STRATEGIES FOR THE FUTURE

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The surveying and mapping industry of Canada is at a cross-roads. Its marketplace is rapidly changing, with some markets disappearing or declining in importance, while new markets are on the horizon. This paper presents a historical overview of the post-war era as it influenced the fortunes of our industry and examines the major changes in the government and private sector marketplace which will affect our future. The downstream impact of government and private sector fiscal restraint, contracting policies and changing social mores is discussed with a view to projecting the shape and form of our industry and its individual players as we enter the next decade.

HISTORICAL OVERVIEW

To facilitate contemplation of the future, it is often useful to briefly review the past. This is particularly true in the case of our industry, since it is simply a servant of the political and socio-economic conditions of the times. Therefore, let us begin with a review of the ambient conditions of the post-war era in order to clarify our vision of the future.

During the golden decades of the fifties and sixties, life was simple for the surveying and mapping industry of Canada. Government and private sector clients enjoyed expanding revenue bases to fund their demand for our product. Marketing strategies were scarcely required since the greatest problem facing our industry was how to cope with the ever increasing demands thrust upon it.

Conventional land surveying firms were kept busy with the ever expanding urban sprawl and its attendant need for more and more subdivisions to service a rapidly growing suburbia. Coupled with this was the new infrastructure of highways, utility and natural gas corridors, as well as surveys for the exploratory and production phases of the resource industries.

For similar reasons mapping companies were kept busy servicing the domestic market as well as capturing a significant share of the world mapping market. European and Pacific Rim countries, recovering from the devastation of the Second World War, were as yet unable to pose significant international competition to the highly regarded Canadian mapping industry.

The technological change accompanying this period, while seeming quite revolutionary at the time, was incremental and relatively easy for industry personnel to cope with. Professional and technical personnel were able to update and upgrade themselves through seminars and hands-on experience with the technology as it came on stream. In addition, better educated professionals and technologists were starting to enter the industry from the specialized surveying programs of selected universities and training institutes. The capital cost of this technology, while seeming quite costly at the time, was bearable considering its anticipated useful life expectancy and the expanding revenue base of progressive survey companies.

During the seventies, we began to see some stabilization of our work load, particularly in the more conventional surveying fields. In many areas, the urban sprawl slowed down noticeably as the rush to suburbia was replaced by urban core revitalization and the trend towards high density and condominium housing became popular options. The utility and pipeline corridors were now largely in place and the resource sector requirements were also starting to stabilize.

At this point, only the exploratory phase of the petroleum industry remained as a significant growth area. While the onshore surveying requirements of the petroleum industry were fairly conventional, the offshore requirements gave rise to a whole new breed of private sector surveying companies. These companies equipped themselves with increasingly sophisticated and costly long-range positioning equipment and prospered with the expansion of offshore exploration. The offshore surveying industry thrived under OPEC's high oil prices and the federal government's National Energy Program.

During the latter part of the seventies and the early eighties, our industry went through a series of regional economic ups and downs. Unaccustomed stagnation infected the economy of central Canada, while western Canada, with one minor hiccup, enjoyed boom times. Due to offshore exploration, coastal zone Maritimers began to dream of enhanced and sustained caloric intake. While these regional economic fluctuations resulted in some migration of survey capacity and personnel, the overall future of our industry seemed relatively secure.

With indecent abruptness, all of this comfort and security went out the window by the mid-eighties. The federal government cancelled its National Energy Program and OPEC drove the price of oil down to record lows. The combined effect of these two events threw the petroleum industry into chaos and signaled the demise of virtually all frontier oil exploration. Coupled with this was the federal government's commitment to budgetary restraint both at the federal level and, through transfer payments, at the provincial level. The result was that even where a demand for major programs still existed, the required funding ultimately affected municipal revenues, with the result that our industry began to experience increasing difficulty with respect to the market share traditionally funded, directly or indirectly, through any level of government.

THE FUTURE MARKETPLACE

Having reviewed the fortunes of our industry during the post-war era, let us now contemplate what the future holds.

As we look ahead, it seems obvious that the following political and socio-economic realities will greatly affect our marketing strategies over the next decade.

There will be continued and increasing restraint with respect to government funding of surveying and mapping programs. No longer can we expect major government initiatives for programs simply because they are desirable, elegant or promise some ill-defined future benefit. Henceforth, all government programs will have to meet the test of being essential, highly focused, cost effective and will have to demonstrate satisfactory short term political pay-back. Furthermore, each level of government will increase its resolve to manoeuvre the funding of such programs to some other level of government. Failing that, joint funding will become an increasingly popular option.

