

Remarks by Guest Speaker

Dr. Boris Townsend, IBA

Mr. President, ladies and gentlemen, good afternoon.

I bring with me the good wishes of all my colleagues in the Independent Broadcasting Authority for the continuing success of the SMPTE. I must tell you that the IBA holds you in very high esteem. Nevertheless, for me, this is a close encounter of the fourth kind, that is to say, it is terrifying for me to know that I am talking to an audience which is unusual — by several orders of magnitude — compared with anything which I might encounter elsewhere. I have known, since I was knee-high to a film can, that our members enjoy an exceptional array of talents and our Sustaining Members command the most remarkable resources, while the amalgam, in the form of the corporate SMPTE, has a synergy which is even greater than one might have expected from the individual elements. So to be asked to address you is a presidential command, which only the intelligent would reject.

In fact, I haven't been so embarrassed since the day I addressed the Oxford Mothers' Union on the subject of Productivity. I arrived by bicycle, of course.

Indeed, when the SMPTE first asked me to speak, I ran through a whole gamut of emotions. How flattering, but what to say? Would they understand my accent?

I went into a shop this morning and the assistant, after making me say everything twice, then asked: "Where are you from?" In my English manner, I was not inclined to embark upon my autobiography, so I merely answered: "Alderney." "Alderney? Where's that?" "It's a small island, off the coast of France." "Oh. You been over here long?" "Two days." "Zeeze, you're sure picking up the language quick!"

But my concern is not so much with the Queen's English, nor indeed with the President's English, come to that. No, my concern is with the language of television; and especially with the future language of television. Language clearly has a purpose; indeed, a number of purposes. It is a uniquely human matter. But it is constrained by a number of technical factors, and these constraints are largely imposed by the design of our aural receiver rather than



Boris Townsend giving the guest address at the SMPTE Get-Together Luncheon.



Audio Recording Chairman William A. Palmer.



A view of the SMPTE Equipment Exhibit.



A view of the SMPTE Equipment Exhibit.

that of our transmitter.

This I find to be surprising, since the organs responsible for transmission are primarily concerned with breathing, chewing, taste, and swallowing — as all of us have just been demonstrating — very successfully!

Nevertheless, the useful bandwidth of the signals, and the maximum usable data-rate, and the cross-talk between sources, and the comprehensibility of the message, are all more limited by the characteristics of the receiver complex, than they are by the performance of our oral transmitter.

My more learned colleagues assure me that we humans — if you will forgive my lumping myself in with you all — we humans have a channel capacity of about 25 bits a second. I suppose it's true, and that most of my drinking companions merely suffer from a rather high noise-level.

As an aural receiver, however, we do have a saving grace — we can adapt. An hour or two in a cave and we can understand speech despite the reverberation. Given time — oh, rather more than the few days assumed by my friendly shop assistant — we even begin to understand speech in a foreign language, signals in a strange convention, which at first have to be laboriously decoded, and then begin to be recognizable, and eventually, seem

obvious and natural.

Is it a difficult process? For most adults, yes. For most young children — no. It comes naturally to them, but as they get older this natural ability fades away.

The adaptive principle appears to be at work in a large part of nature, but only rarely in our man-made artifacts. Nature's devices, of course, employ a very high level of intricacy in their signal processing, but I anticipate that within the next decade or so, we shall be manufacturing chips of equivalent biological complexity.

How shall we use them? Various signs are pointing the way. Our IBA television receiving aerials on Alderney, which feed the mainland signals from England — 80 miles away — into our transmitters on the Channel Islands, automatically adapt to any change in the numerous interfering signals, by adjusting their own response lobes for the best signal-to-interference ratio. Language, like television, is certainly a means of communication, and influences the communication itself.

Many of you, of course, are adept at telling your story with images. "One picture is worth a thousand words," complained the art critic, when his wife ran off with the painter Millais. I would credit the remark to the cuckold

if I could remember his name. But then, Ruskin deserves to be forgotten by television engineers, since he had his data bit-rates wrong and understated his case by at least two orders of magnitude.

Which brings me to a question. Is the picture a better picture if it is worth, not a thousand words, but ten million words? I am into the realm of semantics. Is a bigger picture better than a small picture? Very often — especially if your family is large. Is a very sharp picture better than a reasonably sharp picture? Oh dear! it depends on your point of view — literally! As well ask if a Canaletto is better than a Monet. And I wonder if thirty mediocre pictures are better than four good ones?

These are the kinds of questions which are being asked back home in the United Kingdom about our four terrestrial services, our anticipated two direct-broadcasting satellite channels, and cable television coming out of every orifice. It's enough to get us up to our assets in debt.

It is only recently that we have started our second IBA National Television Service in the United Kingdom, known as Channel 4, which is charged by our Parliament with being of a distinctive character. I received a letter from a schizophrenic,

recently out of two hospitals, who watched both services simultaneously on side-by-side receivers and wrote to tell me that the two channels were so similar it was driving him mad!

