



*Let me say this about that –  
Talks on Topical Topics*

**George A. Fierheller**





Mr. Fierheller has received many awards including a **Doctor of Laws** degree from Concordia University in 1976, a **Doctor of Sacred Letters** from Trinity College in 1999, the **Award of Excellence** from the Canadian Wireless Telecommunications Association; is a **Significant Sig** from Sigma Chi Fraternity, and in March 1991, he received Toronto's highest honour, The **Award of Merit**. In 1998 he received the highest award from the United Way of Canada, the **André Mailhot Award**. In the Fall of 1998, he was admitted into the **Canadian Information Productivity Hall of Fame**, as well as receiving the **Arbor Award** from the University of Toronto.

In July, 2000 Mr. Fierheller was appointed a Member of **The Order of Canada**.

In May, 2001, he was honoured by the Association of Fundraising Professionals as the **Outstanding Volunteer of the Year** during The International Year of the Volunteer. In 2002, he received the **Queen's Golden Jubilee Medal** and the **Salute to the City Award** for service to the City of Toronto.

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GEORGE A. FIERHELLER, C.M., B.A., D.S.LITT., LL.D.

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## OTHER PUBLICATIONS

BY

GEORGE FIERHELLER

*Finnie's Family: A Canadian Story.  
The Fierhellers in Canada*

•

*The SDL Story*

•

*The First 125 Years: The National Club*

•

*The Toronto Adventurer's Club - 25th Anniversary*

## DRABBLE



## Acknowledgements

My thanks to Robert Stewart who turned out to be more than just my Publisher. He was, as always, full of ideas on how to make the unremarkable remarkably readable.

My thanks also to Wendy McKee-Jackson, my assistant for a number of years, for listening to my endless dictating tapes and transcribing these for printing and Jennifer Lopez, my new assistant, who completed the job.

Finally, with one exception, I have never used a researcher or speech writer. However, during the time when I was President of the Information Technology Association of Canada, Barry Gander, an imaginative Ottawa-based consultant, was a great help on several talks.

Specifically these were:

- The Revolution of the Magic Lantern
- A World of Opportunity, and
- A Fabric of Intelligence.

Their help was greatly appreciated.

### Hagar



# *Preface*

*Many rise to the occasion; few know when to sit down*

Banker's boxes in the basement - there must have been at least a dozen. They contained talks and articles that I had presented over nearly 40 years. Boxes in the basement are exactly where many of them should remain.

However, some form the record of several companies as well as many associations and a few are possibly interesting personal observations. They express views that are often outrageous, sometimes insightful and occasionally just plain wrong in retrospect.

Before relegating them all to the recycle program I selected a few that I felt might still be of interest. Amazingly enough, some of the observations on particular topics still apply today. This implies that either the fields have not progressed, which I doubt, or we are not making much progress in dealing with the issues. In either case, these talks with some added commentary form the basis of this book.

In the Appendix, I have referenced a selection of the rest that are of more specialized interest e.g. to those who might some day want to do some research on the companies or associations. These have been put up on a Website for easy access. This is:

[www.gfierheller.ca](http://www.gfierheller.ca)

This book is an eclectic collection of thoughts by someone who has something to say about everything often as not unhampered by the facts.

It is not a linear story of any organization or particular issue. For a more cohesive biographical story I refer you to "Finnie's Family: A Canadian Story". This is also available on that Website.

I hope you will enjoy browsing through some of these observations.

Now to the delight of my wife, Glenna, I can finish cleaning out the basement!

George Fierheller  
April 2006

## *Who is he anyway?*

This brief summary is more suitable for an obituary but it may help to put the talks into some perspective. When you look back on 50 years of doing things, you realize that your “Best Before Date” has likely expired!

\*\*\*\*\*



Mr. Fierheller graduated from Trinity College at the University of Toronto with an Honours Degree in Political Science and Economics in 1955. He joined IBM in Toronto that year and subsequently progressed through a number of positions in their sales organization. He was Marketing Manager for IBM’s federal government business in Ottawa prior to founding Systems Dimensions Limited (SDL) in 1968.

Mr. Fierheller was President of SDL from the inception of the company until it was acquired by Crown Life of Toronto. SDL was one of the pioneering companies in the computer services industry in Canada.

In April, 1979, Mr. Fierheller moved to Vancouver as President and Chief Executive Officer of Premier Cablesystems Limited. In July, 1980, Premier merged with Rogers Cablesystems Inc. to form one of the world’s largest cable TV companies. Mr. Fierheller was a Vice Chairman of Rogers Cablesystems Inc. and Chairman of Canadian Cablesystems Limited, as well as the President and CEO of Rogers Cable TV - British Columbia Limited.

During 1983, Mr. Fierheller led the team that was successful in winning the mobile cellular radio licences for Cantel. He was the founding President and CEO of Cantel Inc. In September 1989, he was promoted to Chairman and CEO of Rogers Cantel Mobile Inc. He was Vice Chairman, Rogers Communications Inc. until 1996 and now heads a private investment and consulting firm.

Mr. Fierheller has been actively involved in community affairs in Ottawa, and Vancouver and Toronto including: Chairman of the Board of Governors of Carleton University; Chairman of the Finance Committee of the Board of Governors of Simon Fraser University; Chairman of United Way Campaigns in Ottawa in 1971, Vancouver in 1981 and in Toronto in 1991, President of the Canadian Information Processing Society; member of the Executive Committee of the National Arts Centre; a Trustee of the Vancouver General Hospital Foundation; a Director of Vancouver Opera; and a member of the Vancouver Centennial Commission.

Since returning to Toronto, Mr. Fierheller has served as Chair of the Board of the United Way of Greater Toronto; Chair, Information Technology Association of Canada; Chair, Smart Toronto; Trustee of the McMichael Canadian Art Collection; President of The Toronto Board of Trade; Director, Ontario Exports Inc.; Chair of The Spirit of Leadership Campaign, Trinity College, University of Toronto; Chair of the Sigma Chi Canadian Foundation; and President of the National Club.

Mr. Fierheller currently serves as the Chairman of the Honorary Board of the Greater Toronto Marketing Alliance. He is currently Chair of the Sunnybrook and Women's College Health Sciences Centre Capital Campaign; a Director of The Canadian Institute for Advanced Research; Past Chair, Toronto Adventurers Club; is on the Campaign Cabinet of the Canadian Opera House Corporation; and the Board of the Council for Business & the Arts in Canada.

He has also served on a number of public company Boards including: Extendicare Inc., Falconbridge Inc., Telesystem International Wireless Inc., GBC North American Growth Fund and Rogers Wireless Inc.

Mr. Fierheller has received many awards including a Doctor of Laws degree from Concordia University in 1976; a Doctor of Sacred Letters from Trinity College in 1999; the Award of Excellence from the Canadian Wireless Telecommunications Association; is a Significant Sig from Sigma Chi Fraternity; and in March 1991, he received Toronto's highest honour, The Award of Merit. In 1998 he received the highest award from the United Way of Canada, the André Mailhot Award. In the Fall of 1998, he was admitted into the Canadian Information Productivity Hall of Fame, as well as receiving the Arbor Award from the University of Toronto.

In July, 2000 Mr. Fierheller was appointed a Member of The Order of Canada.

In May, 2001, he was honoured by the Association of Fundraising Professionals as the Outstanding Volunteer of the Year during The International Year of the Volunteer. In 2002, he received the Queen's Golden Jubilee Medal and the Salute to the City Award for service to the City of Toronto. In 2005 he was made a member of the Sigma Chi Hall of Fame.



"Just because I have a few faults, that doesn't mean I'm not perfect."

# Synopses

- 1. A Time for Everything and Everything in its Time** .....Page 15  
*A discussion with the Association of Fundraising Professionals, Toronto, April 10th, 2001*  
 If we assume most of us have 50 productive years averaging 50 weeks and 40 hours a week, we all have in excess of 100,000 hours in which to do something. This talk addresses the perennial comment of people who are asked to do something - I just don't have the time.
- 2. The Competitive Edge** .....Page 19  
*A talk to Wilfred Laurier University, Waterloo, Ontario, February 2000*  
 There are many reasons to be a volunteer. At least some of these are related to improving a person's competitiveness in whatever field they chose.
- 3. The Technological Solution** .....Page 23  
*A talk given to the International Club of the School of Business Administration, University of Western Ontario, March 14, 1978*  
 Sometimes we try too hard to find expensive technological solutions to relatively simple problems. This is an argument for Appropriate Technology.
- 4. The Evolution of the Magic Lantern** .....Page 30  
*A talk to the IEF Canadian User Group Conference, Toronto, September 20, 1993*  
 This paper sheds some light on the fundamental change that Information Technology is having on society.
- 5. A World of Opportunity** .....Page 37  
*A talk to the World of Wireless Communications Conference, Toronto, June 22, 1993*  
 A look at Wireless Technology and the way this is revolutionizing time and space.
- 6. A Fabric of Intelligence** .....Page 44  
*The IP Sharp Lecture, Faculty of Library Information Science, University of Toronto, October 7, 1993*  
 A look at the growth of information and a forecast about how this information will be linked through a worldwide electronic network.
- 7. Chips, Bits and a Speck of Spectrum**.....Page 51  
*A talk at Congress '89, Edmonton, Alberta, June 1989*  
 Perhaps, but this paper predicts that the decreasing cost of computer power will allow us to build intelligence into anything we wish, even inanimate objects.
- 8. Where It's Going** .....Page 55  
*A talk to the Winnipeg Chamber of Commerce, Winnipeg, Manitoba, May 4, 1994*  
 This talk expands on the idea of adding intelligence to just about anything and discusses the role of Information Technology (the IT in where it's going) and the implications for business growth.

**9. Micromarketing/Micromanufacturing** .....Page 59

*Notes for Panel at the World Economic Forum, Stanford University, California, September 20, 1994*

Technology now allows us to understand customer needs on a one-by-one basis. It also allows us to tailor manufacturing to each individual need.

**10. Converging on the Consumer** .....Page 61

*A talk to Inter Comm 95 World Conference, Vancouver, B.C., February 23, 1995*

Converging multimedia is more than just an interactive stream of co-mingled bits. It will only be a commercial success if we really concentrate on what the consumer needs and will use.

**11. Myth versus Reality, Understanding the Converging World** .....65

*A talk given to the Canadian Congress of Advertising at the Metro Toronto Convention Centre, May 16, 1995*

The myth is that the new technology will eliminate the need for mass advertising. The reality is that if used intelligently, it can be of enormous help in bridging the gap between awareness and the sale.

**12. Dynamic Solutions in a Dynamic Industry** .....68

*A talk to the International Engineering Consortium, Toronto, July 6, 1995*

We tend to use technology because of what it can do rather than what it should do.

**13. Racing Toward a New Era of Opportunity in Multimedia** .....71

*A talk to the Canadian Institute, Toronto, December 6, 1994*

Technology will only really win if the consumer is the ultimate winner.

**14. Tech Talk '96** .....76

*A talk to the Mississauga Technology Association, June 19, 1996*

Moore's law shows that we are gradually reducing the cost of computing to zero. The implications of this for all kinds of industries are truly exciting.

**15. In Tandem with Reality** .....80

*A talk to Tandem Computers Canada Limited sales force, October 18, 1995*

I was on the Board of Tandem Canada and was asked to speak to their sales force. Following the idea that computer cycles will eventually become so inexpensive they can be considered free, I pointed out the same applies to communications costs. This opened the question as to what a computer company can do to make money. My answer was content and software. Tandem was subsequently sold to Compaq which was subsequently sold to Hewlett-Packard. Interesting!

**16. The Information Sage in the Information Age** .....84

*A talk at the CIO of the Year Awards Dinner, Toronto, November 29, 1994*

The talk was to the Chief Information Officers to try to convince them that CIO does not stand for "career is over".

**17. Is there a Computer Profession?** .....87

*An article for the Canadian Information Processing Society, December 1970*

In the 1970's when there were just a few computers, there was a great debate about whether

there should be some form of licensing of computer practitioners. Now that computers are used by hundreds of millions of people, the question is more whether there should be computer professionals who act like auditors to assist management in developing and monitoring systems.

**18. All You Wanted to Know About Computer Professionalism** .....93

*A Q&A response to questions raised as a result of the previous article, September 1971*

At the time of the debate about whether or not there should be computer professionals as there are engineering or medical professionals, there was a lot of confusion about the terminology. This paper attempts to clear that up.

**19. The Senior Executive's Responsibility in Data Processing** .....98

*A talk to the Data Processing Management Association, Montreal, February 26, 1974*

This was a talk about how a senior executive can increase the likelihood that a large data processing operation will be successfully completed. Surprisingly enough, over 30 years later, I would still give much the same advice.

**20. Planning in the Medium-Size Company** .....103

*A talk to the Planning Executives Institute 29th International Conference, Montreal, May 16, 1979*

This is an example of a Planning Program I instituted at Systems Dimensions Ltd., a start-up computer services company based in Ottawa. Again the advice given would not change much today.

**21. The Turning Point** .....110

*A talk given to the Society for International Development Conference, Montreal, October 16, 1993*

This was an early talk aimed at the growing challenge of the Information Gap between the haves and have nots.

**22. The Development of Development** .....119

*A talk to the Economic Developers Council of Ontario Annual Meeting, Toronto, January 25, 1995*

This is an examination of how new technology will impact the development of communities.

**23. East is East** .....125

*A talk given to the Canadian Information Processing Society Meeting, Halifax, Nova Scotia, May 11, 1978*

Atlantic Canada has some huge opportunities for development based around the natural advantages they have, such as tidal power. The region could use this to be a world leader in this field.

**24. Computer Service Bureaus and Developing Countries** .....129

*A talk to the Jerusalem Conference on Information Technology, August 17, 1971*

Israel is a wonderful example of a small country that has capitalized on its energy, its educational system and its confidence that it can be a leader in many fields. This talk discusses how computer service bureaus could assist that process.

**25. The Business Case for Corporate Leadership. Defining a New Role for the Private Sector in a Region's Economic Development** .....137

*A talk to the Canadian Urban Institute, Toronto, October 4, 1996*

In Canada, businesses always thought that economic development was solely the role of government. The time has come for a co-operative effort between business and government to drive economic development.

**26. Team B.C. - the Process** .....142

*A talk to the Public Relations Society of British Columbia, Vancouver, September 29, 1982*

During a downturn in the economy of the province of British Columbia, I was asked to lead a group to raise people's perspective about what they could do to help themselves.

**27. The Computer and Public Relations**.....147

*A talk to the Canadian Public Relations Society Conference, Edmonton, Alberta, June 1976*

The misuse of computers can lead to bad public relations. This does not have to be the case.

**28. Marketing Through New Technology** .....153

*A talk to the Sales & Marketing Executives of Vancouver, September 18, 1980*

We are all selling something all the time, whether it is an idea to investors or convincing the dog it is time to go for a walk. This paper looks at the many ways that computers can help in marketing of all types.

**29. Can the Administration of Justice be Programmed?** .....158

*A panel presentation to the Canadian Bar Association, Ottawa, September 3, 1969*

Over 35 years ago, it was obvious that computers could make a major impact on the administration of justice. This paper outlines some of the ways this could be brought about.

**30. Agents of Change** .....165

*A talk to the Canadian Institute of Travel Counsellors of Ontario, November 21, 1994*

Computers and the Internet are making a major change in the way people do work. If you have the term 'agent' in your job description, watch out.

**31. The Next Decade: the Impact of Computers on Education** .....169

*A talk given at College Canada '76, the Annual Meeting of the Association of Canadian Community Colleges, Ottawa, November 15, 1976*

This is an early examination of the impact of computers on the education process pushing the idea that we have to do more than just educate youth for the future but also about the future.

**32. Training on a New Track** .....174

*A talk to the 4th Annual Leading Edge Training Technologies (LETT), University of Victoria, Victoria, B.C., March 19, 1996*

I was invited to give a talk at the University of Victoria on Leading Edge Training Technologies (LETT). As I knew very little about this, I looked up the topic on the Internet. The only entry said "come to Victoria and George Fierheller will tell you all about this".

**33. Communications Technology: Are You Getting the Message?**.....178

*A talk to the students at a Science and Technology Conference, Don Mills Collegiate Institute, Toronto, April 10, 1995*

This was a talk to a group of high school students in the graduating class about why they should choose the Communications Technology field as a way of ensuring their future.

- 34. Selling Science, Marketing Math** .....182  
*A talk to the National Mathematics Institute, Queen's University, Kingston, Ontario, August 19, 1994*  
 Getting young people to take mathematics courses is not easy. I proposed concentrating on how mathematics is vital to moving ahead in many exciting fields, i.e. by selling its uses and then encouraging people to learn this vital tool.
- 35. Planning for 2000 - A Talk on Library Science** .....187  
*A talk at the University of Toronto Library, March 23, 1994*  
 Library Science is being revolutionized by computer technology. The role of libraries for lifetime learning is a huge opportunity.
- 36. The Computer - Its Possibilities in Information Storage and Retrieval** .....191  
*A talk at the 4th Annual Seminar of Canadian Government Information Directors, Halifax, Nova Scotia, September 11, 1975*  
 Even thirty years ago it was obvious that at some time we would be able to put the entire range of human knowledge on something the size of a sugar cube. The implications are enormous.
- 37. Electronic Surveillance** .....199  
*A talk at the 14th Canadian-American Seminar on Information Processing and the Right to Privacy, Windsor, Ontario, November 17, 1972*  
 This is an early examination of the question of privacy and the growing use of data banks.
- 38. The Problems with Transborder Data Flows** .....205  
*The Organization for Economic Cooperation and Development Symposium, Vienna, Austria, September 20, 1977*  
 There was a great concern in the 70's about the adverse effects that data banks would have on national security or even commercial processes. This paper argues that the restriction of the flow of data is a temptation that must be resisted.
- 39. The Race to Regulation** .....210  
*A talk to a Federal Government Seminar on Information Processing, Ottawa, November, 1978*  
 This talk addressed the concern that the best way to prevent abuses in the use of data is to prevent the accumulation of data. This is like saying the best way to prevent bank robberies is to close all the banks. The disadvantages of such an approach far outweigh the protection offered.
- 40. The Interaction between National Policies and Business Development** .....214  
*A talk to the 3rd International Conference on Computer Communication, Toronto, August 1976*  
 There is a growing tendency for governments to be involved in everything. Governments in fact make very poor entrepreneurs at the best of times. This paper proposes a Bill of Rights for the free market system.
- 41. Beyond Mork and Mindy** .....218  
*A talk to the National Secretaries Association, Vancouver Chapter, September 9, 1980*  
 This looks at some of the problems of standard television and how some of us might be aided by new services on cable.

- 42. TV or not TV** .....222  
*A talk to the Vancouver Board of Trade, September 20, 1982*  
 My enthusiasm over the coming introduction of Pay TV was that it could be an answer to traffic congestion. There would be so much one could do on a TV set, people would just stay home. I was somewhat optimistic.
- 43. Cable in a Gordian Knot** .....228  
*A talk to the Cable Telecommunications Research Institute, Ottawa, September 28, 1982*  
 Cable television developed as a simple means of improving the reception of over-the-air television. I took the position that a serious investment in R&D is the only way to preserve the industry from competition by satellite or the telephone companies.
- 44. Mobile Communications - After the Honeymoon** .....233  
*An article in the University of Western Ontario Business Quarterly, Spring 1993*  
 A discussion of the implications of mobile telephony in changing both lifestyles and organizational structures.
- 45. The United Appeal - Concept in Conflict** .....238  
*A talk to the South Ottawa Kiwanis, March 23, 1971*  
 The concept of a united fundraising campaign is excellent but it must be constantly re-examined to see if it is still in touch with the times.
- 46. The United Way in B.C.** .....245  
*A talk to the Annual Conference, Vancouver, B.C., May 28, 1981*  
 This talk argues that the United Way and other charities need to constantly involve young people and young ideas.
- 47. Convocation Address - Concordia University** .....250  
*Address to the Spring Convocation, Concordia University, Montreal, June 12, 1976*  
 I note that Convocation Addresses are where the old give helpful advice to the young who are generally better educated than they are.
- 48. A Corporate View of Ultimate Reality** .....253  
*A talk at the third biennial URAM Lecture Series, Toronto, September 29, 1992*  
 I was invited to give my views on life, religion and other topics that no one else has been able to straighten out in thousands of years. This did not stop me trying.

A discussion with The Association of Fundraising Professionals, Toronto.  
April 10, 2001

## *A Time for Everything and Everything in its Time*

**“Life is what happens while you are busy making other plans”**

If we assume most of us have 50 productive years averaging 50 weeks and 40 hours a week, we all have in excess of 100,000 hours in which to do something. This talk addresses the perennial comment of people who are asked to do something - I just don't have the time.

I am often asked “how do you find the time for all of your volunteer activities?”

The answer is you don't just find it. You have to make the time for whatever you consider important.

Volunteer activities are just as much a commitment as anything else. They must be scheduled just as we schedule time for our family, personal recreation and health, our business and hopefully having fun.

Now that I am retired, everyone assumes I have lots of time. In fact, I am busier than ever and the only thing that is really changed is that I no longer get paid for most of what I do!

However, I can redirect more time toward volunteer efforts and recent retirees can be a great source of volunteer activity. Many are recently retired and still have some business connections. They may also have learned something from years of running organizations and this can be useful to smaller not-for-profit organizations.

Usually their spouses also want to get them out of the house! I share an office complex with a number of other “used executives” and I suspect much of the motivation is avoiding housework.

But retired or not, everyone needs to recognize that time is a very precious commodity and needs to be managed very carefully. Minutes not used effectively are lost forever.

So how does one make the best use of time and leave enough for voluntary efforts? First, I should point out that there is plenty of time if it is well used. If one takes an objective of putting in even an hour a day for voluntary work, over 40 years this amounts to some 10,000 hours, not a trivial amount of time. But everyone can find that kind of time if they work at it.

So what techniques seem to work? I am a list-maker. I hardly ever wait for the start of a day to start the day. The evening before, I always make a list of everything I need to do the next day. Where possible I even look up the phone numbers of people I need to call.

Yes I even do this on the weekends, which nearly drives my wife toward a divorce!



The secret is to do it or schedule when you are going to do it, whatever the ‘it’ may be.

You can use a palm top or paper and pen or whatever works for you but that list is, in my opinion, the key to getting things done.

There are of course a few downsides. People I have worked with over the years recognize that I do this. After meeting with someone and agreeing on a course of action she laughed and said ‘now you can stroke me off your list’. In fact that is exactly what I did!

The effective part of this is that you can handle all the items surrounding something you have undertaken to do and then forget about it. If you need more information before making a decision, you can send an e-mail and make a note to follow-up if you do not get an answer by the time you need to make a decision.

I have a habit of dictating as I have found I talk faster than I write or type. This technique ensures I can always work with a clean desk. Of course my assistant’s desk is a mess but she seems to be able to handle this.

This reminds me of the old saying, “if a cluttered desk is a sign of a cluttered mind what does an empty desk signify?”

I remember a joke in the New Yorker years ago about an executive sitting at an immense, absolutely empty desk, saying to his secretary “bring me something”.

Making lists does put one under pressure to get through that list every day. However, we always work much better with deadlines, even if these are self imposed.

Deadlines are one of the greatest motivators of creativity. I find that any task just expands to fill up the amount of time available but if I have to do something in a hurry, I simply do it and do not usually think the quality suffers.

Modern communications methods of course can put time on your side. Through the extensive use of voicemail, fax, e-mail and other techniques the amount of time you have has been expanded greatly. Several years ago the fax and e-mail traffic across the Atlantic surpassed the voice traffic and now the imbalance is huge.

Electronic communication has reduced time zones as a problem. It has also allowed evenings and weekends to become substantially more productive.

We all use the technique of calling someone back when we know they are not there and really only want to leave a piece of information but do not really want to talk to them. This does not always work. I called a ‘home office’ about 11:00 one evening and a very sleepy wife replied.

But most of the time it works. It is important, however, to learn how to use voicemail. It is infuriating to receive a voicemail only to have someone say “please call me back”. If they had left a message about what they wanted, I could have replied in the evening or whenever I had the time



“It’s marked ‘urgent’ so I read it on the way over.”

and likely we would never have to actually talk. This eliminates wasteful telephone tag.

This kind of time management also allows you to look ahead. As Will Rogers said, “even if you are on the right track, you will get run over if you just sit there”.

Whenever I have a few minutes to spare, I look ahead at things that I may not have to do even for several weeks e.g. make notes for a speech. The approach is to do today which you may not have the time to do tomorrow.

Crises are normal and leaving things to the last minute is almost certain to be unproductive. This even comes down to planning trips whether for business or pleasure. As soon as you know you are going to have to make a trip, you immediately make the reservations and arrangements. This ties down the time and helps to ensure that you will actually get that vacation you are planning. It also ensures that you get the reservations you want whether they are for flights, hotels, or whatever.

It also helps to have plotted out for the year birthdays and other such occasions. These are less expensive than a costly divorce.

As a result of doing these things, I rarely feel under any pressure because I know exactly what needs to be done, who else needs to be involved and what the time frames are. In fact, I feel pretty relaxed most of the time despite what some would feel as being a somewhat hectic career.

Of course having an understanding spouse really does help. Despite my propensity to plan everything, I have stayed married 44 years. In fact I usually refer to my spouse as my trophy wife - anyone who could live with me for that period of time deserves a trophy!

Actually I have tried to explain to her that the real reason for staying together is that it is too much trouble to change and I do not have it in my schedule. There is no entry such as “Tuesday night - have an affair”!

But the real way to manage time is to encourage your associates whether volunteer or staff to take responsibility for doing whatever is necessary to get whatever the job is done. The real solution to good time organization is to hire or recruit the best and then trust them to do the job. Then all you have to do is be enthusiastic, motivate and delegate. A bit of follow-up helps of course but I usually find that those with whom I work get so much enthusiasm for the project it is sometimes more difficult to control it than create it!

This brings me specifically then to the relationship between volunteers and professionals in not-for-profit organizations.

In my opinion it is a myth that campaigns, for example, are run by volunteers. They are run by the professionals and should be.

The volunteers do not have the detailed knowledge or professional training required to make all the right decisions in a campaign. They can open doors but are often not the best people to close the sale.

Because they may come from a business environment they will be quite used to making decisions but could easily make the wrong ones without the necessary expertise.

So the process of delegation is every bit as important in not-for-profit organizations as it is in any business.

If you find the Chair of the Board is running a company, watch out (unless he or she is also the CEO and this is usually a bad combination).

The President or Executive Director is hired to do the job and the volunteers are really resources.

If the volunteer approaches the job in this way he or she will have enough time to do what they have to do and the professionals can get on with the job.

In summary then, people really have lots of time and can always find some time for something additional. My concluding advice, however, would be to make sure that you schedule enough time to have a good time. People only do well at things they enjoy.

From a perspective of a retiree, remember that you have likely had 40 years of work with 50 weeks a year. This equates to 2,000 Monday mornings. You had better enjoy what you do or that will be a tough grind!

A talk given to Wilfred Laurier University, Waterloo, Ontario. February 2000

## *The Competitive Edge*

**What you do beyond 9-5 can have a major impact on your career.**

“Young Man: “You have done so many things, I have done nothing. I feel useless”.

George: Nonsense. “You are never completely useless. You can always serve as a bad example.”

There are many reasons to be a volunteer. At least some of these are related to improving a person’s competitiveness in whatever field they chose.

I assume that like Michael Jordan or Tiger Woods you are very good at whatever you have chosen to do as a career. However there are many people who are also very competent in their chosen field. The question is whether there is something you can do to gain a competitive advantage.

I suggest that you might consider augmenting your career by volunteering in what is sometimes referred to as the Third Economy. This is the multi-billion dollar not-for-profit segment of the economy.

Why would you spend time on something that takes energy, imagination, some of your time and pays nothing? I believe there are three reasons:

To advance your career. To enrich your personal life. To do something good.

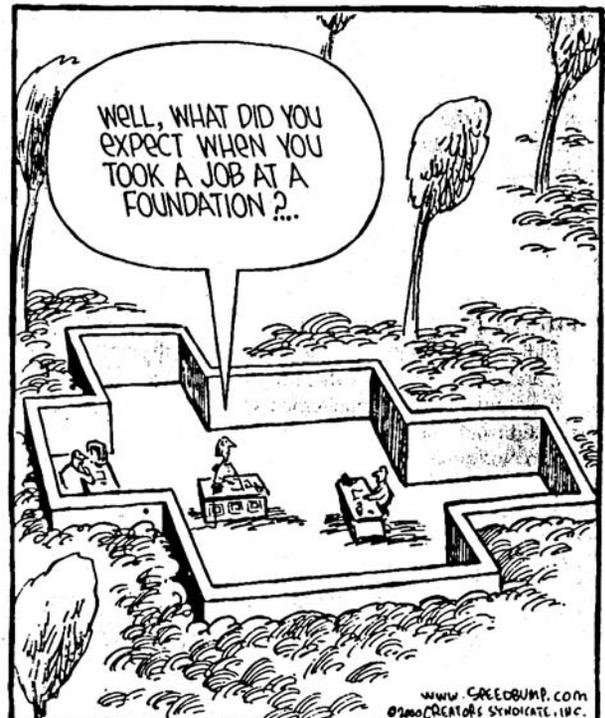
### YOU & YOUR CAREER

Regardless of what you chose to do, even if you are waiting for your .com company to have its IPO, it is likely that you are going to end up working with other people, communicating your ideas and, believe it or not, selling. We sell every day whether we are trying to convince our children, our spouse or our boss to do something or that brokerage firm that is going to take your company public. We are all sales-people and in many cases are also managers.

There is no better place to hone such skills than in the volunteer sector.

The management of volunteers will teach you invaluable lessons in leadership and motivation. Volunteers can quit at any time. In the voluntary sector you quickly learn to lead others by motivating them to do what you want to get accomplished. If you can do that in the voluntary sector, you can do that anywhere.

**SPEED BUMP**



Secondly, much of what you do in the voluntary sector is salesmanship. This may be fundraising or otherwise convincing people that your project is worth their time and support.

Thirdly, you will find many opportunities to develop your public speaking skills. This will stand you in good stead on numerable occasions.

Finally, you will learn to manage outside your area of expertise. By broadening your management perspective and managing different situations, you greatly expand your skill set.

Beyond what you learn however will be the contacts you make. People respect a volunteer. Being a volunteer allows you to contact people at a level which you would normally not be able to reach. In my own experience with the United Way I recruited to my various campaign cabinets people such as Jules Leger, subsequently Governor General of Canada, Allan Gottlieb, former Canadian Ambassador to Washington, John Cleghorn, Chair, Royal Bank, Al Flood, former Chair, CIBC, and other very senior Canadians.

Beyond the contacts, you also vastly broaden your business horizons by making contact with many different industries.

And we should not forget volunteer work within your own industry. You can start by volunteering to do something beyond what is in your job description, e.g. Chair your organization's social club.

Next, you could consider volunteering for an industry association position.

For example when I was in Ottawa with IBM I served on committees for major IBM users (SHARE and GUIDE, the industry organizations responsible for setting standards for Fortran and Cobal). This then led to my establishing an IBM education centre in Ottawa, not something a salesman would normally do. However it tended to differentiate what I was doing from others.

If I could make a suggestion on such volunteer work, it would be to aim for the top. Believe it or not it is no more work to be President of an industry association than it is to be one of the workers. Over the years this led to my being Chair of the Strategic Planning Committee for the Canadian Cable Television Association, President of the Canadian Information Processing Society, Chair of the Information Technology Association of Canada and so on.

And why would you do all this? Your motivation may simply be interest in the subject or your industry but it becomes very hard for your company to ignore you. It becomes even more difficult for them to fire you! If you chair the standards association for your industry for example, your profile is such that you will likely be the last to go.

And even if you are let go, job relocation is a breeze because of all the contacts you will have made throughout your industry.

And if you stay within your company it will help your promotability because you have made your boss look good. Every good manager loves to say "look how promotable my employees are under my good training and leadership".

You also become very aware of new possibilities within your industry.

While I was heading a company called Systems Dimensions in Ottawa we acquired Ottawa Cablevision. The idea was to put together a very large computer services organization with a cable television company to launch the 'wired world'. This was in the early '70's and although the idea was unraveled by the CRTC, this background gave me enough knowledge of the industry to move into the cable television business in Vancouver as President of Premier Cablevision.

A similar contact made outside the industry with an individual in the paging business in Vancouver alerted me to the forthcoming release of frequencies for the cellular telephone

business in Canada and subsequently to my leading the team to get the licences for Cantel.

In a word then, volunteering either within or outside your industry can have a real impact on your career.

### COMING TO GRIPS WITH LIFE

However beyond the direct career benefits, volunteerism can be a great confidence builder. Nothing creates a better sense of self esteem than to have pride in accomplishments, particularly when they are not things you have to do to earn a living.

Volunteerism also opens up vistas to areas you probably know little about. These might lead to a career change. If not they can certainly lead to some very interesting opportunities. For example, I knew nothing about the mining industry but through a contact I had made through the United Way was invited to serve on the Board of Falconbridge. During the years that I was there I traveled with them to Board Meetings in Norway, the Dominican Republic, Chile and even Raglan in Northern Quebec!

Frankly, the more you do the more you are asked to do and are able to do. Saying ‘yes’ more often than ‘no’ keeps you from getting stale.

In particular if you are willing to do some work in the educational field you stay in touch with young people and nothing can be more exciting than that. I was Chairman of the Board at Carleton University and chaired the Finance Committee of the Board at Simon Fraser amongst other fascinating experiences and then was invited to give a series of talks on career planning to the Association for Collegiate Entrepreneurs (ACE).

Volunteering also broadens your outlook. Because you are learning to manage in many different situations you become a strategic thinker. Every president of any organization has to learn to fly at 30,000 ft., see the broader picture and take responsibility for developing the strategy for whatever business you happen to be in.

Volunteerism helps to provide this type of perspective and the skills you learn in one organization will stay with you for life and are transferable to many different fields.

### ISN'T THAT NICE!

This is probably what you thought I was going to talk about - the altruistic side of volunteerism. This is the concept of giving something back to the community in which you are earning your living. This is of course very important. You may well find yourself exposed to those less fortunate than you are. You may think that because you are not a trained social worker there is very little you can do to help such people, but in fact by applying your business talents, you can provide an invaluable service without having professional training in some social field.

What this does is cause you to look at social needs in a new way - not as a problem but from the optimistic perspective of searching for solutions.

This does not have to be done from any religious motivation. I would maintain that an agnostic like myself could easily demonstrate that the Golden Rule works in all aspects of life and this is motivation enough to volunteer in non-industry related situations.

It is a very practical approach to life.

Besides that you feel good and you sleep well at night.

### ALSO, IT'S FUN

I can assure you that you will get a lot of enjoyment out of voluntary work. You will work hard but:

- You will meet some great people
- You will get involved in fascinating challenges
- You might even get to be President of your organization because you start thinking like a president.

And by the way, there is one other side benefit. A study done in North America a couple of years ago indicated that volunteers are happier, have fewer marital problems and believe it or not actually live longer!

So from any aspect, volunteering can give you the competitive edge in your career and add a wonderful balance to your life.

A talk given to the International Club of the School of Business Administration  
University of Western Ontario. March 14, 1978

## *The Technological Solution*

**“Nothing difficult is ever easy.”**

Sometimes we try too hard to find expensive technological solutions to relatively simple problems. This is an argument for Appropriate Technology.

Is technology standing in the way of progress?

The conventional wisdom in the industrialized nations has been that technology would not only come up with adequate solutions for virtually all problems but that continued investment in more sophisticated technology is vital to the well-being of the Western World.

There has been a recent reaction to this concept by groups as far apart in approach as the Sierra Club and the Club of Rome. Environmentalists and computer analysts from such organizations are pointing out that we are rapidly running out of many natural resources, we have been on an energy binge of extraordinary proportions, population pressures will lead to food crises, attempts to solve these problems will produce environmental pollution which will be totally unacceptable and, finally, it is doubtful if the world can create enough capital to attempt solutions.

This kind of thinking leads to extremes of all kinds. The environmentalists will want a ‘return to the farm’ solution. The technologists see the only solution to be massive projects to develop fission or fusion power.

By nature, I am an optimist and believe that solutions can be found. However, these will assuredly lie between the extremes.

The impact for future generations of the decisions we make now will be immense. However, if we not only keep our heads but use them, we could look forward to an era of unprecedented challenge and development. Some of the concepts which follow have significant implications for Canada and indicate that we should rethink some of our industrial notions.

### **Adam @ Home**



There may indeed be a technological solution to many of the problems we face but this will not result from pursuing today's concepts of what that technology should be.

### MARGINAL UTILITY REVISITED

There is a cliché that economists from Adam Smith to Keynes could never adequately explain the need for advertising.

However, the explanation was already in their grasp in the concept of marginal utility. Once an individual society moves beyond providing for basic material needs, it must generate wants. This our society has done with devastating effectiveness.

The marginal utility of major technological development, such as the Concord, has been often discussed. However, one does not have to look at such a massive project to realize that the benefits derived from some forms of development are becoming not only of limited real attraction to people but may, in fact, be becoming a source of irritation.

Recently, I leased a car with headlights that turn themselves on when it gets dark and dim themselves when approaching traffic, an aerial that raises itself when I turn on the radio and a climate control system that decides how hot or cold I should be. Leaving aside the more global questions of squandered energy, or misuse of mineral resources, I find these devices have a negative marginal utility.

On the highway, my tension mounts as I worry about whether the automatic device will dim the headlights in time, the radio aerial is unable to poke through the ice after leaving the car exposed in the Ottawa Airport parking lot and the climate control seems unable to make up its mind in the Spring and Fall.

I suppose I am fortunate to have even been exposed to such advanced technology, but have little inclination to make a further investment in this area. While one would not want to generalize from such an experience, I believe that the amount people will pay for convenience technology is getting close to its limit in the industrialized West. The expense of advertising to create such new wants will shortly become out of all proportion to the likelihood of creating a satisfied buyer.

It has been pointed out many times that one telephone or one car is a necessity, as we view it, but the third or fourth car or telephone, or TV set, is of very limited use or even desirability. This limited marginal satisfaction from excessive gadgetry is at the root of the slowing down of investment in technology in the advanced industrialized nations.

The fact that investment in technology has slowed has largely escaped notice. Griskey is one who has noted that the overall funding growth rate for R&D has been steadily declining in the U.S.

Average Annual Growth Rate	
Period in R & D Employment	
1953-57 .....	15.7
1957-63 .....	5.9
1963-69 .....	2.4
1969-71 .....	-3.0

He notes that North America is now a net importer of technology from Europe and Japan. He concludes that, although the decline is somewhat due to reduced military and space R&D

“fundamentally, our technological decline is part and parcel of what has been termed the ‘post industrial’ society or syndrome”.

The lack of public demand for such advanced concepts as Electronic Funds Transfer Systems, the Wired City concepts of In-the-Home Shopping, and similar advances, seems to indicate that these at least are technological solutions to marginal problems.

### THE BIG PROBLEM IS BIGNESS

Leaving aside the problem of whether or not people in the industrialized West want more sophisticated technology, there is a fundamental problem with the size of projects proposed for new technology.

A classic example was a report last month that the Federal Government in Canada was contemplating building through Eldorado a \$100 million dollar plant in Sudbury, Ontario. This plant might help solve the unemployment situation in the area by creating 150-200 jobs. Even if the maximum number of jobs were created, such an investment in huge technology would be absolutely ludicrous. If the \$500,000 per job were invested, one could pay each unemployed person \$50,000 per annum in perpetuity without endangering the environment or otherwise using up scarce resources.

One might also question the real utility of massive projects such as the \$10 billion dollar investment in moving limited natural gas resources from the North to the industrialized South. Such an investment put into the search for sources of renewable energy would almost certainly have more beneficial long range results for the economy.

However, the problems with ‘bigness’ are far more subtle than the type of thinking exemplified by the above. We are becoming almost totally dependent on the infrastructure of our society. This infrastructure is becoming technologically more complex and our dependence on it is close to being critical.

One can look at many examples where huge organizations have simply ceased to function. The Post Office is the classic example, although this is not as technologically oriented as the airlines which can be halted at any time by the Air Traffic Controllers, maintenance workers or a mechanical breakdown of any kind.

In either case, such huge systems are subject to technological breakdown or, worse, are subject to being used for blackmailing the public through labour disruptions. As we have seen over and over again, our technological society is almost totally dependent on the availability of electric power, water, communications, transportation, and waste disposal, all of which can be easily disrupted by mechanical failure or human avarice.

Current technology is creating for us a very fragile society.

### THE DISAPPEARANCE OF CAPITAL

Bigness requires big investment. This, in turn, leads to big government, big management, and big unions. One can doubt the effectiveness of such bigness. Jewkes, Sawers, and Stillerman, in the “Sources of Invention”, pointed out that the preponderance of important technological or scientific advances of this century have been made by individuals or small firms.

Bigness, therefore, may not be conducive to continuing technological advances.

However, bigness has another risk. If new technology is extremely expensive, then the risk for big investment is very high. The Strategic Planning Institute has cast doubts on the

profitability of capital intensive technology. They point out that investment intensity, contrary to common expectations, has a negative impact on profits. This negative incentive to invest for reasons of poor return is compounded by the current trend in Western Society to remove through taxation the opportunity for a big reward in response to taking such big risks.

For either reason, investment in big or sophisticated technology will likely attract less and less capital in the years to come.

If the investment in new technology slows down, this would have the effect of lowering our manufacturing productivity. This could further compound the problems with Canada's present industrial strategy for encouraging manufacturing in this country. But more of that later.

## THE RIGHT TO WORK

The Industrial Revolution has deep psychological as well as technological implications.

As people flocked to the cities in search of jobs, they tended to give up the concept that they could create their own economic environment. They became totally dependent on someone else to have created a job for them.

This economic 'slotting' is far more the cause of our current unemployment situation than any other single factor. People seem to have accepted the notion that, because they were first employed in one position, or because they had been working at a particular job for some period of time, society somehow owed them a right to continue working in that occupation. This immobility of labour is compounded by the educational system in which we have invested so heavily.

At a recent Conference attended by a number of students, I talked to a group who had specialized in Public Relations and Advertising during their commercial courses. They complained that there were simply no jobs available either in government, or in the major ad agencies. I tactfully suggested that, as they were well educated, young, and presumably bright, they should consider forming their own firm. Undoubtedly, there are thousands of medium-to-small sized businesses in Canada that could use a Communications or Public Relations program. These firms could not afford large expenditures, but certainly would benefit from the talents of a young entrepreneurial firm. My suggestion was met with looks of disbelief!

We seem to have forgotten that every business was started by someone. We are no longer encouraging our young people to strike out in new directions but, rather, teaching them how to adapt to slots within the system. One of our biggest problems is that we are orienting our youth toward getting a job rather than making a living.

Full employment is a realizable goal in the Western World but not if employment is looked at in the narrow sense of depending on the marginal utility, high technology infrastructure.

Our current technological approach is no answer to providing full employment.

## APPROPRIATE TECHNOLOGY

The concept of Appropriate Technology is now cocktail conversation. It is a loosely-defined term outlining an approach to technology where...

- goods are locally produced
- production is labour intensive
- facilities are decentralized
- items are repairable

- the process is fueled by renewable energy sources
- output is ecologically sound
- the effect is community building

In other words, it is technology that does not require major capital expenditures, is not dependent on complex infrastructures and is sociologically and psychologically desirable.

It should be emphasized that it is definitely not anti-technological but, rather, a decentralist approach aimed at solving many of the problems outlined earlier.

Much of the early work in this field was aimed at the Less Developed Countries where resources and capital were short, labour was plentiful, and yet the educational and technological capabilities of the labour force were relatively underdeveloped. Appropriate Technology for the LDC's involved simple devices for pumping water, moving earth, manufacturing bricks, and similar basic tasks. However, what is Appropriate Technology for the Third World countries may not be Appropriate Technology for the industrialized West.

Appropriate Technology for the industrialized nations would be totally inappropriate if it was viewed as the 'return to the farm' approach of which it has sometimes been accused. More appropriately, the new technology would be aimed at simplification and self sufficiency rather than continued sophistication. We can see trends toward this in the computer field where the complexity of massive operating systems and centralized computers is starting to give way toward a more decentralized system, utilizing single purpose mini computers.

At the individual consumer level, Appropriate Technology in the West would mean individual solar heating for reduced dependence on externally generated electric power. It could mean recycled water and waste products and, in fact, it could mean an encouragement of more locally-grown produce, even in urban or suburban areas.

I used to believe that such an evolution toward a more self-supporting technology was beyond the grasp of our technologically-oriented society. However, recently I have noticed a growing reaction to the constant repair bills for highly sophisticated home appliances. My daughters are even starting to make dresses for themselves 'because it is fun'. TIME recently reported on the 'In-the-Home' cooking trend where people are going back to baking their own bread and are pursuing natural foods with natural flavour.

It is statistically difficult to demonstrate a 'return to the farm' and yet many urbanites are buying rural properties, even though they are more hobby farms than real producers. The commune movement of a few years ago amongst young people is also a derivative of this decentralist philosophy.

One of the attractions of decentralization is, not only that it may be politically attractive, or even necessary for a country such as Canada, but it should lead to less government. If a larger measure of self-sufficiency or even craft industries could be developed, this could also lead to effective full employment, even though many people would no longer have jobs in the classical high technology sense of the word.

Many people could be partially employed and partially self-sufficient, making the loss of a normal job far less traumatic.

This return to even a modest measure of self-sufficiency would reduce the necessity for as much big business as we now have and, as a corollary, would reduce the need for the large-scale unionization that we now see.

There is a danger in over-romanticizing this approach.

We are not about to return to an idyllic ‘back to nature’ society, if indeed that would be desirable. The intent is to suggest a middle course where future boundless or mindless technological development would not be considered the only solution, nor would a return to the agrarian society of a century ago.

### AN APPROPRIATE APPROACH FOR CANADA

It has been alleged that a slowed technological growth could lead to a ‘no growth society’. In fact, all it would do is lead to a lowered growth rate toward bigness. It might well lead to an increased growth in the quality of life.

The transition may in itself be a form of growth industry. As we move toward the more environmentally desirable technology, there will be a huge replacement market for automobiles, home heating, and other energy inefficient devices.

At the present time, Canada’s approach seems to be to encourage more manufacturing. This comes at a time when service industries are already larger employers than the traditional manufacturing industries. Not only does an encouragement of old line manufacturing perpetuate many of the problems outlined earlier, it also does not make use of one of the major resources that Canada has - its people.

One of the developing export industries that Canada enjoys at the moment is in intellectual properties, often in the form of advice through consulting. There should be a huge export industry in providing Appropriate Technology to the LDC’s and Canadians could participate in the most important part of the process which is helping those in the LDC’s to develop their own Appropriate Technology.

Our universities and community colleges produce graduates equal to any in the world. For some reason, Canada feels it can only export things rather than ideas and the people who can put these ideas into action.

### SUMMARY

Our current thinking about technology is standing in the way of progress. We are mesmerized by bigness.

What I am emphasizing is not ‘no growth’ and it is certainly not ‘anti-technological’. It is an approach to the future that promotes self-sufficiency and a reassessment of what is big enough.

Specific proposals that I would like to see our various levels of government consider would be to:

- 1) Encourage the starting of small businesses by eliminating tax on the first \$25,000 annual earnings of such businesses and by allowing a tax free capital gain on the first \$200,000 if and when a new business is finally sold by the original entrepreneurs.

- 2) Encourage through grants for speakers from the private sector, the teaching of courses in ‘How to Start Your Own Business’ and promote these through Community Colleges and Universities.

- 3) Promote research and fund, by guaranteed loans, the development of technology appropriate to a conserver society not just through large companies but by small entrepreneurs.

- 4) At the national level, fund projects for alternate energy sources, e.g. tidal, wave or solar power as a major effort comparable to the gas pipeline project.

5) At the international level, fund through CIDA and also encourage through tax incentives the export of the resulting newly developed Appropriate Technology as well as the consulting expertise needed to support this effort.

There are alternate futures available to us. What we really need is Appropriate Thinking.

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## *The Revolution of the Magic Lantern*

### **“Major Trends From Information Technology in the Next Decade.”**

“I only ask for information.”

*David Copperfield, Chapter 20*

This paper sheds some light on the fundamental change that Information Technology is having on society.

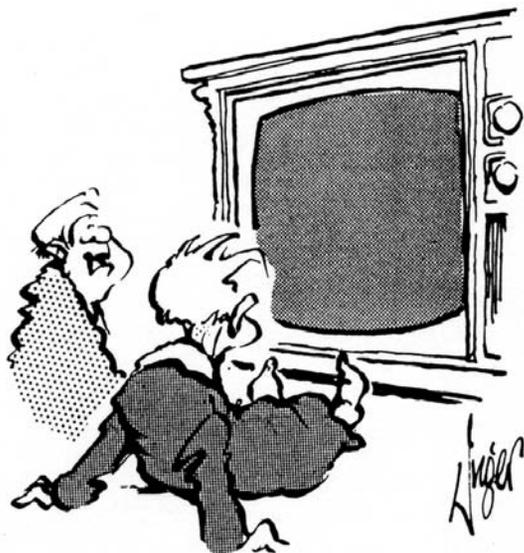
A topic like “Major Trends in Information Technology for the Next Decade” almost compels you to dust off the old turban and gaze into a crystal ball. I am heartened in my efforts by realizing that the *timing* of this “call-to-prophecy” is strikingly appropriate. Tomorrow is the birth anniversary of H.G. Wells, the British novelist and futurist.

Let me reach back more than half-a-century, to share with you a vision that H.G. Wells glimpsed. Wells wrote: “An immense and ever-increasing wealth of knowledge is scattered about the world today; knowledge that would probably suffice to solve all the mighty difficulties of our age, but it is dispersed and unorganized. We need a sort of mental clearing-house for the mind: a depot where knowledge and ideas are received, sorted, summarized, digested, clarified and compared. *This could take the form of a network.*”

Wells titled his article, perhaps most perceptively: “The brain organization of the modern world.”

Today, we are in the middle of the changes being caused by the shift to a global “brain organization”. Because this transformation affects every human activity, I’m going to treat my topic quite liberally. I’m going to move beyond the purely technical changes in information technology, to their impacts on our lives. I think we can most usefully look on the topic, in fact, as “The Major Trends FROM Information Technology in the Next Decade”. These trends – the transformation to a “brain organization of the modern world” – have been going on subtly for some time. They actually started when H.G. Wells was a boy.

When Wells was young he would have seen one of the earliest of the “information technology” devices. It was not the computer, or the telephone, but a “mass media” device. It was something called a *Magic Lantern*. I’m going to use the image of the Magic Lantern to describe the impacts information technology – or “IT” – has had and will continue to have.



**“I can watch as much crime and violence as I like as long as they all keep their clothes on.”**

The thought I'd like to leave you with today is that *we're in the middle of a new revolution – a revolution of the new “Magic Lantern” called Information Technology.*

Let's make the depth of this change visible. Start by realizing that the original Magic Lantern shows were a shock and a delight to their audiences. Sitting on their wooden chairs, in a darkened meeting hall, the audience of a century ago saw black silhouettes projected onto a linen screen. The flame of a kerosene lantern lit slides with profiles of people, animals and far-off places. A good magic lantern operator could also create wonderful illusions of motion, by carefully moving the glass slides up and down. The audience was transported by the magic of black-and-light. It's hard for us to realize how revolutionary that must have been. It was a time, in fact, when “time” was different. Many clocks still had no minute hands. The rate of information exchange was vastly different. The average church-going member of that Magic Lantern audience would hear some 3,000 sermons in his or her whole lifetime. By way of contrast, we will see or hear more than seven million advertisements alone in our life! I'm not trying to compare the quality of the two, of course! But the Magic Lantern shows were the first glimpse of an IT revolution. Magic Lanterns were the first factory-produced technology aimed at communicating with masses of people. And similarly today, new and revolutionary technologies are changing our world. In our own Magic Lantern show, three basic components are changing: speed, power and control. First, the *speed at which our Lantern's images are changing* is increasing every day. Second, the *power of our Lantern* is growing exponentially. The “reach” of the lantern's image is expanding to cover the entire globe.

Last, our *control of the lantern* is getting finer and more assured. The new technologies are giving us incredible new techniques and opportunities. Together, these Magic Lantern components are changing our world so much that - within a few decades – I doubt that we'd understand the images that the Lantern will be showing or the social world into which they were being projected. IT's alteration of our lives through the speed, power and control changes is profoundly different from anything we have experienced before.

All our previous human revolutions were based on enhancements to our *muscle-power*. Now, with IT, we have the first enhancements to our *brain-power*. IT liberates minds as effectively as levers multiply muscles. The combination of computers and telecommunications is invigorating every human activity, from business to pleasure. It can allow a child to interact with a TV game like Nintendo or it can automate a factory. From the point of view of creating the basis for global wealth, some people have called IT the *single most important factor* in determining the winners and losers in today's economy.

I believe that by looking closely at how this lantern is operating today, we can make out the general shapes of tomorrow's world.

Let's look first at the *speed of change*. If you thought you had seen rapid change before - if you thought that the Magic Lantern's images were changing fast – hold onto your hat. The same force that produced the whirlwind advances of the past decade will be at work with a vengeance in the decade to come. I'm talking about the increasing availability of increasingly powerful IT machines. Shrinking unit costs and a steady flow of innovation in “chip” production are snowballing our entry to a knowledge-based world.

To get an idea of the acceleration of change, think of “change” as a set of Magic Lantern slides. Each slide represents a basic human advance – a new scientific breakthrough or discovery. Now imagine that we are sitting through a Magic Lantern show of one hour's

length. We are watching this show called “Human Achievements”.

For the first fifty minutes of the show, we’d be staring at one slide, called “Invention of Stone Tools”. Then the slide would change to a picture called “Invention of Paper”. That would stay on the screen for nine minutes. The slide called “Gutenberg’s Press” would stay on the screen after that for one minute. It would be replaced by a slide called “Invention of the Computer and Telephone” – which would stay up for all of *two seconds!!*

Fifty minutes, nine minutes, one minute, two seconds. The speed of the images is changing faster. Why?

The change is being caused by an acceleration in the “critical mass” of our knowledge base. For most of human history, knowledge wasn’t a very highly-valued commodity, and change was slow. As we built a base of ideas, however, change began to quicken. Ideas feed the next generation of ideas. And IT is the greatest generator of ideas we have ever known.

Today, our knowledge-base is doubling every five to seven years. In the next decade, every sphere of human activity will be able to draw on more than twice the scientific and technical knowledge that we now possess. Imagine what that will mean for education, training and development.

For the business community, it means that the pace of change is increasing constantly. We are like someone who has to run faster and faster just to stand still. “Time” has become a strategic weapon.

In the IT industry itself, we have a saying: “Better never than late”. It is better never to have started to develop a product than to get part-way through and be scooped at the last minute by a competitor. These days, “early to market” often results in the capture of the *entire* market. Consumers don’t wait for you to put up your company’s magic slide; they often go with the first slide they see.

IT is responsible for this increase in the speed of change. The ability of computers to store and manipulate data is being enhanced by the ability of global networks to coordinate the work of more and more engineers, programmers and researchers. Literally millions of papers are entering the electronic network every month – a “docuverse” of knowledge. The volume of data could double some 19 times before the year 2000. The volume of telecom traffic to access this information has jumped six-fold in the past decade, and promises to do so again in the next ten years. The “nerveworks” serving humanity and creating the global brain are doubling along with the increase in knowledge itself.

A more active global “brain” thinks faster. We are seeing an incredible shrinkage of time horizons for all your business projects. It once took Henry Ford 20 years to develop the “Model T”. Today, Honda uses a Canadian software package to help them go from concept to finished car in 18 months! In my own industry, a major portion of the new computer products were not on the assembly lines even a year ago.

This acceleration will continue. Today IT is pushing the slides through the Magic Lantern at the rate of one every two seconds – about the speed of a modern slide projector at its fastest. In the next five years the images will be running through the lantern at a rate closer to the speed of film – 24 images per second. By the year 2010, we will be looking at change happening at video-technology speed - 60 image-changes per second! We used to think of business strategy as a chess game in which you panned out all your future moves. Now businesses operate more like a video game, where you either zap or are zapped in real time.

The first change-element of the Magic Lantern was speed; the second is the *growth in the power and “reach”* of the Lantern. The Lantern’s beams are getting brighter, and being thrown farther, every day.

Its increasing power is shown by the rising level of IT penetration into our society. Twenty years ago, there were 50,000 computers installed world-wide. Today, we are seeing 50,000 computers installed every day! And fully 80 per cent of all the people who are using computers today were not using one ten years ago. The list of activities that are not “IT-mediated” is shrinking daily.

The increasing reach of IT is vividly apparent in the wireless communications sector. There has been a fantastic growth rate in mobile phones. More than a million units have been sold in Canada in only seven years. The forecasts are even more dazzling. We expect that three or four million units will be sold by the year 2000. In fact, it has been estimated that sometime in the next three years, half of all communications will be wireless! Compact cordless handsets will access the global network, and carry voice, faxes, computer files or images. They will enable users to route information automatically to remote offices, electronic storage or to nearby printers.

At the extreme, when the Iridium system of low-orbit satellites is in place, communications will be possible from any location. You will always be within four rings of a phone. In a sense, “earth” will be a local call. The end-result will be universal access to the global brain, through one handset that can find you anywhere in the world with one phone number. The business question you should be asking yourself right now, to prepare for this future, is: How would I run my organization if I could “be” everywhere at once, through mobile telephony?

The communications network is increasingly more than a set of nerve fibres and connectors. The network will be able to offer you *intelligence* – a sort of wired business partner. Taken together, the phone network is the largest computer matrix in the world, and its information-processing power is expanding exponentially. One field alone will have immense effects: the area of voice recognition, in combination with voice synthesis. Many people predict that by the year 2000 the computers in the telephone network will have the capacity to *translate every major human language, in real-time!* When you phone a colleague in Italy, for example, the telephone network will translate your words into Italian as you speak, and you will hear English as your Italian friend speaks. The “common language” of the world will not be Esperanto, but a computer data-base.

So, while the slides are speeding up and the images are growing in reach, a third thing is happening: *the power and control of the operators is also increasing.*

This is happening because of a little-appreciated effect of IT. IT reduces what I call the “grain size” of human activity. It puts more power into the hands of the individuals, at the expense of large organizations. The new Magic Lantern is a tool for personal enrichment. There is an industry guru named George Gilder who calls this process the *Law of the Microcosm*. To Gilder, the Microcosm is the computer chip, and the laws of physics say you can cheaply cram more and more power into smaller and smaller machines – machines for individuals. The average car today, for example, has more computer power under its hood than Neil Armstrong had in his Lunar Lander. Your personal desktop power goes *beyond* the phrase: “The sky’s the limit”.

Today, an individual sitting at a workstation can launch a global enterprise.

The rise of the individual through IT has enormous consequences for society and business. With smaller production units and more decision-making at a personal level, centrally-planned

economies are obsolete. One of the only organizations to predict the revolution in the USSR was ITAC, and we based our view on this effect of the Microcosm. Governments must move to democratic market economies because the most powerful structures of the information economy are those that are shrinking in size. The main social message of our century, as far as the new IT Lantern is concerned, is that *people's opinions matter*.

The revolutions in Eastern Europe and the USSR were revolutions caused by and about information technology. To take one example, the Czech revolution was started by students from the information disciplines – film and TV academies – and was spread by proclamations stored neatly in personal computers. The flyers on the streets were computer printouts. The most strident demand of the crowds in Prague concerned access to the information provided by television. They chanted something that sounds strange to us, but meant everything to a society that had lived under information control. They chanted: “Live transmission! Live transmission!”

Everyone around the world is striving for access to the global information network. In the next decade, I predict that we will see the completion of this move to global democracy.

Individual empowerment through IT is also changing our business structures. For the past thirty years, the average number of employees per firm in North America has been shrinking. This has been accompanied by a steady rise in investment in IT. Workers are using IT to extend their control over the fast-increasing world of information around them. Organizations now have the networks and ability to out-source production to suppliers, while remaining in charge. As a result, we are moving from the industrial “pyramid” of organizational structure to one that is organized like the teeth of a saw-blade. There are dozens of empowered profit centres, making their own decisions along a wired network.

As individual empowerment through IT shrinks our basic work-units, we will continue to experience an ironic move to globalization. From a telecom company viewpoint, just the vision of providing seamless service to the increasingly atomized units is weaving our industry into a planetary web of consensus for progress. We are in a constant dialogue with every player in this connected system. We must translate demands into services, by agreeing on global standards for access technologies and networks.

All this has a different meaning for the individual customers, of course. Looking at the impact of IT is a bit like Relativity Theory – it all depends on the point-of-view of the observer. IT allows individuals to control the information that flows to them. When I was talking before about a world where you could be reached anytime, anywhere, I saw a few disgruntled expressions. But the reverse side of that coin is that you can control when and where you plug into the brain-net. And this is the most fundamental of all freedoms - the freedom to be in control.

I don't want to deny that there are fears these days that we are in danger of being inundated by data. But these fears are not new. In 1927, some American sociologists were fretting that telephone calls meant that “personal isolation – inaccessibility to the demands of others for access to one's attention – is increasingly rare”. In 1927, telephone calls were flooding in at an average rate of one call every day-and-a-half! Think of trying to run your business today if you were limited to three calls a week!

To me, the *control* and *increased personal power* that IT gives individuals is more than enough to compensate for IT's other effects: faster change and longer reach. IT gives you a tool to stretch time and space to your own requirements.

Let me roll all these trends together for you in a few anecdotal examples that will show where things are going.

Wal-Mart is one organization that has made *coordination of its inventory through wireless communications* the centrepiece of its competitive strategy.

Wal-Mart purchases goods in bulk and moves them so quickly through its sorting system that they don't spend time in warehouses. It's a system that is extremely difficult to manage. It required strategic investments in IT that were far beyond what could be justified by conventional return-on-investment criteria. But the investments gave the store *control over time*. Wal-Mart evolved a system that allowed it to refill the shelves of its stores twice a week, in an industry where the norm is once every two weeks.

How? Wal-Mart operates a private satellite-communications system. It sends daily point-of-sale data directly to some 4,000 vendors. This means that the usual management "command and control" logic is turned on its head. Customers "pull" products to the stores – management doesn't "push" products that the market doesn't want. The company's information systems provide store managers with detailed information about customer behaviour.

Wal-Mart complements time-control with space-control. To help managers coordinate their activities, Wal-Mart has a video link connecting all its stores to corporate headquarters and to each other. Store managers frequently hold videoconferences to exchange information on "what's hot and what's not".

And in true recognition of the information age, Wal-Mart empowers its *people* to rise to new heights. Programs like stock ownership and profit sharing give the personnel a direct interest in the stores' success. For your interest, ITAC has a new report out called *Investing In People*, that describes this new approach to human resources.

Wal-Mart's success lies in its recognition that today's business environment is a "war of movement". Victory comes to those who can keep up with the time-and-space pace-setters. New wireless technologies are emerging every day. Satellite systems are being used to help trucking companies like J.B. Hunt keep in constant contact with their fleets.

In the coming decade, be prepared to offer your products, and to operate, in a world of moving computers and people. More and more IT equipment will be aimed at a world of continuous access, and "virtual" geography. This revolution means more than just "cutting the cord". It introduces a whole new value plateau of personal mobility.

Cellular, for example, can change your conception of where your business is located, and personal wireless telephony can turn any room in any building **into** a business office.

A good cellular example is IBM here in Toronto. Almost 1,000 of the 6,000 employees have no offices. They are sales or service personnel who work out of their cars. A limited number of desks are available for use on a temporary basis. The only thing IBM management needs to know about where their employees are is that they're with the customer!

There are many other examples of companies orienting themselves to this new environment.

- Pitney Bowes has changed its entire service organization to operate with mobile data, so they rarely come back to the office.
- A stock broker used to have a 7:30 a.m. update on the market, requiring everyone to be in the office. Now, a conference call is placed to mobile phones on GO trains or in cars on the Gardiner. It provides the same information and allows people to be updated by the time they arrive.

- Federal Express uses mobile data to keep track of each parcel or letter. The courier scans the data on the label and then, with one keystroke, indicates that the parcel has been delivered or picked up or whatever. This is an entire industry being built around mobility.

All of these examples are slides being shown in today's Magic Lantern show. As the decade unfolds, the new slides will reinforce the main elements of the Lantern:

*The pace of change will continue to accelerate*, as the world's knowledge mass grows. We will see entrepreneurial activity focus increasingly on *new ideas* instead of resources. Already, the idea-based economy makes up 90 per cent of the new job growth in Canada.

*The reach and power of Information Technology will continue to grow*, culminating in a world where most activities are IT-mediated and accessible on-line through intelligent networks.

*The increase in individual power and control* will mean that smaller, more flexible businesses will be able to pursue smaller "target groups" of customers in an increasingly democratic globe.

Ultimately, all these changes can be boiled down to one business rule for the year 2000. The Magic Lantern is strengthening our most *human* of attributes: our brainpower; our creativity. If your business is founded on the development or use of those qualities, you will prosper.

Here again, we come face-to-face with the fact that the IT Magic Lantern is a completely different kind of revolution. It's not "just another technology". I am adamant that in terms of overall social progress, computers and communications technology have done more to bring "equality" to human talent than all the revolutionaries in the early decades of our century. Nearly every objective set by political revolution has been transcended by the technological revolution created by free people. Marconi did more to abolish the distance between the country and the city than all the collectivizers who devastated the Ukraine. And I am convinced that we, who are the inheritors of the revolution of Marconi and Bell and Hollerith, will live to see a final break-through to the "world brain" and global democracy.

Ours is a revolution that started in the era of the Magic Lantern. It became a revolution because it fired the imaginations of communities of ordinary people – people like us – who suddenly glimpsed a new and wide-open world.

It started not that long ago: perhaps your own grandparents were in the audience of that silent meeting hall when the slides began to change. Perhaps their souls were stirred by the sense of wonder – the kind of wonder that prompted Samuel Morse's first telegraph message: "What hath God wrought?" Perhaps some glimpsed in the moving shadows the titanic projections to come; perhaps others marvelled at the skill of the operators.

And today, in this meeting, the Magic Lantern is still at work. The slides are still changing, faster and faster, and the future is still being unveiled in the burning light of its lens. And whatever it brings, I am sure of one thing:

We are today only seeing the black-and-light silhouettes of what will be. The rainbow reality if the Magic Lantern's future will be more splendid than we can imagine.

A talk to the World of Wireless Communications Conference, Toronto. June 22, 1993

## *A World of Opportunity*

**"Wherever you go, there you are."**

A look at Wireless Technology and the way this is revolutionizing time and space.

The American writer Ambrose Bierce once complained that the main occupation of mankind seemed to be, in his words, "to multiply his species so rapidly as to infest the whole habitable earth, and Canada."

Without commenting on Mr. Bierce's view of the population explosion, his view of Canada does contain a truth. Our geography and remote landscape shape all our activities. It is a giant presence - an invisible constant that we have struggled to overcome. This struggle has turned us into experts in technologies which span distances.

"Transportation-based" companies like Bombardier are world leaders. Communications technologies have also been pioneered in Canada. Our communications "firsts" are impressive:

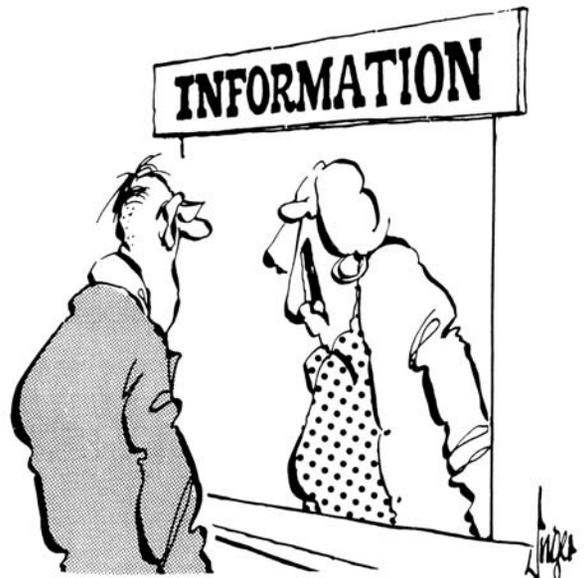
- The world's first long-distance phone call was made in Canada;
- We launched the world's first domestic satellite service;
- We have one of the world's first and longest fibre-optic networks;
- Canada has the highest telephone penetration rate in the OECD, meaning the highest number of access lines per capita;
- Canada has the largest "information supply volume" per person in the world

And from the point of view of my colleagues at Rogers, two delightful statistics:

- Canada has the highest cable TV penetration rate among industrialized nations; and
- Canadian cities have one of the world's highest penetration rates of cellular phones.

In sum, Canadians are "by nature" – by geography – very sensitive to the opportunities presented by networks and computers. We have a passion about anything that promises to make us masters of time, and masters of space.

