

A History of the IEEE Antennas and Propagation Society

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Abstract—In 1949 Dr. Lester C. Van Atta and 55 others signed a petition to form the IRE Professional Group on Antennas and Propagation, the third of the professional groups of the IRE. By 1953 there were 1100 members, and the Transactions started under Editor John Smyth. Participation in annual meetings began in the early 50s, and in 1963 the first of the current series of international symposia was held in Boulder, Colorado. There are now over 70 AP-S chapters worldwide. The IEEE Antennas and Propagation Society continues today in its role of communicating developments in the field begun by James Clerk Maxwell and Heinrich Hertz.

Keywords—technical society; antennas; propagation

I. THE SOCIETY

In the decade before World War II, Lester Van Atta (Fig. 1) conducted high energy research, first at Princeton and then at MIT, working with Robert Van de Graff [1]. During the war years he headed the Antenna Group at the MIT Radiation Laboratory, and after the war he moved to the Naval Research Laboratory to direct the Antenna Research Branch. When he was asked to structure the Professional Group on Antennas and Propagation for the IRE, he assembled 56 signers of a petition that resulted in the creation of the third of the professional groups on 1 February 1949 [2]. By the summer

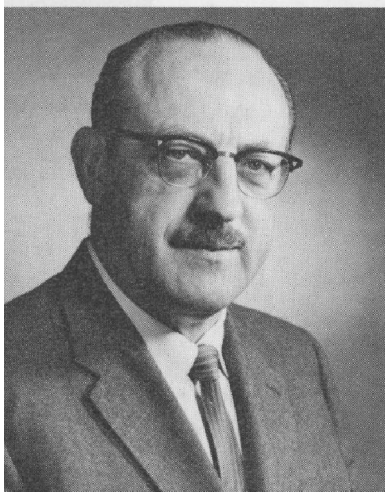


Fig.1. Dr. Lester C. Van Atta

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of that year the constitution and the first slate of officers were approved, and at the end of 1950 there were 910 members. In September 1973 the name was changed to IEEE Antennas and Propagation Society.

II. GOVERNANCE

The Society is governed by an Administrative Committee of twelve members elected by the membership for three year terms, two life members, the officers, and the four immediate past presidents. After a one year term, the President-Elect serves for one year as President. The current AP-S President is Prof. Makoto Ando of Tokyo Institute of Technology. The occupational focus of the Society leadership has changed over the years. Among the 56 founders, 31 were from industry, 18 from government, and 6 from academia. The current administrative committee is composed of 15 from academia, 2 from government, and 4 from industry.

III. MEMBERSHIP

Membership in the Society is currently around 8000, placing AP-S in the mid-range of size of IEEE societies. As a part of Division IV, the Society has common interests with the Microwave Theory and Techniques Society and the Electromagnetic Compatibility Society. Growth of the AP-S membership has gone through three phases. The first was the establishment of the Society, when the membership was at the 1100 level (see Fig. 2). The Society experienced strong growth in the 1960s, leveling off at the 4000 level. In the 1980-90 time frame, the non-U.S. AP-S membership grew markedly. For some years the region 7-10 AP-S membership growth was four times that in Regions 1-6. The International Symposium evolved increasingly into a forum for faculty and students, and the membership increased to the 9000 level. There has been a decline in membership numbers recently, perhaps influenced by economic conditions.

IV. PUBLICATIONS

There are three publications of the Society: the IEEE Transactions on Antennas and Propagation, the IEEE Antennas and Wireless Propagation Letters, and the IEEE Antennas and Propagation Magazine. The IEEE Transactions on Antennas and Propagation is a well-respected source of the progress in applied electromagnetics throughout the world. The initial publications were papers from sessions of the

