee is currently in the process of organizing itself under the direction of Anna Pate. The first meeting of the committee took place during WAM '87 in Boston. During that meeting the committee's name was changed from "Instrumentation" to "Experimental Acoustics and Instrumentation." The committee is actively seeking new members, discussing its intended scope and purpose, and planning for future technical sessions. Specifically, the committee is seeking industrial members, since the majority of current members represent academic or research institutions. Our first technical session on Instrumentation and Measurement took place in Boston during WAM '87.

The committee plans to organize a technical session for WAM '89 on "Measurement-Based Models in Acoustics" (see call for papers). In addition, topics for future sessions to be organized by the committee include: holographic techniques—hardware and software, new instrumentation in acoustics and noise control, acoustic intensity and energy density measurements, reciprocity methods, modeling and similitude, novel signal processing techniques, machinery diagnostics based on vibrational and acoustical signals, wave-vector techniques and structural power flow measurements.

The next meeting of the committee is scheduled to take place in Chicago during WAM '88. Currently, the committee's scope includes experimental methods in acoustics and noise control, signal processing, and instrumentation. The committee would like to invite comments from interested ASME members on the scope and other topics that should be brought to the committee's attention. Anyone interested in the area of Experimental Acoustics and Instrumentation is invited to participate in the committee. Comments and suggestions regarding this committee are welcomed and can be submitted to Prof. Anna L. Pate, Department of Engineering Science and Mechanics, Iowa State University, Ames, IA 50011, Tel. (515) 294-0093.

EDITOR: Charles E. Spiekermann
ASME CONTACT: Jeff Lenard
(212) 705-7159

Technical Committee on Biomedical Acoustics

The biomedical acoustics technical committee would like to solicit input from the membership about sessions at future WAMs. Attendance has been poor in the past and new members are needed to serve on the committee. Suggestions and inquiries should be directed to Kirk Shung, Bioengineering Dept., 218 EEW, Pennsylvania State University, University Park, PA 16802 (814) 865-1407.

Research On Acoustics And Vibration At Wayne State University

Research on acoustics, vibration, and noise control at Wayne State University is conducted in the Acoustics and Vibration Laboratories in the Mechanical Engineering Department. Currently, there are three faculty members, one visiting faculty member, twelve graduate and several undergraduate research assistants associated with the Laboratories. There are a wide range of courses available in vibration and acoustics. The laboratories are very well equipped with modern instrumentation, including laser holography and modal analysis systems, as well as a walk-in anechoic chamber. These facilities are used for both research and teaching.

Current funded research projects are: (i) acoustic and vibration response of high-speed mechanical systems with emphasis on impacts in the connection clearances, (ii) damping of bending wave vibrations by viscous fluid layers, (iii) wind-induced sound generation from flexible thin bodies, (iv) friction-induced vibration and noise, and (v) sound radiation from vibrating non-stationary objects. In addition, projects on sensor



Experimentation at
Wayne State University

development, interaction of sound and structures, and diagnostic techniques are pursued.

For further information please contact:
Adnan Akay
Department of Mechanical Engineering
Wayne State University
Detroit, MI 48202
Telephone: (313) 577-3884

TC on Industrial Noise Plans Organizational Meeting at WAM '88

The Technical Committee on Industrial Noise plans to hold an organizational meeting at the ASME Winter/Annual Meeting on November 28-December 2, 1988, in Chicago, IL. The Committee will determine various areas of interest in industrial noise and develop plans for future sessions and symposia.

W. J. HANSON

TC on Analysis Techniques in Acoustics

Through the formative years of the committee under the leaderships of Drs. K. Baumeister, S. H. Sung, and W. Eversman and following subsequently successful years of '85-'87, the Numerical Techniques in Acoustics Committee has been renamed Analysis Techniques in Acoustics to meet the need for the ever expanding field of analysis techniques in acoustics. The intent of the renamed committee is to promote interest and technical interchange in the rapidly advancing applications of asymptotic modal analysis, power flow analysis, statistical energy analysis, finite element analysis, boundary element method and other analysis techniques related to solving problems in acoustics.

