

SURVEY OF THE CANADIAN TRANSLATION INDUSTRY

Summary of Sectoral Reports

(Translation Suppliers, Clients, Training Institutions,
Designers of Computer Aids for Translation and
Machine-Translation Technology,
Report on Sectoral Competition)

HUMAN RESOURCES AND EXPORT DEVELOPMENT STRATEGY



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FOREWORD

In this report we set out the main findings that emerged from the surveys we conducted and the studies we consulted to determine the status of the translation industry in Canada and the global perspectives that ought to influence its development. Our findings are based more on descriptive research than on analytical research.

In the Final Report, we will show where our various findings converge, and we will analyze the capacity — i.e., the strengths, weaknesses, opportunities and threats — of the translation industry in Canada to position itself more strongly in both the domestic and international markets. We will also point out the challenges looming before the Canadian translation industry, and we will suggest some strategies and steps for strengthening translation as a domestic industry, for encouraging export growth, and for developing human resources.

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1. INTRODUCTION

The Canadian translation industry found its wings and really took flight in the 1960s and 1970s with the passage of Canada's *Official Languages Act* and Quebec's *French Language Charter*. The same two decades saw the first university graduates with degrees in translation enter the work force. By the early 1980s, the first large translation firms had begun to emerge. Today, Canada enjoys an international reputation of excellence in the translation, terminology and interpretation fields, not only for the quality of its expertise, but also for its terminology products, computer aids for translation, and university research.

Yet we note that changes in the translation industry are in full swing around the world. Global markets and the new tools developed with the latest technology are pushing the industry to change how it is structured and, gradually, how it gets the work done. There are also powerful international groups positioning themselves to exploit new market opportunities opening up pretty much everywhere on various continents.

It is against this backdrop that we undertook a systematic study of the translation industry in Canada.

This report presents a summary of the statistical research and surveys conducted among all segments of the Canadian translation industry: supply (translation, terminology and interpretation), computer aids for translation and machine translation, and training. The report also includes summary findings of a survey of Canadian clients, and an analysis of the industry in an international context.

The methodology adopted for this study involved statistical and documentary research coupled with a structured gathering of data. We had access, in particular, to two major recent studies on the global translation market: first, from Équipe Consortium Ltd. in Great Britain, a report entitled *The Global Translation Market*, and second, from Allied Business Intelligence Inc. in the United States, a report entitled *Language Translation: World Market Overview, Current Developments and Competitive Assessment*. We also

consulted numerous articles, documents and statistics, and gathered additional information from the Internet and through telephone surveys. For the purpose of this report, we opted for cross-sectional descriptive research, which means we offer the reader a snapshot of the industry at a specific point in time.

We used semi-structured questionnaires, comprised mainly of closed questions, because this improves the reliability of the results (fewer groupings needed).

We also rounded out this survey with many interviews and focus groups involving various industry stakeholders from across Canada.

2. THE SUPPLY SIDE OF TRANSLATION, TERMINOLOGY AND INTERPRETATION SERVICES

1.1 The professions

The professions of translator, terminologist and interpreter are defined as follows by the professional associations in Canada.

Translators are specialists in written communication who render texts written in one language into another, conveying the message as faithfully as possible.

Terminologists are communications specialists who establish a specific vocabulary for a particular sphere of activity. From documents or a data bank, they make lists of terms belonging to a particular field, define them and find their equivalents in another language. They also define the terms used in a specific work situation and standardize them.

Conference Interpreters are specialists in oral communication who offer simultaneous interpretation services (transmission of a message while it is being delivered, by electronic means) or consecutive interpretation (oral translation after each speaker) at conferences, meetings, lectures, etc.

Court Interpreters are specialists in oral communication who offer interpretation services in courts of law or administrative tribunals. They provide consecutive interpretation of witnesses' statements or simultaneous interpretation of the entire proceedings by electronic means for one of the people in attendance.

1.2 Industry size and composition

Translation, terminology and interpretation service suppliers include firms, independent workers, and the in-house translation departments of private companies or public agencies. This section addresses only external translation services.¹ In-house services are considered in the next section, "Demand for Translation, Terminology and

¹ External services: translation service providers who do business with private companies and public agencies.

Interpretation Services.” The Translation Bureau is deemed to be a translation firm by virtue of its new status as a Special Operating Agency.

A survey of published telephone listings, conducted in the spring of 1998, revealed that there are no fewer than 804 translation, terminology and interpretation firms in Canada. Their geographic distribution is shown in Table 1.

Table 1 — Number of firms by province or territory

	Number of firms	%
Quebec	382	48
Ontario	296	37
British Columbia	52	6
New Brunswick	19	2
Manitoba	18	2
Nova Scotia	14	2
Alberta	10	1
Newfoundland	6	< 1
Saskatchewan	4	< 1
Prince Edward Island	2	< 1
Northwest Territories	1	< 1
Total	804	100

Total sales for these firms were evaluated to be almost \$230 million, of which subcontractors handle 31%. The firms employ more than 7,200 individuals (4,635 professionals and 2,575 others in related functions).

The number of independent workers in the translation industry in Canada is more difficult to pinpoint. They do not necessarily advertise in the Yellow Pages, and many of them work on a part-time basis. We therefore surveyed 1,095 independent professionals who identified themselves as such in the registers maintained by their provincial associations. According to the data gathered through our various surveys and the data from the study completed by Allied Business Intelligence,¹ it is estimated that there are about 4,500 such independent workers in Canada. Their total sales are estimated to be about \$219 million. In their case, the number of employees indicated in Table 2 is equivalent to the number of professionals.

¹ Allied Business Intelligence, Inc., Language Translation: World Market Overview, Current Developments and Competitive Assessment, May 1998.

Table 2 — The translation services market in Canada in 1997

	Firms	Employees	Sales (million \$)
Independent, part-time workers		1,350	27.0
Independent, full-time workers		3,150	192.0
Small firms with sales up to \$150,000	385	1,540	39.0
Mid-size firms with sales between \$150,000 and \$500,000	385	4,620	135.0
Large firms with sales over \$500,000	34	1,050	55.0
Total estimated supply	804	11,710	448.0
Translation Bureau (revolving fund)		820	72.0
Less subcontracted work (double counting) ⁽¹⁾			(77.0)
Total		12,530	443.0

(1) Firms and the Translation Bureau derive respectively 31 and 42% of their revenue from subcontracted work, which is already taken into account by the independent workers. We are including, however, for the firms and the Translation Bureau, their outsourcing margin, evaluated to be 22.5 and 25% respectively. $(\$229M \times 0.31 \times 0.775) + (\$72M \times 0.42 \times 0.75) = \$77M$.

For its part, the Translation Bureau has sales of \$72 million, of which 42% is outsourced. In the spring of 1998, it employed 600 professionals and 220 employees in related functions for the revolving funds sector. If we take into account the sector working for Parliament and the terminology sector, the total employment roster, in the spring of 1998, was 1,200.

In all, the translation industry represents about \$443 million in net sales, after deducting for work outsourced by firms and the Translation Bureau. Based on our survey, the industry employs about 12,500 professionals and support staff. It must be noted, however, that many independent service providers work part time.

2.3 Translation, terminology and interpretation firms

2.3.1 Profile

Ninety of the 804 firms contacted responded to the survey. The statistical margin of error is $\pm 10.33\%$, which is the acceptable limit. Of these respondents, 47 reported annual sales greater than \$150,000 (hereinafter referred to as large firms¹) and 43 reported annual sales below \$150,000 (referred to as small firms). Because of its size and role, the Translation Bureau is considered separately elsewhere in this report.

These firms have been established for many years: 62% were created prior to 1990, and 30% before 1980. The largest firms are also the oldest: 80% of firms whose annual sales exceed \$150,000 were incorporated prior to 1990. In contrast, small firms were incorporated more recently: 56% were created after 1990.

2.3.2 Breakdown of sources of revenue

Translation generates by far the largest share of revenues in the industry. It represents more than 80% of all the revenues of the firms, while interpretation accounts for 10%, and related services (writing, revision, etc.) account for the remainder. 43% of firms and independent workers who responded to the survey do only translation, while 3% do only interpretation. The remaining firms offer both services in varying ratios. In general, it is mainly the large firms that also generate revenue from terminology or interpretation services. Small firms offer strictly translation or interpretation services. From a regional point of view, Quebec-based firms derive most of their revenue from translation, while firms based in Ontario and other provinces derive, with due allowances, a larger portion of their revenue from interpretation.

Translation firms earn 39% of their revenues from large companies, 24% from the public sector, and 21% from SMEs. The large translation firms focus more on serving the public sector and proportionally less on SMEs than do the small translation firms.

¹ In the market description on the previous page, we referred to small, mid-size and large firms. For the sake of data reliability and analysis in the remainder of this study, we have lumped the latter two categories into one, and refer to them as large firms.

Translation between the official languages accounts for 75% of revenue, and the English-to-French combination alone accounts for 48% of revenue. Large firms are more oriented toward the official-languages pair than small firms, as their respective revenues from such translations are 81% and 70%. Small firms do more business in language combinations other than the French-English pair (mostly Spanish). Viewed regionally, the Quebec respondents derive most of their revenue from the official-languages pair (more than 90% of sales comes from the two combinations), while respondents in Ontario and the other provinces generate respectively 27% and 41% of their revenue with combinations involving non-official languages. In this regard we note the significant presence of Asian language translation in British Columbia.

Canadian translation firms, whether large or small, have only a slight presence in foreign markets. In fact, 90% of their revenue is from Canada and 9% from the United States. Large firms have a somewhat greater presence in the United States (9% of their revenue) compared with small firms (6% of revenue).

Sales reported by firms in 1997 averaged \$290,000, i.e., about \$230 million for the entire industry in Canada. About 82% of the firms had sales below \$500,000 per year.

In general, firms are optimistic regarding the growth of their industry in the coming years. The average expected rate of growth is 10% per year (median).

The recent recession considerably affected profitability in the industry. Clients cut their translation budgets, while more independent professionals entered the market because of workforce adjustment. These two factors dealt a severe blow to the profitability of companies. With the increased supply came the pressure to lower prices. Profit margins eroded by about 25%. Today, the gross margin on all translation sales would be, at best, 20%, and the net revenue ratio is scarcely more than 5%.¹

¹ Gross margin: gross sales - direct labour cost. Net revenue ratio: gross margin - marketing cost - administrative expenses - financing cost.

Sales based on work done by subcontractors represent about 31% of revenues on average. For all of Canada, the work done by independent workers for translation firms can be estimated to be over \$77 million. Large firms make greater use of independent workers than do small firms (38% versus 26%).

2.3.3 Rates

Rates among the firms vary, on average, between \$0.19 and \$0.26 per word for the official-languages pair. Some firms reported extreme rates of \$0.10 and \$0.50 per word. For language pairs involving one or more non-official languages, average rates run from \$0.22 to \$0.30 and up to \$0.45 for the more uncommon languages. Large firms charge more for official-language translations (between \$0.21 and \$0.30 per word) than do small firms (between \$0.18 and \$0.24 per word).

Large firms pay their freelancers about \$0.14 per word for official-language translations, compared with \$0.18 per word paid by small firms. Rates for non-official languages are relatively the same for both small and large firms. The average gross margin on work handled by freelancers varies between 20 and 25%.

2.3.4 Human resources

The average number of employees (professionals and support staff) working in a large firm is 12, compared with 4 for small firms. For all of Canada, large firms therefore employ 4,620 individuals, and small firms employ 1,540.

The average age of professionals working in a firm is 41, and they have 14 years of experience. The average age is higher in the large firms.

Fields of specialization for professionals in the largest firms include industry and technology; communications; economy and finance; and policy, management and administration.

Forty-eight percent of the firms who responded to the survey expect their number of employees to go up by three in the next three years (including attrition and growth). At the national level, this represents 1,200 individuals, or 400 per year.

The translation industry employs educated labour. Large firms reported that 26% of their professionals hold a B.A. in translation and 26% hold a B.A. in another field, while 14% have a Master's degree in translation and 14% have a Master's degree in another field. Small firms reported that 27% have a B.A. in translation and 13% have a Master's degree in translation.

The average salary of professionals in large firms is \$45,000, compared with \$38,000 in small firms.