In the United Kingdom, the early history of our public broadcasting service has left permanent scars on our memories. We began, in 1929, with 30 lines, vertically scanned. In those halcyon days, the scanning system was designed to suit the display technology — an idea which still has merit.

We then made the 30-line receivers obsolete and sold dual 240-line/405-line sets. Our next move was to make the 240-line part useless. Then the Government decided that compatibility didn't matter and we went to 625-lines, but to a different standard from the rest of Europe. We added color, but not in the same way that you had. In 1983 we are more critical of our color pictures than we were initially, largely because of defects due to the bandsharing solution to our earlier compatibility problems.

The question arises — dare we change the standards yet again? Our 19 million homes in the United Kingdom have some 26 million reasons why we shouldn't. So history has been repeating itself, and we have been looking at compatible ways of improving the 625-line picture.

After much demonstration and investigation, the Government of the United Kingdom has decided to implement our IBA proposals for a 625-line MAC system, in which the luminance and chrominance signals are each compressed in time and sent separately, in time multiplex with themselves and with eight sound or data channels.

The sound channels are carried in a data-bit stream of almost 3 bits/sec, to convey not only sound but data for captions, information, and instructions to the receiver on how the signal is to be handled. The advantages of MAC are clearer pictures and sound, the continued use of existing receivers, and the possibility of uniform DBS transmissions across Europe.

We already have a number of ideas on how the pictures can be still further improved in the future, such as by doubling the subjective sharpness of stationary objects at the expense of anything which moves. It is prudent to adopt systems and designs which appear to leave scope for further improvement, a precept which engineers normally practice.

Indeed, the television industry has



SMPTC Editorial Vice-President Maurice L. French with Guy Gougeon. Mr. Gougeon will be the General Arrangements Chairman at next year's Television Conference in Montreal.



Authors' meeting prior to the session on "Programming the Picture," in the Authors Lounge. Pictured from left to right are Michael Racelo, Michael Tooms, Larry Seehom, Mary Connolly (SMPTC Program Coordinator, standing), Merrill Weiss (Session Chairman), and Howard Butler.

traditionally been an engineering-led industry rather than a market-led business; I believe — as do most engineers — that this has, so far, been a good thing. I am not sure that it will continue to be a good thing, for change is in the air — and in the ether.

The IBA does, naturally, much audience research. I say research, but some of our market intelligence is kind of hurled at us. One irate lady telephoned to say that she had called a service technician to repair her set, only to be told that it was our transmitter which was off-air. We apologized and assured her that we did know and would have it working again soon. "Well," said she, "you could at least

put up a caption saying so!"

Our audience researchers asked one modern Miss what she thought about sex on television. The dear girl replied that she used to be very liberal-minded about it, but now she had changed her opinion — it was too uncomfortable, and she always fell off!

I am fond of quoting Albert Einstein: "Perfection of means, and confusion of goals, seem, in my opinion, to characterize our age."

What is our goal with our television engineering? And is it based on marketing principles? I am being rhetorical, so please do not bother to answer. But if your answer would have been 525 lines, or 1125 lines, or 14 MHz, or

some such specification, then I would have replied that such an answer is missing the essential difference between the 1930's and the 1990's.

One appreciates that the only thing it is difficult to forecast is the future. It is difficult to forecast because of change. And yet change as such is not necessarily that much of a difficulty. It can be enjoyable and it is certainly the price of progress.

What is bugging us, I believe, is the rate of change. We are accustomed to slow, imperceptible, change; to evolutionary rather than revolutionary processes; and indeed, to the obverse side of that coin; "all composite things decay," said old Sakyamuni, and added — "strive diligently." We seem to have taken his exhortation to heart, if out of context, and today change has become as addictive a drug as sugar and is perhaps as dangerous.

Of course, even extrapolating a well-established trend is fraught with problems. One of our women's magazines carried out a retrospective study over 17 years and found that the average height of British women had increased from 5'3" to 5'4", and the average bust had increased from 33" to 35". Fine. The analyst then calculated, correctly, that heights were increasing by 0.11% per annum and busts by 0.27%. Therefore, by the year 2025 our British women would all be 6-ft tall with 7-ft busts! I guess I shan't live to see it.



Helen Brill, (standing) and Spouses Program Chairlady Fran Kennedy, at the Spouses Hospitality Suite.



A meeting of the Study Group on High Definition Television.



A meeting of the Study Group on Digital Television.

Nevertheless, the rate at which change is taking place in our engineering development laboratories is becoming sufficiently fast to demand a change in the quality of our response to it. In the coming years we shall reach the stage where everybody suspects that anything electronic bought this month is going to be obsolete next month — a situation which will divide the men from the manic depressives like me. Even then, there is still no problem if the purchase costs a trivial amount of our income, such as the price of the morning paper.

Seven or eight years ago I arrived (late) to listen to a lecture on microcircuits. The lecturer kept referring to ZIPs, and I was abnormally confused, until someone explained to me that he didn't mean the interlocking devices which stand between me and a charge of indecency. It appeared that, before I arrived, the lecturer had been plotting the cost of microprocessor chips against time, and had predicted that the cost of integrated circuits would fall to the point where we ought to be considering what to do with the Zero-Cost Information Processor — the ZIP.