At WAM '87 in Boston, the Committee organized a very successful symposium on Statistical Energy Analysis. Three technical sessions were held, each beginning with a keynote address by a distinguished researcher: Professor Richard Lyon of MIT, Dean Earl Dowell of Duke, and Dr. Gideon Maidanik of David Taylor Naval R&D Center. All contributed papers along with two of the extended abstracts of the keynote addresses were published in an ASME good volume, NCA-Vol. 3, Book No. G00403, "Statistical Energy Analysis".

At WAM '89 in San Francisco the Committee plans to sponsor several ses-

sions on analysis techniques in areas related to noise control and acoustics. We fully expect interest in various analysis techniques in acoustics to grow. To attract additional participants to NCAD, the Committee plans to emphasize joint sponsorship of the technical sessions with other ASME technical divisions and/or related technical societies.

For those interested in joining the committee, please contact Dr. K. H. Hsu, Nuclear Equipment Division, Babcock & Wilcox Co., Barberton, Ohio 44203, (216) 860-2653. K. H. HSU

Structural Acoustics Committee

The Structural Acoustics Committee is a new committee and it met for the first time at WAM '87. Prof Sabih I. Hayek, Penn State University, was appointed as the new chairman of the committee to replace Dr. David Feit, who took a leave to spend time as ONR Liaison officer. The new committee membership numbers twelve and all are enthusiastic about organizing sessions in future meetings. The first series of sessions will be organized for WAM '89 in San Francisco. The membership plans to organize three sessions: (a) High Frequency Structural Acoustics (Tom Geers and John McCoy), (b) Structural Damping (Joe Cusehieri), and (c) Advance European Structural Acoustics (David Feit). The committee will also co-sponsor a session on "Numerical Structural Acoustics" jointly with the Numerical Techniques in Acoustics Committee.

The Committee plans to meet at the WAM '88 in Chicago, where we will finalize the WAM '89 and discuss plans for WAM '89. The chairman will coordinate the date and time of the meeting so it will not conflict with other committees.

SABIH I. HAYEK

NCAD Publications and Presentations

One of the primary original goals in the formation of ASME was to provide a forum for the exchange of technical information among practicing engineers. This remains true today and is exemplified in our Divisional activities through paper presentations at meetings, paper publications as pamphlets or in bound volumes, and paper publications in the Transactions of the ASME's *Journal of Vibration, Acoustics, Stress, and Reliability in Design*. The Society prides itself on the overall high quality of all presentations and publications bearing its name, and this is ensured through the peer review process.

All articles submitted for either publication or presentation at a WAM are sent out for three reviews. Each reviewer is asked to judge the acceptability of the paper on its technical quality and merit, and to determine whether the work is of current or permanent interest. The review process is managed by the Associate Editor. Papers to be presented should be submitted about ten months prior to the meeting date. Anyone who is interested in serving as a reviewer should send their name and address, along with a statement of their areas of technical expertise, to Dick Keltie, Associate Editor, at the Center for Sound & Vibration, Dept. of Mech. & Aerospace Engrg., North Carolina State Univ., Campus Box 7910, Raleigh, NC 27695 (919) 737-3024.

Per Bruel Gold Medal For Noise Control And Acoustics

In 1988 the Board of Governors of the ASME established "The Per Bruel Gold Medal for Noise Control and Acoustics" to recognize scientists and engineers whose contributions to the art and science of noise control and acoustics are of extraordinary merit. Each recipient will receive a minted gold medal plus a cash prize of \$1,000 to complement one of the highest recognitions the ASME can bestow.

Nominations of candidates for the Medal are to be submitted to the Per Bruel Awards Committee following the ASME guidelines for Achievement Awards. Nominations in other formats can not be accepted. The awards committee members are Terence A. Dear, C.D. Mote, Jr. (Chairman), Allan D. Pierce, Maurice M. Sevik, Eric E. Ungar. The firm deadline for completed nominations in the coming cycle is February 1, 1989. It is recommended that an early communication with the Awards Committee (C. D. Mote, Jr. at 415-642-2544) and the ASME Committee on Honors (Ms. Marilyn Layne at 212-705-7735) be made prior to completion of a nomination. The Awards committee can recommend one person per year to the ASME Committee on Honors for recognition as The Per Bruel Gold Medalist.