And that is a very lucky thing in today's world. Today, most of the value of the products and services you sell comes from the information component – the Knowledge content. Information guru Stan Davis says that in the next decade, as much as 80 per cent of your business will come from information-related products and services. "Wireless" information technology is the latest, and deepest-penetrating, of all the information technologies. Building on the computer and telecom technologies, wireless communications will



"What are you asking me for?"

bring yet another revolution to our business and personal life. So if there is one idea I would like to leave with you today, it is this:

Wireless in a sense allows us to complete the “networking” process – the quest to be in constant control of information in a networked world. How you generate new freedoms and powers with this new technology will determine your success in the coming years.

My remarks today will focus on how wireless communications can contribute to your prosperity, in an Information World. There is of course important non-business elements to the technology, which I will touch on later.

As I suggested, the main business impacts from wireless will extend the Infotech revolution’s ability to allow us to control time and space. In a sense, Rogers and the other carriers are *merchants of time and space*. Time and space have become commodities, like bolts of cloth, and we can cut them to your measure.

Time, for example, can be cut long or short; expanded or contracted. Faxes, e-mail, voicemail and other smart network services can expand the work-day to 24 hours. They can also contract time by using IT to speed up the “information metabolism” – the rate at which organizations can take in information and use it.

Space is also becoming meaningless. Every location on earth is the same “distance” from you – the distance between your hand and the communications network.

Today I will discuss these new powers and applications, concentrating on the wireless revolution. And I’m going to start with a radical application of “mobility”. This is the ideal:

Steve Roberts publishes a magazine. In itself, not an extraordinary activity. But Steve publishes it while pedalling his bicycle up logging roads in Oregon!

Steve publishes “High Tech Nomadness”, a periodical dedicated to the idea that “home is everywhere”. As he rides his bicycle he types his articles on a computer keyboard mounted on his handlebars. The articles are flashed to a satellite from his on-bike mobile earth station. They are received in a ground station in Denver, where his magazine is published. Steve’s high-tech bicycle squeezes time using electronic mail, and space using satellite links. Steve is a leader in the emerging new community of people who “mobilize” these dimensions.

Following Steve’s radical re-think of the publishing industry, we can ask ourselves some penetrating questions about how we are managing today. To begin thinking about re-shaping your business, the action question you should be asking today is:

“How differently would I run my business if I used wireless to give me complete control of time and space?”

Wireless of course is a many-tiered technology. At the biggest scale, it means satellite-based mobile communications. It scales downward in range from cellular to personal cordless telephony. At all ranges, however, it’s a technology with exploding demand.

Mobile phones have taken off in Canada. We have had a love affair with them. There has been a fantastic growth rate: more than a million units sold in only seven years. The forecasts are even more dazzling. We expect that three or even four million units will be sold by the year 2000. In dollar terms, the wireless market could easily grow to \$3.2-billion in Canada in the next four years. More than \$1-billion of that figure represents “service” revenue – an incredible opportunity for the other value-adding sectors!

It has been estimated that by the turn of the century, half of all communications will be wireless! Compact cordless handsets will access the global network, and carry voice, faxes,

computer files or images. They will enable users to route information automatically to remote offices, electronic storage or nearby printers. When the Iridium system of low-orbit satellites is in place, wireless communications will truly be accessible anywhere.

In a sense, “earth” will be a local call. The end-result will be universal mobile communications through one handset, with one or two phone numbers per person. A wristwatch phone was demonstrated just last week. Motorola is already selling wristwatch-sized pagers. And of course many laptop and palm-top computers are already capable of being used on-the-move.

As an example of what can be done using this technology, we can learn from the best. Let’s start with the biggest range – satellite service – and the largest and highest-profit retailer in the world today.

If Wal-Mart continues to gain market share at just one-half of its historic rate, by 1995 it will have eliminated all competitors from discount retailing, with the exception of Kmart and Target.

What accounts for its success? It made coordination of its inventory through wireless communications the centrepiece of its competitive strategy.

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How? Wal-Mart operates a private satellite-communications system. It sends daily point-of-sale data directly to some 4,000 vendors. This means that the usual management “command and control” logic is turned on its head. Customers “pull” products to the stores – management doesn’t “push” products that the market doesn’t want. The company’s information systems provide store managers with detailed information about customer behaviour.

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Wal-Mart’s success lies in its recognition that today’s business environment is a “war of movement”. Victory comes to those who can keep up with the time-and-space pace-setters. New wireless technologies are emerging every day. Satellite systems are being used to help trucking companies keep in constant contact with their fleets.

Be prepared to offer your products, and to operate, in a world of moving computers and people. It is a world of continuous access, and “virtual” geography. This revolution means more than just “cutting the cord”. It introduces a whole new value plateau of personal mobility.

This is especially relevant in a conference such as ours, dealing with all aspects of personal wireless communications. Where cellular phones are designed to allow two-way communications

to or from vehicles, Personal Cordless Telephony allows the same freedom between individuals. The key to effectively benefitting from the personal devices is to think in different distance scales than cellular. Cellular operates in terms of kilometres, for road distances.

Cellular, for example, can change your conception of where your business is located, whereas personal wireless telephony can turn any room in any building into a business office.

A good cellular example is IBM here in Toronto. Almost 1,000 of the 6,000 employees have no offices. They are sales or service personnel who work out of their cars. A limited number of desks are available for use on a temporary basis. The only thing IBM management needs to know about where their employees are is that they're with the customer!

There are many other examples of companies orienting themselves to this new environment.

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A stock broker used to have a 7:30 a.m. update on the market, requiring everyone to be in the office. Now, a conference call is placed to mobile phones on GO trains or in cars on the Gardiner. It provides the same information and allows people to be updated by the time they arrive.

Federal Express uses mobile data to keep track of each parcel or letter. The courier scans the data on the label and then, with one keystroke, indicates that the parcel has been delivered or picked up or whatever. This is an entire industry being built around mobility.

Personal wireless differs from this cellular service by operating on shorter lines, for interior spaces. Personal mobility therefore means something different from the ability to span long distances. It means making the "short hops" transparent. Personal mobility means being able to talk to everyone in a large warehouse without having to physically track them down. It means being able to send inventory orders from one storage area to another, instantly. It means that employees working anywhere in a building can share information wherever they happen to be.

In fact, in the current highly competitive and global business climate, it is reasonable to assume that at any time many of an organization's best people will be with customers or suppliers. They will be in the air, on a highway, or in a foreign country. I was reminded the other day that we used to think of business strategy as a chess game in which you planned out all future moves. Now businesses operate more like a video game, where you either zap or are zapped in real time.

In this environment, you can't afford to ask the question: "where is she?" Now, with wireless mobility, we only need to know "where can she be reached?" The future of wireless telephony, in fact, can be summed up in the ambition: one person, one number, one handset, anywhere, anytime. This will be a staggering achievement – one of the greatest technical marvels of any age. Think of it: everyone will be able to be in instant touch with everyone else, all around the planet! This is a development beyond the imagination of our ancestors; almost beyond belief. Of all the powers invested by our ancestors in their ancient gods, none included the ability to talk to anyone, anywhere, anytime.

From the point of view of someone responsible for providing the wireless capability, this means that we have to be able to track the location of individual network customers. We need to provide call completion, call continuity during movement, and admin support services such as billing. To ensure that it all works, we have to consider universal standards for cordless telecoms, and all the types of access technologies and network needs. In a sense, to manage the

telecommunications needs of our individual customers, we ourselves are engaged in a constant dialogue with every player in this integrated system.

Achieving our vision of seamless customer service on a global basis therefore weaves all of our country's suppliers, manufacturers and governments into a planetary web of consensual progress.

This is exactly the sort of challenge that industry-wide associations were created to handle. For my sins, I am now Chair of the Information Technology Association of Canada (ITAC). ITAC has about 250 members, who make up 70 per cent of the industry's Canadian revenues of \$40-billion. This sector called Information Technology, incidentally, employs more Canadians than banking, auto assembly, mining or forestry – all the activities we traditionally think of as economic “powerhouses”.

ITAC and its international counterparts are engaged in all the activities central to technical advancement of our global web. But there is more – much more at stake. For ITAC, the issues of “connectivity” extend deeper than the technology. They extend into the social fabric itself, and the issue of whether Canadian society is prepared to prosper in an Information Age.

ITAC has published a report called “A Knowledge-Based Canada: The New National Dream”. I won't go into the details, but it is a sweeping blueprint for change. To employ IT effectively, we believe that the total context in which it is used – our social and business dynamic - must also change. Our “human structures” must encourage the adoption and use of knowledge. And this, we believe, is the most magnificent challenge of all: the challenge of “people”.

We believe this report is “must” reading for all organizations. I will be happy to send you a copy.

Wireless itself has special human implications; issues that go beyond business applications into our other structures. One of these special aspects is the ability of wireless to further “democratize” information. Being able to access the world's data sources from any location brings entirely new groups of people on-board the global knowledge machine. In developed countries, these new “knowledge accessors” include people whose mobile occupations once prevented them from being “knowledge networkers”. Now, look inside a taxicab. Beside the radio, you'll see one wireless machine for sending digital address information, and another for swiping credit cards. In the developing countries, cordless systems are often the only practical way for many populations to “plug in” from the remote areas.

And of course their access is a two-way street. The new tele-workers are also contributing to the world's store of information, via wireless. This speeds up our knowledge momentum even more. We are presently increasing our data at a fantastic rate. One study indicates that data will double some 19 times before the year 2000. How will anyone be able to keep up with that flow?

Only through the kind of ease-of-access and control you get from wireless communications. The faster the information flows, the more important it is that you tighten your grip on time and space. You keep control by creating information conduits wherever you are, whenever you want.

People need to use the technology to stay on top of the information being generated by the technology. It's all a matter of whether you feel you are in control. There are fears these days that we are in danger of being inundated. But these are not new fears. In 1927, some American

sociologists were fretting that telephone calls meant that “personal isolation – inaccessibility to the demands of others for access to one’s attention – is increasingly rare”. In 1927, telephone calls were flooding in to the then-installed phones at an average rate of one call every day-and-a-half! Think of running a business today if you were limited to five calls per week! As we know, call volumes have soared since then, and show no signs of stopping. In the past 20 years, the volume of phone traffic in North America has increased 30 times.

To me, the main event in wireless communications is not that it is blurring the lines between home and work, or between free time and office time. That merging can work for you as well as against you. It’s true that the office could reach you at any time, but you can equally reach the office from your favourite restaurant. Instead, the main event for me is that it gives you another controlling tool – a tool to stretch time and space to your specifications.

Good as it presently is, think of the limitations to your control over information that are imposed on you by our present “tethered” phone system. Today, most people still have to spend much of their time out of reach by phone. It has been estimated that only one per cent of North Americans are currently within four rings of a phone. You might say that vast areas are still a telecommunications “wilderness”. Mobile phone service can give you information control in the wilderness.

There are other human issues to consider in a “wireless world”. I am sure that this conference will devote time to some of the interesting impacts:

Consider the role of national governments in a world where information rains down from the heavens directly into people’s homes. The most interesting thing about direct broadcast satellite television technology, for example, is that it can be picked up with very crude equipment. Receivers can be made out of cardboard covered with aluminum foil. Recently, a TV repairman in Hampshire, England, built a dish out of a garbage can lid. No government could control a system like that. Wireless technology may weaken the information influence of national governments, to the gain of a viewer-led system that has no dominant group.

Regulatory issues such as cellular privacy are prime concerns. Ask Prince Charles how he feels about cellular conversations! There is much that can be done through regulation to ensure that Canadians get as much privacy protection as possible. There is also the enormous challenge of cable versus direct satellite TV service. Without opening the debate now, it seems to me that the winner will be decided by “pure” competitive performance. It will be the service that can offer the most variety for the least money. And if you thought the technologies were confusing before, hold onto your hat! With digital, all technologies are merging. There is even a cellular technology – CellularVision – capable of sending high-definition TV over the airwaves! How would you like to get your TV signal from Rogers Cantel?

The shape of our cities may change as wireless allows people to move more freely. While not all telecom services can be obtained “through the air”, the great majority of value-added services can be transmitted by wireless. We can already see the emergence of a trend: telecommuting workers are no longer a curiosity. Many service businesses like banks, airlines and insurance companies are gradually moving their support people to rural places in the Maritimes and small centres across Canada. Tomorrow’s “cities”, in fact, may be virtual clusters of people working on the network, and not be spatial organizations at all. I caution that there is no universal view about this. Some people feel that wireless may be another force leading to “concentration” of urban clusters.

Our use of resources like energy is likely to change dramatically. Some specific effects are unclear, even contradictory. Wireless may have the effect of cutting down on gas consumption, as more people are able to telecommute. Or it may actually increase the use of vehicles, as people are able to move around more. But the main effect of wireless – especially in the developing countries – will be to provide people with a better link between demand and supply. Less resources will be wasted, as wireless fine-tunes human requirements through communications. A farmer in India will not have to travel to the next village on the off-chance that he can sell his crop, if he knows by wireless phone that no buyers will be available till next week.

Finally, let's not forget the greatest "human issue" of them all. It's not a wireless issue in particular, but wireless has made important contributions to its development.

The issue is, that the arrival of the "information age" has coincided with the dawn of world peace.

This has not been an accident.

The first tool to amplify brain-power over muscle-power, information technology is allowing us to develop our finest attribute as a species: our ability to reason. For once, our swords become less important than our intellect.

There was a little-noticed item in the newspapers some time ago that summed all this up for me. It reported that some 10,000 Russian tanks were being shipped to a firm in the U.K. They are being recycled to earn hard currency for the Russian government. What are they being converted to? Agricultural implements! It's the original story of "swords into ploughshares". It is an information age story.

The fact that vast new markets and opportunities are opening up because of information technology should not blind us to perhaps the greatest profit of all. The earth will be an immeasurably better place once our networks make us a common people, and our computers and networks lever our minds. In all respects, it is becoming a world of opportunity for the Merchants of Time and Space.

A talk at the University of Toronto. October 7, 1993.

# *A Fabric of Intelligence – How Our Supercomputing Network is Weaving the Next Human Renaissance*

**"Let knowledge grow from more to more."**

*In Memoriam Prologue, Alfred Lord Tennyson*

A look at the growth of information and a forecast about how this information will be linked through a worldwide electronic network

*The Ian P. Sharp Lecture on Information Science was established in 1990 with an endowment from Reuters Information Services (Canada) Limited in honour of its founding president and former chief executive officer. The lectureship is intended to provide a forum for distinguished figures in information science and related fields. I.P. Sharp Associates, one of the world's leading numeric database companies, was founded by Ian P. Sharp and seven colleagues. The Canadian company soon expanded, establishing a timesharing service and pioneering the use of electronic mail. In 1976, the company installed its own private, packet-switched network, and today it supplies the world's major financial and economic centres with historical information and financial products. In June 1987, I.P. Sharp Associates was acquired by Reuter Holdings PLC of London, the world's largest electronic publisher.*

*George Fierheller, the fifth I.P. Sharp lecturer, delivered the address that follows at the University of Toronto on October 7, 1993. He was introduced by Adele Fasick, Professor and Dean, Faculty of Library and Information Science, University of Toronto.*

This is the perfect group, and the perfect time, to be sharing thoughts about the impact of information technology.

The group is perfect, because you are Canada's information "champions." I have always found you to be among the most forward-looking and visionary members of our culture.

It's the perfect time, because it is an anniversary. One hundred and seventeen years ago yesterday, the American Library Association was founded. The event marked the first stirrings of the Information Age – it was the first step up the ramp that leads to the present Information Age. Prophetically, in that same year, someone named Bell patented the telephone. A decade later, Herman Hollerith invented a machine-readable punch card, and launched the birth of the other pillar of the Information Age: computers.

In my remarks today, I will be talking about their legacy. I will be talking about the global information network. But in talking about the "network," we in the technology sector have been guilty of concentrating too heavily on the "net" and ignoring the "work." We love to talk about the technology, while postponing the discussion of what capabilities this new technology will permit us.



moved an incredible distance to a knowledge-based world within our own lifetime. A few observations:

The economic value of knowledge has mushroomed. At the time of the ALA's founding, human capital accounted for less than half of the wealth of an advanced industrial country. A century later, human capital is accounting for eighty per cent of national wealth.

Trade in knowledge is becoming the main event in international commerce. Trade in knowledge-based goods is rising some two to five times faster than in resource-based goods. By 1995, trade in information technology, aerospace equipment, electronics, and chemicals – by no means the full list of knowledge-based industries – will represent one-fourth of all goods traded in the world.

Knowledge itself is snowballing. *Every four or five years, the total amount of world information doubles.* The sum total of all human knowledge to 1993 is only one per cent of the information that will be available to our children in the year 2050.

The number of brains being connected to the electronic knowledge network is expanding swiftly. In fact, “networking” may be too outdated a term for the flow of the rivers of information. The continuous transmissions are getting much closer to self-developing biological processes. A billion telephones are now in use, and telecommunications is a trillion-dollar industry. In North America alone, the volume of telecom traffic increased thirty times in the past two decades. And this traffic is increasingly being dedicated to “information” instead of “conversation.” Data traffic comprises half of the bits flowing through the telephone network. And there are close to 100 million personal computers alone installed on this worldwide system. This is only fifty years after Thomas J. Watson, the Founder of IBM, predicted a world market for about five computers!

This whole revolution is being driven, as revolutions usually are, by a change in a basic factor of production. With new fibre optics and satellite technologies, communications bandwidth is becoming as abundant and cheap as the air it is transmitted through. A revolution of this magnitude happened a short time ago to computers. The transistors that are at the heart of our computer revolution became virtually free when the integrated circuit was invented. These once costly items now go for some 400-millionths of a cent each. Today you use millions of them to slightly enhance your TV picture. Tomorrow, we will be able to treat communications costs with the same cavalier disregard. We are on the verge of a “com-municopia.”

Whither Canada as all this takes place? We are at the top of the information pile. We lead the world in telephones per capita. We have the highest cable TV penetration rate, and we own more video machines than any nation in Europe. One study found that Canada had the largest information supply volume per person in the world. So not only is the Information Age arriving fast, it is arriving here first.

The shift to an intelligent network is “infomediating” all aspects of work and play – transforming them by the application of intelligence through communication.

This shift is affecting business. Corporations now depend on knowledge work.

In a survey of some of the largest companies in America, it was found that the higher they rated in human resource development, the better their long-term performance. Companies with the best positioning in terms of knowledge and information are the most likely to prosper.

Geographic barriers will continue to crumble in a “virtual” and borderless electronic world. We now live in an interconnected marketplace, where ideas shift electronically. Even newspapers

are now being defined as information bits flowing through a satellite to remote locations where they are printed.

Information technology will continue to speed up the business metabolism. Integrated information “appliances” are on the way, allowing you total control and access to faxes, phone calls, copying, scanning, information processing, and printing. New and massive numbers of applications software programs will contribute to an ever-increasing efficiency of the global economy.

Finance is going electronic. The volume of shares now being traded on NASDAQ, the electronic quotation system, now exceeds that on the New York Stock Exchange. There is a network of invisible investors from around the world. And increasingly, they are using electronic intelligence to inform their decisions – intelligence supplied by and over the network.

The equipment business will get a big boost from the creation of the global electronic “nerve-work” itself. There are likely to be three waves of global economic prosperity arising from the need to construct the intelligent network. The first will be spurred by the advanced information economies like those of Japan, Europe, and North America as they introduce the global computerized network. The second wave will be generated by the new information-seeking economies of Singapore, Thailand, Korea, and so on. The third will be the final global “plug-in” of the remaining portions of humanity in China and elsewhere. As the world economy has surged ahead each time we have experienced a rise in integration, this final economic integration of the world through information technology is expected to lead to the mother of all economic booms.

Because information technology is already the world’s largest single industry, these next three waves will push it way over the edge to claim the title of the world’s first “meta-industry” – the foremost economic player that transforms and underlies the economic potential of all other sectors. Already, industry is gearing up for the construction of the “information highway.” This high-speed network could spur some \$300 billion in direct investment. Welcome news indeed, for some studies have shown that productivity declines in tandem with falling investments in infrastructure, and that a dollar invested in infrastructure typically yields four dollars in return.

The new information highway will provide enough bandwidth to allow us to work smarter in new ways. A single fibre optic line can provide enough capacity, for example, to allow us a “world on a thread.” Theoretically, half the world’s population could talk to the other half over one fibre optic line. With that much information-carrying capacity, and with intelligence built into the network, the whole structure becomes an active partner in your business. You would instruct your software “agents” to monitor the network constantly and report any news that could impact your business. You could get business analysis and advice from the network’s knowledge software. Planning information, construction blueprints for the latest manufacturing facilities, the best of business practices – all this will be available immediately, to every global user on the intelligent network. The network will even have the intelligence to advise you of strengths or weaknesses involved in these ideas. It could also scan the world looking for business partners to help you make your ideas come to life. It will intelligently apply the world’s rising stock of information to help us as individuals become expert contributors to the world’s economy. And as the business of business becomes ever more efficient, the economy will speed up yet again and the production of knowledge itself will rise even faster!

The intelligent network will also add individuality to you as a global consumer. As knowledge banks continue to grow, increasingly intelligent business decisions can be made about each consumer. Marketing activities, for example, would become increasingly tailored – as a consumer, you will be treated as an individual, with an individual's preferences and tastes.

And, of course, the travel industry will be affected, though no one is sure whether it will be up or down. Arthur C. Clarke points out that as we move towards more perfect communication, our need to physically move ourselves, be it by airplane or car, diminishes. Business travel may drop. On the other hand, if we can move while communicating, wouldn't we be tempted to take our work with us and travel even more?

The rise of the intelligent network is also affecting our work practices. Even now, ninety-seven per cent of all new jobs are being created by knowledge industries. In the industrialized economies, more than half of all workers are employed in the production, storage, or distribution of knowledge. Some gurus say that in the next ten years, *all* work will be knowledge work. Certainly, eighty per cent of the value of product or service is expected to come from its knowledge content.

One of the biggest changes will come from the network's ability to spur the process of collaboration. This is one of the most important, and least understood, of all human activities. I am talking about something more than cooperative work. I mean a process whereby motivated people share a workspace and create something new. I expect that an intelligent network will provide far more than a physical link between collaborators around the world. I expect it to intelligently encourage the process of collaboration, using advice and suggestions where appropriate to get people moving through a successful collaborative experience. I expect a talking, comprehending network to collaborate as a partner in almost every work activity. And that experience of collaboration, I believe, is at the core of most of humankind's greatest inventions and discoveries. By itself, that intelligent contribution could catalyse a vast increase in our knowledge metabolism.

We will not only be inhabitants of a global electronic village, our workplace will cease being a "place" at all – it will be a mental construct where "close encounters of the human kind" occur. Of course, computers will also continue to give individuals more information power. By the year 2000, the average personal computer will have at least fifty times the power of the original personal computer. And by the same year, more than one-fifth of the workforce is expected to work primarily at home or on the road.

Knowledge is increasingly mobile. We will soon have a cellular system that can relay calls anywhere in the world. In a sense, Earth becomes a local call. The motto for my industry is: one number, any place, any time. This means that you will be in contact through one telephone number that will be able to trace you anywhere you go in the world. Instead of being a threatening intrusion into your life, you will have the key to mental health: *control of the process*. Devices such as voice messaging give you control of time: you decide when to be available, and you can send information at any moment of your choosing. Today, you spend about two years of your life on the telephone. That probably won't change much – the time will just be spent smarter. Tomorrow's most-used computer, in fact, will be the portable wireless assistant. In a move to help that evolution along, the Americans have just tripled the available airwaves set aside for wireless telephony.

Products themselves will be connected to the intelligent network, because they will have

the brains to be able to use remote information. As computer chips shrink in size, they get embedded in other objects: your car, for example, or your wristwatch. Your 1998 Macintosh computer may be built by Nissan and parked in the driveway, or may be buried in your Swatch. And the products could all be connected to the worldwide network.

Our conception of a library will change. With a nationwide communications system, it becomes feasible for all manufacturers to put consumer information and diagnostic systems about their products into a central library, accessible from anywhere. A library will be viewed as a very relevant partner in a consumer's struggle to stay on top. It could also be the one-stop contact for a host of electronic games and entertainments. You could have real-time access to millions of opponents in the global village.

The intelligent network transforms society. It revolutionizes the practice of governance, for starters. Here we must be wary. I tend to look on an intelligent network in the service of a market economy – an economy whose gestalt is service to people – as a benign thing. But an intelligent network applied to power relationships – political relationships – has to be carefully watched.

On the whole, though, I think the intelligent network will continue the process begun by the personal computer revolution. It will elevate the power of the individual over the power of the organization. The “grain size” of all organizations will continue to shrink, for example. Governing such a society of small-grained groups will be extremely complex. As they used to say about France: how do you govern a country that has two thousand different kinds of cheese? Governance will require sophisticated use of the intelligent network for polling, discussion, and consensus-making.

Relations between the state and the individual are being intensely questioned today. The more efficient a state's communications, for example, and the more aware the state is of the value of information, the more it can envision its citizenry as talent – as a human resource. It's no accident that the new “enterprise government” philosophy started in America, a nation very aware of the role of communications.

The commonplace activities of human interaction also become not so common. An intelligent network enhances or changes almost every aspect of daily life. A trip to the mall, for example, changes to a push-button electronic tour, with tens of thousands of products marching across your TV screen. The electronic university will allow the best lecturers from around the world to address students with full multimedia capabilities and with interactive discussion capability. This may be the only way the university can expand its quality while containing costs. Even “virtual religion” will be possible, where individuals can participate in simulated religious experiences from a variety of cultures and beliefs. Everything changes when we live inside a universal information continuum.

But through it all, and through the intelligent network, individuals become more important than ever. The entire information technology revolution, in fact, is being driven in a very individualistic way. Three things are key to understanding this greatest-of-all success stories:

It all happened more or less by accident: like the evolution of our present computer operating system.

The people who made it happen were amateurs: people like Bill Gates.

And for the most part, they are still amateurs.

Let's illustrate this last point with the runaway success of Internet: the amateurs' network.

Internet, as you may know, is a “network of networks”. It is a set of communications protocols that “glue” diverse computer networks together. Started with a small amount of government seed money, it mushroomed across the world as more and more host networks joined on. It now has almost 40,000 individual networks attached, although no one really knows for sure. Equally surprising, at its present growth rate of one million new subscribers a month, by 2001 every human being on the planet could be an Internet user. While that is a figurative statistic, it is indicative of a new social phenomenon. Internet’s surging importance is such that every college student today is given his or her own Internet address along with a student ID. And Internet is soon going to be available over cable TV!

My point is that the intelligent network is an accretion of individuals and it promotes individual behaviour. It coaxes you to reach out to try new and different things – to follow your interests and learn as you will. In the sense that it makes learning and interactivity *fun* again, it creates the “cyberspace” for a new renaissance: a vast liberating of human talent and individual expression. This new renaissance spirit could easily be one of the most significant effects of the new age.

Finally, the intelligent network alters our view of reality. It will soon be a network, for example, with the ability to translate *in real time* all human languages. People from every country and nationality will be able to talk to each other over the network and be understood. Will we ever be able to look on people of different cultures as enemies if we have spoken to them in person and know them by name?

It will also allow us to tackle our scientific problems with the collaborative brain-power of all the world’s specialists. The impact on such fields as medicine will be spectacular.

And in a “virtual” world, our electronic alter egos can leave our bodies far behind and gather in a consensual electronic cyberspace, floating through the matrix of a parliament – a talking place – of all peoples.

These are some of the reasons why I think that this latticework we are creating of fibres and chips and light, is the most powerful artifice ever built by humankind. Its brilliance will do more than bring us closer together. It will illuminate our thoughts and provide us with a frame on which threads of intelligence and ideas are treasured and woven. This weaveworld is more than a universal tool for sharing. It is a loom to spin knowledge from the minds of all humanity.

The garments that we make from this new cloth of concepts will be our main heritage. Our children, with some hundred times the knowledge that we possess now, may look back with pity on the age before the planet had its intelligent nervous system. They will treasure, with great wonder, the device that we are giving them. We are giving them, in fact, the most powerful inheritance that any generation has ever provided for its successors. We are giving them a thought-loom. We are giving them a shared conceptual matrix in which each individual becomes a creative part of a larger, global organism. We are giving them a *fabric of intelligence*, to help create their dreams of value, and value their creative dreams.

Thank you for your participation in its construction.

A talk for Congress '89 - Prospects for the 90's, Edmonton, Alberta. June, 1989

## *Chips, Bits and a Speck of Spectrum*

**“In two words, impossible.”**

*Samuel Goldwyn*

Perhaps, but this paper predicts that the decreasing cost of computer power will allow us to build intelligence into anything we wish, even inanimate objects.

### ABSTRACT

A look at the changing expectations of the consumer in the 90's. Decentralizing intelligence and breathing life into inanimate objects. The implication for the computer/communications industry as we enter our most exciting decade yet.

### LOOKING TO THE 90'S

The 90's will be the decade of the humanization of inanimate objects.

For those in the computer industry, this will mean incredible new opportunities. For a country like Canada, this will open up new industries far beyond anything Free Trade or anything else has promised.

But if this is to happen, Canada must quickly carve out a place in this new field.

We must capitalize on a world of Chips, Bits and a Speck of Spectrum.

### THE SPREAD OF INTELLIGENCE

The spread of computer power to the consumer market goes far beyond the PC. Of course, with Mac's and Mice (if that is really the plural of Mouse in this context), the PC has become sufficiently user friendly that most people with the need can easily get the computer power they require for normal information processing.

This is not what I mean by the spread of computer intelligence.

I believe that the 90's will see the widespread integration of computer intelligence into all aspects of what we do. The revolution will be the ability to make an “intelligent anything”.

The concept is not new. In fact, I ran across a talk I gave in 1982 forecasting that this would be the next revolution in computing. The idea is becoming a well established part of the leading edge literature on Artificial Intelligence.

### Calvin & Hobbes



Professor Randall Davis, co-director of the Massachusetts Institute of Technologies Artificial Intelligence Laboratory, talks about ‘embedded intelligence’ as being his favourite topic in the new AI field.

He notes that “the industrial revolution was fueled in a large part by the availability of cheap and transportable physical power, in many sizes and shapes so the NEXT industrial revolution is being fueled by cheap and transportable intellectual power in many sizes and shapes. The most remarkable thing about AI and knowledge-based systems in the future will be their invisibility, as larger and smaller bodies of intelligence become part of, embodied in the machines of the future. Just as we have hundreds of small electric motors scattered throughout our houses and offices, so we will have hundreds of small intelligences scattered in our houses and offices in the future.”

He goes on to say “my long term dream is that everything we make will have just enough intelligence in it so that it is easy to use.”

The implications of this revolution of decentralized intelligence deserve a lot of attention.

### A CHIPPY NEW WORLD

Let’s let our imaginations soar. Consider any object, even those in this room, and think about how it could be improved by adding computer intelligence. For example, think of a chair that is smart enough to roll back when you stand up and that adjusts to your favourite height when you pull it up to a table or tilts to your preferred position.

Consider doors that open and close when you approach or leave a room a la Star Trek but of course only for those who should have access.

Consider drapes that automatically adjust to compensate for ambient sunlight.

Think of lamps or wall lighting panels that turn on when you are in the room but go off when you leave and adjust again to compensate for natural light.

Moving outside the house, think of an automatic lawn sprinkler system that is intelligent enough in these days of water conservation to only go on when the lawn requires it.

All of these involve adding micro-miniaturized chips plus the necessary motors and servo-mechanisms to make the unit respond automatically and just the way we want.

But it needs more.

### A SPECK OF SPECTRUM

To be effective each inanimate object must know the users personal wishes. This means a personal data bank containing your preferred chair height or back tilt. This would of course be stored in a device worn by the user.

It also means a broadcast capability so that the inanimate object can identify the user as well as understanding the information on which it is to act.

Going back to our examples:

- the chair needs to be able to respond to countless users adjusting itself to each one’s preference;
- the door should not open to a stranger or to the neighbour’s cat;
- the lawn sprinkler should not go on while you are walking across the lawn.

All of this will provide an interaction between humans and objects that will give us a degree of control over our environment that would have been unimaginable a few years ago.

## DO WE NEED IT?

I well remember reading an ad in the New Yorker some years ago about a new device. The ad was headed “every wiper needs a washer.” This was an ad for a new invention called windshield washers for automobiles. At the time I thought it a ridiculous luxury. Now it is standard equipment on every car. My own car even has headlight washers to show how an original idea can expand!

The point is whether we need the device or not, new technical capability usually leads to a developed demand. What is possible often becomes desirable unless of course it happens to be a nuclear bomb or a new biological weapon.

However, in the consumer goods field yesterday’s possibilities become today’s standards. Just look at the advances in dishwashers, stoves or other common utilities that are now a row of push buttons. Each contains some micro intelligence already allowing a stove for example to switch from a regular oven to a microwave oven to a convection oven or even some combinations thereof.

Some implementations do not prove all that popular or useful. A trip computer for your car is a device I doubt one person in a hundred ever uses.

However, Tom Peters of “In Search of Excellence” fame the other day noted that in the 90’s standard passenger cars will have more computer power than the early Apollo moon capsules.

When you think about it, the embedded intelligence in a car which might for example prevent a crash by detecting instantly when a car in front is stopping would be a real boon to safety.

The answer is that the need is there and the desire will be cultivated by the entrepreneurs of the 90’s.

## THE SOCIOLOGICAL IMPACT OF EMBEDDED INTELLIGENCE

Someone is bound to ask whether all of this is really desirable. They may say:

- it will make life too easy. Somebody told me the other day that they were driving a youngster in a rental car and he asked how you could get the windows to go down with no push buttons. He had just never seen a crank window.
- this does raise the prospect of a world so dependent on technology that we lose the ability to function when the devices do not work. It also raises some of the spectre of Star Wars. Will it work when you need it?
- such advances may be considered a waste of resources when much of the world is in need of basics.

This is an issue worth considering but look at the other side of this. Look at the jobs, industries and new wealth that will be created by this whole program.

- new chairs will be needed.
- new doors, drapes and other items will need to be reworked all with the new capabilities. The process is one of creation of new wealth for industrialized countries who care to take advantage of it. The question to be considered is how one can meet world needs with the new wealth so created.

In any case, there is an aura of inevitability about this new industry. As long as the free enterprise system gives people the right to manufacture something of marginal utility and then market it aggressively, someone will do it. Naturally that same free enterprise system also gives that person the right to blow a bundle of money on doing it!

If one looks to the year 2000 and beyond, there is little doubt that a vast array of such embedded intelligence products will be available. The groundwork is being laid now.

### THE INTELLIGENT HOME

When articles start to appear in TIME (January 23, 1989) you know such ideas are gaining acceptance. For example, the Electronic Industries Association/Consumer Electronics Group has unveiled a new wiring standard called the Consumer Electronics Bus or CEBus. CEBus is designed to enable micro-equipped appliances built by one company to communicate with those built by any other.

The examples given in that article envisage a central home computer controlling a great many appliances as well as having the appliances themselves with a high degree of embedded intelligence. To mention just a few, they envisage:

- turning on snow melting devices for driveways or porches when required;
- monitoring when a child gets too close to a swimming pool;
- lights that go on automatically indicating an escape route in the case of fire.

CEBus will be integrated into a chip that can be embedded at the factory into everything from air conditioners to toaster ovens. Further, the National Association of Home Builders has a project called Smart House in which a single revolutionary wiring system would supply not only AC power but also telephone, audio, video and high speed data signals to every electrical outlet in the house. It is no longer a question of whether all this will happen but when.

### HOW DOES CANADA CAPITALIZE ON THIS?

Canada has been looking for ways to move away from a natural resource based economy to one based more on high tech industry. The opportunity is here to regenerate some old industries and to start new ones.

The chip design business is dependent on bright innovative people. The niche marketing that Tom Peters exhorts us to seek is a natural for entrepreneurs who want to custom design an inanimate object to make it more appealing.

Even the door manufacturer in Kitchener, Ontario, could start manufacturing a whole new line of intelligent doors to use my earlier example.

The capability will be there. By the year 2000 chips with a billion components will be available. Communication with inanimate objects will be simple because it will be done by voice or automatically transmitted from the wearer's chip as noted earlier. Until recently I had a car that talked back to me.

This year cellular companies will be installing phones that are voice activated. The days of Star Trek with its voice activated computers is not far away. Hal is just around the corner.

The challenge for the 90's for Canada will be to start now by applying what we already know before somebody else occupies the territory.

Those in the computer industry can help by raising their sights beyond the payrolls and payables packages. The fun of the 90's will be in embedded intelligence. The next round of Canadian industrial development can be built around these new concepts if we just let our imagination soar as to what we can do with Chips, Bits and a Speck of Spectrum.

A talk presented to the Winnipeg Chamber of Commerce, on the trends in Information Technology and their impact for Business. May 4th, 1994

## *Where IT's Going*

**“Only the incompetent are always at their best.”**

This talk expands on the idea of adding intelligence to just about anything and discusses the role of Information Technology (the IT in where it's going) and the implications for business growth.

There was a cartoon the other day of two people sitting in the modern well equipped office. One says, “Okay, we have the computers, phones, fax machines, CD-ROMs ... now what can we do with all this stuff to make money?”.

It seems that many of today's business people are swept up in this same confusion.

In the developed world, the most overused term these days is “The Information Super-highway”. But, many people have difficulty getting beyond the gee-whiz concepts to really understanding how some of this can profitably affect their businesses.

To make sure that we are all on the same wavelength (no pun intended), we need to understand two significant technological trends:

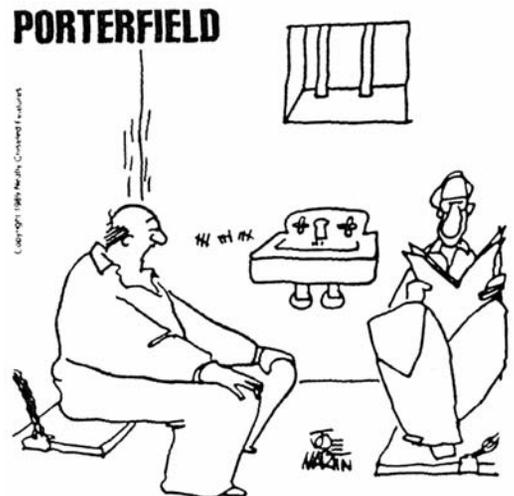
- the vast increase in the power of computers;
- the equally vast increase in telecommunications capability.

### POWER AND ACCESS

The power of computers is increasing exponentially. If you buy a new car this year, you will find more computer power under its hood, than Neil Armstrong had in his Lunar Lander! Computer power is surging because we can cram more and more circuitry into smaller and smaller spaces. The volume of a computer switch has dropped from the size of a fist in 1940 to that of a finger in 1950, a pencil-eraser in 1960, a grain of salt in 1970 and a small bacterium in 1980.

Where is all this going? The visionaries of nanotechnology believe they can create switches from individual atoms. This would mean that the equivalent of the number of switches in the human brain could be put onto a chip the size of a thumbnail within, perhaps, three decades.

The number of components on a computer chip is doubling each year, and there is no sign that this curve is levelling off. We will likely have billion-bit chips by the year 2000.



**All this talk about cellular phones really got my hopes up until someone took the time to explain to me what they really were.**

Not only will these incredible chips reduce the size of computers, but they will be so inexpensive that they can be used for massively parallel processors. Even today, the latest processors can handle trillions of operations a second. We all know that even a contemporary desktop PC can run in the area of 60 - 80 million instructions per second.

All of this means, from the user's standpoint, the cost of computing is dropping at an incredible rate. In fact, if the cost of automobiles had dropped as fast as the cost of calculation, it would be cheaper for us to abandon a Rolls Royce at the parking meter than to feed the meter!

The other implication of this is that one can now store vast amounts of information in very tiny spaces. In fact, if the atomic switch becomes a reality, it should be possible to store all of the world's knowledge, i.e. the content of all of the world's libraries, in a single device about the size of a sugar cube.

If all of this seems fantastic, remember the changes that have already occurred. Computers are penetrating society at an accelerating rate. Twenty years ago, there were only 50,000 computers installed worldwide. Now, 50,000 computers are sold every day.

90% of all today's computer users had not touched one in 1980!

If I were to ask you, how many computers do you own? You might not think you have any, or perhaps you have a PC or even a laptop. In fact, the answer is likely around 20 in your home alone. Computer chips are starting to be built into your VCR, your watch, your kitchen blender and most devices you use.

In Canada alone, the number of microcomputer units being shipped to meet this demand has skyrocketed from just over 1 million units 10 years ago, to 7.5 million units in 1991.

In fact, if I were also to ask you to name North America's largest domestic computer presence, you would probably think of IBM or Digital Equipment. Not at all! America's largest computer presence is Nintendo.

The second revolution is in the cost of communications. The same kind of breakthrough that drove down the price of computers is driving down the cost of telecommunications. To go back to the automobile analogy, if the cost of fuel had dropped to the same rate as the cost of communications, you would be able to buy gas today for 2¢ a litre!

Part of the reason for this revolution in the cost of communications is digitization. For those of you who have followed the multimedia developments, it is the move to digitizing all forms of communication that has allowed us to intermingle anything we wish. For example, we digitize our voice transmission, we do the same with still pictures, full motion video, text, graphs or anything we may want to display on a monitor. To the transmission facility and the computer, this is just a stream of bits with identifiers advising the computer what to do with the particular data.

The digitization not only dramatically improves the quality, but it enhances the ability to compress the data. It is this that gives the capability of transmitting perhaps 500 simultaneous movie channels over a satellite transmission, or through fibre optic cable.

The result is a drop in the cost of transmitting information, whether over the air in wireless form, or through a hard wired medium such as co-axial cable or fibre.

The drop in cost of both Power and Access is such that they essentially will be free in the decades to come. This does not mean that you will actually pay nothing for these two commodities, for there will certainly be a cost for the information stored, and there is a big investment in the software to make all this information accessible.

## THE IMPLICATIONS FOR BUSINESS

All organizations are going to have to re-examine some very basic assumptions based on the incredible Power and Access becoming available. If you want to be in a high growth industry in the years to come, the easiest course is to, of course, become a knowledge-based industry. Nuala Beck has pointed out that the engines driving the new economy are all knowledge-based. These include:

- instrumentation, made up largely of robotics;
- the leading edge health and medical sector with its diagnostic tools and leading edge instrumentation;
- computers;
- telecommunications.

In fact, three-quarters of Business Week's one hundred fastest growing companies fall within these industry groups.

This is hardly surprising because of the incredible growth in knowledge. Knowledge is becoming the most sought-after competitive ingredient, to say nothing of its major trading resource. World trade is growing 2-5 times faster in knowledge-intensive goods and services than in resource-intensive goods and services.

Scientific knowledge is doubling every 5 years. By the time our children retire in the year 2050, everything human-kind has learned up to 1993 will amount to only 1% of the knowledge available to them.

The Information Technology industry is already the largest industry in the world having out-distanced the automobile industry.

It would appear, therefore, that your best options for growth would be to:

- become one of the four major growth areas;
- become a supplier to these industries;
- use the Power of Computing to revitalize an industry you are already in.

The first two may or may not be possible, depending on where you are starting. The third almost certainly is an option for any industry.

## THE INTELLIGENT ANYTHING

The unrealized revolution brought about by the microchip economy is that it is now possible to build intelligence into any inanimate object, and thereby add value.

For example, one could make an intelligent chair. This would be a chair that would automatically adjust to the height, setting of the back or whatever for the particular user at a particular time. The chair could even be designed to roll backwards when you get up. All this would involve would be a microcomputer and a servo-mechanism added to current chair design.

The new microchip technology would be augmented by the latest in wireless communications. Each individual would have a small transmitter that would relay to the microchip his or her personal seating preferences.

Think where this could take you! You could design doors that would open or close automatically, just like Star Trek. However, this would only happen when you or some other authorized person walked to the door. The door would not open for the postman or the neighbour's dog.

We already have lawn sprinklers that test the soil and water only when required. However,

the same transmission device to a more intelligent unit could ensure that the lawn sprinkler does not turn on when you are walking across the lawn!

When viewed this way, the implications for any industry are obvious. There now exists vast new possibilities for developing innovative new products. A door manufacturer in a small Canadian town may be on the verge of extinction. However, if that manufacturer could add innovative new technology to something as simple as a door, the sales possibilities internationally become enormous.

Think of whatever industry you are in and how, by adding intelligence to whatever you manufacture, that object could become more useful and, therefore, immediately more saleable.

This is what I mean by the new technology creating endless opportunities for new jobs, new investments and new export possibilities.

This gives Canada the opportunity to move away from a resource-based economy and to capitalize on the well-educated workforce we already have. It is one of the world's best kept secrets, but Canadians are leaders in pushing Information Technology forward. Did you know, for example, that the world's largest integrated circuit is built by Dalsa Incorporated in Waterloo. We have many examples of this, but we have not yet applied this capability to revitalize our economy.

Beyond just the chip capability, one of our fastest growing industries is the software necessary to make these chips perform as we wish.

We are the business visionaries and we are in the best position to appreciate the central change-making role of Information Technology.

I believe this is the best option to ensure Canada's success in the years to come.

A talk for a Panel at the World Economic Forum, Stanford University, California.  
September 20, 1994

# Micromarketing/Micromanufacturing

**“When the customer comes first, the customer will last.”**

Technology now allows us to understand customer needs on a one-by-one basis.  
It also allows us to tailor manufacturing to each individual need.

It is easy to get carried away with the capabilities of technology. It is fun to speculate on what can be done with multimedia, interactive marketing and in-the-home almost anything.

It is more fruitful, however, to examine this from the customer’s viewpoint. We now have the capability of tailoring goods and services to match individual consumer’s desires.

It is easy to miss the phenomenal improvement that new technology can provide to custom serve the customer. This comes in two general areas:

- tailoring information about what the customer wants, i.e. micromarketing;
- tailoring the product or service to meet these needs, e.g. micromanufacturing.

## MICROMARKETING

Business Week (September 5th, 1994) summed up Micromarketing as being “the biggest change in marketing since ‘new and improved’”.

Micromarketing starts with the use of databases aimed at a precise understanding of what an individual consumer wants. This is vastly different from mass marketing, which assumes a standard product will satisfy a reasonable segment of the population.

I am not going to dwell on this because the process is well known to all of you. We only need to recognize that Micromarketing is becoming increasingly sophisticated with data being collected via cash register scanners, calls to 800 numbers and credit card records, amongst others. The information available in Database or Relationship Marketing is allowing us to sell one customer at a time.

I could give many examples of this, but I will use one non-commercial example. I am the Chairman of the Board of the United Way of Metropolitan Toronto and our marketing committee has recognized the dramatic change in the workplace. The United Way has



**“You do have good ideas, Phillips, but around here we don’t rush wildly ahead and do any damned thing just because it happens to be a good idea.”**

always depended on workplace campaigns and payroll deduction. There are now far fewer employees in most organizations and many are holding down multiple jobs. Some of these jobs are working at home. United Way has started its own Micromarketing program to track donors from the cradle to the grave. For example, we are encouraging donors to make a contribution, e.g. a life insurance policy, when a child is born. We then send that child a birthday card each year reminding them of how the money is being used. This way you grow donors on an individual basis.

At the other end of the life cycle, we track the donor when they leave a workplace and encourage them to get into planned giving - the ‘give when you’re gone’ approach.

However, if Micromarketing tells what the consumer wants, what can an organization do about it?

### MICROMANUFACTURING

Marshall McLuhan envisaged a factory producing a million units, all different. The capability of doing this is one of the least understood potentials of the microchip revolution.

We now have the ability to add intelligence to any inanimate object, and therefore make it more responsive to a consumer’s needs.

For example, one could create a smart chair that would remember the height you like, the slope of the back and might even roll back when you stand up.

It would be just as easy to design intelligent drapes that open or close to adjust to the heat load.

Doors could open or close automatically just like Star Trek, but only when you approach, and not the neighbour’s dog or the postman.

All of these things are possible with microchip technology, some servo-mechanisms and, of course, some way of recognizing just who the client is. This could be done by a very simple device that broadcasts an identification number or whatever specifications you wish.

Think of the advantage of this system when you have an automatic lawn sprinkler that tests the moisture in the soil and only goes on when required. However, with a personal transmission device, this would ensure that the sprinklers do not go on when you are walking across the lawn!

Think of the possibilities for the new industries redeveloping what used to be unresponsive physical devices. And think of the possibilities for tailoring any object to an individual’s preferences.

### SUMMARY

The impact of Micromarketing and Micromanufacturing on the global consumer and advertising is obvious. Goods and services can be tailored to ethnic groups or individuals with minimal increase in cost.

The form of mass advertising based on mass manufactured products will largely disappear. It will be replaced by highly individualized information with a high probability of interest by the consumer. As Frank Feather, author of “The Future Consumer”, noted there will be “no more hard-sell hype, junk mail, or telemarketing. You will be treated as an honoured guest no matter where or how you shop.”

A talk to Inter Comm 95 World Congress, Vancouver. February 23, 1995

## *Converging on the Consumer*

**“Info, info everywhere, but no one stops to think.”**

Converging multimedia is more than just an interactive stream of co-mingled bits. It will only be a commercial success if we really concentrate on what the consumer needs and will use.

### ABSTRACT

Convergence has been looked at from the point-of-view of the technologist, the common carrier, the regulator and people like me presenting papers at conferences such as Inter Comm '95. If convergence is going to mean industries getting larger rather than converging on nothing useful, we must look at what the consumer wants, needs and will pay for.

### 1. DIGITAL AGE

We all understand that convergence in communications technology results from the digitization of everything. It is this digitization that allows interactive Multimedia to happen. This whole process is now referred to as the new Digital Age.

Nicholas Negroponte has often referred to this converging Multimedia phenomena as an interactive stream of co-mingled bits. The co-mingling refers to interspersed bits that tell a receiving device what meaning to place on the bit stream.

In fact he believes that there is a huge business in bits about bits. He used the example of TV Guide which is simply information about information.

At Softworld '94 he went farther, and concluded that all businesses are now about either atoms or bits, i.e. you are in the business of creating, selling and servicing physical things or you are in the information business. The rate of change of an industry is directly related in his opinion to the ratio of atoms to bits.

The technological conversion of everything to bits allows convergence of information technologies to be dramatically more effective. It allows effective compression of data. This compression is becoming evermore dramatic. Although audio digital disks have only been on the market a few years, even simple technological changes could increase the density perhaps 16X's (one could get a 4X's compression simply by switching to a blue laser with better resolution and another 4X's using better encoder techniques).

Even more dramatic compression can



**“George – think of the mortgage, the car, the furniture, taxes – you just can't say ‘To hell with it!’”**

take place by storing or transmitting only the changed elements in a full motion video mode.

A second major advantage of the Digital Age is effective encryption. It is far easier to encrypt a digital signal than an analogue signal. This will be vital for the protection of privacy and the protection of Intellectual Property Rights (IPR). But if digitization makes convergence possible, what is making it practical and what are the constraints?

As with most new technologies the drivers and constraints have far more to do about the consumer's desire, than it has about actual technology.

## 2. THE BATTLE OF THE TITANS

The CRTC decision 94-19 re-wrote the rules. Canada has taken a lead over the United States where a Bill to change the Telecommunications Act to allow similar competition has been delayed in Congress. It is now a national free-for-all with cable companies being allowed into the local loop business and the telephone companies being allowed into the information and entertainment business.

It did not take Stentor long to announce its Media Linx Interactive organization which will spend \$250 million over the next couple of years to enter the Video-On-Demand business and other forms of interactive wannabes.

Ted Rogers had already announced a deal with Bill Gates to trial the Tiger software to provide the same kinds of services over the cable network.

So who will be the winner? To understand the approaches to convergence, it is important to look at the mind-set of the cable companies and the phone companies.

The cable companies believe in the set-top box. This is a derivative of the channel converter with a remote control, with which we are all familiar.

Phone companies want to move the intelligence outside the home to the network.

Both approaches reflect traditional positions.

The phone companies have always been big switch thinkers - sort out remotely what the customer wants, and deliver just the desired signal over a narrow band wire. This is necessary because the phone is essentially a dumb device, similar to the old dumb computer terminals before smart work stations.

The cable companies have traditionally brought everything into the home and let the user select what he or she wants at the set-top.

These are fundamentally different approaches. The set-top box is betting on the TV set as the major device for convergence. The belief is that the consumer will want to do everything over the set in the family room and only the cable company has the band width to be able to deliver five hundred (500) digitally compressed movies or whatever the consumer may wish to that device. Whatever intelligence is necessary is built into the set-top box.

The phone companies do not have this luxury and therefore are likely to bet more on the PC as the terminal device.

The PC has some inherent advantages:

- it is here! In 1994, home PC's numbered over 30 million in the United States alone with about 5 million with Multimedia capability. Set-top boxes may start to appear in 1995-6, but by 1997 there will be well over 50 million home PC's, and 15 million with Multimedia capability compared to about 2 million set-top boxes.
- the PC has a keyboard.

To understand the importance of this requires us to understand the reality of interactive Multimedia. In my opinion, the average householder will not use interactive shopping, interactive education or other applications that require extensive access through menus. This is simply too complex to be usable.

The only way someone would reasonably shop for an item of any complexity is to key-in directly the desired parameters. Even with Personal Digital Assistants, it is doubtful if people will want to sit in front of their TV set with a bulky keyboard. They are already well attuned however to using a keyboard with their PC.

Another factor mitigating against the TV set as the primary interactive Multimedia device is the use and location of the unit. By and large a TV set is still viewed as an entertainment device. I have no doubt that delivering the five hundred (500) channels to the TV set will be a real and viable application. However the TV set traditionally sits in a room designed for group viewing. Further, you are not that close to the screen and it becomes almost impossible to see icons and then use a remote mouse from perhaps fifteen (15) feet away. The CRT on a PC is however designed for one-on-one viewing from perhaps two (2) feet.

So my conclusion on which device or approach will be the winner is both. I believe that the TV set will stay right where it is and will be used for VOD. The PC will be in the den and will be used for applications requiring a high degree of interactivity.

However, this does not really answer the question about who wins between the cable companies and the phone companies. Negroponte has stated on many occasions that it should be possible to get full motion video over a 64K bit copper pair. I am sure this will be possible but this still puts the phone companies back in the position of having to deliver five hundred (500) channels down the street on fibre and then having the consumer select from that stream only what can be transmitted over the phone line into the home for Multimedia purposes. As undoubtedly, most homes will have multiple PC's and multiple TV sets; this is really not a suitable solution.

This would seem to give the nod to the cable companies who at least have coaxial drops in the homes. But it will not be all that easy for them either. They will still have to add a switching capability as access to the international PSTN will be required for Internet and other uses. Also, a number of the cable companies do not yet have two-way amplifiers in their systems.

### 3. AND THE REAL WINNER - THE CONSUMER

The real winner in all of this convergence will be the consumer. What the consumer wants, as John Evans, President and CEO, News Electronic Data noted the other day at Softworld 94, is content. The consumer cares little about technology. In fact technology only becomes useful when it becomes totally transparent. He reminds us of the failure of High Density Television (HDTV). People really didn't care about how many lines there were on a screen as long as the program was reasonably clear. They certainly cared however about whether the baseball season was cancelled.

If the secret to real estate is location, location, location, then the secret to Multimedia is content, content, content.

But what does the consumer want? Recent surveys such as that done by Andersen Consulting indicate that Canadians will opt for business over entertainment. 58.7% said they were interested in educational services. 50.2% said they wanted banking from the home.

Only 48.3% said they viewed as a priority seeing movies of their choice whenever they wish to see them. Other studies have indicated something the same. My own bet is that some of the winning applications will be very financially oriented e.g. using interactive Multimedia to get the best price on a car, a mortgage or an insurance policy (watch out if your title has the word ‘agent’).

But ultimately the consumer is going to want even more technological transparency than a PC or a set-top box will provide. I am a believer in voice recognition. Negroponte indicated that it might be two hundred (200) years before we would actually match the Star Trek capability of a replicator being able to respond to Jean Luc Picard’s request for *Earl Grey, hot*. However, I believe that interactive Multimedia could work well with the assistance of a Commentator. This is essentially the way Comp-U-Card (CUC) works. This is really a electronically available sales clerk. This may not be High Tech but it is High Service.

#### 4. BACK TO THE FUTURE

In summary, regardless of what the carriers, the regulators or the politicians want, the consumer will drive the process.

We will be making the right decisions in the Multimedia field if we ensure that the convergence of technology converges on what the consumer will pay for.

A talk given to The Canadian Congress of Advertising Conference  
at the Metro Toronto Convention Centre. May 16, 1995

## *Myth Versus Reality, Understanding the Converging World*

**“Today is the tomorrow we worried about yesterday.”**

The myth is that the new technology will eliminate the need for mass advertising.  
The reality is that if used intelligently, it can be of enormous help in  
bridging the gap between awareness and the sale.

The top one hundred national advertisers in North America spent more than \$36 billion in 1992. A thirty second spot on a major late-night television show costs as much as \$45,000. Is it any wonder that advertisers are looking at new technology to see if there is a more effective way of reaching the consumer?

However, it is very easy to get carried away with the technology and forget that all this talk about convergence only makes sense if we converge on the consumer.

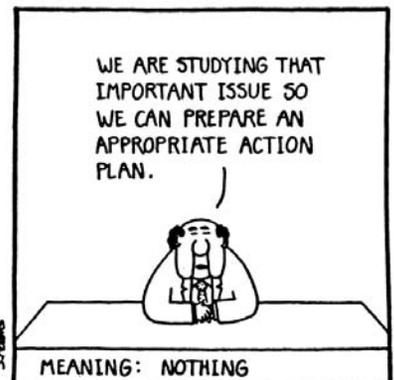
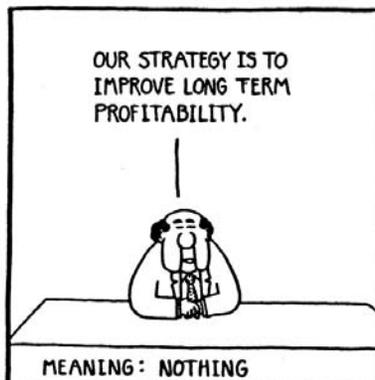
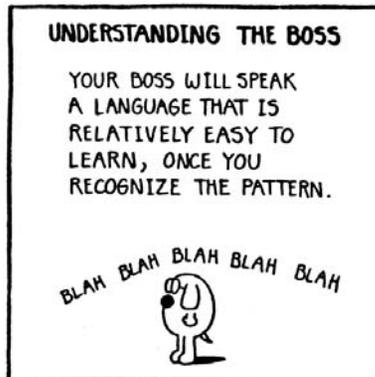
Information technology is an enabling technology. If used with common sense, it will help us understand the consumer and tailor products and services to him or her.

The great advantage of the new technologies is that it allows us to close the sale as soon as

the sales pitch has been made. This has always been the dream of the advertiser.

The waste of that \$36 billion is enormous. While it of course fosters brand awareness, it is very difficult to tell how effective it is.

Advertisers use every means they can to be as effective as the Avon lady. They use tip-ins in magazines,



1-800 numbers as we do on Canadian Home Shopping Network or my personal nemesis, telemarketing. All these are somewhat ineffectual, although better than an ad with no response possibilities. (*I might add that I am getting so tired of magazines being cluttered with tear-outs or drop-ins that I periodically take a handful and throw them in the mailbox without filling them out just so the advertiser has to pay the postage.*)

On the other hand there is a great deal of nonsense talked about how the new technology will solve all these problems by allowing the consumer to shop at home by making his or her decision immediately following an appropriate sales pitch. This might be referred to as the *'just push the button'* view of what the new technology can do.

To sort out the MYTH from REALITY, it is important to understand first, how the new technology can really help. My point-of-view is that unless advertisers re-think the process for reaching the consumer, the new technology will be a costly disappointment.

There are three areas where intelligent use of the technology can make a great difference.

1. *Tailoring information about what the customer wants, i.e. Micromarketing.*
2. *Tailoring the product or service to meet these needs, i.e. Micromanufacturing.*
3. *Tailoring the delivery of the product or service to be user friendly, i.e. Microdelivery.*

## MICROMARKETING

We now have the capacity to understand at the microlevel just what a consumer really wants. This is what Frank Feather points out as being *'beyond mass marketing'*.

With all of the information that is accumulating in data banks about individuals and what they actually purchase, we should no longer have to guess at what a particular consumer will want. Whether it is the Dominion Priority Plus Card, an analysis of past mail order transactions or even computers monitoring usage, data is readily available. An example of the latter is Cantel where we watch people's telephone usage. If it tails-off for two or three months, we contact them to see if they are still satisfied with the service or to suggest a new price package.

We talk about 500 channels on a TV and might wonder how one would ever know what to access. Of course the TV set will be intelligent enough to remember what channels the consumer normally watches and will advise him or her what is on these channels each hour.

In my house virtually all the flyers that come in are thrown instantly in the garbage. However, if these were tailored to my household, covering only items in which I might have an interest, I would more likely look at them.

Business Week summed up micromarketing as being *"the biggest change in marketing since 'new and improved'"*.

I will not dwell on this because the process is well known to all of you. This is however using technology that is already available in an imaginative new way.

## MICROMANUFACTURING

Marshall McLuhan envisaged a factory producing a million units, all different. The capability of doing this is one of the least understood potentials of the microchip revolution.

We now have the ability to add intelligence to any inanimate object, and therefore make it more responsive to a consumer's needs.

For example, one could create a smart chair that would remember the height you like, the slope of the back and might even roll back when you stand up.

It would be just as easy to design intelligent drapes that open or close to adjust to the heat load.

Doors could open or close automatically just like Star Trek, but only when you approach, and not the neighbour's dog or the postman.

All of these things are possible with microchip technology, some servo-mechanisms and, of course, some way of recognizing just who the client is. This could be done by a very simple device that broadcasts an identification number or whatever specifications you wish.

Think of the advantage of this system when you have an automatic lawn sprinkler that tests the moisture in the soil and only goes on when required. However, with a personal transmission device, this would ensure that the sprinklers do not go on when you are walking across the lawn!

Think of the possibilities for the new industries redeveloping what used to be unresponsive physical devices and think of the possibilities for tailoring any object to an individual's preferences.

### MICRODELIVERY

Assuming that you know exactly what the customer wants and can tailor-make products to meet this need, the consumer still has to be aware of what is available and how it can be ordered. It is here that a great deal of nonsense is being promoted.

The idea of a virtual reality shopping mall is interesting but the real challenge will be how to make this sufficiently attractive that the consumer will be able to go directly to a particular item and order it. The problem with most current approaches is that they were built by computer people for computer people. In a word, they use a cumbersome menu approach.

About a year ago, at ITAC's Powering Up North America Conference, Larry Ellison gave a demonstration of using the new technology to order a pizza. It took about five minutes to specify what he wanted. While this was entertaining, it is an example of not thinking through the capability of the new technology. There is a perfectly good alternative to using the TV with a remote mouse - the standard telephone. It is faster, more convenient and it allows the user to interact with the seller in the way he or she is most comfortable - by voice!

A better way of using the new technology for direct marketing would be to use the Comp-U-Card (CUC) approach of having an electronically available salesclerk on the television set. The interaction is then two way by voice. In effect, what is happening, is the sales process is personalized at the microlevel. This may not be hi-tech but it is hi-service.

### SUMMARY - MYTH VERSUS REALITY

The MYTH is that the new technology will eliminate the need for mass advertising. The REALITY is that if used intelligently, it can be an enormous help in bridging the gap between awareness and the sale.

Convergence of technology is of little interest to the consumer. The only convergence that counts is when we converge on what the consumer wants and will pay for.

A talk to the International Engineering Consortium, Toronto. July 6, 1995

## *Dynamic Solutions in a Dynamic Industry*

**“Never get into the thick of thin things.”**

We tend to use technology because of what it can do rather than what it should do.

Fortune (August 22, 1994) proclaimed that “the household device that receives and decodes digital data could decide who wins control of the Information Highway”. A wrong guess could cost a Fortune (not referring to the magazine!). The contestants for delivering this digital data are the phone companies and the cable companies.

And the winner is? Well, let’s look at the fundamentals. The cable companies have been leaning toward the set-top box. This is a derivative of the channel converter with remote control with which we are all familiar.

The phone companies want to keep the intelligence outside the home in the network.

Both approaches reflect traditional positions.

The cable companies have traditionally brought everything into the home and let the user make his or her selection at the set-top box.

The phone companies have always been big switch thinkers - sort out remotely what the customer demands and deliver just the desired data on a narrow band wire.

So who is right?

To make money, one needs to own something someone else wants. One problem with the set-top box approach is that the cable companies will have a tough time holding onto it. The regulators have long since decided that the phone companies could not have an exclusive on devices in the home. Cable will be hard-pressed to maintain an exclusive on the selection mechanism in the house.

However, the network is not that secure either. Competition in message toll carriage is already here. Local loop competition is not far behind. In fact, many message toll carriers in the United States are already betting that wireless will provide a local loop alternative. In summary, neither organization can expect to maintain a monopoly by following its traditional thinking.

Hagar



But even more fundamental is the way the consumer wants to interact.

The set-top box is fine for decoding 500 digitally compressed movies and allowing the consumer to make the selection by a relatively simple remote device. The system incidentally will be smart enough to know what channels a person usually watches and will provide these as a first choice menu.

Beyond this, the set-top box runs into problems.

Let's take interactive in-the-home shopping as an example. Some of you may have watched Larry Ellison of Oracle order a pizza interactively at the "Powering Up North America" Conference this Spring. He is a billionaire, so he must know something I do not. But I would never waste my time in doing this. I would pick up the phone and order my Medium Super Supreme in an elapsed time of about 20 seconds. I am sure Ellison's approach must have taken him at least 5 minutes.

If one tries to order something more complex, e.g. clothing, the problem only worsens. This would require the consumer to flip through multi-layered menus to indicate whether the potential buyer is interested in men or women's clothing, for which season, what type of clothing, what colour, etc. The approach used by most systems was designed by computer people for computer people.

The reason the set-top box with a relatively simple handheld unit requires such an approach is that the unit does not have a keyboard.

If one could key in the pizza order and have an acknowledgement, then at least this would be somewhat user friendly. It is still a klutzy approach.

What has a keyboard? A PC. Who owns the PC? Not the cable company or the phone company. You do.

This further ensures that neither the cable company nor the phone company will be able to control the device in the home. This relegates both types of organizations to carriage. As noted, this is already a highly competitive field.

This implies that for the near future at least, the only way either the cable or the phone company will be able to own something people want is to own the content. This of course is why there is a rush of mega mergers between carriers and movie producers or broadcast networks. Why did Ted Rogers buy Maclean Hunter? Sure it was for the cable, but it is also for the content.

The reason I predict the PC will be the preferred interactive media device for the next number of years, is the foothold it already has.

In 1994, home PC's numbered over 30 million in the United States alone with about 5 million with multimedia capability. By 1997, when interactive set-top boxes begin to appear, there will be well over 50 million PC's and 15 million with multimedia capabilities. This will compare to about 2 million of the set-top boxes in the same period.

So the answer for cable is to add high-speed modems to PC's. This is exactly what they are doing. But where does this leave the TV set?

Where it belongs - in the family room for entertainment. A TV set is far more suitable for distant viewing than it is for text-oriented viewing. Who can really see icons from 15 feet away unless you have a wall size TV screen. And in any case, who really wants to shop using the TV set when they could be watching Joan Rivers? (*Maybe a lot of people!*)

So the cable companies will use the set-top box to deliver their 500 channels of

entertainment, edutainment or whatever and will provide the needed high-speed modems to the PC for interactive applications.

In the short run at least, it will be these practical considerations that will drive convergence or lack thereof.

Whoops! Where does this leave the phone companies?

While data compression and other techniques will help in providing some full motion video over a twisted pair, the phone company is clearly at a disadvantage in working with either the set-top box or the PC. Even their role of providing centrally switched local telephone service will change. I believe that microminiaturization will allow many calls to be switched locally. For example, new high capacity microchips should be able to store all the '416' numbers and route calls locally on whatever network may be available. There is no need to have the switching decision for many calls made remotely with wasted transmission time in both directions.

However, cable will not have everything its own way. The phone companies network is ubiquitous and their financial resources very strong.

Perhaps the way this will evolve in the near future is with both networks accessing the home. A Home Area Network (HAN) will almost certainly evolve. The user can then select the best solution from either the cable or the phone network through a box in the basement. A low-speed switched connection may be quite adequate for a simple voice communication while a high-speed computer software download would clearly benefit from the cable capability.

So who will be the real winner? The consumer.

Both carriers should be concentrating on what will make devices in the home or office as user friendly and really useful as possible.

I am a great believer in voice recognition and feel that this will be a much better answer than either a set-top box or a PC keyboard. The consumer will be the real winner when he or she can order *Earl Grey, hot*, just the way Jean Luc Picard does.

A talk to the Canadian Institute, Toronto. December 6, 1994

## *Racing Towards a New Era of Opportunity in Multimedia*

**“Find a need, and fill it.”**

Technology will only really win if the consumer is the ultimate winner.

We all understand that convergence in communications technology results from the digitization of everything. It is this digitization that allows interactive Multimedia to happen. This whole process is now referred to as the new Digital Age.

