

BOOKS

Shirley Serafini and Michel Andrieu. **The Information Revolution and its Implications for Canada.**

Communications Economics Branch, Department of Communications. Canadian Government Publishing Centre, 1980. Canada. 113 pp.

Reviewed by Ihor Cap

This book is one of a series of intended reports by the Canadian Department of Communications, aimed at making the public aware of the gap between the development of "new information technology" and its use. The authors Serafini and Andrieu, in this important and timely report focus on the new technologies in an international context and discuss its impact on Canadian economy and its implications for society as a whole. Serafini and Andrieu stress the need for formulating an integrated policy strategy designed to make the "information revolution" work for us.

Because this "revolution" is international in nature, surely, incentives that condition individual human-investment decisions should be in accord with wider social-interests. If people are to be affected in areas that may be relevant to them, then individual, minority, linguistic and cultural rights will grow in importance as well, especially when it comes to making choices about education. Perhaps, a more cooperative approach to planning on the part of the government will ensure that our resources are properly tapped, long overdue in such a rich diverse country as ours.

Furthermore, the area of "new information technology" leaves many unanswered questions that pose some serious transitional problems not only in our work place, but in our educational and government institutions as well. Hopefully, our government will give serious consideration to some of the other issues raised by the new technologies, and not overlook items such as print, media and computer literacy in their reports.

The book is readable and practical, and in some cases over-written, but it is work that should be read by every casual student of higher education interested in the new technologies. It provides us with well documented statistics, some useful charts and an appendix which includes a typology of "information occupations". This carefully argued report reviews the origins and content of "new information technology" and offers some alternatives,

to the public policies which direct that spending.

The report consists of seven sections. The first deals with those background assumptions which appear to be most relevant to the field of "new information technology". It also introduces the remaining six chapter titles of the report under the following headings: 2) The new empire of the information workers 3) The technological revolution 4) Issues raised by the information revolution 5) The experience of other countries 6) The Canadian experience and 7) The challenge for Canada.

In the second chapter, the authors attribute the increase in information-related activities of the economy to "information workers" of industrialized countries, whose primary function is the production, processing or distribution of information. However, they also suggest that there is reason for concern as well, because the growth in information employment will taper off in the near future. If that is the case, there could be serious implications for the overall level of employment and changes in the composition of labor.

In chapter three, Serafini and Andrieu briefly outline and examine the evolution and diffusion of information technology since the Second World War. They go on to tell us, that in the late 60's, one of the most imaginative inventions gave way to one of the latest technological developments, the silicon microchip. It boasts enormous storage capacity, ease of access to information and flexibility of programming for commercial, industrial and educational uses.

This general summary and assessment discusses the move towards miniaturization, fibre optics, satellite technology and digital transmission and switching, which create a whole new scope of delivering information to distances great and small. The combination of computing, micro-electronics, and telecommunications, which are the "new information technology" is that, it facilitates changes in the worker/machine ratio, not possible with mechanical technology.

Chapter 4 contains important perspectives for those who want to include values and ethical issues. Almost all the major policy issues which the "information revolution" raises are discussed at length. (1) The possible impact on productivity and employment (2) privacy of personal data stored and transmitted electronically (3) implications for Canadian culture inherent in the new technology (4) the ef-

fect on national sovereignty caused by transborder data flows and (5) the increased vulnerability of society. It touches upon virtually every aspect of our economic, social, cultural and political life as a people. In presenting the negative issues arising from "the information revolution", the authors however, are quick to remind us; "that in order to ascertain the degree of seriousness of the perceived problem areas, policy approaches must weigh potential benefits against possible negative aspects."

After having built the case, the authors systematic efforts to evaluate the effects of "the information revolution" are increasingly more evident throughout the remaining three chapters of the book. These sections include reports and discussions of those industrialized countries involved where an effort has been made to include values and issues. The authors are making a case clearly and reasonably and allow for the facts to accumulate en masse. The problem-areas identified in the report, that have been reviewed to some degree by the countries involved, include:

- * protection against foreign competition
- * government procurement policy,
- * restructuring of industry,
- * provision of venture capital,
- * funding of R & D,
- * use of standards to advance national interests,
- * financial and taxation measures to promote development and use of new technologies,
- * government financing of training programs,
- * aid in developing export markets, and the
- * establishment of public research institutes to conduct basic and applied research and transfer new technologies to the private sector.

The last two chapters consist of a general summary of the international overview which sets the scene for an assessment of the Canadian experience. Serafini and Andrieu speak of the "double challenge" Canadians are faced with. First, "the information revolution" is international in nature and governments everywhere are implementing policies

designed to gain international competitive advantages. Therefore, Canada must exploit the "new information technologies" if it is to maintain some degree of economic technological, political and cultural sovereignty in the future.

