

Presidential address: Acoustical Society of America—2016

Robert E. Apfel

Yale University, New Haven, Connecticut 06520

(Received 28 May 1996; accepted for publication 15 July 1996)

The president presents his vision for the future of the Acoustical Society and its publications. This address was presented at the Plenary Session of the ASA Spring Meeting in Indianapolis, Indiana on 15 May 1996. © 1996 Acoustical Society of America.

PACS numbers: 43.05.-k

In our fast changing world only a fool would try to predict the future. In my youth, as a young member of ASA, I must have realized that when I sat on a panel where we were asked what the future of physical acoustics would look like. Probably in a panic as my mind went blank, I wisely responded that one couldn't predict the future of physical acoustics because serendipity and circumstance conspire against such prognostication.

After all, who would have guessed that the field of physical acoustics would have burgeoned with developments in areas such as near-field acoustical holography, thermoacoustics, single bubble sonoluminescence, resonant acoustic spectroscopy, and the like. What was clear to me was that if the laboratories in academia, government, and industry provided the right research environment, and if professional societies provided a culture of cooperation and collaboration, then great and unexpected things would happen. I knew that because the people that I interacted with in this Society were bright and innovative scientists and engineers, as well as congenial colleagues—all prerequisites for pushing the frontiers of our disciplines forward. Who would have predicted the surge of activity and commercial interest in diagnostic uses of ultrasound for imaging and flow determination in the body; and the parallel revolution now going on with therapeutic applications of ultrasound, as exemplified by the wonderful workshop on this topic at this ASA meeting? In each of the other technical areas of our Society similar advances, some incremental and many revolutionary, have taken place both in the theory and practice of our professions.

We cannot predict particulars, but we can provide the environment that fosters creativity and collegiality, and let the progress ensue. This is what our Society is all about: Providing an environment for communicating and sharing our new knowledge, and assuring the scientific community that the highest standards of quality are achieved in our formal publications.

Having confessed that I cannot predict the future of scientific advance, I will boldly predict something else of great importance to this and other Societies, and I will further predict something unique to our Society.

For the first of these, I believe, like many others, that we shall be sorely challenged by the information and communications revolutions that are taking place simultaneously. Why? Because the stable relationship that has existed among scientists, professional societies, publishers, and libraries has been upset by the electronic and digital revolutions.

In the old order, each of us knew our proper place. The scientist had two major responsibilities: to produce new knowledge, and to participate in the peer review process that assures the quality of the scientific enterprise. The professional society provided a venue for communication among scientists, and was responsible for mechanisms by which peer review—that is quality control—took place. The publisher assured a uniformity of style in the manuscripts, and was responsible for printing and distributing the scientific journal. Finally, the library archived the resulting publications, for the use of its constituents. While member dues and voluntary page charges have helped to offset some of the costs of publishing, nonmember library subscriptions have grown to bear the major burden, and have become the source of more than half of the income of some professional societies.

Now enter the information-internet revolution, which has sped up communications immensely, and at relatively low cost so far. Many scientists are impatient and do not want to wait for a year between submission and publication of their precious contributions. Libraries are financially strapped, and have begun cutting back on their journal subscriptions. Groups are set up on the internet that allow scientists to post their pre-prints for comment. Is this a publication? What happened to peer review? Libraries get the idea that perhaps they should pay by the article that is requested, and suggest that there be some central depository, a super computer server, with all the relevant publications, mirrored by servers around the world. New organizations spring up that promise to act as the middle person between the scientific societies and the libraries, selling access rather than journals. How will the professional society get compensated for its important function of acting as a host organization for a given field of endeavor and for the extensive peer review process that it coordinates?

As we ponder these questions, the professional society must continue to print pages as well as gear up for the changes demanded by the information revolution. Can the societies afford to carry both of these forms of publication? If they don't, will they become obsolete in the time that it takes for computers to speed up by a factor of 10 (which is probably 3 years)?

Fortunately, we are blessed in our Society with members of diverse talents, including many having a comfortable familiarity with the new tools for participating in the information-internet age. Just in the last year we have intro-

duced meeting abstracts by e-mail, a sophisticated and informing home page on the world-wide web, and our *Journal* on CD-ROM. I am proposing that we experiment with online publication of rapid communications, which are short articles which have a timely relevance. And, in order to test our mettle with the new technology, I am proposing that the whole process become electronic, from the submission by the author of a pre-print requesting comments, to the formal submission of the article, to the peer review process, and finally to the publication of this article on the web, with access to members by password. Of course, these papers would also appear in our print journal.

The electronic revolution presents numerous uncertainties that we must face, but fortunately there are many societies addressing these issues at the same time. Just last week I took part in a meeting of the Council of Scientific Society Presidents, where I co-chair a committee on cyberspace issues. I met with an officer of the Optical Society of America, who is proposing that several AIP member societies, and perhaps others, join together so that we can collectively negotiate with libraries for site licenses for our journals in a way that meets the needs of all parties.

If we are going to surf this net, we might as well ride near the top of the wave, lest we wipe out beneath the froth. If we keep our balance, then in the year 2016, you can go to your computer and call up any article you want. It will contain not only text and graphics, but color images, video, sound, of course, and data, in the form of spreadsheets and computer programs. It will permit automatic links to other articles, and you will probably be able to send a message to the author directly from the midst of his or her article. Quite a vision!

I mentioned to you that there were *two* subjects about the future that I wanted to predict. The second is one role of our Society that transcends the information we share and publish—our bread and butter, or should I say fat-free butter

substitute? This role is in the outreach that we perform in bringing the excitement and relevance of our work to our fellow Americans and, increasingly, to others around the globe. In a sense, this role is more difficult, because in the crush of commitments that most of us face, we often have little time to give of ourselves. We are the science rich, and we owe a debt to the very democratic system that made our success possible. The role of this Society is to facilitate your interactions regarding acoustics outside the Society, in your schools and communities, where science education and community involvement beckon. We can work together to build a service infrastructure that makes it easier for you to exercise your desire to assist in your schools and communities.

Both the information-internet revolution and the service to society aspects of our role will cost money. The meetings we hold and our journals are currently subsidized in part by subscriptions to our *Journal*. We may decide together to re-adjust our finances to pay the full cost of the services provided by our Society. And, to get out ahead with the new investments that we must make for our important new initiatives, we will have made a strong and compelling case to you—members of the Acoustical Society of America—to transcend the ordinary to make the extraordinary possible.

In my President's message that appeared in April in our newsletter, *Echoes*, I thanked you all for your wonderful support, and wrote of the strong traditions of our Society that transcended the immediate and pressing changes that we face. The roots of this tradition extend deep because the commitment is great. And the commitment is great because the creations of our minds are illuminated by the sentiments of our hearts. My fondest wish for 2016 (when I, with some luck, will be 73) is that no matter what path we follow together, we will remain true to our traditions...guided by the sentiments of our hearts.

Thank you.