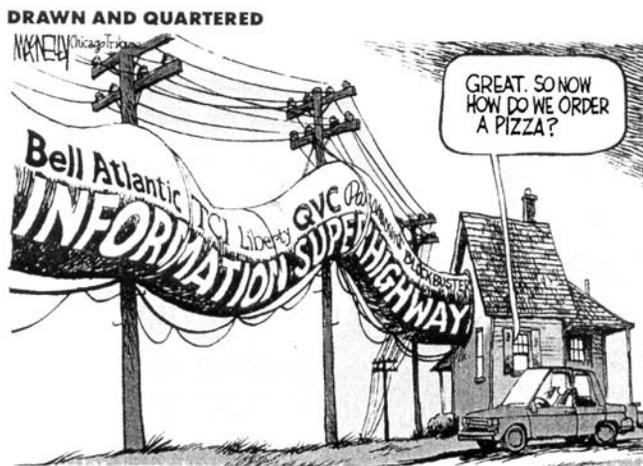
Like many other recent terms, the name digital is not sales oriented. It is only slightly better than cellular telephony or Pay TV. In fact, it is a complete misnomer. Obviously, the process has nothing to do with the real meaning of digital. The term refers to the Arabic numbers 0-9. It derives from the Latin digitus, meaning a toe or finger. The digitization we are talking about today involves the transformation of voice, text, graphics, still photos and full motion video into a stream of binary bits. Perhaps a better term would be bitification!

Oh well, we are stuck with the term and can better spend our time looking at the implications of the Digital Age. Nicholas Negroponte has often referred to this converging Multimedia phenomena as an interactive stream of co-mingled bits. The co-mingling refers to interspersed bits that tell a receiving device what meaning to place on the bit stream.

In fact he believes that there is a huge business in bits about bits. He used the example of TV Guide which is simply information about information.

At Softworld '94 he went farther, and concluded that all businesses are now about either atoms or bits, i.e. you are in the business of creating, selling and servicing physical things or you are in the information business. The rate of change of an industry is directly related in his opinion to the ratio of atoms to bits.

The technological conversion of everything to bits allows convergence of information technologies to be dramatically more effective. It allows effective compression of data. This compression is becoming evermore dramatic. Although audio digital disks have only been on the market a few years, even simple technological changes could increase the density perhaps 16X's (one could get a 4X's compression simply by switching to a blue laser with better resolution and another 4X's using better encoder techniques).



Even more dramatic compression can take place by storing or transmitting only the changed elements in a full motion video mode.

A second major advantage of the Digital Age is effective encryption. It is far easier to encrypt a digital signal than an analogue signal. This will be vital for the protection of privacy and the protection of Intellectual Property Rights (IPR). But if digitization makes convergence possible, what is making it practical and what are the constraints?

As with most new technologies the drivers and constraints have far more to do about power struggles, regulation, politics and yes - even the consumer's desire, than it has about actual technology.

The power struggle is primarily between the major telecommunications carriers. The regulatory struggle is between Heritage Canada and the CRTC/Industry Canada over content control. The political questions revolve around NAFTA and GATT. Regardless of all of these, the consumer will ultimately determine what happens when he or she buys the product or service or not.

Let's look at some of these drivers and constraints:

### THE BATTLE OF THE TITANS

The CRTC decision 94-19 re-wrote the rules. Canada has taken a lead over the United States where a Bill to change the Telecommunications Act to allow similar competition has been delayed in Congress. It is now a national free-for-all with cable companies being allowed into the local loop business and the telephone companies being allowed into the information and entertainment business.

It did not take Stentor long to announce its Media Linx Interactive organization which will spend \$250 million over the next couple of years to enter the Video-On-Demand business and other forms of interactive wannabes.

Ted Rogers had already announced a deal with Bill Gates to trial the Tiger software to provide the same kinds of services over the cable network.

So who will be the winner?

To understand the approaches to convergence, it is important to look at the mind-set of the cable companies and the phone companies.

The cable companies believe in the set-top box. This is a derivative of the channel converter with a remote control, with which we are all familiar.

Phone companies want to move the intelligence outside the home to the network.

Both approaches reflect traditional positions.

The phone companies have always been big switch thinkers - sort out remotely what the customer wants, and deliver just the desired signal over a narrow band wire. This is necessary because the phone is essentially a dumb device, similar to the old dumb computer terminals before smart work stations.

The cable companies have traditionally brought everything into the home and let the user select what he or she wants at the set-top.

These are fundamentally different approaches. The set-top box is betting on the TV set as the major device for convergence. The belief is that the consumer will want to do everything over the set in the family room and only the cable company has the band width to be able to deliver five hundred (500) digitally compressed movies or whatever the consumer

may wish to that device. Whatever intelligence is necessary is built into the set-top box.

The phone companies do not have this luxury and therefore likely to bet more on the PC as the terminal device.

The PC has some inherent advantages:

- it is here! In 1994, home PC's numbered over 30 million in the United States alone with about 5 million with Multimedia capability. Set-top boxes may start to appear in 1995-6, but by 1997 there will be well over 50 million home PC's, and 15 million with Multimedia capability compared to about 2 million set-top boxes.
- the PC has a keyboard.

To understand the importance of this requires us to understand the reality of interactive Multimedia. In my opinion, the average householder will not use interactive shopping, interactive education or other applications that require extensive access through menus. This is simply too complex to be usable.

The only way someone would reasonably shop for an item of any complexity is to key-in directly the desired parameters. Even with Personal Digital Assistants, it is doubtful if people will want to sit in front of their TV set with a bulky keyboard. They are already well attuned however to using a keyboard with their PC.

Another factor mitigating against the TV set as the primary interactive Multimedia device is the use and location of the unit. By and large a TV set is still viewed as an entertainment device. I have no doubt that delivering the five hundred (500) channels to the TV set will be a real and viable application. However the TV set traditionally sits in a room designed for group viewing. Further you are not that close to the screen and it becomes almost impossible to see icons and then use a remote mouse from perhaps fifteen (15) feet away. The CRT on a PC is however designed for one-on-one viewing from perhaps two (2) feet.

So my conclusion on which device or approach will be the winner is both. I believe that the TV set will stay right where it is and will be used for VOD. The PC will be in the den and will be used for applications requiring a high degree of interactivity.

However, this does not really answer the question about who wins between the cable companies and the phone companies. Negroponte has stated on many occasions that it should be possible to get full motion video over a 64K bit copper pair. I am sure this will be possible but this still puts the phone companies back in the position of having to deliver five hundred (500) channels down the street on fibre and then having the consumer select from that stream only what can be transmitted over the phone line into the home for Multimedia purposes. As undoubtedly, most homes will have multiple PC's and multiple TV sets; this is really not a suitable solution.

This would seem to give the nod to the cable companies who at least have coaxial drops in the homes. But it will not be all that easy for them either. They will still have to add a switching capability as access to the international PSTN will be required for Internet and other uses. Also, a number of the cable companies do not yet have two-way amplifiers in their systems.

The solution seems very obvious, although I assure you this is not a position of either Rogers Communications or as far as I know Stentor. The best approach would seem to be to allow both organizations to bring their specialty networks into a box in the basement and thence into a HAN (Home Access Network). Any device in the home could then access the switched PSTN, a broad band capability with as much spectrum as required or any combination. It would

seem to me that this is a sensible solution best utilizing the national resources we already have.

I note that even Japan has backed away from the enormous cost of putting fibre into every home by the year 2015. If Japan cannot afford this, I doubt that Canada can.

The implications are significant e.g. who owns the customer in this case and who provides the bill? It may be that for the time being the easy answer is to allow each organization to bill separately for its own services with the convergence being essentially electronic.

### REGULATING THE UNREGULATABLE

The CRTC and Industry Canada have made their intentions known. Canada is to have a wide open competitive telecommunications system with minimum price regulation and then only in the form of caps. The market will decide what it wants.

Well, almost! The problem is the CRTC's mandate to protect Canadian culture, whatever that may be. There is more likelihood of the five hundred (500) channels being held up here than there ever will be because of the technology. I can see years of debate on how Canadian content can be protected in a five hundred (500) channel world.

The problem of course is competition from foreign satellites. Direct Broadcast By Satellite (DBS) will be here whether CANCOM likes it or not. I am reminded of Pat MacGeer's comment years ago that if the Canadian government did not like him to watch foreign satellite programming then they should stop the signals from falling in his backyard. There will be no practical way to stop foreign satellites from delivering whatever the customer wants. The CRTC and Heritage Canada are going to have to resolve their differences, put in minimum Canadian content requirements and then let any carrier deliver whatever signals the customer will pay for.

### POLITICS, POLITICS

As noted above, no country can protect its borders from the Global Village. We have not been able to do that for years.

If this is true of electronic signals, it would be equally true of foreign companies operating in Canada. CRTC 94-19 allows any Canadian company into any part of the telecommunications business or at least implies this as the direction the government is going. I question how long Canada can maintain a Canadian exclusive in this area. As Canadian companies, more and more must go abroad to continue growing, there will be increasing pressure on Canada to open up its telecommunications business to a much higher percentage of foreign ownership.

Already the government has undertaken to allow a communications holding company to go to 33% foreign ownership. This is absolutely essential for the financing of companies given the limited size of the Canadian financial markets.

I believe we will see pressure under NAFTA, GATT and the World Trade Organization to open up even local loop competition, wireless communications and broadcasting to more foreign competition. The implication of this is that Canadian companies operating in the Multimedia business are going to have to look well beyond their borders. Convergence in Canada will become less an issue than International competition in the Digital Age.

### AN THE REAL WINNER - THE CONSUMER

The real winner in all of this convergence will be the consumer. What the consumer wants,

as John Evans, President and CEO, News Electronic Data noted the other day at Softworld 94, is content. The consumer cares little about technology. In fact technology only becomes useful when it becomes totally transparent. He reminds us of the failure of High Density Television (HDTV). People really didn't care about how many lines there were on a screen as long as the program was reasonably clear. They certainly cared however about whether the baseball season was cancelled.

If the secret to real estate is location, location, location, then the secret to Multimedia is content, content, content.

If you thought that the reason Ted Rogers is buying Maclean Hunter is for some additional cable capacity in a paging company, you are missing the point. The value of Maclean Hunter is its access to content. I might add that CRTC 94-19 in my opinion likely ensures the approval of the Maclean Hunter deal. I cannot see the CRTC saying that anyone can get into anyone else's business, the Stentor companies can put together a Multi Linx but the cable companies cannot rationalize their own networks.

But what does the consumer want? Recent surveys such as that done by Andersen Consulting indicate that Canadians will opt for business over entertainment. 58.7% said they were interested in educational services. 50.2% said they wanted banking from the home. Only 48.3% said they viewed as a priority seeing movies of their choice whenever they wish to see them. Other studies have indicated something the same. My own bet is that some of the winning applications will be very financially oriented e.g. using interactive Multimedia to get the best price on a car, a mortgage or an insurance policy (watch out if your title has the word 'agent').

But ultimately the consumer is going to want even more technological transparency than a PC or a set-top box will provide. I am a believer in voice recognition. Negropte indicated that it might be two hundred (200) years before we would actually match the Star Trek capability of a replicator being able to respond to Jean Lues' request for *Earl Grey, hot*. However, I believe that interactive Multimedia could work well with the assistance of a Commentator. This is essentially the way Comp-U-Card (CUC) works. This is really a electronically available sales clerk. This may not be High Tech but it is High Service.

## BACK TO THE FUTURE

In summary, regardless of what the carriers, the regulators or the politicians want, the consumer will drive the process.

We will be making the right decisions in the Multimedia field if we ensure that the convergence of technology converges on what the consumer will pay for.

A talk to the Mississauga Technology Association. June 19, 1996

## Tech Talk '96

**“I do not fear computers. I fear lack of them.”**

*Isaac Asimov*

Moore's law shows that we are gradually reducing the cost of computing to zero.  
The implications of this for all kinds of industries are truly exciting.

This might be called a ‘Dear John’ letter. Had John von Neumann, the mathematician who did so much to pioneer computer science been alive today, someone might have to write him to explain how the incredible changes in computer technology are altering some tenets that he would have held fundamental.

John and the other early computer pioneers were trying to perfect a general purpose machine that by altering the internally stored program of instructions could tackle essentially any problem based on logic.

Today the advances in computer speed, storage capability and communications have brought into question whether continuing to build evermore powerful general purpose machines is really the next wave.

I am reminded of a cartoon called ‘Chubb and Chauncey’ in which one dog is saying to the other, “*Dogs and cats both have teeth, we both have claws but dogs are bigger than cats. I am going out to beat up on a cat*”. When Chubb comes back he is of course all in bandages. His comment was, “*I forgot to factor in blinding speed*”.

Blinding speed is of course only one of the accomplishments of current microchip technology. In the late 1950's, I was responsible for what was then the fastest machine installed in Canada, an IBM 704 which was installed at AVRO Aircraft. That machine could execute 40,000 instructions per second. Today, it is not uncommon to have a PC with a Pentium chip capable of 166 megacycles. Further, that 704 filled an entire room and required a very complex environment to pamper its tube technology. Today of course microchips can contain tens of thousands of active components on a substrate about the size of a thumbnail.

With the decline in size of components, cost is declining as well. In fact, despite some recent levelling off in the cost curve, computer hardware is trending toward being free.



“I'm sorry, but Mr. Cremworth is too important to see you right now.”

The cost of cycles is even now almost a negligible part of computer design considerations.

In fact more and more, computers are being designed with hundreds or thousands of microprocessors operating in parallel. This provides the ultimate in scalability but as importantly, it provides reliability of an unprecedented level. Computers are built essentially with throwaway components. Even if some of the microprocessors fail, the rest carry on.

Ultimately, the machine simply dies of old age when too many of its components wear out.

However, this trend toward zero cost is not restricted to MIPS. Data storage is following the same downward cost trend.

We already know how to make a CD-ROM many times more efficient by simple data compression techniques or even changing the laser from red to blue.

It is also easy to layer the binary bits, i.e. embed the bits in a disk at varying depths allowing the laser to select the appropriate layer. Six layers is easy now. IBM projects that twenty layers will be quite possible in a few years.

And no one thinks the disks are the ultimate answer. They are still mechanical devices not much improved in concept from the drum on the IBM 650 or the pioneering disk storage device on the IBM 305 RAMAC.

Solid state devices are on everyone's drawing boards (pardon me, in everyone's Computer Assisted Design program (CAD)).

Again the trend is toward nearly zero cost for the storage of data.

These trends are not going to result in zero costs in the immediate future. Even Gordon Moore of Intel now believes that Moore's law indicating the capability of computer chips would double every 18-24 months is in doubt. The ability to photo-reduce circuit layouts is already constrained by the wavelength of light. X-rays are being investigated as an alternative.

However, no one doubts that ultimately atoms will be the switching device. Of course quantum mechanics warns us of some quirky behaviour when approaching atomic or sub atomic particles.

Having said all this the cost of computer cycles and the cost of storing bits is becoming so inexpensive that we can look at computing in a new way.

There is a third component that assists in looking at new things we can do with microchips. This is the declining cost of telecommunications.

No one knows the actual amount of information that a fibre can carry. The active components just keep getting better and better.

Between fibre and satellite, distance dependant telecommunications' charges will soon be a thing of the past.

Just look at what has already happened to long distance rates. In the United States each of AT&T, MCI and Sprint have enough capacity across the country to meet all the data carrying needs in the United States. Of more importance with the ever improving digital transmission and data compression, wireless communications when linked to microchip technology open incredible new opportunities.

As an aside, in the pre-Internet days I would have said that the only components of computer networks that are not trending toward zero cost would be information and software. However, information voluntarily supplied is of course the backbone of the Internet. Further, an incredible number of organizations are now offering their software at no charge, e.g. Netscape, Java and Microsoft Net. Presumably, the hope is to capture market share with a view

to eventually charging for add-ons or improvements. At the moment, however, even software and information are trending toward zero cost.

Trends tell tall tales if you push them to their limit - *reductio ad absurdum* is sometimes useful to see where these trends lead.

### FROM THE GENERAL TO THE PARTICULAR

We are all aware that Larry Ellison of ORACLE has concluded that it is no longer necessary nor economical to waste general purpose computers when they are hooked to a network. A much simpler and less costly machine could be built that would simply call up whatever programs are required or whatever storage or other facilities may be needed and download this capability over a network. This would essentially be the return to the relatively dumb workstations that were in vogue a decade ago. Larry sees this as the end of the PC. His \$500 terminal is coming on the market.

However, one of his former employees, Farzad Dibachi of the IDEA Corporation (Interactive Digital Electronic Appliance), believes the time has come to by-pass even this approach. He believes that electronics is now so inexpensive one can afford to do just one thing with a chip. He looks forward to the day when there could be thousands of special purpose chips throughout homes, offices and organizations. For example, he notes that one could have a specialized unit for the kitchen containing thousands of recipes on a CD-ROM.

Such an approach should be of no surprise. If most people were asked how many computers they had in their home, they would likely reply one or two depending on the number of PCs they have. They might increase this estimate if they think of the Nintendo or SEGA products their children play with. However, one only has to realize that there are about twenty microchips in a reasonably sophisticated new car to understand how far this process is going.

Business Week, May 13, 1996, reported that when Sony wanted to upstage Nintendo and SEGA, it could not rely on an Intel chip. It was simply too expensive for a unit that was expected to sell retail for \$299 U.S. Instead, it contracted with LSI Logic Corp. of California who came up with a specialty game playing chip for about \$40.

Others like MicroUnity Chief Moussouris believe that the general purpose PC architecture is nearing the end of its life cycle and highly specialized graphic-handling chips will prove much more successful for working on the Internet or the Intranet.

So where is all this going? If one realizes the unbelievable capability that is now with us, one would realize it is now possible to build intelligence into any inanimate object.

For example, it is now possible to build intelligent drapes that will open and close themselves depending on the ambient lighting. If one wanted such a device, it would be equally possible to build an intelligent chair that would automatically adjust to the user's comfort position for height, back inclination and might even roll away when the user stands up.

Of course to make this approach truly feasible, one would need a small transmitter that would identify the user for the inanimate object, i.e. would tell the object whatever he or she wanted the object to do.

This would have all kinds of benefits. One could design doors that would operate like those on the Enterprise that would open automatically when the user approached. They would not, however, open when the postman or the neighbour's dog approached.

It would be quite possible to have highly intelligent lawn watering devices that go well

beyond the current analogue units. However, with a small transmitter being worn by the user, at least the unit would not go on when you are walking across the lawn!

The implications of all this for the economy are enormous. Think of a door manufacturer in Waterloo. This is hardly a growth business at the moment. However, if the doors could be made intelligent, a whole new industry could open up.

### THE DEAR JOHN LETTER

So what would we tell John von Neumann? The message would be that even PCs are simply general purpose computers that are smaller in size and with increased capability. However, the next logical projection is for microengineering and micromanufacturing that will allow devices to be tailored to the individual. This is truly consumer driven technology and the capability of this is now within our grasp.

I believe John would have been every bit as excited with this trend as he was during his pioneering work for the general purpose computer.

A talk to Tandem Computers Canada Limited sales force. October 18, 1995

## *In Tandem With Reality*

**“I always advise people never to give advice.”**

I was on the Board of Tandem Canada and was asked to speak to their sales force.

Following the idea that computer cycles will eventually become so inexpensive they can be considered free, I pointed out the same applies to communications costs.

This opened the question as to what a computer company can do to make money.

My answer was content and software. Tandem was subsequently sold to Compaq which was subsequently sold to Hewlett-Packard. Interesting!

When I talk about being IN TANDEM WITH REALITY it is not virtual reality but market reality that I am referring to.

Tandem can be proud of its leading edge approach - highly parallel systems that are fault tolerant and have almost limitless scalability.

But no one can risk being at the leading edge of the status quo. Tandem is no exception.

There are clear trends in the information technology field and it can be illuminating to project these to their ultimate to see the implications for the marketplace.

### MIPS AND GIGAFLOPS

I am not a technologist but have been working in the high tech field for over forty years. All this means is that I have been fortunate enough to live through what all of us understand from studying the history of information technology. My career with IBM predated the arrival in Canada of the first IBM computer - a 650 that was installed on a trial basis in the old 36 King Street East office in Toronto. It was of course a tube machine. The program, however, was stored on a magnetic drum which contained two thousand, ten digit words. The tubes in that machine were about as big as my thumb.

I then had the fun of installing one of these machines at Orenda Engines in Malton and a 704 which was IBM's high speed scientific computer of the day at Avro Aircraft. After the demise of the Avro project in 1959, I was transferred to Ottawa where I installed a 705, Model 3 at the Dominion Bureau of Statistics for the 1961 census. All of these were tube machines. When the power failed (*which was quite common in Ottawa*) everyone dashed for the computer doors to open them for heat dissipation before the tubes burned-out.



The first transistorized IBM computer (*ignoring an electronic calculator called the 608*) was the 7070. The transistors in this early machine were about the size of a pencil eraser.

On April 7, 1964, I participated in the announcement of the IBM 360 line. These were integrated chip machines but by the time that line was at its ultimate with the 360/85, the cooling of components was a real problem. In fact, the 85 which I installed at Systems Dimensions Limited in Ottawa was water cooled. Imagine having your computer installed by a plumber!

However, the INTEL revolution had reduced the size of transistors to components about the size of a grain of sand.

Today of course, the fully integrated computer chips with which we are familiar operate in the 100 megacycle range even in our PC's with tens-of-thousands active components on a substrate about the size of a thumb nail.

Okay you say, we all know this - progress is great. But the implications are that with the decreasing size of components, the cost for components is also decreasing dramatically. In fact, despite some recent levelling off in the cost curve, computer hardware is trending toward being free. The cost of cycles is even now almost a negligible part of computer design considerations.

No one knows this better than Tandem. For years you have built a business around throw-away components. You have designed machines that recognize it is cheaper to build in hundreds or thousands of micro-processors. Even if some fail, the rest carry-on.

Ultimately I suppose, the machine simply dies of old age when too many of its components wear out.

But the implication is that soon Tandem could be virtually giving away its hardware.

Imagine a Himalaya in a blister pack being sold through Wal-mart like the Amigo cellular phone.

So who needs a sales force for this? You had better believe that commissions will not be great on a product that is essentially a giveaway.

So an initial conclusion from this would be that you had better make sure that your resumés are up-to-date!

## BIG BIT BUCKETS

Furthermore, this trend is not restricted to MIPS. Data storage is following the same downward cost trend.

We already know how to make a CD-ROM many times more efficient by simple data compression techniques or even changing the laser from red to blue.

It is also easy to layer the binary bits, i.e. embed the bits in the disk at varying depths allowing the laser to select the appropriate layer. Six layers is easy now. IBM projects that twenty layers will be quite possible in a few years.

And no one thinks the disks are the ultimate answer. They are still mechanical devices not much improved in concept from the drum on the 650 or the initial disk storage device on a 305 Ramac.

Solid state devices are on everyone's drawing boards (*pardon me, in everyone's Computer Assisted Design program (CAD)*).

Again, the trend is toward nearly zero cost for the storage of data.

Better dust off those resumés again!

## TARGETING TELECOM

But don't feel too badly. You are not alone. Look at Rogers or Bell, or AT&T. The cost of telecommunications is also on the same trend toward absolute zero.

No one knows the actual information carrying capability of fibre. The active components just keep getting better. Between fibre and satellite, distance dependant telecommunications charges will soon be a thing of the past.

Just look at what has already happened to long distance rates. Already in the United States, each of AT&T, MCI and SPRINT have enough capacity across the country that anyone of them could carry all the data needs of the United States.

If this is the trend in telecommunications, come to think of it, I should update my own resumé!

## A LIGHT AT THE END OF THE FIBRE

As computer power, data storage and telecom all trend toward zero cost, where does this leave Tandem?

Fortunately, these trends are not going to result in near zero costs in the immediate future. Even Gordon Moore of INTEL now believes that Moore's law indicating the capability of computer chips would double every 18-24 months is in doubt. The ability to photo reduce circuit layouts is already constrained by the wave length of light. X-rays are being investigated as an alternative.

No one doubts that ultimately atoms will be the switching device but Quantum Mechanics indicates some quirky behaviour when approaching atomic or sub-atomic particles.

So, we have some time. But time to do what?

## THE NEW REALITY

Even if computer cycles, data storage and telecom become essentially free, what is not free is the knowledge (*read software*) to make this incredible capability useful.

Nor might I add does the data to be handled by these systems come for nothing - Internet notwithstanding.

The latter reason is of course why Rogers bought Maclean Hunter and Disney is busily acquiring distribution systems. In telecom, money is going to be made by those who control content and not simply carriage.

For Tandem, I believe the future lies in Value Added systems. You are already evolving into sales persons of solutions rather than systems.

I was pleased to see the emphasis on software in your recent sales literature. You obviously understand how to exploit the Tandem hardware advantages for Data Warehousing and Decision Support Systems.

I also believe that the systems integration service provided by TXN will be an important component of your future sales programs.

But to really remain at the leading edge, I believe you are going to have to go further.

Bill Gates did not become a multibillionaire by custom designing systems for each person's PC. He created flexible, general purpose applications such as Microsoft Office and then proceeded to sell millions of copies. I know this approach of replicating application software sounds simplistic but it is fundamental. No one I can think of has ever made real money in the long run re-inventing solutions for each problem.

Just look at SHL Systemhouse. I know this organization well, as it was a spin-off from SDL in Ottawa many years ago. Its earnings have been all over the place and its stock price looks like a sine wave. This is because it must constantly re-sell its services to each new client. AMDAHL just bought DMR. This is a fine Canadian firm but has the same problem. It makes money one year and then loses large amounts the next.

Where I hope Tandem can concentrate is in application expertise. Use the unique capabilities of scalability and fault tolerance to identify the industries that really need these capabilities. Then concentrate on developing the flexible software approaches to meet the needs of banks, airlines, the insurance industry, or whatever.

And do not be afraid of buying the applications expertise, if you do not already have it. There are plenty of good firms with insurance know-how for example. Their programs just need to be adapted to the Tandem platform and aggressively sold as a true integrated solution package to the myriad of firms in each of these industries.

### A TANDEM TARGET

Tandem has a great base on which to build. Replicable application software is what is needed to exploit this base. This approach will, I am sure, get us IN TANDEM WITH THE NEW REALITY.

A talk at the CIO of the Year Awards Dinner, Toronto. November 29, 1994

## *The Information Sage in the Information Age: a Talk at 'CIO of the Year' Awards Dinner*

**"If you aim high, you can't shoot yourself in the foot."**

The talk was to the Chief Information Officers to try to convince them that CIO does not stand for "career is over".

The standard joke is that CIO stands for "*Career Is Over*". Indeed a recent study by Deloitte & Touche reports that "*CIO turnover remains high, with 18.8% of respondent companies reporting a turnover in the CIO position in the past year*" (6th Annual Survey of Chief Information Officers, 1994).

The average information services budget increase for all respondents to the survey was only 0.4%, well under inflation. In fact for the Fortune Five Hundred companies, the information service budgets were actually cut by 2%.

What has happened? During the late 1970's and early 80's management gurus were predicting that the CIO would become the Executive of the future. After all we were heading into the Information Age and those who control the information will ultimately control major corporations.

In some industries of course the CIO's have effectively risen to the top. However, this has largely been within the industry itself. Obviously the way to become a multi-billionaire is to follow in the footsteps of Bill Gates or Larry Ellison. But in the non-industry sectors, the CEO's have rarely been former CIO's.

There are many reasons for this, not the least of which is that the CIO has often been a technologist and in many cases has had the information systems resources reporting to him or her. It was not usual that the CIO would come from an operating division or from some area where knowledge of the needs of customers and the internal corporate clients would be a primary requirement.

This often led the CIO to be viewed by their peers as people who stand in the way of what the operating managers want to do.

The CIO would tend to respond to almost any request with comments such as:



**"It may look good to you, but remember that I don't have any good career moves left."**

- We can't go ahead with that project until standards are established.
- We are putting in a new network and your request will have to wait until that is complete.
- We are short of resources and this will likely be low on the priority list.
- We are currently developing a super system that will answer all of these needs in about 2-3 years. (In fact the name of the Rogers Cablesystems billing program is Supersystem.)

And then to ensure that the CIO is viewed as someone with little understanding of the real problems of an organization, they will cloak their explanations in words such as Client/Server, Object-oriented Programming, LAN's, WAN's or similar terms.

Small wonder that in early 1990, an article in Business Week when referring to the CIO noted that "Despite this early rush to hire them, only a handful ever gained real power. The CIO is usually the odd man out among the Executives. A half dozen recent surveys say that less than 10% of CIO's take part in strategic planning sessions and even fewer report to the CEO or President. Without influence at the top, it is impossible to make a difference".

But are there other reasons why the CIO position has yet to gain the prominence it seems so obvious it should have? Behind all of this is the computer paradox - a questioning of whether the spending on Information Technology has in fact lowered business costs or increased efficiency. There certainly has been an increase in efficiency in many organizations in the past few years but as Stephen Roach of Morgan Stanley points out many of the gains have come from dramatic downsizing and it is not obvious that this is directly attributable to the increased use of Information Technology.

As reported in Scientific American (November 1994) "*The computer conundrum first emerged in the 1980's. Expenditures on Information Technologies in that decade rocketed into the billions of dollars. At the same time, white-collar services - such as banking, finance, healthcare, insurance, telecommunications, advertising and retail - increased their productivity by a meagre average of 0.8%, well below their historical norm of 2.5% a year. Was it a coincidence that during that same decade these companies spent more than 860 billion dollars on computer hardware?*"

Lester Thurow, of the Massachusetts Institute of Technology noted that "*Some people are now saying of the services, 'Well, maybe it just took these guys twenty years to learn to use their equipment'*".

It appears that the CIO's are becoming the scapegoats for overselling what Information Technology can do while under-implementing the technologies in areas that could really improve the productivity of organizations.

An interesting statement was made by William D. Bell in a book called Management Guide To Electronic Computers. In this Bell notes that "*The use of Electronic Systems in unified, integrated business data handling-systems is not as far advanced as business men have been lead to believe. The reasons for this delay are the time required for new equipment to reach the user and even more important the learning and training periods followed by the operational transition requirements*". The book was written in 1957 or over thirty-seven years ago. The complexity of systems and the capability of equipment has increased dramatically but in many cases the process of delivering true productivity improvements has not changed that dramatically.

But perhaps the CIO is also suffering from being new on the scene and from facing unrealistically high expectations from senior management. I often wondered what would have happened if CIO's had been around as long as other senior management positions. The answer was partly provided in a stimulating science-fiction story by Gibson and Sterling called "*The Difference Engine*". In this the two authors postulate that Charles Babbage had indeed been successful in the 1830's with developing the mechanical Difference Engine followed by the equally successful development of the Analytical Engine driven by punched cards. The story takes place in the 1850's at which time huge mechanical computers were becoming involved in all aspects of Government and Business with all the problems of systems that did not entirely work, invasion of privacy, Government surveillance of individuals and other problems that sound only too contemporary. It is a world full of Clackers (presumably the equivalent of today's hackers) but the CIO was a clearly identified position of great importance in this new pre-electric mechanically automated world.

Perhaps CIO's would be more kindly treated today if they had a 150 year history behind them! Unfortunately, Babbages' efforts were magnificent failures and the story remains interesting science-fiction.

#### THE INFORMATION SAGE IN THE INFORMATION AGE

However, hang in there! The best current thinking is that the CIO may yet play the role envisaged for him or her 10-15 years ago. Organizations are finally realizing that they really are in the Information Age and that their main competitive advantage will be knowing more about their customers, market trends and their ability to design new products and services to meet these rapidly changing demands.

Peter Keen in *Shaping The Future* noted that "*There is no contradiction between the CIO as both endangered species and growing elite*". He believes that the CIO can be a catalyst worrying less about the hardware and even the software than about what information is required and how best to accumulate and analyze this. As he notes "*The issue is management, not technology. Over the next decade we will see new and unanticipated business, technical, organizational, political, social, organizational and economic challenge, opportunities, stress and uncertainty*". Information Technology must correlate these. He notes that IT "*comes out of a tradition of techno-centered thinking, language and methods and a poor mutual understanding between technical specialists and business managers*". This can however change, and the CIO can certainly lead the way.

As Don Tapscott in the PARADIGM SHIFT noted; the CIO of the future having recognized the decentralization of much of the technology may well not want to have responsibility for the technology at all. Or at best the CIO may want to only control the standards leaving the implementation to be on a very decentralized basis. The role of the CIO will be in determining what information is really required to make a business effective and will be "*ready to be an equal business partner with functions such a marketing, manufacturing and finance*".

Knowledge of the business and the industry will become much more important than knowledge of the technology. The CIO can really become the INFORMATION SAGE IN THE INFORMATION AGE.

Or as Don Tapscott concluded, if the CIO comes to view his responsibility in this way, CIO may come to mean "*Career Is Opening*".

An article for the Canadian Information Processing Society. December 1970

## *Is There a Computer Profession?*

**“If you are not fired with enthusiasm, you will be fired with enthusiasm.”**

*Vince Lombardi*

In the 1970's when there were just a few computers, there was a great debate about whether there should be some form of licensing of computer practitioners.

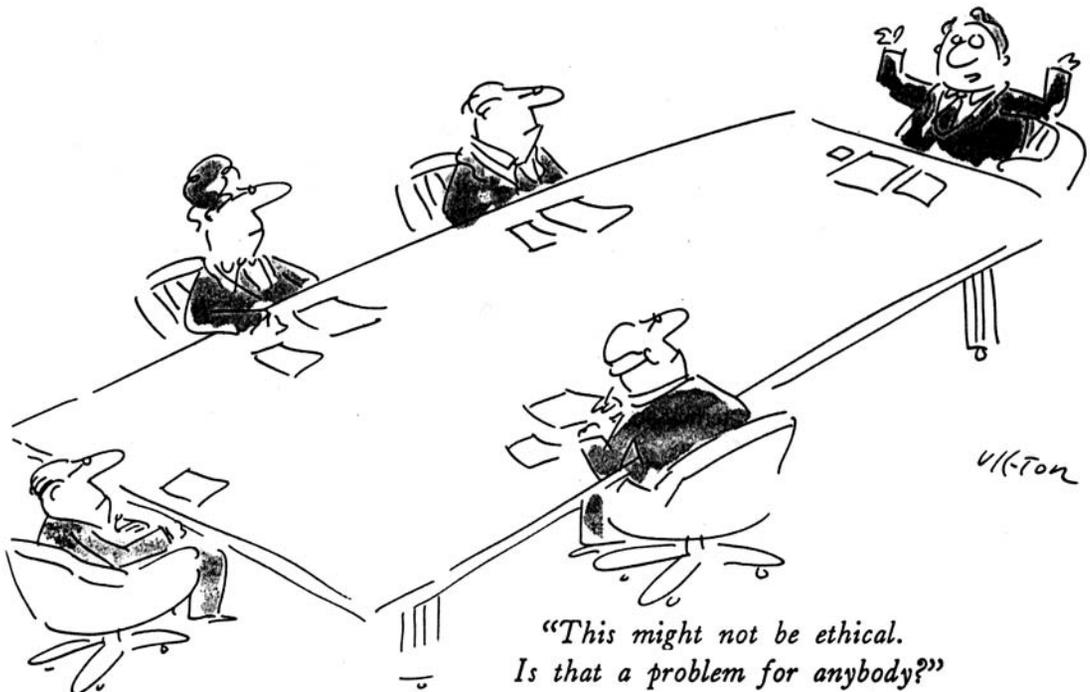
Now that computers are used by hundreds of millions of people, the question is more whether there should be computer professionals who act like auditors to assist management in developing and monitoring systems.

A recent survey of computer field people indicated that about 10% were strong proponents of a true professional status within the industry, 5% were vocal critics of such a process and the remaining 85% were disinterested.

If this is the case, why should we care? Are those who are raising this question just building a windmill for the purpose of tilting against it? What are some of the issues that must be decided and what is CIPS doing about this?

There are many reasons why a consideration of professional status cannot be ignored. One of these is the size and importance of our industry.

We have all read figures indicating that, at the present time, Canadians spend about one half of 1% of our gross national product in the computing field. This will rise to about 5% by 1980, making the computer industry the largest in Canada.



On a worldwide basis, by 1980, the computer industry will be third only to petroleum and automobiles. It is interesting to look at these other industries to see why there may be a need for people in our field to be professionally responsible for the results of their work. Certainly, the petroleum and automobile industries have a great impact on the everyday life of people in not only the industrialized West but in the Middle East and other parts of the world. These industries, however, have shown considerable disregard for such factors as preventing pollution of our environment, public safety, and the realistic use of capital by avoiding planned obsolescence.

I would not maintain that if these industries were staffed by professionals a more responsible approach would have resulted, but I do believe that the public will not tolerate the establishment of a new industry of the size of ours without considerable regulation as to the effect on individuals. If the profession does not become self-regulating, someone else will regulate our behaviour for us.

Many examples of such major issues are already before the public. The question of privacy or the prevention of unauthorized access to data about the individual is a major public issue. Security has recently aroused a great deal of interest in areas such as the use of computers for counting ballots in elections. Certification and bonding are already required for those associated with such projects in some parts of the United States.

But there are other more subtle occurrences which the computer profession will have to guard against. Bill Kerrigan, a partner of Urwick, Currie and Chairman of the CIPS committee investigating accreditation drew up some sample press clippings of the future:

#### INFORMATION LEAK SUSPECTED IN OTTAWA

Ottawa, June 7, 1975

A spokesman for Compucredit disclaims the possibility that government files have been copied for their use but the opposition member from Hamilton says he has evidence that the source of salary information in their files can only be from National Revenue. The Prime Minister was bombarded with questions in the House today.

#### ECONOMIST CLAIMS COMPUTERS ARE DEPRESSING GNP GROWTH RATE

Toronto, September 13, 1976

Addressing the Canadian Club today Cyril Stodge, well known economist, says that the diversion of capital investment into computers over the past five years is the factor most responsible for the diminishing growth rate of the GNP in Canada. They are simply not producing the same return on investment as other capital invested...

#### COMPUTER SERVICE BUREAU FAILS

Montreal, January 13, 1975

Shareholders were shocked to find that gross technical incompetence led to the downfall of Computeria the darling of Bay Street last fall. Bradley J. Bluff, President, was unavailable for comment...

#### OVERPOPULATION IN THE COMPUTER WORLD

Grimsby, March 18, 1977

Despite the continuing claim that there is a crying need for qualified people latest reports

state that there are now 2,000 surplus programmers in the Golden Horseshoe. Benedict Arnold Technical Institute indicates that only two of their graduating class have found jobs in computer installations...

Do those practicing in the computer field have a responsibility for such results or are we willing to delegate this to others? Before we can decide whether we have a professional responsibility for such matters we should try to define just what a profession really is.

### WHAT IS A PROFESSION?

Richard Canning, in the EDP Analyzer, December, 1968, listed a number of criteria by which any group could judge if it would qualify as a profession.

1. A profession has a defined body of knowledge, of high intellectual content, acquired by training in depth.
2. A profession has defined standards of competence, and certification that the professional meets those standards.
3. A profession has a code of ethical behaviour.
4. A profession has at least one professional society aimed at advancing the welfare of its members.
5. A profession has responsibility to society to perform in a competent, ethical manner.
6. The members of a profession generally are not under the control of non-professional management. (With regards professional decisions).
7. The members of a profession have a loyalty to the profession which may transcend their loyalty to their employers.
8. The members of a profession may be licenced by the state to practice the profession if it affects such things as public health, public safety, property rights, or schooling of the young.
9. A profession has the right and ability to eject someone from the field for being incompetent or unethical.

### COMMENTS

It would appear that the computer field is moving toward having a defined body of knowledge. Attempts such as those by the ACM to create Curriculum 68 are a step in this direction. The British Computer Society and others have also attempted to define the minimum knowledge a computer professional should have.

It is clear that we do not yet have a certification process in the broad sense that people in the computer field can meet defined standards of competence. In fact, there are few standards that are widely accepted. This is obviously the area in which CIPS is working now.

A number of societies have tried to create a code of ethical behaviour. These include the ACM, the Association for Data Processing Service Organizations (ADAPSO), the British Computer Society, etc. but this is still an area requiring a lot of work.

The computer profession does have at least one society aimed at advancing its welfare. However, our profession, at the moment, has not shown as much responsibility as it should toward society to perform in a competent and ethical manner. The recent behaviour of some firms in the computer field who established themselves as service organizations and then withdrew from the field on short notice, has damaged the image of the computer field.

To understand what Mr. Canning means by point 6, one should think of dealing with a Chartered Accountant. If a CA is acting as an auditor, he takes full professional responsibility for his decisions and will not be intimidated by a company even though the company is paying for his auditing services.

To consider whether we have a loyalty to our profession, rather than our company, I would ask that you consider how you reply when asked ‘what you are’. Do you think of yourself as an employee of an organization, or as a systems analyst? In these days of high mobility within our profession, I suspect we tend to think of ourselves as practitioners rather than employees.

There are many questions about who, if anyone, will now undertake to licence a profession to be self-regulating. As you are aware, such certification has tended to be a provincial matter under the British North America Act. We are not yet sure that the Federal Government could, in fact, set up a national regulatory body.

Finally, unless a profession is willing to discipline its members for incompetent or unethical practice, the profession would not have met one of the objectives stated earlier.

If the above are the criteria for being considered a profession, it would appear that those in the computer field could qualify. The next question is, do we want to and what would have to be considered.

## QUESTIONS

- If the best we can do is to get provincial certification, would we risk being in the situation of the doctors or lawyers who can only practise in one province and must undergo extensive re-examination to practise in another?
- Is the main reason for going to professional certification to make us more like the engineer who certifies that a bridge is safe and takes responsibility for this decision, (in computer terms he would sign off on an air traffic control program where the loss of life is potentially huge)?
- If this is the case, would we risk being sued for malpractice?
- If we take this risk, would we testify against each other in court? (I would suggest that a new discipline of computer jurisprudence may be required and you should consider seriously the value of someone with both legal and computer training in these days of impending court cases involving computers.)
- What are the real motives for certification, e.g. are they to increase the income of those who have a certificate, or as Dr. T.J. Vander Noot suggested is the case with the British Computer Society, is the certification of professionalism being used as a sales gimmick?
- Would computer professionals go on strike as the doctors did in Quebec where they withheld all but essential services? The analogy here might be systems analysts refusing to develop new programs but doing essential maintenance for vital process control operations.
- What about certification in peripheral areas, e.g. process control? Would a practitioner in this field have to go through the full certification even though he may never sort a file or invert a matrix?
- In any case, it is obvious that our field is not like other professions where there are few practitioners relative to the population. Our field has progressed quickly

because so many are involved in it. Would the certification process reduce this rate of development?

- Who are we considering certifying? If one of the aims is professional responsibility, this may have to be restricted to systems design and consulting because we could not likely certify every operator who could have just as much responsibility for incorrect results. What about those already in the field? There would, of course, be a Grandfather clause. But, what about the problem of re-certification in a field moving as quickly as ours?
- In any case, who do we certify? Is the correct procedure to certify individuals who pass examinations established by the professional society, or would a better choice be certification of institutions, stipulating that their graduates would be professionally qualified.

These are just a few of the many questions that must be asked. It is worth taking a quick look at what is being done in other countries.

### THE INTERNATIONAL SCENE

The British Computer Society is the most advanced in terms of professional qualification. To give you an idea of what is now required, the BCS stipulates that a fellow must hold a British Honours Degree, plus having completed two years of planned training in the field plus five years proven experience. You will note – that the element of apprenticeship is clearly a part of certification in Britain.

As of the end of April, 1970, the British Computer Society had the following makeup:

Fellows	1,106
Members	3,621
Affiliates	9,861
Associates	149
Students	403
Institutions	<u>374</u>
	15,511

The above approach is interesting as it indicates that far more people are associated with the BCS than are either full members or fellows. Much along the lines suggested in the November issue of CIPS magazine, members of the ACM and other organizations join the BCS as affiliates.

The ACM itself seems to have spent more time working on the accreditation of institutions rather than individuals although they are examining the latter at the present time. Their initial concern was with the private EDP schools.

The DPMA has its Certificate in Data Processing. The first exams were written in 1962 and this program is improving every year. However, it should be noted that this process is far less rigorous than that of the British Computer Society.

### WHAT IS CIPS' POSITION?

The Accreditation Committee, under the chairmanship of Bill Kerrigan was set up to make a study of the needs for professional certification and then to recommend an approach. It is clear that any resulting body must involve all associations having a real interest in the field.

The recommendation of the Accreditation Committee was for the establishment of the Information Processing Institute of Canada, which would include representation from the DPMA, ACM, CORS, ASM, or any other groups whose primary interest or a major secondary interest is in the computing field. Individual meetings have been held with representatives of these societies and it is hoped that the first meeting of the Institute will take place shortly. The CIPS involvement was to get this started but once initiated, it would be jointly supported by the participating societies.

As members of CIPS, you will be more affected by this than any other group in Canada. I suggest that you cannot allow yourselves to remain in that 85% who have no opinion.

A Q&A response to questions raised as a result of the previous article. September 1971

# *All you wanted to know about Professionalism in Data Processing but were afraid to ask*

**“It’s never too late to be what you might have been.”**

At the time of the debate about whether or not there should be computer professionals as there are engineering or medical professionals, there was a lot of confusion about the terminology. This paper attempts to clear that up.

## **Q. IS THE COMPUTING FIELD REALLY A PROFESSION?**

**A.** By most accepted definitions, the computing field could be considered a profession but there is one major difference. Most established professions, e.g. engineers, doctors, lawyers, accountants, etc. have been established for many years and their professional status was begun while the field was still relatively young and the practitioners few in number. By contrast, there are now hundreds of thousands already practising in the data processing field.

## **Q. IF THE COMPUTING FIELD HAS THIS SIGNIFICANT DIFFERENCE, WHY MIGHT WE STILL WANT TO BECOME A PROFESSION IN THE MORE FORMAL SENSE OF THE TERM?**

**A.** There are many reasons but among the most important are:

- The recognition that there is a basic minimum knowledge that everyone claiming to be a competent practitioner should have and that it is on this base that specialty skills should be developed.
- The establishment of standards that cover these basics for the many schools, intermediate colleges, and universities now teaching data processing.
- To increase the number of people practising in the field who have met at least these minimum standards.
- To encourage continuing self education by providing recognized goals of

**PORTERFIELD**



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**I want a complete financial accounting, and I want it from an optimistic point of view.**

competence beyond these basics combining academic training and practical experience.

- To establish high ethical standards for work performed and to have some means of policing these standards.
- To establish a clear personal responsibility for our work built around a dedication to our profession which may, in extreme instances, take precedence over personal or even corporate positions.

**Q. NOW THAT WE HAVE DISPENSED WITH MOTHERHOOD AND THE FLAG, ARE THERE OTHER REASONS FOR THIS MOVE TO PROFESSIONALISM?**

**A.** The major reason, beyond the continuing development of our own field, is the protection of our employers, the public and ourselves.

To begin with, no corporation would think of trusting their accounting to other than a CA, RIA or other person of recognized professional standing. Just as clearly, none would build a building without an architect, structural engineer or other professional. A firm would certainly not trust its legal protection to one not qualified as a lawyer. Yet, these same firms have, to date, been willing to trust their vital information processing to those of unknown qualifications. The result in many firms, both large and small, has been systems design and implementation that in some cases has ignored even the most basic standards of good practice and in isolated instances this has been nearly disastrous for the organization concerned. Fortunately, these latter instances are few and far between but with the growing reliance on computers the potential for such disasters is increasing. Further it is the smaller company which is most prone to problems resulting from lack of competent personnel.

The general public has the right to be confident that work done in the computer field is as professionally handled as the work done designing a bridge on which their lives could depend. Computers are now used for applications affecting the public safety such as traffic control, police work, national defence, air traffic control and weather prediction to say nothing of on-line medical data processing.

Further, the public has been made aware of the possibilities of the misuse of computers to the detriment of their legal right to privacy. Enforceable standards of competence and ethics are becoming increasingly important and may well be demanded by the public before long.

Finally, we in the profession must be concerned about seeing our field maligned in the popular press and elsewhere as a result of the work of those few who are less qualified than they could be. More than anyone else, we should be the most interested in increasing the level of competence of practitioners in our own field.

**Q. EVEN IF THESE AIMS ARE WORTHWHILE, WHAT GUARANTEE DO WE HAVE THAT THOSE WHO PASS AN EXAMINATION WILL ALWAYS DO COMPETENT WORK?**

**A.** Of course, no profession can guarantee competence but perpetuating the lack of any standards only increases the chance that those in the field may be lacking some very basic knowledge. The present proposal does not assume that a diploma attests to much more than one's ability to pass tests. However, even this would be a major step forward in ensuring some level of general competence.

The proposal now before the societies in the computing field involves a multi-level

recognition of one's growth within the field. One might correctly say that those who had graduated from a community college, CEJEP, university computer science course or had passed the DPMA's CDP had really done little more than demonstrate their ability to pass exams. Little is known about their personal work habits, their ability to continue to develop within the field or their sense of ethical behaviour. Therefore, the present proposal suggests that those who have gained the minimum academic training would be qualified only as associate members of the profession and would have to have proven experience over a period of about five years after which they would have to pass further examinations involving their practical experience before they would be considered full members of the profession.

**Q. DOES THIS MEAN THAT ONLY THOSE THAT ARE SO LICENCED COULD PRACTISE IN THE DATA PROCESSING FIELD?**

**A.** By no means. The process you refer to would more correctly be called licensing. This is usually a process backed by legislation restricting those who can operate in a field. The medical profession is a good example of this. However, if one were to look at a field somewhat closer to data processing, it would be obvious that many people are involved in bookkeeping without being Chartered Accountants. The same would certainly be true of many people who would still be involved in all facets of data processing.

However, an employer, at his discretion, would have the option of hiring or contracting for a fully-certified professional to review systems design and certify that, in his opinion, auditing techniques are adequate, recovery techniques have been provided for, data security has been safeguarded, etc. This professional could not, of course, guarantee that the system would work or that schedules would be met but he could, on the basis of his professional reputation, at least undertake to assure his employer that all reasonable standard techniques had been employed in the design of the system and, therefore, disasters should not result.

**Q. I AM STILL SOMEWHAT CONFUSED ABOUT THE USE OF THE TERMS ACCREDITATION, CERTIFICATION AND LICENSING.**

**A.** Accreditation means the approval of an institution or of a particular course of study within an institution as being acceptable to the profession. Graduates are usually accepted without further examination. As the present proposal does not involve the proposed institute entering the education field except in a supplementary way, the body would most likely, at the earliest stage endeavour to accredit educational institutions whose graduates would either be accepted as associate members of the profession upon graduation or would at least have many of the courses necessary for such acceptance.

Certification is the process of admitting the individual to membership in the profession.

Licensing, as noted above, is instituted by the state to restrict those people who can perform certain tasks within the profession.

**Q. MANY PROFESSIONS ARE CRITICIZED BECAUSE THEIR ACCREDITING PROCESS TENDS TO STIFLE TEACHING IN THE FIELD. WILL THIS HAPPEN IN DATA PROCESSING?**

**A.** It certainly will if anyone other than those in the data processing field has control of this process. Most major countries other than the United States and Canada are already in the

process of establishing some kind of national certification for those in the data processing field. If we accept the inevitability of some kind of certification, then we can be more assured of forward looking teaching if we ourselves control the process rather than having our profession externally controlled. If we cannot prevent the process from becoming fossilized ourselves, then we have no one but ourselves to blame.

**Q. PROFESSIONS ARE SOMETIMES CRITICIZED FOR BEING SELF-LIMITING, I.E. THEY TEND TO RESTRICT THE NUMBER OF PEOPLE IN THE FIELD. DO YOU FORESEE THIS HAPPENING?**

**A.** Except for attempting to prevent the incompetent from practising, the intent of the professionalism program is to have more better trained people in the field rather than less. How this could hurt the development of the field is hard to foresee. However, an increasing number of bad data processing experiences suffered by the public or corporations certainly could hurt the field.

**Q. WHAT TYPES OF PEOPLE WOULD YOU EXPECT TO BE INTERESTED IN BECOMING CERTIFIED PROFESSIONALS?**

**A.** Among those who should be interested would be:

- systems analysts and designers
- systems and application programmers
- managers of computer centres
- computer consultants
- instructors in the computer field
- many involved in research in computer applications
- some auditors
- computer marketing personnel

**Q. WHAT ARE THE DANGERS OF NOT PROCEEDING WITH ESTABLISHING OUR FIELD AS A PROFESSION?**

**A.** One danger is that there will be many de facto standards of varying quality. We may feel that if we ignore certification, it will not come, but, in fact, the CDP and other standards already exist. For example, those who have graduated from university computer science courses may feel that they are in some way or another certified.

However, a greater danger exists from the tendency toward government imposed certification as we see in some states in the United States. This is why I earlier referred to the inevitability of some certification in our field and why I stressed that we should take the initiative.

**Q. IS THIS PROFESSIONALISM NOT REALLY A SELFISH PROCESS ESTABLISHED SO THOSE ALREADY IN THE FIELD CAN RESTRICT THE ENTRY OF OTHERS?**

**A.** If we believe this, then the process should go no further. The fact is that many of those who have been practising in the field for some years will have little need or desire to enter the certification process. What we are proposing today will not come into full effect for perhaps a decade. What we are trying to do is to build a solid base on which the computer field can

progress and expand by taking the steps now to provide for the future training of those who will follow.

Some ‘grandfather’ clause may have to be inserted to get the process started but I hope the number brought in this way will be relatively small and clearly restricted to those who are dedicated to the development of future practioners in the field. Those who are already practising in the field will, by now, have clearly written their record of accomplishment for all to see and no amount of certification will materially change their ability to succeed to the extent they deserve.

This is a program for the young. It is up to us to give the leadership.

**Q. THERE ARE SURELY MANY OTHER QUESTIONS THAT SHOULD BE ASKED. WHERE DO WE GO FROM HERE?**

**A.** One must take the first step before any other steps are possible. AFIP approves the move toward professionalism. The British Computer Society and nearly all similar societies around the world approve the move. The CIPS National Board gave similar approval over two years ago. Now after great effort representatives of all societies in the field in Canada have backed the proposed Professional Institute. This joint committee’s proposal is now being considered by the various national bodies. This Institute will be open to the many suggestions that will continue to arise but at least a full-time body will be available to get the process underway.

Getting the co-operation of the many groups to establish the Institute was a hard won battle. We should not lose the initiative by turning down this opportunity. The time for the first step is now.

A talk to the Data Processing Management Association, Montreal. February 26, 1974

## *The Senior Executive's Responsibility in Data Processing*

**“To find the exact answer, one must first ask the exact question.”**

This was a talk about how a senior executive can increase the likelihood that a large data processing operation will be successfully completed. Surprisingly enough over 30 years later, I would still give much the same advice.

The standard story about youth interfacing with experience is that of the young agricultural student trying to convince the elderly farmer he should go back to Agricultural College for some refresher courses. The old farmer just shook his head and said: “I already know how to farm a whole lot better than I have time to do”.

I suspect that most senior executives, in fact, know a great deal more about how to manage data processing than they practise. There is still a tendency to look at data processing as though it is something different. Computers, however, are hardly new. Back in 1971, I was asked to be the Canadian representative to the special dinner held in Chicago to recognize the 25th Anniversary of the installation of the first true computer. Unit record equipment goes back at least sixty years in its commercial form and longer than that if you go back to the origins of this type of equipment in the 1890's with Herman Hollerith.

If computers have been with us this long, then why are people still reluctant to look at them as just another capital investment or to regard computer projects any differently than setting up a production line in a factory.

There are some of these points I would like to examine, and try to get back to some fundamentals. As Wernher von Braun once said: “Basic research is what I do when I don't know what I am doing”. Like any good football coach, when things are not going just the way you would like them, you tend to go back to the fundamentals of good blocking and tackling.

I suspect that part of the reason that we look on computers differently than looking at a

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By Scott Adams



manufacturing process derives from the substantial publicity that surrounds computers. This publicity has led us to accept the idea that computers are something special and, furthermore, that one should expect a number of problems when anyone installs a computer application.

Everyone has their own horror story about how computers can foul things up - this may be as mundane as a magazine subscription or as frustrating as a department store invoice that you just can't seem to get corrected. Every Saturday the 'Grin and Bear It' cartoons remind us of the difficulties of working with computers. The newspapers love every story that involves a computer delaying the opening of a school for two days because the student records weren't available.

You have all heard the expression about flying, which says... "Go by Air if You've Time to Spare". I often think that people accept delays in getting things done by using the computer as a sort of technological 'Royal Commission' - e.g. "I am sorry but we can't take any action on that now because the process is being put on our computer".

In a word, we have become complacent and are too ready to accept the notion that computer projects are going to run over in costs, take far longer to implement than was originally estimated and, when they do arrive, will not really do what we had in mind. I believe that, as senior managers, you already know enough techniques to correct this situation and there is no need to accept less than good sound performance from those of us who are in the data processing field.

Many applications that are put on a computer are no more complicated than the steps that one would have to take to set up a complicated production line. If that line is going to be efficient, each step has to be carefully thought through - the input, i.e. the raw material or sub-assemblies have to be available at the right time and have to be carefully quality-checked. This is no different than the steps that one has to go through in making sure that the input to a computer system is available when you need it and is of acceptable quality. In building a complex product, each step on the assembly line has to be carefully planned and instructions written to ensure that the workers do exactly the right thing at the right time and with a high degree of consistency. Finally, the output from the assembly line must, once again, be checked for quality and this is analogous to the final checking of output from a computer to ensure that it is, at least, within the bounds of reasonableness.

The point is that any senior executive would accept the necessity of minute planning before an assembly line is set up.

He would also carefully ensure that each step was being done in the most reasonable way and would certainly very carefully monitor the return on investment that he expects to get from the whole process.

An executive would be justifiably upset if it cost twice as much to set up the production line as was expected, or if the products that arrived at the end of the line were not, in fact, what the customer had ordered. Senior management seems to have come to accept that, in data processing, one should expect overruns in schedules, higher costs than anticipated and, on occasion, even major disruptions in the business.

I believe you would not accept that kind of performance in any other part of your business or organization. You need not accept it in data processing.

FOR INSTANCE...

To give you an example of a large and very complex project that went along right on

schedule and within the cost budget, let me draw on our own experience at SDL.

Over a year ago, we had calculated the approximate time we would need additional computer capacity. There are several ways in which this can be added to a computer service organization's facility, and our conclusion was that if we wanted to provide the facility in the best way, we should fully integrate the new computer with the existing equipment rather than just adding a second computer and running this independently.

However, an organization such as ours cannot tolerate any disruption in customer service, and this meant that the whole project had to be keyed to exactly the right time schedule and the installation had to be made in such a way that the customer would not, in fact, know that we had increased the capability of the system, i.e. it had to be transparent to the user. We accepted as a goal having the new system on-line by February 1, 1974, carefully calculated the costs, established the project team, and also set up the criteria by which we would judge the success of the system. One of these was to have the productivity of the system increased by a minimum of 25% while meeting the other criteria noted above.

This was a highly complex technical project involving 'marrying' a virtual machine to a standard /360 processor with all the complexities of complex Production Control systems, comprehensive accounting systems, and one of the largest high-speed data processing networks in the country. The project was completed right on schedule, it was kept within cost, and the only deviation was that it, in fact, appears to be producing about a 35% increase in efficiency.

I am sure all of us can point to similar projects within our own organizations that have, in fact, been handled on time, within budget, and do produce the results expected. I believe that this should become the norm rather than the exception.

#### WHAT CAN SENIOR MANAGEMENT DO ABOUT IT?

Let us take a look at a few of the fundamentals I referenced earlier to see if there are things that senior management can do to help data processing management, and vice-versa.

#### 1. REALISM IN APPLICATION SELECTION

Your data processing development group has a finite capacity and it is very important that senior management look carefully at what applications will really contribute to increasing the effectiveness of the organization. There was a good article by Cyrus Gibson and Richard Nolan in the January-February issue of the Harvard Business Review called "Managing the Four Stages of EDP Growth". This article points out that the initial thrust is to put on applications which are essentially cost-saving. Then, at stage two, because overcapacity in equipment is usually being purchased, a variety of other applications are added of significantly less importance to the company. At stage three, the company usually declares a moratorium on new applications and starts to emphasize control. It is only at stage four that the company goes back and really examines what its data processing needs are in terms of the effective use of information. At this stage, companies start to look at large data base applications or management information systems.

When selecting applications, it is really important that the estimated costs of the application be balanced against the anticipated benefits and, if this does not come up with a reasonable return on investment, then, in all likelihood, the application should not be loaded onto your EDP department.

Further than this, however, senior management can help by simplifying the application, i.e. cutting out the extraneous rocks on which the project could founder. (Roland Michener told a story at a final dinner at the Rideau Club in Ottawa in December about his experience on a ship in Newfoundland – the pilot had come on board and the Governor General, to make polite conversation, said... “I guess you know every rock in these waters”. The pilot replied: “Nope, but I know where they ain’t!”)

It really helps if senior management takes the time at this stage to think about what decisions can really be made with the data to be provided and only ask for those applications to be put on the computer that would be really meaningful. In a word, the first step is to see if you can eliminate the need for all, or some, of the operation.

## 2. DETERMINE THE BEST WAY TO GET THE RESULTS

This sounds almost too simple, but management at the senior and DP levels are often mesmerized by the computer. The first step should be to see whether the results you want could be obtained by a person with a calculator and a pencil (I used to use the expression ‘dumb blonde with a sharp pencil’ but, in these days of Women’s Lib, I now have to remind people that the blonde could, of course, be a male or a female!) Do not mechanize for the sake of mechanization.

The 80-20 rule often applies, where 80% of the load can be easily mechanized, and some smaller percentage may, in fact, still be best handled on a manual basis. If you try to do the whole job on the computer, you will likely make the process so complex that you are asking for delays and cost overruns. Remember that trying to handle the last 1 or 2% on the computer may, in fact, cost you 20% of the whole cost of the application, and usually even a simple cost benefit analysis study will point out that having this exception handled manually could be a lot more effective and less expensive.

## 3. REMEMBER THAT THE SYSTEM GROWS

Usually the most important thing is to get the application underway, realize the major benefits and then look at ways of sophisticating the system. Trying to undertake a huge project and planning ahead for every contingency can often mean the planning cycle is never completed and, hence, the project never gets off the ground. Senior management can do data processing management a big favour by remembering that a good data processing system is a living, growing thing - it is an iterative process where reports are produced and, after a manager has had a chance to live with them for a few months, he can suggest what, in fact, would improve their effectiveness.

For example, I get a report each day on the performance of the computer complex for the previous day. I found that I was really scanning a rather bulky report to pick out a few important facts, e.g. the total number of jobs, the total revenue, the percentage of internal workload, the number of downs, etc. Gradually, we have paired down the amount of information I get to these few essential figures, but I would not really have known what I was looking for until I had a chance to run with more voluminous reports for a while.

The corollary to this is that you have to make the best guess you can as to what information you really want from the system, but having made that, do not alter the specifications in mid-stream. Get the application on-the-air, and improve it later.

## 4. EXPECT RESULTS

Having decided on the applications and what results you really want, you should expect that your data processing management group can come up with realistic estimates and should

be able to stick by these. In a way, I feel that the correct management-by-objectives approach in this instance is not much different than creating a contract with your own organization in much the way you would with an outside organization, and you should expect no less from your internal group.

The question, then, is how do you, as a senior manager, really know whether your internal data processing group is, in fact, performing as it should?

I hesitate to mention this because it sounds a bit like a sales pitch but, in fact, I do not know of any other way for senior management to gauge the results of his internal operation than by, periodically, taking applications and putting them outside to see whether, in fact, schedules, costs, and performance are on a par with, or better than, the performance being obtained internally. (It's a bit like the scientist whose wife had twins and, naturally, he had one baptised and left the other as a control group.)

Lest I be mobbed by the DP Managers here tonight, I should point out that they, as well, should welcome this, as an outside control group is by far the best way they have for managing their own operation. Nothing keeps your own staff on its toes as much as having an outside group for comparison.

#### FOLLOW IT UP

It is amazing how seldom senior managers really go back to examine what the costs in schedules of a data processing application were and what, in fact, happened. There is a natural tendency for technologists to be over optimistic about what they can accomplish and may well suggest that the particular application can be done on a 128K 158 with two tapes and a disk. An examination eighteen months later indicates that your installation has a 3-megabyte 168 with a room full of peripheral equipment.

As a service organization, we see this happening regularly. When you contract with an outside organization, the contract is normally very specific in terms of the dollar costs, turnaround, performance, etc., and the results are very easily measured. When examining the use of outside services versus internal development, senior management should expect the internal data processing management to operate in the same way. This can only be done if the external supplier or the internal development group both know that senior management is going to lean over their shoulder with a good follow-up to ensure that the results are being obtained and other specifications met.

#### SUMMARY

What I am really stressing is that, in data processing as in everything else, we only get the results we deserve. If senior management is willing to accept less than the best, then that will become the norm.

The days of extravagant claims for data processing are over and should have been a long while ago. The success of data processing operations, in terms of producing results and meeting schedules within budgets, starts with senior management being responsible in its requests and the data processing professionals, in turn, being realistic in their answers.

Not many bridges fall down and not many sponges are left in patients, and senior management should expect a similarly high level of professional performance in the computer field.

A talk given to the Planning Executives Institute 29th Annual International Conference,  
Montreal. May 16th, 1979

## *Planning in the Medium-Size Company*

**“Plan for the ordinary, pray for the extraordinary.”**

This is an example of a Planning Program I instituted at Systems Dimensions Ltd., a start-up computer services company based in Ottawa. Again, the advice given would not change much today.

In many ways, the medium-size company faces the most difficult task of all when it comes to corporate planning. A small company does not have the options available to make extensive planning necessary. The large corporation will have a formal planning department staffed with trained planning professionals.

This paper outlines an approach successfully used in a company in the 15-50 million dollar range.

### OVERVIEW;

The small corporation is usually started to do only one thing. It can often stay out of trouble if it restricts its activities to its initial specialty. The problem arises when the company either believes its specialty is becoming obsolete or it simply gets ambitious. Once it starts to diversify, the need for sound corporate planning becomes critical.

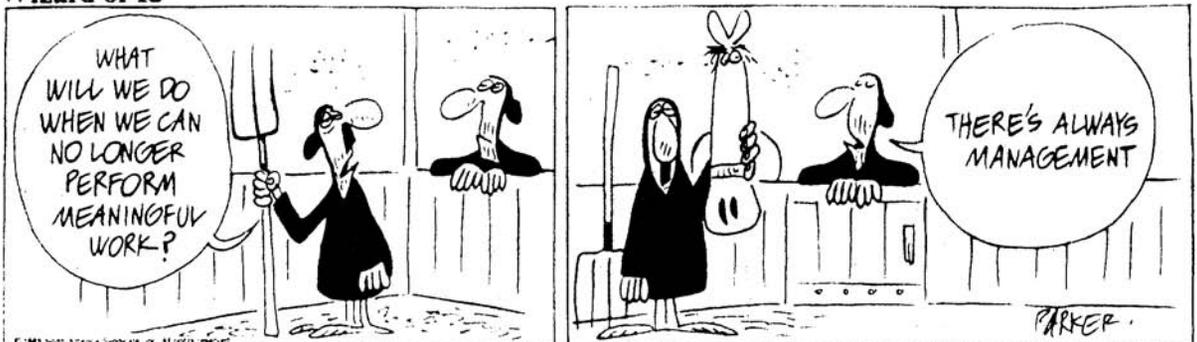
The company I founded in 1968, Systems Dimensions Limited (SDL), went through this stage about five years ago. We had to evolve a planning style that acknowledged we could not afford a planning department. Even staff positions were a luxury.

As it turned out, however, the very lack of a formal planning department was key to the relatively successful procedure we implemented:

- I was forced to involve myself as CEO directly in the planning process;
- in turn, I had to ensure that everyone in the management group and, in fact, all staff came to accept that planning was an integral part of their responsibilities.

To be fair, I should point out that long-range planning was not new to SDL. The company

### Wizard of Id



had started with a large public underwriting. Therefore, we had to establish a long-range plan and publish this in the form of a Prospectus. This also meant we had to regularly report to our public shareholders on our progress relative to that plan.

Planning was also recognized by the staff as being necessary because we were in a fast moving field. SDL was a pioneer company in the computer services industry. It had to combine several new technologies with some new concepts in remote servicing of clients using telecommunications.

In a company such as this, wrong moves could be costly. They could even be fatal because of the size of the investment decisions being made. In fact, on two occasions they very nearly were but in each case I credit the planning process with alerting us to the difficulty in time to do something about it.

### THE PLANNING PROCESS:

During most of this period, SDL had a Board of outside Directors except for the President. With one exception, these Directors were not technically knowledgeable in the computer field. However, I wanted to place before them a document outlining SDL's strategic plans in a way that did not require in-depth knowledge of the technology. I felt the Board could contribute best at the strategy level.

I am a believer that Boards should not become involved in the day-to-day management of a company, i.e., they should not be overly concerned about the HOWs but rather with the WHATs.

I also wanted to ensure that the Board could have a lively and meaningful discussion of the basic issues in the business as well as a voice in determining the financial and strategic objectives. The Board could then evaluate management on how well these objectives were attained.