2.3.5 Technology

The large majority (93%) of firms said that each of their professionals is provided with a computer equipped with a CD-ROM drive and a modem. Also, this equipment is new. On average, 93% of the firms are set up with microcomputers running on a Pentium processor. The Internet has also become a core resource for translation firms, and 96% of firms have acquired access to it.

However, with regard to automated text entry, text analysis and generation, machine translation and voice recognition software, the penetration level falls below 25 percent. We note that machine translation is used by 23% of the firms.

Lastly, we note that large firms make greater use of computer aids for translation than do small firms.

2.3.6 Translation Bureau

The Translation Bureau was established in 1934. In 1995 it became a Special Operating Agency (SOA), meaning it is no longer an obligatory source of translations but an optional one for federal departments and agencies. The federal government created some twenty SOAs, along with some agencies. The intention of this new approach was

to enable each service delivery unit to increase operational flexibility while still remaining in the public service.

While the Translation Bureau is an optional service delivery unit for federal departments and agencies, it is still the exclusive supplier for Parliament, and it still establishes standard terminology for the entire federal government.

Although it is still in the public service and is part of the Department of Public Works and Government Services, the Translation Bureau must reach certain cost-effectiveness objectives. It therefore invoices its clients for translation services, linguistic services and some interpretation services.

Demand is greatest for translations involving both official languages, which accounts for 94% of the Bureau's activity. Demand for foreign- and Aboriginal-language translations, which involves some 100 language combinations, is met by multilingual translators with help from the private sector.

In 1998-1999, the optional service delivery unit had about 600 translators, of which approximately forty worked with non-official languages. The remainder worked in the official languages. These resources, complemented with a roster of approximately 500 subcontractors across the country, translated about 270 million words, just over half of the federal market, estimated to be 400 to 500 million words, excluding the in-house translations done by departments themselves and excluding translation work included in the acquisition of goods and services (e.g., translations done as part of the frigate construction project). The Bureau's in-house staff (revolving funds sector) translated about 175 million words. Including the approximately 95 million words outsourced by the Bureau, the private sector accounted for 225 to 325 million words in the federal market. The translation contracts are granted in accordance with the Government Contract Regulations. With its 51 points of service across Canada, the Translation Bureau is a major player as supplier for the federal government

**Table 3 — Translation Bureau Rates
1998-1999**

	Translation		Simultaneous interpretation	
	Minimum	Maximum	Minimum	Maximum
Official languages*	\$0.25/word	\$0.27/word	\$500/day	\$625/day
Non-official languages*	\$0.25/word	Language dependent	N/A	N/A

*The Translation Bureau also invoices translation services by the hour, for which rates vary between \$60 and \$75, depending on the difficulty of the work.

The rates paid by the Translation Bureau to its freelancers vary between \$0.12 and \$0.25 per word; the weighted mean is \$0.19 per word. Contracts involving the largest volumes of work are granted mainly to firms, and they are at the upper end of the scale. In turn, the large firms offer between \$0.14 and \$0.21 per word to their subcontractors.

The average age of professionals in the Translation Bureau is 46, and they average 18 years of experience, compared with 41 years of age and 14 years of experience for professionals with firms. The average annual salary of professionals with the Translation Bureau is \$51,000 per year, compared with \$45,000 paid by large firms, according to our national survey. It should be noted, however, that the average salary of translators in the Ottawa-Hull region is 20% higher than the national average (see section 2.5).

In view of the average age of the professionals in the industry, the Translation Bureau is working closely with the university sector in order to develop the next generation of translators and interpreters. About 70 students at five universities are already enrolled in various programs that are enabling not only the Translation Bureau to meet its needs, but also the industry to prepare new workers. It is expected that these numbers will climb significantly in the coming years. The Translation Bureau has plans to hire between 150 and 200 professionals in the next three years.

In addition, by working with the professional associations, the Translation Bureau supports the industry by offering professional development services in both translation and revision.

For 1998-1999, the gist of the Translation Bureau's development plan was:

- Reach financial objectives

- Improve productivity
- Continue to rationalize operations
- Develop the next generation of professionals
- Make its terminology resources more accessible to the federal administration and the public

The Translation Bureau is open to the idea of supporting the translation industry in the area of exports, insofar as its skills, experience and reputation could make a contribution. The Translation Bureau would also like to dialogue with the industry about getting a foothold in international markets.

As for computerization, the Translation Bureau seems to be as well equipped as the private firms (Pentium computer for each professional, CD-ROM drive, access to the Internet), although their professionals are less equipped with certain computer aids for text analysis and generation, etc. However, mention must be made of its initiatives such as METEO^{®1}, Lexium and TERMIUM[®]. It may be noted that the latter product will be accessible in 1999 through the Internet.

2.4 Independent workers

2.4.1 Profile

We sent a questionnaire to a sampling of more than 1,000 independent workers across Canada, and received 193 responses, which limits the margin of error to ± 5.83 , 19 times out of 20.

The geographic distribution of questionnaires sent to independent workers is shown in Table 4.

¹ METEO[®] is a trademark owned by John Chandioux, its developer and sole owner.

Table 4 — Questionnaires sent by province

	Questionnaires sent	%
Quebec	642	59
Ontario	219	20
Saskatchewan	108	10
New Brunswick	82	7
Nova Scotia	21	2
British Columbia	14	1
Prince Edward Island	8	< 1
Manitoba	1	< 1
Total	1,095	100

At least 56% of independent workers began working as such after 1990, and 23% after 1995. Corporate and government downsizing has clearly had an impact on this situation. We note by way of comparison that only 38% of firms were incorporated after 1990.

2.4.2 Breakdown of sources of revenue

Independent workers derive 81% of their revenue from translation. Their largest client is the public sector, with 31%, followed closely by large corporations, with 29%. The comparative numbers for firms are 39 and 24%.

Official-languages translation represents 82% of revenues for independent workers, compared with 75% for firms. The English-Spanish pair dominates all other combinations.

Independent workers derive 93% of their revenue from Canada and 5% from the United States. This ratio differs only slightly from the ratio for firms, for which 90% of revenue comes from Canada and 9% from the United States.

Average annual sales by independent workers are \$61,000, if we exclude the more than 30% of them who earn less than \$25,000 per year (part-time).

Independent workers are optimistic about their future, since they find that the translation industry should grow annually by 5% (median) over the next three years.

2.4.3 Rates

As may have been expected, the average rate charged by independent workers is lower than that charged by firms, as much for official languages (minimum rate of \$0.17 to \$0.23 per word) as for non-official languages (minimum rate of \$0.19 to \$0.25 per word). However, we also observe the same level of extremes as can be found with firms, i.e., from \$0.10 to \$0.50 per word.

2.4.4 Human resources

Independent workers are on average older than their colleagues in firms (45 years versus 41 years), and they have more experience (16 years versus 14 years).

In general, their training is as specialized as that of their colleagues in firms. However, the ratio of professionals holding a Master's degree is somewhat higher in firms.

2.4.5 Technology

With regard to the use of technology, 94% of independent workers use computers with Pentium processors, and 92% have access to the Internet. These percentages are comparable with those for firms. However, the penetration rate of computer aids for translation, except for word-processing software, is much lower than is the case for firms. For example, desktop publishing is used by 32% of independent workers, compared with 64% of firms.

2.5 Firms and independent workers in interpretation

Interpretation is as much a part of communications as are translation and terminology. This field of expertise is itself undergoing rapid growth because of freer trade and the multiplication of exchanges. There, however, is where the similarity between translators and interpreters stops. In fact, professionals in interpretation in Canada differ from translators and terminologists in several regards.

The interpretation profession, as understood by the professional associations in Canada, falls into two categories: conference interpreters and court interpreters (defined earlier in this report). Interpreters generally provide simultaneous or consecutive interpretation. A third category of interpreter for which there is a growing demand, but which is not yet regulated by the associations, is the “community interpreter.” Community interpretation is done by professionals or paraprofessionals who interpret between the official languages and a foreign or Aboriginal language.

Whereas conference interpreters must strive to be as transparent as possible so hearers do not notice they are speaking for another person, court interpreters must exercise absolute impartiality, and community interpreters must often show considerable empathy, especially in the health sector, for example. Community interpretation has always existed, but it has often been provided by volunteers, neighbours, or members of the family of the individual who does not speak either of the two official languages. It is only recently that the need for structure and recognition has been felt, and from this has emerged some initial training programs.

There are more than 500 interpreters in Canada (200 conference interpreters and 300 court interpreters). Less than 30% of them belong to a professional association. This number does not include community interpreters, about whom there are few sources of information. There are therefore fewer interpreters than translators and terminologists, of whom those who are members of a professional association number approximately 2,500.

The nature of conference interpretation is such that it often requires a team of interpreters, at least for simultaneous interpretation. Where an interpreter could work several hours without a break while providing consecutive interpretation, it has been

determined that 45 minutes is the maximum possible period for simultaneous interpretation if quality is to be maintained. Conference interpreters must therefore spell each other off. Court interpreters work alone most of the time, and almost always aloud (consecutively) or whispered (simultaneously).

In Canada, court interpreters work in the courts and administrative tribunals. They are based primarily in large urban centres, although some are in more remote areas, particularly for Aboriginal languages. Conference interpreters work primarily in Ottawa and Montreal, and to a lesser degree in Toronto and Quebec City. They are either public servants or independent workers. Independent interpreters continue to get most of their work from the Translation Bureau. To this are added bilingual or multilingual conferences or meetings put on by industrial, trade or professional groups (local and international).

For ethical reasons, conference interpreters have traditionally been prohibited from any type of business activity or doing any advertising. So other players, such as the suppliers of the equipment they use, have established themselves as initial points of contact for those who need interpretation services. These suppliers have been able to stimulate demand and become, in many instances, the liaison between clients and interpreters.

Interpreters have responded by softening their position and establishing co-operatives, bureaus and secretariats. While continuing to work as independents, the members of these entities are able to rely on a more effective mechanism to advertise their services and meet client needs in a more professional manner. Interpreters, whether conference or court interpreters, are not salaried (there are some exceptions). Interpreters collect the fees for their services in full, but contribute some amount to their group's general operating fund. As a group, interpreters have erred in failing to promote their services.

Their profession is not widely known, despite its omnipresence. The creation of professional associations and the emergence of more business-like entities should help to correct this situation.

While court interpreters are paid on an hourly or half-day basis, conference interpreters who are members of professional associations are paid by the day. Supply and

demand govern the average level of fees, and conference interpreters report having three different rate scales:

- One rate scale for bilingual conferences with simultaneous interpretation.

- One rate scale for multilingual conferences with simultaneous interpretation.

- One rate scale for consecutive interpretation (25% more, in general).

Based on our national survey of the translation industry, the rates quoted by firms and independent workers for simultaneous interpretation vary between \$425 and \$562 per day for official languages and between \$288 and \$461 per day for consecutive interpretation (all categories combined). The rates quoted by firms are slightly higher than those quoted by independent workers, and rates for non-official languages are higher than those for official languages. Elsewhere in the world, fees for consecutive interpretation are usually higher than fees for simultaneous interpretation, yet the results of our survey show the opposite: consecutive interpretation is less expensive than simultaneous interpretation. The conclusion we draw is that the respondents considered consecutive interpretation to include any sentence-by-sentence interpretation provided in office meetings, in a court of law, at the Refugee Board, or in various administrations, and did not invoice these services using the traditional rate scales. The inversion may also be explained by the large number of individuals whose mother tongue is not English or French, who work within their business community, and whose rates in many cases are very low.

In general, the average level of fees has stagnated, if not regressed, for bilingual conferences in Canada in the last five years. At this point the fees charged in Canada are considered to be among the lowest in the world.

Like their counterparts in the other language professions, interpreters are relying increasingly on the latest technology for the administrative side of their work and for preparation. Also, interpreters can conduct research via the Internet, for most organizations have a site with all the information needed for proper preparation. Court interpreters, on the other hand, are expanding their use of electronic devices (info port)

that enable them to offer whispered translation from a distance. Interpreters are also being asked more and more to work over the telephone, via satellite, even on the Internet. All this represents new working conditions that are the subjects of feasibility and quality studies almost everywhere around the world.

While training in translation is available at various levels in a dozen Canadian universities, conference interpretation is available only at the University of Ottawa at the post-graduate level through a one-year program (39 credits). Admission to this program requires a B.A. in Translation or another field, or proof of sufficient interpretation experience. The program includes a mandatory on-the-job training period, which is equivalent to fifteen days of work. The candidate must also undergo a final practical examination, which is graded by an independent jury comprised of external examiners.

