

access to your history, your records, your ideas may also be able to plug in.

Divergence and Convergence

Two other difficulties which accompany the emergence of an information society are (1) *technological overload* and (2) *information overload*. A technological tower of Babel is emerging which bodes badly for facilitating communications between people and organizations. This is occurring because, like the 19th Century florescence of railways, we are putting machines in place which cannot easily communicate with each other because their programs are written in several different languages. There is a pressing need for agreed-upon standards or at least interfacing mechanisms. Some progress is being made such as Xerox's Ethernet concept and Bell Canada's Envoi 100 system, but we need much more progress in this area. In this context I would like to congratulate the Ontario Ministries of Education and Industry and Tourism for their bold initiative in establishing the functional specifications for a microcomputer for use in education.

Naturally we must also work toward a common use in education. We must also work toward a common programming language, perhaps NATAL, perhaps another, so the courseware we create can be used by all Canadians and, hopefully, even exported. Canada has a tremendous opportunity here both in educational and industrial terms but to grasp it we must work together on a cooperative, concerted national basis. One exciting Canadian hardware development is NABU, the cable compatible personal computer.

Perhaps a national user oriented body of educators is needed to sort through hardware and courseware, provide advice to users, and encourage communication between the educational and commercial worlds both vis-a-vis hardware and courseware. This would avoid the waste inherent in false starts and duplication. As Canadians we have a strong tradition of cooperative effort and in these days of scarce resources such as course is even more desirable than in the past.

Developing our analytic and perceptive capacities to deal with the hardware and software is difficult but even harder is coping with the flood of data, information, knowledge, and ideas which will be increasingly and productively in our daily activities. Managing it effectively will be even harder than in the past so we need much creativity in this domain too.

The new role of education here too is absolutely central to the successful use of the new information technologies in Canada. Central because education as an industry can generate effects — multiply productivity — increase efficiency — in almost all other industries. How? By disseminating the new knowledge about the potential value of these technologies and teaching people and organizations

how to use them. In Great Britain the government has spent millions of pounds giving firms money to hire consultants to do this. In Canada — with a new vision of our role as educators we can use our existing institutions to fill much of this need. Redirecting some of our resources in this direction and learning more ourselves so we can teach others are required but we have a solid base on which to build. This is the economic concept of "forward linkages".

Turning from the individual level of analysis we must be conscious of our increasing dependence upon machines and the vulnerability this creates. We are becoming more and more wired but what happens if our *electronic highways* break down or deteriorate. Our banking system is already highly vulnerable to disruption by union action, sabotage, or natural disaster. Can you imagine the equivalent of our postal strikes in the banking system?

Speaking of banking I should tell you that even criminals are having trouble adjusting to the impact of computerization. Bank robbers are having a particularly bad time and may be faced with severe technological unemployment in the very near future. Fortunately Canadian criminals are a visionary lot — there is a dramatic increase in requests to colleges and universities, continuing education departments for computer science and programming courses. This phenomenon clearly implies a danger in the white collar crime area but a vivid market opportunity for adult educators.

New Learning Opportunities

Thinking about opportunities more broadly, if robots and computer based office equipment take over most of the boring and/or dangerous tasks then the possibilities for personal development of all kinds including *self development through learning* become prodigious. I have argued elsewhere in a paper on public policy that with our extraordinary high quality cable, satellite, data, broadcasting and telephone networks in Canada we have fantastic opportunities to innovate in the cultural industries. We can distribute plays, films, dance, music and all other kinds of creative productions so widely to so many more people on a pay per channel or per program basis that the arts can rise from their present impoverished state and all our creative artists can begin to reap the rewards they so richly deserve.

With more leisure, assuming that this leisure is not accompanied by the loss of income, so much is possible. Gordon Thompson has developed the technological model for Ivan Illich's learning exchange concept, the computer based "serendipity machine". Every person becoming his own publisher is moving closer to realization.

Again here our educational system has

marvelous opportunity which at once is liberating and delight giving and will, in my opinion, be extremely important to Canada's economic future. Helping people realize their creative and artistic potential, while building a Canadian base in the cultural industries, is one of the key industries of the future. My opinion, that these industries will be central to the economic development of the western countries, is bolstered by Japanese initiatives in videodiscs and other cultural products.

Conclusion

We have seen in this brief conspectus some of the dangers and some of the opportunities which are emerging from the technologically driven information revolution. If this revolution is to liberate and serve the human spirit then we must foresee and forestall the dangers and seize the opportunities. The alternative is repression and enslavement.

In seeking a harmonious relationship with the machines and the changes they will bring with them, we have a particular responsibility as educators. Your active participation and engagement in the learning experience facilitated by conferences, workshops and special journal issues like this, will be an important step in this process. Concretely, I hope your learning about the technology and its potential impact will lead not only to new understanding and insights but some clear recommendations for action which you personally, and your organization, can implement.