Major users of our services in the private sector will be increasingly "lean and mean". They too will be applying similar "means tests" to their programs. Furthermore, clients in the petroleum industry can reasonably be expected to be very circumspect with regard to major initiatives in the field of frontier exploration programs. Conventional surveying requirements of smaller clients will continue to ebb and flow in concert with the regional socio-economic conditions of the time.

Lastly, all clients will expect our industry to provide increasingly cost-effective solutions to their problems. Our task will be to meet this demand by virtue of applying improved organizational and technological solutions, while at the same time maintaining satisfactory profit margins.

IMPACT ON OUR INDUSTRY

Conventional Land Surveying

The traditional detached single family dwelling and the subdivisions it spawns, is pricing itself off the market to a large percentage of our population. This will lead to declining volumes of work for land surveying companies due to the resultant trend toward high density town housing and condominium style housing stock. Similarly, the infrastructure of highways, utility and natural gas corridors is largely in place and we can anticipate limited demand for such surveys in the future.

As a result, the outlook for the future suggests fewer conventional land surveying companies facing a stagnant to declining volume of work. Only those companies which expand into new areas such as digital land information services and the export market can expect to grow and prosper over the next two decades.

Hydrographic And Offshore Surveying

The demand for conventional hydrographic surveys on the domestic market will, at best, remain stagnant due to government fiscal restraint. Unless our industry can succeed in changing the government's present policy regarding contracting-out, there is little likelihood that this will become a growth area in the near future.

With regard to the offshore surveying requirements of the petroleum industry, we can expect an even bleaker future over the next decade. Only a dramatic increase in the price of oil, coupled with renewed initiatives by the government for energy self-sufficiency, can revitalize this sector of our industry. Since this is an unlikely scenario in the near future, we can foresee considerable rationalization of this part of the industry and those firms which survive will do so through diversification and exploitation of the export market.

Mapping Companies

Those companies who remain committed only to conventional mapping are doomed to a death even more agonizing than the life they have led. The wave of the future will be in digital mapping to provide the base for large-scale integrated land information systems. Again we will see rationalization of this sector of the industry leading to a relatively small number of well-capitalized regional companies. These companies will be equipped with the latest and best digital technology and the specialist support staff necessary for them to become leaders in digital technology. In the near term, given appropriate contracting-out procedures by the government, these firms can expect to prosper solely on the domestic market. However, in the longer term, they must develop a comprehensive export strategy if they are to maintain their momentum and growth potential.

FUTURE IMPERATIVES

To maintain and improve its market volume, our industry must:

1. Convince all levels of government of the relevance and essential nature of the relevance and essential nature of the services our industry provides.
2. Develop a strong lobby to persuade government to accelerate its contracting-out policies. Without a strong work base at home, we cannot expect to succeed in the overseas market.
3. Convince government to give greater support to our initiatives with respect to research and development, education and export marketing.
4. Develop strategies for funding the ever increasing capital and operating costs of our future world-class companies.
5. Develop sound business management and marketing practices.

Company Profile of the Future

The successful, profitable and enduring company of the future must possess the following characteristics:

1. A management team with the expertise, experience, time and vision to focus on organization, finance, strategic planning and long term goals.
2. A marketing team dedicated to effective exploitation of domestic and overseas markets. Marketing personnel must display a high degree of political and cultural sensitivity and have the requisite linguistic skills for the target market.
3. Professional and technical specialists covering all core sectors of our industry. Only multi-disciplinary companies can hope to expand and prosper on the national and international scene of the future.
4. Sufficient capitalization to fund both a multi-million dollar equipment pool and a reliable line of credit (at reasonable rates), in order to support the protracted operating costs of national and international projects.

HUMAN RESOURCES

As our corporate organizations and marketing strategies are restructured to meet the needs of the new era, we must also address the future training and staffing requirements of our industry, as well as those of our professional and para-professional associations.

In this regard, numerous papers have been presented over the past decade which develop the concept of an expanded survey profession. Let us now examine the term "expanded profession".