Therefore, we evolved a three level planning process:

#### 1. THE CORPORATE PLAN

The CORPORATE PLAN was a strategic document. It outlined, as one would expect, the overall aim of the corporation, defined the business in which the company would operate to meet this aim and reviewed the industry or industries within which the company planned to operate.

We also chose to include in the document our view of the many external factors that could influence the reaching of our aim.

The CORPORATE PLAN contained specific financial objectives, including pro forma balance sheets, income statements and other financial data for the period chosen.

In our most recent CORPORATE PLAN we chose a three-year period. We felt there was nothing magic about five years. In our rapidly changing industry, we felt that a ten or twenty year plan was simply unrealistic. Our reason for three years was that it happened to relate well to the particular aim of the company that we had selected at that time.

A corporate aim should remain unchanged during the planning period. Everything else can, of course, change in response to evolving conditions.

We had chosen as our primary aim 'to improve our relative position in our chosen markets'. The purpose, of course, was to then use this improved market position to significantly improve our profitability and, hence, our return on investment.

We had put certain constraints on the company as well. We felt we should ensure that:

- a steady though modest growth in profits was maintained;
- cash plus short-term investments were always greater than one month's cash operating costs;
- the net worth of the company was not impaired.

This approach was based on my belief that for our type of operation in the computer services industry in Canada there was only room for two or three very large companies. This market share aim was thoroughly discussed with the Board before the next step was taken.

Next I felt it was absolutely essential to have all levels of management involved in setting the specific goals, e.g., what markets would we go after, what percentage penetration would be realistic and what products would we need to ensure we reached an adequate level of penetration in each of these markets.

Having already agreed with the Board on what EARNINGS PER SHARE would be acceptable during this period we could then model the operation to see how much would be available for additional marketing, product development or other elements needed to achieve our aim.

## 2. THE BUSINESS PLAN

This second document was project-based. The BUSINESS PLAN outlined what strategic thrust or project would be necessary to meet the goals we had set.

This document was produced by the officer group but with task forces from other levels of staff to study particular areas. Position papers were written and a DELPHIC approach was used to get input from those who are not involved in a particular task force.

We realized that total agreement would not be possible. We were very aware of the care needed to ensure that good approaches did not get diluted with too many compromises.

At this point, the development of the BUSINESS PLAN concentrated only on which projects were necessary to get the job done. No organizational structure was considered. However, as CEO, I did try to make sure that those who would ultimately be responsible to carry out a project were involved in the task force studying that area.

This correctly implied that as CEO, I really had an organizational concept in mind even though I was prepared to consider alternatives. The planning process, itself, needs careful planning. It cannot be totally free form. Therefore, some biases by the CEO are bound to creep in.

Ultimately the writing of the CORPORATE PLAN and the BUSINESS PLAN had to be done by the CEO, or his immediate designate. At SDL much of the credit for the planning process goes to our Executive Vice-President, Bill Bearisto, and our Vice-President, Finance and Administration, Norm Williams. It was essential that all five officers were as enthusiastic about the planning process as the CEO.

With the outline of the BUSINESS PLAN in place, we then held a STRATEGIC PLANNING CONFERENCE. This was the only time during the process where we used an outside consultant. His role was simply to guide the discussions during the Conference as an impartial catalyst.

The STRATEGIC PLANNING CONFERENCE was held at Queen's University over a three-day period. The aim was to do the final selection of the specific strategies and to translate these into identifiable projects. This also gave a chance for all of the members of

management to comment on any areas and to get an overview of the whole corporate strategy.

In addition, at the Conference the projects were prioritized and a suggested timetable for each was created.

The Conference participants also discussed the things that could go wrong. As noted earlier the CORPORATE PLAN had already included an analysis of the industry, where we felt it was going, whether or not we should stay in that industry and, as well, analyzed as many factors as we could that might alter our ability to reach our goals, e.g., mergers or acquisitions, international laws on transborder data flow, actions of our competitors, etc.

We now reexamined our strategy in the light of these possibilities and plotted alternative courses of action if any of these external factors did come into play. We created a decision tree so that we could track the strategies we would have to implement if various combinations occurred.

We felt it was absolutely necessary to have our alternate strategies known in advance if we were to be able to react quickly. There was no way we could come up with a surprise-free approach but we could, at least, know what we were going to do when we were surprised.

At this point we stressed the need for realism. The BUSINESS PLAN was the bridge between the CORPORATE PLAN and results. The BUSINESS PLAN could not be theoretical. It had to take into account the resources available, the constraints placed on us by the Board in the CORPORATE PLAN and, above all, the people we either had or could reasonably expect to attract.

The next stage in the BUSINESS PLAN was to design an organization to carry out the projects. This could not be done on a group basis. Here again, the CEO and his immediate advisers had to make the final decisions.

We realized that we might not have all the people needed. There could be a serious effect on our timing if an outside personnel search was required.

However, our approach was consistently to ‘put the right people in the right place’. We had to make some hard-nosed decisions but wherever staff simply did not fit the new corporate needs, we made every effort to ensure that people were well looked after and, in most cases, relocated.

We felt that the only approach that made any sense was to have enough organization to do the job but no more.

The next very difficult decision was to determine how much we were going to delegate to those in charge of the projects. This involved a discussion of:

- the degree of decentralization we felt we could live with;
- the accountability we expected from those in charge of the projects;
- the necessity for an accounting approach to monitor delegated responsibility;
- the need to give enough authority to project leaders to carry out their responsibility;
- the design of incentive schemes that were partly project related and yet still encouraged a corporate view and maximum cooperation (a corporate Profit Sharing approach was chosen, together with awards for the achievement of specific objectives)

Finally, the project objectives in the BUSINESS PLAN had to match or overachieve the objectives given to the Board in the CORPORATE PLAN.

We had not, of course, come up with a perfect solution. All such planning is constrained by

the necessity of carrying on existing businesses. We did not have exactly the right staff to match every job that needed doing.

However, we were pleasantly surprised that by building on the strengths of people we had, we turned up some astoundingly good people solutions to the new challenges presented. The fact that we were embarking on new projects was very stimulating to people and awakened capabilities neither they nor I realized they had. No doubt, involving everyone in the planning process had helped the group to pull together.

The BUSINESS PLAN, which was project-oriented, included many projects which would take longer than one year to implement. The Board had to become used to approving projects which lasted over several normal budget cycles. The Board quickly appreciated the advantage of approving a project rather than simply approving an annual expenditure in an area. The project could be monitored, had specific objectives and had checkpoints during the course of its life (we actually use the term PRODUCT LIFE CYCLE as our way of describing the project and its various phases from conception through implementation to eventual disposition).

However, we still needed an annual budget. This we called the PROFIT PLAN.

### 3. THE PROFIT PLAN

The annual PROFIT PLAN was always placed before the Board prior to the start of the new fiscal year.

This PROFIT PLAN, or budget, really divided the projects in the BUSINESS PLAN into twelve-month segments.

The PROFIT PLAN outlined by month and by quarter the revenue and profit objectives for the corporation. It also included pro forma balance sheets and income statements for the end of the period as well as cash flow projections, a capital budget and a staff budget.

This was provided in a summary document for the Board. The Board also received an update to the CORPORATE PLAN. This ensured that the CORPORATE PLAN was re-examined at least annually.

The BUSINESS PLAN which was a very detailed document was not tabled with the Board although it was available if requested. As can be seen from the above discussion, the BUSINESS PLAN was really the key document - the link between plans and practice. Individual projects from the BUSINESS PLAN were discussed with the Board if they were particularly critical.

While the summary PROFIT PLAN for the Board was relatively brief, the PROFIT PLANNING MANUAL, which was used by the managers for the preparation of the budget, was very extensive.

To ensure uniform profit planning, many decisions had to be made by the officers in advance, e.g., the amount of forward progress that would be allowed in our salary grid, the way foreign exchange was to be treated, the accounting methods to be used for equipment which was partly leased, partly rented from the original supplier and partly purchased, etc.

One reason the PROFIT PLANNING MANUAL was so extensive was that it provided each manager with forms on which he had to show how each of his staff's activities and each capital expenditure was directly related to the projects for which he was responsible. This was actually a form of annual zero base budgeting although we did not call it that.

### SCHEDULE:

Our year ended June 30th. The planning schedule started in the Fall when the CEO and officers met for two days away from the office. During this time any update to the CORPORATE PLAN was considered and its implications for the BUSINESS PLAN discussed. These changes would then be reviewed with the Board of Directors, usually in December.

The STRATEGIC PLANNING CONFERENCE was then held in late January or early February, usually on university premises away from the office. This ensured that the management could provide any desired input at the BUSINESS PLAN level.

In early April, Profit Planning Kick-off Meetings were held for all managers. As we had offices across Canada and in the United States these were on a regional basis. A published schedule was available for the PROFIT PLAN cycle as indeed it had been for the entire planning process. In fact, we actually had a printed document which laid out the entire planning cycle for the year (we ultimately sophisticated this to the point where we had a desk calendar printed with all the important planning and review dates on it).

Finally, at the Board meeting in mid-June the PROFIT PLAN for the year and any revisions to the CORPORATE PLAN were tabled with the Directors.

### STAFF INVOLVEMENT:

As can be seen from the above, we had no separate planning staff.

We used no consultants except for the STRATEGIC PLANNING CONFERENCE provocateur.

Everyone felt that planning was part of their job description. They came to believe that they had to know exactly where they were going and welcomed the opportunity to participate in setting the goals.

Our ability to get along with little staff for the actual planning process was helped by the extensive use of computers for consolidating figures. All forms were designed so that input could be translated immediately into machine readable form. Usually this was done remotely and our communications network was used to relay this budget information to head office.

The computer was also used for modelling and projecting. We all believed that the latter process was absolutely vital. Reports to the Board of Directors or management were of little value if they were simply historic and did not make projections of trends.

### RESULTS:

The process was gradually refined over several years. During the time this planning process was in effect, the company showed a steady improvement in results. SDL had gone through a rather difficult period, resulting from too rapid growth and too many uncoordinated acquisitions.

Finally, SDL, itself, was the target of considerable acquisition activity. The company was finally acquired by Crown Life, of Toronto, in late 1978 and has now been merged with a subsidiary of theirs in the same business. The combined companies, which now have sales in excess of \$50,000,000, operate under the name Datacrown Inc.

As a result of this merger, we can only surmise that the planning process would have continued to produce good results for the company.

At this point, I will add a word of caution. While I am a firm believer in long-range planning, I also believe that the organization must remain flexible enough to take advantage of

opportunities. Planning is vital to sound day-to-day management. However, it is no substitute for intuition. What it does do is allow rapid assessment of the likely effects of whatever impetuous thing the CEO later decides he wants to do.

It ensures that one can rationally decide if a new project should be undertaken because the company has a solid plan against which it can be compared.

#### CONCLUSION:

For the medium-size company, the approach we used seemed to be effective. It can be done with available resources. However, it was totally dependent on the CEO instilling in everyone the belief that planning is an integral part of their job responsibilities.

As Mohammed Ali pointed out “it is too late for planning when you are in the ring and you are getting hit”.

A talk to the Society for International Development Conference, Montreal.  
October 16, 1993

## “The Turning Point”

**“Knowing what’s right doesn’t mean much unless you do what’s right.”**  
This was an early talk aimed at the growing challenge of the Information Gap between the haves and have nots.

I am honoured to be part of this Conference. I consider the subject to be one of the most pressing public policy issues of our time. A new global society is being moulded by the enormous technological forces of the Information Age, and we must understand these forces and anticipate their impacts.

Whether we benefit – or lose – from this new age, will be largely decided by the Vision that guides our preparation. If we take the largest possible vision – that we belong to an interconnected world, and we have a responsibility to our fellow-citizens – then the Information Age could bring an epoch of universal prosperity. If our vision is limited, and we try to solve our problems within the tidy borders of our nations, then we are likely to fail. In the new Information Age, the nation-state can no longer be the measure of our planning, and the only real guarantee of our security is the most daring plan – a plan that is as trans-national as the Age itself. I am encouraged to see that organizations like the Inter Press Service are making electronic communications such a large part of their focus. Your electronic network to increase communication between 17,000 Non-Governmental Organizations, and your daily electronic newspaper to U.N. Policy-Makers, are following the logic of the new Information Age. I am sure they will have tremendous impact. If I had one thought about this Information Age, in fact, that I would like to leave you with today above others, it would be this:

In every age of Humankind there comes a turning point. This Turning Point is upon us. We are now undergoing a rapid and absolutely unique economic and social transformation to a world based on knowledge. The challenge for our “turning point” is to guide the global change from a “have versus have-not” economy to a “know versus know-not” economy.

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If we can do this successfully, the Information Age has the power to create a universally prosperous world. Within a few decades, our Grand Vision could establish this world: a world where every child receives the best education available; where disease is conquered by the coordinated energy of all the best minds on the planet; where ethnic rivalry gives way to the compromise that comes with communications and understanding; where people around the world are continuously re-trained for an open global economy of knowledge work; and where human imagination and ideas are the main sources of wealth.

Today, I'd like to explore this "Turning Point". I intend to talk about: our present situation, the Information Technology trends that are driving our economy, and the implications for the creation of a Grand Vision capable of harnessing that potential.

Let's start with a few observations on our present situation. There are very real indications that something unusual is happening to our world economy – a revolution different from all the others in human history.

Virtually all of humankind's past advances have come from the leveraging of our muscle-power, from animals and machines. Now, for the first time, we are experiencing the enhancement of the most precious of human resources. The new revolution amplifies brain-power. And it does so for us as a society and as individuals within a society. In the "connecting" sense, the information revolution associates each of our minds within a unified global "brain" – an electronic commonwealth of human thought. And in the "individual" sense, the revolution vastly increases the mental potential of each unique human.

How far along are we in the shift to a "knowledge-based" world?

The overall situation can be summed up in one phrase: it's later than we think!

We have moved an incredible distance to a knowledge-based world, within our own lifetime. A few observations:

- The economic value of knowledge has mushroomed. A century ago, human capital accounted for less than half of the wealth of an advanced industrial country. Today, human capital is accounting for 80 per cent of national wealth.
- Trade in knowledge is becoming the main event in international commerce. Trade in knowledge-based goods is rising some two- to five-times faster than in resource based goods. By 1995, trade in information technology, aerospace equipment, electronics and chemicals – by no means the full list of knowledge-based industries – will represent one-fourth of all goods traded in the world.
- Knowledge itself is snowballing. Every four or five years, the total amount of world information doubles. The sum total of all human knowledge to 1993 is only one per cent of the information that will be available to our children in the year 2050.
- The number of brains being connected to the electronic knowledge network is expanding swiftly. In fact, "networking" may be too outdated a term for the flow of the rivers of information. The continuous transmissions are getting much closer to self-developing biological processes. A billion telephones are now in use, and telecommunications is a trillion-dollar industry. In North America alone, the volume of telecom traffic increased thirty times in the past two decades. And this traffic is increasingly being dedicated to "information" instead of "conversation". Data traffic comprises half of the bits flowing through the telephone network. And there are close to 100-million personal computers alone installed on this world-wide system.

This is only fifty years after Thomas J. Watson, the Founder of IBM, predicted a world market for about five computers!

- This whole revolution is being driven, as revolutions usually are, by a change in a basic factor of production. With new fibre optics and satellite technologies, communications bandwidth is becoming as abundant and cheap as the air it is transmitted through. A revolution of this magnitude happened a short time ago to computers. The transistors that are at the heart of our computer revolution, became virtually free when the integrated circuit was invented. These once-costly items now go for some 400-millionths of a cent each. Today you use millions of them to slightly enhance your TV picture. Tomorrow, we will be able to treat communications costs with the same cavalier disregard. We are on the verge of a “communicopia”.

Whither Canada as all this takes place? We are at the top of the information pile. We lead the world in telephones per capita. We have the highest cable TV penetration rate, and we own more video machines than any nation in Europe. One study found that Canada had the largest information supply volume per person in the world! So not only is the Information Age arriving fast, it is arriving here first!

Canadians, therefore, have an interesting contribution to make. In a sense, we are the “bellwethers” of the Information Age. We can see that more and more activities are being “infomediated” – transformed by the application of information technology. We can help by using our experience to reveal and describe the trends underlying the impacts we have just discussed. What have we found out about the general social and economic trends that result from the rise of an Information Technology revolution?

I think there are three trends that are especially worth highlighting in respect of the question of human equity in an Information Age. They concern *the rise of the individual*, *global democracy*, and *the accelerating transformation into a knowledge-work environment*. All three trends, I will argue, are pushing humankind towards a new and more equitable social structure.

First, *the rise of the individual*. I refer to the process whereby Information Technology pushes power down to the individual level, at the expense of large organizations. The grain size of our social and economic decision-making unit is shrinking to the individual citizen. This is a direct result of the way computers are supercharging individual endeavours. Today, one entrepreneur sitting at a PC can launch a global enterprise. Industry guru George Gilder calls this the “Law of the Microcosm”. The microcosm is the computer chip, and the laws of physics say you can cram more and more power onto smaller and smaller machines. Cost of performance is dropping like a wounded falcon. It has been said that if the cost of automobiles has dropped as fast as the cost of computers, it would be cheaper to abandon your car at the parking meter than to feed the meter! And your car would be so improved that it would be getting several million miles per gallon – or kilometres per litre.

In any event, Gilder says that the *organization of enterprise will follow the miniaturizing organization of the chip*. Small companies, entrepreneurs, and individuals will all benefit hugely in this process. Our organizations are flattening. Pre-Infotech companies were organized with one leader or strategic manager at the top, and a steadily widening base of order takers. It’s a classic pyramid. In the information economy, the organization chart looks more like the serrated edge of a saw blade. It has hundreds of decision-makers at the tips of hundreds of

information-enabled opportunity centres. This kind of organization gives a company immensely more flexibility, immensely more speed.

This is immensely gratifying from the viewpoint of human equality. When grain size shrinks, decision-making power passes to the hands of individual knowledge-workers. Markets also shrink in size, and “mass customization” takes over. Products and services can be localized or segmented, with information power keeping track of consumer preferences. Again, the individual gains in importance as markets segment. Global companies become more of a federation of regional marketing operations.

Political relationships are also transformed by shrinking grain size. In fact, information technology turns upside down the balance of power between the individual and the state. And with this we enter the second major Infotech trend today: the move towards global democracy. This is happening in parallel within nations, and outside of national boundaries, with the rise of free groups around the world which are not tied to the nation-state.

Long before the world was amazed at the rise of freedom in Eastern Europe, one of my predecessors as Chairman of ITAC used the “democratizing” tendency of information technology to make this prediction:

“As information technology has created smaller production units, and put more power in the hands of the individual, centrally-planned economies are obsolete. Eastern bloc governments must move to adopt market economies; huge state-run entities can no longer keep up with the new tools and powers of the Information Economy... They are destined to move to a free, market-driven economy. Their only choice as a government is whether the change will be made by them, or for them, (because) there is no such thing as partial access to the Information Age. This is binary: you are either on the “freedom network”, or you are denied all access to it – and you stay in the stone age of the industrial, not information, revolution.”

I think that’s a remarkably prophetic statement, especially when you consider that none of the political pundits were aware of this trend. The central story of this century is this: *People’s opinions matter! Information technology is a technology of freedom; it is driving the world out of an era of control.* The power of the mind of the individual is in ascendancy. Wealth no longer comes from the things that the state can control – things like materials, geographic ties, physical wealth – but from ideas and information, freely generated by free people. As a corollary, the freer the society, the more powerful are its ideas and the more influence it will have.

The signs are all around us that new Infotech-based groups of self-regulating interests are eroding national borders. No country is an island. Infotech’s networks are superseding national constraints and are creating a global knowledge-based marketplace, where international corporations operate through knowledge networks. Companies and capital are able to leap borders. This means that national governments are less able than in the past to shelter inefficient industries from international competition. As Infotech increasingly squeezes the world’s national economies into a single unit, national protectionism will increasingly fail.

*Finance*, for example, is a borderless electronic operation. The volume of shares now being traded on NASDAQ, the electronic quotation system, now exceeds that on the New York Stock Exchange. There is a network of invisible investors from around the world. 24-hours a day, they move resources to areas where knowledge can add value to their capital.

*Information exchanges*, too, are slipping away from national control. These information networks are the life-blood of the Information Age. The way they are evolving illustrates once

again that individual grass-roots behaviour is driving Infotech. Three things – idiosyncratic things – are central to understanding the Infotech Revolution:

- It all happened more-or-less by accident: like the evolution of our present computer operating system.
- The people who made it happen were amateurs: people like Bill Gates
- And for the most part, they are still amateurs.

Let's illustrate this last point with the runaway success of Internet: the amateurs' network. Internet, as you may know, is a "network of networks". It is a set of communications protocols that "glue" diverse computer networks together.

Started with a small amount of government seed money, it mushroomed across the world as more and more host networks joined on. It now has almost 40,000 individual networks attached, although no one really knows for sure. Equally surprising, at its present growth rate of one million new subscribers a month, by 2001 every human being on the planet could be an Internet user! While that is a figurative statistic, it is indicative of a new social phenomenon. Internet's surging importance is such that every college student today is given his or her own Internet address when they get their student ID! And Internet is soon going to be available over cable TV!

My point is that the Infotech network is an accretion of individuals and it promotes individual behaviour. It coaxes you to reach out to try new and different things – to follow your interests and learn as you will. In the sense that it makes learning and interactivity FUN again, it creates the "cyberspace" for a new renaissance: a vast liberating of human talent and individual expression. This new renaissance spirit could easily be one of the most significant effects of the new age.

*The rise of the individual, and the spread of global democracy among and beyond nations, are joined by the third Infotech trend: the accelerating transformation into a knowledge-work environment.*

Again, this is being precipitated by an amazing drop in the cost of computing power. They are consequently being used to power machines that are spreading throughout our society. Twenty years ago, there were only 50,000 computers installed world-wide. Now, 50,000 computers are sold *every day*. In fact, fully ninety per cent of all today's computer users *had not touched one in 1980!* And the number of things that are not being affected by computers is shrinking every day. I defy you to tell me how many computers you own. You may not think you have any – but they are so small and cheap that they are being embedded everywhere! They are in your VCR, your watch, your kitchen blender. In Canada alone, the number of micro-computers units being shipped to meet this demand has sky-rocketed: from just over one million units ten years ago to 7.5 million units in 1991!

The cost of "communicating" has also plummeted. In Canada's portable telephone field alone, the number of subscribers is expected to climb from zero just seven years ago to three million Canadians by the year 2000.

And ease of access to the network will only increase in the future. Looking ahead, mobile "telepoint" phones will soon be available. They will carry digital sound and computer information in a package no bigger than Captain Kirk's communicator on Star Trek. By the year 2000 wristwatch phones could be common, fed by powerful satellites. These direct broadcasting satellites will make the world of digital video information available to anyone with

a napkin-sized receiver sitting on their window sill. And fibre optic technology has become so good that something we call “world on a thread” is theoretically possible. In theory, half of the total population of the earth can talk to the other half over a *single fibre optic line!*

Effectively, the cost of our prime factor of production today – information – has undergone a revolution. And with that, we see a dramatic shift to knowledge-based competition. Knowledge is the raw material of a new age. This trend will only accelerate. Today, scientific knowledge is doubling every five years. Let’s make that visual. We know in principle that we can make an optical memory device out of polymer that could store all human knowledge in a one centimetre cube. The contents of all the major libraries in the world, in the space of a sugar cube. In the working careers of our children, humankind’s knowledge will grow in volume from a sugar-cube to an encyclopedia.

The lesson for business is that *people’s skills are the number one asset!* Again, this trend enhances the individual. People and their knowledge are at the core of advancement in a Knowledge Economy. Information technology is causing a shift in employee capabilities. Companies now depend on employees with knowledge skills: professionals, technical people and senior management. In a survey of some of the largest American companies, it was found that the higher they rated in human resource development, the better their long-term performance. This isn’t just something that is “nice to do”. This is an imperative if we are to grow. Books like Richard Crawford’s “In The Era of Human Capital” say that in the next ten to fifteen years, virtually all employment growth will occur in “knowledge economy” areas. The knowledge economy comprises those organizations with high ratios of skilled and educated workers like professionals, technical workers, and senior managers.

This kind of result is so significant that ITAC hired Canadian economist Nuala Beck to check our economy and see whether the Information Age was indeed raising the “value” of our workers. Bearing in mind that Canada is a sort of global Infotech “trend-setter”, are people in fact shifting to more valuable, knowledge-based work?

The employment numbers indicate that such a transformation is taking place. Information technology now contributes more to Canada’s GDP than pulp and paper and transportation combined. More Canadians work in Infotech than in banking, mining, forestry or auto assembly. Infotech accounts for more than one-third of Canada’s industrial R&D. In fact, Nuala said, we are dealing with two economies. The older, mass-manufacturing economy ended about a decade ago. The new “information economy” has an entirely different set of leading industries. Three-quarters of Business Week’s 100 fastest-growing companies for 1991 fall within the new knowledge-based industry groups!

We are still too early in the transformation to an Information Economy to know whether the absolute numbers of new jobs being created in the Knowledge Economy is equal to the number being lost from the older industrial economy. The figures we do have are encouraging. In the last seven years, Canada’s low knowledge-intensive industries lost some 192,000 jobs. Moderate knowledge-intensive industries gained 133,000 jobs, and high knowledge intensive industries created 330,000 jobs. We seem to be emerging on the plus side of the ledger, by about a quarter-of-a-million jobs – and they are the high-paying, professional kinds of careers. In any event, let me stress that more than 97 per cent of all the new jobs were created by the high knowledge intensive industries! In all the industrialized economies, in fact, more than half of all workers are employed in the production, storage or distribution of knowledge. Some

gurus say that in the next ten years, ALL work will be knowledge work. Certainly, 80 per cent of the value of a product or service is expected to come from its knowledge content.

Those are the general trends of the new Infotech Age; trends that I believe could power up a more democratic and equitable world. The significance of all this for the developing countries is that knowledge is unlimited, uncageable and unfettered. Every society can use it to become more prosperous. And the more you use this resource, the more valuable it becomes.

Now let's look at the implications for the creation of a Grand Vision capable of harnessing that potential. There are two keys to accessing global wealth in an Information Age: education, and an information infrastructure.

Let's start with education. In the Grand Vision I mentioned earlier, it seems to me that one of the most constructive and cost-effective ways the developed world can help developing nations is to realize that we are together responsible for developing people to their *fullest* human potential, their greatest promise.

Now that the cold war is cold ashes, it seems to me that we could shift some of the "peace dividend" from armaments to education. As you know, there has been a drop in global military spending over the past six years of some \$250-billion. Do you know how many *teachers* that would finance? Even assuming travel expenses, we could pay for the transfer of some two-and-a-half million teachers to developing countries! This is not meant as a serious proposal, merely a statistic to indicate the scale of the resources we could unleash. We would, of course, need more than teachers.

And we have more, in fact, to offer. Information Technology is making available some highly effective teaching tools: computers that instruct at an individual level, networks that connect people to the greatest libraries in the world, and interactive videodisc instruction by some of the best teachers in the world, available for millions to use at once!

These tools are getting less expensive and more accessible with each passing day. A good classroom computer today costs about the same as a desk. If you translate this accessibility into a global context, you can see that education will increase very rapidly in developing countries. Already, the share of college students produced by the developing world has risen from 23 per cent to 49 per cent over the past 20 years. The Canadian class of the year 2000 will not be able to count on our traditional competitive advantage of a relatively well-educated work force. With the help of information technology, *everybody* will be well-educated. I expect that it will only be another 15 years before Canadians will lose our present national educational advantage. A small, multi-lingual hand-held device will contain explanations of all the facts it is possible to know. It will cost almost nothing. Every country in the world, every child, will have the same access to knowledge.

Let me leave you with a statistic concerning information technology and the rate of change in education. It has no real meaning, but has information value nonetheless:

- had the profession of "schooling" improved at the same pace that computers have since 1950, 12 years of public schooling could be achieved today in ten minutes for three cents.

In an Information Age, and with Information Technology tools, *education will become the number one job in every nation*. It means we need educators in our factories, our service industries, our health care facilities, and in almost every other sector in addition to our schools. Every nation becomes a school. And our students are in fact all our citizens, in every

community. It was a Canadian, Marshall McLuhan, who saw this first. He said: “The future of work consists of *learning* a living”.

Learning our living: this is where our Grand Vision can make use of productive “partnerships” between peoples. We need more than money to help developing nations; we need to be able to link their education to self-sustaining employment. Fortunately, we each offer the other something of immense value. We can answer each other’s needs - the basis of every productive partnership.

In essence, we can share knowledge work. The developed countries can help developing nations supply the brain-power that is needed to fuel the Information Age.

Canadian companies, for example, are among the best software producers in the world. An increasing trend is to do some of the software work in Canada, and send the rest out to competitive knowledge workers in countries like India, Israel, Mexico, Singapore, Hungary, China and the Philippines. Almost all of the world’s trans-national corporations are shopping the globe for educated workers. In India, IBM is in a 50-50 joint venture with the giant Tata Group to make IBM PS-2 personal computers and develop software. All told, India’s software exports multiplied twelve-fold over the past ten years to some \$144-million, and is expected to reach \$350-million by 1995. Andersen Consulting employs more than 500 people in the Philippines producing customer information systems for client around the world. Corel Corporation here in Ottawa has recently announced plans to establish a software centre in Ireland. China predicts that its software services sector will grow ten-fold to \$200-million by 1995.

This is a process that can be accelerated by industry efforts, such as the ITAC “Softworld” Trading Forums where new alliances are formed. The potential is so great, however, that we should consider spending some of that “Peace Dividend” on establishing educational linkages between the developed Knowledge Economies and the developing Knowledge Workforce. Information technology is now the world’s largest single industry, and one of the fastest-growing. In order to ensure an equitable share of Info-Employment, we should spend a significant portion of our national incomes NOW on ensuring that a “critical mass” of information workers exists in all regions of the world.

Secondly, to ensure that these information workers can earn a decent salary without having to leave their homeland, our Grand Vision should establish “seed” information infrastructures to link them to the developed world. We need not talk about vast amounts of money. You can build a lot of information infrastructure for the same cost as paving a kilometre of road. It could be accomplished like the growth of the Internet system, with a very small seed of government funding and then incredible accretions of private capital. This in fact is one of the most encouraging growth strategies for developing nations. Overall resource flows from the private sector have increased by nearly 50 per cent to \$100-billion in 1992. Information infrastructures provide an ideal lever for this kind of investment. The American “Information Highway”, for example, is expected to attract \$300-billion in private sector investment for a core government investment in the tens-of-billions.

One of the places that the core funding could come from for developing nations is the liquidation of the arms budgets of the developing nations themselves. I am suggesting that each continent needs to match American Information Highway levels of public sector investment, and can do so by diverting their arms spending to act as seed funding. Currently, the leaders

of the Third World are spending two- and three-times as much on arms as they are on the education and health of their people. They are spending eight times more on soldiers than on doctors. Some \$150-billion a year is being spent by developing nations on armaments, and these are going to countries that cannot feed themselves.

This kind of nationalistic, militaristic behaviour is the worst trait of the old nation-state, industrial economy. It was an economy based on natural wealth and geographic advantage. It encouraged conflict for territory.

Now, we are entering a world without borders, and we need a borderless vision. The coming Information Age could bring limitless opportunity and knowledge-work for every citizen of our planet. We need to think in terms of global information use. We need to invest at the “Peace Dividend” level in education for every region in the world, not because we’re being kind but because our global businesses would run better if we did. We need to seed an information infrastructure in each region, to the tune of some \$100-billion a year. We need to do this, to prepare for an equitable distribution of the employment and business spoils of the world’s first meta-business: Information Technology.

Information technology is a meta-business because it transforms everything it touches. It is the springboard for almost all the current growth sectors. It is giving power to individuals, accelerating a democratic “electronic commonwealth”, and ensuring the dignity of humankind by making people’s knowledge the touch-stone of wealth. Nothing else in the history of human technology has promised so much. Already, few things in the history of technology have delivered so much: it is no accident that the end of the Cold War coincided with the arrival of the Information Age. In the future, who knows what will come from a planet where all of our minds are globally networked in a consensual harmony of achievement and learning?

One thing we do know: we are at the “Turning Point”, where we can make this happen. All the ingredients are there. All, perhaps, except the Vision. I am happy that your Society is affording us an opportunity to spread this awareness.

A talk to the Economic Developers Council of Ontario Annual Meeting, Toronto.  
January 25 1995

## *The Development of Development*

**“Progress is capitalizing on the inevitable.”**

This is an examination of how new technology will impact the development of communities.

My friends in other parts of Canada have pointed out that Economic Development in Ontario is an oxymoron!

No question we have had our challenges as we move from the old to the new economy. However, this Annual Meeting of EDCO is entitled “Opportunities” and there is no shortage of these in this new Information Age.

We must begin by accepting that the changes we are seeing in Ontario and other industrialized nations are largely systemic. Wishing for the ‘good old days’ will be just that – wishing.

As Nuala Beck and others have pointed out, the New Economy is driven by new industries. In the era around 1918, the Engines that drove the Canadian economy were textile, coal, steel and railroads. The infrastructure supporting this consisted of the railroads, shipping and the telegraph. The key factor behind this development was cheap steel.

As Nuala points out from 1918 to about 1981, the Engines driving the economy in Ontario were autos, machine tools, housing and retailing. Here the infrastructure was highways, airports and the telephone. The key factor allowing this to happen was cheap energy, especially oil.

There is now little doubt about what is driving the Ontario economy in the post 1981 era. The Four Engines are:-

- Computers and semi-conductors
- Health and Medical
- Communications and Telecommunications
- Instrumentation.

### **Mother Goose and Grimm**



The infrastructure now consists of telecommunications satellites, fibre optics, LANs, WANs and mobile communications. The key factor allowing all this to happen is cheap microchips and I would add increasingly inexpensive telecommunications.

To understand the magnitude of the drop in cost of computing power one only needs to note that the transistors which cost about \$30.00 when first introduced now cost about 4 millionths of a cent in their equivalent on an integrated circuit. The reduced size and increased capability of computer power means that it is now possible to build intelligence into any inanimate object we may wish.

Further the cost of telecommunications is declining rapidly and its capability is increasing at an incredible rate. With the capacity of fibre optics, one can almost assume that the cost of telecommunications is following the cost of computing i.e. becoming almost a negligible factor in considering the economic development of an area.

The consequences of this for a Province such as Ontario are immense. Think of the ability to build intelligence into a chair or a door or a set of drapes. A chair could be designed to respond automatically to someone's preferences by adjusting the slant of the back, the height or perhaps even to roll back when the individual stands up. A door could open only at the approach of an individual who is authorized to enter. Drapes could open or close automatically to suit the ambient sunlight.

The key to all this is to combine communications with microchip technology. An individual could wear a small transmitter that would tell the microchip his or her preference and the formerly inanimate object could respond.

Just think of the implications of this for a furniture manufacturer in Waterloo or a door manufacturer in Ottawa or a drapery company in Toronto. We have the opportunity to rebuild industries that would otherwise be in decline, simply by using the capabilities of the new Information Age.

But to understand even more about the impact of the Information Age, we need to really understand the impact of all this on jobs and job creation. Nicholas Negroponte has pointed out that most companies these days are either in the business of bits or atoms. Because of the digitization that is now the cornerstone of the Information Age, virtually everything that will be handled by microchips or telecommunications will be handled as a stream of bits. Nicholas points out that the companies that will be growing in the new Information Age will be those based on bits rather than atoms i.e. they will be dealing with information rather than things.

A recent ITAC study, called "Things change, economies evolve" pointed out that:

- Information technology already contributes more to Canada's GDP than pulp and paper and transportation services combined.
- More Canadians work in information technology than in banking, mining, forestry or auto assembly.
- Information technology accounts for over one-third of Canada's industrial R&D.

In a recent Business Week survey, three quarters of the one hundred fastest growing companies in 1991 fall within the Four Engines driving the New Economy. The common thread: they all rely heavily on knowledge and innovation rather than muscle.

I might add that the fields of computers, telecommunications, information services and

software which is the link amongst the three, are the fields represented by the Information Technology Association of Canada (ITAC).

But if we all acknowledge that the New Economy is what will drive economic development, it is important to look at the direct impact on your work.

### THE NATURE OF WORK

The very nature of work is being changed in the knowledge based Information Age. It is no longer sufficient just to realize that people will change careers perhaps four or five times during their lifetime. It will now become more common that people will hold several jobs simultaneously. They may well work at home using a PC, a modem and whatever data banks they need to access, to add value to products or services being produced by a number of companies.

Loyalty will no longer be to a company or an organization but rather to one's profession or career.

If this is the case, it will be interesting to see how one can even tax for this new cottage industry. The reliance on tax deduction at source when there is no single source will become much more challenging.

This will also require a reconsideration of our whole social infrastructure. When are people unemployed? Why should people retire, if they are not required to work for any single organization? In fact, one could ask just what the nature of work really is in this new age.

During most of history prior to the industrial revolution, there was no such thing as unemployment as we understand it today. People worked for as long as they had to work to accomplish whatever was needed for subsistence or some luxuries. The concept of a 9 to 5 job was unheard of. The new Information Age is now allowing people to revert to an era when work and leisure are blended. Part-time work by many people working wherever they wish will become the norm. One quarter of all jobs in the U.S. are already part-time, temporary or contract positions.

### HIGH SPEED TO WHERE?

As Frank Feather, a noted Canadian futurist has pointed out, it makes no sense to drive an hour to the office, take the elevator to the 64th floor, spend the day on the telephone and sending faxes or e-mail and then driving an hour home. Obviously, most of this 'work' could be done anywhere, even at a cottage or on the road. Mobile communications simply extends this concept.

This has to raise the question of whether pouring money into subway lines designed to bring people from suburbia into the core of the City makes any sense. This money would be much better spent on the Information Highway Infrastructure.

### THE HOLE IN THE DONUT

If people can work wherever they wish, then the problem of the decline of urban centres will continue to worsen. The often discussed decline in the tax base in the core of major cities is obvious. The solution by most metro politicians seems to be to increase the property taxes to make up for the difference. This of course just compounds the problem.

Fiddling with market value assessments is just a *'deck chair on the Titanic'* approach. The concept of property taxes will have to change in line with the new Information Age. The idea that property is the major driver of the economy goes back to Ricardo, Malthus and Adam Smith. If the New Economy is based on information, then it would seem obvious that information is what should be taxed in the future rather than property.

Of course, some property tax will be necessary to cover services but even a small tax on information such as that being passed between Automatic Teller Machines and the bank's computers would rapidly produce more money than the property tax. If property taxes were lowered this would encourage more development in the core of cities.

The challenge will be to continue what Toronto did so successfully in prior decades which is to make the core area a pleasant and productive place in which to live. If it costs no more to live in the core than in the suburbs, people might well flock back to the cities. The secret of course is to put more money into the Information Highway Infrastructure in the core areas.

But the implications of the Information Age go far beyond this.

### THE GREY ECONOMY

The cashless society is nearly here. Debit cards will soon be widely used.

I project that cash will be eliminated in the New Economy. There is no reason that smart cards could not be used for everything from paying for a newspaper on the corner, to a subway ride. Even the LCBO is now accepting plastic!

The point is that if cash is eliminated so is the grey economy. If every transaction goes through a computer, then there is no question that a GST or a Provincial Sales Tax can be collected on every transaction. The increase in revenue to the Province could be substantial. There would be no exceptions except for true barter e.g. I will paint your back porch, if you will shovel my driveway.

### MULTIMEDIA MARKETING

Shopping at home means more than passively watching the Canadian Home Shopping Network (CHSN). The new multimedia capability will allow shoppers to interact with a salesperson, see the merchandise they may wish to buy and even see how a suit or dress would look on a person because the computer would maintain a physical image of each person and could model the cloths on that image (allowing for a slight expansion after the holiday season!).

This true interactive shopping will have an impact on Malls and again may reverse some of the trends toward decentralization to the suburbs with their huge Malls and parking lots.

The Malls may in fact become more and more a social gathering place than an actual shopping opportunity. The impact of this on retailers would likely be to encourage more specialty boutiques in Malls and fewer large department stores. Again, the taxation and developmental implications of this are far ranging.

### NEW EDUCATION IN A NEW AGE

Distance education which has always been a dream is becoming a reality with the new multimedia capability. There is now little reason to move students to a building to acquire an education. It is far easier to move the information to the student.

The success of interaction on Internet indicates that even for discussion purposes, it will not be as necessary as it used to be to bring people together. I would not for a moment suggest that for the social and psychological development of people face-to-face interaction is no longer necessary. However, with full motion two-way video much of this can be supplanted.

The implications for our education system are obvious. If the best teacher for a particular business course happens to be at Queen's, then that teacher could disseminate his or her direct lectures with interactivity throughout the Province. In fact, if the best teacher for German history happens to be in Hamburg, the same would be true. What we are now opening up is the globalization of education.

Libraries are already becoming internationalized through Internet.

### GLOBALIZATION OF WORK

Taken to its next logical step the globalization of work is also made possible by the Information Age. We all know that regularly software development is being done by North American firms in India and to an increasing degree in Russia. Here well trained talent is available at a fraction of the cost of such development in Canada. Again, this leads me to the conclusion that the systemic changes in the economy could easily lead to a lower number of working hours for many Canadians. This is not necessarily a negative but it does once again lead me to the conclusion that taxing information flow may be a much more realistic approach in the 21st Century than taxing incomes or property.

But there is one more systemic change the Information Age will bring.

### DIRECT DEMOCRACY

Just as the decentralization of computer power has been made possible by the declining cost of microchips and of communications, the direct input of citizens on major decisions will become increasingly common. Already countries are using referenda on a regular basis. There is little doubt that this is going to have a significant impact on the whole democratic process.

In Canada and in Toronto in particular, we have heaped layer upon layer of Government on the citizen. The Information Age may well now provide the way to reduce this and get back to a more Athenian democracy.

### SUMMARY

For those concerned with development in any economic area, the most important thing to remember is that; *Progress is Capitalizing on the Inevitable.*

The Information Age is inevitable. Understanding its implications will be one of the major challenges you will face in the decades to come.

To help in this, there is a project underway to try to position the GTA as a major player in the Information Age. It is called Smart Toronto (another oxymoron?). A group of firms from the private and public sectors, some NGO's and institutions from the educational and health field, have got together to promote Toronto in its role as the major economic centre in Ontario, as well as a world centre for information technology.

As second initiative is being undertaken by ITAC and the Conference Board of Canada.

This is a study relating to the nature of work and the implications of the Information Age on job creation. The first report on this work will be at the forthcoming ITAC Conference in Ottawa, February 28 / March 1, 1995 entitled “Roadwork: People Issues on the Information Highway”. I encourage you to attend what I believe will be a fascinating and important look at this challenging area.

Congratulations on the work you are already doing. *The Development of Development* is just beginning.

A talk given to the Canadian Information Processing Society Meeting in Halifax, Nova Scotia.  
May 11, 1978

## *East Is East*

**“The important thing is to look at what you have, rather than what you have not.”**

Atlantic Canada has some huge opportunities for development based around the natural advantages they have such as tidal power. The region could use this to be a world leader in this field.

Mark Twain was quoted as saying that... “being called an engineer does not guarantee one knows much about engineering - just that one doesn’t know much about anything else”.

The same might apply to those in the computer field. For example, most of my Halifax talks have been on computer subjects. The last time I talked to a CIPS Section in Halifax, the topic was on Data Communications. I then talked to a group of Halifax investors about the computer services industry. I think the result of that was that many people in Halifax bought SDL stock at \$15.00. Frankly, I am flattered that Haligonians would invite me back at all after yet another example of an Upper Canadian exploiting the Maritimes.

Finally, about a year ago, I gave a talk on Information Retrieval to a number of information specialists from various levels of governments who were meeting in Halifax.

This time, just to prove that Mark Twain was a bit off base, I would like to open up a topic that is not exactly a standard computer topic. I will give Mr. Twain some marks, however, as the topic I would like to discuss is one that I frankly do not know much about. I hope I will learn more by raising the topic tonight.

### REGIONALISM IN CANADA

My question is... “What do people in the computer field do when they happen to live in an area somewhat remote from the rest of Canada?” This whole area of discussion was brought to my attention by Dr. Gaylen Duncan, Director of the Office of Computer Policy for the Government of Nova Scotia. He had mentioned to me that he was trying to devise a program

### Calvin & Hobbes



...WHICH MEANS I CAN'T PASTE ANYONE WITH A SNOWBALL ... WHICH MEANS I'M GOOD ... WHICH MEANS I'LL GET LOTS OF CHRISTMAS PRESENTS! HA!



to keep computer people in Atlantic Canada in touch with the activities across the country. He was doing this by encouraging an active CIPS Section, ensuring that people from the Nova Scotia Government attended conferences and meetings in other parts of North America, and by trying to encourage the right kind of computer industry in the Province and the Region.

My interest was heightened by the fact that we are now a Nova Scotia company. As you are no doubt aware, the Jodrey family of Hantsport now own all the outstanding shares of SDL. I might add that, with typical Maritime astuteness, they managed to buy the company at what, I believe, is a very good price. They bought during the only year over the past five or six years that we had incurred a loss. The company is now operating profitably, once again.

When the Jodrey interests exercised their right to buy out any remaining shareholders after their original offer, there was not much protest. However, we did receive one classic letter from a little old lady who pointed out that she had bought the stock for about \$20.00 a share and these Maritimers were now going to pay her only \$4.60. She was convinced that somehow or other, the company would soon, once again, be worth \$20.00. Her comment was... “That’s how big corporations get richer and little old widows get poorer”. She may have something there!

In any case, whether it was obvious or not, one of Canada’s largest computer services organization is now essentially a Maritime company. My interest in the region is, therefore, more than academic.

The last thing the Maritimes needs is someone from Ottawa suggesting what they should do. If it makes you feel any better, however, I could point out that my mother’s family all came from Halifax. They were United Empire Loyalists who moved into Saint John, New Brunswick, after the American Revolution.

It will probably be acceptable, therefore, to consider that our family has just been on a 60-year vacation in Upper Canada!

## QUEBEC AND EAST

Most companies with head offices in Toronto, Ottawa, Montreal or elsewhere, have not rushed to the Maritimes. We do some business here but handle it through a division called Quebec and East - hardly a major thrust! To be realistic, however, the current situation in Quebec is going to complicate things for Atlantic Canada as much in the computer field as any other. I have no better insight than anyone else about the ultimate fate of the Province of Quebec. However, whether, as I sincerely hope, Quebec stays within Confederation, or whether it leaves, nothing can stop the fact that it will be more firmly than ever a unilingual French barrier between Atlantic Canada and the rest of the country.

I know that people point to Alaska and Hawaii as examples of how a country can operate successfully when its parts are widely separated. One can also, however, point to Pakistan and Bangladesh as examples where this has been less than successful. It seems to me, therefore, that Atlantic Canada is going to have to develop as a standalone area with its own computer traditions.

Not that this has not already happened to a degree but, as I reawakened my interests in this area on the ‘right’ side of Quebec, it seemed to me that there was a great deal more that could be done.

## THE ISRAELI EXPERIENCE

Several years ago, I gave a talk at the First Jerusalem Conference on the Use of Computers in Developing Countries, another topic about which I really knew very little. What impressed me was that here was a small country of about 3,000,000 people hosting a major international Conference with a view to taking the lead amongst the Developing Countries in the computer field.

They believed that computer expertise could be a major exportable product for this tiny country. The Israelis were isolated in the sense that they were surrounded by relatively hostile neighbours, they had no native computer industry in the sense of manufacturing, but they did have good people, an excellent educational system, and a burning desire to be the best.

Atlantic Canada strikes me as being in somewhat the same position. I would certainly not suggest that establishing a computer manufacturing industry here would be the answer. However, I do believe that knowledge is a readily exportable item. I see no reason why the Maritimes could not become a world leader in certain computer speciality fields.

Like Israel, Atlantic Canada has some of the finest educational institutions anywhere. I know this because, as Chairman of the Board of Carleton University, I have considerable contact with educators from the region. Further, I need only look at our own staff to realize how many of our senior people are either from the Maritimes or have spent considerable time here.

Bill Beairsto, our Executive Vice President, is from Fredericton, and a Mount Allison graduate. When looking at a recent acquisition, it turned out the lawyer we were using from Toronto was also a Mount Allison graduate. One of our recently appointed new Vice Presidents is Jim Hunter who, for some years, was the IBM Branch Manager in Halifax. You have the talent. What might you consider doing with it?

## A QUESTION OF SPECIALIZATION

As well as the unique resource in your trained people, you also have some unique problems. For example, as you are an area surrounded by ocean, there must be any number of computer projects related to oceanography in which the Maritimes could strive to become the world's knowledge centre. You have universities around which an Institute of Oceanographic Computer Science could be established. Such an Institute could work closely with the Bedford Institute, or other such organizations.

Halifax has one of the world's finest natural harbours and yet I was somewhat surprised the other day to learn that Leigh Instruments from 'land-locked Ottawa' was undertaking a harbour scheduling project for Vancouver. This project involved not only the computerized control of traffic movements, but also the necessary radar installations to keep track of the movement of ships. Surely this kind of project would be a natural for the Maritimes.

I am not sure how many computer applications there might be related to the fishing industry, but it would seem to me that computerized models of the habits and movements of schools of fish would be of great benefit to a protein starved world.

Some of the best ship-designing in the world has taken place in the Maritimes. The Bluenose won international fame. Possibly here could be found some interesting application areas.

In this energy short world, you have one of the best natural experimental areas to test wave energy, or the generation of power from wind. All kinds of computerized design programs could be developed around this.

Finally, on your doorstep, there is about to begin one of the greatest power projects ever attempted.

The Maritimes may have the opportunity to become the world's experts in harnessing tidal power.

In fact, the only area of exotic energy development that I would not suggest the Maritimes undertake is solar power! I managed to get fogged in at St. John's, Newfoundland several weeks ago. I gather the sun so seldom shines there that, in the Battery Hotel, they have a painting of the view of the Harbour over the window overlooking the scene. It has under it a brass plaque explaining that this is what you would see if you could see it through the fog!

It would be interesting to see if the several governments in Atlantic Canada might be interested in funding an Institute to develop computer expertise in one or more of these areas.

Our own company is looking more and more toward decentralizing its own R & D to develop speciality products, particularly designed for the needs of local areas. It is not much fun to come into an area like the Maritimes to simply run more payrolls.

If some areas of expertise such as this could be developed, it would be a real challenge for Atlantic Canada to hold an International Conference within five years to, not only invite world experts from other areas, but to demonstrate that the Maritimes has something unique to offer.

#### SUMMARY

The important thing is to look at what you have, rather than what you have not.

For years, Atlantic Canada has been exporting people to the rest of Canada. Perhaps now there is an opportunity to retain the fine people you have and, instead, export ideas.

I hope, now that we are a Maritime company, at least through ownership, we will be able to participate in what could be a very exciting future for the region.

A talk to the Jerusalem Conference on Information Technology. August 17, 1971

## Computer Service Bureaus and Developing Countries

**“To stand still is to fall behind.”**

Israel is a wonderful example of a small country that has capitalized on its energy, its educational system and its confidence that it can be a leader in many fields. This talk discusses how computer service bureaus could assist that process.

In North America, the computer services industry has shown a remarkable growth rate. In the United States, the revenue from service bureaus and time-sharing companies, during 1970, was estimated at \$1,235,000,000. This is expected to grow to \$1,505,000,000 or an increase of 22% during 1971. The only segment of the data processing industry that is expected to have a faster growth rate is the sale of independent peripheral equipment at 26%.

At the same time, the industry, in general, is expected to grow about 17.5% which indicates that the service bureau approach is the second fastest growing segment of the world's fastest growing major industry.

Mr. J.C. Maisonrouge, president of the IBM World Trade Corporation, said at a recent National Academy of Engineering Symposium, that over the next thirty years the data processing industry will surpass the automobile and petroleum industries to become the world's largest industry. All of this means that unless we can find a way to bring the benefits of this industry to developing countries the disparity between the computer power per capita in the developed countries and the developing nations will become intolerable.

My purpose then is to examine the feasibility of making extensive use of computer service bureaus as a means of bring computer power to developing nations.

### CONCEPT OF A SERVICE BUREAU

All service bureaus operate on the concept that many organizations need to obtain services that none could reasonably afford alone.

### Wizard of Id



Service bureaus have been operated by manufacturers for over 40 years and independent service bureaus began to appear after the Second World War. Of course, these used unit record equipment and their services were restricted to the payroll and sales analysis type of application. Large-scale service bureaus using computers were again initially offered by manufacturers in the mid-50's but independents such as CEIR (now part of Control Data Corporation) saw the possibilities of the shared use of a large machine on a local batch basis. In the past there has been one significant difference between the independent service bureau and that run by a manufacturer. The manufacturer often used a service bureau as a sales tool to encourage the customer to get his own in-house computer. The independent service bureau is dedicated to keeping the user on the service bureau machine. In neither case, however, did service bureaus using large computers seem to be able to produce substantial profits, regardless of how useful they may have been to the user. One reason for this was, of course, the large capital investment necessary to gain sufficient economy-of-scale to make the service bureau a better long-range proposition than installing an in-house machine.

A second problem faced by the service bureaus was that even if a sufficiently high investment was made, there might not be enough local business to fully justify this investment. This meant that the service bureau industry had to wait until the mid-1960's when it became economically feasible to transmit data for high-speed remote batch operation before the industry could start a significant growth rate. It is interesting to note that of the service bureau segment of the industry, the largest growth rate is forecast for remote batch processing, which, even during the poor economic climate of 1970, grew by 50%.

In summary, then, the combination of the economy-of-scale, based on Grosch's Law, coupled with the ability to access these machines remotely, laid the foundation for what is often called the computer utility.

Before we consider these concepts in more depth, it is worth bearing in mind the major types of service bureaus now operating in North America.

### 1. General Purpose

These service bureaus must depend on their ability to offer general computing services more economically than an in-house computer, even when one considers the cost of terminals and communication lines. Examples of the general purpose service bureau would be the Cybernet System or INFONET.

### 2. Specialized Service Bureaus

Some bureaus offer services only for a particular application or group of applications. A common example is a service bureau specializing in payrolls. Another example would be the Keydata operation offering a tailor-made billing, inventory, accounts receivable application package over a key-driven terminal.

Either type of service bureau can operate in one or more of three modes:

#### a. On-Site Batch

This was the only method for early service bureaus and required the customer to physically bring his work to the service bureau centre.

#### b. Remote Batch

Access to the service bureau is obtained over a communication line using a high-speed terminal. The line could be voice grade (2400-baud) or a higher speed line. Some remote batch services operate from a key-driven terminal although more often than not, such terminals

are used in conjunction with a high-speed remote batch terminal.

c. Interactive

This is the often discussed time-sharing mode where the computer time slices the access to its resources to give the appearance that each of many key-driven terminals has sole use of a large computer. The most common use for this type of facility is for program development as the terminal user can interact directly with his programs or files.

In either of the last two cases, the user can make remote inquiries into files. This has led to the use of the term ‘information utility’, when referring to such service bureaus.

It should be remembered that service bureaus can either be internal to an organization or be an external commercial operation.

For a variety of reasons I am now going to restrict further discussion of computer service bureaus to some of the above categories. First, I believe it is unlikely that most developing countries would have the need for dedicated specialized service bureaus. Such service bureaus nearly always depend on a sophisticated market as their offerings are often marginal improvements in cost or efficiency over presently installed systems. Any specialized need can really be met by a general-purpose service bureau running a specialized application program.

Secondly, I doubt if the interactive or time-sharing type of service bureau should be the initial approach for developing countries. Admittedly, time-sharing is reputed to be economical of a programmer’s time but it is certainly not economical of the computer’s facilities. In any case, such systems depend on an extensive communications network which may or may not be available.

Remote batch, on the other hand, is a possibility as it represents a compromise between the extensive network required for a typical time-sharing operation and the relatively limited number of lines required for remote high-speed terminal operation. The lines for remote batch must be of good quality.

Local batch is, of course, a concept that should be considered.

With this in mind, we should now take a look at the state-of-the-art in the large general purpose on-site or remote batch processing service bureau operation.

## STATE-OF-THE-ART

Our own installation at SDL is reasonably typical of a very large service bureau operating in the mode being considered. SDL has installed an IBM System/360 Model 85 with a large peripheral configuration. One might suspect that a system of the size of the Model 85 is required because of its internal processing speed. This is only partly true. The 12.5 million cycles per second provided by the CPU are considered only a resource shared by any of the 15 programs which may be concurrently operating in the 2-million bytes of main storage. A more important factor to us is the very wide input/output bandwidth, which, as presently configured, exceeds 36-million bits per second. This makes this large system very suitable for advanced multiprogramming operation. In fact, it goes without saying that a large system such as this could only be economically operated under a control program such as O/S MVT.

It is interesting to note that our presently installed data communications facility utilizes a bandwidth of about 120,000 bits per second. The remainder of this very large data input/output capability is available for the operation of high-speed tapes and direct access devices. At the moment we have 62 data entry ports installed on the Model 85 distributed as follows:

22 165 bit per second dial-up ports used for access by IBM 2741's and other similar key-driven terminals.

27 2000-2400 bit per second ports used to communicate with intermediate speed remote card reader/punch printers or small computers such as the IBM 1130 and UNIVAC 9200.

13 4800 bit per second ports used to communicate with specific customer terminal equipment in the intermediate speed range such as the IBM Model 20 or the UNIVAC 9300.

At the moment, over 80 terminals use these 62 ports on either a leased line basis or a dial-up basis. By the fourth quarter of 1971, the capability of the Model 85 will be expanded to allow 350 ports with an aggregate data capability of nearly 2-million bits per second. Fortunately, at about the same time, the channel capacity will be expanded to exceed 60-million bits per second.

One method we are currently using to expand our capability to handle terminals is to use a small computer such as a Model 40 as a local or remote concentrator. This Model 40 can handle over 20 2400/4800 baud lines in a remote location and can then be attached to the Model 85 on a facility such as a 50 kilobit line.

At the present time we process an average of 2,300 jobs a day and this uses on the average less than 20% of the available CPU cycles.

Such an installation is an expensive undertaking. The Model 85 which is purchased cost \$11,000,000 U.S. and we have, in addition, the equivalent of \$6,000,000 worth of rented equipment. It should be noted that even the maintenance on the purchased equipment exceeds \$15,000 a month.

In addition to the cost of such a large system and the necessity for extremely good data communication facilities, we should bear in mind that such a system requires a great deal of technical support if it is to be used efficiently. For example, many man years of effort by senior technical staff had to be applied to problems such as the following:

We had to completely rethink the method of charging customers for time used on such a large system when used in a multiprogramming environment. Charges in such an operating environment are usually based on elapsed time. This means that each job has to bear the costs of the total, system and, in addition, the costs of delays in operation such as time required to mount tapes and disks.

By multiprogramming, many jobs can co-reside in the system at the same time. Therefore each job should only bear the cost of the actual facilities it utilizes. If the same job is run several times, even under varying system loading conditions, the measurement of computer services should be identical.

A second type of problem that must be solved involves production control. The SDL Production Control System analyzes job control cards to determine the volumes, such as tapes, required to run a job. A table is maintained within the system identifying all the volumes currently in the library. The shelf location of particular volumes requested is determined and a Job Bill of Materials is produced.

Materials required for the job are routed to a dispatcher who, by means of a special terminal, releases the job from HOLD status. While the job materials are being gathered, the job remains in the HOLD status in the Operating System queue. Jobs which require no setup such as compilations are routed directly to the Operating System queue and will not cause a Job Bill of Material to be prepared.

These are only examples of a number of complex systems and operation problems which must be solved in order to make effective use of a very large system.

I mentioned earlier that such large systems in a service bureau environment depend, for their success on the substantial economy-of-scale available on a big machine. This is worthy of some discussion because we must be realistic about the economy-of-scale - it does not apply to all components of the system. For example, it does not apply to communications interface devices, datasets and, to some extent, even core itself. Communication lines can have some economy-of-scale if you can take advantage of Telpak or other bundling rates. Fortunately, however, the economy-of-scale does apply once again to some extent in the peripheral area. Large machines can support very fast file processing devices. Since this is the case, these big machines excel in the handling of large files as well as problems with a high compute content.

It is also worthwhile to take a look at the state-of-the-art of communications networks for this can easily be a limiting factor on the ability to make good use of a large system. We tend to use 4800 baud lines. We should bear in mind that a 4800-baud line is only the equivalent of 600 bytes per second maximum, even allowing for no IRG's or retransmission due to error conditions. The tape which might be the source of the data transmitted was likely created at 60,000 to 320,000 bytes per second. This implies that even a sophisticated remote batch operation is often uneconomic relative to direct mailing or delivery of a tape.

However, a 4800-baud line used with suitable data compression techniques can support a 600 line-per-minute printer and similar speeds on a card reader so that such lines are often sufficient for many purposes.

Some final comments on the state-of-the-art are in order. One of the major markets of the large computer service companies is the replacement market. Bearing in mind that the costs of running an installation are often twice the cost of the computer rental, one could expect to save considerable money by utilizing the economy-of-scale of a large machine to replace a presently installed computer. Among the costs that should be considered as replaceable are the following:

1. Computer rentals or depreciation. It should be noted that these costs are incurred whether the computer is used full-time or not. Extra shift charges may also be incurred on a rental basis.
2. The operating staff including any overtime or shift differentials.
3. Systems programming staff.
4. Technical support staff to help application programmers debug their programs.
5. Tape librarians and stock room operators.
6. Staff training costs in operations.
7. Reconfigurations and conversions to new systems.
8. Software package rentals.
9. Inventories of standard forms, disk packs and scratch tapes.
10. Prime space.
11. Installation and maintenance of airconditioning, special flooring and regulated power.
12. Management's time spent on all of the above.

In summary, the use of a large computer service bureau should allow organizations to concentrate on solving their own application programming problems and largely forget about the operational problems.

The trend I see in the field is toward the use of both larger and smaller computers. Clearly

the economy-of-scale of the large machine makes it very effective for the types of jobs mentioned above and the mini computer will find its place for specialized work such as process control, in a laboratory environment, for some types of education and most certainly, as the basis for terminals to the large machines. The middle sized installations incur all of the problems and costs noted above but do not provide the economies that can be gained through the use of a large-scale service bureau. I might add that the latest Computer Census published by the Canadian Information Processing Society already indicates this trend in Canada with the highest proportional increases in the number of computers being at the low and high ends of the scale. The mini computers will also have their greatest impact on the present time-sharing approach as many of these machines can be purchased for \$5,000 while many time-sharing services rent for \$500-\$1,000 per month.

With this consideration of the state-of-the-art in North America, let us now take a look at how this would affect developing nations.

### THE DEVELOPING NATIONS

I do not pretend to have first-hand knowledge of the computing needs of developing countries. Therefore, I am basing the following comments on such studies as the UNESCO Resolution “The Application of Computer Technology for Development”, and the OECD report on “Gaps in Technology - Electronic Computers”. These documents plus some intuition would lead me to make the following assumptions:

1. A major aim of any computer operation in a developing country must be training of personnel.
2. There are many competing demands for capital and any funds used for computing must be used in the most effective way. (Many studies have indicated that in-house computers are usually under-utilized, often by 20-50%.)
3. Most applications discussed in the above documents lend themselves to batch processing and fairly large computers.
4. Communication networks in many developing countries would be insufficient for an operation similar to that described earlier.

If the first point is correct, we could assume that a service bureau should be established in conjunction with a university. This approach should be used under careful supervision. If the centres are to be fully productive in the national interest, then applications must be picked according to national priorities. This would imply that although the computer service might be run in conjunction with a university, its priorities must be set by the national government or if several governments are co-operating to provide regional centres, then by the regional economic commission. The UNESCO Report clearly points out that the real need is not initially for hardware as much as for proper training starting with the economic planners. This should then be followed by sound application planning and manpower training.

If there is one caution developing countries should take from the experience in North America, it is that it is a mistake to rush too quickly to obtain hardware. In the United States and Canada much unfounded speculation about the early profitability of computer service operations led to thousands of companies being established in a short space of time. Many of these were either badly financed or poorly conceived and the result in terms of mergers and bankruptcies is now well known.

With regard to the second point, it would appear that the service bureau whether run privately or by the government would provide an economic answer to the effective use of capital. It is possible that on a regional basis, private service companies might be willing to undertake the establishment of a service bureau but as one of the main initial aims would be training, clearly a great deal of government support would have to be given. One solution might be the establishment of, what in Canada we would call a Crown Corporation. This is a company owned by the government but run relatively independently of the government. There is always the possibility that such a company could be sold to private enterprise as a taxable corporation after the initial development has taken place.

Developing nations have one advantage over much of the North American or European market. The biggest marketing problem that computer services companies face is overcoming the empire building desires of those who already have their own medium sized computer. This problem is encountered in both government and industry but would not be a problem in a developing country.

The third point was that a large computer may be necessary for certain types of problems. For example, many of those referenced in the UNESCO Report are applications involving GPSS, SIMSCRIPT or similar programs that only run efficiently on very large machines. Another group of problems were those such as ICES for Civil Engineering.

One of the large applications that we run in Ottawa is a sophisticated routine developed by the Canadian Federal Government, which should be of great interest to developing countries. This is a computerized land resource analysis program called the Geo-Information System. An optical scanner is used to transcribe into machine readable form map data from scribed sheets indicating the present land use and suitability of land for agriculture, forestry, recreation, etc. This system then allows questions to be asked of the resulting data bank such as:

- What are the total number of square kilometres in a region that have a population of less than 100 people per square kilometre and contain land suitable for grazing but not suitable for crops?
- How many areas and what are the size of the areas within a given region that are suitable for forestry and are within 10 miles of a railhead?

An application of this type requires very large internal storage and a very fast computer but the results can be most significant for a developing country.

Finally, if communications networks are not highly developed, it might still be possible to have a large central computer at a regional location and have high-speed batch terminals at strategic locations in the member countries. Even if this is not possible, the transportation of magnetic tapes produced on the large computer to small local computers with printing capability may still be a very economic process, particularly bearing in mind my comments about the relative speed of lines and computers.

## SUMMARY

My conclusion would be that the concept of the service bureau would be very suitable for developing nations, either on a national or on a regional basis.

Secondly, such service bureaus initially will have to be government supported.

Thirdly, the development of such centres in conjunction with universities should ensure that the major aim of training is looked after.

Fourthly, developing countries should not underestimate the cost of setting up large centres in order to gain the benefit of better utilization, more capability and a further important point, the ability to attract good people to work at the centres. If inadequate budgets are provided, the country could easily have advanced hardware without the staff necessary to make it a success.

Finally, I would warmly endorse the concept put forward in the UNESCO document of ‘twinning’ with similar installations in Europe and North America. As pointed out earlier, a great deal of thought has gone into how to run a very large computer and in the ‘generation leap’ that the developing nations are trying to make, it would be a shame to waste time on problems already solved elsewhere.

The problems of developing nations are everyone’s problems and I hope that those in the service bureau industry in North America will be responsive to the possibilities of assisting emerging nations in making the best possible use of computers.

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# *The Business Case for Corporate Leadership*

## **Defining a New Role for the Private Sector in a Region's Economic Development**

**“You'll never leave where you are, until you decide where you'd rather be.”**

In Canada, businesses always thought that economic development was solely the role of government. The time has come for a co-operative effort between business and government to drive economic development.

Economic Development Organizations have a long and proud history. They did not seem to exist however at the time Jericho was built around 7500 BC. The layout of the city was haphazard. However, some form of EDO must have come into existence around the sixth century BC. Recent excavations in southern Cyprus revealed an ancient hilltop city called Khirokitia. This city is unique because it is the first that has a street.

This was particularly interesting because the street predated the wheel which did not appear until about 3500 BC.

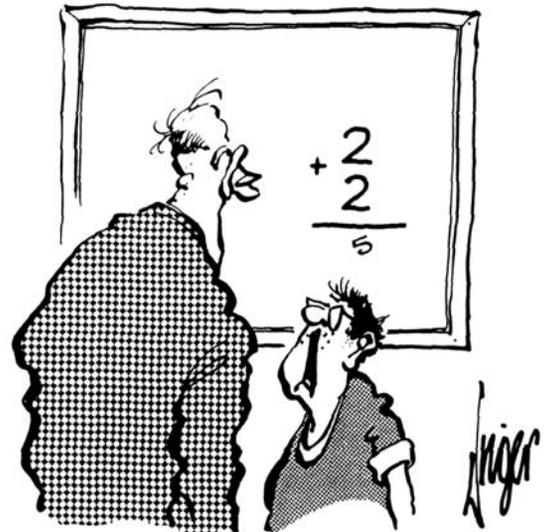
For the purpose of today's topic, however, we should note the fact that this was the first example of common property, i.e. a portion of a city that was shared by all and presumably maintained by some early form of government. In fact, it was this type of common property that may well have lead to the establishment of municipal government as we know it.

It was this type of co-operative effort that eventually led to the concept of the Common in medieval Europe and town councils to administer such property.

In a way, your predecessors several thousand years ago, created the need for municipal government. There is a lesson we can learn from this. Co-operation is the key.

