

The SMPTE in an Age of Transition

By Maurice L. French

President Takagaki, distinguished guests, ladies and gentlemen.

I'm honored to be invited here and to have this opportunity to give an overview of SMPTE activities in these times of technological transition. I bring greetings and wishes of success for this conference from the President, officers, Board of Governors, and members of the SMPTE.

Separated by thousands of miles, our Societies are half a world apart, but in the world of motion-picture and television engineering we are virtually inseparable in our commonality of purpose. Professor Yagi's kind invitation to me to be part of your meeting underlines the value that your Society places on our relationship. Let me assure you that the Society of Motion Picture and Television Engineers also recognizes the importance of continued liaison and cooperative endeavors.

Through education, innovation, discipline and hard work, the tremendous achievements of Japan as a nation have astounded the world. This progress towards the 21st century that has retained the cultural heritage and many of the old customs provides a unique and important balance to your country. For after all, if you don't know where you came from, it's difficult to know where you're going.

Recognizing Japan's advanced developments in television and motion-picture technology, the Society is proud to have 120 Japanese members in the SMPTE and the participation of many of these prestigious engineers in our international standards activities.

The Society of Motion Picture Engineers (SMPE), as it was known then, was founded in 1916. C. Francis Jenkins was its first President. These were the formative years of the soon-to-be-booming motion-picture industry. Manufacturers were independently designing their own equipment. There were no standards or interchangeability. The Society members worked hard to bring order



SMPTE Executive Vice-President Maurice L. French addressing delegates at the MPTeJ Exhibition in Tokyo.

to this rather chaotic situation. One of the prime purposes of organizing the Society was to standardize the motion-picture industry. The world motion-picture standards that are so vital today result from work started in 1916 and from the continuous work undertaken throughout the years since. Television was added to the Society's name in 1949. The Society at that time responded to the needs of the television age, and our standards activities in both motion pictures and television have continued since.

Technology is by definition the application of science, and image technology has indeed evolved as a composite of the photographic, electronic, and computer sciences, producing the exciting images and sounds of the 80s. While some of the earliest images or hieroglyphics were confined to the walls of caves or sealed in the tombs of the ancient pharaohs, images today are broadcast or exhibited worldwide, and millions of people have home receivers enabling them to select from an increasing number of sources, events, or programs that inform or entertain them. They have been stimulated and they are constantly being surprised by the creativity of production and the level of engineering achievement. New standards of quality have been set, and our audience's expectations are high and constantly rising.

The worldwide distribution of programs to meet the insatiable demand

in a competitive market not only mandates superior program content of optimum technical quality, but also places high priority on international standardization.

Since its inception, the Society of Motion Picture and Television Engineers (SMPTE) has assumed a leadership role in standards. Many of today's excellent standards are the result of years of dedicated work by the Society members, but the evolving magnitude and scope of the task, influenced by the immediacy of need, adds still new responsibility and places even greater emphasis on the importance of international standardization.

The SMPTE Engineering Dept. is undergoing reorganization to provide more support to the due process engineering committees (the working groups and technology committees), in an effort to expedite our standards work. There are 82 engineering committees actively involved in pursuing the Society's major commitment to standardization, and the Society is represented in 21 other organizations that include the American National Standards Institute (ANSI), Advanced Television Systems Committee (ATSC), European Broadcasting Union (EBU), International Electrotechnical Commission (IEC), International Organization for Standardization (ISO), and the International Radio Consultative Committee (CCIR).

The SMPTE administers, in ANSI's name, the Secretariat of the ISO Technical Committee 36 on Cinematography.

The Society's working groups, study groups, and the seven technology committees are at present concerned with many issues. Their work in 1987 is detailed in the Progress Report, published in the April 1988 issue of the *SMPTE Journal*. Here are a few highlights of work in progress in the technology committees.

Committee on Film Technology (F2)

The Film Technology Committee, chaired by Rick Olbrechts of Agfa-Gevaert, is responsible for motion-

Text of address given at 20th Motion Picture and Television Equipment Exhibition of the Motion Picture and Television Engineering Society of Japan, May 19-20, 1988, in Tokyo. Maurice L. French, SMPTE Executive Vice-President, is with the Canadian Broadcasting Corp., Toronto, Ont., Canada.



