Japan Trip: A Message From the President and Delegates

One of the more pleasant duties of the SMPTE presidency is to head official Society delegations that are invited by other international organizations in allied fields. These goodwill exchange visits are considered important in the SMPTE's constant efforts to foster and improve friendly relations with international groups that share our interests and goals.

Earlier this year we received two independent invitations that we felt warranted our serious consideration. With some fine tuning of the dates involved, we were able to consolidate this trip to the Orient into a smooth sequential circuit that well satisfied the stated desires of both the Japanese and the Chinese groups that had extended the invitations.

The Japanese invitation came from the Motion Picture and Television Engineering Society of Japan, (MPTEJ) who through their Vice-President, Nobutada Yagi, specifically invited SMPTE President Harold Eady, Engineering Vice-President Richard Streeter, and Richard Stumpf, chairman of the Working Group on High Definition Electronic Production, to present lectures at a High Definition Television Production Symposium in Tokyo, September 17-18, 1985. The SMPTE was also a co-sponsor of this symposium, and other patrons included the national radio and TV network, Nippon Hoso Kyokai (NHK), the National Association of Commercial Broadcasters, and several film and television professional and industrial associations.

The invitation from the People's Republic of China came from the Ministry of Culture, under whose auspices the Chinese Society of Motion Picture and Television Engineers (CSMPTE) organized an Academic Lecture Conference in Beijing from September 21-25, 1985. Mr. Di Sijie, Vice-President of the CSMPTE, and a member of the Film Bureau, provided a list of technical topics that SMPTE delegation members were asked to cover, and the hope was expressed that ties between the SMPTE and the CSMPTE would be strengthened by this visit.

The SMPTE delegation that visited China included additional officials from the Society: Executive Vice-President Carlos M. Kennedy, Secretary Stephen Kerman, and Governors Irwin Young and Bengt Orhall. Also joining the delegation were SMPTE members Arnold Brown, Joseph Roizen (who acted as *Journal*

Note: Joseph Roizen acted as editor for this article and contributed most of the photos. Although Roizen went on the trip to China on behalf of Dolby Laboratories, Inc., he joined the SMPTE delegation in Tokyo and made a valuable contribution to the success of the trip to the Orient.

The full SMPTE delegation at the HDTV Production Symposium included (L-R) Joe Roizen, SMPTE Journal *Editorial Board; Carlos Kennedy, Executive Vice-President; Harold Eady, President; Richard Stumpf, Chairman, Working Group on High Definition Electronic Production; Richard Streeter, Engineering Vice-President; and Irwin Young, Governor.*

The proceedings at the HDTV Production Symposium attracted an SRO audience, as shown in the auditorium of the Nihon Kogyo Bank. In the background is a 35mm motion-picture projector used to show the excellent video-to-film transfers of HDTV-originated programs.

correspondent), and Paul Yang, who acted as the China trip coordinator. In addition, Jean Pierre Beauviala, Aaton, France, participated in the Beijing symposium. After Beijing, the delegation of Eady, Streeter, Young, Orhall, and Brown continued on to visit other cities in China. They also visited Hong Kong, where they participated in technical lectures and visits to several Chinese television stations, motion-picture studios, and laboratories.

The overall impression was that this trip was an outstanding success in terms of the goals set for it. We and the other official delegates felt we had established better relations with both the MPTEJ and the CSMPTE (PRC), that they had contributed to the technical conferences in a significant way, and we had set the stage for greater future cooperation between the SMPTE and its companion organizations in the Far East.

In the interests of time, and because this turned out to be a rather extensive trip with a great deal of activity to recount, we have decided to present this report in two parts. The following is the first half, relating to our experiences in Tokyo and Expo 85 at Tsukuba Science City. The second part, which will be published in the January *Journal*, will cover the Beijing, Shanghai, Hangzhou, Guangzhou, and Hong Kong visits, and our participation in the SMPTE Academic Lecture Symposium.

The delegation was delighted to have the opportunity of visiting these countries, of meeting our counterparts over there, and of contributing to a substantial exchange of technical information, as well as a further cementing of already friendly relations. It was indeed both an exciting and a rewarding trip, which we hope to share with all of our members through these pages in the *Journal*.

The HDTV Production Symposium

Most of the major conferences held up to now on the topic of high-definition television (HDTV) have dealt with the technical aspects of the system and its components, rather than with how an HDTV system would be applied to program production. While there have been individual examples of HDTV productions shown over TV projectors, or transferred to film for optical projection, there has never been a conference completely devoted to the topic of HDTV program production. This symposium in Tokyo could be considered as the first such meeting catering to the production side, and involving many filmmakers whose interest in HDTV comes from its potential application as a mastering system for film.