Some observations on interpretation (all categories combined) in Canada emerged from the 1998 survey of translators, terminologists and interpreters. Of the 283 respondents (firms and independent workers), 67 stated they had revenue from interpretation: 41 respondents derived less than 50% of their fees from interpretation and 26, over 50%. Only seven of those in the last category said they did only interpretation. Translation is the main or secondary activity in most of the cases where the respondent had revenue from more than just interpretation. The comments we note below are based only on the respondents who earned at least 20% of their revenue from interpretation (47 out of 67 respondents).

The category of those who earn between 20 and 49% of their revenue from interpretation has a high proportion of independent interpreters working in non-official languages, including Russian, Vietnamese, German, Arabic, Greek, Japanese, Chinese, and Spanish. They are also mainly community interpreters. Their primary activity is translation. Their interpretation rates (mostly hourly based) are clearly lower than the national average. In general, they have no basic training in interpretation. They work a lot for individuals, non-profit organizations, and small business. Groups (or firms) in this activity sector have parameters more in line with the national average: interpretation mainly in the two official languages, rates between \$450 and \$550 per day for simultaneous interpretation, greater visibility in the public sector and among large businesses, and a strong ratio of professionals who hold degrees in translation.

The other categories (interpreters who derive 50 to 79% and 80 to 100% of their revenue from interpretation) also include some independent workers offering interpretation services in non-official languages (Italian, Serbo-Croatian, Arabic), and their interpretation rates are still just as low. However, the groups in this category show higher sales and rates (\$450 to \$1,000 per day for simultaneous interpretation). The very large majority of respondents in this category have clients based in Canada.

To enter the Canadian market of interpretation in the official-languages pair, interpreters must have a strong grasp of both official languages. As for multilingual interpretation, there now is a strong demand for Spanish interpretation because of NAFTA and the imminent opening of the pan-American market. In addition to perfecting their acquired linguistic skills and knowledge, either through advanced study of additional languages or specializing in a number of areas, interpreters must also stay abreast of current events in all areas. A balance has been reached, more or less, between supply and demand for interpretation in the official-languages pair, with the only problem being, on occasion, a shortage of specialized knowledge. There are no real external threats to the interpretation sector. When interpreters are imported, it is because their languages and skill-sets are required, or the conference has asked for its usual interpreters. Canadian interpreters are called to work outside Canada for the same reasons. Interpreters are being required more and more to be skilled in four languages if they wish to break into the international markets or work with major institutions. The fact that working in both French and English is second nature to Canadian interpreters has enabled them to do well with the OECD in particular. The existence of the ICAO has enabled others to gain familiarity with the United Nations circuit.

As is the case for translators, interpreters are aging, and a serious lack of new blood capable of taking over is compounded by the lack of culture among budding interpreters. The greatest challenge facing court interpreters is coming up with a rigorous definition of their role, how their work is organized, and their rate scales. While court interpreters working in the two official languages are relatively well structured, those working with non-official languages suffer from a lack of recognition and organization.

The volume of interpretation work declined for several years, but it has since started to climb strongly. In fact, some groups bemoan a lack of qualified interpreters, as this limits their growth.

As is the case for translators, the non-official language sector is experiencing rapid growth. In Europe, interpreters work in a minimum of four languages, and large organizations like the OECD and the IMF often use this criterion to select recruits. Also, the nature of their work necessitates travel, and interpreters know no borders. However, Canadian interpreters who function primarily in the official-languages market work mostly for domestic clients. Their market is, in a way, relatively protected, especially in view of the demand from the public sector.

2.6 Official data on the profession from Statistics Canada

Every five years Statistics Canada publishes the number and average incomes of individuals (based on Revenue Canada tax returns) for the 514 professions listed in the National Occupation Code. The aggregate professions of translator, terminologist and interpreter¹ represent one profession for which statistics are compiled. The average revenue is estimated on the basis of a survey of 20% of those who reported working in this profession. The average revenue of translators, terminologists and interpreters includes the revenue earned by salaried employees and the net income (total sales less the expenses incurred to earn income) of independent workers. We scrutinized the data compiled for 1985, 1990 and 1995. All financial figures below are in 1995 dollars.

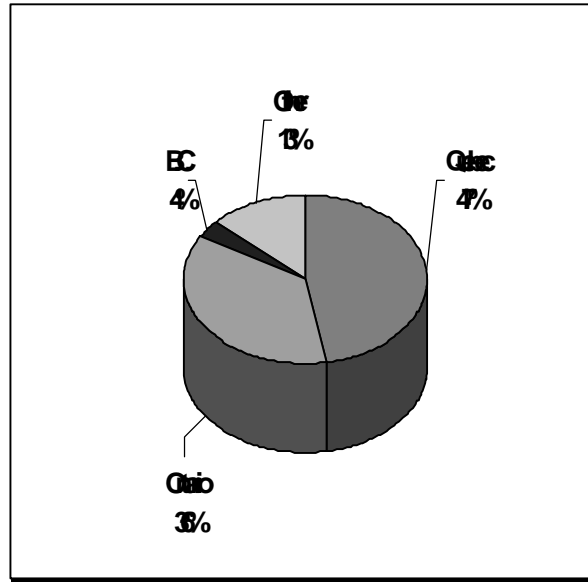
Trends in the number of translators

According to Statistics Canada, the number of translators who declared revenue from their profession rose from 7,450 in 1985 to 11,790 in 1995. Quebec is the leading

¹ For the remainder of this document, we will use the term “translator” to designate inclusively the professions of translator, terminologist and interpreter.

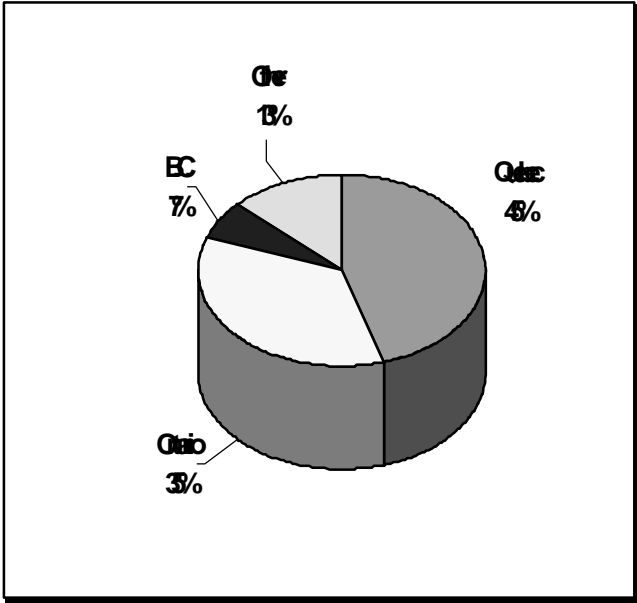
region, with 5,325 translators, followed by Ontario with 4,155. Of the other provinces, British Columbia, with 765 translators, increased its share from 4 to 7% of translators in Canada between 1985 and 1995.

With regard to major urban centres, Montreal had the most translators in Canada, with 3,400 in 1995, followed by Ottawa-Hull, with 2,180, then Toronto, with 2,025, and Vancouver, with 600. These four urban areas alone account for 80.4% of all translators in Canada.

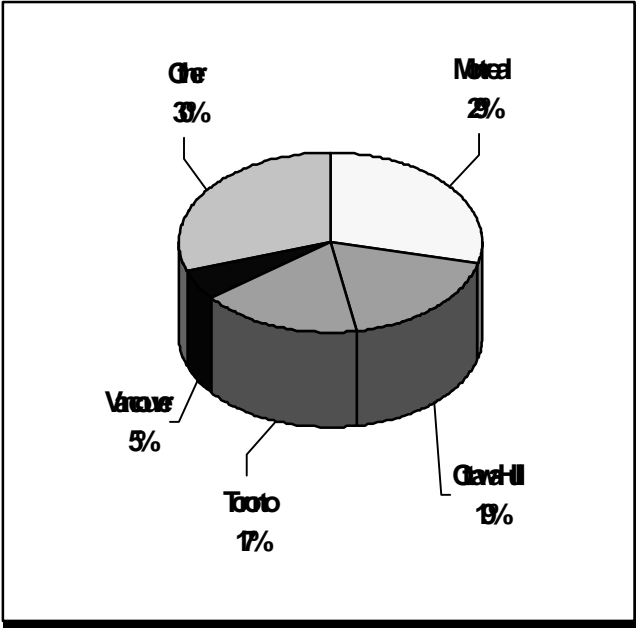


Gr. 1985 Distribution of translators by Province in Canada

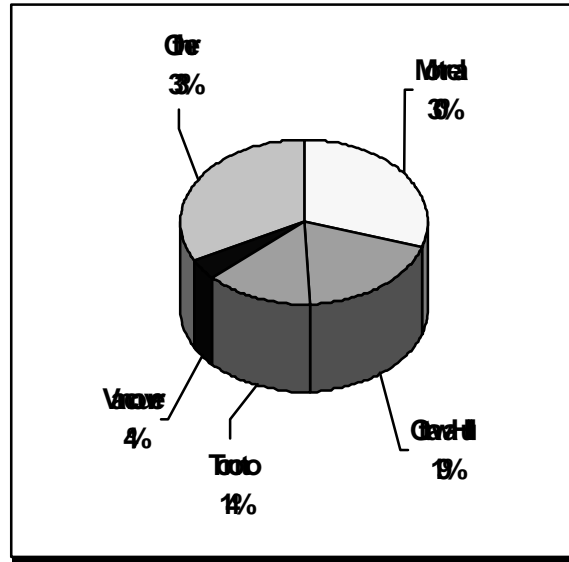
1995



1990



1995



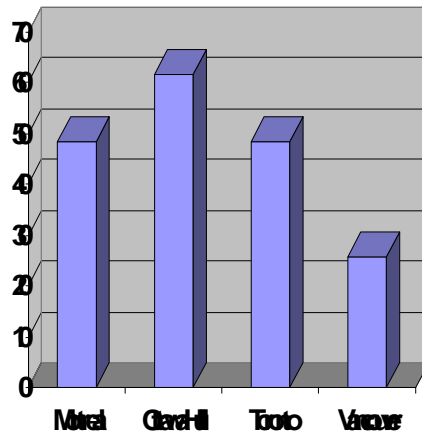
Graph 2 — Number of translators by major urban centre

There are more female workers than male workers in this profession. In 1995, female translators numbered 7,775 in Canada, i.e., 65.9% of all translators. The ratio has not budged since 1985 and is approximately the same across all provinces. However, with regard to the major urban centres, the ratio of female translators is not as strong in Ottawa-Hull, where they account for only 55.0%, compared with the other major urban centres, whose ratios are close to the national average.

The ratio of translators who devote themselves full time to their profession was 42.6% in 1995. This is a significant drop from the ratio of 48.1% in 1985. The recession of 1990-1991 and the ensuing downsizing clearly were factors, and many translators found themselves freelancing and unable to earn sufficient income from their profession. Several firms also embraced a more flexible arrangement by using freelancers in order to reduce direct costs, and this had the same consequences. This situation was evident in all Canadian provinces except British Columbia, where the ratio remained unchanged, although considerably below the national average (23.5% in 1995). As for the major urban centres, Ottawa-Hull had the highest ratio (62.2%) and appeared unaffected by the recession and downsizing (61.6% in 1985). This stability is clearly due to the fact that the federal government is the leading client in the region. In Vancouver, the low ratio of full-time translators can be explained by the presence of translators working in non-official languages, an area where demand is intermittent. They undoubtedly rely on other sources of income. It may also be noted that the strong increase in the number of translators in Vancouver is probably linked to the growth of the Asian population.

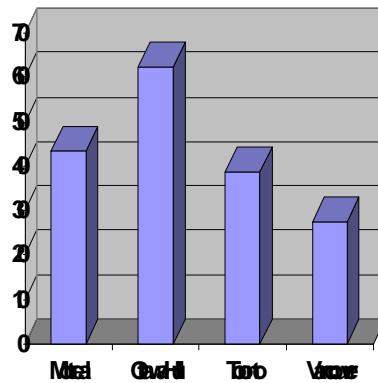
Although they are in the majority, female translators work more on a part-time basis. The ratio of female full-time workers was five percentage points lower than the ratio of male full-time workers (40.8% versus 45.8%) in 1995. The spread was 10 points in 1985 and 5 points in 1990. In Quebec, particularly in Montreal, the ratio of female full-time workers was higher than the national average (45.5%). In Ontario, however, we note some extremes: the Ottawa-Hull ratio was 60.4% (yet female workers were still 5 percentage points below the ratio for male workers), while in Toronto the status of female full-time translators dropped between 1990 and 1995 (from 49.7% to 34.8%). In Vancouver, the ratio of female full-time translators was 22.5%, i.e., 7 points below the ratio for male full-time translators.