We have a unique opportunity today for a co-operative effort amongst the private sector and various levels of government to promote the development of our region and to sell to the world the obvious advantages that we have. This will require a co-operative effort along the lines of that initiated in Cyprus thousands of years ago.

Regional Economic Development cannot be left to government alone. It is time for corporations to show leadership, particularly in marketing greater Toronto to the business world around the world.



**“I make mistakes to keep you  
on your toes!”**

## WHY NOW?

- In the past our business community has not been involved in marketing our region, as the business communities have in most U.S. metropolitan areas.
- Of course, until recently business participation has not been necessary; compared to the rest of North America, we were growing at a faster rate than all but a few Sun Belt metropolitan areas.
- But by the 90's, it was a different story; we experienced the de-industrialization that the Mid-West went through in the 70's and 80's, plus shrinkage in our office and construction sectors for reasons we are all very familiar with.
- The result, a recession and jobless recovery; so today our unemployment rate in the GTA is around 10%, compared to about 6% for most American cities; our unemployment rate is even higher than that for the Province or the country. In absolute numbers, a July 1996 GTA unemployment rate of 10.2% translates into a quarter of a million residents (officially) unemployed. Beyond this are many who have given up a search for work - particularly in the youth group.
- For many years before and after World War II, we were “order takers” for foreign corporations wishing to serve the Canadian market, and the source of many home-grown corporations. When tariff walls required foreign corporations to set up subsidiary plants to serve the Canadian market, more often than not the Toronto region was the logical place to locate their Canadian branch plant.
- The reason Toronto grew as a manufacturing centre and became known as a city of subsidiary plants was pointed out in a brochure of the Toronto Area Industrial Board that used to serve as the marketing agency for the Toronto areas from 1929 until about 10 years ago. Their brochure pointed out that approximately one-third of the population and even more of the business activity in Canada was located within a couple of hundred miles of Toronto. The other two-thirds was divided approximately evenly - between eastern and western Canada. So we had, and still have, the country's largest market concentration and a central location within the country.
- However, with national tariffs coming down and global competition coming in, we are losing businesses and jobs to downsizing, and relocation of production to other locations. These and other trends have given us fewer jobs in the GTA than we had in 1990.
- So the “order taking” period is long gone, and so are the unemployment levels of around 5% that we experienced in the late 80's.
- Now, in the mid-90's, we need a concerted effort in promoting economic development and generating jobs; and that concerted effort must include both government and business.

## WHAT ROLE CAN CORPORATE TORONTO PLAY IN REGIONAL ECONOMIC DEVELOPMENT?

- A primary role would be to give full support and provide leadership in the creation and effective operation of the recently announced Greater Toronto Marketing Alliance - a proposal brought forward by the region's municipal economic development officers, the Office of the GTA, and the Boards and Chambers of the Greater Toronto Area.

- As many of you know, The Metro Board, through the leadership of Murray Beynon, immediate Past President of The Board, and Brad Henderson, has been researching the need for a permanent agency to promote our region to outside investors since June of '95, and they have been lobbying the Golden Task Force and others for such an agency for about a year.
- I am delighted that since the Golden Report release, the GTA Economic Development Partnership - consisting of municipal economic development officers and the Office of the GTA, and other Boards and Chambers in the GTA - are all supporting what seems to be a very timely and worthwhile entity: the Greater Toronto Marketing Alliance.
- The proposal for the Greater Toronto Marketing Alliance calls for a 50/50 public/private participation in its start-up phase, but I suspect and I believe the proposers do as well, that in the long run, the majority of funding and direction will come from the business sector with our major corporations playing a major role in its funding and business support.
- Business brings a much need “value added” to the task of selling Greater Toronto to prospective business investors, including:
  - Marketing expertise, and we have got plenty of that!
  - Credibility with business prospects and contracts, “business talking to business”. If you really want to know the competitive advantages and quality of life advantages of investing in our region, a fellow business person can do that best, and from my experience, he/she will be delighted to do that (unless said business person is a smoker or does not like crisp Canadian winters).
  - And our business leaders should be a good source for leads.
  - And plugging our business community into our community’s economic development needs should also help to develop more strategic alliances, whereby our businesses arrange to manufacture products for foreign companies which, of course, avoids a major capital investment for foreign manufacturers and adds to the product line and output of a GTA company.
  - Oh, yes, business can bring one other advantage to the table - money. The proposal for the greater Toronto Marketing Alliance recommends at least \$½ million a year from the private sector in the start-up years. I think corporate Greater Toronto can meet the proposal, and a lot more. If Atlanta, Cleveland, and Charlotte can raise in excess of \$1 million a year from their corporate “investors”, so can we.
- But I believe that business participation in selling our community should go beyond funding and participating in the Greater Toronto Marketing Alliance; for example, there would be:
  - Corporate executives serving as Ambassadors for Greater Toronto, being well informed on our competitive advantages and committed to marketing our region to prospective investors;
  - CEO’s of Canadian operations of foreign owned companies strongly advocating the retention, mandating, and expansion of their Canadian operations;
  - Business people using their speaking engagement opportunities to talk about the virtues of the community (of course, only after a perfunctory talk about how mean and lean their company is becoming).

## WILL CORPORATE TORONTO RESPOND TO THE CHALLENGE OF PROVIDING LEADERSHIP IN MARKETING OUR ASSETS TO THE BUSINESS WORLD?

- If corporate Toronto is as committed to regional economic development as corporate Atlanta, corporate Cleveland, and corporate Charlotte are, we will have the business leadership we need. All the above mentioned urban areas, and many more as well, went looking for private sector funding for their respective regional marketing agencies in the last year or two. All of the above-mentioned cities wanted at least \$1 million from the business community, and all either reached or exceeded their private sector funding targets. So our competitors are getting corporate sector support to sell their communities, and I think we need the same, and I am confident we will get it.
- Corporate support for U.S. regional marketing agencies goes beyond funding; for instance:
  - CEO's make themselves available to major prospective investors. Murray Beynon mentioned how on this second trip to Charlotte, he was talking to the CEO's of the two major banks headquartered in Charlotte, and he was given the distinct impression they wanted his business.
  - Another example is in Cleveland, where corporations provide volunteers to participate in a "telemarketing blitz" of prospective investors for the Cleveland area.

I would like to see that kind of corporate involvement in economic development in the GTA. Our corporate sector should become more involved and I believe it will.

## SO HOW DO I KNOW?

- Well, for one thing, The Metro Board including The Board of Trade Council and The Board's Corporate Advisory Council have been discussing a regional marketing agency for some time, and the discussion centered more around how to create it, not whether we needed it or not.
- Support from our Corporate Advisory Committee was especially valuable since it is the CEO's that sit on this Committee that will be asked to write many of the cheques and provide much of the business expertise for the Marketing Alliance.
- The members of the Corporate Advisory Committee all agreed we need a regional marketing agency, and I presume they are willing to give it financial support.
- The real estate industry is looking for private sector leadership, and much of the leadership will be provided by representatives in this industry.
- Like the real estate industry, utilities derive direct benefit from new investments in the GTA and they too should be strong supporters, including Consumers Gas.
- The telecommunications industry is another sector that benefits directly from additional investments and jobs.
- And just two more examples: the financial sector that dominates our downtown economy, and the auto industry that is so vital to many of our suburban municipalities. We think they should play a central role in promoting Greater Toronto and supporting the Marketing Alliance.

That view is echoed by senior bankers, who believe the Marketing Alliance is a great idea and urge us to get on with it.

## SO WHY ARE WE GETTING SUCH STRONG SUPPORT FROM OUR BUSINESS COMMUNITY?

- In part, as I mentioned earlier, for many corporations, there are direct financial benefits from new investments, particularly if the corporation's product or service serves the regional market.
- However, many business people are also acutely aware of our employment problem and want to support a vehicle that is responsible for attracting investments and generating jobs and taxes.
- I also believe many share the view that I have, that they are proud to live in a community with a quality of life second to none and would want to support an agency that will promote our assets to the world.
- The 1996/97 Toronto Business and Market Guide published by The Board of Trade of Metropolitan Toronto looked at how others around the world rank Toronto.

## HERE'S HOW OTHERS RANK TORONTO

- "Smartest" City in Canada (Report on Business Magazine, 1995)
- Among the Top Three Cities in the World for Personnel Recruitment and Retainment (Fortune Magazine, 1995)
- 4th Best Place to Live in North America (Places Rated Almanac, 1993)
- 4th Highest Quality of Life (Geneva-based Corporate Resources Group, 1995)
- 5th Most Desirable International Headquarters Location (Chicago-based PPH Fantus, 1993)
- 8th Top City in the World for Business (Fortune Magazine, 1995)
- 10th Largest Stock Exchange in the World (Federation Internationale des Bourses de Valeurs, 1995).

So, in conclusion, I'm convinced the time is right for corporate leadership in economic development and from my discussions with my colleagues, I know I am not alone in expressing that view.

A talk to the Public Relations Society of British Columbia, Vancouver. September 29, 1982

## *Team B.C. - the Process*

**“The easiest thing to sell is optimism. The easiest to accept is pessimism.”**

During a downturn in the economy of the province of British Columbia, I was asked to lead a group to raise people’s perspective about what they could do to help themselves.

The easiest thing to sell is optimism, the easiest to accept is pessimism, the pessimist is never disappointed for he or she expects that nothing will improve in any case, pessimism is a lowest common denominator state of mind.

Optimism, on the other hand, is hard to sustain, as Plato commented on the Spartans - the problem with perfection is that there is nowhere to go but down, one has to work very hard to develop a state of mind in which optimism dominates.

For only optimism creates. Pessimism is the antithesis of progress as it leads to inaction.

I was reminded of the instructions given by God to Moses in Exodus, somewhat paraphrased, this was, “stop praying and get your people moving,” but to get people moving requires a stimulus, a recession does this very dramatically, a depression even more so.

The optimist will look upon such difficult times as an opportunity for change. This is not just unrealistic thinking but a very pragmatic recognition that people will not change themselves, their organizations, or their countries during times of plenty, it is therefore only during a less than perfect condition that change is possible.

I am reminded of the famous line by Orson Welles when he was playing Harry Lime in the *Third Man*. Lime noted that during the time of Medici, Florence was in a constant state of warfare and upheaval, that time produced some of the major leaps forward in renaissance thinking and art. Switzerland, after three hundred years of continuous peace, produced only the cuckoo clock.

We live in a time of stimulus – a fertile ground for seeds or weeds, it is up to us.

You are ‘process’ people so my intention is not to discuss the program of Team B.C. but rather look at how one motivates the launching of a volunteer movement at a time like this when the only product is ‘hope’.

### THE APPROACH

Some of the requirements are as old or even older than the Bible. Christ sold hope, so did Muhammad, so, in fact, did most religions.



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**Frankly, Bob, we’re expecting a more detailed business plan**

The techniques used then are a valid place to start.

The first requirement is to develop amongst the group a sense of trust, people will participate when they perceive that the others involved have no possible avenue of personal gain from the process. This is absolutely essential for the leader of the group who must appear to be particularly selfless.

This cannot be faked or certainly not for long. Retribution for those who misuse this trust is swift and final.

Whether it is used to mislead the public or the rest of the group, such retribution is deserved.

The most important single motivator is, therefore, that sense that what is being done is being done for some ultimate good transcending the group. One cannot start a project such as this on a volunteer basis unless this is truly the motive of those involved.

This is a particular difficulty in a time such as we are experiencing, for trust is the precious commodity missing in most of our contemporary society. The public does not trust its institutions such as government. Government does not trust the unions. The unions trust neither government nor big business. Regrettably, few people even trust each other and the media is particularly cynical these days about motives.

The second requirement is genuine enthusiasm. This is contagious but it is a pleasure to pass on to others. It leads to genuine effort of the type no wages can buy.

The third requirement is energy. A recent article noted that some people may get 'adrenaline highs'. Whatever drives people to pour high levels of energy into projects, such performance is absolutely essential.

It is unrealistic to expect others to exceed your energy level. You set goals by example that produce a multiplier effect. Your energy used as an example can motivate dozens or hundreds of people to duplicate it or approach it.

The fourth requirement is organization. The best people work best within a structure that allows a sense of security or approach with minimum wasted effort.

This involves simple techniques such as agendas of meetings in advance, minutes with clear action plans resulting from them and, of course, a long-range plan.

Most important, tight deadlines usually established by publicly declaring events or a timetable, will sharpen the process and keep it moving forward.

Printed materials, well worded and produced, gives a sense of professionalism to the process. This can be supplemented with audio visuals, TV clips, satellite conferences or any new techniques – all these are part of the process.

Finally, though hardly a technique, a recognized goal that is seen to be worthy is absolutely essential. In the case of Team B.C., this might be described as hope for the people of the province. There is no point in starting a major volunteer effort if there is not a clearly defined goal.

#### TEAM B.C.

The idea was simple, but the process was floundering from the lack of several of the above techniques.

It started with a presentation in early June 1982 to a provincial cabinet committee on the need for a self-help program for the province. This was followed by several meetings attended by a number of very competent people. However, attendance was irregular and the group

seemed to have difficulty even coming up with a name, a slogan, or a clear sense of direction. I attended about the fourth such meeting.

It was clear that while the concept was good, what was needed initially was something that would focus the group's attention so that decisions would be made. I suggested a hosted luncheon of a number of Vancouver's movers and shakers.

This set a deadline and forced the group to define a program.

It also spread the word. I had no illusions that many of the group would be available in mid-summer or even be interested. However, the luncheon started to spread the word, people started to volunteer.

The lunch also provided an initial mailing list – another essential technique. The mere fact that a number of senior people in the area had been alerted to this young organization also provided another form of self-discipline. Now people had some of their friends involved and no one wanted to look inept to one's peers.

The next step was to set another deadline – this time a news conference on September 16th.

To ensure that everyone kept together and that progress was made in relatively short time, I scheduled weekly breakfast meetings. This was something I had started the previous year with the united way (some claim that I had contaminated Vancouver with eastern ideas!). Recruiting became a major job. If the group is to have credibility, we had to ensure that the coordinating committee had representation from as many areas as possible, e.g. Labour, business, the media, social services, education and the broad religious community. Labour proved to be the most difficult area, not because of any lack of interest on labour's part, but rather the curious revelation that none of us around the table knew any of the senior labour leaders in the province! It is small wonder that labour relations in the province are not what they could be when most of us simply do not talk to or have lunch with our counterparts in the labour movement.

We set out with the objective of getting everything we needed volunteered to us. We realized that we would have little money as no fund raising campaign had been started. By the news conference, we estimated that we had in excess of \$200,000 worth of services provided to us.

Public relations people quickly became involved. Some saw the idea as a good filler project during a slow period allowing them to keep top flight staff employed and motivated, naturally, they saw the project as being high-profile and a good opportunity to try out new techniques. I mention this because although no personal gain could come to any of the people involved, there was certainly nothing wrong with organizations using this as an opportunity to help themselves through difficult periods.

We involved the media at every step. We ensured that the publishers of the leading newspapers, the major electronic media people and others were kept informed and invited to appropriate meetings.

We produced a pre-news conference press release to show progress and sustain interest while we got ourselves organized.

We produced an extensive press kit complete with a printed brochure. We have even got a Team B.C. song and our first TV spot – all donated!

The technique during this period was Mail, Mail, Mail. This gave the impression of significant activity which indeed was the case. It also gave us the opportunity to thank people. As a technique, thank people as often as you can, you will find the opportunity is invaluable in the voluntary process.

At this point, the whole process reminded me slightly of the Broadway play, ‘How to Succeed in Business’. You may recall the hero laid on a gaudy production (complete with flip charts, audio visuals, etc.) about how great his idea would be. The whole process bogged down, however, when finally some member of the board of directors asked, “but what is your idea?”

This is still a problem. It is difficult to put the right program in place – if it is too little or too soft it will not be perceived as being worthwhile. If it is too much, it will become unbelievable as a commitment for a volunteer organization.

### THE RAFF MAIR SHOW

Talk shows are great, they are free and available on short notice.

I appeared on the show in early August and got a surprising reaction, comments were:

- The first optimistic thing I have heard on radio in a year;
- A breath of fresh air;
- Finally someone is starting a grass roots movement to do something;
- At least with this approach we are not expecting someone else to do something for us.

All I had done was to remind the people of the province how well off they really were relative to most and had noted that although many were unemployed and no one should make light of this problem, over 88% of the population were still employed and the potential for recovery should be better in B.C. than anywhere else. When I pointed out that there is too much reliance on someone else to do our thinking for us, someone agreed and noted that “when you ask a government to do something for you, they likely will do something to you.”

There were certainly some skeptics. I had used the phrase, “you cannot think yourself out of a recession but you can certainly think yourself into one.” When some disagreed, later calls tended to put them down and calls were still coming in more than an hour after I left the show.

### GRASS ROOTS CAN LEAD TO A BRUSH FIRE

To me, this was a frightening process. I began to realize how easy it was to motivate people – almost too easy. It struck me that it would be incredibly simple to start a populist movement which ultimately could have political consequences instead of the truly grass roots self-help movement that was our aim.

I sensed a road to easy power which I found alarming and worried that in the wrong hands could start a dangerous and uncontrollable movement.

Therefore, at the next breakfast meeting I proposed we establish a sunset law. This was done and we agreed to wind up our voluntary efforts on June 30, 1983.

In this way, we could not be considered either a political movement or any threat to any other organization. In fact, we stated that our intention was to work through and with other organizations to promote their programs to provide a sense of forward movement within the province.

As a result of this, cooperation flowed from organizations with approaches as far apart as the social planning and research council, the Vancouver Board of Trade and the Electronic Manufacturers Association.

My ultimate offer of cooperation was made shortly thereafter when I offered the co-chairmanship to Jack Munro.

## THE FUTURE

Only time will tell whether Team B.C. and its program of information, inspiration and instigation will in fact have an impact, and we have very little time.

As we succeed in some areas, and I predict that our initial success will be with community programs, we will encounter increasing criticism. This may be criticism of either the program or the motive.

We will have difficulty sustaining the drive. The volunteer can only be led, never pushed. Public expectations may be too high and this may lead to disappointment.

But despite these obvious future difficulties, the problem we are addressing is real and this will help to sustain the effort as will the defined short time frame during which the effort is required.

Your role as public relations people is vital. Your comments and suggestions, as well as your active input, is essential.

Remember that your power to influence people's thinking and actions is immense. I am sure that you will continue to use it wisely and responsibly, for a discouraged and disillusioned public is a dangerous tool in the wrong hands. Your ability to motivate others in this province can assist in leading us to a period of energetic recovery or could lead to a period of social upheaval.

Naturally, I am optimistic that the program of Team B.C. to promote optimism will succeed. How could it be anything else?

With your help, we will come out of this difficult period with a brighter future than ever before. Together we can *Keep B.C. Moving*.

A talk to the Canadian Public Relations Society Conference, Edmonton, Alberta. June 1976

## *The Computer and Public Relations*

**“Always try to be modest, and be proud of it!”**

The misuse of computers can lead to bad public relations.

This does not have to be the case.

Computers need all the good Public Relations they can get. I know this is not the aspect of computers and Public Relations that you expected me to address. However, I never miss an opportunity to suggest an area of potential profitable business for any of my friends or associates.

Consider the computer’s point of view. It has trouble communicating because it speaks and understands only foreign languages, such as Fortran and Cobol. At best it has a limited English vocabulary. It has little, if any, imagination. Thank heaven, it has no feelings that it has ever let us know about.

People blame nearly everything on the computer. If an invoice is wrong, it is the computer’s fault. If someone sends you the wrong goods, that anonymous clerk on the other end of the telephone will quickly blame the new computer system.

It is time that someone defended these servants of mankind which do so many miserable and menial tasks for us.

My true understanding of the relationship between people and computers began a number of years ago when I was sent by IBM to heal a sick computer system in a large wholesale grocery operation in Ottawa. The system had been set up with a rather complex cross-indexing of the item number of the product with the computer location in which the record about the product was stored.

The index became snarled. The result was a disaster.

For example, grocers in remote locations would order cases of tinned peas and receive frozen artichoke hearts. To fill what appeared to be an incredible new demand for artichoke hearts, we were rapidly trying to corner the entire supply in Canada. The grocers ordered sugar and got salt, toothpaste and got toilet bowl cleaner, etc.

I well remember the head of the organization who understood things very clearly at the macro level, tossing his Annual Report in my lap the day I arrived with a comment that ... “I made a profit last year. I would like to make one this year”.



One of the staff, in a state of complete frustration, was seen pounding the computer with his fists.

There are many such stories of computer disasters, leading to violent human reaction.

A friend of mine, Donn Parker, of the Stanford Research Institute, collects such anecdotes, and advised me that, there are four recorded instances of computers being shot! Fortunately, only one was fatal! The worst mess occurred when someone used a shotgun but the computer continued working - they are perhaps more thick-skinned than we are. The one fatality occurred in Seattle, Washington, when someone shot four times through a plate glass window. I am happy to say the computer died quickly and, I suspect, painlessly.

In any case, the grocers in the Ottawa area are now getting peas when they order peas and are gradually working down their supply of artichoke hearts. I did want to suggest to you that, as well as having a great potential for assisting practitioners in the Public Relations field, the computer has a great need for your services. I know anything you can do would be appreciated by computers everywhere.

## PUBLIC RELATIONS & THE COMPUTER

Your job is communicating. The computer's job is communicating. I am sure you never forget the main purpose of your job. Do not forget that a computer has the same aim.

A computer can be of great assistance, as long as you remember it is only an extension of your own creative abilities in communications.

Let me give you a simple example. In any large retail operation, the billing is computerized. Yet by whom? Not by the Public Relations Department. The Accounting Department normally develops the billing system. Yet accountants have their own PR problem which ranks right up there with that of the computer!

Billing is an important customer communication. Nearly every month a retail organization communicates with each customer by sending out the monthly account. What an opportunity to sell! What a chance for creating a good image! What a horror story it usually is!

The invoice is crammed with such sexy selling words as:

- Previous balance owing
- Minimum acceptable monthly payment
- Penalty for late payment, etc.

When the store has an opportunity to at least remind you of the items you presumably enjoyed buying, they do it with such buoyant terms as:

- Department 764
- Piano Department

Most things you buy in the Piano Department are, in fact, records, tapes, hi-fi sets, or almost anything but pianos.

In a word, most invoicing operations are a Public Relations mess.

Think of the incredible customer profile that a retail organization has in the information stored in its own billing computer. For example, you could easily have the computer pull out all invoices, indicating that a customer had bought a hi-fi set during the last six months. The computer could also check to see that he or she had not returned it! The computer could then generate a personalized note, hoping that the customer was pleased with his purchase and indicating that there would be a record sale next month. An advance catalogue could

be attached with an order form which could be returned with the invoice.

Stuffers are used as part of the billing system but, as there is no analysis of what would likely be successful, many of these are wasted. For example, the person who usually pays the bill is the 'head of the household' (a term borrowed from the Census and one which I doubt has had much Public Relations forethought in this day of uni-sex). I find that most invoice stuffers are for lingerie, cosmetics, or towels - department stores are big on towels. None of these items are likely to be bought by the person who pays the bill.

In summary, here is a superb marketing tool and a captive mailing list, both of which are grossly underutilized.

## COMMUNICATING DIRECTLY WITH THE PUBLIC

Such communications can be verbal or graphic, in print, or directly electronic. The computer can help in all of these.

Consider, once again, the commonly used mailing list. A little imagination could greatly increase the effectiveness of this for Marketing or Public Relations.

Most mailings are impersonal. They are also subject to duplication. The best cure for the first is illustrated by the effective use of personalized letters by the Canadian Government Travel Bureau. These letters not only address the individual by name, but use the name several times in the body of the computer-generated letter. Depending on the information requested, a number of suitable paragraphs can readily be selected and personalized, creating a quite acceptable reply.

This technique is not suitable for all mass mailing, but is very effective for replies to coupons or other sources of known interest.

Duplication of mailings is a real image destroyer. I receive all kinds of requests to subscribe to publications I already get. It is not uncommon to receive three or four copies of the same direct mail solicitation on the same day. Several sophisticated computer techniques have been developed to compare mailing lists and weed out duplications.

With the increasing cost of mailing, it will become more beneficial from a cost benefit standpoint to do this in the future.

Not all direct mail is selling products. Computer-generated personalized mail was used quite successfully during a recent Federal political campaign in a Toronto Riding.

Image building with the help of a computer can be very effective when it is designed with imagination and forethought.

However, let us move on to more imaginative, direct selling. Consider the problem that is being encountered in direct mail catalogues. The recent demise of the Baton's catalogue should lead us to consider a more dynamic electronic approach.

Several years ago, SDL proposed such a catalogue replacement scheme which is commonly called Tele-Shopping. The idea was to use a computer hooked into a cable-TV operation. With two-way communication, it would be possible to utilize a simple, in-the-home terminal, which would allow a potential shopper to call up an index of items, select the particular items in which he or she was interested, and then see a videotape catalogue of what was available.

Unlike the static catalogue, the electronic catalogue would be dynamic. If one were looking for shoes, one could see a variety of styles being modelled, and this would encourage the sale.

When the customer sees the item he wants, he could order it immediately by keying into the terminal the code number, colour, etc. This information would be relayed to the computer which would directly arrange for the shipment.

Associated sales could also be promoted, e.g. if a customer has just ordered women's shoes, the electronic catalogue could suggest a matching purse.

This approach could make catalogue sales very dynamic. A major problem with catalogues, as they are at the moment, is that they are very expensive to produce. Worse than that, distribution is inefficient. They cannot readily be updated. Prices must be established sometimes 10-12 months in advance and, in these days of escalating prices, this may mean that catalogue items are being sold at a loss by the time the order is actually received.

Such an electronic catalogue would also be far more effective than regular advertising. Standard advertising on television violates a fundamental rule of good salesmanship which is to close the sale at the time the sales presentation is made. This would have helped solve John Wanamaker's problem at the turn of the century when he said ... "I know half the money I spend on advertising is wasted but I can never find out which half". There are many other possibilities involving the interaction of the public and the merchandiser through two-way cable communication.

Let us, however, take a look at some other areas of interest...

## COMMUNICATING INDIRECTLY WITH THE PUBLIC

Advertising is still a major means of indirectly influencing the public. It is not new and the problems it faces do not seem to change.

William Caxton was reputed to have published the first ad printed in English in 1477. It was an ad offering some books for sale and was put up in Westminster Abbey. The bottom line was the only part not in English. In Latin, it pleaded: "Please do not tear down".

Samuel Johnson, in the middle of the 18th Century, said:

"The trade of advertising is now so near to perfection that it is not easy to propose any improvement". Perhaps the computer can show the way to some improvement.

The public seldom appreciates the careful analysis behind the media selection. This is a good area to examine for it leads us to another type of assistance the computer can provide - modeling or simulation.

The computer is in one of its most useful modes when it is analyzing large amounts of data and suggesting alternate courses of action.

For example, a computer model can rate the costs of various forms of media, estimate the exposure of the viewing or reading target group by each, rate these by region, etc.

The model can then examine a wide range of alternatives and suggest the most effective choice within the media budget.

These models are becoming more sophisticated, although they may never achieve the success of Samson, who simply took two columns and brought the house down!

Surveys are another common use of computers in the Public Relations field.

For example, I recently received a questionnaire as a follow-up to an RHOP which I had just purchased. There were a great many questions and the analysis, if done manually, would have been quite time consuming. One question was whether or not I presently owned a home in Canada - a bit sneaky I thought! When surveys reach the size and complexity of

Quinquennial Census underway in June, it would be impossible to analyze this data manually.

Furthermore, the types of analyses done by computers are becoming quite sophisticated. For example, ‘cluster analysis’ may be used to pick out similar combinations of attitudes from otherwise quite dissimilar groupings. This would be almost impossible to do manually because of the difficulty of detecting patterns in reply data.

It might be pointed out, once again, that if the In-the-Home interaction with TV becomes more widespread, it would also provide an opportunity for instantaneous public reaction to a wide variety of matters.

Still in the area of simulations or models, a great deal of work has been done in the area of new product acceptance predictions. A recent survey indicated that 80% of the total sales in the grocery business in the United Kingdom was for products that did not exist ten years ago. Predicting the success of new products is vital.

A body of techniques has been developed under the general title ‘Venture Analysis’. A reasonably detailed description is given in an article by M. Christopher, entitled “Computers in Marketing” in the Handbook of Computer Management. In essence, this is the analysis of the expectations of a product’s chances of success in a national launch, taking into account the competitor’s public relations tactics and any variety of other factors. It is really risk analysis aimed at obtaining a desired return on investment.

All of the above examples emphasize the more mathematical uses to which a computer can be put in the areas of Marketing and Public Relations.

We can now turn to some other imaginative uses ...

## THE COMPUTER AND THE IMAGINATION

Names sell products. The story is told of the Three Wise Men bringing gifts to the Infant Jesus. As one of them entered the stable, he bent to duck under a low beam. He hit his head on the beam and exclaimed: “Jesus Christ”. Mary turned to Joseph and said: “There, even that is a better name than Gus!”

Computers are now used extensively to suggest possible names. EXXON is a good example of a computer-selected name. I have a painting in my office by a Canadian artist named NISKA. This is also a computer-selected name. I might add this particular artist knows a great deal about Public Relations. His paintings are completely non-objective and he actually sells them by the square inch. He commissioned a book to be written about him, uses direct mail extensively and, generally, is right with it in terms of contemporary PR techniques.

I might point out that not all work in choosing names and designing logos is successful whether or not computers are involved.

A success story was Eastman’s choice of the name ‘KODAK’, although the reason was apparently not much more sophisticated than the fact that the founder liked the letter ‘K’. An equally famous story with a less joyful ending is that of the new MOBIL OIL logo. Some advertising agency felt that more visual impact would be given to the signs if all the letters were in blue except for the ‘O’ which would be put in red. After untold millions of dollars had been spent changing signs across the country, one ‘little old lady shareholder’ wrote complimenting the President on the new image, but asking why they had not also put the ‘I’ and ‘L’ in red, so that the combined effect would be ‘MOBIL OIL’!

I understand that the Public Relations firm was rapidly changed. This only goes to

prove that you do not need to use computers to mess things up!

An even farther out example of the use of computers is exemplified by the SDL Collection. A couple of years ago, we commissioned a dozen artists around the world to create a special collection of computer-assisted art. This should not be confused with computer graphics where the computer creates a design usually on a plotter and this is the end product. In our case, the computer was used to suggest designs, shapes, and colours to an artist who then rendered these in the form of a painting. I have never seen this used to suggest new logos, carton designs, or other visual impact items, but I believe this could be very effective.

## SUMMARY

More and more the computer is becoming the major link between people and ideas. It is a communications link that those in the Public Relations field cannot ignore.

In a recent survey done by the American Federation of Information Processing Societies and Time magazine, it was revealed that ...

- 49% of the people interviewed at some time had a job requiring contact with a computer.
- 89% agreed that in the future computers will help provide many kinds of information services to us in our homes.
- 65% agreed that computers are helping to raise the standard of living.
- 87% agreed that we can do many things that would be impossible without computers.

I believe it is important that Public Relations people be involved at the early stage in the design of any new systems that will affect the image of an organization.

The computer can add richness and flexibility to our futures, or it can be thought of as nothing more than a big bookkeeping machine.

You are the professionals to whom organizations turn for imaginative solutions to problems. The choice of how effective computers will be in image creation is largely yours.

A talk to the Sales & Marketing Executives of Vancouver. September 18, 1980

## Marketing Through New Technology

### “We are all salesmen now.”

We are all selling something all the time, whether it is an idea to investors or convincing the dog it is time to go for a walk. This paper looks at the many ways that computers can help in marketing of all types.

Lord Acton made the comment about seventy years ago that, “We are all Socialists now.” I expect that today he would have changed that to say we are all salesmen now.

Today we are selling all the time. This is true whether we are professional sales and marketing people or even non-marketing executives endeavouring to sell our ideas farther up the line. The process is all the same. What we are trying to do is constantly improve our ‘close’ rate – this is the only aim of salesmanship. The process is simple; you assess the customer’s real desires, i.e. make the sale easy; you tailor your pitch; you close before the customer changes his or her mind.

When you look at much of the current media marketing, either there is not much opportunity to really analyze the customer’s desire, or there is no chance to close the sale once the pitch has been made. There are attempts to do this, e.g. with coupons or other devices to allow the client to make an instant decision, but the return rates indicate that the success ratio is not as high as one would like. They still require the client writing out an address, possibly finding a stamp, addressing an envelope, and certainly require him or her walking to the post box.

Think of how much more effective advertising would be if:

- The client could select on a TV set just the ads he wanted to see. In this case there is no problem in assessing the client’s real desires. He or she is already partly pre-sold.
- The potential customer views only advertising relevant to his or her interests. The pitch is effectively already tailored.
- The client can buy the moment he sees what he actually wants to purchase. The ‘close’ immediately follows the pitch, much as is done in face-to-face selling which is so effective.

It can be done. The process is called “teleshopping”.

### For Better or For Worse



## TELESHOPPING

I was asked to talk about Marketing Through the Media and Marketing the Media. Teleshopping is an example of the former. Consider first the more traditional method of in-the-home marketing. Mail order catalogues or flyers are printed. These are proving to be increasingly expensive. They are very un-selective in terms of the audience, although, of course, attempts are made to send catalogues only to those who have ordered before, or to distribute flyers only in districts likely to buy the product. They are hand delivered, and with postal disruptions this will become even more difficult in the future. They make use of a scarce national resource, i.e. paper. They become out of date quite rapidly, particularly in the area of pricing.

It is not uncommon to have large catalogues going to the printers months in advance of mailing. In inflationary times, prices can be out of date before the catalogue is in the hands of the consumer.

Catalogues are also far too easily thrown out. We all remember the supposed use of the old Eaton's catalogues in rural communities!

In some forms of direct mail no credit check is immediately available. This leads to requirements for prepayment, COD, or the use of an established credit card. These may be further deterrents to a sale.

It is not easy to have associated sales, i.e. there is no on-the-spot salesman to remind people if they bought a camera they should also be looking at a slide projector or whatever. The location of related items in the catalogue, of course helps.

Finally, it is very hard to create new demand by coupling the static picture of the item with a dynamic demonstration of how the item could be used.

Teleshopping corrects many, if not all, of these shortcomings. What it presents is an electronic catalogue with the possibility of immediate interaction by the customer.

I am sure the general approach is well known to you. In its simplest form still frames would be projected in the TV set at specified times so the client could watch when shoes are being advertised by various companies. In this primitive form of teleshopping, the response could even be given by telephone when a particular item is desired.

This, in fact, is only marginally better than a catalogue but at least has the opportunity of comparative shopping and being up-to-date. A more sophisticated method, which would require two-way cable, would enable a customer to indicate on a key pad attached to his set the item number, quantity, etc. for a desired item. If the key pad were replaced by an alpha-numeric terminal, the client could also key in specific instructions, e.g. deliver Thursday or leave on the back porch.

In either of the first two examples, automatic credit checking could be arranged and, in the latter case, automatic debiting of the account would be quite straight forward, (like the T.D.'s new "Green Machine").

A further sophistication would be to allow the client to use his terminal to select from a menu of possible sales categories the one in which he or she may be interested. Then, selectively, only those frames are shown to the client. This allows the potential customer to shop at his or her leisure. And this meets another of my early criteria for allowing the customer to essentially sell himself.

All the above are quite feasible with today's technology. With sufficient channel capacity,

however, and the advent of much more sophisticated storage devices, the use of full film clips might be considered. For example, if a client were interested in a hand saw, he could request not just a still picture but a presentation looking like a regular ad from each of various companies, and then make the selection of the best price and model available. These pitches would be short demonstrations of how the saw meets the client's needs.

With this kind of video rather than the still frame approach, associated sales could be promoted, e.g. the client could get a demonstration of how the purchase of a mitre box would make his saw much more useful.

This latter form of in-the-home shopping will likely still be some time away because this requires much greater bandwidth into each individual home as well as the trunks of the system. It is relatively easy to have, say, ten thousand frames of teleshopping information circulating on one channel and the client can pick off the ones of interest. A full video pitch, unfortunately, requires a full video channel during the time that it is transmitted.

To date, I have promoted this process as though it were the answer to everything. There are still some problems to be solved. Those of you who have tried to use a tree structure to access information from a Prestel or Telidon-like system would quickly realise that this can be a frustration. It is somewhat akin to using the Yellow Pages when you do not know exactly under which category your item is listed. In fact, Prestel in the United Kingdom, which has had a couple of years advance experience over Telidon, uses a directory, i.e. a printed catalogue, allowing you to go directly to particular items rather than examining broad categories and gradually narrowing down the area of interest.

Another concern people have is protection against misuse. Naturally, a password or account number would have to be supplied for direct ordering, thus discouraging the children from playing with the device. Most terminals will also have a key which can lock the device out of use.

Finally, the ultimate system would include a home printer. There are already a number of thermal or electronic printers available that could do the job. It would certainly be handy to get a printed confirmation of your order, or your theatre ticket, or your restaurant reservations, or whatever. The alternative would be to have the confirmation mailed to you or your theatre ticket picked up at the box office at performance time.

## THE ELECTRONIC RETAILER

This whole approach of teleshopping really allows the retailer to provide electronic shelf space for all kinds of marketing possibilities. Consider just some of the following:

### *Want Ad Replacement*

Think of the waste of paper and space if you have a relatively unique product to sell and are trying to match this with a buyer. If you could input your ad electronically and have a computer search for a match, the process would be much more efficient. (To a limited degree, cable companies already do this through the medium of swap meets, although no computer is involved here.)

### *Real Estate*

If such selling would be effective for miscellaneous items, it would certainly be effective for real estate. We have already proposed to the CRTC a real estate channel. At the moment this is also somewhat primitive as it requires the agent to call the office and ask for the display of

homes in a certain area and a certain price range. However, it is a great step forward as full colour pictures are available and the information is constantly up-to-date. The client can obviously review many homes sitting in the agent's office without the wasted time of driving around the city. You can imagine how much more effective this can be if one could have a videotape tour of a house without ever leaving the real estate office, or possibly without ever leaving one's home.

#### *Travel*

Without going into details, you could quickly see the advantages of selling travel this way. A travelogue could be shown, followed immediately by the various competitive packages to that particular location. The client could make instant reservations.

#### *Menu Selection*

There would be no reason why we could not sophisticate the current comparative shopping packages by letting the client choose a menu and then have the computer come up with where to buy the various components of the meal at the lowest total cost.

#### *Stock Market*

At the present time all we do is provide the stock market listings. Needless to say, a client from his or her home could easily order shares by a terminal, allowing quick reaction to short trends.

#### *Tele-bidding*

The same approach could be used for an auction. Clients, from the comfort of their home, could watch items being offered and make competitive bids by terminal.

#### *Lotteries*

Instant lotteries could be used in association with the sales along the Reader's Digest line, but with immediate client interaction.

These are only a few ideas just to get you thinking about the possibilities. Clearly, tele-polls could be conducted and are already. Marketers could get instant reaction to planned new products. Interactive surveys on the effectiveness of advertising could be taken.

We should not forget the use of audio. In addition to the video presentation, one could have a pre-recorded audio side band to add the human touch.

Finally, there are advanced concepts, such as the tele-mag approach. People have often asked what we would do with a hundred or more channels. The answer is to narrow-cast to select audiences both programming material and advertising that would appeal to their particular interests. The concept is much like that of a magazine. Special channels could be established for boating, bridge, gardening, or whatever other interests people may have. They would subscribe to the channel, but the channel would also be supported by tailored advertising. Such advertising would be very effective because it would only be viewed by those who are obviously interested in buying new brass fittings for their boat, for example.

## MARKETING THE MEDIA

I have not left much time for the discussion of marketing the media itself. This is just as big a topic.

Consider for example how the cable capability can become a service in itself. We are already developing in-the-home security services, where the cable is an integral part of providing medical, fire and police burglary protection services. Home monitoring services

are already becoming part of this approach to using the cable as its own product.

I could go on and talk about the advantages of electronic mail, interactive in-the-home computer operations, and similar services, but I will leave some of this for discussion. I believe it is more important to look at the reality of all the “gee wiz” items we have been discussing.

#### WHERE ARE WE NOW?

Technically, all of the above is possible. In fact, it is closer than any time since the early 70’s when I and others first started talking about these possibilities. The hold-up so far has been the regulatory environment more than anything else.

I am optimistic, however, that with the recent decision to allow CCL and Premier to merge, the CRTC was effectively saying that they accepted the concept that cable would and could be used for many of these new services. There is still no guarantee that we will be allowed to proceed, but we made as part of our pitch to them a commitment to spend millions of dollars over the next few years in research and development, much of it in the Vancouver area, and included a commitment to experiment with many of the concepts I have been outlining.

We are therefore committed to give this a try. This leads me to my conclusion.

There is no point in my simply outlining to you all the myriad possibilities. You, as the Sales and Marketing Executives, are the ones who are going to have to make the system work. We will be essentially only the retailers of the kinds of things you want to have done. The main advantage of a meeting such as this is that it will now allow us to get into a meaningful discussion of what you really view as the future potential for this fascinating new electronic media.

A panel presentation to the Canadian Bar Association, Ottawa. September 3, 1969

## *Can the Administration of Justice be Programmed?*

**“Ninety-nine per cent of lawyers give the rest a bad name.”**

Over 35 years ago, it was obvious that computers could make a major impact on the administration of justice. This paper outlines some of the ways this could be brought about.

The principle of using computers to assist the legal profession is no longer questioned. In fact, there are so many areas in which computers are used in the aid of justice that it is easy to overlook some of the more important and more imaginative areas.

Much of the work to date has involved the use of computers in legal information retrieval. This area is reasonably well advanced and will be the subject of the talks of other speakers.

I felt it would be more useful to review some of the frontier areas with a view to stimulating further investigation of the use of computers.

I don't pretend to be an expert in these areas, nor do I claim that all of the uses referenced will in the long run prove to be equally fruitful. This is for you to decide.

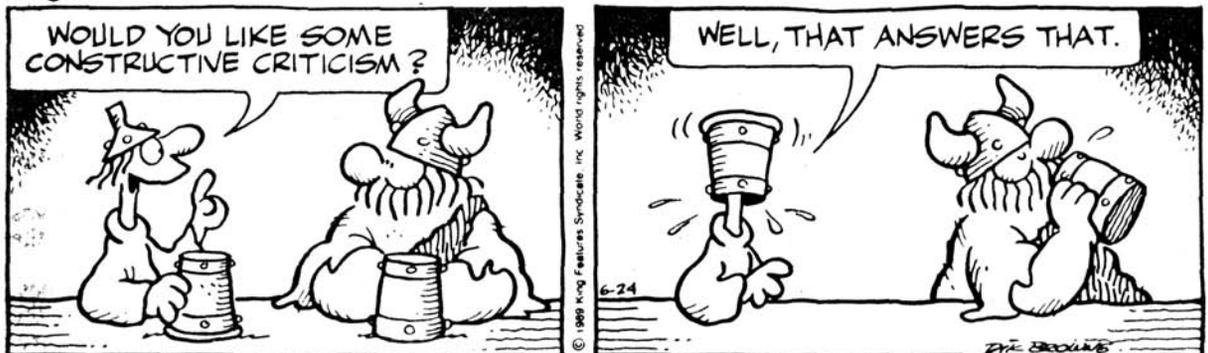
Justice Douglas said, in 1948, “The law is not a series of calculating machines where answers come tumbling out when the right levers are pushed”. However, in 1964, the Justice recanted somewhat, and said, “that he does not mind if computers are used to help make decisions, just so long as he gets to push the buttons”.

Justice Douglas had correctly recognized that the success of the use of computers to assist the legal profession will depend on the involvement of lawyers in this process. With that in mind, let us now survey the field.

### 1. Collecting the Evidence

It is often forgotten that computers start to assist the cause of justice long before a case reaches court. Computers are used in some unusual ways for crime prevention.

### Hagar



For example, considerable work has been done on the division of police districts into patrol beats. Standard techniques of operations research are used to analyze the number of police required per 1,000 population (4), how the manpower should be allocated according to level of crime by type of district, what areas are best patrolled by car, on foot, or on scooter patrol, as well as the long-range manpower planning. One of the problems this type of analysis introduces is the necessity of being able to refer to small areas of the city. This normally involves a form of geo-coding such as being undertaken by the Dominion Bureau of Statistics and others, to assist in census taking in large cities.

(Saul I. Gass, IBM Federal Systems Division, ACM Proceedings, 23rd National Conference, page 459.)

This application is only one example of the use of the technique of computer simulation in a narrow aspect of police work. The problem facing North America was graphically pointed out in Edgar J. Hoover's recently released *Statistics on Crime in the United States*. Last year, the chance of an individual being the object of some attack on the person, e.g. robbery, assault, rape, etc. was one in fifty. Today's police force cannot come close to coping with this situation without modern techniques to help optimize their war on crime.

Another example of a common computer application to assist the police is in the maintaining and searching of a modus operandi file. The M.O. file is built up by recording on a standard code sheet, the particulars of the crime as to:

- Time of attack, e.g. funeral, weekend, holiday
- Object of attack, e.g. auto accessories, cameras, cash registers, etc.
- Type of property attacked, e.g. airplane, auto, boat, church, school
- How attacked, e.g. breaks glass, cuts glass, etc.
- Trademark, e.g. ate on premises, barefoot, etc.
- Vehicle used, e.g. stolen auto, rented car, etc.

These facts, stored in a computer, are then searched to establish a list of suspects for an unsolved crime, to determine that a series of crimes may have been committed by an individual arrested for one particular crime or to determine that a series of unsolved crimes appear to have been committed by the same unknown criminal thus guiding future investigation of the crimes.

(Thomas H. Giske, IBM Sacramento, *Computers and Automation*, February 1963.)

It is interesting to note that extensive work in this area is being done in other countries including the Soviet Union. An article in *Cybernetics and Law*, Moscow 1967, the Russians report considerable work in the study of handwriting for the apprehension of criminals. This is used to buttress expert opinion. Other uses under study by the Russians include analysis pointing to similarity in prose.

The Russians, like ourselves, are doing considerable work in the area of fingerprint analysis on computers, as well as the comparative analysis of photographs of faces. One might suspect here that such investigations have more to do with an individual dossier intelligent system than crime control in our sense of the word.

The reason for mentioning this area is that it does point up another frontier computer application in criminology and that is 'pattern recognition'.

We should reference in passing, that computers are used extensively in other police administrative matters, such as motor vehicle licence registration. The mere availability of such

masses of information on computers, does assist greatly in the prediction and apprehension of criminals. I have no doubt that one of the other speakers will reference the problems of privacy when data banks of such information are established about individuals.

One could go on to speculate that even such things as traffic control systems, which are now computerized in Toronto and elsewhere, could be used to assist in apprehending criminals, although I know of no instance of this being done to date. Computers are certainly used in this area for accident prevention.

#### *SUMMARY*

- In general, then, the major computer techniques used to assist police are simulation, pattern recognition and information retrieval.

### 2. Analyzing the Evidence

Having decided to bring the action to court, there is the problem of putting together and assessing the mass of evidence necessary to make a good case. Once again, computers can be of assistance.

Some civil cases involve masses of data which must be correlated and be available for retrieval before and during the court presentation. A recent example was the Peace River Dam lawsuit in British Columbia. Mr. Justice J.A. Macdonald of the Supreme Court said that thousands of documents will be involved, including 3,600 construction drawings, 60 volumes of letters, and large numbers of memos and photographs. Douglas Brown, counsel for prosecution against BC Hydro, said that a computer will be used to sort out the documents - the first such use in Canadian legal history, to his knowledge. (Vancouver Province - June 12, 1969.)

Once the evidence is assembled, however, it should be possible to use computers to assist in assessing the logic and consistency of evidence. In fact, this field of jurimetrics, because of its use of symbolic logic, lends itself very well to the use of computers. P. Meyer, in the Canadian Bar Review, March 1966, reviewed some of the techniques. In general, it should be possible, in complex cases, to use a computer to sort and sift information to determine the correctness of time sequences, the consistency of alibis, and other such uses, particularly where court cases drag on over many months with massive amounts of testimony.

#### *SUMMARY*

- The use of computers in this area involves the more standard techniques of data retrieval and data manipulation.

### 3. Predicting What Will Happen

Leaving aside, for the moment, the obvious use of computers to search for legal precedents, there has been some preliminary work done on the use of computers to predict judges' decisions. Reed C. Lawler, a Los Angeles patent attorney, has been working for almost ten years in an effort to describe some phases of the judicial decision making process by means of mathematical formula. Much of this work was done studying appellate court decisions in a project with the University of Southern California Law Centre.

Lawler hastens to point out that computers will never replace judges in handing down decisions. The work of people in this field has given rise to speculation that if you could always predict a judge's decision, eventually you do not need the judge.

Miss Sally Dennis of IBM, pointed out in the January 1968 issue of *Law and Computer Technology* that judges should be complimented rather than alarmed. At least this indicates that judges' decisions are sufficiently consistent that some prediction should be possible.

A judge's attitudes tend to program him in somewhat the way one programs a computer. Lawler's approach is to reduce the pattern of facts to mathematical formula and then match these against the pattern of facts of previous cases decided by that judge. He proceeds on the assumption that every fact is favourable to either a positive or negative answer to the issue posed in the case. The fact pattern is then reduced to a string of binary ones and zeros.

I make no attempt to assess what Lawler calls 'Personal Stare Decisis' where simple precedent is replaced by the judge's decision-making patterns.

It is interesting to speculate, however, that the use of such techniques in advance of a case reaching a particular judge might cause a lawyer to advise his client whether to proceed with the litigation. (*Law and Computer Technology*, May 1968, page 11)

#### *SUMMARY*

- Here the use of the computer's logical ability is the major technique.

#### 4. Creating the Law

Computers can be used in a variety of ways to assist legislators in creating the law. Some of these techniques are very straightforward.

For example, a modern legislature would be hard-put to handle the mass of law that must be handled in a single session without the assistance of a computer. (Although most Canadian legislative bodies are endeavouring to handle the workload manually.) For example, there were 26,566 bills and resolutions introduced before the 89th Congress in the United States. These bills went through innumerable references to committees, readings on the floor of either House, changes and alterations, etc. Of this number of bills, 4,016 were passed into law. (This can be contrasted to 118 bills passed by the first Congress of the United States.)

It is proposed that for the U.S. Congress, computers will be used to give:

- Status of pending legislation
- Current schedule of committee meetings and hearings
- Even an up-to-date telephone listing

An analysis of the needs of Congressmen showed that 78% considered their major problem to be "complexity of decision making and lack of information".

Vice President Humphrey commented that "few groups of men and women in the world need more, better, or more varied information than the 535 elected Representatives and Senators. Congress' committees and subcommittees and members need push-button, preferably display type access to specialized banks of information. Each major bank should serve the interested committee - agriculture, appropriations, armed services, banking and currency, foreign relations, interior, etc."

Specific examples of the use of computers in keeping track of legislation would be the Florida State Legislature which uses an RCA Spectra 70 Model 45. Here, over 5,000 bills are introduced annually and over 4,000 questions a day are asked on their status. Information is displayed on cathode ray tubes.

Having used a computer to be able to retrieve and keep track of legislation, it is also possible to use the computer to analyze the consistency of legislation. For example, it would

be possible to use the computer to ensure that everywhere an idea is referred to in a bill, the same words are used to describe it. This process, incidentally, could be helpful to translators to ensure the consistency of translations.

Needless to say, computers are already being used in a limited way to examine the consistency of treaties. For example, at Stanford University, the full text of 5,000 U.N. treaties in the U.N. treaty series, has been put on computers and experiments are in progress to see how many of these contain clauses contrary to the United Nations Charter.

No doubt, such analyses could also point out inconsistencies between Federal and Provincial legislation much in the way life insurance companies have analyzed their own policies to determine where clauses unnecessarily overlap.

One mundane way in which computers can assist the legislative process follows from the legislative production control system. Obviously, many changes are made to bills in the course of their consideration and a great deal of time can be wasted in retyping and proofreading. The Oregon State Legislature, which has one of the more advanced systems in the United States, claims that 60% of the typing and proofreading time has been saved by automating the retrieval, alteration and reprinting of legislation.

Needless to say, many of the current legal information retrieval systems have as their end product an automatic typesetting function. Characteristic of this approach would be the Linotron used in the U.S. Government Printing Office. Here a typical 8" x 10½" page can be typeset in five or six seconds directly from a magnetic tape containing the latest draft of the item in question.

#### *SUMMARY*

- Here computers assist legislators through production control techniques similar to those used in a manufacturing operation and through the use of the automatic typesetting functions now commonly used by newspapers.

### 5. Implementing the Law

This field is so broad that one can do little more than reference some of the major areas. For example, the law is often implemented directly by a computer. An example of this would be the computerization of income tax assessments, as carried out by the Department of National Revenue, and the IRS.

Other speakers are going to address such uses of computers as the search for legal precedents, and the retrieval of land records.

It should be noted, however, that a corollary of this type of work is that computers can be used in a wide variety of fields such as title searches, patent investigations, trademark research, etc. Many of these fields are in their infancy despite a great deal of work expended on them. For example, well-defined areas of patent searching can be computerized fairly readily. An example of this could be the computerizing of searches in the steroid chemical field, where the chemical bonds can be fairly easily defined and related products determined. In other areas, the computer may, at best be able to assist in suggesting items that might otherwise have been overlooked.

In the areas of trademarks, the barrier to good computer utilization will be in the classification of shapes, colours, and sizes. Here again, pattern recognition may ultimately assist in this area.

An application such as company name searching could be greatly assisted by computers,

although more sophisticated techniques would involve a SOUNDEX or AUTOPIC approach to ensure that names were retrieved that sounded similar as well as appeared similar.

### *SUMMARY*

- The techniques in this area involve the computer's ability to match data.

## 6. Assisting the Courts

Once again, the technique of computer simulation can come to the assistance of the legal profession in one of its major current problems. In the Daily News Record of New York, June 17, 1969, it was noted that computers are now being used to clear the jam-ups in U.S. courts. Some long-held theories of what slows the court system have been shown to be untrue.

For example, in 1959, 62,000 cases were disposed of by the Federal Courts. In 1964, there had been 63 new judges added, i.e. about a 25% increase in judge-power. However, the case termination rate had increased by only 3%.

It had always been assumed that the turtle-like movement of courts was a result of a lack of judges, court personnel, or too few courtrooms.

The General Purpose Systems Simulator (GPSS) was used to establish a model of the criminal justice system. This model could:

1. Identify where the systems costs are expended, i.e. it provided a cost accounting by type of crime.
2. Provide an estimate of workloads and personnel and facility requirements based on projections of future crime and arrest rates.
3. Test the consequences of reallocation of resources within the system, i.e. by putting more resources so the courts can speed trial, the costs of pre-trial detention can be reduced. (Naturally, there are other side benefits to this.)
4. The model permitted an examination of crimes committed and suggested solutions.

The model quickly disclosed bottlenecks in the U.S. system. For example, it showed that the U.S. Commissioner was being used in only 25% of the cases allocated for preliminary investigations. In contrast, the alternative routine for preliminary processing, the U.S. branch of the Court of General Sessions was being used to 90% of its capacity, thus forming a bottleneck.

The run also suggested that a bottleneck existed in the Grand Jury section and an increase in capacity in this process would eliminate some three weeks' delay in many cases.

It is interesting to note the type of information put into such a model. The actual data came from the District of Columbia Adult Felony cases. In 1965, there were 6,300 persons arrested in D.C. on a felony charge. Two-thirds of these did not reach the stage of a formal felony charge. Instead, the charge was reduced to a misdemeanor or the prosecution simply dropped the case. About 2,000 were held for Grand Jury action. The Grand Jury voted an indictment for 80% of these cases. The 1,600 adults were arraigned in a district court on a formal felony charge. In trial court, approximately 55% pleaded guilty, 15% were dismissed and the remainder (less than 500 went to trial). Measured from the time of initial presentment, 50% of the trial cases took more than six months to disposition and even in the non-trial cases, 50% took more than five months.

This was a very simple model but with that type of information, a model could be constructed showing the stages and delays in the process.

In general, the computer-based cost effectiveness analysis of our system of justice can help in both improving the effectiveness of policy work and court work while reducing the cost. For example, a study in Los Angeles showed the improbability of apprehension of a criminal (less than 12%) when the suspect is neither apprehended at the scene of the crime nor known to the victim. This indicated that much police work was being wasted where there was almost no chance of capture in certain types of crimes.

#### *SUMMARY*

- Once again, simulation on computers can greatly assist the legal profession.

#### FINAL SUMMARY

I have tried to review many of the computer techniques that can be applied to the field of justice. It would be incorrect to imply that the development in all of these fields had reached the same level. However, two conclusions can be drawn from this review.

1. Computers are logic machines. The law is based on logic. Therefore, computers should find a place in every aspect of legal work.

2. Lawyers know their own problems and can undoubtedly suggest many other areas where computers could assist in their work. We, in the computer field, are most anxious to expand the frontiers of this new field of legal data processing.

It has often been noted that the computer is essentially an extension of man's mind to cope with the vast storage, retrieval, and logical operations necessary in a complex world. The use of computers in the legal field will only progress with the active participation of the legal minds that computers are intended to extend.

A talk to the Canadian Institute of Travel Counsellors of Ontario. November 21, 1994

## *Agents of Change*

**“Change is inevitable, except for vending machines.”**

Computers and the Internet are making a major change in the way people do work.  
If you have the term ‘agent’ in your job description, watch out.

I understand that the CITC is primarily an association of Travel Agents. A friend of mine Don Tapscott, author of the *“Paradigm Shift”*, recently noted that if you have the term ‘Agent’ in your job description, you are likely in deep trouble. Whether you are a Life Insurance Agent, a Real Estate Agent, a Manufacturer’s Agent, or a Travel Agent, the new technology could squeeze you out of a job. Individuals working with their modem-equipped PCs can shop their insurance directly, pre-screen houses in particular areas in which they are interested, order virtually anything they wish directly from manufacturers and with OAG on-line can of course book flights, hotels or other services directly.

Major on-line services such as Comp-U-Card will shop the world for about 250,000 items and will do comparative shopping to get the CUC member the best deal. The current real estate channels are primitive as they just list available properties with pictures. However, the interactive channels on the horizon will allow the perspective buyer to specify the type of house, price range, location or any other parameters and have a data bank scanned for them on their home PC. Full motion video tours of the property would be available leaving the real estate agent with little to do but negotiate the final deal.

Travel Agents are vulnerable to the same multimedia technology.

However, my theme is basic. If you see new technology as a threat, it will be! New technology can either threaten your business or your job, or it can offer unbelievable opportunities.

Like most changes, the name of the game is to *“capitalize on the inevitable”*. In a word you can exploit the opportunities by getting out in front of the trends.

Furthermore, you will enjoy the process. As David Leadbetter, the pre-eminent golf teacher in the world, always points out ‘mind set is everything’. If you look at technology as your partner in new opportunities you will be amazed at the results. Hence the topic of this talk is how you can become not just travel agents but AGENTS OF CHANGE.



**“I think you’ll find, Sir, our brochure says ‘safe beach.’ You must have gone into the water.”**

## HIGH TECH TRAVEL

The Information Superhighway is a way of having a presence wherever you wish without having to physically move. I recently counselled corporate travel managers at the Canadian Business Travel Association meeting, that they had better reconsider the role of their position as internal travel consultants. The new technology means that they will no longer be required to book reservations but rather to advise executives on the optimum way of meeting their communications needs.

For example, if video conferencing is on the upswing, the internal communications consultant should be promoting this.

If executives travel to conventions to see new products, why can't most of this information not be brought to them electronically? When you can easily accommodate an entire encyclopedia or the complete Oxford dictionary on a single CD ROM, it is logical that most of the information you could pick up at a convention could easily be viewed on your PC.

If deals need to be cut much of this could be done through teleconferencing and video phones (*although, I will admit the latter needs some work*).

The trend leading to all of this capability is the falling cost of telecommunications that is now following the declining cost of computer cycles. The advent of multi-transnational fibre optic systems is dramatically reducing the cost of telecom. The digitization of everything from voice communications to video, to graphics, to still pictures and text combined with dramatic data compression, will mean that the cost of communications, together with the cost of computer power should be almost free in the decades to come.

This is tough competition for the travel industry.

Just look at the dramatic changes that are reducing the need for travel.

- In the past couple of years fax traffic has exceeded voice traffic on trans oceanic communications. It is marvellous because it gets around time changes and allows you to send messages anywhere in the world twenty-four hours a day.
- Voicemail has been even more revolutionary. I regularly make calls on weekends or at night, knowing that I will not reach the person. I simply leave them a voicemail message. This vastly expands my productivity and is another reason why I do not travel as much as I used to.
- I used to travel a great deal to give direct talks to employees. When this became unwieldy because of the number of offices I would have to cover, I moved to video-taped fireside chats. These are not ideal as they are one way and more and more we are using video conferencing to accomplish the same thing.
- Just look at what has happened with Internet. There are perhaps 25 million people now hooked up on this network of networks to exchange ideas, retrieve information or simply electronically to get to know other people better.
- As noted in the Globe & Mail the other day, more and more individuals are now making their own travel arrangements where needed, by booking these directly through PCs or lap tops.

Just look at all this for minimal cost and no jet lag! We all know that travel is the third largest controllable expense a corporation has. I was advising internal travel consultants to provide a real service to their organizations by reducing the need for travel. Had you known this you probably would not have invited me here today to try to cheer you up!

However, let's look at how to make the technology a friend rather than a threat.

### PEOPLE WILL STILL TRAVEL

Believe me, the reasons that people travel, even on business, are only somewhat related to the business of doing business. Business people like to socialize - share a good meal, have a drink, talk in a relaxed atmosphere.

If they are even more honest, they will likely admit they travel to:

- Get away from the kids, the boss or possibly their spouses.
- Fit in a game of golf.
- Expand their horizons by seeing some new place.

I can assure you that nothing I have seen in the field of Virtual Reality is going to change this in the near future! But now Travel Agents are going to have to be more innovative in the field of micromarketing - knowing in advance what your customer will likely want based on past requests and being able to communicate to him or her at their desk or in their homes. Bear in mind that fewer and fewer people are going to be working in offices and be directly associated with corporations. More individuals will be working for multiple organizations from their homes. Travel Agents are going to have to utilize the best in the new technology to be able to communicate with them.

You can of course use the new technology to your advantage. The data banks of information that can readily be accumulated on individuals should allow you to bring to their attention new travel possibilities. The other day John Evans, President and CEO of New Electronic Data gave a demonstration of his TAXI system. This is a sophisticated PC based program that provides a guide (Marilyn for Men and Bob for Women!) to discuss a city and its amenities. A map is then displayed allowing the potential traveller to pick a hotel according to his or her specifications, be advised of restaurants in the area that might appeal to their previously known tastes and even indicate the routes to major attractions.

The individual can actually book any of these facilities and could even select a meal if they wish, as there is no problem in displaying the menu. For example, if you were going to Dallas, the menu for the Mansion on Turtle Creek, could be displayed or the meal pre-ordered.

The same would apply for theatre tickets, fitness clubs, or any other amenities the customer may want (*well, almost anything!*).

As Travel Agents, you could easily put together a full package for the client, tailored directly to his or her interests. You would be selling the sizzle directly to the client.

There is almost no end to the ingenuity you could provide. For example, when a client wishes to book a hotel room, there could actually be a full motion video or a still picture of the room, the view from the window, or the banquet facilities, or the pool.

In effect, multimedia becomes a great selling tool. However, Travel Agents are going to have to be aggressive in using the technology. More and more, you will be selling in competition with increasingly impressive local alternatives. For example, we all know that Toronto is the world's most cosmopolitan and multi-cultural city. More and more, the world is coming to us, in terms of variety of food, cultural events and even travel documentaries. A video on The Learning Channel, on say the architecture of Notre Dame, is far more informative than an actual visit. It may not be as much fun as sitting in a Paris cafe but video travel is certainly one strong competitor.

## THE NEW TRAVEL AGENT

I was advised that the commission earned by Travel Agents when averaged over hotels, airlines and car rentals is about 9%. Someone also noted that it costs about 7.5% on revenue to run an agency. Your margins look something like those in the grocery business!

But then come to think of it, this is exactly what you would expect because you are delivering a largely undifferentiated product. You all deal with the same suppliers and you all access them over the same reservation systems.

About the only way you can increase the margins is through volume incentives from suppliers and this would seem to mean that only the very large agents will survive. I have heard predictions that by the end of the decade there will likely only be about five very large agencies in Canada plus a smattering of the ethnics serving particular cultural communities who are able to survive on very low margins.

One only has to look at Thomas Cook taking over Marlin and then in turn having their business travel operation taken over by American Express, all within about twelve months.

So how do you make the new technology work for you?

There is a case to be made that even if people are booking directly via PC, Travel Agents could provide volume incentives to individuals that might be lost if bookings are made directly in an uncoordinated fashion.

However, I believe that the real value added will come from up-to-date on-site experience which the agent can pass on to the traveller. I would predict that the major surviving Travel Agents will use the Information Superhighway to connect the traveller directly with highly informed regional offices e.g. the Singapore desk. All of the multimedia capabilities I discussed earlier could be made available supplemented by current comments on conditions or opportunities in that city.

If you have ever tried to book on Intourist, in Russia, as I recently did you will understand the value of such service and the frustration of trying to book direct.

I also believe the Travel Agents can sell a service of shopping for the best deals. Perhaps one of the greatest irritations of the business or pleasure traveller is the feeling that he or she is not getting the best or even a reasonable deal for a seat on a plane or a hotel room. You feel somewhat cheated when you read in travel magazines that if you just ask you can probably get a lower rate at a hotel for example because they are under-booked. Just imagine the positive impact if your Travel Agent could check this out and offer the best available rate to regular customers.

To use the new technology effectively, you will have to consider yourselves to be in the information business rather than the travel business, i.e. you have to add real value by being able to supply more and better information about travel facilities than the user could obtain directly without a lot of comparative shopping or time consuming scanning of multiple alternatives.

Regardless of the ‘gee-whiz’ possibilities that technology offers, what you must do to remain an effective Agent is to own information about your clients and to match that with information not readily available to the client. Fortunately, such information changes all the time (how often recently do you call a hotel and say “Are you still a Four Seasons?”). Therefore you have an opportunity to become not just a Travel Agent but an AGENT OF CHANGE.

A talk at College Canada '76, the Annual Meeting of the Association of Canadian Community Colleges, Ottawa. November 15, 1976

## *The Next Decade: the Impact of Computers and Education:*

**“If it works, it’s obsolete.”**

*Marshall McLuhan*

This is an early examination of the impact of computers on the education process pushing the idea that we have to do more than just educate youth for the future but also about the future.

Instant communication leads to instant reaction. Attitudes can change overnight as a result of a single TV program. The public is flooded with opinions and facts. The opinions may be in error and the facts may be wrong. The flood continues.

We are in an era of information pollution without the value systems needed to assess this flow of data.

In such an age, overreaction to instant information is common. This process is stimulated by governments at all levels, trying to react to public whims rather than leading. This leadership could be shown by requiring a long-range look at the consequences of today’s actions. This rarely happens.

This overreaction is nowhere more prevalent or dangerous than in the field of Education. The recent swings in public opinion regarding Education are well-documented - the North American concern about the technology lag in the ‘Post Sputnik period’, the resultant panic expansion of the Education system followed by a growing concern about the cost of the whole process. The expenditures in Canada rose from \$2 billion a year in the early 60’s to over \$12 billion today. This represents about one-third of the total budget in each of the provinces.

The current overreaction to this budgetary situation could be a disastrous course for Canada. Few would doubt that a re-thinking and reallocation of expenditures is necessary. However, any drastic cuts in total expenditure that would reduce the quality of Education in Canada could have serious consequences.

The reason - a changing population pattern.

### **PORTERFIELD**



It doesn't look good and it doesn't look bad...  
What we're trying to say is...  
We don't understand.

## OUR DEMOGRAPHIC FUTURE

The educational system has had to cope with a steady growth in student population during the past decades. We all know that the population in the 18-24 year age group will peak in approximately 1980 at about 3.4 million Canadians. This population will then decline fairly sharply until, by 1990, the level will be about 2.6 million, or about what it was in 1970. This pattern is now set.

Only extensive and very selective immigration could alter this picture. By selective, I mean concentrating on immigration of the young.

The intuitive reaction to such a future is to cut back on further expansion of expenditures on Education.

Such a course would produce a popular reaction. A recent poll showed that the public felt it received good value from expenditures for a variety of public services, including Police, Fire Protection, and even Garbage Collection. The public rated Education close to the bottom. Only about 40% thought they got their money's worth.

In Ottawa last year, municipal taxes went up sharply. It is widely known that over 70% of the increase was due to higher costs of Education. Yet, the universities claim the students produced by the system can barely read or add. The public's reaction is listened to by governments. The governments themselves work on very short horizons - rarely more than the five year period between elections.

With the population statistics to back up a reduction in expenditure on Education, it is not surprising that educational institutions find themselves in a difficult financial situation.

The UNESCO Report: "Learning to Be - The World of Education Today & Tomorrow", recognizes the precarious situation in Canada, "Without political leadership and responsibility - and after all neither of these is forbidden under the British North America Act - a severe backlash against future educational development in Canada may be unavoidable".