Report of the Secretary/Treasurer

The Noise Control and Acoustics Division finances are currently in a strong position with a balance on hand in the ASME Custodial Fund of about \$16,000. The division has embarked

on two note-worthy ventures which involve considerable financial resources and are to be for the most part funded externally.

Each year at WAM we feature the Rayleigh Lecture which has drawn large audiences and provides good visibility for our division. We are in the process of a fund raising effort to provide an endowment for support of the Lecture to cover the various expenses associated with bringing the distinguished speaker to the meeting. The Executive Committee voted to allocate \$10,000 from the Custodial Fund to start the endowment with the intent that our corporate friends will be asked to contribute to bring the balance to a sustaining level of \$20,000-\$25,000.

The Division is also working toward the establishment of the Per Bruel Medal for recognition of outstanding accomplishments in the field. An endowment of \$25,000 is in place and the many details required for the endeavor are in progress.

WALT EVERS MAN

Member News

NCAD members are encouraged to send along Member News for inclusion in the newsletter.

Gary Koopmann

Dr. Gary Koopmann joined the Department of Mechanical Engineering at the Pennsylvania State University at the beginning of 1988 as Director of the Noise Control Laboratory. Previously he taught at the University of Houston for eleven years where he directed their graduate program in Engineering Acoustics. Dr. Koopmann's research interests include developing methods for noise and vibration control using both passive and active controls.

Dan Mote

C. Daniel Mote Jr. is one of 14 ASME members recently elected to the National Academy of Engineering. Academy membership is among the highest professional distinctions accorded to engineers, and honors those who have made "important contributions to engineering theory and practice" or have demonstrated "unusual accomplishments in new and developing fields of technology." Mote was cited for his analysis of the mechanics of complex dynamic systems, which has provided results of great practical importance in vibrations and biomechanics.

Mote was the first Chairman of NCAD. Under his leadership the Division progressed significantly. He has been the Vice President of the Environment and Transportation Technical Group, which oversees several Divisions including NCAD. He is an ASME Fellow and professor and chairman at the University of California, Berkeley.

NCAD Members

The Noise Control and Acoustics Division of the American Society of Mechanical Engineers is conducting a survey to determine the needs of our members so that the Division's activities can best represent its constituency and to develop a data base of expertise, interests, and experience of our membership. One possible use for this information is a directory, available through ASME, to as-

sist persons looking for specific expertise in noise control, acoustics, or vibration.

This side of the questionnaire (multiple choice) provides information that will be entered into a data base for the Division leadership to use for planning and for selecting appropriate programs and activities; the other side will be photocopied as submitted and possibly used in the publication of a "directory."

We need your help to develop a thorough data base and directory. Our division has grown rapidly over the past few

years and we want to be sure that we are tracking the interests of our members accurately. In order to get the data into the computer system for use at the Winter Annual Meeting, we need these questionnaires back quickly. Please return yours by September 15, 1988. Thank you.

Send completed questionnaires to:

William J. Hanson
376 Wataquodock Hill Road
RFD#1
Bolton, MA 01740

QUESTIONNAIRE AMERICAN SOCIETY OF MECHANICAL ENGINEERS NOISE CONTROL AND ACOUSTICS DIVISION

Name _____ Title _____

Preferred Mailing Address: _____

City, State, Zip: _____ Phone () _____

Latest degree: BA MA MBA BS MS PhD ScD _____ Other _____

Publications (in last five years): Number _____

JASA JSV AIAAJ JAHS J of Aircraft Acoustica
 JVASRinD Noise Control Engineering Journal _____

Topics: Active Noise Industrial Noise Machinery Vibration & Noise
 Instrumentation Turbomachinery High Intensity Acoustics
 Industrial Acoustics Ducts/Silencers Structural Acoustics
 Biomedical Acoustics Flow-Induced Noise _____