Both the speakers' rostrum and the audience were almost equally divided between television and film representatives, who were anxious to interface with each other on their relative interests in HDTV. In addition to the individual presentations over the two-day period, there were roundtable panel discussions about all of the issues at hand.

Interest in Japan on the topic of HDTV was very high, as evidenced by the packed lecture hall at the Nihon Kogyo Bank auditorium, and by the sessions which ran into overtime to accommodate the questioning periods.

The symposium opened with a short welcoming address by the President of the MPTEJ, Masahiko Mori-

MPTEJ President Masahiko Morizono, deputy president, Sony Corp., Japan, opens the HDTV Production Symposium and welcomes the SMPTE delegation and its co-sponsorship of this first meeting devoted to the programming side of HDTV.

zono, expressing his appreciation of the SMPTE high-level delegation on hand, and wishing them a successful and pleasant stay in Japan. As deputy president of Sony Corp., one of the major developers of HDTV equipment, Morizono was vitally interested in the HDTV field and its potential as a world production standard for high-quality television and film production.

After Morizono's opening remarks, SMPTE President Harold J. Eady gave the keynote address that opened the actual conference sessions. The text of his address appears in this issue (see p. 1298).

Eady reviewed the SMPTE's extensive role in providing an open forum for emerging technologies in both film and television, and he reminded the audience that NHK's first North American demonstrations of their 1125-line, 60-field HDTV system was made by Dr. Fujio and his associates at the Society's 13th Television Conference in San Francisco in February 1981. He discussed the sequence of national and regional SMPTE conferences, where additional demonstrations and many Japanese papers were given on the same topic. He pointed out that Francis Ford Coppola's first interest in HDTV was sparked by the demonstrations in San Francisco, and that the 1985 Television Conference had a substantial segment allocated to HDTV and film-transfer technology which was shown at the studios of KGO-TV and the North Point Theater.

Taking advantage of this unique opportunity to address so many members of the Japanese film and television industry, Eady completed his address with a liberally illustrated review of SMPTE history, its growth, goals, and current achievements. He showed graphs of steady growth in general membership, sustaining membership, conference attendance and, most important, standards committee meetings. Society highlights covered included the established standards in film and television, and the recent consensus on a digital VTR format. Eady closed by inviting members of the audience to consider SMPTE membership, and by wishing the organizing committee a most successful HDTV symposium.

Dr. Kotaro Wakui of NHK presented a paper titled "HDTV As a New Visual Media." His presentation covered a very wide range of HDTV principles and issues, and he admitted that the 60 to 50-Hz field rate conversion technology was still a point of considerable disagreement among proponents and opponents of the NHK-developed HDTV.

Dr. Wakui also stated that he believed NTSC to be the best system for the economic delivery of television images, and that parallel development work should continue to improve both NTSC and HDTV. However, he gave a variety of reasons as to why the Japanese were proposing an HDTV system different from NTSC. He backed up his statement by showing the rapid changes that have already taken place in TV technology, which have made even NTSC more practical. He gave the example of an early color camera weighing 500 kg and consuming 3 kw of power, which has been displaced by modern cameras weighing 6 kg and using only 20 W of electricity.

NTSC has improved by three magnitudes and became economically viable in two decades. Dr. Wakui felt that HDTV could do the same in half the time, especially at the rate that integrated circuit (IC) memories and other new components are developing. Dr. Wakui closed by saying that HDTV was now at the "exhibition" stage, and that much has to be done to develop the system for practical applications.

Richard Streeter, SMPTE Engineering Vice-President, speaking on behalf of the Society, gave an update on the SMPTE/ATSC position on 1125-line, 60-field HDTV that was to be taken at the CCIR meetings in Geneva. Streeter, who is with the CBS Broadcast Group in New York, expanded on Eady's presentation by explaining how the SMPTE committee's diligent work had provided a significant contribution to the ATSC, which then made recommendations to

Presidents Morizono and Eady expressed satisfaction at this friendly joint venture between the MPTEJ and the SMPTE. To the right of Mr. Eady is Hiroshi Tanimura, who later gave a review of current second-generation HDTV equipment now available.

the U.S. State Dept. which were adopted as the official American stand at the CCIR.

Besides giving a very detailed and well-illustrated review of the standards activities going on in the HDTV field, Streeter also emphasized the need for world agreement on an HDTV standard for primary program production. Since CBS had been heavily involved with NHK Research Laboratories in joint demonstrations of HDTV in the U.S., Streeter showed a series of slides depicting his network's use of the HDTV equipment for experimental television coverage of sports events and other programs. A 35mm film transfer from an RAI HDTV production made in Italy and converted to film on a Sony laser-beam recorder as well as several other such conversions, were shown throughout the symposium to illustrate the quality that could be achieved by mastering on tape using HDTV and converting to film for cinema projection.