Graph 3 — Ratio of full-time translators by major urban centre



1990

1995



Trends in income

In 1995, the average income of full-time translators in Canada was \$40,570, a drop of 3.6% from 1990 levels, and an increase of only 4.0% from 1985 levels. The recession in 1990-1991 and the growing trend to use freelancers are likely explanations for this situation. If we consider all translators (full- and part-time), the average income was \$27,119 in 1995, compared with \$29,406 in 1990 and \$26,300 in 1985. In other words, part-time translators have very low revenues.

In Quebec, the average earnings of full-time translators have usually been above the national average and have shown constant growth. In 1995, the average was \$42,193. However, it seems that translators outside the Montreal metropolitan area earn more. In Ontario, the average income follows the national average quite closely. The situation proves quite different, however, when one compares the income of translators in the Ottawa-Hull region with the income of those in the Toronto area. In Ottawa-Hull, full-time translators earn more than their counterparts in Toronto, where earnings dropped substantially in 1995, as was the case in British Columbia, where the average income was already definitely below the national average.

**Table 5 — Average incomes of full-time translators in Canada
1990-1995
(in 1995 dollars)**

Region	1990	1995
Quebec	41,691	42,193
Montreal	38,989	39,726
Ontario	44,548	41,514
Ottawa-Hull	49,780	48,970
Toronto	43,195	35,903
British Columbia	38,302	26,035
Vancouver	38,984	26,086
Canada	42,100	40,570

The average income of male full-time translators was \$43,601 in 1995, compared with \$38,813 for female full-time workers. However, the gap between them is closing, having

gone from 18.7% in 1985 to 11.0% in 1995. In Quebec, the income levels of male and female translators compare with the national averages. In Montreal, however, there is no difference between the average incomes of male and female translators. The difference emerges outside of the urban centre. In Ontario, there is a significant gap between the incomes of male and female translators in the Ottawa-Hull region, whereas they are on more equal footing in Toronto.

**Table 6 — Average incomes of male and female full-time translators in Canada
1990-1995
(in 1995 dollars)**

Region	1990		1995	
	Male	Female	Male	Female
Quebec	45,942	39,025	44,852	40,675
Montreal	40,802	38,079	39,242	39,932
Ontario	49,047	42,042	45,103	39,317
Ottawa-Hull	53,329	47,185	52,706	45,685
Toronto	49,588	39,560	35,520	36,136
Canada	46,214	39,712	43,601	38,813

2.7 Conclusion

We estimate the value of the translation market in Canada to be about \$443 million, excluding the value of translations provided by the in-house translation services of Canadian businesses and organizations. There are approximately 12,500 professionals and employees providing related services in the industry. This does not include the positions created by companies that have set up their own in-house translation services.

The translation industry in Canada is quite fragmented, comprised mainly of small firms and independent workers. There are about 800 firms in Canada whose principals are translators, terminologists and interpreters. Scarcely thirty of them have annual sales greater than \$500,000. 85% of firms are based in Quebec and Ontario. British Columbia is the home of 6% of the firms, and New Brunswick, 2%. In addition there appear to be about 4,500 independent full- or part-time workers in translation, terminology or interpretation.

Overall, the translation industry is relatively young. Few firms were incorporated prior to 1980. Most were created between 1980 and 1989. This also holds true especially for independent workers: over half of them (56%) have been self-employed since 1990. Downsizing by governments and large businesses from 1990 to 1995 is a partial cause of this phenomenon.

Translation generates over 80% of the revenues in the industry, firms and independent workers combined. The remainder is split between interpretation and other services, such as revision and writing. Terminology is an important service within the firms, but is not invoiced as such to the client. Rather, it is more of an auxiliary service to the industry itself.

The average annual sales for firms in 1997 were \$290,000, and for full-time independent workers they were \$61,000.

Translation in the official languages accounts for 80% of the revenues in the industry: 83% for independent workers, 81% for large firms (large firms being those with annual sales greater than \$150,000) and 75% for small firms. Small firms derive more revenue from non-official-language translations, primarily Spanish.

Large businesses are the leading source of revenue for firms (39% on average), while the public sector is the most important supplier for independent workers (32% on average).

The Canadian translation industry exports little: 90% of revenues are from Canada, and this applies to both firms and independent workers. These numbers lead us to conclude that the Canadian translation and interpretation industry is highly, if not entirely, dependent on the Canadian market.

The Canadian translation industry is experiencing growth. Firms estimate that over the next three years the industry should grow by 10% annually. In comparison, independent workers foresee growth of 5% per year (median).

Firms and independent workers also anticipate hiring more than 1,500 professionals over the next three years, i.e., 500 per year.

The professionals working in Canadian firms or as independent workers are older and more experienced. They are well educated, as 80% of the respondents hold a B.A. or a Master's degree.

The average salary of professionals working for firms is \$44,000, compared with \$61,000 for independent workers (including their operating costs).

According to Statistics Canada, the average declared income of translation professionals differs from region to region: for example, the average income of translators and interpreters in the Ottawa-Hull region is 20% higher than the national average. Also, the salaries of full-time professionals dropped by almost 4% between 1990 and 1995. Women, although in the majority in the industry, were earning 11% less than men in 1995.

The Canadian translation industry makes full use of basic computer aids, but the penetration rate of more sophisticated electronic or computer aids for translation is relatively low. Firms make a slightly greater use of computer equipment and tools than do independent workers.

The Translation Bureau became a Special Operating Agency (SOA) in 1995, meaning it is no longer an obligatory source of translations but an optional one for federal departments and agencies. In 1998-1999, the optional service delivery unit had about 600 translators, of which approximately forty worked with non-official languages, with the others working in the official languages. In view of the average age of the professionals in the industry, the Translation Bureau is working closely with the university sector in order to develop the next generation of translators and interpreters. The Translation Bureau is open to the idea of supporting the translation industry in the area of exports, insofar as its skills, experience and reputation could make a contribution.

The segment of the industry comprised of firms and independent workers providing interpretation services is unique as much by the nature of the work as in how the business is organized, their rates, and their training. There are more than 500 conference and court interpreters in Canada, and to these are added community interpreters, for whom demand is increasing. Although their work is very different, interpreters experience in more than one way the same socio-economic realities as do translators.

3. DEMAND FOR TRANSLATION, TERMINOLOGY AND INTERPRETATION SERVICES

The demand for translation services in Canada comes from both the public sector and the private sector. Because it is difficult to identify the target population accurately for either sector, we opted instead to survey representatives from both sectors.

3.1 Profile of private sector

We sent a questionnaire on translation-related expenses to a sampling of 2,350 Canadian businesses. We received 225 responses: 47% from Quebec, 28% from Ontario and 22% from the other provinces (3% could not be linked to a given region). Sectoral representation was as follows: private services (40%), manufacturing (20%), information technologies and telecommunications (7%), and utilities (5%).

The average sales figures of the respondents are \$74.4 million. The average number of employees is 660. Businesses using external translation services are definitely large.

52% of the respondents, i.e., 116 businesses, stated they had their own translation, interpretation or terminology service. These businesses are much larger than those without an in-house translation service. In fact, 60% of them report revenues greater than \$100 million and employ more than 1000 individuals.

3.2 Outsourcing

Companies with and companies without their own translation service rely equally on external translation suppliers. The respondents to our survey estimate their average annual spending on translation, terminology or other special language services outsourced to firms to be \$72,000 (median of \$20,000 however). The total amount for the 225 respondents is therefore estimated at \$16.2 million for all of Canada.

Businesses with in-house translation services spend more than others for external translation services, mainly because of their size, but also because their needs fluctuate sharply. The 116 businesses annually spend \$103,000, for a total value of almost \$12 million (73% of the expenditure of all respondents). Accordingly, the other 109 respondents spend only \$40,000 on average.

According to 53% of the respondents, these expenditures should remain at current levels for the next three years.

The respondents rely on external suppliers comprised of freelancers (55%) and firms (45%).

Translation spending is mainly in relation to the two official languages, which account for 90% of expenditures. The English-to-French combination predominates (59%) compared with the French-to-English combination (31%).

3.3 In-house translation services

The average annual budget of the 116 businesses with an in-house translation service and who participated in the survey is \$325,000 (median of \$140,000). This amount excludes amounts spent on outside suppliers. The respondents to our questionnaire alone therefore spend \$37,375,000, which represents almost 30% of the total sales of medium-sized translation firms. There is reason to believe that for all of Canada, in-house translation services account for a significant portion of the translation market in Canada.

In-house translation services employed, on average, 4.8 professionals in 1995 and employ 4.5 now. It is anticipated that in the next three years 29% of them will hire more staff. These services expect to grow by 1.3 individuals on average (attrition and growth combined).

The professionals working for these services have on average 12.6 years of experience, which closely reflects the years of experience of professionals with translation firms.

In all, 72% of these professionals have earned a B.A., and 16% have earned a Master's degree. For translation firms, these ratios are respectively 55% and 26%.

91% of the respondents pay subcontractors by the word. Rates for official languages are between \$0.19 and \$0.25 per word, and for non-official languages, \$0.23 and \$0.32 per word.

The average salary is \$61,000, clearly higher than what is paid by translation firms.

3.4 Client satisfaction

In general, the respondents are satisfied with the service provided by their external suppliers. 90% of them say they are "very satisfied" or "satisfied" with their suppliers. The most important criteria for businesses are quality (98%), quick turnaround times (92%) and knowledge of the sector (89%). Price ranks only fourth (79%). The leading sources of dissatisfaction are mainly lack of knowledge of the sector, uneven quality in some projects, and the limited availability of professionals.

3.5 Public sector

In parallel, we surveyed six industry players from four federal departments, which employ almost 2,300 individuals:

- Health Canada
- National Research Counsel
- National Defence

- Agriculture and Agri-Food Canada

These four departments spend on average \$300,000 each for external translation and other language services. They expect to maintain this level of spending for the next three years. About 94% of these expenditures are strictly for translation and, in 90% of the cases, for translation in the official languages. One department uses freelancers almost exclusively, while the three others use private firms almost exclusively. The rates they pay compare well with those paid by private clients: between \$0.21 and \$0.26 per word. The level of satisfaction of the departments we consulted is very high with regard to their external suppliers.

Two departments have an internal translation service: one, very small, has two professionals. The other, much larger, has some twenty professionals and a budget nearing \$1 million.

3.6 Conclusion

Our survey of businesses that use external suppliers for translation, terminology and interpretation and of businesses that have an in-house translation service leads us to make the following observations.

The 225 respondents to the survey are large businesses whose average annual sales are \$75 million. They annually spend \$16.2 million for translation, terminology and interpretation services. This demand should hold steady or grow slightly over the next three years.

These businesses devote 80% of total spending for external services on translation services. Translation expenses involve mainly one of the official languages, and official-language translations account for 90% of translation expenses.

When outside suppliers are used, businesses distribute work between freelancers and translation firms in a ratio of 55% to 45%.

The 116 businesses covered by our survey that have an in-house translation service are multinationals or very large corporations. The annual median budget is \$140,000. In all,

they annually allocate about \$38 million for their in-house translation service and over \$12 million for acquiring external services.

The average number of translators, terminologists and interpreters employed full-time by these businesses was 4.8 in 1995 and 4.5 in 1998. Over the next three years, 29% of them anticipate additional hiring. These businesses expect growth of 1.3 individuals on average (attrition and hiring combined).

The translators, terminologists and interpreters employed by the businesses are better educated and better paid than their colleagues employed by translation firms or independent workers. These employees earn, on average, \$61,000.

Businesses with an in-house translation service do not seem to be fully exploiting the potential offered by technology. They make little use of modern computer aids for translation. The computer tools used most often are word-processing software packages and documentation research, which are the most commonly used tools of business.