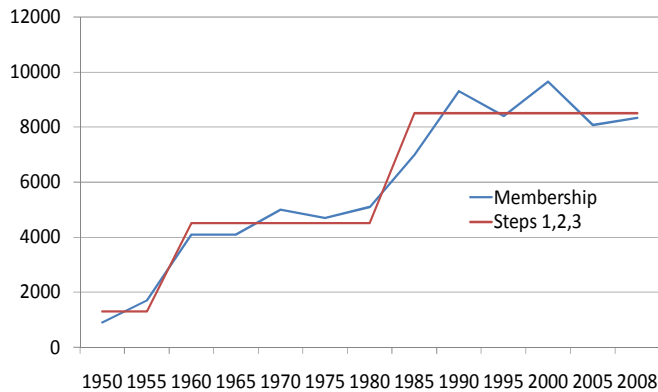


Fig.2. IEEE AP-S Membership

Wescon and the USNC/URSI meetings, but in 1953 the first Editor, Dr. John B. Smyth of the Naval Electronics Laboratory in San Diego, “established the Transactions as the organized technical publication of the membership.” In his words, “the technical papers will have undergone the same careful and discriminating attention customarily accorded to papers published in the Proceedings.” He continued as Editor until Prof. Sidney Bowhill took over in 1960. The Transactions has grown to a monthly publication with an annual page budget of approximately 4000 pages (Fig.3). The current Editor-in-Chief is Dr. Trevor Bird of CSIRO, Australia, who works with 33 associate editors. In 2002 Prof. Piergiorgio Uslenghi began the IEEE Antennas and Wireless Propagation Letters, which provides a forum for the rapid publication of new results in the technical area. The IEEE Antennas and Propagation Magazine is a bimonthly publication of about 1200 pages annually. The Editor-in-Chief, Dr. W. Ross Stone, has brought the magazine from a newsletter-style publication to a journal with multiple technical articles as well as departments covering the Society’s activities.

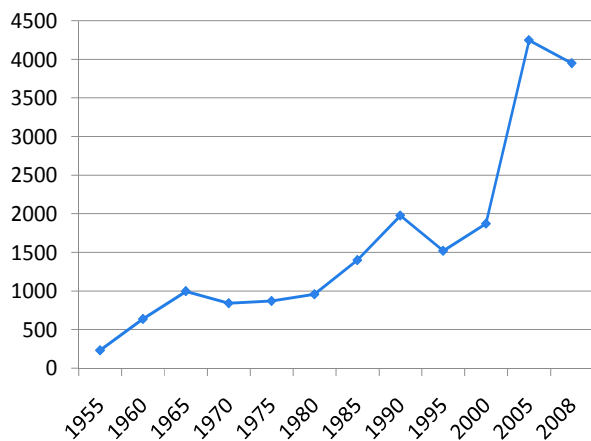


Fig. 3. IEEE Transactions on Antennas and Propagation Page Count

There have been comments occasionally expressed about the utility of the Society’s publications to current engineering practice [3] - [7]. Attempts aimed in part to encourage input from industry authors have included sections of Letters, Communications and Succinct Papers in the Transactions, establishment of industry coordinators, and the appointment of special associate editors.

V. SYMPOSIA

The first symposium, the 1963 PTGAP International Symposium, was held at the Boulder, Colorado Laboratories of the National Bureau of Standards. Since 1966 the IEEE AP-S International Symposium has been conducted cooperatively almost every year with the Radio Science Meeting of the United States National Committee of URSI (International Scientific Radio Union) [8]. URSI is a non-governmental and non-profit organization of member committees from 38 nations under the International Council for Science. It has a mission to stimulate and coordinate studies and applications of radio science. The ten commissions within URSI cover a wide range of technical areas from electronic metrology to radio astronomy. At a typical AP-S/URSI meeting, four or five URSI commissions participate, and a mix of oral and poster sessions are held. Attendance at the Symposium ranges currently from 1400 to 1600. The meetings are held in the United States or Canada in the summer. The scope of international participation has dramatically increased over the past two decades, as shown in Figs 4 and 5. Gross revenue has risen to approximately \$1 million.