All speaker presentations were made with simultaneous translation in both Japanese and English. Here Richard Streeter's comments on the SMPTE/ATSC recommendations to the CCIR committee are fully understandable to Japanese delegates by means of pocket translators.

The next speaker, Hiroshi Tanimura of Sony, covered the technology of HDTV with a paper that described the developments that led to the currently available equipment, much of which is manufactured by his company. Tanimura said that they were now building second-generation HDTV equipment, much of it improved over the prototype gear shown earlier. They have developed special high-performance 1-in. Saticon pickup tubes with electrostatic deflection, new camera enhancement circuits, and better optical systems, including fiber-optic interconnects between camera head and CCU.

Tanimura concluded that the picture quality of the HDVS* is as good as, or even surpasses 35mm film, that there is five times more information contained in a high-definition system over conventional television, and that Sony has now produced a video production system which has enough components (camera, VTR, peripherals) to satisfy all of the basic requirements for TV program production. Both Tanimura and Morizono made

*Sony name for their HDTV.

HDTV Production Symposium Program

1. Opening Address
   Harold J. Eady, SMPTE President
2. "HDTV As A New Visual Media,"
   Kotaro Wakui, NHK.
3. "HDTV Standards and World Trends,"
   Richard Streeter, CBS.
4. "High Definition Television Technology,"
   Hiroshi Tanimura, Communication Products Group, Sony.
5. "Large Picture Display Equipment For High Definition Television,"
   Keisuke Yamamoto, Matsushita Electric Co., Inc.
6. "A Proposal For Reformation of Film Making Method,"
   Hiroaki Kumata, NAC Inc.
7. "Film To Video/Video To Film,"
   Nobuaki Matsumoto.
8. "Problems Of HDTV In Post-Production,"
   Noboru Yura, Far East Labs.
9. "Color Motion Picture Film For Laser Recording,"
   Satoru Hanjo, Fuji Photo Film Co., Ltd.
10. "A Consideration of Image Display System for Large Audiences,"
    Haruo Teshi, the Japan Motion Picture Equipment Industry Association.
11. "Program Production By Means Of HDTV: Its Present Situation and Future Image,"
    Ken-ichi Hara, NKH.
12. "A Film Studio Looks at HDTV,"
    Richard J. Stumpf, Universal City Studios.
13. "A Major Motion Picture Production Enterprise's View For HDTV,"
    Yukichi Ohashi, Toho.
14. "Expectation and Request For HDTV as a Television Program Director,"
    Sakae Okazaki, NHK.
15. "The Software of HDTV: The Directing Technique and Its Prospect with Trials,"
    Yoshiko Muraki, Today and Tomorrow.
16. "What The Motion Picture Cameraman Is Expecting For HDTV,"
    Kurataro Takamura, Japan Association of Cinematographers.
17. "The Possibilities Of HDTV As A Video Media,"
    Yoshikazu Tsukamoto, Dentsu.

Richard Stumpf replies to a question from a delegate, which he understands via the miniature radio and earpiece carrying simultaneous translations of the Japanese-language comments made by speakers or attendees.

reference to a "new video culture" arising from HDTV.

Keisuke Yamamoto of Matsushita followed with a look at large picture display equipment for HDTV. He covered both direct-view picture tube and projection systems, but perhaps the most interesting part was his description of the progress made in producing 40-in. CRT display devices.

Admitting that 40-in. tubes are still somewhat bulky and heavy, he stated that they were even now a practical mass-production device based on NHK specifications. He also described the most advanced 400-in. high-definition display used at the Cosmic Hall at the Tsukuba '85 Exposition, which used 12 specially developed 10-in. projection CRT's (4 for each primary *RGB* color) and produces a picture 4.8 m × 8 m.

In conclusion, he said that direct-view and projection systems for HDTV are already acceptable means of showing large, high-resolution images, and that only flat panel displays still required much more development before becoming a household fixture. In the meantime, he felt the 40-in. direct-view tube was the answer to HDTV, especially if its depth could be reduced to 20 cm. Current HDTV equipment is too heavy, consumes too much power, and is too expensive, but all that will change with the progress that is expected in this field. Yamamoto's copious illustrations gave a good overview of the mechanics and dimensions of all current large-screen display systems.