Only a minority of businesses with an in-house translation service can be deemed to compete with language-service firms and independent workers. A quarter of the businesses use their translation department to offer translation services to external clients. These businesses report sales of approximately \$100,000, but half of them report revenue lower than \$25,000.

Businesses using external translation, terminology and interpretation suppliers are generally satisfied with the services received. 90% of the respondents claimed they are "very satisfied" or "satisfied" with their suppliers.

Satisfaction depends on mainly on quality (98%) and quick turnaround times (92%). Price ranks only fourth as a criterion for satisfaction (79%).

4. COMPUTER AIDS FOR TRANSLATION AND MACHINE TRANSLATION

The use of computers is increasingly widespread, and a relentlessly growing number of users require sophisticated word-processing tools for writing and correcting documents. With increased computer usage comes greater numbers of words and phrases being processed, with a commensurate increase in risk of error. A juxtaposition of this reality with the translation industry points to a definite need for the users to ensure they stay informed and are properly equipped, particularly with regard to computer-assisted writing and translation.

4.1 Sector profile¹

Computerized translation products fall into two categories: computer aids for translation and machine translation systems. A translation tool is a software package designed to facilitate the work of a translator. These include:

- Word-processing packages
- Personal terminology management systems
- Terminology banks on CD-ROM
- Documentary data bases
- Word counters
- Spelling checkers
- Search utilities
- Version comparison utilities

There are three classes of machine translation systems:

- General machine translation systems
- Dedicated machine translation systems
- Translation memories

A general machine translation system can be fed any text for translation. But it is generally used to get the gist of a text, since the need for revision remains high. General systems give more reliable results if technical texts are processed, while enriching the system's dictionaries is helpful only if the system is used to translate in only one field. The best-known systems are ALPS, Language Assistant, LOGOS, METAL, Power Translator, Systran, Transcend, and XLT.

¹ Based on the booklet by the Association of Linguistic Service Managers, Machine Translation — Dream or Reality? and on information provided by industry representatives.

Dedicated machine translation systems are designed to translate only in a specific field, using a pre-established vocabulary. These systems are profitable if there is a large volume of words to be translated. Reliability rates are evaluated around 80%. In Canada, the METEO® system is a good example of a dedicated machine translation system.

Translation memories store target-text sentences and propose them to the user if the corresponding stored source-text sentences reappear for translation. These systems are useful where texts are repetitive, as is the case with contracts, collective agreements, and work descriptions. Translation Manager 2 by IBM and Trados are good examples of translation memories.

In speaking of computer aids for translation and machine translation tools used in a computerized environment, the preferred term is computer-assisted translation (CAT), which is likely a more accurate, more encompassing term in that it applies to a range of tools and systems, including those mentioned above.

4.2 Results analysis

4.2.1 Profile

In Canada, we identified some twenty businesses and research agencies involved in producing computer aids for translation. Fifteen were selected to receive the questionnaire, thirteen replied, and we met with or telephoned six of them to gather additional details or to gain a fuller perspective of the industry.

Some companies specialize in developing either aids for translation (AT) or machine translation (MT) systems, while only a few work in both fields. Nine of the thirteen companies design and distribute their own products.

Table 7 — Leading Canadian businesses that research or develop computer aids for translation

Company name	Sector	Field	Product line
JOHN CHANDIOUX	AT-MT	Custom tool design	METEO®, METEO®96, Général TAO, Lexium
MACHINA SAPIENS	AT-MT	Writing tools and machine translation	Correcteur 101, CorText, El Corrector, ConText
UNIVERSITY OF TORONTO	AT-MT	R&D	Computational linguistics
ALIS TECHNOLOGIES	MT	Integrated language solutions	Castil, Florès, Batam
SOCATRA	MT	Machine translation	XLT
TRANSLATION BUREAU	AT	Terminology bank	TERMIUM® (1 million records)
DOCUMENSA	AT	Customizable systems for in-house terminology management	Edibase IW5.0, Edibase.net
DRUIDE	AT	Writing tools	Antidote

Company name	Sector	Field	Product line
OLF	AT	Terminology bank	Grand dictionnaire terminologique (3 million records)
LABORATOIRE RALI	AT	R&D	Reacc, ¿Que?
TERMINOTIX	AT	Pre-translation and terminology tools	LogiTerm, LogiTrans, LogiLex, LogiXact
UNIVERSITÉ DE MONCTON	AT	Legal terminology bank	JuriTerm
ARDILOG	AT	Document tools	Naturel Pro, Naturel Net, NQL, Naturel Edition

The industry is highly fragmented, being comprised of small businesses undergoing rapid growth. They work in a variety of fields, including:

- Documentary information
- Text analysis and generation
 - Writing
- Lexicography and terminology
 - Language learning
- Automatic language identification
 - Machine translation
- Grammar and spelling checkers
- Terminology bank management systems
 - Translation memories

The data shows that 75% of off-the-shelf products are writing tools, while the remainder are specialized products (text generation, machine translation, etc.). With regard to client-specific custom tools, we note a broader distribution among the various uses for the tools. The most frequently developed custom tool is either a machine translation system (20%) or a lexicography and terminology system (20%).

All the respondents develop tools that handle the two official languages, but only a few companies offer products for processing non-official languages.

4.2.2 Geographic distribution

Canadian companies developing computer-assisted-translation products are highly concentrated in Quebec, particularly in the Montreal area. In fact, more than 86% of the

industry is based in Quebec, of which 67% is in the Montreal area. The companies in the rest of Canada produce mainly instructional software (language learning software). According to some of the respondents to our survey, the main reasons for this situation are:

- Canadian bilingualism has its roots in Quebec
 - Montreal's multilingual setting
- Tax credits for scientific research and experimental development
 - Calibre of computer programmers
 - Quality/price ratio of human resources
- Existence of many venture capital corporations

4.2.3 Breakdown of sources of revenue

The sales reported by the respondents paint a picture of a small, rather fragmented industry in which 80% have revenues under \$1.5 million. In 1997 their total sales were \$23 million. However, they are greatly optimistic about the future, expecting a median growth rate of 17.5% per year for the next three years.

Export markets represent almost 75% of all sales, i.e., almost \$18 million. This is primarily due to the presence of Alis Technologies, since seven of the thirteen respondents make 80% or more of their sales in Canada. The others have several export markets for their translation products. The leading importing countries are the United States at 34%, Asian and Far Eastern countries at 32% and Western and Eastern European countries at 6%.

Machine translation developers find their market mainly among large corporations, where the technology is used most extensively (three respondents stated 75% or more of their revenue comes from large corporations), i.e., a market of almost \$12 million. Moreover, the computer aids for translation market is characterized by several small players. In all, they represent revenues in excess of \$7 million, and achieve this mainly through the SME market (almost \$3 million).

4.2.4 Human resources

The computer aids for translation sector currently employs more than 300 individuals, primarily computer programmers, engineers, graphic designers, project managers, and so forth. In the next three years, companies that design computer aids for translation and machine-translation tools expect to recruit another 150 employees. These companies employ very few translators holding degrees in translation. The most coveted training is computational linguistics. An average 73 hours per year is devoted to training, and this average is high compared with average standards for hours for ongoing training.

Average salaries range from \$40,000 to \$60,000.

4.2.5 Technology

Computer aids for translation have been integrated into user software by 78% of the respondents, primarily with their word-processing packages. Machine-translation designers have integrated it into the client interface. With regard to adapting to Internet and Intranet transmissions, 89% of developers of computer aids for translation, and 75% of machine-translation system designers have or will offer this type of access.

3.3 Institutional research

In Canada, several universities, private and public specialized institutes, and language businesses are conducting research. We contacted three of them: the *Laboratoire de recherche appliquée en linguistique informatique* (RALI) at the *Université de Montréal*, the *Centre de traduction et de terminologie juridiques* at the *Université de Moncton*, and the Department of Computer Sciences at the University of Toronto.

RALI was created in June 1997 by the *Département d'informatique and de recherche opérationnelle* at the *Université de Montréal*. Industry Canada outsourced to it the computer-assisted-translation research program begun at the Centre for Information Technologies Innovation (CITI). The university department brings together some fifteen full-time researchers and students. Its areas of specialization are computer aids for translation, text matching, text generation, accentuation, linguistics-based information searches, information retrieval, language and coding identification, and finite state transducers.¹ RALI has partnered with private businesses, including ALIS for the Reaac and ¿Que? products, and Machina Sapiens. The *Centre de traduction et de terminologie juridiques* at the *Université de Moncton* Law School conducts lexicographical and terminological research. It employs nine researchers. It has developed a computer aid for legal translation called JURITERM. Lastly, the Department of Computer Sciences at the University of Toronto works mainly in the areas of artificial intelligence, text analysis and generation, lexicography, and terminology. It employs a dozen researchers.

These three examples provide a fairly representative picture of institutional research in Canada: small teams, limited budgets, and specialized yet divergent research. The researchers themselves dislike the isolated nature of the various research teams in Canada. It is therefore vital that researchers be able to work together in creating critical masses in the language industry in Canada.

There is a project under way to set up a new network of centres of excellence comprised of university researchers and other stakeholders (users, industrial partners and public agencies) in the field of natural language processing as it applies to aids for translation.

¹ Mechanisms underlying transformational linguistics (automaton theory).

4.4 Conclusion

Since the target population and thus the sampling of respondents of this survey were quite limited, major trends or clear-cut findings are less evident. The Canadian translation-related software industry has scarcely more than fifteen businesses, of which three are para-university agencies. Even so, this survey enabled us to draw some observations.

The businesses that design or distribute computer-assisted-translation products are in a relatively fragmented market. Whether the data is sorted by type of tools, targeted sector and client base, languages used, markets where they are active, or size of business, it is difficult to produce a univariate analysis or identify major trends. Each respondent has its own profile. The computer-assisted-translation products industry lacks consolidation, and is comprised of small businesses experiencing strong growth and working in highly diverse fields.

About 86% of the Canadian companies selling computer-assisted-translation products are based in Quebec, and, more specifically, 67% are based in the Montreal area. There are twice as many companies designing computer aids for translation as companies building machine-translation systems. Of the thirteen respondents, two businesses are wholly devoted to machine translation, and eight to computer aids for translation, while three work in both fields.

All the respondents develop tools that involve the two official languages, but only a few businesses offer their products in non-official languages.

The competition for companies producing computer aids for translation differs from the competition for companies producing machine-translation systems. Of the former, each respondent named its own competitors, while the machine-translation respondents are all active in the same markets and name practically the same competitors both in Canada and outside Canada.

The market for computer-assisted-translation products, although modest at this time, is experiencing strong growth. Total sales for the industry barely reached \$25 million in 1997, which depicts a small, fairly fragmented industry in which 80% of the businesses make less than \$1.5 million. However, these businesses are active in a market where there is strong demand: the median growth rate for the next three years, all tool types combined, is estimated to be 17.5%.

Some major actors dominate their category, such as Machina Sapiens and Druide Informatique for tools that detect typographical errors, and Alis Technologies for machine-translation tools.

The designers of machine translation products find their market mainly among large corporations, where this technology is used most, whereas the computer aids for translation market is characterized more by smaller actors.

Most respondents still report limited exports, with the exception of a few businesses, including Alis Technologies. In fact, more than 50% of the respondents earn 80% or more of their sales in Canada. The others export their products, mainly to the United States (34%), Asia and the Far East (32%) and Western and Eastern Europe (6%).

This section of the translation industry employs almost 300 individuals and is expected to recruit about 150 more over the next three years. However, very few recruits have translation training. The businesses hire mainly computer programmers, engineers, project managers, etc. The most coveted training is computational linguistics.

Growth in the computer aids for translation or machine translation sector depends mainly on the research and development effort made by each designer, as well as on the support from university research in language processing with the related spinoffs. This is an indispensable dynamic among the players in the language industry. In Canada, several universities, public and private specialized institutes, and language companies carry out research, but do so in isolation. It is therefore essential that these actors be able to work together to create critical masses in the language industry in Canada.

5. TRAINING INSTITUTIONS

5.1 Profile

Training institutions are an important link, and they play a key role in the evolution of the Canadian translation industry. We consulted eleven training institutions in Canada, all of which are members of the Canadian Association of Schools of Translation (CAST).