(L) Kenjirow Takayanagi, Honorary Member and "father of Japanese TV;" Kinya Takagaki, MPTEJ Past-President; Executive Vice-President Maurice French, and Brigid French.

picture raw stock (including perforated magnetic materials), as applied to dimensional specifications. The scope also includes motion-picture film behavior in cameras, and steadiness, as well as specifications of camera image areas.

This committee has a Study Group on 35mm 3-Perforation Frame Advance, under the leadership of Ed Zwaneveld (National Film Board of Canada). They are continuing to investigate worldwide issues with regard to this 35mm format. Ninety-three experts in 18 countries were queried on 25 points presented to them as part of a "Delphi Study." The Delphi Study consists of three rounds, with an anticipated final-round conclusion in about 18 months. The use of the 3-perforation format has found mixed acceptance as an economy measure, and it is expected that the Delphi Study will assist in addressing other issues such as impact on cameras, sound quality, projectors, laboratory equipment, and the many other considerations involving a change in a film format.

A final report of the Study Group on 30 Frame Film Rate, submitted by Chairman Ed DiGiulio, Cinema Products Corp., with regard to 35mm-30 frames/sec, indicates a need for investigation in the areas of the 30 frames/sec rates on post-production and film laboratories as well as telecine transfer in the 50 cycle/25 frame-rate countries and of product distribution. Other areas requiring further investigation involve soundtrack quality, lamp brightness, and projector changeover.

Committee on Theatrical Projection Technology (P3)2

The Committee, chaired by John Pytlak of Eastman Kodak Co., has as its primary area of responsibility the technical quality of the projected image seen on the motion-picture theater screen.

Issues under consideration include a proposal for an Engineering Guideline for evaluating the quality of movie presentations. It covers projection factors such as formats, screen luminance, contrast ratios, jump and weave, and lenses. In the process of completion are proposals for a Recommended Practice or Engineering Guideline on methods for measuring 35mm projector and lamphouse illuminance.

Laboratory Services Technology Committee (L6)

This committee, chaired by Rami Mina of Eastman Kodak Co., is responsible for all phases of the operation of laboratory services in the preparation and duplication of motion-picture films and video products. The committee is working with the Film Technology Committee on a proposed Recommended Practice dealing with "Edge Identification for 35mm Release Prints" to relieve the problems that on occasion arise when leaders are removed from reels of release prints while being assembled them for "platter" projection systems.

Audio Recording and Reproduction Technology (A12)

The Audio Recording and Repro-

duction Technology Committee, chaired by Ioan Allen, Dolby Laboratories, has been involved in many projects, and areas of interest include the following:

- Recommended Practices in the areas of leaders, channel assignments, labelling, preemphasis, audio level metering, and volume range control for film masters intended for transfer to video media

- Further work on motion-picture auditorium acoustics in reverberation time, power output requirements of amplifiers, calibration of reference sound pressure level, sound isolation between adjacent auditoria, and low-frequency loudspeaker usage. The digital sound-on-film study showed that a bit size as low as 18 μm is feasible. System needs and format requirements are now under study, and of course work has begun on investigating the issue of sound quality on 35mm 30 frames/sec film.

New Television Technology (N15)

The work on HDTV falls within the jurisdiction of the new Television Technology Committee, chaired by Bill Nicholls, CBS. HDTV is a technology that is of interest to both the motion-picture and television segments of our industry.

The Working Group on High Definition Electronic Production, chaired by Dick Stumpf, Universal City Studios, continues to make remarkable and substantial progress.

The Ad Hoc Group on High Definition Production Colorimetry, chaired by LeRoy DeMarsh, Eastman Kodak Co., has work in progress toward a comprehensive tutorial on television colorimetry. It will include a comparison of the gamut of the proposed HDTV primaries to that of motion-picture film. A practical demonstration of colorimetry concepts is being planned by this group for the SMPTE Conference in Oct. 1988.

The Ad Hoc Group on Interface Between HDTV and Film is provisionally chaired by Jim Mendrala, Sonex International Corp. This group was formed in response to questions of the intercuttability of HDTV with film. The first meeting of the group was held on March 2. The group will make a series of tests, using HDTV and film cameras side by side, to define what is needed to achieve a high degree of intercuttability of film. The first shoot is scheduled for April or May 1988.