What does industry think of this?

Of course, we want efficiency in the educational system. Naturally, we believe there have been some excesses in the past.

But our success depends on productivity. The prosperity of our country will depend in a large measure on exports. For reasons I will discuss, Canada is facing a period requiring huge amounts of investment. Much of this will have to come from abroad. Our balance of payments in the coming decades will be adverse.

We will need all the increases in productivity we can get to enable us to export to even attempt to retain international solvency. We must be competitive in world markets or face a situation like the United Kingdom where we are simply unable to pay our foreign bills.

We have an alternative - one that is not open to the United Kingdom and one that is not attractive to us. This is the approach of selling the rest of our birthright - our natural resources.

If this latter is not an alternative we wish to take, then we must become more productive. To do this, we require a highly skilled workforce - a workforce able to cope with increasingly sophisticated techniques of production.

We cannot stay competitive if we do not use highly automated production methods. The declining size of the young workforce does not leave us the option of non-automated production.

The workforce we have in Canada will be aging. It must be highly skilled.

The implications for the educational system are clear.

- we will need an increasing, not decreasing, attention to the training of the young
- we must concentrate on re-educating an aging workforce in a rapidly changing environment.

This is not a short range problem. When Meadows and others wrote “Limits to Growth”, they based their assumption on a continual growth in world population. By the time Mesarovic and Pestal wrote “Mankind at the Turning Point”, more sophistication was built into the computerized world models. It was pointed out that population growth pressure was only regionally an accurate prediction. In fact, my belief is that lack of population growth in most post industrial countries, as a result of the changing societal patterns, will be a major problem.

In a word, I doubt if the youth curve will turn up much, if at all, in Canada even after 1990.

As if these complications were not enough, it is further envisaged that, by the late 1990's, only about one person in ten will be producing goods. The remainder will be in service industries.

This trend towards service industries in Canada is already pronounced, with over half the population being employed in these areas. (At the rate the government is growing, I am inclined to believe the projections.)

If this is to happen, the small number of people producing the things we need will have to be highly skilled and very productive. The rest will have to be trained for changing life patterns.

The conclusion I draw is that education has never been more important. Re-thinking what is required is certainly needed but the aim should not be a lowered percentage of the Gross National Product spent in this vital area - not if we value our future.

But what type of Education will be needed? To answer this, we should look briefly at what kind of world today's students will live in.

## A VIEW OF THE FUTURE

The students you teach today could still be working in the year 2020. One should assume that retirement ages will continue to lower, but I predict that the concept of work will change to avoid that traumatic discontinuity at age 65. I believe that a gradual phasing out of the workforce will become far more common.

The concept of a second, or even a third career, will be more widely accepted.

It will become more obvious that non-work is not a psychologically acceptable alternative to work. Leisure, at least as we now define it, will not fill the gap.

I doubt if, for the majority of people, the workday will ever drop below four hours. However, the nature of work will change. I can foresee a specialist in Auto Mechanics starting his life building cars on an assembly line, phasing into a less onerous repair operation with a smaller company, and possibly at 75 still casually repairing the fuel cells in his neighbour's 21st Century Intra-City Vehicle.

In essence, work and leisure will become interwoven. In this context then, one challenge facing Education will be that of interfacing with the individual for many years. As Stephen Leacock said in... “Too Much College”... “What I want to advocate is not to make education shorter, but to make it much longer - indeed, to make it last as long as life itself”.

The experiments are underway - the Open University, In-the-Home Education via computer, communications networks, educational TV, and other techniques, will all have their place. Such developments will not take place unless the level of support for education is maintained.

There is an interesting corollary to this. If people in the future are going to go through phases in their worklife, and may well at some point end up working for themselves, this means that the educational system has a responsibility to teach people to be able to do this.

To a degree, this means a change of attitude on the part of your students. I suspect that most teachers and students view the training provided as helping the student to get a job. We should remember that jobs only exist because someone at some time had an idea and started a new business. This is one of the great strengths of our society.

If, as I predict, more people will work more independently and in more service-related areas, educational programs must prepare students to be entrepreneurs, not just job seekers.

Part of the training should include how to start one's own business. If this does not happen, we will be in danger of producing a nation of parasites, living off the initiatives of others.

I believe that youth is very receptive to this concept. I see a growing independence of spirit. Those in the educational system must help youth capitalize on this.

If the work/leisure situation will be very different in Canada in our view of the future, then so will the situation of Canada in the international community. The students of today will live in an increasingly precarious world. The instant international communication system I referred to earlier has created instant reactions in all parts of the globe. People in the Third World understandably want to make the 'generations leap' into the late 20th Century. Regrettably, the gap between the 'haves' and the 'have nots' is widening. The current wisdom is that this will continue unless purposeful and rapid action is taken by countries in the post industrial stage.

If it is not, then the situation facing our students of today is one that neither industry nor anyone else can look forward to with comfort.

I mentioned earlier that Canada faces a serious balance of payments problem in the coming decades. This situation results from the Energy Crisis. We are either going to have to pay a heavy price for importing oil from the Middle East, or we must borrow to build pipelines, develop Tar Sands, etc. The situation will last until the exotic energy substitutes can be brought into practical use. As noted earlier, to balance this, we will have to develop a better export picture than we have at the present time.

It is difficult to develop a healthy export market in an unhealthy international environment. Poor countries don't pay bills.

Without a broadminded and fresh look at the international economy and, allowing for the unequal spread of resources around the world, natural resource blackmail could become common. We witnessed this during the Oil Crisis. Nutritional blackmail will be next. This can already be seen with commodities such as sugar and coffee.

These problems can be solved with understanding. But, as the Club of Rome, and many others have pointed out, there is need for a total change of attitude toward "The World Predicament".

This is the second great challenge facing our educational system. Not only must we change people's attitude toward work and the Free Market Society, but we must now change attitudes at the international level. We must broaden the perspective of students, so that they will understand that their own future well-being is intimately linked with the well-being of other people in other countries. This can be best taught by encouraging people to look at a much longer time horizon than they are used to.

We do not live in the present alone but in a continuum from Past to Future. Our educational

system teaches a great deal about the past and enough about the present to enable a student to get a job. It teaches little, if anything, of the future. Yet, as has often been pointed out, the future is where we will spend the rest of our lives.

Finally, my view of the future presents a third challenge - change itself. The Toffler thesis is well-known. But do we really train our youth to accept change and, in fact, look forward to it.

Change is the most exhilarating of all phenomena.

Mankind drowns in the Sea of Certainty.

Kenneth Boulding, in an article written for “The Future of Education: Perspectives on Tomorrow’s Schooling” noted that... “Certainty produced the great and sterile simplicity of the Moon where nothing much has happened for 3½ billion years.” When man first landed on the Moon, he realized how dull the lack of change can make an environment.

Even Harry Lime, in the movie “The Third Man” recognized this. He pointed out that the Swiss had been in a relatively undisturbed environment for hundreds of years. During that time, their contribution to mankind had been the Cuckoo Clock!

Yet, we are creating a workforce that is afraid of change. We have built rigidities into our infrastructure, into our unions, our government, and even our educational system.

In a future where rigidity of thought will be our worst enemy, we have a workforce that will go on strike if the wind changes.

I would hope to see a system evolve where government involvement in the economy is there to provide that element of stability that people seem to need.

But this should be at a minimum level. The rest of what life is all about should be left to people’s individual initiative to foresee opportunities and devise imaginative new solutions.

The fun of life comes from the variety that change brings. Institutionalizing too much can only lead to a ‘moon-like’ future. The students you teach see this. I believe they will, or can, if they wish, live in a world far richer in qualitative and quantitative things than the fascinating world in which we already live. The young are starting to accept and push for less permanence. Marital relationships are more casual. People live in groups and re-group from time to time.

We can help this through our educational system if we meet this third challenge and teach youth that change is not only normal, but desirable.

## SUMMARY

I foresee then, a future for today’s students which can be fascinating, filled with an increasing variety of possible lifestyles.

The educational system will have to react, however, by...

- understanding it must establish a life-long relationship with students
- aggressively trying to broaden students’ attitudes towards self-reliance and the interrelationship with others at all levels, and
- being bold about teaching people to welcome change

One way this can be done is to educate not only for the future but about the future.

If we let today’s students know what alternative features are available, they can make choices about the kind of world in which they want to live.

What industry needs, and what the country must have, is a generation of young people with a positive and creative attitude toward the future.

If we have this, the rest is detail.

A talk to the 4th Annual Leading Edge Training Technologies (LETT),  
University of Victoria, Victoria, B.C. March 19, 1996

## *Training on a New Track*

**“It is of course better to know useless things than to know nothing.”**

*Seneca*

I was invited to give a talk at the University of Victoria on Leading Edge Training Technologies (LETT). As I knew very little about this, I looked up the topic on the Internet. The only entry said “come to Victoria and George Fierheller will tell you all about this”.

Why are you here? Or more correctly why are we here?

As proponents of Leading Edge Training Technology, we should be using our own technology for this meeting rather than travelling thousands of miles to meet face-to-face. The fact that we are here in person tells us all something about the state-of-the-art of training technology and some of our own attitudes toward it.

Now I am far from being a Luddite. My career of over forty years has always been in high technology. I remain as excited and optimistic about what it can do as I ever have been. But perhaps the fact that we are in the high-tech field makes us too ready to accept the benefits of solutions we may propose. The purpose of a keynote talk should, I believe, raise questions that would be asked by others farther from the field. In a word, what we should do is look at the state of our art in terms of the impact on those we most affect. Training is on a new track, but where is that track taking the passengers?

More specifically, is there any concrete evidence that this new technology is training people faster, better or cheaper?

We have had over one hundred years experience in using chalkboards. We have perhaps six months experience with Digital Whiteboards. Perhaps, therefore it is premature to ask the question.

But I am not alone. Drexel University’s College of Information Studies in Philadelphia was recently awarded a grant from the Sloan Foundation to determine, “whether college students learn better and faster when their courses are taught over a computer network”.

Before we examine the questions, as to whether new training technology is faster, better or cheaper, we should clarify what kind of training we are talking about and what sort of technology. Otherwise, the range of the topic would be unmanageable. Let me assume therefore that what we are addressing is training in a narrow sense rather than learning, i.e. essentially looking at secondary and post-secondary

### **PORTERFIELD**



**Ever get the feeling no matter what you did or how well you did it, the next day you'd have to do it again?**

education, as well as job training or re-training. I will try to focus my observations on skill-oriented training, e.g. writing a computer program using JAVA or the type of vocation-oriented training that would involve changes in one's profession or field.

Secondly, let me assume that the technology we are talking about is the broad application of computers, information storage and retrieval techniques and telecommunications. Largely, this will be the use of PC's locally or remotely. So back to my three original questions.

### IS IT FASTER?

It certainly should be for the teacher. If the technology is used to its potential, the teacher should be able to prepare a first class training session by pulling together multimedia material from centralized data banks. The teacher could rapidly assemble some of the best minds in the field together with full motion video, graphics, audio or whatever is desired. Bill Gates, in "The Road Ahead" pushes this approach using the Digital Whiteboard, as an example of how all this could rapidly be brought together.

However, the student may benefit even more by having the same presentation on a terminal, where he or she could pace learning to match their own capability. This allows the student to re-try a segment of the course. The student can also test progress on his own without the peer pressure that comes from a classroom environment.

This process removes the need to teach at close to the Lowest Common Denominator speed of the class.

It also allows for enriched training for those who can proceed more rapidly.

To be effective, however, such a technology requires huge file servers, ample bandwidth and lots of computer power somewhere in the network. This latter point is at the heart of the current leading edge debate between Bill Gates and Larry Ellison of Oracle. As I am sure you are aware, Gates has taken the position that the intelligence in the network should be decentralized to the PC (naturally running Windows '95). Ellison believes that the intelligence should be in the network and the terminals can be essentially 'dumb', and therefore inexpensive.

While the final answer may be somewhere between these two positions, it would be a boon to the training and educational networks to be freed from the high cost of terminals and the extremely high cost of hardware and software upgrades. Essentially, in the 'dumb' terminal approach, the terminal would download whatever software it needs in the latest format, together with whatever data or other information is required, as it is needed. This minimizes the cost of local storage.

This approach would be a boon as well, to the manufacturers of large fault-tolerant, highly parallel computers with access to huge storage and possessing unlimited scalability.

However this plays out, extensive user-paced training should become more feasible.

Another aspect of increasing the speed of education should come from distance learning. The mere fact that travel time is reduced and the training programs are available twenty-four hours a day should have the effect of making the whole process faster.

### IS IT BETTER?

Presumably the process would be better, if the student learns more and retains it longer. There is little doubt that the correct combination of the printed word with video, audio and other digitized material will help accomplish both these aims.

But again, this will only happen if there is a much greater concentration on both the content and the techniques of presentation. We have all experienced our share of totally inadequate use of electronic training media. Often tapes are just classroom talking heads put on video.

Even some of the CD-ROMs now being rushed to market are little more than one-for-one transcriptions from the printed media. I have dubbed these Gutenberg GUI's. Some imagination is being used even with this technique. On the CD-ROM that accompanied Bill Gates' book for example, hyper text is available even in the video of the actual pages, so that cross-references can be called up that may themselves involve video or audio explanations of terms. (They even add the sound of the page turning as you advance the text, although, I suspect this is a Gutenberg holdover that will rapidly disappear!)

Some training CD's, such as Encarta, are beginning to use the capabilities of the computer. This geography program allows you to zoom in on an area of the world and call up still pictures of culture in the area, as well as, audio clips of music. (Encarta even provides a guide called Cosmo to help students through the process.) But even this suffers from superficiality. The graphics are restricted to perhaps half-a-dozen and the audio clips are only about 20 seconds. I have a real concern that the current state-of-the-art will lead the learner toward broad generalities and away from in-depth training. Beside my PC with all its CD-ROMs is a current set of the Encyclopaedia Britannica. While the material is available on CD-ROM, I see no real advantage in its current format to moving from the wonderful Micropedia and Macropedia approach. The only thing that would add real value would be very extensive use of video and audio, and this is currently not feasible with the capacity of CD-ROMs.

Fortunately, this is a situation that is being rapidly remedied. Simple techniques such as digital compression, combined with even changing the wavelength of the laser reader could increase the capacity of current disks by sixteen times. By embedding multiple layers in a disk, the capacity could be further enhanced. IBM recently stated they believed up to twenty layers could be imbedded in a single disk in the very near future.

I am sure there will be a new and lucrative profession aiding those with specialized knowledge to create truly effective multimedia teaching techniques. As my associate, Ted Rogers would say, "The best is yet to come".

We all believe that better training will come through providing the learner with access to the best teachers in the world. In a discussion with the president of a leading Canadian university, we both readily agreed that the best way to teach Economics 101 would be to have the best teacher in the university do a CD-ROM and let the students take the course on their own. He was somewhat less enthusiastic about the idea when I pointed out that the best teacher might not be at his university. He was even more concerned when I suggested, that if the best teacher for German history happened to be in Hamburg, then that is where the CD-ROM should be made. However, that is where the techniques are taking us.

But no one believes that interacting with a CD-ROM is where this will end up. Obviously, the main advantage is in the real time interactivity with others. We would not be making the best use of the technology, if we used it in the broadcast mode. Video seminars can easily be part of the learning process.

Just think of how effective joint problem solving could be with a group of students in different locations tackling the same problem together.

The possibilities are enormous. Clearly the New Training Technology should produce dramatically better results.

### BUT IS IT CHEAPER?

We can safely assume the cost of computer power, information storage and telecommunications delivery is declining at a rate that should put these techniques in the hands of any learner at an affordable cost. The real cost, however, is in the content and the development of the ever increasingly sophisticated software to deliver it.

Intuitively, when one looks at the cost of running a physical plant with its classrooms, staffing and maintenance, it seems obvious that distance-delivered electronic training must save money. However, we all subscribe to the idea that future generations will ‘Learn Their Living’. Much greater opportunities exist for institutes of higher education and training by assuming a life-long responsibility for their graduates. Stan Davis noted that “The half life of an engineering degree is three and a half years”. Institutions should assume a life-long relationship with the graduate to upgrade his or her education. This is not only a money maker for the institution, but a great aid to the student.

In the future, a life-long student should not say, “I went to U. Vie.”, but rather “I go to U. Vie.”. I might add that this is also a wonderful way of keeping alumni records of the date which is the backbone of good fund-raising. At the moment the latter is about the only reason most institutes of higher education stay in touch with their alumni!

But all of these considerations about being more cost/effective are still not looking at where the real savings for a country will be delivered. These will come from the upgraded skills of the workforce, lower unemployment and higher export sales through better international competitiveness.

I believe that not only will the new training technologies be more cost effective. They will be essential to the future of our educational system.

However, all of the above observations are anecdotal. I believe that major challenge for this organization will be to develop ways to measure whether in fact this new technology is really faster, better and cheaper. In the commercial world, one would rarely start a program without knowing how it will be evaluated. This is still a huge gap in Leading Edge Training Technology.

### SO WHY ARE WE HERE?

Despite all the wonders of the new technology, you still cannot comfortably have a cup of coffee with your computer. Social interaction training is going to be just as important as technical training in the years to come. It is only through face-to-face seminars and discussions that this skill can really be developed.

The technology is leading us down a new track but it will accomplish more if it is used as a supplement and not a substitute.

A talk to the students at a Science and Technology Conference,  
Don Mills Collegiate Institute, Toronto. April 10, 1995

## Communication Technology: Are You Getting The Message?

**“The early bird may get the worm, but the second mouse gets the cheese.”**

This was a talk to a group of high school students in the graduating class about why they should choose the Communications Technology field as a way of ensuring their future.

The message that telecommunications brings is OPPORTUNITY. The inter-linking of computer power with telecommunications networks is the driver on the Information Superhighway. My message today is *“Don’t get left on the sideroad”*.

The Information Age is creating new industries and revolutionizing older industries faster than anyone could imagine. Those like you with your careers in front of you are in an enviable position.

Frank Feather, a noted Futurist, living in Aurora, noted *“To those who are alert, career prospects in the late-90’s and into the twenty-first century are dazzling”*. He went on to say that *“Without question, information/knowledge and hi-tech careers are the wave of the immediate future. We already are in the Information Age, and the information/knowledge workers now comprise the largest sector of the Canadian workplace”*.

He notes by the year 2000, over two million Canadians will be working directly with computers. Another 800,000 will work directly in computer areas. While only about 35% of Canadian households have PC’s now, this figure will escalate to 80% by the turn of the Century. His advice is *“Watch the PC monitor not the TV tube”*.

In telecommunications alone:

- Overseas faxed traffic is now larger than overseas phone calls.
- Voicemail has largely replaced the pink slips.
- There are likely about 40 million

Internet users world wide.

Nuala Beck, a noted Toronto Economist, has said that the New Economy is being driven by four engines:

- computers
- telecommunications
- instrumentation and robotics
- health care and medical.

All four of these are knowledge industries. Canada is at the forefront in developing new applications in all of these areas.

In the computer area, one of the leading



*“Excuse me, I’m lost. Can you direct me to the Information Superhighway?”*

firms in image software is right here in Toronto. Alias, develop the software that is now used world wide for producing imaginative media. It was their software that was used in Jurassic Park to create the dinosaurs.

It is expected that about 100,000 new jobs for software writers alone in Canada will be created by year 2005.

In telecommunications, companies such as Northern Telecom have developed advanced communication switches which are sold world wide.

In the area of robotics, there are over 1.1 million people who research, plan, design, manufacture, sell, deliver and install, industrial robots in North America. By the year 2005, there will be more than 12,000 industrial robots in Canada and another 10,000 robots that will be serving consumers.

The biotechnology field involving genetic engineering, gene splicing and cloning is just one example of the health care/medical work being done with the aid of computers. Career opportunities here will be in areas such as control of pollution, modification of raw materials, production of new products such as new proteins, and management of waste residues.

But the career opportunities are not just as computer professionals. Those who are providing information will have equally challenging careers. In 1993 there were 65,000 new titles published in Canada and the United States. This is the information explosion that is often referred to. Now more and more of the books will be CD-ROMs allowing information to be in the form of text, graphics, audio, still pictures or full motion video. Learning and entertainment will be merged into Edutainment and learning as we know it will be revolutionized. The creation of such content is already a major Toronto based industry, through organizations such as the Information Technology Design Centre at the University of Toronto.

All of this is possible because of the new multimedia revolution. The storage, processing and transmission of all forms of information has been transformed into a series of binary bits. It makes no difference to a computer or a communications line whether that stream of bits represents the human voice, a picture or a video.

This is further assisted by a dramatic reduction in the cost of computing power and the cost of data transmission. To understand the advance in computer power one need only note that when transistors were first introduced in the 1970's, they cost about \$30.00 Canadian each. Now the equivalent of a transistor in a fully integrated chip is about four one-millionths of a cent. Computing power is becoming free, although the software and the information will still incur a charge. Telecommunications is similarly becoming a non-issue for data transmission. In the United States there is already sufficient fibre optic capacity across North America that each of the three major carriers could carry all the necessary traffic for the whole country.

The opportunities all this new computer/telecommunications power can open up is astounding.

In the retailing field shopping at home will become a reality. To-date this has been relatively primitive but now with organizations such as CompuServe you can 'shop the world' by interactively discussing with a salesperson what it is you want. The organization will then supply it directly from the producer wherever they happen to be. CUC effectively "*Sells Everything and Stocks Nothing*".

Distance education has been talked about for years but with the new multimedia capability and two way communication, it is now becoming a reality. There is no real need for people to

cluster in expensive school buildings, when much of what they need could be handled electronically wherever they happen to live.

The same of course applies to the workplace. It makes no sense to travel an hour downtown, go up to the 64th floor of the Scotia Plaza (where I work), spend the day on the telephone and sending faxes and then spend an hour going home. I could have just as easily done much of this work from my home. In fact, this is what I am starting to do more and more.

Health care will be similarly revolutionized. Not only can those requiring treatment in remote areas get the best advice of top medical experts via telecommunications but interesting experiments in virtual reality might even allow a surgeon in Toronto to guide the hand of a surgeon in a remote community.

Cash is about to disappear. Rather than just doing away with one dollar and then two dollar bills, we will shortly see the elimination of cash entirely. Smart cards will take the place of cash for even simple transactions.

Already riding the subway can be done with a card. In the near future, a single card will handle all of this (there goes the grey economy!). Even our political system will be revolutionized by the ability to have referenda on many topics. Politicians already rely on polls. Now they will be able to get direct votes on major issues.

The wireless world is a phenomena of the last ten years. Essentially all of the applications I have talked about do not require a physical connection. The digitization of all forms of transmission allows remarkable compression of the data. This in turn makes it practical to use the limited available spectrum for over the air transmission for multimedia applications. Truly the new world of communications allows one to be in touch anywhere at anytime.

The career opportunities in all of these fields are staggering. The opportunities provided in the entertainment field with the proposed 500 channels are themselves almost beyond comprehension.

Satellite systems are already delivering CNN news world wide. Canada is a leader in satellite technology through companies such as SPAR Aerospace.

Many of the advances used by Captain Picard and Captain Janeway will be here much faster than most of us realize. Voice recognition by computers will, I predict, be a major factor in how we communicate with our computer/communications networks in the coming decade.

As Marshall McLuhan, another Canadian, noted the global village is now here. Or is it? Of all the opportunities you have, the biggest comes from a disturbing statistic. Over half the people in the world have never made a telephone call in their lives, and they probably never will.

Half the world is not 'getting the message'.

And yet this is after more than a century since the invention of the telephone and a century and one half after Morse demonstrated the telegraph.

One of the greatest challenges you will have is created by this opportunity of spreading the incredible advances in Information Technology to those who have not yet experienced it.

## GETTING FROM HERE TO THERE

What should you be doing to ensure that you are one of the drivers on the Information Highway?

The most important step will be to get as broad an education as you can and stay in school

as long as you can afford. By a broad education, I mean one that has a good cross-section of the math and science areas to supplement those activities that will help your communications skills. Because the opportunities in the Information Age are so broad, I would caution you again thinking that on graduation you are equipped with the skills you will need. Education is a lifetime process. You will learn your living not just earn your living.

You can expect to change jobs four or five times during your lifetime. This is what happened to me when I moved from computers, to cable television, to the telephone business and now the broad information industry.

In fact with the skills you learn, you may well not hold a job in the usual sense of the word. You can be an information age practitioner serving a number of different companies by adding value to the products or services they make.

Flexible thinking in career planning is going to be essential.

One way to get experience in this new career path is to volunteer for community or other projects. It is amazing how broadening this is and what incredible management skills you develop when you are working with volunteers rather than paid staff.

Don Mills is to be congratulated for setting up their new Math, Commerce and Technology program for gifted students entering grades 9 and 10 in September. This is just the type of program that we need to get the message out to younger students about the wonderful opportunities of the Information Age.

A talk to the National Mathematics Institute, Queen's University, Kingston, Ontario.  
August 19, 1994

## *Selling Science. Marketing Math*

**“The math teacher said the student was average, but he was just being mean.”**

*Mark Foerster*

Getting young people to take mathematics courses is not easy. I proposed concentrating on how mathematics is vital to moving ahead in many exciting fields i.e. by selling its uses and then encouraging people to learn this vital tool.

“Education is not the filling of a pail, but the lighting of a fire.” - *William Butler Yeats*

It would be presumptuous of me to try to advise you on how to teach mathematics. I may, however, be able to draw on my business experience to help you get the minds to teach, i.e. if not filling the pail, then at least filling the classrooms. Once the students are there, I am confident that you can inspire them to stay.

Let me address then the “lighting of a fire”.

I have linked selling science and math for reasons that will become apparent. This is just a selling job like any other. To do this one has to understand:

- what is the product
- what are its competitive advantages
- what is the target market
- who else needs to be sold on the product
- how do you sell it
- how do you evaluate the results



*“Take some more tea,”  
the March Hare said to  
Alice, very earnestly.*

*“I’ve had nothing yet,”  
Alice replied in an offended  
tone: “so I can’t take more.”*

*“You mean you can’t take  
less,” said the Hatter:  
“it’s very easy to take more  
than nothing.”*

## I. THE PRODUCT

The Binomial Theorem is a tough sell! When I went through school, I took Algebra, Geometry and a course called Trigonometry and Statics - hardly names with sizzle! Some of the better students at the University of Toronto Schools (UTS) took a course called Problems, which was an enriched math program. Can you imagine anything more enticing than taking a course with a name that already defined its difficulty rather than its excitement. The course should have been called Discovery, or some similar name.

This is not to say that the private sector does a good job in choosing good descriptions of the product (think of Pay TV, Cellular Telephones or even the Sick Children's Hospital). However, the packaging of a product does become important. I have the feeling that you are perpetuating this when I look at the Strands with names such as Number Sense Enumeration, Geometry and Spatial Sense, Patterning and Algebra, and Problem Solving and Inquiry.

What has all this to do with the excitement of learning about the world around us? None of this seems to relate to the child's natural enthusiasm for things he or she can touch or experience. How does all this relate to Nintendo or Star Trek?

We are likely starting from the wrong end and that is why I have included science with math when considering the selling of this type of program. Math must be related to results:

- The study of numbers systems could probably start from looking at computer chips and how these are used in Sega games.
- Spatial Sense might best be related to space travel.
- Sines and Cosines have nothing to do with measuring the height of a flag pole (who cares?). But when looked at being just statements of the simplest periodic function, then a child might understand how these can be used to describe economic trends.

They will certainly understand booms and recessions.

This makes me question whether math should be taught as a separate subject. Even basic arithmetic skills could be put in the context of understanding a Loblaw's sales slip.

As Roger Schank, the controversial educationalist from Northwestern University's Institute for the Learning Sciences said, "The best way to learn is to get information just when you need it".

Sell them on the Why - then the How.

I recently interviewed a York University Professor with a Ph.D. in Mathematics. His resumé was filled with skills in mathematical disciplines I did not even understand. He had no idea how to relate his skills to any need that I might have, e.g. wireless antennae design, network engineering or similar saleable skills.

My suggestion is that we redefine the product to become the application. That is a skill the student can sell. It, therefore, becomes a way to sell the student on taking integrated courses that will as a corollary teach the needed mathematical skills.

All of this is "the lighting of a fire".

## II. COMPETITIVE ADVANTAGES

What advantage does the study of science/math give to the student? The courses are perceived as being more difficult than studying history or a language. Languages can be sold on the basis of getting jobs in emerging international industries, travel or even understanding foreign films. Who needs math?

According to the recent publication by the Canadian Chamber of Commerce (A National

Direction for Learning: A Business Perspective. March 1994), “Counsellors frequently have little detailed knowledge of the ever-changing work and work environment”. It goes on to point out that many schools have guidance counsellors, but rarely have “career counsellors”.

And yet the competitive advantage of a career in high tech should be fairly easy to demonstrate. It should not be hard to get statistics on where jobs are being developed in the New Economy. In fact, one only has to pick up the want ads to see the incredible number of job opportunities for those with these types of skills.

A competitive advantage of mathematics is that it is fundamental to most other disciplines. If one were to go into literature, it would not be long before the graduate would be into computer concordances. If the student’s ultimate interest is in archaeology or language, mathematics is used to decipher and fill in gaps in documents such as the Dead Sea Scrolls. Biology is now filled with statistics and mathematical models of DNA.

There is, therefore, the obvious competitive advantage of breadth of job opportunity, and I suspect, higher than average earnings.

The more fundamental competitive advantage, however, is the ability that mathematics provides to both understand and control the physical world we live in. The programming of microprocessors to allow the control of virtually any physical process will open the door to thousands of new industries in the next several decades. It will be possible to add intelligence to any physical object to make it more useful. Students, if they understand this, will want to be part of the process.

We have come a long way from the time when the Polynesian counting system was simply 1,2, many. We no longer live in that idyllic world, and math provides the key to the New Economy.

### III. TARGET MARKETS

I have no illusion about the marketplace in terms of parents or children. Although the situation may not be the same in all parts of Canada, in Toronto 45% of all children in the public school system come from homes where English is not the first language. By the turn of the century, this will be about 60%. This is not a negative for the children of many new Canadians from the Pacific Rim and elsewhere do exceptionally well in mathematics and science. Much of this may result from an environment where the desire to succeed is extremely strong and the understanding of the role of math and science is well advanced.

However, any teacher will quickly point out that teaching anything in a Regent Park school in downtown Toronto is as much a challenge of maintaining minimal discipline as it is exciting students to learn.

I noted the other day that in an effort to communicate with ‘street kids’, they were retranslating portions of the Bible. The Commandment, “Thou shall not kill” was using terms and concepts to which the students would simply not relate. This Commandment was translated into “Don’t waste nobody”. I will not even tell you the translation for the Commandment regarding adultery!

Young people are also subject to intense peer pressure. The desire is not to be considered a nerd or a geek. This is particularly true of women entering science. This target market will have to be approached as noted earlier by pointing out that multibillionaires around the world are far more likely to be a Bill Gates of Microsoft than they are even a major sports star.

While the children themselves are the obvious prime target market, the parents are also important. Unfortunately, this may be less the case than in the past. With divorce rates exceeding 50% in many centres and with perhaps 20% of children in metropolitan areas having two or three house keys (split parents, a grandparent), influencing the parents may be of less importance than influencing the children directly. However, this does not mean we should not try. The bright side is that close to 35% of households in Canada now have a personal computer. Even if these are largely used for games, there is clearly a growing understanding of the need for high tech training.

#### IV. WHO ELSE NEEDS TO BE SOLD?

Selling the system will be as important as selling the students and their parents. This is not easy to do in the only federal country with no federal ministry of education. However, even with our decentralized approach, there is a great deal of attention being paid to education. As a share of the Gross Domestic Product (GDP), total education expenditure in Canada is the highest of all 16 OECD nations. How can more of this be directed to science and math?

The place to start would seem to be the Faculties of Education and Teachers' Colleges. I suspect the problem here is likely the lack of understanding of many teachers of the excitement and all pervasive place of math and science as described earlier. I am not familiar with how teachers are taught these days, but suspect as my friend, Frank Feather, the Futurist, noted that unless this group will "turn on the PC and not the TV", this will remain a problem.

The federal and provincial governments seem very aware of the need with programs such as the "Innovators in the Schools". I would be concerned, however, about the impact of school boards, which I suspect these days may be more of a hurdle than a help in changing curricula.

However, industry also needs to be sold on playing a role. After all, they are one of the prime benefactors of well trained students in leading edge disciplines. It is encouraging to see organizations such as The Learning Partnership starting in Toronto to encourage corporations to adopt a school and ensure it is equipped with the latest technology. Science Network Ontario is another example of this growing trend. This follows very good examples in Alberta and Atlantic Canada. The establishment of joint industry/school advisory councils with some real teeth to implement jointly approved programs may be the answer. Obviously, this will only work if it is enthusiastically endorsed by industry, school boards and teachers' unions, amongst others.

#### V. HOW DO YOU SELL IT?

Selling techniques have to match ever expanding current expectations. If young people are used to watching videos, then this is a technique that must be expanded. The good example of this is Discovering Science, encouraging women in science and engineering as produced by the University of Toronto in 1993. This is aimed at girls in grades 7-9, and has the advantage of young people talking to their contemporaries. It also makes extensive use of role models (Roberta Bondar, the late Helen Hogg).

But of more importance, it points to the responsibility of those in universities to spend time with younger people to kindle their enthusiasm for whatever their specialty may be.

I gather some excellent videos have been produced by Disney on encouraging youth into science and technology. This is an international priority, and we should not limit ourselves to what is produced in this country.

If youth is addicted to games on PC's, then imaginative math or science games could be devised that might even appeal to parents.

Imaginative programs such as Toronto's Calendar Math, are examples of programs designed to help parents help their children.

Again, industry can play a role in selling students on high tech careers. Plant tours, promotional videos (like the recent one from Alias which promotes computer graphics), talks by senior industrialists can all help. Why not start with members of the Information Technology Association of Canada. This organization represents about 70% of the revenue in the IT field in Canada. Their publication, *Investing in People: The Key to Canada's Prosperity and Growth*, indicates their interest in participating.

If we are really interested in reducing peer pressure, we should dramatically increase the number of prizes and awards in the math and science area.

Some great programs are available on The Learning Channel, TV Ontario and similar channels. Watching Carl Segan, James Burke or Jay Bronowski can be really inspirational. Are teachers aware of when these programs are on, and are they encouraging students to watch?

The use of the Information Superhighway is exemplified by SchoolNet, which is a way of providing interesting, up to date information in a form that young people will relate to. Again, the cooperation of industry in supplying PC's or other terminal equipment will be essential.

Above all, we should make science and math seem like fun. Dig out that old recording of Tom Lehrer singing about the New Math. Distribute to your class the story, *Flatland*. See if you can locate Sylvanius P. Thomson's, *Calculus Made Easy*. Let them learn logic by reading *Alice in Wonderland*: ("Take some more tea," the March Hare said to Alice, very earnestly. "I've had nothing yet," Alice replied in an offended tone: "so I can't take more." "You mean you can't take less," said the Hatter: "it's very easy to take more than nothing.")

## VI. EVALUATING THE RESULTS

In a normal sales program, you can determine the success by an increase in sales or market share or a contribution to the bottom line. It may take some years to evaluate the impact of a concerted sales program for math and science (the Chamber of Commerce suggests five years minimum). But objectives should be put in place to meet the challenges in the federal government's *Learning Well . . . Living Well*, discussion paper. A number of statistics indicated that our performance is inadequate.

- An excessively high number of first year university students have to take remedial math courses to prepare themselves for the university education.
- International science test results indicate that Canadian secondary students are less prepared than those in most other industrialized countries.
- Less than 60% of high school students have taken courses in physics or chemistry.
- Both high school and university level courses in sciences have faced decreasing popularity.

There are ways of measuring the results and such objectives should be built into any program.

## VII. Summary

Behind all of this is my contention that math is a tough sell. Science should be much easier. By selling science, you market math. Both come out winners.

A talk at the University of Toronto Library. March 23, 1994

## *Planning For 2000*

**“The further backward you look, the further forward you can see.”**

*Winston Churchill*

Library Science is being revolutionized by computer technology.

The role of libraries for lifetime learning is a huge opportunity.

In Information Technology, it has been said that everything is possible and nothing is predictable. However, there are some clear trends that will dramatically affect Library Science in the decades to come.

Two, in particular, are easily predictable - Increasing Power and Increasing Access.

### THE INFORMATION TECHNOLOGY POWER CURVE

We all understand that computer power is surging because we can cram more and more circuitry into smaller and smaller spaces. In fact, if you buy a new car this year, you will find more computer power under its hood than Neil Armstrong had in his lunar lander.

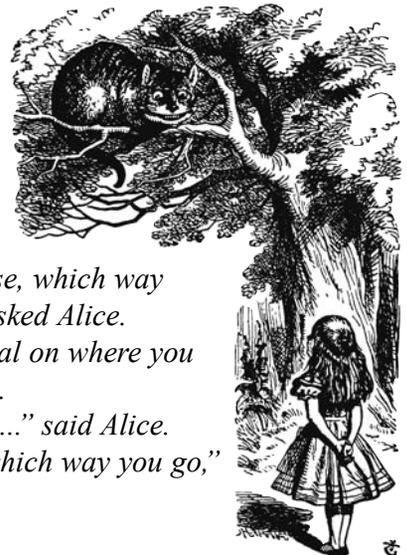
The volume of a computer “switch” has dropped from the size of a fist in 1940 to that of a finger in 1950, a pencil eraser in 1960, a grain of salt in 1970 and a small bacterium in 1980. Where is this going? The visionaries of nanotechnology foresee atom-size switches that could put the equivalent of human-like brain power onto a thumbnail-size chip within 3 decades.

Whether this happens or not, it is true that the number of components on a computer chip is doubling each year. We will have billion bit chips by the year 2000 at this rate.

Further, the cost of this increasing computer power is dropping dramatically. The equivalent of a transistor, which cost about \$30 when first put into production, has now dropped to about 400/1 millionths of a cent.

Looked at another way, computing power is essentially becoming almost free. By way of comparison, if the cost of automobiles had dropped as fast as the cost of calculation, it would be cheaper for us to abandon a Rolls Royce at the parking meter than to feed the meter!

With this computing power comes an incredible ability to store data. If we could really perfect a device using atoms as switches, it should be possible to contain all of the world’s knowledge in a cube of about 1 cm. on each side.



*“Would you tell me, please, which way I ought to go from here?” asked Alice.*

*“That depends a good deal on where you want to get to,” said the Cat.*

*“I don’t much care where...” said Alice.*

*“Then it doesn’t matter which way you go,” said the Cat.*

Just think of it - the Robarts Library in a sugar cube. You would not have to worry about people stealing books - they could steal the entire library just as easily.

Of course, this would not leave enough room for librarians' offices or seminar rooms, but I suppose, theoretically, one could have the sugar cube located in Alexandria (for old times' sake) and have everyone in the world simply access this single, intensely dense, data base.

Of course, it will not happen this way. It reminds me of the prediction made in Popular Science in 1967, when they pointed out that "a few years ago when people thought about household computers at all, they thought of some small, inexpensive individual units that would keep track of the family chequing accounts. Now we know it won't be like that at all. It will be far cheaper to build one monster computer with thousands or even millions of customers hooked into it, than to have small individual machines in individual homes."

This disastrously erroneous prediction was made at a time when there were perhaps 25,000 computers installed worldwide. Now we install 50,000 every day.

In fact, a far more likely scenario will be that people will use same the technology to have their own personal libraries containing a life file of all of the books, articles, letters, songs, pictures, movies or other images that have significance for an individual's career or life.

One only has to look at the boom of the CD-ROM to realize that already one has on disk Compton's interactive encyclopedia with some 9 million words and 32,000 articles, 13,000 images and 50 minutes of sound, music and speech; or the Complete Oxford English Dictionary on a single disk.

We need to examine the role of libraries with this kind of computer power available to individuals at very low cost.

### THE IT ACCESS CURVE

What is less obvious to the public is the rapidly declining cost of interconnecting such personal computer power. Fibre optics is giving an almost limitless capacity for very high speed transmission of data. In the United States alone, there are three essentially ubiquitous fibre optic networks. If two of these were chopped at the Mississippi River, the third could easily carry all the current traffic the rest of the way across the country. The cost of moving data around is following a similar declining cost curve to that of computing.

- We can look forward then to essentially free computer power and free access. We have the opportunity to create a massive neural net interlinking intelligence wherever it may be, at least in the more developed world.

In fact, as we both know, this power and access will not really be free, but the major cost will be in the development of software for all kinds of applications, and the cost of information itself. As pointed out during my Sharpe Lecture last Fall, this means that the winners will be those in Information Science and those with the custody of data, such as yourselves.

Mr. Clinton noted that his ambition with the Information Superhighway was to have all of the Library of Congress accessible to every school child. Clearly, this is where we want to be, but the question for you today, I am sure, is "what is practical within our planning period".

### LIBRARIES TO THE YEAR 2000

The role of libraries as repositories of knowledge can only grow. We all know that scientific knowledge is doubling every 5 years. By the time our children retire in the Year 2050,

everything human-kind has learned up to 1994, will amount to only 1% of the knowledge available to them. Recording, storing and then providing meaningful access to this data is one of the greatest challenges we will face in the decades to come.

For a moment, let's consider the recording of data. Obviously, with the incredible advances in data compression, it is already possible to store images of printed pages, graphs, still pictures or even video-clips of any subject. There are numerous scanners on the market allowing for this kind of input.

This should allow the right combination of whatever will help people understand, remember and utilize facts.

Of a great significance, is the fact that virtually all books published in the last decade have been set up with photo typesetting. This means that the text content of the book is already in digital form, and therefore the recording of such data in machine-accessible form should be fairly straightforward. Many magazines are published the same way, as are newspapers.

The storage of such vast amounts of computer-accessible information will be made easier by file servers, which can be thought of taking multiple CD-ROMS and having them accessible in something resembling a jukebox. This is clearly primitive, but will become quite usable well within your planning period.

The retrieval of information, however, is where I believe the biggest immediate potential lies. It will not likely be practical to go back and scan the millions of volumes already available in the world's libraries for the relatively small number of retrospective searches that will need to be undertaken. It would be far more useful to concentrate on electronic indexing, which I am sure is something that all librarians are actively pursuing. Fortunately, the incredible power of even personal computers, 60 MIPS in a PC, should mean that access techniques can be made more user-friendly. The whole concept of 'question trees' is a leftover from the days when computer programs were designed for computer programmers and for relatively slow machines. It should now be possible to identify directly the areas of interest and have the relevant material retrieved.

## THE NEXT STAGES

For data that is already in machine-readable form, we should revisit Auto Abstracting. This is hardly a new concept, but the sophistication of programs that will scan an article, pick out the main themes by such techniques as the repetitive use of terms, could supplement the indexes with meaningful descriptions of the article or book in question.

This brings me to a major theme that will be the turning point for Library Science in the rest of this decade and beyond. It is clear to all of us that individuals will have to go through 3 or 4 career changes, and may well hold multiple jobs at the same time. This is a huge challenge for universities who cannot give up the responsibility for their graduates the day they leave campus. Constant updating and refreshing of knowledge will be required. This means distance education using the new multimedia techniques.

The immediate implication is that libraries are going to have to become proactive through outreach programs, rather than waiting for individuals to realize that new knowledge is available in their field. Interest profiles have used this for years, but now the computer power should allow libraries to provide individuals with abstracts of the books and articles they should be accessing.

Not only will this be great for universities from a fundraising standpoint, i.e. a reason to track graduates, but it will be a major source of income to the library.

Nor should we ignore the Holy Grail of Library Science, which is language translation. Some of the programs already available, while hardly adequate for translating literary works, could provide adequate translations for the abstracts referred to above. This could dramatically broaden the scope of the information outreach program I am proposing for libraries. Perfection is not required here, as we are only alerting an individual to a potential source of interest.

Toward the end of this decade, the power and accessibility of computers will encourage Artificial Intelligence programs that will be quite usable. Again, there is no need to wait for perfection to provide programs at libraries that will assist researchers in relating various ideas. This is somewhat the Propaedia approach. With vast amounts of data readily accessible, it should be possible to do idea relationships on an interdisciplinary basis, e.g. a researcher interested in lasers for optical transmission over long distances may get excellent ideas from someone who is using lasers for eye surgery or computer printers.

With these approaches, the library of the near future will become the driver for new developments in our knowledge-based world.

Practitioners of Library Science have a marvellous opportunity to lead us into the new century.

A talk at the 4th Annual Seminar of Canadian Government Information Directors,  
Halifax, Nova Scotia. September 11, 1975

## *The Computer – its Possibilities in Information Storage and Retrieval*

**“Everyone has a photographic memory; some just don’t have film.”**

Even thirty years ago it was obvious that at some time we would be able to put the entire range of human knowledge on something the size of a sugar cube. The implications are enormous.

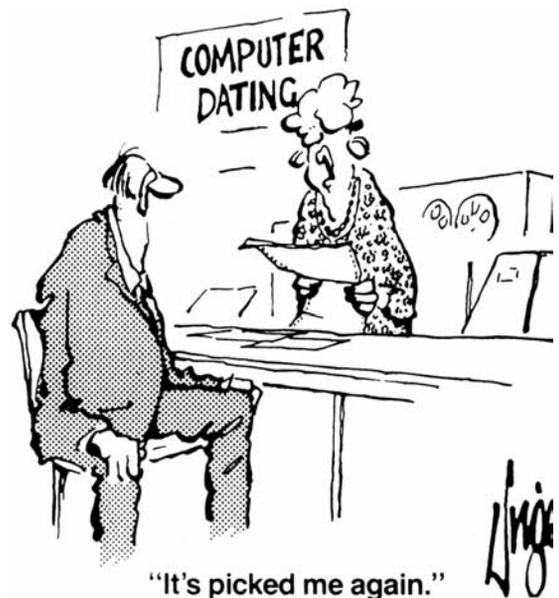
Peter Drucker in his book “The Age of Discontinuity” projects that the information industry will be the most important in the world in the latter part of the twentieth century. He notes that “one thing is clear - knowledge during the last few decades has become the central capital, the cost centre and the crucial resource of the economy”.

Drucker believes that “this is the first era when energy for mind work has been available. Information through the ages has been all but completely lacking. At best it has been expensive, late and quite unreliable. Most people in responsible positions today whether in Government, in hospitals, in research labs or in business spend most of their time scratching to get a little incorrect and unreliable information on what happened yesterday”.

Finally he notes that “the impact of cheap, reliable, fast and universally available information will easily be as great as the impact of electricity... in another generation it is safe to predict people will have learned that the computer is their tool and not their master and that it enables them to do the mind work they want to do and are unable to do today for want of cheap, reliable and fast information”.

This is heady stuff. However, it is one of the advantages of meetings such as this that we can take a few minutes to get an overview of this fascinating industry in which we all are participating. It gives us a chance to remember that we are not simply suppliers of data, but are in the more universal business of trying to get the right information to the right people in the right form, and at the right time.

We are working against a background of uneven accomplishment. Satellites can relay messages around the world in seconds, and yet it takes days to get a letter from one side of the city to the other. We can store billions of bits of information on modern computers and yet often have trouble retrieving a letter we filed last week.



This is the challenge. If we are to solve the immense problems facing us, we should ensure that we are working from the same background of understanding of information technology.

From time to time some of the things I will discuss may sound a bit far out, but my intention is to review many fundamental ideas and possibilities. I hope this will have the effect of reminding you of things that might be of use in your particular areas.

As Oliver Wendell Holmes noted “man’s mind, stretched to a new idea, never goes back to its original dimension”. Let us stretch.

## THE WONDERFUL WORLD OF RADIATION

There is no shortage of information about the world around us. It radiates toward us constantly, both literally and figuratively. Our problem is to correctly utilize computer communication systems to both broaden our ability to perceive the information presented to us and to make some sense of it.

We should bear in mind that our ability to perceive the universe is very limited because of the shortcomings of our own sensor systems. We are all aware that our eyes can only detect a narrow range in the electromagnetic spectrum. If our eyes were able to detect X-rays for example and we were to look at the sky at night we would see a totally different pattern of information about the universe. Rather than twinkling stars we would perceive a new and unfamiliar sky as our eyes detected many of the now invisible sources of X-rays.

The fact that such information exists is known because we are able to capture it on photographic plates. This universe is every bit as real as the one that we can perceive directly, but by using new sensors, new communication channels, and the ability of the computer we can make this much broader world understandable to us.

My reason for mentioning this is only to remind us of the real background to information science - the use of the most modern technology we can devise to collect, store, interpret, and disseminate information so that we can understand more about the world in which we live and, of course, particularly the relationship of our organizations to it.

Let us now examine the more down to earth aspects of this process.

## CAPTURING INFORMATION

The secret of good information systems is to capture the data early in its purest form. Ideally, a person should only have to enter data manually one time. It is the re-keying of information that escalates costs.

In fact, it may be possible to avoid keying information at all. For example, there have been many experiments in direct voice input for computers. Many years ago IBM developed a device called Shoebox which would accept simple numeric information spoken to it and record this information in computer usable form. We have all been introduced to this idea in the movie 2001, or have seen Spock talking to his computer in Star Trek. With the work being done in voice print recognition, this is an increasingly interesting possibility, but we should be aware that the current state of the art is primarily that of vocal input in numeric form and is restricted to a limited number of voice patterns. A Scot might not be able to use the same vocal input device as a Swede without considerable adjustment - small wonder as one may have some trouble understanding a good Scots brogue with or without a computer!

While direct voice input is still somewhat in the future, a combination of keyed input and voice response is certainly possible. In fact, in our company we had installed an audio response unit as early as 1969. This unit was designed to allow individuals to use a Touchtone phone to contact the computer, key in their job number and request the status of their job in the system queue. The computer replied verbally giving the anticipated delivery time. Without meaning to sound too proud of our system we finally discontinued the operation because the turnaround was sufficiently fast the system was seldom useful.

However, many imaginative systems are being tested today involving a Touchtone telephone and an audio response unit. For this reason let me briefly explain what is involved. There are two types of audio response units on the market. One involves the recording of a human voice, much as is done with a tape recorder. The individual words are then selected and put together by the computer to form the response given over the telephone.

A second more sophisticated device actually creates the sounds with no human voice ever having been recorded. As a computer deals basically with strings of numbers it is quite possible for the computer to cause a sound transducer to create tones at the required volume, which can themselves be put together to form words. In effect, the computer has stored a series of codes which are translated by a transducer into an audible sound.

I am spending a bit of time on this particular process because I want to ensure that you understand the great flexibility that is introduced into information systems by the process of digitizing or creating a coded simulation of the information with which you want to deal. I will return to this concept shortly with another example.

In the meantime, however, we should consider another way of minimizing the amount of work that must be done to capture data early for an information system. I am referring to the optical scanning of typed, printed or handwritten input. It is possible for a computer input device to scan a printed page even with many different type fonts, compare the image it has encountered against known possibilities, and effectively read the page much as we would read a page. This is in fact what we do when we look at a word and compare it to previously memorized patterns. This allows us to instantly recognize the word.

I mentioned that computers can also read handwriting. This is somewhat of an over statement, for once again you and I may have difficulty reading our own handwriting from time to time. What really happens is that a computer can read carefully handprinted characters. This may have a useful application in your systems, e.g. the creation of order forms for government publications where a clerk could record the order by handprinting on a form as the order is phoned in by a customer.

Just as we may have problems recognizing a poorly printed word, or understanding a word in a combination that does not correspond to a previously stored pattern, the computer may have similar difficulties. As in all systems, one must protect against the possibility of error, but there are many standard techniques available to assist in this. One should not ignore the interesting possibilities of optical input to computers despite the somewhat more elaborate editing that may be advisable.

A third method of input involves some direct keying on a typewriter-like device. This could be a keypunch which creates a card which the computer can read. It could also be a keyboard attached to a cathode ray tube similar to a television tube. Many of these devices are now connected directly to a computer so that a computer can edit the input information and ensure

that it is within the bounds of reason. For example, limit checks could be used, e.g. to check that a person's age is never less than 1 or over 110.

There are many current systems for capturing information so it is ready for typesetting operations, or simply for the production of reports, after final correction. These systems allow people to type in a raw text and then update only the words or phrases one wishes to alter. When the final text is satisfactory, a printout can be obtained ready for direct input to a photo composition machine, or the final report can be typed already hyphenated, with right hand margin justification, spaces for illustrations, computer generated graphics, or other advanced features.

A further advantage of this approach is that the entire text is already in machine readable form and hence automatic indexing or other retrieval aids can easily be utilized. More of this later.

There are many other possibilities for direct input into a computer. The computer can be tied to all sorts of sensor devices. However I believe the above will be enough to understand the problems and potentials. Let us now look at the storage of data.

### HOLDING ON TO INFORMATION

The most common approach for storing a data bank is in some form of randomly accessible magnetically recorded device. These devices have evolved rapidly over the years. The first one of these with which I had any direct experience was the IBM 305 RAMAC, which was announced in 1956. This system was capable of storing online 5 million characters of information. At SDL we are about to install the IBM/3850 Mass Storage System, which will be capable of storing up to 472 billion bytes of information - and a byte can contain more information than a single character on the 305 RAMAC. The units are not much different in physical size.

This is an increase in online storage capability of 5 orders of magnitude in a twenty year period. However, even such vast online storage devices are not the answer for all types of retrieval systems. It may still be useful to be able to retrieve the original document, or an image of the original document, or a coded simulation of the document. Let us take a look at each.

It is possible, of course, to store the original document and use a computer to assist in the retrieval of information about the document and its location. This is commonly done by simply allocating a finder number or other cross reference in numerical sequence as documents arrive. The documents may be filed according to this number, and the computer retains the locator number and enough information about the document to allow for easy retrieval. This system is commonly used for money orders, cheque reconciliation, or many other processes.

One should bear in mind that it is not necessary to have an online index for such original document retrieval. The printed KWIC Index is often the least expensive approach. This static index can be updated regularly and saves the expense of online storage of large indexes.

Secondly, it is always possible to destroy the original and retain a microfilm image. As is the case when one stores the original, microfilm allows one to store material which has photographs, graphs, fingerprints, or other nondigital information. Once again with a microfilm retrieval system the most flexible approach is to use a computer for the indexing and searching. The computer will require that a manually created abstract or series of key words be inserted in the index. An alternative to manually created abstracts and key words is to have at least a portion of the original document optically scanned, or keyed so that the computer can

assist by auto-indexing, i.e., selecting key words on the basis of frequency of use within the text or some other criteria.

If the entire text is inserted, the computer can also be used for auto-abstracting by selecting the paragraph or paragraphs containing the key terms most frequently used. There are many variations to this. At the present state of the art it may still be better to use manually created abstracts.

The third storage method is one that has not been used widely to date, but may have its place. This is the storage of a digitized image of the document. This involves the scanning of the document, not with a view to interpreting the meaning of the words on the document, but rather storing in digital form what could be thought of as a photographic image of the document.

The method is fairly simple. The document is scanned by a small photoelectric cell reader. The scanner starts at one corner of the document and then moves back and forth across the surface of the document until the entire surface has been read. Every time the scanner encounters a line it writes a 1 on a magnetic tape or disk and when it senses nothing, i.e. the blank page, it writes a 0.

As you will quickly realize it does require considerable storage to contain such a digitized image. However, there are many methods for compressing the amount of data kept. For example, when you have a string of 0's representing blank space on the page, you can replace this with a single 0 followed by a number indicating the quantity of zeros that follow. Compression techniques such as this are very useful for reducing data transmission costs as well. We will touch on briefly in a moment.

Let me give you two examples of the advantages of actually storing the image of a document in this form. Some years ago the Federal Government and the provinces instituted a computerized mapping project which involved the digitizing by the method described of a series of maps representing present land use, suitability of land for agriculture, suitability for recreation, water coverage, transportation lines, etc. Once digitized these maps could be conceptually overlaid one on the other by the computer to answer questions such as 'how many square kilometers are there in a province of land that is suitable for recreation, with a minimum water coverage, not otherwise suitable for agriculture, within 10 miles of a rail line', etc. This would be a very time consuming question to answer manually.

A second example of the utility of digitized images is the photo enhancement procedure that you often read about in connection with space shots. An image is relayed in digital form from the space probe or satellite to a computer. The process is only slightly more complex. A 'grey scale' is used. This is simply a piece of photographic film with shades of grey ranging from pure white to pure black and numbered from 0 to 63. A scanner scans the photograph in minute increments and compares the light level intensity at each point with the grey scale. The computer then writes out a series of digits on magnetic tape, one for each spot on the photograph. As the scanner detects darker sections on the photograph the numbers recorded are higher. You can now foresee what the computer can do next. The computer increases the value of each digit by adding to it or multiplying it by some factor. This has the effect of re-coding areas to appear much darker. The tape is then run back through the computer and the photograph is re-created. Now, however, each spot which had some image will be darker and the whole photograph will be much clearer.

Naturally, it is also possible to eliminate ‘noise’ caused by poor camera resolution, film problems, or other difficulties. This is done by ignoring all grey scale numbers under a certain value.

One could spend a great deal of time on the many interesting ways of storing or cross referencing information. These three examples will at least give you some idea of the kind of techniques now being used.

The next area to examine is means of retrieving either the entire stored document, or information about documents.

### YOU GOT IT THERE, NOW GET IT BACK

Information retrieval would be simple if we always knew the kinds of questions we were going to have to ask of the data bank. In fact, this is rarely the case. It may be necessary to search several different data bases with a variety of questions. This has led to the establishment of many general purpose computer programs for data base management.

It would be beyond the scope of this discussion to look at individual computer techniques as there are many good programs available. Most, however, will have the following broad features. They will allow the user to:

- Create and store data bases which are really just collections of records about people or things.
- Expand or alter the data base as necessary, usually on an online or offline basis.
- Retrieve data from the data bases according to specified criteria.
- Have the retrieved data displayed at the terminal or printed on a high speed printer.

As a general rule these data retrieval programs will allow you to specify Boolean operations - an intimidating term for the same type of thing our children are now learning in the new math. All this means is that you can ask for a document in which (a) and (b) both occur in the same document, or where (a) but not (b) occur, or a document where (a) or (b) occur, etc.

It is also possible to select records only when some numerical factor is equal to, greater than, or not equal to, certain criteria. The possibilities are endless. However, as a user you should be aware that the more complex the questions asked and the more data bases through which you may have to search to get all the information you need the more expensive will be the retrieval process.

At one time at SDL we proposed the development of a simulation system which would estimate the cost of retrieval before the retrieval process was actually started. This could be a very useful thing if the retrieval appears expensive or difficult.

The above assumes that someone is asking questions of the data bank (I use the term data bank to specify one or more electronically stored data bases). It is often advisable as new documentation arrives to advise those who have a need to know of the arrival of this information. There are many Current Awareness or Selective Dissemination of Information (SDI) techniques. They all involve the establishment of interest profiles for individuals. These are automatically matched against new data and abstracts are forwarded when the interest profile matches the information contained in the new publication. This type of current awareness can be a useful addition to the retrospective searches referred to before.

## GETTING THE INFORMATION WHERE IT SHOULD BE

We can now consider how to get the information where you want it. Using a delivery service is a good first approach. The band width of a bus is very wide, relative to the limited information you can transmit over a voice grade line.

For example, a normal telephone line is capable of transmitting about 300 characters per second. An average text book could contain 1,500,000 characters. This means that to transmit an entire text book over a voice grade line could take over 1.5 hours.

This implies that the use of communication lines in conjunction with information retrieval should usually be restricted to the input of queries and the output of very abstracted information. Bulk information will still have to be forwarded by some other means.

Naturally, higher speed lines are becoming available. Microwave is now common. For local use, coaxial cable is helpful as it can carry the equivalent of 17,000 voice conversations simultaneously.

For longer transmission a wave guide system could provide 100,000 simultaneous voice channels. One should bear in mind however, that wave guides are rather difficult things to handle - essentially a wave guide is a pipe about 2 inches in diameter with a fine enamel copper wire wound tightly around inside in a spiral. This is surrounded by a layer of thin glass fibres and then by a carbon layer. This only indicates that a wave guide is difficult to construct and is not easy to bend around corners.

Lasers are more promising. A laser beam can have a band width which is almost 100,000 times greater than that of a microwave beam. Its great advantage is that the laser beam can be transmitted through fibre-optics, which can in fact be bent reasonably easily.

Finally, there are communication satellites. These satellites do not have, at the present time, anything like the information carrying capacity of a laser land line, but do have the advantage of being able to transmit long distances relatively inexpensively. The use of satellites for broad dissemination of information directly to individual residences is an interesting possibility although a more likely combination will be transmission to a central receiving station followed by local distribution by coaxial cable to individual homes. Shadowing because of mountains or buildings is one reason for this approach.

In general, however, these advanced forms of data transmission should not be your primary concern. The important thing to bear in mind is that without a corresponding broad band local loop, i.e., without a totally coaxial wired city, you still have to be selective about the amount of information you try to transmit.

In a word, you should consider how rapidly your user really needs the information, and then select your dissemination approach based on this.

## THE OTHER END OF THE PIPE

The final area to touch upon is the form of the resultant output. As noted earlier, once the information is in machine readable form it is possible to have tapes produced which can directly drive a photo composition machine such as is done at many newspapers today. One of the great advantages of this system is that one need only proofread the changes to text, rather than re-proofreading the whole final document.

It is possible to output directly on microfilm from a computer, as an alternative to using the extremely high speed computer printers that are now available. Some of the online printers

using non-impact techniques can output at 20,000 lines a minute. But microfilm can form a very effective semi-static storage media for it can be re-scanned more easily than bulky computer forms.

The most important lesson is to avoid creating too much hard copy in any format. If information is changing dynamically the use of a cathode ray tube terminal may be far better than proliferating printouts of now out-of-date information.

A recent advance in information retrieval is the concept of Computer Conferencing. This is dependent on the use of CRT's for creating and communicating ideas amongst people in widely separated areas. In a recent article in *The Futurist* it was pointed out that there are likely only about 100 people throughout the world who are now seriously using computer conferencing techniques. However, the idea of having a computer act as the intermediary between a number of parties at distant points is very intriguing.

Finally, one always hears that whatever goes into a computer is what comes out. This is more or less true, but as we discussed one can enhance the quality of photos, which is really to say that one can improve information with a computer. Another way of getting more out than went in would be to input English and get French out. SDL is extremely interested in the possibilities of using the computer as an aid in language translation. Systems cannot yet translate literary prose, and we may never get to that point. But given limited objectives the possibilities are intriguing.

#### SUMMARY

I have only touched on a few topics in the information industry. I have not even begun to discuss the major challenge thrown out by Drucker which was to stop using information to tell us where we have been and start using it to tell us where we are going. It is this and only this that will really make our contribution to society truly worthwhile. But that is another story.

“Would you tell me please which way I ought to go from here?” asked Alice. “That depends a good deal on where you want to get to, said the Cat”. – *Lewis Carroll*

A talk at the 14th Canadian-American Seminar on Information Processing  
and the Right to Privacy, Windsor, Ontario. November 17, 1972

## *Electronic Surveillance*

**“Learning begins with listening.”**

This is an early examination of the question of privacy and the growing use of data banks.

Surveillance is an ugly word. The Oxford dictionary defines being ‘under surveillance’ as being ‘not trusted to work or go about unwatched’. The very use of such a term betrays an adverse emotional approach to a subject which should be full of hope and promise - the application of modern computer and electronic techniques to alter the quality of life.

Surveillance by itself is a passive act. For all we know we are under constant surveillance by intelligent beings from another world without knowing it or feeling any ill effects from it. Damage is done only when the surveillance leads to some action that is detrimental to the object of the surveillance.

This does not mean that there might not be some impact from even this passive act.

Like the principle of indeterminacy in physics, the act of observation itself may have some effect on the object. For example, in the case of the type of surveillance we are discussing today, this could be the requirement to fill out innumerable forms to collect data for the purpose of surveillance.

The points I want to put forward for discussion are:

- We cannot escape surveillance.
- Because it is not in itself harmful, we should not take steps that will destroy the benefits that can be derived from data so collected.
- We should address our efforts to providing meaningful redress where acts taken as a result of surveillance prove harmful to the individual.

This does not mean, of course, that we should not try to provide preventive legislation against types of abuses that will likely lead to harm for the individual but it does mean that, we could never legislate against all the possible abuses and if we did try to do this, we would lose far more benefits than we would gain.

In the computing field we usually suggest that one should try to automate perhaps 90% of an operation and then handle the remaining items which have unusual conditions on a



**“Phoning or non phoning?”**

manual basis. This normally leads to a far more effective system in which human beings can exercise their judgement on the contentious items and machines can automate the rest. It is much the same principle I am recommending. We can establish some laws to prevent the most likely abuses and this will mean that most of all data collected can be used for beneficial purposes and only a very small percentage might have adverse consequences for the individual observed. Since such consequences could not have been anticipated, in many cases, without doing away with all forms of surveillance, these abuses can best be handled on an exception basis as I will discuss later.

The main issue is not really privacy which is, of course, a legal concept but really a choice of what kind of world we want to live in. We can go to either extreme. If we live in a society in which no information is collected or processed about individuals, we would in effect have anarchy. I suspect there are some of the hippie cult today that would believe that such a life is possible. I doubt if most of us would believe it is desirable.

At the other extreme, we could strive for perfect information on all individuals and, of course, end up with the sterile world of 1984.

Compromise is obviously necessary.

#### WHY IS SURVEILLANCE UNAVOIDABLE?

First, there is the increasing capability of what has been called cyberveillance. As has been repeatedly pointed out over the past several years, advanced electronics and micro electronic devices can provide surveillance techniques which are virtually inescapable.

After the publicity of the Watergate affair, it is unnecessary to review the many techniques that can be used for bugging rooms, telephones or other means of communication. We have all read about microphones small enough to be hidden in a cocktail olive and we are aware of the long-range listening devices that enable a remote conversation to be followed without detection.

We are probably also aware of the ability to not only monitor telephone conversations but to use voice print techniques to determine who is talking. We have had enough experience with the incredibly detailed photos that can be taken from satellites and with the incredible photo enhancement computer techniques to realize that no place on earth is secure from electronic surveillance. We also know that this type of surveillance can take place at night through the use of infra-red techniques and that radio broadcasts can be monitored from satellites as well.

It has even been postulated that one could put a tiny radio beacon in an aspirin or a birth control pill which when unknowingly swallowed by the recipient would make him a living transmitter of his whereabouts.

One could go on to speculate that minute devices could be developed that could be implanted in the human body at birth or without the recipient's knowledge during some non-related operation which could monitor thought patterns to detect our behaviour even before we may be fully aware of what we are doing or thinking. Anyone who watches SEARCH on television is already exposed to this type of technique.

My point is that such devices are now so sophisticated and yet so relatively inexpensive to produce, that no amount of legislation could safeguard us from their use.

#### SURVEILLANCE BY DATA

A more subtle surveillance takes place even now through the information maintained in

thousands of data banks whether they are manual or computerized. I maintain that this kind of surveillance is, in many cases, neither avoidable nor undesirable.

As stated earlier, information is not in itself malicious. Its use, however, might be, whether through intent or stupidity.

We are all aware that information is kept on all of us in innumerable files. The benefits for the majority are obvious. If, for example, a life insurance company were unable to keep records on individuals, the life insurance business would become impossible and millions would be deprived of this valuable tool to save the few abuses that might arise from having such information, no matter how it is kept.

In our sometimes emotional attachment to privacy, we tend to forget the great benefits that are brought about by having data banks of personal information. I will cite only several of a long list.

Medical information kept on individuals is probably one of the greatest tools for medical research. It allows searches for correlation of symptoms and disease which might lead to earlier cures which would benefit all. Such an information data bank would have to be sufficiently detailed that individual identification could be easy. In any case, such case history data when accessible by any doctor would be invaluable in emergency situations.

In these days of high unemployment, it is almost vital that we are able to match jobs quickly to individual qualifications. This kind of search requires data that is identifiable with the individual involved.

There are certainly very necessary uses of data banks for social science research which could get away with some degree of aggregation but my own experience in working with programs to correct regional economic disparity is that to provide really useful assistance in relatively small areas requires information that will almost identify the individual in any case.

The use of data banks for detecting patterns of crime could also be on an anonymous basis but again it would not usually be difficult to identify the crime type with the street location and hence identify the individual.

The above examples really only serve to reinforce the idea that we must have information to run a modern society and that much of this information must be identifiable with the individual. What we are really talking about, then, is not whether data banks of individual information are necessary but rather how to pick out the high point on the normal curve which plots the benefits derived against the privacy lost. When the slope of the curve starts to drop and the loss of privacy is high relative to the benefits gained, this is where preventive legislation should take place. At any point in the curve, abuses resulting from the invasion of privacy should of course have access to some form of redress.

The price of progress is a compromise of our privacy.

### WHAT PRIVACY DO WE REALLY HAVE?

By now we are all aware that we have very little unassailable privacy. In fact, most of our real privacy comes because the majority of people frankly do not care what we do.