<i>Université de Montréal</i>	University of Ottawa
Concordia University	McGill University
<i>Université Laval</i>	York University
Laurentian University	<i>Université de Moncton</i>
<i>Université du Québec à Trois-Rivières</i>	<i>Université du Québec à Hull</i>
<i>Collège universitaire de St-Boniface</i>	

Canadian universities are the leading institutions in providing training in translation, terminology and interpretation. There are also a few post-secondary institutions such as Vancouver Community College and Algonquin College, which offer training in community interpretation, but their number is limited.

Training institutions offer essentially six levels of training and/or degrees at the post-secondary, graduate and post-graduate levels: (1) certificate (± 30 credits), (2) B.A. with a minor (± 30 credits), (3) B.A. with a major (± 60 credits), (4) B.A. Honours (90 credits), (4) graduate diploma, (5) Master's degree, and (6) Ph.D. degree. Ten institutions offer a certificate or B.A. with a minor in translation. Eleven institutions offer a B.A. Honours program. Four institutions offer a Master's degree program. Only the *Université de Montréal* and the University of Ottawa offer a Ph.D. program. Two universities, Concordia and Ottawa, offer a co-op (work-study) program.

Training institutions are highly concentrated in the Quebec-Montreal-Ottawa corridor (7 of the 11). Moreover, they account for more than 87% of all students registered in a program of translation studies in Canada.

Training in conference interpretation is offered only at the University of Ottawa, and this is a one-year program at the postgraduate level (39 credits). Candidates must sit a final practical examination, which is marked by an independent jury comprised of external jurors. The small number of candidates admitted to the program and the high cost of the program forced the University to suspend it in 1995. However, it was once again offered in September 1998.

Only those holding a B.A. or higher degree are eligible to apply for the reserved titles of Certified Translator (C.Tran. / C.Tr.), Certified Terminologist (C.Term.) and Certified Interpreter (C.Int.), which are granted by the provincial associations. Of course, applicants with equivalent training and experience may be eligible if certain conditions are met.

5.2 Degrees awarded

For each of the last three years, the number of new students registered in Canada has held steady around 1,040, and the total number of students registered has hovered between 3,300 and 3,400. In addition, the annual number of graduates has held steady at ± 550 , but this hides a significant trend: the number of students graduating with a certificate is on the rise, while the number of students graduating with a B.A. is dropping.

An Honours B.A. in translation is the most coveted degree. In 1995-1996, Canadian universities produced 307 graduates at the B.A. level (specialized and/or major), which represented 54.1% of all translation graduates. In 1997-1998, 278 students earned a B.A., which represented 49.2% of all graduates. There has therefore been a drop in that three-year period. Similarly, the number of graduates with a Master's degree dropped from 50 to 42 during the same period, and their overall representation dropped from 8.8 to 7.4%. In comparison, there was growth in the number of students graduating at the certificate level (including minor, technical writing and third language), as the number of graduates went from 189 to 221 between 1995 and 1997, and their representation went from 33.3 to 39.1%.

In the medium-term, the numbers of new registrations and graduates should remain stable, at best, according to university representatives. On the one hand, quotas have had to be set because of the limited capacity of the institutions. On the other, translation workforce downsizing in large businesses and governments has given the impression that there are limited prospects for employment in this field. In the last two or three years, however, the demand for translators is much stronger, although the perception has remained unchanged. The failure of universities to promote training programs and the lack of information about the translator's trade in the schools account for most of the stagnation in the number of graduates. Uninformed guidance counsellors have also discouraged students from taking up the translation profession.

5.3 Needs analysis

Needs are analyzed on an ongoing basis, although this analysis does not result in a strategic planning process per se. Programming changes are often ad hoc decisions based on CAST meetings with professional associations, employers and instructors (often from the private sector). The institutions offering a co-op program benefit from the relations they develop with employers, as they become aware of the employer's needs.

In addition, the Canadian professional associations have training and professional development committees that assess the available programs and make recommendations to the universities. Professors attend colloquia and seminars on various translation-related topics and stay abreast of emerging needs and new methods. Some institutions sometimes conduct surveys and co-ordinate focus groups among translators employed in the industry.

Professional development is handled mainly by the provincial associations, the Translation Bureau and professionals themselves. Most of the Canadian associations have a training and professional development committee that offers courses or professional development programs to their members on an ad hoc or structured basis. The committees in Quebec (OTIAQ) and Ontario (ATIO) are the most active in this area by virtue of their respective sizes. Through its Training and Evaluation Service (TES), the Translation Bureau offers its employees and outside clients a series of translation, writing and revision courses. For example, for the fall of 1998, OTIAQ signed an agreement with the TES to offer workshops at the best possible cost. Universities are also solicited occasionally by the associations to give professional development courses. Through OTIAQ, some 600 to 800 translation professionals annually complete some forty courses given in Montreal, Quebec City and in the Outaouais area.

5.4 University funding and aging instructors

Funding is the most critical problem faced by translation schools in Canada. Budget cutbacks in recent years have considerably limited any possibility for adding new courses, acquiring the latest in technological equipment, and increasing the supply of translators. Some universities, however, have adopted the client-development approach through new programming. For example, the creation of a program accessible through the Internet could considerably increase the number of applicants, according to one university respondent. Another institution anticipates setting up a co-op system that is less expensive for universities to operate and creating a double-major program (e.g., translation plus law), in order to stimulate student applications.

The aging of professors, combined with the tendency to use instructors rather than tenured resources, does not help ensure that programs develop continually. To that can be added the difficulties universities have in offering adequate wages to instructors, which becomes all the more acute in universities so far from the major urban areas that they have difficulty attracting experienced instructors.

5.5 Fields of specialization

Multilingualism is an inescapable trend, and mastery of a third language is becoming increasingly required, according to university stakeholders. In Europe, for example, fluency in three languages is necessary. It is expected that, in Canada, there will be a strong demand for Spanish in the future. Some universities are already offering certificates and degrees in a third language. Languages other than English, French and Spanish are also likely to be given attention: German, Asian languages, Polish and Russian.

Although a third of the universities have student exchange program agreements with foreign universities (particularly in France, Chile and Switzerland), few Canadian students take advantage of them.

The respondents find that universities must concern themselves primarily with general training. Options exist for the various sectoral specializations. Of course, students need to be made more aware of the importance employers place on specializing, without,

however, encroaching on the basic training. The current fields of specialization are economy, medicine, the sciences, and the computer sciences.

5.6 Technology

A majority of the universities offer introductory courses in software use at the certificate, B.A. and Master's levels. These courses generally cover the fundamentals of how computers can be used in translation, terminology and managing a company: workstations, word-processing software, spellcheckers, online dictionaries, terminology banks, office automation and desktop publishing, computer-assisted translation, accessing the information highway, and so forth. Some universities have translation labs where all students have their own terminal and can test some of the main computer aids for translation. Other universities have only demonstration software. Yet, apart from the basic tools, few universities make use of sophisticated systems: computer-assisted publishing, speech-to-text software, machine translation, etc.

Overall, the large universities are better equipped with computers and related equipment than the small universities.

5.7 Entering the workforce

Sixty percent of translation graduates are hired by private firms, 10% work for public organizations, and 30% become independent workers. The average salary of a new graduate ranges from \$25,000 to \$35,000.

Sixty-five to 70% of graduates from universities located in major urban areas find a job in translation six months after graduation, compared with only 15% for graduates from universities not based in major urban areas. However, almost 100% of the students who earn their B.A. through a co-op program find work.

5.8 Supply-demand matching of graduates

The demand for professional translators, terminologists and interpreters in Canada comes from several sectors: private translation firms, in-house translation services of corporations and private organizations, the Translation Bureau, federal departments and agencies, provincial ministries, and research centres. There are also private companies that hire professional translators to fill communication and writing positions, for example. Our surveys did not allow us to cover all these areas of activity. However, we can make the following observations regarding demand.

- Private firms anticipate hiring about 400 professionals per year for the next three years (attrition and growth combined). We also recall that 26% of the personnel working for firms have a B.A. in translation, and 14% have a Master's degree in translation.

- Independent workers seeking to expand operations and establish a translation firm anticipate hiring about 100 professionals per year for the next three years.
- The Translation Bureau anticipates hiring 50 to 60 professionals per year over the next three years.
- The businesses we surveyed, that have an in-house translation service, anticipate hiring 50 professionals per year for the next three years. It is difficult, however, to project how many professionals would be hired in the coming years by all the Canadian businesses with an in-house translation service.
- We draw the hypothesis that the in-house translation services of the public departments, ministries and agencies will at best hire professionals only to fill the vacancies created by others retiring. We do not have any data on the numbers involved.

We also know that:

- The translation industry in Canada should continue to grow by 5 to 10% per year (median).
- Foreign markets will grow at a much higher rate. In some cases growth of 20 to 30% is projected.
- Computer aids for translation will improve productivity and relieve some of the demand for professionals. Average production of 3,000 words per day could be a reality in the short- or medium-term.
- 34% of employees with translation firms and 51% of independent workers are 45 years of age or older. In the next ten to fifteen years, the industry's professional workforce will be considerably depleted.

As for the supply side and incoming graduates, we know that:

- The number of graduates with a B.A. or Master's degree is declining, and the current numbers, respectively, are 278 and 42 per year.
- The number of graduates with a certificate is increasing, and several students already hold a job. They often use their certificates simply to improve their situation with their current employer.
- 30% of graduates become independent workers upon graduation. Is this by choice or for want of finding a permanent job? If by choice, then there are that many fewer graduates available to fill permanent positions in the industry. The second hypothesis would lead us to conclude that graduates have insufficient experience (qualitative shortage), or that supply is not fully off set by market demand.

In view of the foregoing, we believe, without being able to quantify it, that the demand for graduates in Canada will exceed the supply, and that adjustments will have to be made to redress the balance.

5.9 Conclusion

Our interviews with the main university-level training institutions across Canada lead us to make the following observations.

Translation training institutions in Canada are highly concentrated in Quebec and Ontario, which have 75% of such institutions, primarily in the Quebec-Montreal-Ottawa corridor. These institutions are the largest both numerically and in terms of budgets. They also are the only institutions, along with York University, to offer graduate and post-graduate degree programs in translation, and they are the universities equipped with the latest technological equipment. Moreover, approximately 87% of students registered in translation study at these universities.

Training in conference interpretation is offered only at the University of Ottawa, through a one-year postgraduate program. The small number of candidates admitted to the program and the high cost of the program forced the University to suspend the program in 1995. However, it was once again offered in September 1998.

For each of the last three years, the number of new students registered in translation courses and programs in Canada has held steady, along with the number of graduates. Yet this stability hides a significant trend: the number of students graduating with a certificate (or B.A. with a minor in translation) is on the rise, while the number of students graduating with an Honours B.A. (or B.A. with a major in translation) or a Master's degree is dropping.

The training institutions are struggling with limited funding. Budget cuts are definitely nothing new in the education sector, but the majority of the institutions we contacted noted that the funding problem hits translation harder than it does other disciplines. For example, translation schools are considerably limited in developing new courses, acquiring advanced technology, promoting co-op programs, or even offering a well-rounded translation program.

The training institutions seem unable to exploit fully the potential of new technology. In addition, some translation departments in Canadian universities are better equipped than others with computer aids for translation. Some have workstations for each student, while others offer little more than an introduction to the theory of computer use

in translation. Some software installations are demo versions only, rather than licensed versions that allow students to acquaint themselves more fully with the tools.

Our surveys in other segments of the industry showed a growing demand for professionals capable of working in a third language (especially Spanish) and for graduates with degrees in computational linguistics. For the former category, universities are aware of the need, and some offer certificate and degree programs in a third language. However, computational linguistics is not offered per se in translation departments. The universities recognize the importance of offering new programs, but here too budget restraints delay their introduction.

There is a gap between the industry and the university setting with regard to the skills and preparation of recent graduates. According to our survey of businesses, the main obstacles to hiring graduates are their lack of general culture and practical training, and inability to work alone. They find that graduates need at least one year of on-the-job experience in order to meet their requirements. However, these same businesses are quite reluctant to sponsor on-the-job training for translation students because the size of the business and the rate structure in Canada do not allow them to allocate sufficient money to provide such training. For their part, the universities offer basic general and linguistic training (including fields of specialization and computer aids). The reality of work as a professional is also addressed in various ways. According to the universities, training students to specialize must not take precedence over or encroach on general education. The Canadian translation industry must come up with a human resources strategy that addresses in particular the problem of helping graduates to enter the work force.