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AV Standards Report

By Alan J. Powell and Tom Rich

After the Ottawa Conference of AMTEC '79 at Carleton University, an article was published in *Media Message* (the forerunner of the CJEC), which described Canada's involvement in international standards for education and training.

An AMTEC advisory committee was established to permit Canadian participation in the international committee² representative of media professionals from coast to coast. A formal proposal was made during the following year (1980) to the AMTEC Board of Directors for AMTEC support in the formation of such an advisory committee.

At the AMTEC '80 conference in Edmonton, a document was circulated to the membership asking for volunteers to give their time as a long term commitment in the development of international standards.

The circulation of this document produced the names of 16 media professionals willing to commit their time and expertise to this work and to present a specifically Canadian viewpoint to the International Committee.

In the fall of 1980, formal approval by the AMTEC Board of Directors was given to this activity under the proviso that no AMTEC funding would be committed to the activity.

Over two years have now elapsed since the involvement of the AMTEC advisory committee in the circulation and development of international standards documents in audio visual. At present 19 AMTEC members are on the committee mailing list.

The principle areas of work covered in the standards documents are:

1. Equipment
2. Operating practices
3. Safety standards
4. Interconnections
5. Methods of measurement

Table I shows typical titles which were circulated for comments and then forwarded to the Canadian sub-committee chairman for coordination. They were then returned to the Canadian Council of Canada, International Standardization Branch, for transmission to the IEC in Geneva, where they were recorded as a national Canadian viewpoint, in the long process of adoption as an international standard.

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1. "Electrical Requirements for Interconnection Between a Video Tape Recorder and a Television Receiver by Means of an 8 Pin Connector." IEC Document No.60C (Secretariat) 49, July 1980.
2. "Mechanical Requirements for Interconnection Between a Video Tape Recorder and a Television Receiver by Means of an 8 Pin Connector." IEC Document No.60C (Secretariat) 50, July 1980.
3. "Proposed Standard for Audio Pages." IEC Document NO.60C (Secretariat) 52, July 1980.
4. "Labelling for Audio Cassettes." IEC Document No.60C (Secretariat) 52, July 1980.
5. "Control Systems for Two Still Projectors — Operating Practices." IEC Document NO.60C (Secretariat) 53, July 1980
6. "A Guide to the Safe Handling and Operation of Audio Visual Document." Working Group Document — Circulation. IEC Document No.60C WG4, December 1981.
7. "Questionnaire on the Application of Connectors for Remote Control of All Functions on 50x50mm Automatic Slide Projectors." IEC Document No.60C (Secretariat) 58, June 1981.
8. "Video Recording Systems — Operating Practices to Facilitate Video Browsing." IEC Document No.60C (Secretariat) 59, July 1981.
10. Working Group Document on Learning Laboratories. IEC Document No.60C WG5, March 1982.
11. Draft Proposal on Labelling of Audio Cassettes. IEC Document No.60C (Secretariat) 63, June 1982.

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Table II gives a listing of standards documents which originated in Canada, as a result of specifically Canadian applied research and development work, carried out in an audio visual centre.

Both items of work were reported on at AMTEC conference in Truro 1981³ and Winnipeg 1982⁴.

TABLE II

1. Report to Working Group 6 on "Projection Television." IEC Document No.60C (Canada), No.1, 1981.
2. Report to Working Group 7 "Audio Visual Environments and Equipment Standards." IEC Document No.60C (Canada) No.2, 1981.

The AMTEC advisory committee has provided the Canadian Committee, IEC CSC 60C with consistent and solid support over the past two years. The result has been the presentation of a specifically Canadian viewpoint on a wide range of areas in audio visual standards for education.

At AMTEC '83, which will take place in Montreal in June, a concurrent session on Audio Visual Standards is in the planning stages. It is anticipated that the session will cover the work of the Standards Council of Canada, and the background and future directions of audio visual standards work.

The article provides an opportunity to thank the members of the AMTEC advisory committee for their hard work and support on a long term commitment to a vital area of work in the future of audio visual operations, planning and development. Any others who would be interested in contributing to the work of the committee are invited to submit their names to either of the authors.

REFERENCES

1. International Electrotechnical Commission on Standardization. (IEC) Sub-Committee 60C (Education and Training Equipment and Systems.)
2. Powell, A.J. "Canada's Involvement in Standards for Education and Training Equipment and Systems." *Media Message*. Vol. 8, No. 4, p. 23.
3. Powell, A.J. "Audio Visual Equipments." Unpublished presentation to the AMTEC '81 conference. Copies available.
4. Powell, A.J. "Projection Television for Combined Video/Computer Displays." Proc. AMTEC '82 Conf. ISBN-O-9691044-0-5. pp. 165-179.