To all intents and purposes his pre-

dition has come true for pocket calculators and watches. Can throwaway technology come to television receivers — or to parts of television receivers? If we are indeed heading for rapid technological change, and if television engineers are not to degenerate into caretakers for an aging industry, then perhaps there are one or two things for which we should, logically, be organizing ourselves.

ZIPs can only come true on the basis of a unified, massive, world demand. As far as television is concerned, that means a unified world transmission signal. We could then think about what we would do with a microprocessor and a picture store in every receiver. And if we are to keep our unified world transmission signal up-to-date, then our standardizing organizations, such as the International Telecommunications Union, must grow accustomed to making decisions at a much faster rate than they have achieved in the past.

Our receivers need to become modular so that the latest ZIPs can be substituted for last year's ZIPs without our having to buy a new piece of furniture. In contradistinction to electronics, which become cheaper and

cheaper, I'm continually surprised at the increasing cost of wood — I used to think the stuff grew on trees.

We might find it even more useful to have a receiver which could adapt a number of its performance parameters to suit the incoming signal, and could modify other parameters to suit the particular type of display that it was feeding. Given such electronic complexity at the receiver, we can think in terms of the unified transmission signal perhaps with different scanning standards in each country carrying its own description via one of its data channels in the unified code, so that smart receivers could easily adapt to it. We should then be able to change the scanning standards on January 1st every year.

I believe such apparatus is now plausible and would become feasible within a relatively few years. It would remove the 300-Giga-dollar millstone of existing receivers which hangs around the neck of broadcasters, inhibiting our innovation and undermining our competitiveness with other distribution technologies. Do not enter the future with the mentality of the past, for new ingredients have been poured into the cauldron of time.

It was Clerk Maxwell, whose electromagnetic theory and color mixture theory alike laid the fundamental basis of color television, and who was certainly not a man to walk around with his headlights dipped, who said that "practical men practise the errors of their forefathers."

Oh, perhaps I am talking arrant nonsense, and the people will defeat the prophets, for as all gamblers know, it is a law of nature that no trend continues long enough for you to take advantage of it. But I would ask you to remember that an idea is not responsible for the people who believe in it.

The one thing I will take bets on, is that the future needs the SMPTE. I thank you, Mr. President, for your hospitality, conscious as I am that sin began with eating.

Have a nice day, everyone.

Acknowledgments

The Society thanks the following companies for their contributions to the success of the conference.

Orchids: JVC Corp.
Ladies Continental Breakfast: Ampex Corp.
Wine and Cheese Party: KRON-TV, KGO-TV, KTVU, and Viacom International, Inc.
Audio Recording: W. A. Palmer Films, Inc.
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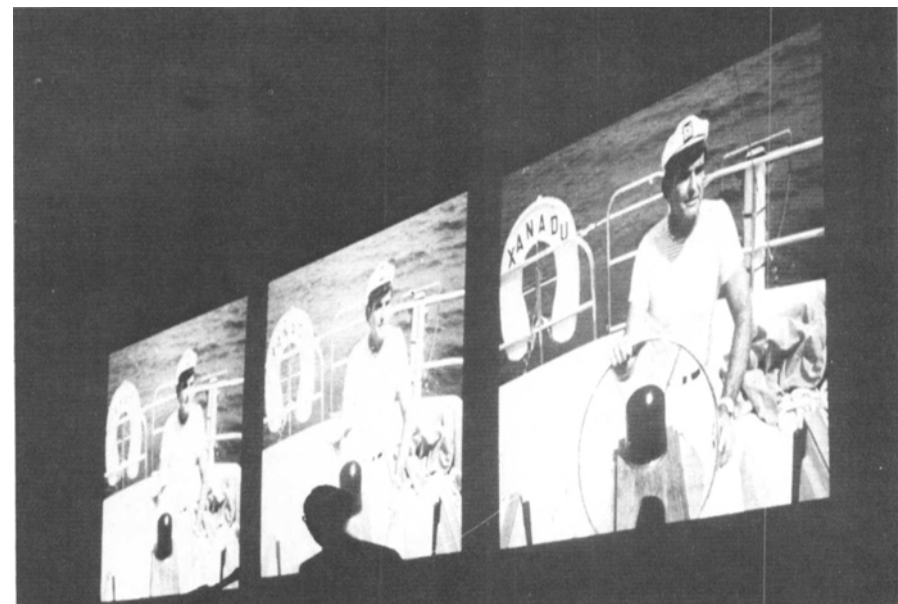
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Session Chairman Stephen D. Kerman and Session Vice Chairman Robert B. Daines at the Television Graphics and Special Effects Session.



Conference Program Chairman David K. Fibush (left) was the Session Chairman during the session on the Future of Videotape Formats. On the right is Session Co-Chairman Thomas E. Mehrens.



A view of the screen during the presentation of the Eastman Kodak paper "Today's Photographic Imaging Technology for Tomorrow's HDTV System," in which three synchronized slide projectors were used to show the results of Kodak's experiments.