6. GLOBAL PERSPECTIVE

The worldwide industry of translation goods and services can be divided into three sectors: human translation, localization, and computer aids for translation and machine translation tools. Two approaches were used to evaluate these various markets: total market demand and the supply of contracting-out services (translation industry).

5.1 Worldwide consumption and contracting out of human translation services

Allied Business Intelligence Inc. (ABI) evaluated the total translation need in the world (or total consumption) on the basis of the number of translators. Accordingly, the 140,000 full-time translators and the 252,000 part-time translators reflect a total need evaluated to be over US\$7.3 billion (CAN\$11.2 billion) in 1998. By 2003, consumption should reach between US\$8.8 and US\$9.6 billion (between CAN\$13.5 and CAN\$14.8 billion). This market includes both the in-house translation services of corporations and organizations around the world and external services, also referred to as the private industry of language services.

Equipe Consortium Ltd. evaluated the contracting-out sector, or the external human translation suppliers sector, at about US\$2.3 billion (CAN\$3.5 billion) in 1998 and predicts it will reach US\$3.9 billion (CAN\$6 billion) by 2000. The demand for external translation services will continue to be concentrated in Western Europe (on the basis of target languages) with CAN\$2.9 billion by 2000 (49% of the world market), followed by Far East countries with \$2.3 billion (39%). In Western Europe, the largest markets are in Germany, Italy, France and the Netherlands. Japan dominates by far the market in the rest of the world. Translation in Japan will be a CAN\$925-million market by 2000, which is greater than the German market, which dominates the Western Europe market.

Despite the enormity of these markets and their strong growth, the industry is still highly fragmented and characterized by a large number of freelancers. Worldwide, few businesses report annual sales in excess of \$5 million. However, in recent years we have witnessed some groupings, mergers and acquisitions which will result in global players capable of meeting the multiple needs of businesses "going global."

In the human translation market, the public sector demand that is handled by subcontractors should grow at a slower rate than the rate for the industry as a whole: from US\$264 in 1994 (CAN\$406 million) to US\$354 million by 2000 (CAN\$544 million), i.e., 5% per year.

In comparison, the technical translation market niche will grow strongly. It is estimated, for example, that scarcely 8% of technical documents are currently translated. This field should see growth reaching 25 to 30% per year.

The main fields in which the need for human translators will grow sharply are:

- Aerospace industry
- Transportation
- Business services
- Pharmaceutical industry
- Telecommunications equipment
- Financial services
- Information technology
- International organizations

8.1 Localization

Localization is more than a simple, literal transcription of a software product's features into a target language. It also strives to integrate coherently all the features into the language and cultural context of the target country.

Not so long ago, converting software for a non-Anglophone market simply involved translating, from English to the main European languages, the user guides, advertising copy, and messages appearing on the screen. Most of these products, easily handled and managed, were well received by the non-Anglophone world. That meant that almost any translator would be considered qualified to translate this type of document. Managing this type of work as well was relatively simple: it could be handled by small translation firms or even by independent translators.

The market has since changed, especially with regard to management and entertainment software, which represent the main localization markets. Clients have become more demanding, and the procedures are more complex. Localization is considered a success if the French or German user of a foreign software product has the impression that the software was designed and developed in the user's own country, never once thinking that it may have been created in a foreign country, converted and then imported.

The businesses that specialize in this new market niche must, however, rely on highly diversified resources, including:

- Skilled project managers
- Regional experts and language specialists (a broad, worldwide network)
- Experts in the marketing jargon of the target country
- Experts in the product's technical specifications
- Audiovisual production teams
- World-class recording studios
- Seasoned programmers and beta testers

The localization market is mainly from English to other languages, mostly Japanese, German, French and Spanish.

The total worldwide "consumption" of localization services (in-house and external services) was evaluated in 1998 at US\$2.8 billion (CAN\$4.3 billion), and is expected to

reach US\$4.8 billion (CAN\$7.4 billion) by 2003. In 1998, 80% of localization was for software products developed in the United States, with the remainder from other regions. The Asia-Pacific region should capture 42% of the American supply by 2003, while Europe should keep its demand at 1998 levels. Growth in the European market will be absorbed by a better-structured local supply.

The contracting out of localization services (localization industry) represented total sales of US\$1.4 billion (CAN\$2.2 billion) in 1998, and sales are expected to reach US\$3.4 billion (CAN\$5.2 billion) by 2003. Despite this strong growth, entrance barriers for new businesses are relatively high, as can be ascertained from the essential resources listed above, as well as from the amount of investment required. Moreover, there is a limited number of businesses specializing in localization worldwide (see the tables in section 6.4 listing the main suppliers). No translation firm based in Canada offers a full-fledged localization service, and for this reason most of the software companies in Canada turn to foreign firms to have their products localized. For marketing, however, they might rely on in-house localization services. Companies such as Corel, JetForm, Newbridge and Fulcrum, which are based in the Ottawa area, all have contracts with foreign localization service providers.

6.1 Computer aids for translation and machine translation

This is the sector of the translation industry that will experience the strongest growth, with growth nearing 50% per year. Private industry will see sales grow from US\$200 million (CAN\$308 million) in 1995 to US\$1.5 billion (CAN\$2.3 billion) by 2000. This sector includes all computer aids for translation, translation memories, machine translation and the related costs of implementation and training.

Machine translation

Machine translation accounts for almost 50% of the computer aids for translation and machine translation sector. Until the 1960s, researchers from the United States, the Soviet Union and Western Europe were confident that research coupled with advances in computer technology would greatly improve the reliability of machine translation. However, the Automatic Language Processing Advisory Committee (ALPAC) report, published in 1966, suggested it would be better to redirect resources away from machine translation development and toward resolving the underlying linguistic problems that were preventing the development of reliable machine-translation systems in the short-term. In the next decade the number of laboratories active around the world in machine translation research dropped sharply. However, this did not prevent some countries, such as Canada and France (Montreal and Grenoble) to further research through grants to university groups.

The globalization of markets and the phenomenal growth of the processing capacity of computers at increasingly lower cost created a new surge of interest in the 1980s for machine translation systems. Machine translation systems can be divided into three categories: general, targeted and translation memory. General machine translation systems are used to get the gist of a text in a foreign language. They are not, strictly speaking, aids for translation. They translate texts without human intervention, but the texts are not intended for publication. Targeted systems translate only in specific fields

using fixed vocabulary. The METEO® system, developed in Canada in 1977, set the standard for this type of application, in which machine translation was the most effective. Translation memories store translated sentences and suggest their translations when they appear again. This system is useful for repetitive texts such as contracts, collective agreements and work descriptions.

Although there is a growing use of machine translation, machines are not about to oust human translators. They have, however, become indispensable modern tools in a globalized society, where one needs to quickly get the gist of texts written in many different languages. Moreover, research in natural language processing continues. Rather than being in competition with professional translation, general machine translation systems are complementary tools that the translation industry should take greater advantage of and include in its range of services.

Machine translation will likely increase the demand for human translation insofar as it encourages ever-greater exchanges around the world.

A survey sponsored by the Association for Machine Translation for the Americas¹ was conducted in 1993 among both the large users and the suppliers of machine-translation systems. 38 businesses and organizations worldwide participated in the survey. At that time, it was estimated that 380 million words were being translated annually by machines, at least among the very large users. These included the European Union, which alone translated 30 million words in thirteen language combinations with the help of its system called Systran. We now know that this number more than doubled in 1988 and exceeded 70 million words.

However, technical manuals, weather forecasts and product localization accounted for a very large majority of translations produced by machines. Most of the respondents had begun that activity five years earlier. The main advantages observed at that time could be summarized as follows: easier to produce target translations whose format and attributes matched those of the source text; ability to process large volumes of information; savings in time and money; uniform terminology usage; shorter turnaround times; and increased sharing of scientific findings. However, the disadvantages observed were quite salient: high cost of preparing source texts; high editing costs (50 to 100% of the translations had to be reviewed); low-quality output; and need for extensive training.

The same survey was conducted again in 1995. This time, there were very few respondents: either the results had not improved, or the phenomenon was accepted and no longer needed justification. However, those who did respond found faults with machine translation unexpressed in the first survey: stifled creativity, impoverished style, inflexibility, took away one repetitive task but only created another, and so forth.

Of course, machine translation has its limits and is for market sectors completely separate from human-translation sectors. Yet the strong growth in demand for machine translation witnesses to the fact that it does an immense service when it comes to translating technical, repetitive texts, or controlled-vocabulary source texts (use of sub-languages), and to filtering texts.

¹ Colin Brace, Muriel Vasconcellos, L.C. Miller, *MT Users and Usage: Europe and the Americas*, Paper presented at the Fifth Machine Translation Summit, Luxembourg, 1995

According to ABI, the total consumption for machine translation was evaluated at US\$246 million (CAN\$378 million) in 1998. ABI also predicted sales in excess of US\$1.3 billion (CAN\$2 billion) by 2003, which represents an annual growth rate of over 40% per year. The three main markets where this growth will be evident are Europe, North America, and Japan. Most of the consumption of machine translation will derive from government and para-government organizations.

6.2 American suppliers

Sales in the translation industry in the United States were evaluated at over US\$1.3 billion (CAN\$2 billion) in 1997. The following table shows how more than 3,000 translation firms share this market.

**Table 8 — Distribution of translation industry sales
in the United States by size of firm
1997**

Number of firms	Size	Total sales (US\$ millions)
2700	< US\$500,000	925
220	US\$500,000 - 1 M	165
105	US\$1 M -2.5 M	155
35	> US\$2.5 M	105
3060		1350

Source: Allied Business Intelligence Inc., Language Translation: World Market Overview, Current Developments and Competitive Assessment, 1998.

Although this fragmentation greatly resembles what has been observed in Canada, the large US firms are, in comparison, much larger, and the trend toward mergers in response to globalization is much more advanced than it is in Canada.

However, contrary to the situation in Canada where various Acts have helped to shape the profession, translation in the United States is tilted to meeting private sector demand (domestic and foreign) and, to a lesser degree, to public sector demand (foreign trade and international bodies). Training in translation is not as developed in the US as it is in Canada, relatively speaking. To become a member of the American Translators Association, for example, which has more than 6,000 members, one need only successfully sit an entrance exam.

In 1998, the main suppliers in the United States were:

Table 9 — Main suppliers in the United States

Company Name	Total sales⁽¹⁾ (\$US million)	Fields of specialization
Alpnet	41/41	Localization, translation, documentation, interpretation, desktop publishing, glossaries
Berlitz	90/500	Language instruction, localization, translation, documentation, desktop publishing, interpretation
Bowne Global Services	60/500	Localization, translation, information management, preparation and distribution of documents
International Language Engineering	20/20	Localization, multimedia
LioNBridge Technologies	38/38	Localization

⁽¹⁾Sales from translation and related services/total sales

Source: Allied Business Intelligence Inc.

In coming years, the main characteristics of the US market will be:

- Ongoing consolidation of the industry.
- Diversification will continue to be the preferred development strategy, and large businesses will turn increasingly to one-stop suppliers.
- Large businesses will continue to subcontract language and documentation services. Large businesses have traditionally used in-house translation services to meet their need for translations for foreign markets. However, the globalization of markets and the ever-growing need for “cultural” translation is leading the large businesses to turn increasingly to subcontractors. They will prefer to partner with firms offering a production capacity and quality that meet their standards.
- The cost of translation services will be a more significant factor for smaller businesses than for larger ones.
- Large translation firms could take over between 10 and 20% of the market.
- The market will see annual growth of 20 to 40% per year.
- Small firms will have to specialize and envisage various types of partnerships.

Rates

The rates charged by the translation firms in the United States are difficult to obtain by going through the traditional channels, because the Federal Trade Commission determined a few years ago that the publication by associations and firms of their standard rates contravened the principle of free competition. We called some firms and found that their rates vary considerably, depending on the client type. For example, some firms charge high rates for high-end translations of diplomatic documents, as follows:

<u>Target language</u>	<u>Rate (\$US/word)</u>	<u>Rate (\$CAN/word)</u>
French/Italian	0.23 – 0.26	0.35 – 0.40
Spanish	0.20	0.31
Dutch	0.22 – 0.25	0.34 – 0.38
Russian	0.24 – 0.27	0.37 – 0.42
Swedish/Finnish	0.25 – 0.30	0.38 – 0.46
Japanese/Korean/Chinese	0.40 +	0.62 +

However, according to other sources, rates charged by firms could go as low as US\$0.13 to US\$0.15 (CAN\$0.20 to CAN\$0.23) per word, whether for public- or private-sector clients.