Second, there is an urgent need to develop an appropriate and coordinated policy response to this sweeping challenge. Jurisdictional disputes between the two levels of government and disagreements among the provinces on key issues are delaying policy development.

Other contributing factors to Canadian weakness in exploiting information technology are: (1) the lack of effective training programs, and (2) the low level of R & D in Canada. Serafini and Andrieu cite two types of educational activity vital to this task of readjustment.

* formal education, to equip youth with skills needed in the new information economy and

* adult re-education and training programs to upgrade their skills and adapt to the new needs of the work place.

In conclusion, most people will profit from a thoughtful reading of Serafini and Andrieu's report. It is undoubtedly a challenging contribution to debate, which in all practical sense reflects our government's determination to encourage awareness of the implications of "the information revolution".

Yoneji Masuda
**The Information Society
World Future Society**

Reviewed by Marusia Foster

Just as Toeffler's Third Wave (1980) is an American view of technological change, and the Nora-Minc Report a French view, **The Information Society** provides an essentially Japanese overview of advancing societal and technological change. Particularly for educational technologists, Masuda's book has relevance to current trends of thought and apprehensions about technological change.

Yoneji Masuda is a well known futurist, founder and President of the Institute for the Information Society, and author of more than 20 books including the best-seller **Computopia**.

The Information Society is a completely rewritten version, for English

publication, of the book **Information Economics**, published by Sangyo Noritsu University Press. Unfortunately the translation is not always successful, and it is not an easy book to read. Yoneji Masuda, in this book, describes "The Plan for Information Society — A national goal toward the year 2000", developed by the Japan Computer Usage Development Institute. This plan was presented to the government with the idea that it can be realized by 1985. The goal of the plan is "the realization of a society that brings about a general flourishing state of human intellectual creativity, instead of material consumption".

The book consists of two parts. Part I deals with the question of when and through what stages the information society will be created. Masuda takes a systematic approach, reducing the structure of human society into major components such as values, trends of thought, innovational technology, the market, economic structure, and political systems. Through historical analogy and pattern analysis of past societies, he attempts to develop a new concept of each of these components in order to construct the future information society. He touches on actual projects in Japan, on model experiments such as the Telidon program in Canada, and Project Terese in Sweden. He makes projections on the implementation of technology in the future information society and attempts to predict when the information society might be realized.

This book was written six years after the actual plan was proposed, and among the various projects that were underway, the Hi-Ovis Videotex System (Highashi-Ikoma Optical Visual Information System) is of particular interest to those concerned with the new information technologies. These are two-way community information systems which combine computers with recent communication technology, and could be considered, in his opinion, as miniaturized prototypes of the information society of the future.

The Hi-Ovis System utilizes optical fiber cable instead of copper cable for two-way multiplex communication of video signals, audio signals and data, linking 158 households and ten public institutions. It provides four services: TV retransmission service, video request service, still picture services and TV studio broadcasting. Users can participate in a local discussion meeting, take part in foreign language lessons, participate in a quiz program, or register an opinion in a

public opinion poll.

Part II concerns the author's theoretic and conceptual studies on the information society. Here he discusses some of the basic concepts which are included in his information society: globalism, time value, the goal principle, the information utility, a synergetic economic system, information democracy, participatory democracy, voluntary communities and finally a vision of Computopia.

Masuda refers to the concept of a "high mass knowledge creation society" which he expects will be reached by the end of the first decade of the 21st century. This is the most advanced stage of the information society where the ready availability of information and knowledge will cause creativity to flourish. At this stage it is predicted that there will be a personal terminal in each household, used to solve day-to-day problems and determine the direction of one's future life.

With this advanced information society, Masuda introduces the concept of "time-value", the value which man creates in the purposeful use of future time. He believes "time-value" will ultimately replace conventional material values.

Yet another important aspect of this society is the concept of a "global information utility", a global information infrastructure using a combination of computers, communication networks and satellites that would enable one to obtain all necessary information readily, quickly and at a low cost, at any time and place in the world.

The principle most essential to this information society is the replacement of the principle of competition with the principle of synergy. The basic attitude of all participants in this system should be inspired by the "spirit of synergy", that is, each person "cooperates and is ready to voluntarily sacrifice one's own interests for the common good, levelling out the disadvantages and sacrifices to other persons and/or groups".