To give an example, consider how much could be known about you as a regular user of an American Express Card. Data exists in their file which is completely identifiable with you which gives an outline of your life style in great detail. This data bank would show what your level of income is, where you travel, whether you travel alone, whether you eat out often and

where, whether you are a generous tipper, what your drinking habits are, what your purchases may be and almost anything else to make a fairly complete dossier on you as an individual. Nothing in the above should be taken to imply such an analysis is even made but only to point out the possibilities.

My own reaction to this is that the benefits of having the credit card far outweigh anything that someone could find out from this file and I frankly cannot see how the system could operate without accumulating such information. I would suggest that regular purging of the file, which probably happens for reasons of economics rather than morality, would make it somewhat less revealing.

Much of this information is at the noise level and is of interest to no one. An individual's concern could be that someone might put some moral judgements on the activities, i.e., the individual drinks too much, appears to rent rooms with double beds while away from home when the same file could show his wife, on the same day, is using her card back home, etc. If someone tried to use such information for blackmail or other malicious purposes, the individual would rightly be incensed and, as I have stated earlier, should have an easy method of redress.

If, however, the use of such a general purpose credit card could provide evidence that the individual was purchasing goods in the United States and bringing them back to Canada without declaring them, then this is clearly an illegal action and it would be hard for anyone to deny that the Government should be able to prosecute on this basis. If you do not believe this, then you are really saying that there should be a degree of latitude in what is legal or illegal as there obviously is today in what is moral or immoral.

You might make the contention that the mere fact that information exists about an individual could have an adverse effect. For example, this in itself could be damaging to the individual's peace of mind. A psychiatrist could probably comment better than I, but I believe that this is not likely the case. My own experience is that full and free disclosure of information is usually the best guarantee of peace of mind.

Some years ago, I had a case involving security clearance in which the individual had to be released from our employ because he was a security risk. It was not that he had been convicted for any wrong doing. This would not have made him a security risk as this would be information in the public domain.

It was rather that he had tried to cover up the fact that he had been accused of a wrong doing. Even though the case had never come to court, his decision to hide information opened him to the possibility of blackmail and hence made him a security risk as well as, I am sure, destroying much of his peace of mind.

#### WHAT PROTECTION IS POSSIBLE?

As I have already made a case that it is neither possible nor desirable to try to prevent all forms of electronic or data surveillance, we should examine what is possible and desirable.

First, I believe that more problems could arise from the large number of scattered and uncontrolled data banks than from the centralizing of the most critical data. During the National Datacentre debate, it was contended that centralizing such data would lead to too much information being related about one individual and being accessible in one place. The contrary, I believe is closer to the truth.

At the moment, most individuals do not know what information is kept on them or where. They certainly do not know to what use it is put.

A central data bank would at least allow one source of nationally available information which could be checked by the individual and used as the standard basis of information about him.

I do not believe it is feasible or desirable to try to eliminate all other data banks. Every company or organization will want to know things about either its clients or employees that would unnecessarily clutter any central file. Most such auxiliary files are harmless and, again, protection against abuses of these files could come through the process noted below.

The existence of a central file would cut down the amount of harassment by government forms, e.g., enumeration for elections, municipal assessments, etc. and could, if it contained the right information, be extremely useful for the development of national policy in a wide variety of areas. It would be far easier to check the accuracy and currency of such information than it would, in its present scattered form, throughout innumerable files in the government and elsewhere.

Secondly, I believe that it is feasible, at a price, to apply sufficient controls to such a data-centre to ensure an acceptable security of such information.

This, does not mean that anyone can guarantee perfect security of a computer file. It was once postulated that in Egypt the architects of tombs and pyramids were occasionally killed after the construction so that no one would know precisely how to enter the inner chambers. I doubt if I could get many of our systems programmers to complete a foolproof security system and then throw themselves across the voltage regulators as a final assurance of how secure the system is, i.e., there will always be some ways of breaking a security system if there are people there who invented the system.

However, violating a computer file is a tricky business at best and good protection can be provided by scrambling techniques, being careful of what you do with printouts and many other relatively standard and well-known techniques.

I suspect that not many people really doubt the utility of a national data bank nor do they doubt that such a data bank could be made adequately secure. Most of those who raise objections to the idea feel that abuses may occur either through malicious intent or bureaucratic bungling.

I maintain that it is unrealistic to sacrifice the efficiency of such a system for the small number of abuses that could occur.

## HANDLING THE EXCEPTIONS

If my contention is correct that efficiently handling individual data will not result in any problem to the individual in the vast majority of cases, the question then arises about what to do when abuses do occur. The easy answer would be to leave such redress to the courts. I doubt, however, if anyone really believes this could be a solution because of the time and cost involved.

If an individual has lost the opportunity for a job because of an erroneous credit rating, to use the standard example, there is no point in initiating a court case which could take two years to get on the docket. I have, however, seen examples such as the Ontario Human Rights Commission, where an individual who is denied the right to rent an apartment because of race,

could get almost instant action from a commission established to handle such cases. Such decentralized local commissions having some of the functions of an ombudsman with the powers of injunction or interim solution could serve to protect the individual.

It is interesting that some mechanism of this sort is already developing through the Action Line columns of our daily newspapers, indicating that such an approach is feasible.

### SUMMARY

In general, my approach has been that both complete privacy and total information about individuals represent extremes that are equally unrealistic. I also contend that the benefits of centralized and efficiently handled information about individuals far outweigh the potential abuses and that when abuses arise they are better handled by something like a local human rights commission.

The Report of the Special Subcommittee on the Invasion of Privacy commented that “though bank robbers have not been totally eliminated, we have not on that account abandoned banks and banking”. This analogy I believe applies well to the concept of data banks on individuals.

The Organization for Economic Cooperation and Development Symposium, Vienna, Austria.  
September 20, 1977

# *The Problems of Transborder Data Flows*

**“Ideas are a dime a dozen. People who put them into action are priceless.”**

There was a great concern in the 70’s about the adverse effects that data banks would have on national security or even commercial processes. This paper argues that the restriction of the flow on data is a temptation that must be resisted.

## 1. INTRODUCTION

This paper expresses a personal point of view. My observations are from a background as President of one of Canada’s largest computer services organizations.

Systems Dimensions Limited (SDL) does about \$20 million (CDN) of computer services business in Canada and in the Northeastern United States. We export to the United States approximately 15% of our business. All processing is done in a centre located in Ottawa, Canada. The computer complex contains three of the largest IBM computers currently available.

Our interest in this topic stems from our extensive transborder transmission of data on a commercial basis.

## ORGANIZATION OF REMARKS

The paper is in two parts. The first is a statement of general principles which I personally believe would be useful guidelines for resolving the problems addressed by this Symposium. The second part outlines my observations of the Canadian experience to date.

## GENERAL PRINCIPLES

Information is the property of people not governments.

Protection of this property right is the responsibility of governments.

## BROOM HILDA



by Russell Myers



RUSSELL MYERS

Governments have a requirement for information for the general good. This must be strictly on a ‘need to know’ basis. This ‘need to know’ must be defended by the government in question and requests for information from individuals must have a defined purpose. The information so collected can be used only for that purpose.

However, the freedom of international exchange of information will be beneficial to all countries in the long run. It will far outweigh the short-range economic attraction of requiring information to be stored only within the borders of one country.

### A PROPOSED APPROACH

1. Concentrate on the correction of abuses rather than a universal prohibition of data flows.
2. Concentrate on arranging international treaties for the ‘extradition’ of data which may be stored in another country.
3. Allow data to be freely stored in countries where such mutual data extradition treaties exist.
4. For information for which the government has a ‘need to know’ require licences for the storage of that data in countries where no such treaties exist. Furthermore, require that such information be kept in duplicate within the country’s own borders. Penalties for violation could be quite severe.
5. Some classes of ‘need to know’ information may be deemed by governments to be vital to the national interest and not just for the protection of privacy of individuals. Such information should be clearly designated in advance and it may be specified that such information cannot be held outside a country’s borders.

### THE CANADIAN EXPERIENCE

To my knowledge, the Canadian Federal Government does not have an official position on the transborder transmission of data. In the publication *‘Branching Out’*, it was suggested that licences be required to keep data outside the country. This suggestion was not followed up. At the moment, information of all kinds is freely stored by Canadians in other countries or by other nationals in Canada.

This does not mean that there are no restrictions. In fact, the unpublished report of the Computer/Communications Secretariat on North/South Flow of Information outlines a great deal of legislation at the Federal and Provincial level which does have restrictions on where data may be stored. However, to my knowledge little, if any, attempt is made to enforce these regulations. It would be difficult from a practical standpoint to know how to suggest this could be controlled short of requiring licences and establishing an enforcing body.

The confusion of jurisdiction between the Federal and Provincial Governments adds to the problem. For example, some provinces have statutes controlling the activities of credit reporting agencies. In Ontario, for example, there is a regulation that prescribes that no credit information may be reported unless it is kept within Canada.

On the other hand, banks which have federal charters have apparently no statutory restrictions on where they may store information about individuals.

In general, there is very little legislation which requires that original documents must be stored in a particular province or even within the country. In some cases, such as Canada Business Corporations Act where corporate records are kept outside Canada, the company must keep copies within Canada.

The previously referred to paper on North/South Flow of Information outlines twenty-three Federal Acts having some bearing on where information may be stored. In addition, it refers to ninety-two individual pieces of Provincial legislation having some bearing on the matter.

As can be seen, the enforceability of such a mass of legislation is difficult without some coordinating body or overriding legislation. It is even difficult for individuals to know when they are violating a particular piece of legislation.

Canada suffers from the same confusion of purpose as many other countries. There is a strong feeling of nationalism or even regionalism which leads the Federal Government or Provinces to want to protect the cultural integrity of particular areas. If information is defined broadly enough to include broadcasting and publication, Canada has been almost totally inconsistent.

For example, the Canadian Radio Television Commission has been endeavouring to increase the Canadian content of broadcasting within the country. Yet they would condone the pirating of American television programs and the substitution of Canadian advertising for these unpaid for programs.

The Federal Government will trade information about individuals or individual corporations with other countries. For example, with the United States, Canada will trade information having to do with taxation, anti-combines legislation, or other such matters.

The Federal Government, however, does not attempt to protect the privacy of Canadian individuals and freely allows files for medical information for insurance, credit card data files and extensive information on individuals to be held abroad by commercial organizations.

Fortunately, the Federal Government does now realize the magnitude of the problem and is considering ways of dealing with the situation.

### ONE COMPANY'S COMMERCIAL EXPERIENCE

The lack of consistency in the application of existing legislation does provide a problem with the transborder transmission of data.

It has only been after extensive discussions that our company is able to reasonably freely move information stored on magnetic tapes across the border between the United States and Canada. The difficulty is that there is no very consistent definition of whether duty should be paid on the medium or the message. We have finally arranged for a bonding agreement based on the value of the tape rather than the value of its contents.

It is amusing to note that some years ago we were able to transport punched cards on the basis that they were manuscript. We claimed as they were used, i.e. full of holes, they had no value. The customs officials are now somewhat more sophisticated than this.

Technical difficulties have far surpassed the legal problems in transmission of data to and from the United States. The communications offerings in countries differ. The interface even between closely connected organizations, e.g. AT&T and Bell Canada, is often difficult and time consuming. Rates vary considerably.

In fact, the best 'de facto' protection of information is the technical hassle involved in the international transmission.

However, there is no doubt that with better international standards, satellite transmission and the encouragement of multi-national information exchanges, the technical problems will be reduced in the future.

We have also noted that we may, in fact, be a data haven. We would have assumed that companies could be reluctant to store data in another country. In fact, it has been expressed to us that having data stored in a relatively safe and secure place, such as Ottawa, is a real advantage - there are no power 'brownouts', few social disturbances, etc.

In general, we have found very little reluctance by users in the United States to use our computer in Ottawa for scientific or research work. We also store a certain amount of information of a personal or commercial nature. We expect, however, that the growing proliferation of privacy laws in the United States will have an effect on this in the future.

Data service companies do face an interesting problem. It is normal for us to know very little about the type of information which is, in fact, being stored on our computers. It is not clear what the legal responsibility of an organization such as ours would be if we are unwittingly violating the privacy laws in either country.

Our organization submitted a brief on this subject to the Federal Government in connection with planned revisions to the Combines Investigation Act.

We pointed out that the extensive rights of search and seizure could make the operation of the computer service organization virtually impossible. Our business depends on the integrity with which we treat information held by our clients. We took the position that any investigation having to do with privacy laws or resulting from any type of legislation was strictly between the government in question and the company or organization. We would only give up data under a Court Order.

#### THE EXTENT OF THE PROBLEM

Most of the information held in other countries about Canadians or Canadian organizations is commercial. As Canada is essentially a branch office economy, most large corporations hold considerable information in the United States about their Canadian operations.

There does not appear to be a great deal of information held about Canadians other than in the United States. Some large life insurance companies with overseas business do have direct computer links with their Canadian operations. However, most of this appears to lead to the storage of information in Canada rather than abroad.

There are a few instances of data service organizations providing services from Canada to the United Kingdom or Europe.

However, in general, the transoceanic flow of information seems very small.

Even the flow of information between the United States and Canada by commercial organizations is not well documented.

It is likely, however, quite substantial.

What is not obvious is that this has worked to the detriment of Canadians as individuals or to the detriment of the Canadian Government.

Concern has been expressed that information on oil exploration in the Canadian West has been processed and stored in the United States. While this has undoubtedly happened, again there is no indication that to date this information has been misused.

There is certainly some information accessed from other countries by Canadian organizations. Examples of this would be the New York Times Databank or the SDC Databank which is marketed in Canada under the name of INFOMART. It could be a serious loss to Canada if such access to technological or other information were restricted by any universal prohibition

of transborder data flows. Until we better understand the extent of the problem, no action is better than the wrong action.

## SUMMARY

It does not usually make sense to legislate against a sensible technological solution to a problem. If it really makes sense for corporations operating on a multinational level to store data about their operations or about individuals within their company at their head office, it would be difficult to prevent this. I believe, therefore, that the default option should be the free flow of information.

The aim of any legislation or international agreements should be to protect the privacy of the individual. It should not be for purely commercial reasons or for narrowly nationalistic purposes.

The temptation will be strong to restrict the flow of data for these reasons and use as an excuse the protection of individual privacy. These two aims should be kept quite separate. The temptation must be resisted.

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A talk to a Federal Government Seminar on Information Processing, Ottawa.  
November 1978

## The Race to Regulation

**“If something is really urgent, postpone doing anything about it immediately.”**

This talk addressed the concern that the best way to prevent abuses in the use of data is to prevent the accumulation of data. This is like saying the best way to prevent bank robberies is to close all the banks. The disadvantages of such an approach far outweigh the protection offered.

### A POINT OF VIEW

My comments on transborder data flow come from one whose basic point of view is that the desired position in any situation is no government regulation. In any field it should be proven to the public's satisfaction that the benefits of regulation outweigh the problems that inevitably follow.

This is not a general anti-government attitude, but just a position that says ‘the default option should always be to the private sector’. Government should become involved only when the case can clearly be made that a net public benefit will result.

Once an area is regulated it rarely, if ever, is returned to unregulated operation. It does happen, however. The deregulation of the airline industry in the United States is a recent example. As best we can tell this resulted in far lower fares to the public, filled aeroplanes, and sharply higher profits for the airlines. Market forces will lead to some further rationalization of airfares, but in general, the deregulation has benefitted everyone.

What has all this to do with transborder data flows?

I believe that governments in many countries are rushing to enact legislation before the need is known. This could do more harm than it will provide help.



## PROBLEMS - REAL AND UNREAL

A number of European countries have deep and sincere concerns about the issue of protection of privacy of individuals. They remember the use to which government files were put during World War II. However, this understandable desire to protect privacy has led to premature attempts to stop all transborder data flows of information about individuals.

In fact, I suspect that much of the pressure for such laws is really coming from computer services firms, local manufacturers of computer equipment, and governments in general who feel they must protect jobs. All of these groups have fairly obvious goals, having little to do with the protection of individual privacy.

These countries are in fact creating non-tariff barriers to free trade by hiding behind the issue of protection of individual privacy.

## THE RIGHT TO PRIVACY

I believe that once Eve joined Adam, privacy as an absolute right disappeared forever. What we have been endeavouring to do ever since is to find the right balance between privacy and the clear benefits that some forms of centralized personal information can bring, even if that information is stored in, or accessible by, another country.

Some of the many benefits from international transfer of information are: the ability to readily transfer money from country to country, the availability of international credit cards, the promotions that individuals can gain within Multi-National Corporations, and the lifesaving benefits of having internationally available medical information. Yet all of these useful processes can only exist if data on individuals can be accessed internationally.

Frankly, while I support the idea that governments should look at means to protect individual privacy on an international basis, I am very concerned about the shotgun approach that sometimes results. To my knowledge, there have been very few instances where individuals in one country have suffered because of data about them being stored in another country. One exception of course is the information that secret police files may have on individuals in other countries. However, such files will not cease to exist no matter what international agreements take place.

If indeed this is reality, then the protection of privacy debate should be viewed as determining how to remedy the few wrongs that occur, and how to do so quickly. It should not be used as a reason for prohibiting transborder data flows on all information about individuals.

Fortunately, I believe this view is gaining acceptance and seems to be the basis for the proposed guidelines being developed by the OECD, amongst others. I believe that Canada should support such international efforts.

## THE ECONOMIC ARGUMENT

Dr. Peter Robinson correctly points out that there are very real problems for Canada created by unfettered transborder data flows. Amongst these are:

- Loss of jobs.
- Adverse balance of payments.
- Loss of control of Canadian sovereignty.

Again, however, I express my concern about government regulations, particularly where they prohibit the use of a technologically attractive tool.

MNC's do bring many benefits to Canada. Many are good Canadian corporate citizens. If too many artificial restrictions are placed on them, they will be discouraged from expanding their operations in Canada. This could lead to a far larger loss of jobs in Canada than the relatively small number that might be lost in the computer industry.

Canada needs technology transfer to improve its own industrial productivity. If we were to restrain transborder data flow to the United States for example, the Americans would certainly retaliate. The effect could be an Electronic Curtain along an otherwise reasonably free border.

If computer services companies in Canada are concerned about foreign competition, they should take the initiative to start competing in foreign countries for the business of the foreign parents of Canadian corporations. Anti-dumping regulations should certainly apply to this, as any other industry, but I believe an aggressive foreign marketing approach is a far better solution than artificial trade barriers.

At least, when we examine the economic considerations, we are recognizing the situation for what it is. We are no longer talking about simply protecting individual privacy by preventing personal information being stored in another country. To have any practical effect on jobs in Canada we would have to require that all MNC's data processing be done in Canada.

If we were to regulate all information transfers between branches in Canada and parent corporations elsewhere, we would not be far from regulating all mail deliveries, courier services, or other means of international transfer of information. We have already seen the effects of government's attempting to promote Canadian culture by artificially restricting the foreign content of Canadian broadcasters. In a world where international understanding will be absolutely vital, and Third World countries will need all kinds of technology transfer, I would be very concerned about any unnecessary government interference in this process.

### A POSSIBLE SOLUTION

While I have this natural aversion to any government regulation, and, in particular, where it infringes on free transfer of information between countries, Dr. Robinson is correct to raise the economic and national sovereignty questions for Canada.

It has always been difficult for Canada to retain a free trade posture when other nations are regularly imposing non-tariff barriers on free trade.

A possible solution would be not to dictate to the MNC's how they must operate, but instead, establish our own Canadian guidelines for what constitutes 'good corporate behaviour'. These guidelines would encourage MNC's to do most of their data processing in Canada.

The next step would be to monitor annually how MNC's are progressing in moving as much of their work to Canada as possible. The government could make available such information as the percentage of data processing work which major firms are doing in Canada and how this compares with the percentage in prior years. To use the current computer phrase, this plus the future possibility of actual regulation could give these guidelines 'virtual teeth'.

### SUMMARY

The issue of transborder data flows is an important one for Canada and future world understanding.

Satellites are making international data flow easier, while governments are trying to make it more difficult.

I believe that eventually some regulations will be needed for certain types of data such as, some aspects of individual information and data on natural resources. However, the first step will be to find out what is actually happening by monitoring what companies are doing in the way of international data transfers

The aim should be the minimum regulation to do the job.

A talk to the 3rd International Conference on Computer Communication, Toronto. August 1976

# *The Interaction between National Policies and Business Development*

**“If everything seems to be going well, you’ve obviously overlooked something.”**

There is a growing tendency for governments to be involved in everything.

Governments in fact make very poor entrepreneurs at the best of times.

This paper proposes a Bill of Rights for the free market system.

## THE CANADIAN ENTREPRENEUR IN THE 70’S

The interaction between Government and the Free Market System is at a critical stage in Canada. Government involvement in the economies of major countries in the Western World has been growing for over a century, but has shown a marked acceleration during recent decades.

The imposition of comprehensive controls on prices, wages, profits and dividends, here and elsewhere, has caused concern and even alarm. The frightening spectre is that the involvement of government at the detailed level of product development and marketing may become permanent.

This is clearly a time for reason not rhetoric. Entrepreneurs and businessmen in Canada must not panic, but rather respond to the Prime Minister’s challenge to open the topic for national debate.

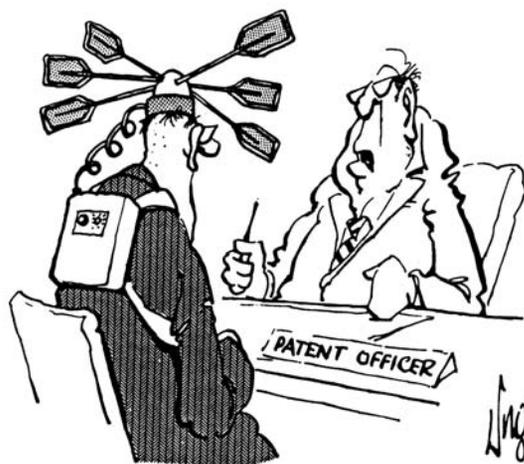
## THE NATIONAL CHALLENGE

The challenge we face as businessmen and citizens is to ensure that the subject is discussed and the result is a clear definition of the role that government should be permitted to play in the Free Market System for the benefit of the country.

The Free Market System has provided the Western World with the highest standard of living ever known. The system should not be lightly discarded.

It has not been proved in any country that extensive government control or direct operation of a large portion of a nation’s economic enterprises does act in the best interests of the majority.

However, it is equally true that the ‘invisible hand’ of Adam Smith is not sufficient



**“No don’t switch it on, just explain the advantages over other insect repellents.”**

guidance for all aspects of a complex modern economy. The question that must be addressed is not IF government involvement is required but WHERE and TO WHAT DEGREE.

Let me suggest some guidelines...

### THE ROLE OF GOVERNMENT

I believe that the first obligation of a national government is to establish a clearly stated set of objectives for the country. These objectives should be stated as rigorously as possible. The plan must be long range, e.g. to the Year 2000.

By being rigorous, I mean that the government should define the national objectives in numeric terms, wherever possible. I suggest they could include:

- A gradually increasing GNP per capita with specific checkpoints every five years
- A defined acceptable level of inflation
- A policy of substantial resource independence through development of substitutes, recycling, etc., as only this way can a National Plan be reasonably independent of external factors
- A definition of acceptable environmental levels of pollution
- An objective in terms of desired population size which must be linked to the desired GNP, resources, and similar factors

Such a model would have to be dynamic but would at least provide objectives against which Canadians could judge the results of strategies developed by governments or private enterprise.

This clearly recognizes that there must be constraints but these will be largely acceptable to both parties when viewed in the light of the national objectives to which the majority of Canadians would then have committed themselves.

I believe that the greatest shortcoming of our current national government is the failure to create such a Plan.

I do not underestimate the size of the task. We must not underestimate the cost in wasted effort if we do not try.

The establishment of a national set of objectives is particularly difficult in a mixed economy. The implementation will be more difficult than a series of Five Year Plans in a more authoritarian state but, if we fail to define where we are going, there will be no way of judging how well we are succeeding.

Many States in the United States have established Project 2000 operations with this in mind. I believe the government in Canada owes the people no less.

Without such a long-range plan, Democracy as we know it and the Free Enterprise System we purport to cherish will almost certainly decline. The difficulty is that, without national objectives, the majority in a Democracy can and will vote themselves as much of the resources of the country as each generation desires. This situation is compounded by the generally short-range outlook of governments elected for periods of five years or less.

With clearly stated goals, the role of government can then be defined in terms of the amount of involvement in the economy necessary to reach these goals.

### THE INTERACTION OF GOVERNMENT AND THE FREE MARKET ECONOMY

If the first objective of government is to define national goals, the next task must be the

definition of minimum levels of service in Health, Transportation, Education, etc., that will have to be provided directly by the government if such services are going to be uniformly available to all Canadians.

Examples might be...

- A national rail network, such as the CN
- A national airlines system, such as AIR CANADA
- A national broadcasting system, such as the CBC

Public support of such basic operations will be necessary if service is to be provided to all Canadians even in marginal areas. Canada has shown great ingenuity in using Crown Corporations, or other devices, in developing our present mixed economy.

However, unless it can be clearly demonstrated that further regulation, control, or operation by government of organizations in such industries is absolutely necessary, I believe that the Free Market System should be allowed to operate with as little interference as possible.

For example, restricting Canadian Pacific Airlines to a percentage of Air Canada flights in designated areas is a restriction totally unwarranted. Having established a national broadcasting network, with its implications for national unity, it then becomes redundant to artificially restrict what can be done by private networks.

It is in areas such as the latter that government is creeping into the Free Market System in a way that will ultimately lead to the destruction of the system.

Where there are peripheral services that are desirable but not within the defined minimum level of necessary services, these should be left strictly to the private entrepreneurs. Those operating in the free market sector will, of course, have to live with constraints in the areas of public safety, environment or, on occasion, resource usage. But beyond this, the default option should be that the private sector is left unregulated.

The role of the private sector must be to provide the choice and diversity of products and services desired by the citizens of the country. They can only do this when the Free Market System is available to allow opportunity for entrepreneurs with suitable rewards for success and the risk of failure when the entrepreneur has not properly judged the desires of the public.

## GOVERNMENT AS AN ENTREPRENEUR

Where the national government has attempted to take over the role of the entrepreneur, the results have been almost uniformly unsatisfactory.

The well-intentioned efforts to establish a computer manufacturing industry in Canada has only led to financial disasters, such as Consolidated Computer, Inc., or the provision of government funding to multinationals who could well afford to finance programs on their own.

The attempts to establish a components industry with government urging and backing has been even less successful. Microsystems International is a project that I doubt would have been undertaken had it not been for the prompting and financing of the Federal Government.

These and many other examples arise because of the confusion in the policy of our government between the risks that an entrepreneur can and should properly undertake in response to real and not imagined demand, and the proper role of government in providing the basic minimum levels of service designed with national objectives in mind.

The government is a poor entrepreneur. It should stay out of this area. It should leave to industry the initiative in response to market demand. Government should let industry take the risks.

There is more than enough to do with public money than to bear risks that should be undertaken by the private sector.

### THE COMPUTER COMMUNICATIONS INDUSTRY

Our industry faces a major challenge in this redefinition of the role of Government and the Free Market System.

First, in Canada at least, our industry is going to have to be more independent and stop requesting assistance from government. The more we request, the more difficult it will be to draw a reasonable line between government and our industry. If we do not like the results, we will then have only ourselves to blame.

Secondly, as we are the entrepreneurs in the information processing field, we will have to direct our efforts towards assisting our national government in doing the computer modeling and other tasks that will be necessary in the Project 2000 I am proposing today.

I am sure our industry will rise to this challenge.

### A BILL OF RIGHTS FOR THE FREE MARKET SYSTEM

As students of Roman History will know, it became necessary for the Citizens of Rome to establish a position called The Tribuni Plebis. This Tribune of the People was responsible for protecting the rights of the citizens against the Senate. Today, the position of Ombudsman has a similar function wherever this concept is in use.

I suggest that the time has come for those of us who believe in the Free Market System to establish an Ombudsman to protect the system from encroaching government interference.

Such a position would have to have constitutional powers to monitor government's action and take corrective steps, where necessary.

I believe that nothing less than this approach will be truly effective. The alternative will be a steady erosion of the system that has done so much for us.

The default option must be the private sector. The onus must be on the government to convince the Ombudsman that it is absolutely necessary for the government to take over or closely regulate a new sector of the economy. This case can only be made by relating the need to the previously proposed national objectives.

If we believe the Free Market System is worth protecting, we must act now.

A talk to the National Secretaries Association, Vancouver Chapter. September 9, 1980

## *Beyond Mork and Mindy*

**“Remember half the people you know are below average.”**

This looks at some of the problems of standard television and how some of us might be aided by new services on cable.

In the average Canadian household the TV set is on approximately six hours a day. Whatever people may think about the quality of the programming, it is clear that TV occupies a lot more of people's time than most other activities. I am not sure that anyone has surveyed accurately how much time people spend on eating, sex, etc., but at least around our household none of these activities run to six hours a day!

If people are that happy with the product, why should I be here discussing some of the new things that you may be seeing on your TV screen? In Vancouver and Victoria over 90% of the households take cable service. It is hard to improve on this. Yet Premier, which controls the major cable television operations in these areas, is committed to spending millions of dollars expanding the system from its present 17 channels to 35 or even 50 channels.

Part of the reason for this is that I doubt people are really as pleased with their TV programming as one might expect.

The standard network programming with its endless sitcoms and police car chases is becoming very wearisome. Except for Morris in the cat food commercials, most people are equally bored with the advertising.

In fact, for the first time in several decades, TV viewing in the United States has actually shown a slight decline.

### WHAT IS WRONG?

The problem with the standard network programming is that in order to attract advertising dollars the programming has to appeal to as broad an audience as possible. Looked at another way, this means that the programming tends to appeal to the lowest common denominator of people's tastes. The advertising tries to appeal to everyone but in fact ends up appealing to

### Mother Goose and Grimm



very few. You would be surprised at how little interest I have in feminine hygienic products. So what is the answer?

### PREMIUM TELEVISION

There is a better way. Television can learn from the pattern established by booksellers, movie houses and other forms of entertainment where the public selects what it wants to read or see, and pays for the privilege. When television started I am sure this is the way home entertainment would have been paid for, except that there was no means at that time for determining what the viewer was watching, and charging accordingly. Hence advertising was the only means of paying for the programming provided.

Technology now allows for selective programming aimed at much narrower audience tastes. We are moving into an area when the viewing public can watch what it wants - rather than what the networks insist one should see.

This is often called Pay TV. The name is really misleading. All television is paid for one way or the other.

- We pay for the CBC through our taxes whether we like what they put on or not.
- We pay for commercial network programming every time we buy a can of peas. Again, this is non-discretionary, for the public pays under these methods whether they want to or not.

There is a form of discretionary TV programming which is PBS. At least this is supported in some measure by voluntary donations, although PBS is often call the Petroleum Broadcasting System as it, too, is largely supported by commercial firms and hence the cost is ultimately paid for in the cost of products.

### HOW DOES PAY TV WORK?

Small wonder that you have to ask. Pay television has been allowed in the United States for several years. The cable companies there are essentially unregulated and hence can bring to the public whatever they feel the public will enjoy, as demonstrated by what the public will pay for. Pay TV is not available in Canada - or at least not legally.

It is a strange situation where Canadian satellites are largely unused and, as you are all aware, more and more remote communities are buying earth receiving stations and pointing them at U.S. satellites. Those in remote communities are now getting more entertaining programming than many in the big cities. So far the CRTC and the Department of Communications have not seen fit to allow the cable companies to carry the same programming to their urban subscribers. Nor have they prosecuted those picking up foreign signals in what is a possibly illegal manner. I am hopeful that the CRTC will allow Pay TV in Canada legally by the Fall of 1981.

How does it work in the U.S.? The viewing public still gets the regular network shows and, as these are supported by advertising, of course are not directly charged for these. However, there are now dozens of pay packages available largely by satellite. These include first run movie channels, e.g. Home Box Office or Showtime, special sports packages such as Madison Square Gardens, special language programming such as Galavision for those speaking Spanish, special programming for senior citizens, cultural channels including the best of the BBC, and a variety of special programmes produced just for pay television.

Most of this fare is repeated a number of times during the month so that you can see the programming more or less at your convenience.

The costs vary but seem to range from \$10-\$15 per month in addition to the regular cost of cable. You would likely have to add a converter if you do not already have one. The converter might rent for \$3-\$4 a month or could be purchased outright.

As most pay television channels offer 15-20 selections during the month, this works out to about \$1 per film. This would not even cover the downtown parking for one movie, much let alone the cost of the show itself, the babysitter or whatever else. Obviously, as well, a whole family can watch at no increase in cost. I scanned the latest HBO offering and discovered that they were showing “10”, “Linda Ronstadt in Concert”, “The Main Event”, “Norma Rae”, “Hair”, “Sunburn” with Farrah Fawcett, and a variety of other such fare.

In Canada, the cable industry has offered to provide a similar type of programming but would add to this a selection of Canadian productions. In fact we have offered to use some of the funds raised from pay television to develop new Canadian programming. Our aim is to get better Canadian productions rather than simply more. We would even dedicate a separate channel to the rebroadcast of Canadian productions so they are sure to get good exposure. If they are good enough, people will watch.

However, our first aim with pay television is to satisfy the new viewing desires of our public with the best in Canadian and international fare.

#### CABLE AS A RETAILER

I have emphasised that I expect cable to provide a number of channels of pay television each directed at a slightly different audience.

C-Channel is a Canadian package selecting amongst other things the best of productions from the National Arts Centre, the Stratford Festival, the Charlottetown Festival, etc.

But there are other approaches a cable company can use to improve your viewing.

Some of the new channels will contain information. For example we have already proposed to the CRTC that we add channels starting about a year from now that would give much better alpha-numeric news coverage. Other channels would provide business and financial information, greatly improved environmental information, e.g. not just the weather but where the fishing is good, small craft warnings, where the skiing is best, etc., and a transportation channel showing airline schedules, ferry boat delays, train schedules and a variety of other information.

We are also proposing to add a comparative shopping channel. To make it easier to find your way around the dial we are going to put on an electronic TV listing, including information on all the channels offered by our cable companies.

All of the above would be included in the basic cable fee although a converter will be required of course as there is no more capacity on the regular TV dial.

There are other approaches, however, too - items for which a premium would be charged.

For example, we are looking at the possibility of providing a range of TV games which could be quite sophisticated when tied in to a computer at the cable office. Some of these might even be instructive. As you may have read in the press, we are also planning to cover the B.C. Legislature, although I am not sure they would appreciate my discussing that in the context of TV games!

We are experimenting with a process called teleselect. We might assign a channel and provide a menu of possible items. Subscribers could let us know by phone or by an in-the-home polling device of items they would like to see. If the response is strong enough then that particular item would be shown. This is another example of selective viewing.

Channel E (for Education) has been selected to distribute educational programming provided by institutions such as the B.C. universities, BCIT and the Open Learning Institute, to cable subscribers.

In-the-home shopping has been often discussed as an alternative to the mail order catalogue. Since we announced the possibility of such a service we have been flooded with requests from the major department stores, ticket reservation agencies and the like. They all want to run tests with us.

Many of these more advanced applications, however, require that we make the cable system two-way. This will require an expenditure of tens of millions of dollars over the next five years. However, we are going to make this expenditure on the assumption that the CRTC will allow these new services to become part of the cable package which you will be able to receive.

#### BUT WHAT DO YOU THINK?

I have outlined just some of the new services that will be available. But it is important for the cable companies not to second guess what the consumer would like. I would be most interested in getting your ideas about how appealing such services would be and what other kinds of things you might like to see in your home.

The whole process also raises some interesting questions. Will this increase the amount of television viewing, and if so is this good for family life? In fact, it may help to keep families together but it may also work to the disadvantage of older forms of entertainment such as cinemas.

Will shopping by television create unfulfillable desires in consumers and will this be disadvantageous. Of course this may be no different than regular advertising.

Is all of this going to take some of the fun out of a 'night on the town'.

One important factor is that all of this is discretionary. Beyond the basic programming you pay for what appeals and don't have to pay for anything that does not.

It is here or will be here shortly.

A talk to the Vancouver Board of Trade. September 20, 1982

## *TV or not TV*

**“Rush hour: that hour when the traffic is almost at a standstill.”**

My enthusiasm over the coming introduction of Pay TV was that it could be an answer to traffic congestion. There would be so much one could do on a TV set, people would just stay home. I was somewhat optimistic.

I hope you like the title. I thought it up myself. When I mentioned this to Sandy Buschau, our Director of Public Relations, she said, “I believe it. You certainly didn’t seek any professional advice!”

### PAY TV

Your cable television company’s answer to the traffic congestion in the downtown area. With all this fascinating new entertainment coming along, you will have no incentive to do anything else but sit at home with your loved ones and neighbours and watch all the new entertainment.

As a matter of fact, this might start neighbourhood parties once again. You may recall, in the early days of TV, that as soon as someone got the first black and white set on the block, or a new colour set, everyone flocked over to view the new phenomena. Now it will be, I’ve got C-Channel and we’re having a party.

### BUT REALLY, WHAT IS PAY TV?

As I have pointed out on a number of occasions, all TV is Pay TV. There is no free lunch and there never was. The television you watch today is supported in one of two ways; either by advertising, or in the case of the CBC, by taxes.

As for advertising, you pay for the programming that appears whether you want to or not because you pay for it every time you buy any goods or services. The cost of the programming is built into the cost of the product to pay for the advertising support. Taxes are at least as involuntary. The new factor in what is now called Pay TV is that it is discretionary. If you like it, you subscribe to it; if you do not, you need not pay for it.

The closest example we have had in Canada is PBS, which is, of course, not really a Canadian operation. You may be interested in knowing however that there are over 44,000 voluntary Pay TV subscribers in



*“We appreciate your making the effort to attend this breakfast meeting, Mr. Kadlow.”*

British Columbia alone, and they average over \$30.00 a year for the privilege of watching PBS. The thing that is different about PBS is that you could watch it without paying. This, of course, will not be possible with commercial pay television.

To describe what Pay TV is, let me start with a bit of history. Pay TV actually got its start in Canada over twenty years ago. In Etobicoke, just outside of Toronto, the first Pay TV system was launched literally by using coins placed in a box beside the TV set. This was not a commercial success but it was another example of a Canadian first on which no one chose to build at that time.

I sometimes wonder if Canada's motto should not be, "Defeat Snatched from the Jaws of Certain Success".

It was therefore left to the United States to launch Pay TV in the late 1970's. HBO (Home Box Office) was the first to offer a comprehensive movie-based program across the country via satellite. The programming was not scrambled but was intended to be picked up only by cable television companies, who would in turn sell the programming to their subscribers.

HBO was followed by Showtime and a long list of innovators with programming that appealed to either broad or quite narrow markets.

Just to give you some examples of the types of programs available in the United States, there are specialty networks for ...

- Sports such as ESPN
- An all-music station
- Several all-news channels
- Special language programming in Spanish (with the enticing name of SIN)
- Programming for senior citizens, youth and for those who are not sure what state they are in, a specialized cable health network (CRN)
- There is even ESCAPADE, which offers slightly livelier fare, courtesy of Playboy Magazine

This proliferation of discretionary pay services led to a huge growth in the cable television industry in the United States. The U.S. is not what we call a 'natural' cable TV market, i.e. there are not many off-air signals that appeal to the general public that are not readily available. The case is quite different in Canada where there is a real desire to watch American programs and hence cable gained a very early and broad penetration of the marketplace. Ireland is another natural cable market as the Irish want to watch the BBC and ITV.

The result of all this is that pay television is well established in the United States and has not yet begun in Canada.

## PAY TV IN CANADA

Canadians took their usual approach to the development of a new product or service. Any such development in Canada has to go through a series of well understood stages. For your convenience, I have outlined these:

- It is essential that no new product upset any existing product or industry. In the case of pay television, it was essential that this in no way disturbed the existing broadcasting industry. This is a well established Canadian approach with precedents such as the protection of the knitting industry in Quebec and is, of course, part of our national fabric.

- It was important to ensure that all possible sociological interests are covered by the new product. Of course, such things as Canadian culture, protection of bilingualism, promotion of national unity, etc. all had to have their appropriate piece of the pie, stopping just short of pricing the product out of the marketplace.
- It is, of course, essential in good Canadian tradition, to delay the implementation until everyone else has proven that it is a success. In the case of pay television, this led to approximately a ten-year delay.
- After the whole subject had been researched for longer than most of us can remember, is about to be launched as a commercial product with some chance of success, then naturally the entire matter must become tangled up in a federal/provincial jurisdictional issue – again, in the best Canadian tradition.

I am pleased to announce to you today that we now have the most Canadian product ever developed! It is something of which every level of government can point to with pride as a model of the Canadian product development process.

AT LAST!

However, all that is now behind us. Well almost. The jurisdictional dispute is still raging because it looks as though Pay TV will be a commercial success and therefore, like offshore oil, still needs to make a few lawyers wealthy with the various governments' fight over the spoils.

Despite all this, I am optimistic that we will be introducing pay television to our subscribers in British Columbia on February 1, 1983. I am also pleased to say that despite my somewhat facetious comments about launching new products in Canada, I believe it will be a fine service providing a whole new range of entertainment to the public.

Although it is almost out of style for me to do this, I would also like to compliment the CRTC for an imaginative approach. We had thought they might approve just a single, national service. Instead, they went out of their way to encourage competition. As a result, the public will receive much greater variety and better service than would otherwise have been the case – a good decision.

## THE PRODUCT

We could look at this in three general areas ...

### 1. TECHNICAL

It may not be too obvious to people just how they will be able to access pay television. The services will initially be available on what we call a Pay-per-Channel approach, i.e. you will have a choice of several channels each with some degree of specialization and will be able to choose one or more of these for a monthly fee.

The alternative is a Pay-per-Event approach in which we might provide a Special, for which you would pay on a one-time basis. It will be some time before we are providing this although the equipment I am about to describe will allow this.

In either case, the signals will be scrambled. The following description applies to the Premier group of companies and not necessarily the North Shore or Delta for example.

Basically, you will require one of two devices that will work with your television set. The first is a sophisticated integrated converter/descrambler. This unit looks like a regular

converter with a remote control unit and such sophistications as remote volume control. This sophisticated converter, sometimes called a Wonder Box will have the circuitry to descramble the signals on up to 20 channels.

If you already own a converter, then we will provide a Base Unit which will provide the descrambling capability through your existing converter.

Either of these units will allow us to turn a channel on or off by scrambling or descrambling the signal from our Head-end, i.e. once you have the unit, there is no further reason for a serviceman to call should you want to start taking a particular pay television program.

I should caution you that one of these two units will be required even if you have recently purchased a so-called Cable Ready TV set. Unfortunately, although these sets give some capability to access channels beyond the normal 12 you can get with a rotary tuner in an older style TV set, there is obviously not the built-in capability to descramble signals or to allow us to turn on signals from our Head-end.

We have had discussions with TV set manufacturers advising them that they may be putting users in the position of paying for a device they will not be able to use should they want to take Pay TV.

With this one caution, however, Pay TV is technically quite straightforward. Either the full converter or the Base Unit will be available on a rental basis from the cable television company.

## 2. ENTERTAINMENT

To date, there have been three pay television channels authorized by the CRTC for British Columbia.

### 2.1 FIRST CHOICE

First Choice is a national service which expects to show over 90% movie fare. They are also intending to show some specials not otherwise available on television. As a national service, they will be gradually increasing the Canadian content of their product, but I would not be too concerned about this.

First, I believe the Canadian product over the next five years will gradually improve in both quantity and quality with the additional money being poured into it. Secondly, the definition of what constitutes Canadian content is quite broad. As I noted the other day, if there happened to be a beaver in Golden Pond, it would likely qualify.

Hollywood produces only about 20 blockbuster movies each year with perhaps another 120 Grade B movies. It is from this selection that First Choice would be making its offering. I would expect that their programming would parallel HBO fairly closely as they are drawing from the same pool.

### 2.2 C-CHANNEL

C-Channel started out as a cultural channel but before you think this will be nothing but opera and ballet, you should understand that their definition of culture ranges from the best of foreign films to jazz festivals, top performances from various theatre festivals around Canada, and a wide variety of very imaginative material.

In fact, it might just be too imaginative for some people. One cable company in Toronto has already said they want the right to substitute material being offered by C-Channel as they are intending to offer R-rated movies. Needless to say, the C-Channel people quickly denied permission as this would be censorship by the cable companies. At least you can see the interest is very high.

### 2.3 WORLD VIEW

This is gradually becoming known as the People's Channel. Unlike the first two services, it is local to B.C. and will not be relayed by satellite, at least initially. Its aim is to service the large, ethnic communities in the greater Vancouver area. However, before you decide that these films which will largely be produced in their original languages are of no interest, you should be aware that sub-titles will be available on many of these and, in fact, this might turn out to be a 'sleeper'.

### 2.4 OTHER

On October 19th, the CRTC will hear applications for additional, regional Pay TV channels. A couple of very interesting groups have got together to make application. One of these is WES TV, which is backed by Western Broadcasting and a group of local artists, performers and others.

Another is AIM, which again is planning a wide variety of fare with enough local content to differentiate it from other services. There are at least two other applicants.

All in all, this initial menu should provide a good selection of new entertainment.

### 3. COST

The cost will be between \$15.00 and \$17.00 per channel, per month. This fee for the first channel will include the Base Unit. If you wish the integrated converter descrambler, this will be an extra charge.

We are still negotiating with the suppliers to provide package deals if you take more than one channel.

When you think of it, this is actually inexpensive entertainment. If you go to the movies, you find the cost these days is between \$4.00 and \$5.00, plus parking, plus babysitting, or any other incidental costs. To take the family to the movies could easily cost you \$15.00 for one evening.

A Pay TV channel will provide between 12 and 15 different movies, recycled at various times during the month so that you should be able to see whatever you want. As noted earlier, the charge does not go up no matter how many people may be watching the set.

Now, of course, I am working on getting the home popcorn concession – a problem which I have not yet solved! We used to own 49% of Famous Players and finally figured out that they got most of their profit from real estate and the food concessions – popcorn and property profits we used to call them.

### SUMMARY

I believe that the competition will ensure that the Pay TV programming is good. This competition comes not only from the Pay TV producers themselves, but also from non-cable products such as videotapes, video discs, and whatever their current legal status may be, the TVRO's or satellite receive dishes.

All this is healthy and well worth the long wait to bring these new services to Canadians.

We will start marketing before Christmas – a great stocking stuffer! This will be followed by all the appropriate hoopla one would expect for the launch of an exciting new service.

I am sure you will get many hours of enjoyment from this new entertainment media starting February 1, 1983.

## TEAM B.C.

Clearly, Pay TV is an example of what TEAM B.C. is trying to promote:

- It is a new service being launched in a tough economy;
- Hopefully, it will provide some new jobs in the province to replace those recently lost in our company and others as a result of the 6/5 program restricting our rate increases;
- Pay TV investment in B.C. will be in the area of \$9 - \$10 million, assuming any reasonable penetration of the market;
- In addition, there will be the stimulus that will come to the advertising industry, publications such as TV Week and others, and hopefully Canadian movie development, some of which will undoubtedly be shot in B.C.

Yes, there are new and exciting things going on in this province. If we all look for opportunities such as this, we will really be able to *Keep B.C. Moving*.

A talk to the Cable Telecommunications Research Institute, Ottawa. September 28, 1982

## *Cable in a Gordian Knot*

**“Basic research is what I do when I don’t know what I am doing.”**

*Wernher von Braun*

Cable television developed as a simple means of improving the reception of over the air television. I took the position that a serious investment in R&D is the only way to preserve the industry from competition by satellite or the telephone companies.

Research and the cable television industry have never been comfortable together. The industry as we know it today was not the result of some major scientific breakthrough. There was no Thomas Edison or Alexander Graham Bell with a laboratory background to give leadership.

If we are to be honest, cable television was started by pragmatic businessmen who simply wanted to find a way of selling more television sets in poor signal areas.

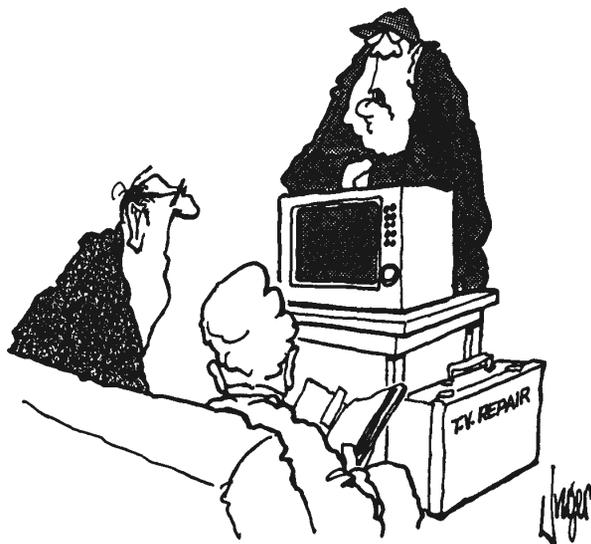
This humble beginning became dignified however, in the late 60’s and early 70’s by Telecommissions, Instant World and the much discussed and weighty future of the Wired City. Suddenly, the academics and futurists had concluded that cable would be the electronic highway of the future. By and large, the founders of the industry from the previous decade or so were not the proponents of this idea but were certainly caught up in its glamour. Suddenly, this entrepreneurial little industry seemed to have world wide social importance.

We hardly noticed that this caused our industry to move from being a discretionary convenience to being a regulated necessity with a destiny to play a major national role in Canadian culture, national unity, the promotion of bilingualism or whatever.

Had we recognized at the time what was happening, we would realize that our industry was gradually being tied in knots by all kinds of well-meaning people. What we now need is an answer to where we can and should be going - a clean cut through this Gordian knot.

More simply stated, our problem is that the industry does not have a long-range plan. We have no real sense of identity and have allowed ourselves to be tangled up by everyone else’s ideas.

We seem unsure of whether we are a high-technology industry, whether we are in the entertainment business, the data communications field, are a service industry for home security or all of the above.



**“Folks, the main reason you’re not getting a good picture is because you bought yourselves a microwave oven.”**

What has all this got to do with C.T.R.I.?

This organization was set up to provide a more scientific base to what the industry should be doing. Yet, with the 6% and 5% restraint program and other economic pressures, we are about to emasculate it.

Let me suggest that a C.T.R.I., or some variation of it, is needed. However, it does need redirection.

Fortunately, it has the opportunity to build on the base created by Joe Halina. We now have a new Executive Director who can look at what we have done in the first two years, build on the successes and drop the understandable false starts, where we recognize these exist.

## CABLE AND R & D

Our initial problem was that we set C.T.R.I. up to look like Bell Northern Research, or at least that's what we thought we were doing. A B.N.R. has a funding base of millions of dollars. Our industry is simply not in this league.

It is surprising how our industry seems to be expected to carry an enormous social and cultural load despite our relatively small size. This leads one to such facetious suggestions as recommending that the telephone companies could be restricted to 20% foreign calls to encourage higher Canadian content and lessen foreign influence!

For its limited resources, C.T.R.I. tried too much:

- We are involved in an office of the future experiment;
- We tried to provide pragmatic support documents for Pay TV;
- We tried something for the small operator, e.g. CB in the home.

What C.T.R.I. failed to do is to start by trying to develop a long-range plan to put these various experiments into perspective.

I suggest that we must start there.

## IF IT CAN BE DONE, WE SHOULD BE DOING IT

As noted above, we have limited funds. We are blinded by the bright light of possibilities for cable without really understanding that the most important thing in any research and development program is what the customer wants and what we can deliver better than our competitors.

Let us look at a few examples:

- In the Home Security - Of course we can handle this on cable and we do bring a few advantages such as constant status monitoring of the system. However, the actual data transmission needs are very small. I question whether we are really able to perform this service better than the telephone companies.
- Data Transmission - This is a very complex business which the telephone companies have been developing over many years. There are needs for transmission standards, data protocols and reliability statistics. In a word, this is an entirely new business and to launch a program successfully here, we would have to start a concerted development and marketing program.
- Business Services - We have to recognize that as cable companies, we do not serve most of the downtown office buildings. Further, this is a complex business developed over many years by IBM and similar companies. To compete successfully in this area would again require a huge dedication of time and money.

- Telewhatever - All of the teleshoppings, telebankings, and similar applications could certainly be handled well on cable. In fact, here we likely have a real advantage. However, we have to get our thinking well beyond the Telidon graphic approach and acknowledge that Telidon graphics were originally designed to squeeze limited data over restricted bandwidth lines. We can do better, but it will take an enormous amount of development.
- Downloading Software - This could be for games, personal computers or other facts and fads. Certainly, we can do this as well but we should be aware there are many alternative ways of providing these services. Unless there is a requirement for real time updating, these areas may also be questionable.
- Education - Again, here is an area that we could develop but would have to be sure there is a real market there and it is not an area so tangled up with government involvement, there is no real money to be made.

In general, all of the above are responses to what the technology can do.

I maintain that none are really responses to proper market research as to what the customer wants and can pay for – affordable demand.

I suggest that our first approach with our limited funds has to be a critical look at what people really want:

- If it is games, then let us work on becoming the preferred method of marketing and delivering such services. The competition is huge, but we could win if we concentrated on an area such as this.

#### HOW NOT TO WASTE R & D DOLLARS.

Before we even start, we must recognize the first principle of good research and development. That is that senior management must be committed to following through with the funds and resources if the R & D demonstrates that the project is feasible.

Our approach in this industry has largely been to waste dollars on the R, with no firm commitment to any D – this just results in frustration on all sides.

Our first need, therefore, is to understand that we have a need for new products and to build into our own corporate long-range plans the money to follow through on the best of these.

Secondly, I suggest we take a hard look at what we can do better than our competitors. The main advantage we have in the delivery of electronic material to the home or office is, of course, our full video bandwidth capability.

In most cases, the telephone companies can deliver low bandwidth data as well or better than we can, e.g. their system is more universal, is in all business locations and is a switched network.

Therefore, we should concentrate on applications that not only the public wants, but where we have a real edge as provided by the video capability. This could include tele-shopping where the public is used to full video and audio ads and in the long run will settle for nothing less. Or, it could include business education in the home where full video capability is clearly required.

Thirdly, I recommend that we stop kidding ourselves that we think like a sophisticated industry. Frankly, even if we find out what the client wants and even if we decide that we have a competitive edge in delivery, we still think like one-product people.

As we have no real dedication to broadening our scope, we pay lip service to R & D. In doing so, we do ourselves a great disservice for all we have done is raised our profile and invited additional regulatory interest from all levels of government.

We have added nothing to the bottom line. In fact, it is worse than this as we have actually dribbled money away in token R & D we really had no capability of capitalizing on.

To be blunt, we still operate much as the early pioneers in our industry and our products today remain much as they were then – recycled over-the-air broadcasts for the purposes of now selling converters rather than TV sets.

In a word, however we may view ourselves, we still act as cable television companies, rather than market-oriented companies developing a series of products for the next decades. There is nothing necessarily wrong in this but we should at least be honest that that is, in fact, what we are doing.

### WHERE DO WE START?

My recommendation is that we put our second highest priority on defining what we are and what we want to be – the first priority at this point is survival.

My own recommendation would be that we act as we talk and take the approach of becoming truly electronic retailers. Like any good retailer then, we would not put the emphasis on the type of truck we use to deliver the product, but would be willing to look at and use any method of delivering what the customer wants.

We should look at ourselves as being marketers first and foremost. This means we should operate as any good marketing-oriented firm would and as soon as we can, put the resources into:

- Product oriented market research
- Product development
- Follow through with product delivery under the responsibility of product managers
- Evaluate the results on the bottom line and quickly dump the inevitable unsuccessful products so that we can concentrate on the ones that are winners

The corollaries of concentrating on the product rather than the delivery method are:

- We should cooperate with the telephone companies to find the best combination of the use of networks to deliver whatever products we desire;
- We should look at the sale or rental or any product that will deliver a desired service, e.g. if we are truly in the entertainment business, we should consider any technology that will allow us to deliver what the customer wants such as video discs, videotape recorders, or even the leasing of TVRO's.

The problem with the C.T.R.I. approach to date has been its failure to become part of the mainline thrust of the companies paying its bills. This is not particularly C.T.R.I.'s fault but rather ours for not having corporate plans in place into which a C.T.R.I. could fit.

### A POSSIBLE SOLUTION

C.T.R.I., in its new version, must be reintegrated with the industry and must be closely aligned with C.C.T.A.

The major companies in the industry themselves need a long-range strategy. Some of the R & D needed to accomplish this strategy could be on a pooled basis, coordinated by a group like C.T.R.I.

These needs suggest a possible strategy:

1. I suggest that C.T.R.I. give up its notion of being an independent body. The industry is simply not large enough to support this at this time. Instead, C.T.R.I. would become the research arm of the C.C.T.A. with a small, but hopefully capable staff using the administrative facilities of the C.C.T.A.  
The present board of C.T.R.I. could be retained as an advisory committee in the R & D area.
2. C.T.R.I. report to C.C.T.A. members through the Strategic Planning Committee. This is not intended as a self-serving recommendation, but rather an acknowledgment that this committee is the only one that has the leaders of the major companies serving on it and no R & D can be of any use unless that group solidly backs the efforts.  
There is a second reason for suggesting this approach. I believe the Strategic Planning Committee should take as a mandate, the development of the above-mentioned strategic plan for the industry. The C.T.R.I. staff, together with C.C.T.A. staff as appropriate, could become the resources to the Strategic Planning Committee for this purpose.
3. The funding of C.T.R.I., in its revised form, would be through the regular C.C.T.A. fees which would have to be adjusted upward to a degree but this would alleviate any separate levy.

#### SUMMARY

I believe the industry needs post-Pay products for the 1985-89 period.

This will only happen if an approach along the above lines is implemented and is done concurrently with a long-range strategy for the industry which I believe is essential to its survival.

I recommend this approach to cut through the Gordian knot in which the industry finds itself tied.

An article in the University of Western Ontario Business Quarterly. Spring 1993

## *Mobile Communications – After the Honeymoon*

**“The bonds of matrimony aren’t worth much unless the interest is kept up.”**

A discussion of the implications of mobile telephony in changing both lifestyles and organizational structures.

Canadians are infatuated with the mobile telephone. The rapid growth of these devices is leading to a change of lifestyles and different organization structures.

For seven years, Canadians have been enmeshed in a love affair. In this particular attraction, they have been more passionate than the French or the Italians. And they show no remorse; in fact, they show every sign of becoming more entangled.

The truth is, Canadians are profoundly in love with the mobile phone. Despite its relatively modest population, Canada ranks fourth among 14 major industrialized countries in number of users – accounting for 5% of the world total of about 15 million. By the middle of 1992, there were over 800,000 subscribers across Canada. This is expected to mushroom to three million or even four million by the year 2000, representing around 20% of our adult population.

This kind of growth for a seven-year-old Canadian industry is breathtaking. There is no doubt that modern mobile communications is satisfying some pent-up demand. We need, however, to try to catch our breath. Why? Because at this point in the evolution of mobile communications, many companies are making the same misjudgment about mobile communications that they are prone to make about other information technologies – they are not aligning them effectively with their overall business plans.

Philip Pyburn of Ernst & Young’s Centre for Information Technology and Strategy in Boston expressed it best. In the Winter 1991 issue of *Business Quarterly* he wrote,

“The traditional view of information technology’s role in competitive strategy is largely reactive – that is, a response to existing competitive strategy and business process, but not a critical factor in shaping that strategy and process. A superior approach is to position IT in a proactive role where the competitive strategy is not viewed as given, but rather as something that should be challenged, and perhaps modified, in light of emerging technologies and applications.”

### **HOLD THE PHONE!** BY JIM PHILLIPS



*“Right now, I’d give anything for a hands-free cellular phone...”*

After seven years of infatuation, it is time to ask some questions. What can mobile communications do for us, and what can it not do? Is it a tool of efficiency, or true effectiveness? What role does it play in modern management thinking? Does it have the power to change some traditional patterns of conducting business? Some of the answers may be surprising.

In the relatively short period that mobile communications has become popular, its role in competitive strategy has been reactive; to date it has not been a critical factor in shaping that strategy. Some organizations, however, recognizing that mobility can be important to their competitive success, are beginning to use mobile communications as a centerpiece for planning.

### PEOPLE BECOMING MORE INDEPENDENT

North American business has always valued the contribution of the individual – employee of the month, top salesperson, chief executive. Despite some alternative models from other parts of the world, North American business still gives managers the independence to contribute their creative best. This means that, on any given day, many of an organization's best people are in the air or on the highway.

Until recently these people were right out of touch, their movements constrained. But yesterday's "Where is she?" has become today's "Where can she be reached?" – and thanks to mobile communications, the answer is just about anywhere. Managers and salespeople are less concerned about leaving the office, and more inclined to stay in the field for longer periods of time. There is more interaction with customers, new perspectives, stimulating contacts and more inspiring activities.

If this sounds too good to be true, it may be. The potential of an organization is more than just the sum total of individual contributions; there are synergies to be considered. Managers liberated by communications technology are only valuable to the organization if they keep their new perspectives in perspective; otherwise, they become loose cannons. That is why managers of a mobile organization must consider themselves as members of an 'exploded' office, rather than satellite operations on wheels. I do not mean exploded in the sense of a bomb, but rather as an engineering diagram of a machine showing how all the parts fit together. Even one missing part of a machine could impair its function. Mobile communications provides, paradoxically, both the temptation to 'go missing' and the opportunity to make the machine run better than it has in the past.

In his popular book, *The 7 Habits of Highly Effective People*, Stephen R. Covey makes an important distinction between independence and interdependence. "True independence... is a worthy, liberating goal," says Covey. "But it is not the ultimate goal in effective living. If I am interdependent... I realize that you and I working together can accomplish more than, even at my best, I could accomplish alone."

This is a valuable theory, but how does it translate to the daily activities of a mobile businessperson? First of all, it means that the management style and division of responsibility that apply in the office should be projected outward, helping mobile activities retain their focus and sense of purpose. Mobility should not necessarily change the rules of the game – most certainly not unilaterally. The mobility factor can and should make an impression on management style in many industries. But changes should be part of a consistent plan to be truly effective.

Second, no man or woman is an island, which is what Covey means by interdependence. Each member of a management team has a particular talent by virtue of training or intuition

that qualifies him or her as a special adviser. This talent should remain available to the organization regardless of an individual's location. It may mean that forays to the field are more carefully planned and scheduled among all members of an operating unit. Departments that would never think of scheduling vacations at the same time may routinely schedule business trips all at once. It may be important to schedule mobile 'meetings' at a prearranged hour to mull over important issues.

### BOTH EFFICIENCY AND EFFECTIVENESS CAN BE IMPROVED

It is also time we asked whether mobile communications is a tool of efficiency or effectiveness. At first glance, it appears to be a tool of efficiency; it allows you to do two things at once - travel and talk on the phone. Any time you can do two or more things at once, you are increasing your efficiency.

Efficiency, however, can be something quite different from effectiveness. One person can accomplish more with one phone call than another can with ten. If a mobile caller cannot reach the intended party, and neglects to leave a detailed message that would set the person in motion, the efficiency is meaningless. If a mobile manager on the threshold of a decision neglects to call the one person whose advice would be important, regardless of who else is called, he or she may have done better to stop for coffee, think it over once again and use the pay phone. The more things change in this technology-based world, the more they stay the same. Tools still work best in the hands of a skilled craftsman.

Does this prevent information technologies from having a direct impact on effectiveness? Do not tell that to the inventors of automated banking machines! In mobile communications, as in other information technologies, the key to effectiveness is often found in the application – and there have been some ingenious applications.

Some companies have mobile phones for field service technicians and find they can do more service calls per day by receiving assignments on the road. Unlike a traditional radio dispatch system, the mobile phones also enable the technicians to contact customers. As response time is quicker, customers believe the company is more attentive to their needs. Next, technicians will be able to update accounts directly from the work site or their vehicles, keeping records up-to-date and shortening the billing cycle.

In much the same way, a newspaper reporter will be able to enter a story from the scene directly into a typesetting computer minutes before the final deadline. It could mean the difference between today's or tomorrow's news. This is mobile communications technology at its best, expanding the organizational effectiveness of each worker regardless of his or her location.

### CANADA STEAMSHIP LINES USES MOBILE PHONES

Canada Steamship Lines in Montreal has about 50 phones aboard its ships, enabling 24-hour communication with their crews. Some ships have a phone at each end, and portable phones are used when on shore. Although ship-to-shore radios are legendary, the cell phones enable much less formal communication by a wider range of crew members in a greater variety of circumstances. For example, emergency situations can be dealt with in a conference call rather than through two radio operators. Moreover, crews have connected their phones to fax machines, which give them the option to file reports or to process paperwork en route. Computers with modems, coming next, will link the computers directly with CSL's main data bases.

Newer technologies have even more exciting potential. Until 1992, most mobile communications have been operated on analog technology, which transmits a scale model of the sound waves that make up a voice. Now, digital mobile transmission can numerically encode the voice and decode it at the other end of the transmission, meaning digital communication can be about as reliable over the airwaves as it can through wires or fibre optics. For users, this development means wider applications for data transmission, wider applications for voice transmission, opportunities for even better handset equipment, improved voice quality and improved security from eavesdroppers.

Mobile communications got its first practical application in 1921 when the Detroit police department deployed the first system of squad-car radios. But the good constabulary could never have imagined the possibilities they pioneered. From a police cruiser in most major cities, an officer can now crosscheck vehicle and driver licences with outstanding warrants in a matter of minutes. The chances of apprehending a criminal are greatly increased – the essence of effectiveness in law enforcement.

#### CONVENTIONAL AND MOBILE VOICE AND DATA COMMUNICATIONS ALL MEET

The herald of many new technologies is the promise of labor saving devices. With the advent of personal computers, for example, sociologists were warning us to prepare for leisure activities. Little did they know we would simply find more time to invest in work (mostly, it seems, on our personal computers); the future of mobile communications could be described in these same mellow tones.

A concept called ‘personal communications’ is the point at which conventional and mobile voice and data communications all meet. In the near future, perhaps before the turn of the century, most people will probably carry a compact digital cordless telephone, which operates like a powerful cordless phone. Using little power it will be able to transmit to a variety of sources. In the home, it will connect to a base station the approximate size of a hardcover book. Around the neighborhood, it will connect to slightly larger, more powerful public access base stations. On the road, it will connect to cellular networks. In very remote areas, it may even connect to special low earth-orbit satellites.

The technology alone is awe-inspiring. Parents will be able to call their children to make sure they are on their way home from school. People in difficulty or danger will have rapid access to emergency assistance. The digital cordless telephone will wipe out three or four of the numbers we currently carry on our business cards. The telephone will be extraordinarily convenient, but it will alter a mindset we have grown up with in this century of telecommunications – that locations, not people, have phone numbers. Since it will be the individual rather than the location that has a phone number, the number will stay the same when the person moves to a new home. One number may become a person’s communications ID for a lifetime.

#### TWO DIMENSIONS – TIME AND SPACE

The core of significance boils down to two dimensions – time and space. The first dimension, time, is a matter of accessibility. People will have the facility to contact us at any hour. The phone will have an all-important on/off switch, however, and the most reassuring point about that switch will be our control of it. Through our exercise of that control, we will have to come to terms with ourselves. If we are workaholics we may not be able to turn the switch

off, and that part of us will become much more exposed. If we are escapists we may be reluctant to turn the switch on, and we may pay a price for withdrawing from society.

The other dimension, space, is a related consideration. If we can communicate easily from anywhere, where should we be? This question is already arising in the current mobile communications environment. Some people in business now believe location is less relevant, that working at home or on a client's premises is acceptable – even preferable. This culture is in the process of being institutionalized, with many offices opting for pooled desk space. At this point in time, however, a consensus has not been reached. Many people still take comfort in the office environment, the visual contact and personal accessibility. They also believe this is important to consistency of management style and strategy, as well as commitment.

All things considered, people will likely be more responsible for governing their own attitudes and behavior in the future of communications. Circumstances will no longer obligate us, or defend us. Some statements headed for extinction might be: "I've just stepped away from my phone," or "I can't leave until this call comes in," or the ever-popular "I tried to reach you!"

### MOBILE COMMUNICATIONS A CENTURY OLD

At the moment, the market for mobile communications is moving faster than deliberate, effective strategies for using it. In this respect mobile communication is no different from other information technologies such as personal computers, which grace most executive desks in the absence of any coordinated plan for their use. Indeed, most companies make the same misjudgment about mobile communications that they make about other information technologies – they do not align them effectively with their overall business plans. Moreover, they do not plan around them when these technologies could become key factors in competitive success.

Mobile communications promotes independence, which can be a double-edged sword. On one hand, a liberated manager can be a happier, more creative and even more productive manager. On the other, he or she can lose sight of organizational goals and the valuable advice of colleagues. In any strategy employing mobile communications, interdependence must replace independence as a guiding principle. The ideal model is that of the exploded office, where all members remain focused on the effectiveness of the organization regardless of their location.

To be most valuable, mobile communications must also take efficiencies for granted and concentrate on effectiveness which can take either two forms – *individual* choices in specific circumstances, or *organizational* choices in business planning. The latter produces applications, which can be the most valuable result of all. Applications that enhance response time with customers should rank high, as well as applications that simplify and/or improve business processes.