The rates we noted during our documentary research were mainly those charged by independent workers. For example, ABI found that independent workers in the United States charged an average US\$40 (CAN\$62) per page for common languages. Assuming 300 words per page and a Canadian dollar at US\$0.65, we can estimate the rate at about CAN\$0.20 per word.

A survey conducted by an American researcher over the Internet between January and April 1997 among 337 respondents gave the following findings: the rates charged to translation firms by independent workers ranged from CAN\$0.17 per word (into Italian) to CAN\$0.25 per word (into Dutch). Rates for translation into French or English was, respectively, CAN\$0.19 and CAN\$0.18 per word. Where the independent workers transact directly with the client, their rates went up 35%.

The profit margins seen by translation firms for revision, the client's terminological corrections, formatting, administration of freelancers, vary from 30% to 70% of the rate charged by the freelancer.

Our survey found that the average rates charged by independent workers varied from CAN\$0.19 to CAN\$0.23 per word. We can conclude that the rates charged in the United States and in Canada are quite similar, although the impression is that one can find less expensive freelancers in the United States.

2.1 European suppliers

The overall translation market in Europe is the largest in the world, and the governments and international agencies employ large numbers of translators.

The diversity of languages and the advent of the European Union largely explain the enormous need for translation. The European Commission alone employs 1300 translators; the European Parliament, 400; the European Council, 500; the Economic and Social Committee and the Audience Court, 100 each; and the Court of Justice, 200.

The translation service of the European Commission translates about 1.4 million pages per year. The portion entrusted to freelancers amounts to 170,000 pages per year. Not all documents are translated into the eleven languages of the member countries. It is estimated that each document is translated into 5.5 languages.

The leading European suppliers are:

Table 10 — Leading suppliers in Europe

Company name	Total sales⁽¹⁾ (\$US M)	Fields of specialization
Interverbum (Sweden)	13/13	Localization, translation, technical documentation, technologies management
LOGOS (Italy)	13/13	Machine translation, localization, translation, technical documentation, glossaries
L&H/Mendez (Belgium)	30/30	Localization, machine translation, human translation
Star (Germany)	30/30	Translation, technical documentation, automobile,

		information management
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⁽¹⁾Sales from translation and related services/total sales

No European supplier has annual sales in excess of US\$50 million.

The main characteristics of the European market are:

- Firms have experienced lower growth rates than their American competitors: from 10 to 20% compared with 20 to 30%. European firms have given less impetus to the software localization market, which is the area showing strongest growth in the world.
- Consolidation will also continue in Europe, but will be led by the American firms.
- There are fewer acquisitions by European firms, as this approach is foreign to their culture. They prefer the internal approach for growth. It is observed that access to public funding for acquisitions investment is more limited in Europe than in America.
- European firms have not been as successful as the American firms in trying to reduce the pressure on prices, for the sake of more enduring relations with their clients.

Rates

Translation rates are “advertised” more in Europe than in the United States. The average rate paid to a translator hired by the external translation service of the European Commission is US\$47 (CAN\$72) per page (one page being 1500 non-white characters) for a finished text. For translations requiring “post-editing”, the average rate is US\$26 (CAN\$40) per page.

Rates vary from US\$15 (CAN\$23) to over US\$95 (CAN\$146) per page, depending on the language combination and field of specialty. These rates are based on an analysis of the contracts granted in 1997.

The external translation service of the European Commission has a roster of over 700 translation firms and independent workers (evenly distributed), on whom they call depending on the need.

The rates of international organizations (ILO, WTO) are about 200 to 220 Swiss francs (CAN\$208 to 229) per 1000 words, including formatting and publishing.

OECD rates vary between 0.70 and 0.85 French francs (CAN\$0.18 and CAN\$0.21) a word.

In Great Britain, average rates vary between CAN\$0.17 and CAN\$0.20 per word. A freelancer can expect about 50% of this rate if subcontracted by a translation firm.

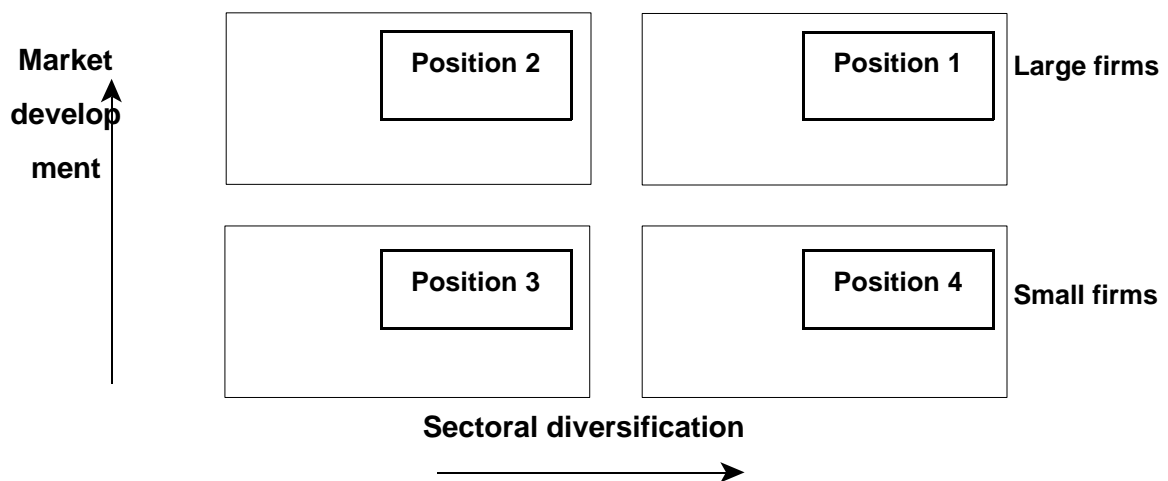
6.6 Strategies used by large translation firms

Translation firms, large and small, American and European, have adopted a strategy geared to one of the following factors:

- Specialization
- Diversification
- International development

These strategies are illustrated in the following diagram.

DEVELOPMENT STRATEGY



The vertical axis represents the strategy of conquering international markets (from domestic markets to international markets). The horizontal axis represents the strategy of progressive diversification (from one specialized sector or field to general diversification). Large firms are positioned in the international markets (positions 1 and 2) while the small firms work mainly in the domestic markets (positions 3 and 4). Firms in position 1 (Berlitz and Alpnet) are more generalist, traditional, large and increasingly dependent on market expansion, mainly through acquisitions. Firms in position 2 have concentrated their efforts in a few sectors and fields of specialization that they exploit internationally (e.g., Bowne and LionBridge). They invest considerably in technology. They have been among the most profitable firms in the past and have seen strong growth. But without territorial expansion they risk levelling off. They try, little by little, to diversify and gain ground in additional markets, thereby becoming a threat to the firms in position 1 who, themselves, do not always have the most recent expertise needed to break into some specialized markets. The firms in position 3 are also specialized, but they work mainly in domestic markets. They are unable to compete with the large firms on the international markets, but often work for them as subcontractors. The firms in position 4 are generalists and concentrated on their domestic market. They are excellent targets for take-overs by the large, expansionist firms.

Canadian translation firms are located mostly in positions 3 and 4, and only a few are in position 2. No Canadian translation firm is in position 1.

The main strategies of the large firms, whether American or European, are:

- **Diversification.** None of the large firms does nothing but translation. They are all diversified in various communications-related fields: language courses, multimedia, information management, computer aids for translation, speech-to-text processing, training, etc.
- **Turnkey services.** In the translation sector, large firms often offer integrated services, including graphic arts, desktop publishing, translation of WWW sites, writing and publishing glossaries, and, in some cases, printing. The main strength of large firms is their ability to offer a complete range of translation and communication services to large international businesses. In

the translation-only and standing-offer market, they will be less and less able to compete with small firms and independent workers.

- **Multilingualism.** All the large firms offer multilingual services and have an international network of translators.
- **Development of international markets.** Large firms emphasize growth through acquisition (in order to diversify or to break into emerging markets), organic growth, or massive investments in technology.
- **Investments in technology.** All large firms invest in technology and, in a good number of cases, in the creation of proprietary tools (machine translation, translation memories, speech-to-text, desktop publishing, etc.).

6.7 The number of translators in the world

ABI estimates that there are 140,000 full-time, salaried translators in the world (including in-house services and subcontractors).

Table 11 — Distribution of translators worldwide - 1998

Country / region	Salaried translators	Independent translators
United States	22,360	41,509
Canada	6,800*	4,114
Latin America and the West Indies	10,192	18,921
Europe	40,212	74,650
Countries of the former USSR	8,551	15,875
Africa	15,265	28,338
Oceania	2,922	5,554
Other	34,038	63,055
Total	140,340	252,016

* The number for Canada is based on the results of our survey.

6.8 Conclusion

Allied Business Intelligence Inc. (ABI) evaluated the total translation need in the world (or total consumption) on the basis of the number of translators. Accordingly, the 140,340 full-time translators and the 252,016 part-time translators reflect a total need

evaluated to be over US\$7.3 billion (CAN\$11.2 billion) in 1998. By 2003, consumption should reach between US\$8.9 and US\$9.6 billion. This market includes both the in-house translation services of corporations and organizations around the world and external services, also referred to as the private industry of language services.

Equipe Consortium Ltd. evaluated the translation services industry worldwide to be US\$2.3 billion (CAN\$3.5 billion) in 1998 and predicts it will reach US\$3.9 billion (CAN\$6 billion) by 2000. Europe will continue to be the largest region, with 49% of the market, followed by Asia, with 39%.

Despite the enormity of these markets and their strong growth, the industry is still highly fragmented and characterized by a large number of freelancers. Worldwide, few businesses report annual sales in excess of \$5 million. However, in recent years we have witnessed some groupings, mergers and acquisitions which will result in global players capable of meeting the multiple needs of businesses "going global."

The main fields in which the need for human translators will grow sharply are aerospace industry, transportation, business services, pharmaceutical industry, telecommunications equipment, financial services, information technology, and international organizations.

In addition, the technical translation market niche will grow strongly. It is estimated, for example, that scarcely 8% of technical documents are currently translated. This field should see growth reaching 25 to 30% per year.

Localization has become the star product of the translation industry. Localization is more than a simple, literal transcription of a software product's features into a target language. It also strives to integrate coherently all the features into the language and cultural context of the target country.

The localization services industry had total sales of US\$1.4 billion (CAN\$2.2 billion) in 1998 and should reach US\$3.4 billion (CAN\$5.2 billion) by 2003. Despite this strong growth, entrance barriers for new businesses are relatively high because of the variety of types of expertise required, the need for maintaining a worldwide network of translators, and investments in technology.

It is, however, the computer-aids-for-translation market that will show the strongest growth, with growth nearing 50% per year: from US\$200 million (CAN\$308 million) in

1995 to US\$1.5 billion (CAN\$2.3 billion) by 2000. Although machine translation usage is on the rise, it is not about to oust human translators. Machine translation will expand mainly in specialized sectors and in situations where documents would not have otherwise been translated. Machine translation will likely increase the demand for human translation insofar as it encourages ever-greater exchanges around the world.

The translation industry in the United States was evaluated to be worth more than US\$1.2 billion (CAN\$1.8 billion) in 1997. More than 3,000 translation firms share this market. Although this fragmentation greatly resembles what has been observed in Canada, the large US firms are, by comparison, much larger, and the trend toward mergers in response to globalization is much more advanced than it is in Canada.

The overall translation market in Europe is the largest in the world, and the governments and international agencies employ large numbers of translators. The European Commission alone employs 1,300 translators. The large European companies offering language services are fewer and smaller than those in the United States. They have experienced lower growth rates than their American competitors, and they have given less impetus to the software localization market, which is the area showing strongest growth in the world. Consolidation will also continue in Europe, but will be led by the American firms.

Based on our survey of current rates in Europe and the United States, we find that Canadian rates are very competitive.

Translation firms, large and small, American and European, have adopted a strategy geared to one of the following factors: specialization, diversification or international development. Many businesses operate in a domestic market and offer highly specialized or highly diversified services. Others, fewer in number, operate in the international markets in the same manner. In Canada, we find businesses that work mainly in their regions or nationally, but very few are active in the international markets.