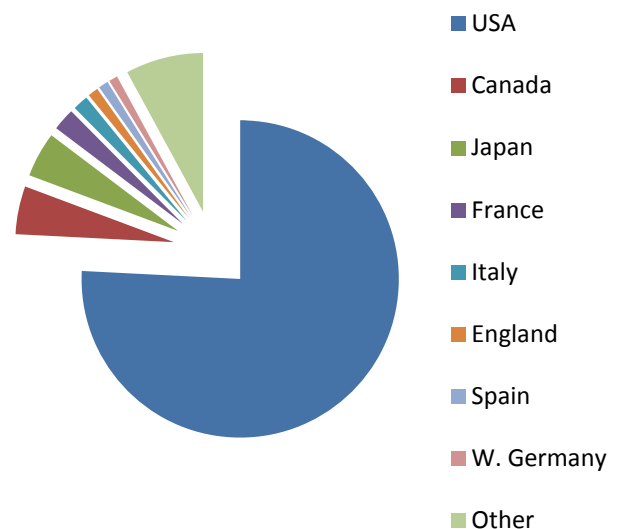


Fig.4. Sources of 1990 AP-S Symposium Participants – 36 Countries

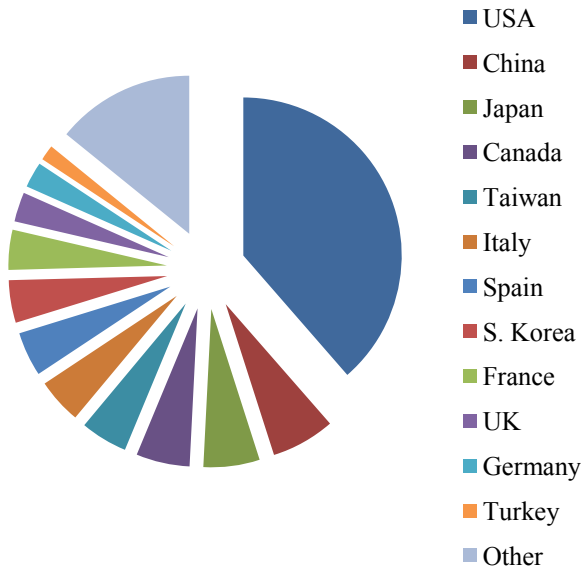


Fig.5. Sources of 2008 AP-S Symposium Participants - 47 Countries

VI. CHAPTERS AND OUTREACH

There were two chapters in 1953, at Los Angeles and Chicago. Within ten years of operation, fifteen chapters were organized. In 1982 there were 25 active chapters, and today there are over 70 chapters of the Society throughout the world. The Distinguished Lecturer Program, started in 1973, provides speakers to the chapters. There are currently ten lecturers whose talks are funded by the Society. Research grants are awarded at the undergraduate and graduate level, and the Student Paper Contest has awarded up to 45 grants annually of \$1000 each to attend the symposium. A Student Design Contest has been started, and an experiment to videotape Symposium special sessions for web presentation has begun. AP-S is participating in the IEEE Expert Now program, and three courses targeted to advanced engineers are in process. A concerted effort to reach students has started which offers the awards mentioned above, as well as opportunities to co-chair sessions and to participate in AP-S committee activities.

VII. PROFESSIONALISM

In the 1970s during a period of heightened engineering unemployment, members of the Antennas and Propagation Society were active in the formation of the US Activities Board, later IEEE-USA. Dr. Victor Galindo, known for his contributions to the field, was a leader in an effort to raise awareness about employment issues with IEEE members. He petitioned for changes to the IEEE constitution and the addition of the new activities [9]. The AP-S and MTT-S were two technical societies that attempted to broaden the charter of the IEEE to include career activities and interactions with government [10].

VIII. GLOBAL EXPANSION

In the past two decades, as activity in applied electromagnetics has increased throughout the world, there has been a corresponding increase in forums for technical information, especially in Europe and Asia. Today there are over ten major technical meetings that are oriented to topics of antennas and propagation. The IEEE AP-S is a technical co-sponsor of most of these meetings, and much of the growth in activity throughout the world is reflected in these meetings. The IEEE International Symposium on Phased Array Systems and Technology will be held again in October 2010, in Waltham, MA, continuing the coverage of new results in this area.

The annual symposium venue has been maintained in the U.S. and Canada, and some Society leaders have felt that this lessens the appearance of the global scope of the organization. Whether this is the case or not, the IEEE Antennas and Propagation Society continues in a position of strength and leadership in the technical area of electromagnetics, illustrated by the partial list of recipients of significant IEEE Awards (Table I).

Table I: Recipients of IEEE Awards

Medal of Honor	Heinrich Hertz Award
<i>H. H. Beverage 1945</i>	<i>Nathan Marcuvitz 1989</i>
<i>Harold A. Wheeler 1964</i>	<i>John D. Kraus 1990</i>
Edison Medal	<i>Leopold B. Felsen 1991</i>
<i>John D. Kraus 1985</i>	<i>James R. Wait 1992</i>
<i>Archie W. Straiton 1990</i>	<i>Kenneth G. Budden 1993</i>
Alexander G. Bell Medal	<i>Ronald N. Bracewell 1994</i>
<i>Bernard Widrow 1986</i>	<i>Jean Van Bladel 1995</i>
<i>Donald C. Cox 1993</i>	<i>Chen-To Tai 1998</i>
Graduate Teaching Award	Harry Diamond Award
<i>Weng Cho Chew 2000</i>	<i>Jules Aarons 1982</i>
Morris Leeds Award	<i>Howard Jones 1985</i>
<i>Donald C. Cox 1985</i>	<i>Robert Mailloux 1992</i>
Judith A. Resnik Award	<i>Edward Altshuler 1997</i>
<i>Sudhakar K. Rao 2009</i>	<i>Hans J. Liebe 2002</i>

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