(L-R): Takayoshi Miyakita, Nobutada Yagi, Brigid and Maurice French, and Kinya Takagaki.

Television Technology Committee (T14), Chaired by Merrill Weiss, NBC

Outstanding cooperation with the European Broadcasting Union (EBU) has resulted in the writing of several standards by the Working Group on Studio Video Standards. Interfaces for both a serial and a three-component parallel video standard were developed by the Committee and have been forwarded to the American National Standards Institute (ANSI). A document for synchronization signals has been received by the Television Technology Committee from the Working Group for approval by the SMPTE letterballoting process. Also, RP 125, which covers the bit-parallel interface, is being revised to add clarity, while a new document is being considered for 10-bit or higher interfaces. Demonstrations and further evaluation are being made to determine the advisability of set-up removal, all this in close cooperation with our colleagues in the EBU.

The Working Group on Professional/Studio Monitor Systems presented the Television Technology Committee with three documents:

1. A draft proposed Standard on Performance Standards for Professional/Studio Television Monitors
2. A draft Recommended Practice for Viewing Conditions
3. A draft Recommended Practice for Alignment of Professional Color Picture Monitors

Television Recording and Reproduction Technology Committee (V16)

The Television Recording and Reproduction Technology Committee,

chaired by David Fibush of Ampex Corp., is working in several areas of tape technology.

A Working Group on D-1 and D-2 Applications is investigating operational questions that arise in planning for television recorders using the SMPTE D-1 and proposed D-2 digital recording formats. Studies and documentation include items such as signal connectors and connector pin assignments, cassette labelling systems and user-hole assignments, applications and use of bar-code label systems, operational parameters of multicassette machines, and similar matters.

All of the technology committees are looking at how the 30 frames/sec and 3-perforation pulldown issues affect their areas of responsibility.

The National Academy of Television Arts and Sciences recognized the Society of Motion Picture and Television Engineers and the European Broadcasting Union by presenting an Engineering Emmy Award to both organizations for the standardization of D-1 component digital videotape recording. The D-1 standard is the result of an extensive two-year effort by the SMPTE and the EBU.

To strengthen the cooperative relationship of the SMPTE worldwide, last May the Society participated in the second Motion Picture and Television Engineering Society of Japan High Definition Symposium, held here in Tokyo. In June of 1987 a delegation, led by the President of the SMPTE, visited motion-picture research institutes, laboratories, production studios, and manufacturing facilities in the Soviet Union, in Moscow, Kiev, and Leningrad.

In the fall of 1987, the Society was represented by the President and members at the Broadcast Technology

Symposium and the International Electrotechnical Commission (IEC) Standards Meeting in Beijing, People's Republic of China.

The SMPTE was also represented at the Montreux International Television Symposium and Montreux, Switzerland, and at the 10th British Kinematograph Sound and Television Society (BKSTS) Film and Television Conference and Exhibition in Brighton, England.

The SMPTE Technical Conferences continue to attract an increasing number of delegates from all over the world. In Los Angeles in 1975, registration was 5000, and there were 160 exhibit booths. In Los Angeles in 1987, the 129th SMPTE Conference attracted a record 17,000 attendees. There were 796 equipment exhibit booths that occupied 80,000 sq. ft. of convention floor space, involving the participation of companies from several countries.

The theme of the conference was "Imaging and Sound, Today and Tomorrow." During the outstanding technical program, 149 papers were presented by authors from many corners of the globe. In addition to the papers presentations, one of the highlights of this conference was an engineering demonstration that presented continuous screening of HDTV material on Sunday and Tuesday. The screening demonstrations included production material from many countries. The demonstrations were jointly sponsored by the SMPTE and the Motion Picture and Television Society of Japan. This event attracted many people from the Hollywood production and post-production community. While it was apparent that there were technical areas that required further work, they were generally surprised at the quality of the 35mm film material transferred from High-Definition production systems. Many could also see the possibilities of High Definition as a production tool.