For educators, **The Information Society** has several important messages. As the new computer and communication technologies transform society, education will also enter a new period of innovation. Five educational aspects of concern will be: a lessening of the restrictions of formal schools; a personal type of education suited to individual ability and choice; a system of self-learning; knowledge-creative education and training; and

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From the Media Periodicals

By Patrick Wright

BRITISH JOURNAL OF EDUCATION TECHNOLOGY, 14:3, October 1983

Hawkridge, David & McCormick, Bob, "China's television universities"

Barker, P.G. & Singh, R., "A practical introduction to authoring for computer assisted instruction. Part 2: PILOT"

THE COMPUTING TEACHER, 11:4, November 1983

Cory, Sheila, "A 4-stage model of development for full implementation of computers for instruction in a school system"

Jarchow, Elaine M., "Teaching literature with the help of microcomputers"

Heid, M. Kathleen, "Calculus with **muMath**: implications for curriculum reform"

THE COMPUTING TEACHER, 11:5, December/January 1983-83

Torgerson, Shirley, "Classroom management for Logo"

McCauley, Jim, "Kepler"

Clements, Douglas H., "Supporting young children's Logo programming"

Lough, Tim, "A cure for recursion"

Riordan, Tim, "Helping students with recursion: teaching strategies"

Moore, Margaret L., "A recursion excursion with a surprising discovery"

Bull, G. & Tipps, S., "Problem spaces in a project-oriented Logo environment"

EDUCATIONAL COMMUNICATION AND TECHNOLOGY, 31:3, Fall 1983

Pressley, Michael, (et al.), "Mismatched pictures and children's prose learning"

Beck, Charles R., "Successive and simultaneous picture and passage formats: visual, tactual, and topical effects"

Carrier, Carol (et al.), "Supplied visuals and imagery instructions in field independent and field dependent children's recall"

Levin, Joel R. (et al.), "Learning via mnemonic pictures: analysis of the presidential process"

EDUCATIONAL TECHNOLOGY, 23:10, October 1983

Goldes, Harold J., "Designing the human-computer interface"

Norton, Priscilla, "Computer potentials and computer educators: a proactive view of computer education"

Tolbert, Patricia H & Tolbert, Charles M. II, "Classroom application of electronic spreadsheet computer software"

Yeager, Douglas M., "Educational recordkeeping at a large corporation: the NCR system"

Schwartz, Helen J., "Hypothesis testing with computer-assisted instruction"

Derry, James O. & Behnke, Ralph R., "Instantaneous feedback in the teaching/learning laboratory"

EDUCATIONAL TECHNOLOGY, 23:11, November 1983

Scanland, W. & Slattery, D., "The impact of computer-based instruction upon teachers: two perspectives"

Rockman, S., White D.J.D., & Rampy, L., "Computers in the schools: the need for policy and action"

Tiene, Drew & Urakawa, Tomoji, "Japan's elementary science series: the chemistry of successful educational television"

Wileman, Ralph E. & Gambill, Thomas G., "The neglected phase of instructional design"

Duttweiler, P.C., "Barriers to optimum use of educational technology"

Borsnan, William J., "Use 'driving force' to develop cohesive computer efforts in the schools"

Herschler, Michael S., "Use of computer simulation in teaching a college business course"

INSTRUCTIONAL INNOVATOR, 28:7, October 1983 (Special issue: "High tech in higher education")

Lipson, Joseph I., "How to keep up-to-date with high technology"

MEDIA AND METHODS, 20:3, November 1983

Howe, Samuel F., "Interactive video"

Pantiel, Mindy & Peterson, Becky, "School-friendly computers: the media specialists's key role"

"Guide to education in a nuclear age"

"Educational computer buyer's guide"

in a logical well developed sequence. He does present some negative aspects such as the danger of an automated state or controlled society with the alienation of mankind and social decadence, but suggests that if we have complete information we will make the right choice and will not "succumb to the weaknesses" in the system. Unfortunately if one takes into account man's shortcomings and competitive spirit, Masuda's argument is not completely convincing. Possibly the

supposed cooperative nature of the Japanese culture is more suited to the evolution of such an information society. "This book is useful for its optimistic,icipating voluntarily in shared goals and ideas, flourish simultaneously throughout the world".

In general, the author presents his case Japanese-based discussion of a future society." It should be considered in conjunction with similar documents from other countries.

BOOK REVIEWS

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finally greater emphasis on lifetime education.

Finally, Masuda presents his seven-fold concept of Computopia, a society in which everyone pursues the possibilities of their own future by acting in a goal-oriented way. However, it would be on a global scale in which "multi-centered voluntary communities of citizens, par-

FOR YOUR INFORMATION

Mediography

Media on Instructional Design

By Nancy Lane

This issue's mediography deals with instructional design; media useful for those involved with course design, student learning, and the planning of instructional activities.