The next paper, by Hiroaki Kumata of NAC, covered laser beam recording and playback of film originated in HDTV. He referred to this technique as Media-Mixture and described equipment built by his company to accomplish these tasks. Their laser telecine, which is quite a compact machine for this purpose, was used extensively at Tsukuba for HDTV film display. It used three lasers (1-W Argon at 514.6 nm for green, 50-mW He-Ne at 632.8 nm for red, and a 10-mW He-Cd at 441.6 nm for blue) and produced excellent pictures in 1125-line, 60-field format. There was a Sony demonstration of such a laser beam film transfer using the RAI production of Omnicron, and some segments showing good chroma-key sequences with hair, smoke, and water.

On being questioned on the film-to-tape and tape-to-film transfer qualities, Yamamoto felt that HDTV was equal to 35mm film, but some film people in the audience were not convinced and stated that 35mm film was still superior. This is an argument which is likely to continue for a long time.

Noboru Yura, president of Far East Labs, a major production and post-production facility in Japan, discussed the problems of HDTV in post-production. He was concerned with the fact that multiple generations of HDTV ended up with a poor

Visiting Expo '85 at Tsukuba Science City were (front) Mr. and Mrs. Yagi, and (rear) Governor Irwin Young and President Harold Eady.

At a dinner hosted by Mr. Morizono (L-R): Mr. Yagi, Carlos Kennedy, Masahiko Morizono, and Harold Eady.

signal-to-noise ratio (SNR) and other limitations. In fact he showed a chart of HDTV SNR through three generations which showed luminance SNR going from 42 dB down to 39 dB, and chrominance SNR deteriorating from 46 dB to 41 dB. In his view, film still has an edge in post-production.

The rest of the papers continued to expand on these themes. Richard Stumpf, Universal City Studios, current chairman of the SMPTE Working Group on High Definition Television Electronic Production, gave a presentation entitled "A Film Studio Look at HDTV." He explained the work of his group and the dilemma faced by filmmakers in plunging into a new technology.

The SMPTE delegation was unanimous in its admiration of the superb pictures that were shown at the symposium via large-screen 1125-line, 60-field HDTV color video projectors, and by the film transfers shown on 35mm motion-picture equipment. Using both domestically generated programming and some made by various international networks, the delegates to the symposium saw a wide array of material that attested to the ultimate quality that the NHK-developed HDTV is capable of under almost every kind of pictorial condition.

Two Japanese productions were particularly memorable. The first was a traditional Japanese dance group in colorful costumes, under dramatic lighting conditions, which taxed the full contrast range of the HDTV medium. The second was a travelogue of the Mount Fuji area, with spectacular low-altitude aerial views of Japan's most famous snow-capped volcano that rises from the sea to 12,365 ft.

There was also a special production made by Radio Televisione Italiano (RAI) of a dream sequence with no dialogue, in which the story was related by the visual images and the score. RAI used the Sony HDVS equipment to shoot in film style, and the tape was then transferred to 35mm film and projected. This was used as an example of the practicality of video HDTV origination for eventual cinemetic use. There were, of course, a series of test scenes of various types of typical program material: a pastoral setting with horses and cats, a modern Japanese song-and-dance group doing Oriental rock, nighttime city skyline scenes of Tokyo, and, perhaps the most memorable of all for the American visitors, scenes of the 1984 Los Angeles Olympics opening and closing ceremonies in all their colorful grandeur.

These demonstrations of the excellent pictorial quality of the 1125-line, 60-field NHK-developed HDTV system showed clearly that both the Japanese hardware manufacturers and the production people to whom the equipment was provided had done an outstanding job in putting this fledgling technology through its paces.

The panel discussions brought out opposing views regarding HDTV, even among the Japanese speakers. Hidaki Maekawa of TBS, in his paper, questioned just what his television network could do with HDTV, as they can't own a channel to broadcast it on. They can only produce HDTV

Nobutada Yagi and Harold Eady exchange symbolic gifts between the MPTEJ and the SMPTE. Eady presented commemorative plaques, official SMPTE publications, and a specially made world clock as tokens of friendship during the various events in which the SMPTE took part.

At the end of the HDTV Production Symposium, the principal speakers gathered for an extensive panel discussion.

programs, but don't know how they can participate in the distribution.

There were also questions about the cultural impact of HDTV, and its practicality in small Japanese homes with limited viewing space. One survey in Japan showed that most respondents felt that what they expected from future television services was CAPTAINS (teletext) or interactive capabilities, rather than HDTV. In fact, only 4% chose HDTV as a desirable potential service. Richard Stumpf suggested that HDTV could be distributed in VCR cassette form, and shown and sold in cinema theater lobbies.