The 130th Technical Conference will be held at the Jacob K. Javits Convention Center in New York City, Oct. 15-19, 1988. This new Convention Center, completed last year, occupies six blocks on the West Side of New York along the Hudson River. There will be a large equipment exhibit, and many outstanding paper sessions are now being planned.

The SMPTE Annual Television Conference, now in its 22nd year, was held Jan. 29 and 30 at the Opryland



(L) Yoshiko Yagi, interpreter, Maurice French, and Kinya Takagaki.



Brigid and Maurice French.

Hotel, Nashville, Tenn. Traditionally, this two-day event is more subject-focused than the national Conference and is recognized as one of the foremost television conferences. This year was no exception. The majority of technical papers presented at the 22nd Television Conference have been published by the Society in book form, entitled *Technology in Transition*.

The 23rd Annual Television Conference will be held in San Francisco, Feb. 3 and 4, 1989. The Society will continue engineering demonstrations at this conference but will discontinue exhibits related to the technical papers. This will relieve the pressure on manufacturers who are required to exhibit at an increasing number of trade shows or conferences every year.

Many of the technical papers presented at these conferences are published in the *SMPTE Journal*. The *Journal* is one of the world's leading publications in the field of motion-picture and television technology. Published monthly, it has a circulation of more than 10,000 copies. In 1987 there were 61 engineering scientific papers published in addition to other industry information. The April issue of the *Journal* is the special Progress Report issue. The Progress Report is international in scope. The greatly increased volume of the 1987 Report reflects the continued acceleration of image technology.

The *Journal* is the primary link between the Society and its membership of over 9500, particularly for the many Society members who reside in various parts of the world outside North America (approximately 1300 international).

In addition to the publication of technical engineering books, the Society is now making available, in video-

cassette form, technical presentations and discussions from special seminars.

The Society has commenced the dissemination of information in this form with videocassettes on "Image Manipulation" and cassettes of a very successful lighting seminar conducted by leading Hollywood directors of photography at Universal City Studios. These cassettes are available from SMPTE, and we are optimistic that we will be able to build an inventory of videocassette material.

The grass roots of the Society are the local sections. There are 21 sections, with three in Canada and one in Australia, as well as eight student chapters. The Australian Section, in addition to regular meetings, arranges a major international conference every two years. The 3rd International Conference, Sound & Vision '88, will be held in Sydney, Australia, on June 21-24, 1988.

The Canadian sections are also most active and hold monthly technical meetings. Because of the distance between sections, teleconferencing has special appeal. On two occasions, Global Television Network in Canada kindly made available complimentary satellite time and studio facilities in Toronto. Production and technical staff volunteered their time for the satellite transmission of the technical papers sessions to various local section meetings and television stations throughout Canada. Many U.S. border cities were also able to receive these special broadcasts. A phone-in question-and-answer period was an additional part of these sessions.

The New England Section also arranged satellite facilities and telecast a summary of the 1988 Television Conference. A satellite meeting was also held by the Washington, D.C., section on "Graphics and Animation

in the 80's." All of these meetings were extremely successful.

The Society recognizes the value of satellite teleconferencing techniques in reaching its membership. The Society supports this activity and is now providing additional funds to sections for its expansion.

The SMPTE maintains its headquarters operation in White Plains, N.Y. However, the strength of our Society is the dedication and commitment of its volunteer members. There are many benefits to membership, but the main reward is the satisfaction of accomplishment. I would like to offer an invitation to all of you to become members of the SMPTE. You would be most welcome, and your participation would be appreciated.

The Society recognizes and is most appreciative of the support given to it by the motion-picture and television industries. Their partnership with our industry and the cooperative and meaningful liaison with other societies and associations are most essential if we are to continue our successful progress.

As the Executive Vice-President of SMPTE, I am extremely honored that Professor Yagi, on behalf of the Motion Picture and Television Engineering Society of Japan, invited me to be part of the conference. I sincerely hope that both our Societies will continue to work cooperatively together for the common good. We are living in exciting and demanding times, and forecasting is always difficult, but that difficulty should be viewed as a challenge and an opportunity. Both our Societies have major roles to play as motion-picture and television technology accelerates toward the next century. The future belongs only to those who plan for it. Thank you.