COME TO THINK ABOUT IT Videorecording, TVO, 1979 6 - 30 min. programs, sd., col.

A series on teaching methods. Includes suggestions for motivating students.

COMMENTS ON EDUCATION Videorecording, NETCHE, 1975 30 min., sd., col.

A discussion of the state of education in the United States. With R. Glasser, F.S. Keller, W.J. Popham, B.F. Skinner and P. Suppes.

CONCEPTS OF TEACHING Videorecording, NETCHE, 1980 30 min., sd., col.

Designed to assist teachers in improving their teaching methods; the lesson looks at organization, participation, reinforcement, and enthusiasm.

CURRICULUM DESIGN AND DEVELOPMENT SERIES, Motion Picture, OPENU/ITF, 1980, 12 programs - 25 min. ea., sd. col.

This series looks at various aspects of curriculum design using case studies.

EDUCATIONAL OBJECTIVES, Videorecording, NETCHE, 1972, 3 programs - 30 min. ea., sd., col.

The role of objectives in planning for all aspects of the teaching/learning process is the subject here. Program titles are: "Formulating and Use", "Planning Lessons", "Evaluation of Achievement".

EMERGING EDUCATIONAL PATTERNS, Motion Picture, EDC 1971, 7 programs - 10 min. ea., sd., col.

Titles include: "Achieving Relevance with the Curriculum", and "Enriching the School Environment".

GETTING IT ALL TOGETHER, Motion Picture, MFFD/VEC, 1972 29 min., sd., col.

An illustration of instructional management as a school-wide process.

THE HUMANITY OF TEACHING, Motion Picture, MFFD/VEC, 1977 29 min., sd., col.

Educators discuss some major humanistic principles of teaching. Included are Herbert Kohl, and Jonathan Kozol.

INNOVATIONS IN EDUCATION, Motion Picture, STNFRD, 1966 28 min., ea., sd., col.

The titles in this series are: "Resource Center", "Stimuli For Innovation", "Team Teaching", "Technology in Education".

INSTRUCTIONAL DEVELOPMENT - THE PEOPLE, Motion Picture, MSU, 1972 15 min., sd., col.

Examines the problems encountered by educators seeking help with instructional problems.

INSTRUCTIONAL DEVELOPMENT - THE PROCESS, Motion Picture, MSU, 1972 28 min., sd., col.

Psychological media aids and campus resource services are used to solve an instructional problem. Prerequisites for implementing an effective instructional development programs are outlined.

INSTRUCTIONAL DEVELOPMENT - THE RESULTS, Motion Picture, MSU, 1972 10 min., sd., col.

Examples of solutions to educational problems are shown here.

IS ANYONE OUT THERE LEARNING, Motion Picture, CBS/Marlin, 1978, 3 programs - 48 min. ea., sd., col.

This news report on American public education deals with the situation, the causes, and the solutions.

LEARNING STYLES (INSTRUCTIONAL STRATEGIES), Videorecording, NETCHE, 1977 30 min., sd., col.

This research has implications for instructional design. Three models of cognitive styles are discussed.

PERFORMANCE CURRICULUM I & II, Motion picture, STNFRD, 1966

With Dr. Dwight Allen: the first program discusses issues in innovation, the second issues in organization.

SCIENCE TEACHING, Videorecording, NETCHE, 1971, 3 programs - 30 min. ea., sd., col.

Methods, Approaches, and Case Histories are examined in this instructional series.

SECONDARY CURRICULA, Videorecording, NETCHE, 1976, 2 programs - 30 min. ea., sd., col.

Curriculum development specialists debate the problems of the secondary education system and ways to revitalize schools.

THE SUBJECT IS LEARNING, Videorecording, TVO, 6 programs - 30 min. ea., sd., col.

Numerous applications of cognitive learning theory as they apply to actual classroom teaching. Titles include: "Eglinton Public School", and "Talking About Learning".

TEACHER EFFECTIVENESS TRAINING, Motion picture, MFFD/VEC, 1973 29 min., sd., col.

Thomas Gordon's system of management and motivation is described here.

TEACHING ROLE - A SERIES, Motion Picture, MFFD/VEC, 1968, 12 programs - 28 min. each., sd., col.

Titles include: "Essential Methods of the Teaching - Learning", "Creative Problem Solving", "Formulation of Objectives".

THE TEACHING TRIAD, Motion Picture, AIMS/ITF, 1974 19 min., sd., col.

This film shows how instructional management can and should include all aspects of each student's life - classroom, school, teachers, and parents.