In general, the hope was expressed that film and television would continue to work in harmony. In this regard, Richard Streeter announced that the SMPTE had formed a study group to look into the possibility that basic film production could be converted to work at 30 frames. Streeter also reiterated that much effort in the U.S. had gone toward creating a world standard for HDTV production, and that this would eventually lead to better color television pictures in the home. One Japanese delegate pointed out that even though engineers provide the tools for HDTV, its success can only come from the people who use those tools correctly.

Mr. and Mrs. Harold Eady are shown on the Sony JumboTRON screen at the Expo '85 exhibit. Visitors could see their likenesses on the giant screen, the largest TV screen in the world.

The Social Side

The Japanese organizers of the HDTV Production Symposium did everything possible to make sure that the members of the SMPTE delegation were thoroughly exposed to Japanese film and television technology, and that they were well entertained during evening hours. Of the two days prior to the symposium opening, one was a national holiday in Japan called "Respect for the Elderly," and the other was a Sunday. As a result, Mr. Yagi arranged for the group to visit the Expo '85 at Tsukuba Science City, and see the major pavilions firsthand on a VIP basis. This meant avoiding the 3-4 hour waits in line to get into the most popular exhibits.

Much of what the SMPTE delegation saw was the Japanese adaptation of the North American-developed large-screen film technology like IMAX or 3-D, with special produc-

The SMPTE "official" delegation (L-R: Streeter, Stumpf, and Eady) enjoying a humorous moment between the papers.

tions created to suit the local audience. Surprisingly, much of the super-size imagery was shot in the Canadian Rockies, the American West, or other non-Japanese locations. However, virtually all of the electronic images were shown on Japanese-produced hardware, from the giant Jumbo-TRON Trinilite TV screen that could entertain 50,000 people at once, to the many displays of HDTV in the various pavilions sponsored by Toshiba, NEC, Panasonic, and many other well-known Japanese companies.

The overall impression of Expo '85 was that it was an audiovisual sensory overload that the eyes and the ears had to somehow cope with. Touring the "Little Scientists Hall" quickly showed how Japanese children, some as young as four or five, were adapting to computers, as they sat at the color terminals punching up interesting screenfulls of information.

Several receptions and banquets were also scheduled, the most memorable of which was held on the closing evening of the symposium. Hosted by Morizono and Yagi, and dedicated to the organizing committee and the SMPTE delegation, it was a gala event in a beautiful hall and dining room, where many toasts were exchanged to the friendship between the MPTEJ and the SMPTE. Executives of both societies exchanged token gifts and promised future cooperation in areas of mutual interest. As the level of cordiality grew, various banquet attendees rose to make statements about their views on the Symposium, on the impact of HDTV, or on the state of Japanese/American relations.

The most memorable statement came from Keinosuke Nakajima, president of NAC, who claimed to be the Japanese with the longest SMPTE membership in the room, and perhaps in the country. Nakajima, with visible emotion, recalled vividly how a quarter-century ago, he had travelled to the then Meccas of his film profession, Hollywood and New York, specifically to attend an SMPTE Technical Conference and to join the Society. He felt strongly about his long-time membership in the SMPTE, about the many friends he had made through the years, and he always wore his SMPTE pin with consummate pride. Now president of a major Japanese company, he still treasured those early memories of his youthful enthusiasm in participating in an SMPTE event and joining a professional family of peers. Nakajima's story was warmly received, and it was a fitting close to a most enjoyable evening.

Conclusion

The HDTV Production Symposium was another forward step in the steady path toward HDTV of the future. While there were no definitive solutions to the many problems raised by this new technology, the exposure of this audience to the pros and cons of HDTV was in itself a very useful exercise. One could not help but marvel at the high-quality images being shown on large screens, whether by direct video from tape, or by transfer to film.

Like all new technologies, HDTV is still in a stage of infancy where the eventual effectiveness will only be known when some of the hurdles of cost and complexity are crossed. There are also competing systems that offer other routes to the common goal of better television images for the average home.

To the surprise of many delegates at the symposium, a Sony executive, during the closing panel discussion, gave a rather long comment from the floor that the Japanese should not claim the invention of HDTV. He reminded the audience that right after World War II, Arthur Rank in the U.K. had proposed an HDTV system, and others had also experimented with high-resolution systems. In his views, NHK did not create HDTV, but developed a special system based on extensive research work done by themselves, which led to the adoption of the 1125-line, 60-field, interlaced approach. In a way, he was paraphrasing Sir Issac Newton's comment of "standing on the shoulders of a giant" to be able to see a little further.

In retrospect, the HDTV Production Symposium served a very timely and useful purpose, and no doubt will be the first in a series of many to come. Anyone who attended it could feel privileged to have done so.