Traditionally, all disciplines of surveying in Canada have been carried out by what might be called specialists in such fields as cadastral, photogrammetric, hydrographic, geodetic and engineering surveys. Each specialist practiced within his own relatively nar-

row field, generally completely innocent of any significant knowledge of his sister disciplines. The concept of the expanded profession involves, in part, bringing together by horizontally structuring all those disciplines into one integrated profession of surveying. The other principal element of the expansion involves playing a leadership role in new areas not traditionally seen as part of the surveyor's normal area of activity. Some examples would be the design and development of parcel-based land information systems and the management of land development feasibility studies, environmental impact studies, land evaluation, site planning and real estate project management.

Various authors over the past few years have differed somewhat in the details of what they foresaw as the expanded profession, but they all shared one common theme - that being the multi-disciplinary approach and the embracing of non-traditional but land-related activities.

It is one thing to discuss somewhat abstractly these new ideas - it is quite another to implement them. Inherent in the implementation process will be the need for taking the following basic steps.

1. Instituting a higher and more uniform level of education for the new professional surveyor. At a minimum, it must be at the baccalaureate level from a university offering a specialized degree program in surveying. At present, we have several such universities across Canada, such as the University of New Brunswick, the University of Calgary, Laval University and the Erindale campus of the University of Toronto. All professional survey associations across Canada have implemented such educational requirements.
2. Professional land surveying associations within each province must proceed with the changes required to implement the previously mentioned horizontal restructuring. This basically involves changes in Acts, Regulations, etc., to admit their sister disciplines.
3. An extensive campaign must be carried out to convince the present practitioners within the various disciplines of the virtues of proceeding towards an expanded profession. While much progress has been made in this direction over the past decade, there are still many of our associates who are yet to be convinced.

Having briefly explored the idea of the expanded profession, let us now examine its potential impact on those of us who will be most affected.

1. As a result of increased educational requirements and more stringent licensing requirements, we can anticipate a significant decrease in the number of professional surveyors entering the survey profession in future. Those who do will expect and receive positions as managers, researchers, consultants and senior supervisors of large complex operations. All of the industry's other requirements will then have to be met from the membership rolls of para-professional associations of technicians and technologists. Where, in the past, we perhaps had a ratio of one professional surveyor to three technicians or technologists, I believe in the future you will see that ratio change to one professional surveyor to ten technicians or technologists.
2. With professional surveyors devoting a much greater part of their time to research and development, we will see an acceleration in new and increasingly complex survey technology. This will bring with it an increasing demand for highly trained technicians and technologists, particularly those with strong backgrounds in such specialties as computer science, mathematics, electronics, optics and physics.
3. With the decreased number of professional surveyors available to serve the public, coupled with an increasingly complex workload, technicians and technologists will be called upon to fill far more complex and demanding roles than is presently the case. This will lead to more challenging opportunities, greater job satisfaction and higher remuneration and prestige for members of para-professional associations.

To fulfill their new role, para-professional associations must:

1. Broaden and restructure themselves both horizontally and vertically. That is to say, they must embrace all the disciplines required to support the "expanded profession" and provide within each discipline the various levels of expertise required.
2. Provide higher educational standards, particularly in the senior technologist categories.
3. Ensure that they have stringent and homogeneous certification procedures for new members in order to give and maintain credibility to classification structures.
4. Develop a coherent and relevant program of continuing education to enable members to stay abreast of the rapid changes in technology.
5. Develop and enforce sound internal disciplinary procedures for those members who would otherwise cause their association to fall into disrepute.
6. Establish and maintain effective liaison with all other professional associations and groups within the broad survey community.

To summarize, if our associations can meet the challenge of the next decade, we can expect to play a far more meaningful and rewarding role within the broad survey profession. More of our members will be operating in managerial, research and senior supervisory capacities, with the attendant job satisfaction and financial rewards attaching thereto.

CONCLUSION

This paper has not dealt with specific technological advances such as global positioning systems, digital mapping and data base management technology. Certainly these new technological advances will revolutionize the way in which we do many of our existing tasks as well as open up new tools which enable us to provide new and more cost-effective solutions to society's problems. Due to the accelerating rate of change in new technology, it is dangerous to base strategic planning on the technology of the day.

In the final analysis, our best strategy for the future is to focus on development of our human resources and a company structure which provides the optimum blend of management, specialized personnel, marketing strategies and capitalization. Such companies, with a strong individual and united voice in the marketplace, will be able to respond to and optimize the utilization of new technology as it becomes available. Furthermore, our industry will then be able to play a leadership role, in concert with government, in responding to the future requirements of the society of which we live.

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