— Current activities or research areas: _____

— Interests (please be specific): _____

— Areas of expertise and years of experience in each: _____

— Professional Memberships: ASME AIAA AHS AES ASHRAE

SAE IES IEEE INCE ASA AIHA ASTM Other _____

— Registration, Licenses: _____ PE _____

— Professional Associations in which you are active and your capacity: _____

— Would you like to participate more actively in NCAD activities? ____ Yes ____ No

— If so, in what areas? _____

— Other comments: _____

AMERICAN SOCIETY OF MECHANICAL ENGINEERS NOISE CONTROL AND ACOUSTICS DIVISION

(please type information in the spaces provided)

Name _____ Title _____

Affiliation _____

Mailing Address _____

_____ Phone (____) _____

Registration, certification, degrees _____

History (job responsibilities, technical interests, areas of expertise, employment history and professional memberships)

Available as consultant _____ Available as expert witness _____

Signature _____ Date _____

Call for Papers

The Experimental Acoustics and Instrumentation Technical Committee is organizing a session for WAM '89 on "Measurement-Based Models in Acoustics." Topics of interest include, but are not limited to, acoustic field imaging, multiple input-output analysis, wave decomposition, wave-vector techniques, and structural power flow measurements. Authors are invited to submit papers to Prof. Anna L. Pate, Department of Engineering Science and Mechanics, Iowa State University, Ames, IA 50011, (515) 294-0093.

The Structural Acoustics Committee is planning to organize three sessions on the following themes:

(a) High Frequency Structural Acoustics.

Contributions are solicited in the general areas of structural vibrations, structural wave propagation, structure fluid interaction and structural scattering with emphasis on high frequency predictions and measurement. Prospective authors are requested to send three copies of abstracts (approx. 100 words) to:

Prof. Thomas Geers,
Dept. of Mech. Eng.
University of Colorado,
Campus Box 427
Boulder, CO 80309

(b) Structural Damping.

Contributions are solicited in the general area of structural damping, including joint damping, thin-film viscous damping, high-pressure squeeze-layers, etc. Prospective authors are requested to send three copies of abstracts (approx. 100 words) to:

Prof. Joe Cuschien
Florida Atlantic University
Boca Raton, FL 33431

The Analysis Techniques in Acoustics Committee of the ASME's Noise Control and Acoustics Division will sponsor several technical sessions at the 1989 Winter Annual Meeting in San Francisco, California, December 10-15, 1989. Its purpose is to exchange information on current research and development on analysis techniques in acoustics. Contributions are solicited in finite element, finite difference, boundary element, modal analysis, statistical energy analysis, asymptotic modal analysis, and power flow methods. Applications of analysis techniques in noise source modelling, noise level prediction and control, radiation, propagation, structural-acoustic, structural-fluid interaction, wave propagation, vibration etc. are of special interest.

Prospective authors are requested to submit three copies of an abstract (ap-

proximately 100 words) by January 15, 1989, to Dr. K. H. Hsu, Nuclear Equipment Division, Babcock & Wilcox Co., Barberton, Ohio 44203. Authors will be notified of abstract acceptance by January 22, 1989. If accepted for review, four copies of the completed text should be sent by March 1, 1989, to Dr. Richard Keltie, Center for Sound & Vibration, Department of Mechanical & Aerospace Engineering, North Carolina State University, Campus Box 7910, Raleigh, NC 27695.

K. H. HSU

Koopmann Reflects

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your time as possible, so please respond.

Progress on the second initiative was also made but there is still much work to be done. An annuity fund of \$25,000 is

needed to establish a Rayleigh Lecture Fund to provide the lecturer with an honorarium and to cover travelling expenses. After contacting over 20 companies that provide noise control and acoustics products and services, we have now reached the halfway mark. This summer we will make a second fundraising effort to try to have the fund in place by the Winter Annual Meeting in Chicago.

In closing, I want to say thanks to all our members who have given their time, talent and energies during the past year. Although we are all busy with our own profession, I think all would agree that the effort given NCAD is very satisfying and we have enjoyed good fellowship along the way. Our new chairman is Adnan Akay who is one of our founding members, so the division will be in very able hands during the next year.

GARY KOOPMANN