Finally, we should keep our new perspectives in perspective. Personal communications can affect the way we live, much beyond what it has to date, and could become a focal point for our interaction with the broader community.

Surprising as it may sound, the centennial year of mobile communication rolls around at the turn of the century. It was 1901 when Marconi strapped a 20-foot antenna to a vehicle and demonstrated the first mobile radio. As this 100th Birthday approaches, we can begin to understand that our 'new' technology is not exactly new. In fact it has just about grown up – grown up, and is ready to leave home.

A talk to the South Ottawa Kiwanis. March 23, 1971

## *The United Appeal – Concept in Conflict*

**“When it comes to charitable donations, some people will stop at nothing.”**

The concept of a united fundraising campaign is excellent but it must be constantly re-examined to see if it is still in touch with the times.

In the Royal Bank monthly letter of November 1970, the writer noted that “a healthy community does not remain static. Changes in environmental conditions, changes in aspirations, and changes in the people making up the community require modification of plans and sometimes change of objectives.” Our community is anything but static and what I would like to discuss is how the major fund raising effort of our community should itself be adapting to the changes in our environment.

The United Appeal concept has already undergone a number of changes in its career. The first United Appeal Campaign was held in 1887 in Denver. The principle was simple. Run one efficient campaign, get rid of the nuisance of multiple appeals and above all, let the trained specialists of the agencies carry on their work while at the same time giving the businessman an opportunity to help his community efficiently by doing what he knows best, i.e. talking to his peers and helping in the organization of a good campaign.

We all know that multiple campaigns are not only inefficient because of the duplication of publicity and effort but are also inefficient in the use of people in the community who must undertake the canvass. Individual campaigns often spend 15-20% of the funds raised for the fund raising processing. In some cases, this has been known to be as high as 50% and in the occasional instance, nearly all the money was spent on a badly organized campaign.

By contrast, the fund raising costs in the United Appeal have, for years been held to about 5% of the funds raised.

During the First World War in Cleveland, a very successful organization had been set up to raise funds for the war effort. This was known as the War Chest. In 1919, the community felt that such a good organization should not be wasted when there were many community needs. The campaign was therefore carried on an annual basis but the name was changed to Community Chest.

By the 1930's, Federal Governments in Canada and



*“It might help if you lowered your standards a bit”*

the United States were undertaking some of the work of the agencies. That is, the Government was coming more and more to look after direct welfare. The agencies then, that came to be supported by the Community Chest campaigns, were more those in the following areas:

- Some were involved in planning what should be done and conducting research into how communities should grow.
- Some were specifically for the handicapped.
- Some were for the sick and aged.
- Some were for youth.
- A few were to assist families with their problems.
- A number were for children.

After the Second World War, in a number of cities, joint campaigns were run with the Red Cross, the Salvation Army and other major organizations. Where such an amalgamation took place, the name was usually changed to the United Appeal.

As you can see from the above, the concept of the United Appeal has been adapting to the changing needs of communities, but for nearly ninety years the concept of the one appeal has stood the test of time.

We are now faced with the need to once again reconsider the approach used to raise money in our community. Let us first consider some background facts to help us understand just how the United Appeal works.

## THE AGENCIES

These are the backbone of the United Appeal operation. The United Appeal itself, as presently set up, exists only for a short time each year as a huge volunteer effort of over 10,000 people to raise the money necessary to support the agencies. At the end of the campaign, the volunteers go back to their regular occupations and a small staff of five or six provides the continuity for next year's campaign.

To date, the United Appeal has worked with the agencies in the following way. Most of the agencies accept fees for services they provide, if the families or individuals in question can afford to pay. If not, the services are provided for a nominal fee or are free of charge. Naturally, the agencies incur a deficit and it is the United Appeal's job to finance these deficits.

The United Appeal does not become involved in capital campaigns such as the recent campaigns for the YM/YWCA, the Children's Hospital or university building funds. In fact, the United Appeal could not easily vary its organization to meet the radically changing goals that would be needed if the United Appeal were to undertake this kind of work.

There is a consistent theme that runs through all of the agencies. That is, that these agencies are there as much to stop trouble as to cure it after it starts. Prevention costs a great deal less than cure and yet, by and large, the various levels of Government are not involved deeply in the preventative process.

The agencies, of course, work with the Government wherever possible. The Government may support some of the agencies for some of their work or the work of the agencies and the government may be otherwise complementary. For example, the Government may provide welfare payments to the unemployed but it is the United Appeal Family agencies that help those receiving the payments with budgeting problems, health problems, marital problems and all the other personal needs that help these families make good use of the money they are getting.

The United Appeal and the Canadian Welfare Council encourage the various levels of Government to do all they can to assist the agencies. However, the needs in the community exist today and Government often moves slowly to react to these needs. The agencies, because they are run privately, can and do move quickly to meet demonstrated needs.

We are often asked the question ‘why not let the Government do it all?’. We should bear in mind that many of the agencies are the type that should not be taken over by the Government in any case. Examples are the Boy Scouts, the Good Companions and any number of youth organizations. However, there are many other organizations such as the VON which we believe should have most, if not all, of their fees paid by Government health schemes.

We should remember that the work done by the agencies is done very efficiently. Not only are these agencies under strict budget control by the United Appeal but they make extensive use of volunteer help and citizens are not noted for volunteering to work for Government agencies.

I might add that the Government is certainly efficient in raising money through income tax but as much of the money raised is also through Government bonds, it may well be that the United Appeal is more efficient in raising money than the Government itself when one considers present interest rates.

In any case, it is important to realize that the forty agencies of the United Appeal exist because of the ability of the United Appeal to raise money to support their operations. Most would not be in existence if we in the community had delegated the need to the Government or, in fact, to any other group. It is our community and we are the ones who must support it.

One final thing to remember about the work of the agencies is that these agencies are not just for the other person. One person in four makes use of some agency at some time each year in the Ottawa area. This may be through a visiting homemaker or the participation of one of our children in a YMCA program or a Red Cross Swimming program. We should also remember that anyone of us could break a leg skiing and require the facilities of the Rehabilitation Institute or someone in our family could require the services of the CNIB. Any of this could be in an accident and require blood collected by the Red Cross.

The United Appeal is really a form of insurance to which we all contribute and from which a quarter of our community will benefit each year.

## A RECORD OF SUCCESS

Bearing in mind the above background on the United Appeal, let us now take a look at how well the community has responded to helping itself. As you know, for many years the United Appeal carefully established a goal and met that goal with almost monotonous regularity. However, this in itself has been misleading because there has been an ever widening gap between the needs of the agencies and the ability of the United Appeal to raise the necessary funds. During the last three campaigns the United Appeal has tried to stretch its fund raising ability by accepting ambitious goals and has failed to meet those goals in each of the last three years.

I would not want you to misunderstand what I have said. The failure to meet a goal does not mean the failure of a campaign. Last year’s campaign raised over \$100,000 more than the previous year and this was a magnificent effort. This represented an increase of about 9% over the amount raised in the previous year. In fact, the campaign only fell short of its goal of \$2,060,000 by about \$17,000.

However, the total agency requests in May 1970 were for \$2,432,000, i.e. nearly \$400,000 more than the United Appeal was able to provide. The community's inability to meet these needs meant reduced programs and curtailed expansion so that the agencies will barely be able to keep up with the growing population.

The conclusion one can draw from this is that even with the best run campaigns, the present United Appeal campaign methods may not be enough to keep up with the continuing demands of the community.

This does not mean that we cannot come much closer to raising the required amounts than we do now. However, we must be realistic about the practicality of large increases using standard fund raising methods. For example, corporate giving in Ottawa has remained almost static for the past seven years. Clearly this means that corporate giving in the city is not in any way keeping up with the increased needs and is, in fact, not even keeping up with inflation. However, we should bear in mind that corporations represent only 14% of the money raised in the city and therefore even if the corporate gifts were increased substantially, the amount raised could not be increased enough to meet the agency needs.

The Public Service campaign is exceptionally effective and last year raised an average of \$14.36 per employee with 66% participation. While improvement again is possible, no major breakthrough can be expected in this area. The group employees comprising about 73,000 people raised an average of \$8.08 per capita with 57% participation. Even if we assumed that we could raise the per capita giving to perhaps \$12.00 and increase the percentage participation to something close to that of the Public Service (a feat which will be very difficult because private industry is much more difficult to organize than the Public Service), we would still only be raising an additional \$300,000.

It is reasonable to ask, how Ottawa fares relative to other cities with similar size campaigns, e.g. \$2,000,000 to \$4,000,000 per year. The overall average per capita in the 24 cities reporting was \$5.57. The average in Ottawa was \$4.56. This would indicate that there is some room for improvement. However, in fairness, we should bear in mind my earlier comment about the small percentage of corporate giving in Ottawa. This would really indicate that employees in the city are doing a relatively good job. To be more precise, the per capita gift for those employed rather than total population was \$10.80 in Ottawa whereas the average was \$8.79 for the 24 cities.

In summary, it would appear that if the standard approach of having the agencies put in requests and having a single campaign trying to meet the needs is continued, the gap is only going to widen and there will be very little that the United Appeal Campaign itself can do to correct this.

## A NEW APPROACH

However, two things can be done. First, the United Appeal can re-evaluate its approach to providing services to the community and the United Appeal has already embarked upon this. A special priority study is being undertaken by the Social Planning Council and the United Appeal which will evaluate programs offered by the agencies to determine to what extent they should receive United Appeal financing. I might add that this even includes the United Appeal itself which will come under the scrutiny of its own study. One of the possibilities being looked at is that the United Appeal, rather than supporting agencies directly, should support needs in the community and therefore buy the services from wherever they may be available.

This is a radically new approach but is indicative of the United Appeal's ability to adapt.

While the United Appeal Board is undertaking this, the United Appeal Campaign group is taking a close look at ways to raise money to meet whatever the newly established needs may be. The fund methods committee now studying this problem realizes that the United Appeal in Ottawa is facing the same problem as other United Appeals. Almost none of the major appeals in Canada made their stated objectives last year. Some of the reasons may be:

- An increasing assumption that citizens have a right to welfare without any effort other than the payment of tax.
- A general lack of identification by citizens with the real needs of the community, e.g. it is someone else's problem.
- A growing sense of futility by citizens relative to the size of the problem, e.g. what does my contribution matter?
- An increasing sense of disillusionment, e.g. there are many who are perennial welfare cases or many others are hippies or drifters or just plain lazy.
- A total lack of participation in the United Appeal by other than those directly involved in the canvass, e.g. approaches such as 'Miles for Millions' does seem to involve people who would otherwise not be interested in the more anonymous United Appeal.
- A realization that at least in Ottawa the United Appeal has not succeeded in eliminating other appeals even though it collects about 85% of the non-capital, non-church voluntary dollars in the area.

These very basic problems are being faced honestly.

## POSSIBILITIES

### 1. New Sources of Funds

- Considering the Local Corporation canvass has not substantially improved in seven years, we should consider approaching the city to levy an assessment for the United Appeal as part of the municipal tax. This would not be any different from the present support for schools, libraries and other vital community needs.
- The Federal Government does not donate, although most other employers do. A per capita gift matching that of their own employees would not be out of the question.
- If Montreal can raise money through a lottery there is no reason why a city like Ottawa could not do the same for the United Appeal with sufficient pressure to get such a move legalized.
- The community could participate directly by projects such as having the gate receipts for one exhibition football game donated to the United Appeal.

### 2. The Year-Around Campaign

- The concept of a Loaned Executive calling once a year is obviously not producing adequate results alone. As we have a permanent year-around United Appeal staff, there is no reason why this group assisted by select volunteers at various times during the year could not effectively approach the major corporations to get PRD, new employees signed up by working through personnel officers, etc.
- Luncheon meetings with small groups in the community should be held on a year-around basis.

### 3. A Change of Name

- It is difficult to sell an appeal but it is easy to sell a worthwhile service. Why not change the name to United Services and re-open the question of combining the United Appeal which would now be on a full year basis with the Ottawa Welfare Council.

### 4. 24-hour Service

- If we are getting back to a grass roots approach to serving the needs of the community as the community defines them, then there really should be a 24-hour emergency number for anyone in trouble.

### 5. Publication Relations

- The improved PR campaign this year tried stark shock treatment. This was graphically effective but perhaps a more meaningful approach would be to focus on the needs rather than the agencies.

### 6. A Radical Solution

- If we cannot get wider voluntary acceptance of payroll deduction, then we should attempt to get legislation requiring this to be offered. This is already done for union dues and innumerable other such items.
- If this is not possible, then the final solution would be to treat the United Appeal in the way it is often thought of, i.e. a voluntary tax. The most efficient money-raising operation in Canada is that of the Department of National Revenue for our income tax. We should not ignore the possibility of asking the Department of National Revenue to collect the voluntary United Appeal 'tax' when people are submitting their T1 form. The Government might be encouraged to make a special allowance for such donations, e.g. double the amount given, up to a maximum of \$100, could be deducted from taxable income.

## THE NEED IS NOW

Any of these solutions will take time to implement. We are facing another campaign in 1971 which must do its best to come as close to meeting the needs of the agencies as possible. Specifically, here are two things that I believe that the South Ottawa Kiwanis and other similar groups in the area could do:

### 1. Loaned Executives

The area with the greatest potential is the Group Employee canvass. Each year, Loaned Executives contact the head man in each firm to arrange for a really good in-plant canvass. We need more Loaned Executives. Our problem is that we do not know who in the Ottawa area would be willing to serve in this vital and prestigious capacity. We tend to go back to the same firms each year and this is not only unfair but does not give the opportunity to other companies. I would specifically ask that through your organization you arrange for volunteers to serve in this and other capacities. I can assure you that the work will be interesting and the results heartwarming.

## 2. A Campaign Kick-Off

Up to the early 1960's, the various service clubs in Ottawa participated in a huge luncheon held at the Chateau to officially kick-off the Campaign. I would very much like to see this re-instituted this year and in the years to come. Your organization and similar organizations have a great deal to contribute to the community through the United Appeal and we in the Appeal shoulder all the blame for not having asked for your assistance. I would ask that your executive consider joining together with the other service clubs and similar organizations in providing the enthusiastic start to each year's campaign that only your organizations can provide.

I would be the last one to claim that the United Appeal is the perfect answer but with your help, we can keep improving on the principle of one campaign which is still the best answer that anyone has yet suggested.

In the Abbott report on The Needs and Resources of the Health, Welfare and Recreation Services of Metropolitan Ottawa (December 1967), the introduction concludes with this observation by Lord Fletcher Moulton "that community is greatest in which the greatest majority of its people assume unimposed obligations".

I know from past experience that the Kiwanis will come forward once again to assume these unimposed obligations to make the United Appeal truly serve all those in our community.

A talk to the Annual Conference, Vancouver. May 28, 1981

## The United Way in B.C.

**“Youth keeps us young.”**

This talk argues that the United Way and other charities need to constantly involve young people and young ideas.

United Way's have faced all kinds of challenges since the Community Chest concept arose in the 1930's. The greatest strength of the United Way movement has always been its flexibility to meet changing conditions.

Never before have we been presented with so many opportunities for imaginative new solutions to ever changing conditions.

The Campaign of the 80's which is the topic you asked me to cover today will succeed in meeting these challenges, this decade of campaigns will be successful because the United Way can build on past decades of experience and the work of many dedicated volunteers, but these past experiences must be viewed as the propellers and not the anchors for future campaigns.

In the discussion following this overview we can get into some of the details of running campaigns in the 80's, first let us look at some of the broad challenges that we must now make opportunities.

A few of the challenges

- We are viewed as being just another campaign.
- We are facing incredible inflation rates.
- Government programmes are threatening to over-shadow the work of the voluntary sector.
- There are some elements of the 'me' generation affecting the voluntary movement.
- We face ageing support for ageing agencies.

These are the positive kinds of challenges that keep the United Way young and vigorous, it is worth taking a look at some of them in more detail.

### The Wizard of Id



## JUST ANOTHER CAMPAIGN

Whether it was called the Community Chest, the Red Feather, the United Appeal, or most recently, the United Way, the concept has always been to run one efficient, cost effective campaign for all the worthwhile needs in the community except for those specifically covered by capital campaigns and for religious purposes.

I believe that our number one challenge is to make this one campaign concept a reality.

Last year the United Way of the Lower Mainland did a survey along with the household mailer, we asked what appealed most about the United Way, the answer was that it was ‘a single campaign for a multitude of purposes.’

If this is what the public wants, then it is our duty to make sure that they get it. We have shown great flexibility in the past in bringing in other major campaigns such as the Red Cross. The Red Cross as you know is an associate of the campaign, but does not fall under our regular agency budgeting structure. If we are going to bring other campaigns into the United Way, we are going to have to show more of this kind of flexible thinking.

It may even be necessary to suggest that we would offer a service to these campaigns by approaching corporations and individuals they simply could not reach. We would undertake at our same low cost to collect money through the one United Way campaign and turn it over to the other major campaigns in the area as a public service.

It would not be necessary for these organisations to completely drop their own campaigns, particularly if they felt they had to do some campaigning for maintenance of their own profiles.

But what we would be doing is offering to the major corporate funds and for the convenience of people everywhere the opportunity to give through their United Way card.

It is difficult to see how the other campaigns could turn down such a generous and heartfelt offer. They have everything to win and nothing to lose.

The United Way has everything to gain as well for it would be finally realising its ultimate objective of allowing people to participate in a single campaign if they so wish.

The efficiency if we can reduce the number of campaigns in this province would be enormous. Businesses would welcome not having their executives tapped for all kinds of worthwhile causes.

It would cost the United Way next to nothing to give people the option of contributing to the other campaigns on one pledge card - a little accounting for a big benefit to everyone.

We could now finally and truly say we offer the public a United Way.

## INFLATION

The second biggest problem is getting donors to reassess the base from which they are starting.

Last year United Way of the Lower Mainland launched a campaign asking people for a 12% increase just to keep up with the anticipated inflation. There is nothing fundamentally wrong with this concept, except 12% of an inadequate starting base is going to lead to inadequate results.

We have all worked on the Campaign to Potential concept and this is a vital cornerstone of any good United Way campaign.

However, this year I have proposed to the United Way a new concept.

If we are to once and for all get around the problem of meeting inflation we are going to

have to get back to another original concept of the United Way - one day's pay a year for all the work of the United Way agencies. As the pay scales increase so automatically would the annual donations to the United Way.

I would go even further and suggest the declaration of a United Way Day.

The concept I propose would be that we would get the provincial/local communities to declare a single day, such as October 15th, United Way Day. The public relations including the newspaper campaigns and TV would all build up to this particular day. The household mailers would have been sent out just prior to that.

This would lead to a much sharper focus than the drawn out publicity we have used in the past. Our current campaigns often run over a two month period and no-one can sustain public relations that long.

The concept would be that everyone in the community would be asked to consider that they were working for the United Way. The lead up campaign preparation would advise them of what their day's pay would be that day.

We might even consider phone in pledges or other such high profile approaches.

This could also inject into the United Appeal some of the emotional attraction that Miles for Millions or other such pinpointed campaigns seem to raise.

Contributors could of course still use payroll deduction or any other means they wish, as they have in the past, but the concept we would push is that on that day everyone in the community would be working for the United Way.

We would be asking people to 'help one another' by doing what they do best - working at their own jobs.

This approach could give a new punch to the campaign which I am sure would be appreciated by all the media, who must themselves get a little bored with the same old thing.

## THE UNITED WAY AND THE GOVERNMENT

At our own United Way annual meeting I noted Grace McCarthy's comment when she and I were discussing the United Way that despite the \$6.5 million raised in the Lower Mainland this only amounted to several days expenditure from her Ministry of Human Resources.

I of course pointed out that there is a 5 to 1 leverage on the money raised through the United Way because of its support of volunteer effort in the community. I also noted that there are many agencies which should never be run by the government. I doubt if many of us would want the Boy Scouts or the Girl Guides or similar organisations being totally funded by government.

However, if we are going to continue to co-exist with government programmes and find a role in parallel to what they do, then we are going to have to continue to be innovative in our approach to agencies.

I believe that one of the most effective uses of United Way funds is as 'seed money'. The flexibility available from United Way funds can demonstrate the need for new services which ultimately may be or even should be supported by tax dollars.

Yes, I believe that we should not look upon our agencies as being the right ones to be supported by voluntary dollars.

It is very important to understand that if we are trying to keep up with inflation and we get ourselves tied in to the ongoing support of agencies which are themselves very inflation prone, we may simply never be able to keep up. We should be ready to reassess the agencies we

support to ensure that they are a) the kind that should never be wholly supported by the government or b) they are of the startup kind where some government support should be encouraged or c) are those for which complete government support should be encouraged.

Like the scouts we too must 'be prepared' to reassess and take action where need be, by the same token it is vital that we look for new agencies to join the United Way family to ensure that we are presenting a well-rounded and well thought through programme for our communities.

The relationship with government goes even farther, in some communities such as the United Way of the Lower Mainland. Our social planning council is an integrated part of the organisation. This has its advantages, but it can make fund raising difficult if the roles are not well defined and each side is sensitive to the needs of the other.

Obviously we all promote the concept of constructive criticism. But being an advocate does not mean being an adversary. We would only be properly fulfilling our role as social critics if we are constructively complimentary to governments when they do a good job, just as we should be complimentary to other agencies whether they are part of the United Way movement or not.

It is up to us to show how we fill a parallel role to that of the government. If we do this then our fund raising will be better understood and hence more productive.

### THE 'ME' GENERATION

I simply do not believe that people are any less generous of their time and money than they ever were. However, they are becoming more selective.

As inflation puts pressure on their pocket books, we must expect them to shop around for the best buy for their charitable donations, just as they shop carefully for anything else.

It is becoming more vital than ever that we show that we provide value and that the cost/benefit is readily apparent.

We must emphasise the efficient 5 to 1 leverage on dollars expended through voluntary agencies.

But if we are to continue to get the right kinds of volunteers for the United Way movement, I believe we are going to have to do more. We are going to have to get more recognition for the work done by our volunteers.

More public relations for the people involved will cause more people to want to be involved, or, conversely, it will make people ask why they are not being asked to help.

When we get volunteers we must make them feel and be in a position of influence, the staff of United Way agencies and the United Way itself does an excellent job, but it is a mistake to assume that the staff can run a campaign.

It is important that they see their role as being largely to educate, assist and involve their volunteers. But it is not fair to the staff to expect them to do our job.

One of the great advantages of the United Way is that it offers to business and labour leaders the opportunity to help their community by doing what they do best - organising and motivating.

Labour and business people are not by and large trained social workers but they can still participate in this way. They must, however, be recognised by the community for what they do. Further, we must broaden the base. How often have we all commented that we see the same old faces in every voluntary movement in our communities. It is essential that we ask more people to get involved. We must also go after the younger executives rather than we old retraits.

It is important within your campaigns for the 80's that you get a strong campaign advisory council to survey the communities and make sure that we are getting the new, younger leaders involved so that they can work up through the organisations and become the campaign leaders for the late 80's and 90's.

### YOUTH KEEPS US YOUNG

I have not seen any recent surveys, but I know when I was campaign chairman in Ottawa my greatest concern was that most of the support for the United Way came from people over thirty. This is hardly surprising because of course young families getting started have got major financial commitments, but we must avoid being in the position of Chiang Kai-shek's army on Taiwan waiting for years to invade China - they were there in numbers but were getting less effective with every passing year!

Fortunately, I find British Columbia to be one of the best communities I have ever encountered when it comes to getting youth involved in the United Way. The enthusiasm and support from the universities and community colleges is just great.

A month or so ago the fraternities and sororities put on a marvellous songfest just to raise money for the United Way and its agencies - who said beware of Greeks bearing gifts!

The enthusiasm was just infectious.

What all this comes down to is that we have the responsibility to keep the United Way young and vibrant.

### THE FUTURE

In a way I should not be talking about the campaign for the 80's for many of the things I have talked about I believe can be implemented for the 1981 campaign. I hope that many of you will be looking at similar new approaches and that we can continue to trade ideas on how to make the 80's a decade to be remembered for the United Way.

#### POSSIBLE DISCUSSION TOPICS CAMPAIGN

CHAIRMAN AND BOARD MEMBERS UNITED WAY OF B.C. MAY 28TH, 1981

*GOAL SETTING - NEEDS VERSUS MOTIVATION*

*CAMPAIGNING TO POTENTIAL*

*PROVINCE-WIDE PUBLIC RELATIONS*

*WORKING WITH THE NATIONAL AGENCIES*

*CAMPAIGN ORGANISATION FOR THE 1980'S*

*FOUNDATIONS - THE VANCOUVER FOUNDATION AND LEADERS OF THE WAY*

*A FIVE YEAR CAMPAIGN PLAN*

*REPORT MEETINGS AND OTHER PUBLIC RELATIONS APPROACHES*

*DEALING WITH EMPLOYEE FUNDS*

*MORE INVOLVEMENT BY THE LABOUR MOVEMENT*

*YOUTH AND HOW TO GET IT MOTIVATED*

*AWARD CRITERIA*

*\$100 FOR WHAT? - WILL NATIONAL REVENUE EVER CHANGE?*

*APPROACHING SPECIFIC SECTORS:*

• *PROFESSIONAL* • *HOUSEHOLD MAIL CAMPAIGNS* • *SCHOOLS* • *PROVINCIAL GOVERNMENT EMPLOYEES*

Address to the Spring Convocation, Concordia University, Montreal. June 12, 1976

## Convocation Address

**“Keep your eye upon the donut and not upon the hole.”**

I note that Convocation Addresses are where the old give helpful advice to the young who are generally better educated than they are.

Convocation addresses are occasions for the old to give helpful advice to the young who are generally better educated and brighter than they are!

This puts me in an unusual position. At forty-three, I am in the middle of a wide variety of activities and have not really had time to condense my life into a few well chosen words of advice. I have had only two careers so far and am enthusiastically looking forward to several more. Frankly, I would prefer sitting where you are, with your whole life ahead of you, than being here receiving an Honorary Degree for things I have done in the first half of mine.

I can assure you, however, that I am looking forward to squeezing in as much living in my next few decades as most people would if they lived for centuries.

This is the message – be an enthusiastic optimist.

Some years ago, when I was with IBM, I was in White Plains, New York, for the de-commitment announcement of the timesharing support programs for their proposed new System /360 Model 67. It had been a particularly depressing day, for back in Ottawa I had been trying to sell a Model 67 to the National Research Council. The following morning I was in the Coffee Shop at the White Plains Hotel. Printed on one of their coffee mugs was the following:

“As you go through life, my friend  
Whatever may be your goal  
Keep your eye upon the donut  
And not upon the hole”

As I thought of this ‘homey’ philosophy, I realized with some amusement that being depressed made no sense. After all, I was young, healthy, happily married, and had a good position in an exciting industry.

I came back to Ottawa full of enthusiasm and optimism about what could be done with

### Hagar



what was left of the new time-sharing programs. I concluded they were still far better than anything the industry had been able to offer before.

NRC bought the Model 67. They still have it.

We all need to remind ourselves constantly that problems are only opportunities for improvement.

The most complimentary remark I ever enjoyed was when one of my Vice Presidents said that he felt I could see an advantage to every situation. He noted that, if I had been on the Titanic, I would have been the first to point out that at least we would not run out of ice for our drinks!

It takes effort to constantly focus on the positive. However, when life seems to be getting too much for you, remember that the alternative has little to offer. Therefore, you are better to regroup and start building on your blessings once again.

There is a maudlin, popular song, that reminds us that there will always be people who are better off than we are but usually far more who are less well off. The song will not win any awards, but the thought is right on.

In Canada, we are particularly well-positioned. We live in the freest environment on earth. Even though our newspapers are constantly reminding us of our shortcomings in many areas, we can count as one of our great advantages the fact that we have newspapers that are free to criticize. Take the criticism as a positive value and put the criticism into perspective relative to other countries in the world.

We all know that we have one of the highest standards of living anywhere. We may forget that, relative to most countries, we have an amazingly even distribution of wealth. We have outstanding health care. Few people go hungry.

We are incredibly fortunate in having substantial natural resources, largely covered with the world's greatest supply of fresh water. We are in an environment with low pollution and are not even in a major earthquake zone. We actually approach energy self-reliance.

Most important, however, we have more opportunity in our country to do what we want to do as individuals than in any other country I can think of.

I have little sympathy with those who complain that they cannot succeed in a country like ours. We would be wrong to build our futures around policies designed to help the lazy, the complainers or the pessimists.

Things are rarely better than one is prepared to believe they can be. I could never understand why anyone would be a pessimist. A pessimist cannot possibly enjoy life, as he can only assume that things will get worse.

There is no future in being a pessimist. There is no reason to be one.

This does not mean one should be thoughtlessly optimistic. The true optimist plans for a better future and prudently hedges in case things do not go exactly as planned.

The optimist understands that life can be cyclical.

However, down trends are always followed by up trends. If you capitalize on the ups, you will continue to reach new levels of achievement and enjoyment. Human nature will not allow normal people to stay depressed very long.

There have been predictors of doom for thousands of years, ranging from the prophets of the Old Testament to the writers of "Limits to Growth". Yet, at least in the energetic Western World, we have been getting healthier, living longer, having more leisure, and

gaining more in a material and non-material sense than at any time in our history.

Yes, I believe that in non-material things we are also richer than ever before. Improved communications have made us much more aware of the world's problems, but have also increased the resolve in many people's minds to seek solutions. I believe that today's youth is far more socially aware, better able to cope, and more motivated to succeed than ever before.

Our ability to enjoy life has improved dramatically. The other evening, I was momentarily irate when I dropped a favourite recording of a Corelli Concerto. Then I realized after some reflection that, had I lived when my parents were young, I would have been lucky to hear that Concerto once in a lifetime. Even then, it would only have been possible to hear it if I were lucky enough to live in a city with a major orchestra.

If one believes the Dealers in Gloom, one might conclude that there is little worth preserving in our way of life.

Quite the contrary! When we recognize what we have accomplished, we must be ready to defend what is good about the system and to correct what needs improving.

It will be your responsibility to be on guard when the pessimists tell us that mankind has accomplished little and is going nowhere. You are at the leading edge of the finest society that the human race has ever evolved. You have a responsibility to protect and develop this society for those who will follow you.

Be aware of when this society and its institutions are being criticized unjustly. Be vocal in your defence.

Speak up, or no one will hear. Speak out, or no one will listen.

You have before you a marvellous variety of things to do and enjoy. Get involved. Be alive.

The world is full of people who will tell you what you cannot do. Be a 'yes' man or a 'yes' person. An optimist can always find a way.

I could conclude by wishing you good luck but, if you approach life in a positive and dynamic way, you will not need it.

Have fun, and have a great life!

A talk at the third biennial URAM Lecture Series, Toronto. September 29, 1992

# *A Corporate View of Ultimate Reality:*

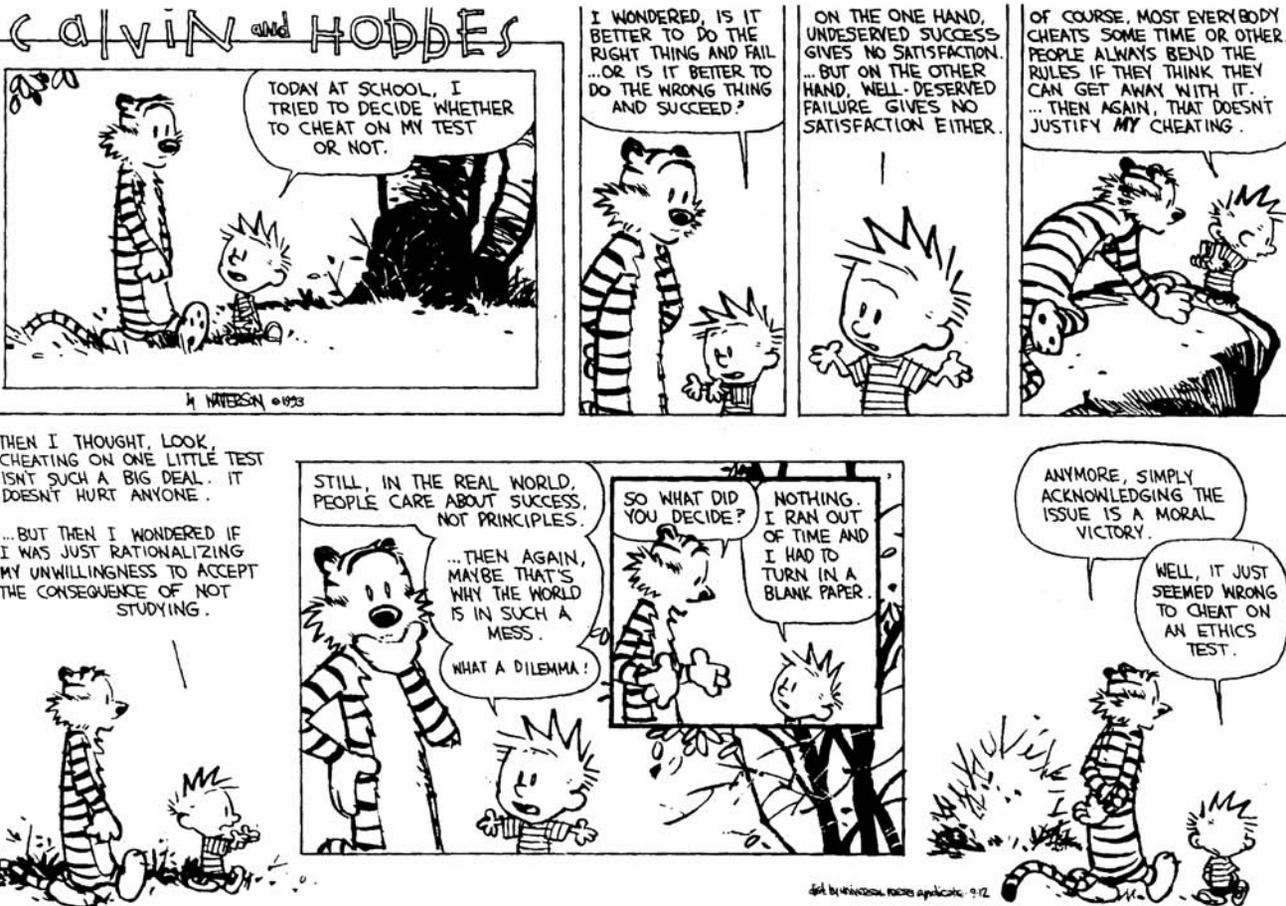
**“Atheism is a non-prophet organization.”**

I was invited to give my views on life, religion and other topics that no one else has been able to straighten out in thousands of years. This did not stop me trying.

It is an honour to be addressing this learned group of those seeking an understanding of what is indeed ultimate and presumably of supreme value in providing guidance for one's action.

The short form for the International Society for the Study of Human Ideas on Ultimate Reality and Meaning is ISSURAM. I presume this is pronounced ‘I Sure Am’. I wish I were as sure because as a corporate executive, I am expected to provide leadership, not just to my staff but to my industry, the community and to show some concern for the welfare of my shareholders.

But leadership in what direction - toward what ultimate reality?



One might assume that as a corporate executive, the ultimate meaning and reality could easily be reduced to a simple term such as money. However, some great minds, while acknowledging money's role as a guiding principle, have rejected the belief that this is sufficient.

Some years ago, I enjoyed an excellent Oxford-style debate between Mishalim Riklis, a leading entrepreneur, and the Very Reverend Martin Sullivan, Dean of St. Paul's Cathedral, London, England, on the topic 'Money is the Only Real Motivation'. The Dean took the affirmative position. He pointed out that if any one doubted the ultimate motivation of money, he should be in the Dean's position of trying to make a decent return on the \$75 million plant (St. Paul's) that he had been provided with. He also expressed the difficulties of satisfying the owner, his son and his Board of Directors of 12, particularly when the communication was not always that easy. No fax. No voicemail.

He also reminded us that the Bible itself had not been that hard on money. He did have to explain to Mr. Riklis who was more familiar with the Jewish faith, that there were some 50 references to money in the New Testament, not all of which were negative. He quoted the parable of The Talents (Matthew 25, verse 14-30) as an example. Mr. Riklis countered by quoting a recent survey that showed money was only third in terms of motivation of corporate executives and was well behind the challenge of the job and the general corporate environment.

As the debate was somewhat inconclusive, I realized I needed to look further for some guidance. This led me to a reconsideration of organized religion as a source for a solid base of reality upon which a modern corporation could build its system of ethics, and hence, decision-making. I regret to say that my quest for a simple solution has been largely unsuccessful. Presumably, any faith in a faith must be based on a firm belief in the deity or deities at the core of that particular religion.

My concern, therefore, started with an attempt to decide which god or goddess could provide the right kind of advice. It is not easy to pick just one which you could quote with confidence in your annual report. However, being somewhat closer to the Christian faith than others, I turned here first.

The Bible is quite explicit in setting out its authority. In John 14, verse 6, Jesus said 'I am the Way, the Truth and the Life; no man cometh unto the Father but by me'. Presumably, one need go no further to find ultimate reality! As a corporate executive might observe, that is going for market-share. Perhaps Jesus meant that he was the only way to his Father. If we pick this particular God as one worthy of being referenced in an annual report, then we should be sure that he or she is the type of God in whom we could trust completely.

This brings me to what I might call the Hiroshima dilemma or any major natural or man-made disaster. If the Christian God is to provide the ultimate source of guidance to a corporation, then He or She would have to be ultimately logical and understandable. What about Hiroshima or any massive scene of human suffering? I can only come to the conclusion that God is either not omnipotent and lacks the power to intervene in human affairs or he is a God of immense indifference. Whether impotent or indifferent, He hardly qualifies as a source for ultimate guidance.

Then, there is the cosmological problem or what, in corporate terms, might be called the Founder's concept. This is the idea that every organization has been started by someone and, presumably therefore, someone had to kick-start the Big Bang. Founders certainly deserve some respect. But if all someone does is just start an organization and remain uninvolved after

that, it is hard to see how he or she could have much good advice to offer about day-to-day behaviour.

When I reviewed these and other dilemmas based on the traditional arguments about the deity, the ultimate answer I seemed to get was always ‘One cannot understand all the intricacies of God’s ways’. That may well be but I would caution you in trying to get a statement like that past your auditors. They are unlikely to accept the concept of your authority for corporate guidance being, at best, a wastepaper basket for all unanswered questions.

However, one need not despair. I believe there is a common basis that is not dependent on any one religion or culture that can provide sensible ultimate guidance for both personal and corporate behaviour. The concept is hardly new. It can be expressed in a sophisticated way such as Kant’s categorical imperative or in as simple a manner as the Golden Rule. This concept of ‘do unto others as you would have them do unto you’ is a common theme which can be found in most of the world’s major religions and is certainly quoted regularly by some of the world’s leading thinkers. The statement may vary but the concept is universal. The reason for its universal validity is that it is built on a premise of enlightened self-interest rather than on any belief in the supernatural. It allows corporations or individuals to relate every action to what would be in their own long-run best interest if everyone did the same. Of course, people’s conception of what is in their self-interest requires a time-frame. A starving person may consider that self-interest does not extend beyond getting something to eat and this may cause what most would consider to be anti-social behaviour, e.g., robbing a store. However, if enlightened self-interest is viewed over a longer time period, then there would be a convergence of view as to what is the right thing to do (time is God’s way of ensuring that not everything happens at once).

For example, in terms of guidance to a corporation in making a difficult decision, the Golden Rule would point in the direction of not polluting the environment. In the long term, this benefits no one and becomes extremely costly. Or as some wit noted, corporations will pay for water pollution down stream.

But look at a more difficult dilemma such as that of a Canadian corporation considering doing business in an area where value judgments are quite different from those in North America. In many countries, it is considered the norm to make under-the-table payments, employ relatives of decision-makers as consultants and use other tactics to gain business. What guidance would the Golden Rule give a corporation in such a case? In the short run, the company could well gain business by subscribing to ethics not of its culture. Sooner or later, such behaviour inevitably comes to light. The moral indignation of the Western culture usually reflects so badly on the firm that it loses in the long run. Corporate heads roll, stock prices drop and the results are clearly not in the self-interest of the corporation.

Most corporations would agree that they would not like to see those practices proliferate in their country and, therefore, the Golden Rule has provided clear guidance on the correct decision. Note that I am not condemning the practices in other countries but rather indicating that enlightened self-interest will dictate a course of action that conforms to at least the local sense of morality. Broadening and perhaps simplifying this concept, one might state that ‘if it does not feel right, don’t do it.’ Most people will know whether what they are doing is right in the long run, using virtually any criteria one might wish to apply. If the perpetrators of Watergate had really thought about their own enlightened self-interest, they would not have done what they did. The consequences far outweighed the gain.

To provide some further guidance about any choice a corporation or a person may make, one could pause to view the decision from the future. How would the decision you are about to make be viewed in ten years' time or one hundred years or a thousand years? Would you be proud of what you have done using any criteria? Would your children be pleased with the choice you made? Could you explain it to your peers with pride? Could you sleep at night, having made that decision?

Perhaps this approach does imply some inherent universal reality but at least in the interim, it is pragmatic. If the mission of a corporation is to 'do what feels right', the strategy can be based pragmatically on the Golden Rule. And this approach can be applied as easily to individuals as to corporations and it works in the smallest as well as the largest decisions. As Beryl Markham noted in *West with the Night*, 'If a man has any greatness in him, it comes to light not in one flamboyant hour but in the ledger of his daily work.'

Thank you for your continuing efforts in the important endeavour of searching for human ideas on ultimate reality and meaning. I hope my thoughts from a corporate perspective have been of some help.

## Chronology of Selected Talks

<b>Period</b>	<b>Activity</b>
1955	Graduated in Political Science & Economics from Trinity College, University of Toronto
1955 – 68	Various sales and marketing positions at IBM Canada <ul style="list-style-type: none"> <li>- Toronto 1955-60</li> <li>- Ottawa 1960-68</li> </ul>
1968 – 79	President & CEO of Systems Dimensions Limited (SDL) based in Ottawa National President, Canadian Information Processing Society (CIPS) 1970-71 Chair, United Appeal Campaign 1971 Chair, Board of Governors, Carleton University 1977-79
1979 – 85	President & CEO, Premier Communications Limited based in Vancouver Chair, Canadian Cablesystems 1980-83 Chair, United Way Campaign 1981 Chair, Finance Committee, Board of Governors, Simon Fraser University 1981-84 Chair, Team BC 1982-83 President and CEO, Cantel 1983-85
1985 – 93	President & CEO, Rogers Cantel based in Toronto Chair & CEO, Rogers Cantel 1990-93 Chair, United Way Campaign 1991 Chair, Vision 2000 1989-91 Chair, Information Technology Association of Canada (ITAC) 1993-94
1993 – 96	Vice Chair, Rogers Communications Inc. based in Toronto President, Toronto Board of Trade 1996-97
1997 – Present	President & CEO, Four Halls Inc. based in Toronto Chair, Trinity College Capital Campaign 1996-99 President, National Club 1998-99 Chair, Greater Toronto Marketing Alliance 1997-2002

# APPENDIX

## *Wandering the Web*

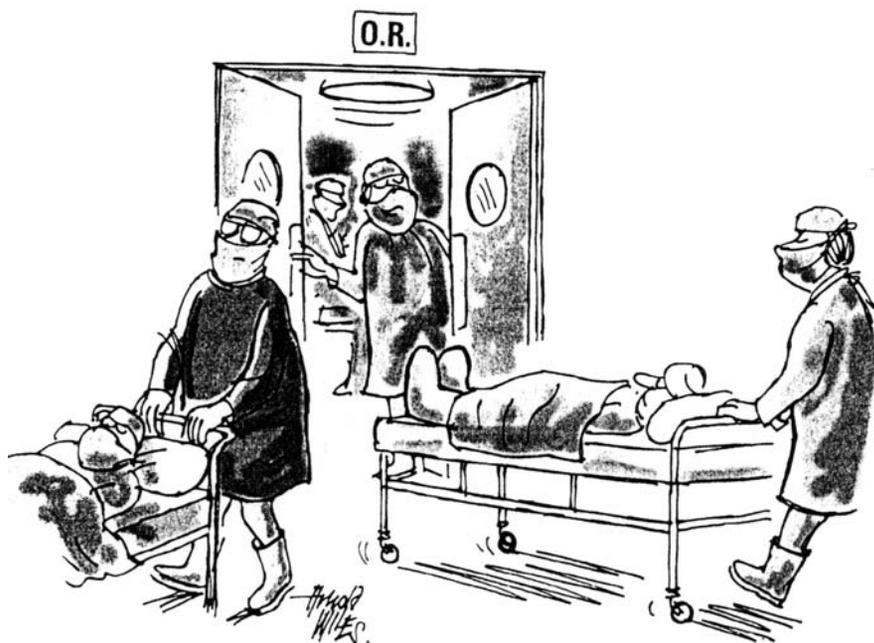
Below is a list of selected talks and articles that are available at  
[www.gfierheller.ca](http://www.gfierheller.ca)

The articles are listed by organization or subject for ease of reference and then chronological sequence within those topics. Also in the index is a brief background as to why they are included on the website.

On page 256 there is a brief chronology to help with the time period when these talks or articles were delivered.

As many of these are of specialized interest only, this web-based approach has been used to avoid cluttering the book.

I hope you will find at least some of this material useful.



*“So much for appendix A – now for appendix B.”*

## SECTION A

# *Systems Dimensions Limited (SDL)*

The concept was simple – its execution was not. By the late 1960's, the need for computing power was growing at an unbelievable rate, driven by the increasing complexity and variety of applications. Many organizations needed to access a high capacity computer but could not afford to install these very expensive systems costing millions of dollars in many cases. Remember this was long before the era of mini computers to say nothing of PC's.

The answer was shared computing power provided by a major service bureau remotely accessed. The correct name for this process is Remote Batch Processing.

In March 1968, two senior Systems Engineers and I had left IBM in Ottawa to create a small computer consulting firm called Systems Dimensions Limited. Shortly thereafter, we started what was to become Canada's largest computer services organization. We designed and built a special purpose building in Ottawa and installed an IBM System/360 Model 85. This was the largest commercial computer that IBM made at the time.

The whole story is told in "The SDL Story" which is available on [www.gfierheller.ca](http://www.gfierheller.ca)

I was the President and CEO from April 1, 1969 to March 31, 1979, the period of these talks.

1. Telecommunications and the Computer Service Industry In Canada
  - A look at the improving capability of communication networks and the opportunities this provides for computer services, April 27, 1970.
2. And This Is Just For Starters
  - A staff talk, one of a series of Fireside Chats, 1971.
3. Relationship of Bell Canada to SDL and AGT
  - A proposal to Bell Canada, January 29, 1971.
4. A New Industry Looks at the Bell
  - Commentary on the development of the computer services industry in Canada, March 1, 1971.
5. An Experience in Raising Venture Capital
  - A talk to the Canadian Computer Conference, Session '72, June 1972.
6. Toronto Society of Financial Analysts
  - An update on October 4, 1972.

7. Computer Services in Canada in 1975
  - A talk to the Annual Meeting of the Canadian Association of Data Processing Service Organizations (CADAPSO), October 20, 1972.
8. Marketing Seminar
  - An introduction to an SDL Marketing Seminar on November 18, 1972.
9. Investment Dealers' Association of Canada, Ottawa Group
  - A talk given on February 14, 1973 as a 5 year update on SDL.
10. SDL Annual Meeting
  - The President's remarks at the November 8, 1973 AGM in Toronto.
11. Marketing Conference, Montebello, Quebec
  - The President's opening remarks at a November 10, 1973 SDL Marketing Conference.
12. Montreal Society of Financial Analysts
  - An update given at the Hotel Bonaventure, Montreal on December 12, 1973.
13. SDL and the Wired City
  - A talk given in January 1974 on the relationship between SDL and cable television companies.
14. Investment Dealers' Association of Canada, Ottawa Group
  - Another update delivered on May 6, 1974.
15. Service Bureaus and Cable TV – State of the Art and Perspectives
  - A talk given to the Organization for Economic Co-operation and Development (OECD) in Paris, France, September 25-26, 1974.
16. President's Remarks at the Annual General Meeting
  - November 15, 1974.
17. The Wired City Concept – As It Stands Today
  - A talk given to the Canadian Industrial Communications Assembly, Ottawa, March 14, 1975.
18. SDL Annual Meeting
  - The President's address on December 8, 1976.
19. What's New Under the Sun?
  - A talk given to the International Federation of Information Processing Societies Conference August 8-12, 1977. At the time SDL was a takeover target by Sun Life.

## 20. Annual Meeting

- The President's remarks at the AGM on November 2, 1977, Ottawa.

## 21. The Wired City

- A background piece on the proposed acquisition of Ottawa Cablevision Limited by SDL to form the first integrated wired city operation in Canada. The intention was to offer such online services as in-the-home banking, shopping, education and information retrieval – this proved to be a bit premature as the Federal Government subsequently turned down our application to acquire a cable company.

## 22. The Future of Computer Services in Canada

- A talk given to a Canadian Information Processing Society and the Data Processing Management Association joint meeting in Vancouver, April 10, 1979.

## 23. A Young Company Growing Up

- A talk to the SDL Annual Business Conference in Kingston, Ontario.

## 24. Service Bureaus in Canada

- An article for Auerbach Publishers Inc. in 1978.

## 25. Where is the computer industry going? – A User's Viewpoint

- A talk to the Toronto section of the Canadian Information Processing Society, September 11, 1979.

## 26. Some Thoughts on Strategic Direction

- A talk given to the Canada Systems Group Management Council reflecting on the computer services industry. Thursday, March 5, 1987 at the Old Mill, Toronto.

## SECTION B

# *The Canadian Information Processing Society (CIPS)*

CIPS, which was formerly the Computer Society of Canada, is a pioneering organization representing the computer professionals rather than computer companies. Amongst its many activities, it published an annual Computer Census in the early days when such systems were still a rarity in Canada.

I was President of the Ottawa Chapter in 1967-68 and was National President in 1970-71.

One of the major activities of CIPS was to promote professional standards for practitioners in the field. In addition to my work at CIPS, I was also a Founding Director of the Institute for the Certification of Computer Professionals, an international organization established in 1973.

1. A Society for the 70's
  - A talk given to the Annual Meeting of the Canadian Information Processing Society at the Hotel Vancouver, June 2, 1970.
2. Communications and Data Processing
  - A paper delivered to CIPS in December 1970 on remote data processing.
3. Trends in Canadian Computing
  - A talk given to the Canadian Information Processing Society in November 1970.
4. Communications and Data Processing
  - Another CIPS talk delivered in December 1970.
5. The Janus Complex
  - A proposal for reorganizing CIPS taking into account that in 1970 we had launched the Canadian Computer Conference, started a Salary and Manpower Survey and started the CIPS National Magazine.
6. A Proposal for the Establishment of The Canadian Federation of Information Processing Societies
  - This did not happen but my feeling was there were far too many societies trying to represent the computer industry and I proposed the establishment of CAFIPS which would then represent the Canadian computer industry to the International Federation of Information Processing (IFIP) – a good try!

## SECTION C

*Premier Communications Limited –  
Vancouver*

Premier Cablevision Limited, as it was known when I moved to B.C. as the President and CEO, was the largest Cable TV company in Canada. It was also one of two pioneers in the Cable Television field (the other being Canadian Cablesystems Limited based in London, Ontario). It had cable TV operations in Alberta and Ontario as well as being the dominant player in B.C. with operations in Vancouver and Victoria. It even had Cable TV operations in Dublin and Waterford, Ireland.

It was however a traditional Cable Television company. I was brought in as President and CEO on April 1, 1979 to bring the new Wired City perspective to the company. We expanded into the United States, participated in the launch of Pay TV in Canada and pioneered some new approaches to multicultural programming.

The company however needed economy of scale and a rationalization of the Cable Television industry in Canada was very necessary. In 1980, the company merged with Canadian Cablesystems Limited which itself had recently been acquired by Rogers Cable TV. I became the Chair of the newly created cable giant under the leadership of Ted Rogers.

During my time in the cable industry, I chaired the Strategic Planning Committee of the Canadian Cable Television Association and was the President of the Cable Telecommunications Research Association.

It was these activities that led to the attached talks from about 1979 to 1983 when I became involved in the application for mobile telephone licences in Canada.

1. The Other End of the Tube
  - A talk given to the Federal Government Computer Conference in Ottawa, September 11, 1979.
2. The Third Phase
  - A forecast of the future of the cable industry published in Cable Communications in 1980.
3. The Unwired City
  - A paper in 1979 looking forward to the 1980's and 90's when there would be a mixture of the wired and unwired worlds – an interesting prediction given my later involvement in wireless telephony.
4. A Policy for the Cable Industry In Canada
  - Discussion notes for the then Minister of Communications, the Honourable David MacDonald, delivered to the Government of Canada, September 1979.

#### 5. Fireside Chat

- I continued my approach of having regular fireside chats with the staff. However as the Premier personnel were in several countries and many locations, I started to videotape these. This one was January 1980.

#### 6. Annual Meeting

- My notes for the AGM for Premier on January 10, 1980.

#### 7. Broadband Communications – Canada's Newest Retailer

- A talk given at the CIPS seminar on Data Communications in Winnipeg, Canada, April 22, 1980.

#### 8. Seminar on Communications

- A talk given to the British Columbia Government at a seminar on Communications held in Richmond, B.C., April 25-27, 1980.

#### 9. The Unwired City

- A talk given at Session 80 of the CIPS Annual Meeting, Victoria, B.C., May 13, 1980.

#### 10. Conference Board Conference

- Notes for a discussion at the Conference Board meeting at Harrison Hot Springs, B.C., May 30 – June 30, 1980.

#### 11. Alternative Approaches to Networking in the 1980's

- A talk given to the Annual Meeting of the Canadian Telecommunications Carriers Association, Vancouver, B.C., June 24, 1980.

#### 12. Investment Presentation

- A talk given to the Toronto Investment Dealers Association, August 29, 1980.

#### 13. Marketing Through New Technology

- A talk given to the Sales and Marketing Executives of Vancouver, September 18, 1980.

#### 14. Victoria Programming Reception

- Notes for a cocktail party talk to the Community Programming Group in Victoria, October 21, 1980.

#### 15. Community Leaders in Victoria, B.C.

- A breakfast meeting in Victoria to explain the reasons for the recent merger between Premier Communications Limited and Canadian Cablesystems Limited, October 22, 1980.

#### 16. Victoria Community Talk

- Notes for a cocktail reception at the Crystal Gardens in Victoria, October 22, 1980.

### 17. Vancouver and Fraser Programming Reception

- An update for the community programming groups in Vancouver and Fraser Valley, October 23, 1980.

### 18. Municipal, Business and Arts Communities

- A luncheon talk for senior members of the Lower Mainland communities, October 23, 1980.

### 19. Freedom to Choose

- A talk to the Rotary Club of Vancouver on January 25, 1983 shortly after the introduction of Pay TV. This Pay TV package has included the Playboy channel which aroused a significant backlash from some women's organizations. I managed to pour fuel on the fire unintentionally.

### 20. Annual Meeting

- My remarks at the AGM of Canadian Cablesystems Limited in Toronto, January 26, 1981.

### 21. You Take the High Road

- An overview of Cable TV as a future market for satellite services. This was given to the management group of Telesat Canada in Ottawa on June 28, 1983 and forecasts the extensive use of satellite delivered programming in conjunction with cable.

### 22. Issues on the Canadian Cable Television Industry

- A background paper in January 1985 on where I felt the cable industry was headed.

## SECTION D

# *Cantel Inc.* *(Rogers Wireless Inc.)*

In early 1983, while I was still Chair of Canadian Cablesystems and still living in Vancouver, I was asked to put together a team to bid for the about-to-be-released cellular radio licences in Canada. A more complete story of this venture is told in “Finnie’s Family” which is also available on the [www.gfierheller.ca](http://www.gfierheller.ca) website. Briefly the bid team that I led was made up of representatives of the consortium financed by Philippe de Gaspé Beaubien, Telemedia, Quebec, Sam Balzberg, British Columbia and Ted Rogers, Ontario.

After about nine months of hard marketing, the consortium was awarded the first national telephone licence on December 14, 1983.

Having led the bid team, I was then asked to be the Founding President and CEO, just until a permanent President could be found. For a variety of reasons, the first President we hired did not work out and after filling in with a very capable contract President, I was asked to resume the Presidency and did so in August 1985.

It was during this time until I retired as CEO in 1993 that the attached talks were delivered.

As usual I was active in the industry and amongst other things chaired the Cellular Safety Committee for the international Cellular Telecommunications Industry Association (CTIA).

### 1. The Future of Basic Communication Systems

- A talk given to Communications in the Eighties, University of Calgary, May 1, 1984.

### 2. Cellular Radio – Coming Onstream

- A talk for Radiocomm '84 given at the Sheraton Centre, Toronto, May 31, 1984.

### 3. Cantel – The Technical Times

- A paper on some of the challenges of developing and building a national telephone system from scratch with essentially no experience!

### 4. Cantel Mission/Vision/Values

- How we saw ourselves.

### 5. Your Phone Away From Phone

- A talk given to the Western Canada Telecommunications Council AGM, April 19, 1985.

### 6. The Wired City in a Non-Wired World

- A talk given to the Stratford Rotary Club, November 28, 1985.

## 7. Canadian Media Conference

- A talk given to the first annual Canadian Media Conference, January 27, 1987. This is where I forecast that the next generation of cellular telephones would look like a seventy-nine cent pen. I was definitely wrong in this projection as what customers wanted was larger screens, keyboards, Short Messaging Systems, pictures and even full motion video.

## 8. CRTC Briefing

- A talk about Cantel as a corporate citizen given to the CRTC, December 2, 1988.

## 9. Canadian Telecommunications: Preparing for 2001

- A talk at Communications Strategies '89, Toronto, May 17, 1989.

## 10. Product Innovation in a Service Industry

- A talk at the National Business Show in Toronto, May 15, 1990.

## 11. The Mobile Communications Revolution

- A talk at the North American Cellular Conference, Toronto, June 21, 1990.

## 12. Emerging Technologies and Strategies in a Newly Deregulated Market – The Canadian Experience

- A talk given in Sidney, Australia, July 31, 1990.

## 13. Mobile Cellular Communications

- A paper given at Inter Comm '90, Vancouver

## 14. Mobile Communications – Challenges and Obstacles

- A talk to the Wireless Communications Seminar, Toronto, April 10, 1992.

## 15. Dances With Digital

- A talk to the Carleton University Seminar on “Publics, Markets and the State: Seminar on Canadian Communications Policy”, Ottawa, January 23, 1993.

## 16. The Leading Edge

- A talk given to the Communications and Media Workshop, Strategies for the 90's, Toronto, February 11, 1993.

## 17. Making Today Better for You – Everyday

- At talk to the Institute of Market-Driven Quality “Breakfast of Champions”, Four Seasons Hotel, Toronto, February 18, 1993.

## 18. Disaster Preparedness and Response

- A talk given to Wireless '93 CTIA Convention, Dallas, Texas, March 1993.

19. Annual General Meeting

- My remarks to the Rogers Communications Inc. AGM in Toronto, March 31, 1993.

20. Management and Mobility

- A talk to the Executive Forum, Toronto Board of Trade, April 22, 1993.

21. A New Communications Scene

- A talk at the Toronto Junior Board of Trade, October 26, 1993.

22. Radio Advisory Board of Canada

- A talk to the Annual General Meeting of the Radio Advisory Board of Canada, November 25, 1993.

23. The Crystal Ball

- A talk to the Comdex/Canada Plenary Session, Metro Toronto Convention Centre, July 13, 1994.

24. Phones Will Shrink to the Size of a Pen

- Article in the Toronto Star Business Section, July 14, 1994.

25. The Future of Public Cordless Telephony

- A look at what consumers really want from their supplier of wireless telephony, July 25, 1994.

26. Business Communication Today and Tomorrow

- A discussion of the Rogers approach to business communications delivered to Ryerson Polytechnic University, September 30, 1994.

27. Cantel's 10th Anniversary

- Remarks at a celebration of Cantel's 10th Anniversary, June 29, 1995.

## SECTION E

# *Information Technology Association of Canada (ITAC)*

Unlike CIPS, ITAC is an industry association comprised of about 270 of the largest providers of computer software and hardware in Canada.

I was the National Chair in 1993–94 where amongst other things I endeavoured (unsuccessfully) to bring about a merger with the Canadian Advanced Technology Association (CATA).

During my tenure, ITAC produced a series of annual conferences based on the growing interest at that time in the Information Superhighway.

The first in Toronto was called Powering-up North America. It included, as speakers, such glitterati as the futurist George Gilder, Nicholas Negroponte, MIT Media Lab, Larry Ellison, CEO Oracle, Bill Esrey, Chairman and CEO, Sprint, Ted Rogers, Terry Matthews, Newbridge and Bob Rae, then Premier of Ontario.

This was followed-up by a conference in Ottawa with a similar line-up called Road-Kill on the Information Highway that emphasized the human resource implications for this new development.

1. Growing the Infratechnology
  - A talk to the National Summit on Information Policy, Ottawa, December 8, 1992.
2. Opening Address, INTERCOM 93
  - A talk given in Vancouver, British Columbia, February 25, 1993.
3. Bits, Bytes and Bold Strategies
  - A talk given to the Mississauga Board of Trade, March 8, 1993.
4. The Strategic Resource
  - Remarks to the Conference Board of Canada, Ottawa, May 11, 1993.
5. Bits of Progress
  - A talk on converging technologies to the Canadian Telecommunications Consultants Association, Toronto, October 13, 1994.

## SECTION F

# *The Toronto Board of Trade and The Greater Toronto Marketing Alliance*

The Toronto Board of Trade is one of the largest Chambers of Commerce in North America. At the time I was President in 1996-97 there were over 10,000 members.

The Board concentrated on policy work but did not directly get involved in Economic Development. It was felt that this was a Government responsibility, unlike the approach in the United States where Chambers usually played a lead private sector role.

When my term as President was up, I became the Founding Chair of a new organization sponsored by the Mayors and Regional Chairs Committee led by Mayor Hazel McCallion and an ad hoc group of the 29 Boards of Trade and Chambers of Commerce in the Greater Toronto Area (GTA).

This organization is called The Greater Toronto Marketing Alliance and its mission is to “expand the economy of the Greater Toronto Area by raising the profile of the region internationally to attract new investment and employment”.

I remained the Chair until 2002.

1. Tenant Real Estate Requirements In The New Economy
  - A talk to the Real Estate Forum, Toronto, December 4, 1996.
2. A More Effective GTMA
  - An address to the prestigious Honorary Board at a luncheon October 23, 2003.
3. Sell! Sell! Sell!
  - A talk on the GTMA given to the Toronto Rotary Club, February 18, 2005.

## SECTION G

# *University Boards*

Interacting with those younger than I (and that now includes nearly everyone) has always been a particular interest. When I served on the Selection Committee for the University of Toronto Arbour Scholars, I was almost embarrassed to be judging the merits of those who were in their late teens or early twenties who are already brighter and better educated than I.

To try to stay in touch I was active with Carleton University while in Ottawa. Specifically I was Chair of the Associates of Carleton (the founding group of the University), Chair of their first Capital Campaign, a Director of the newly formed Norman Patterson School for International Affairs and finally Chair of their Board, 1997-99.

When in Vancouver I was on the Advisory Committee of the School of Business at the University of British Columbia and also Chair of the Finance Committee of the Board at Simon Fraser University.

I have been involved with Trinity College at the University of Toronto, largely in a fund raising capacity and chaired their Spirit of Leadership Campaign in 1996-99.

1. Canadian Council On International Law
  - As Chair of the Board at Carleton I welcomed this group to the campus June 24, 1977.
2. Social Responsibility of Business
  - This was a talk to the MBA students at Simon Fraser, October 21, 1982.

## SECTION H

# *Computer Viewpoints*

These talks cover a variety of topics in the computer industry ranging from the potential benefits to a major constraint which was then and still is the lack of sufficiently trained people in the field.

They reflect views over some 35 years that were occasionally right on e.g. forecasting the ability to add as much intelligence as one wishes to virtually anything, even inanimate objects. However, sometimes I got it wrong having not forecast the incredible growth in Personal Computers for home use. I was somewhat sceptical in those days before the Internet.

There are also some looks at a particular industry and the impact of computers on it.

### 1. Chartered Accountants Presentation

- A talk given to the Institute of Chartered Accountants of Ontario, Toronto, May 12, 1969. These are just speech notes introducing the concept of large scale computer service utilities.

### 2. Where is the computer industry going?

- A user's viewpoint.
- A talk to the Toronto section of the Canadian Information Processing Society, September 11, 1979, discussing the declining cost of computer cycles and its impact on the choice between remote computing and in-house solutions.

### 3. Just Push the Button

- A presentation to the Young Presidents Organization (YPO) Third Canadian Conference, Vancouver, B.C., October 3, 1981. This paper expands on the concept of utilizing the declining size of electronic components and the increasing capability of remote interface with computers to automate just about anything.

### 4. Not Even a Mouse

- A Christmas dinner meeting address to the Canadian Information Processing Society, Ottawa Chapter, December 12, 1985. This is where I talked about my early experience with PCs and my concern about how really useful they would prove to be in the home – dead wrong!

### 5. Have Fun, Will Travel

- A talk to the Canadian Business Travel Association, Toronto, April 22, 1994. A discussion of how computers will impact a particular industry and how that industry can respond.

## SECTION I

# *Government and Regulation*

In Canada we are never far from either. Governments usually mean well but as is widely recognized, sometimes get in the way.

I have always been a social liberal but an economic conservative. These talks reflect that viewpoint that in terms of government, less is usually more.

1. A brief concerning aspects of the Act to amend the Combines Investigation Act (Bill C-42).
  - This was written from the position of a Private Sector Company (SDL) and suggested modifications to the Act.
2. Business Needs an Ombudsman
  - A talk given to the Third International Conference on Computer Communications, Toronto, August 6, 1976.
  - This was really a talk on the Canadian entrepreneur in the 1970s. It seemed to me that we appoint ombudsmen for many reasons and perhaps it is time to do the same for free enterprise to try to avoid the red tape that governments regularly impose.
3. Relationships with Governments – Policies and Strategies
  - A Canadian viewpoint given at the First World Computing Services Industry Conference, Barcelona, Spain, June 20-23, 1978.
4. Ministerial discretion – is there adequate constraint?
  - A talk given to the Canadian Bar Association, Vancouver, September 1, 1981.
5. Communications Planning
  - A talk to the Ontario Ministry of Transportation and Communications Planning Conference, Georgian College, August 19, 1985.
6. Competition and Telecommunications in Canada – A Case Study
  - A talk to the Canadian Communications Law and Policy Conference, March 25, 1988, Osgoode Hall, Toronto.

## SECTION J

# *Legal and Justice Systems*

These are some thoughts on the importance of computer systems in the administration of justice. This includes both law enforcement and the court systems.

1. The Use of Computers To Assist the Legal Profession
  - A speech to the Canadian Bar Association Annual Meeting, September 1969.
2. Great Expectations
  - A talk to the Great Expectations Conference of the Canadian Bar Association, Vancouver, B.C., March 28, 1981.

## SECTION K

# *Voluntarism*

Whatever we do in our business lives, we are always within the context of the society in which we live. I have always been a strong believer that business people need to pay close attention to what is going on around them socially and to participate as far as their expertise will allow in trying to make society better.

As noted in my book, “Finnie’s Family”, this has led me to have a parallel career in the voluntary field beyond the usual involvement in industry associations and education.

While in B.C., I was asked by the Provincial Government to set up an organization to help pull the province out of a difficult recession. As a result I established an organization called Team BC in the early 1980’s to try to help particularly smaller communities regain some momentum after a significant downturn in such industries as logging, mining and fishing.

Finally, having chaired United Way campaigns in each of the cities in which I lived, Ottawa, Vancouver and Toronto, I have some views on where this wonderful concept can and should go.

1. Team BC News Conference
  - Remarks at the opening of Team BC, Robson Media Centre, Vancouver, September 16, 1982.
2. Let’s Keep B.C. Moving
  - A talk about how a little optimism will go a long way in recognizing the potential for communities to capitalize on their benefits.
3. The State of United Ways/Centraides in Canada Today
  - Opening remarks at the Campaign Leaders’ Workshop, Mississauga, February 28, 1982.
4. United Way Annual General Meeting
  - My opening remarks at the United Way AGM in Toronto, September 1986, when I was Chair of the Board of the United Way.

## *I'm on Committees*

Oh give me your pity,  
I'm on a committee,  
Which means that from morning to night,  
We attend and amend,  
And contend and defend,  
Without a conclusion in sight.

We confer and concur,  
We defer and demur,  
And reiterate all of our thoughts,  
We revised the agenda,  
With frequent addenda,  
And consider a load of reports.

We compose and propose,  
We suppose and oppose,  
And the points of procedure are fun,  
But though various notions,  
Are brought up as motions,  
There's terribly little gets done.

We resolve and absolve,  
But we never dissolve,  
Since it's out of the question for us,  
To bring our committee,  
To end like this ditty,  
Which stops with a period – thus.

*(Anonymous)*



*“Whew! That was close! We almost decided something!”*