

CHAPTER ONE

INTRODUCTION

1.0 Background to the Study

Many definitions of the translation process have been proposed by translation authorities. Catford (1965:1) suggests that translation is a process of substituting a text in one language for a text in another. Nida (1959:19) proposes that “translating consists of producing in the receptor language the closest natural equivalent to the message of the source language, first in meaning and secondly in style”. Jumpselt (1961:66) emphasises a reconstruction of the patterns in original texts. Wilss (1977:165) lays emphasis on text analysis and recommends that ill-written source texts be editorially modified in the translation process. Jager (1975:36), cited in Brotherton 1988:58) emphasises maintaining equivalence in communication between the source and target texts while translating. As translation involves many facets, the researcher feels that the process of translating is best captured by Darwish’s (1995:4) viable, comprehensive definition of the translation process as:

Translation is a dichotomous, cumulative and iterative process that musters a host of cognitive activities relating to language, rhetoric, linguistics, communication and culture. It is dichotomous because it deals with two languages that have different linguistic and cultural norms and patterns and different communication codes. It is cumulative because knowledge gained in translating one piece of discourse is applied to translating another piece of discourse. And it is iterative because it undergoes a repetition of a sequence of events yielding results successively closer to the finished text.

Education in Malaysia has undergone several changes during the past few decades. Since the mid-1970’s, the Malay language (which is known as *Bahasa Melayu* in Malaysia), has been the medium of instruction in all national schools in Malaysia, while English language is regarded as the second official language in Malaysia.

According to Abdul Razak Ismail (1997:5), the progress and development of a people and nation depend largely on the scope of knowledge that is obtained and by the

society concerned. He feels that people in developing nations, in particular, need to be equipped with sources of relevant knowledge so as to prepare themselves for the desired development in their nations. At present, according to him, a great deal of knowledge in high technology comes from developed countries such as the United States, United Kingdom, Germany, Japan and Korea. The researcher agrees with his view.

Owing to the explosion in knowledge in the fields of science and technology, many articles, research materials and books are published in the English language, which is an international language. Even our Prime Minister has remarked,

I feel that we will lose out if we do not strive to master the English language, while at the same time continue to improve our command of Malay. In these modern times, knowledge of one language is not enough. Furthermore, English is an international language (*The New Straits Times*, September 18, 1992).

The researcher feels that this explosion of knowledge in the fields of science and technology, which is in the English language, must be translated to the Malay language, which will then be accessible to students who are learning these subjects in the Malay language. However, this is not possible as the translation process in Malaysia is too slow to cope with this knowledge explosion. This is because most of the translators in Malaysia are generally part-time translators holding other full-time professional occupations such as teachers, lecturers, broadcasters etc.

In Malaysia, science and technology are taught in all schools in the Malay language, which is the medium of instruction. However, when these students who have obtained their education in schools in the Malay language begin tertiary education, they find very limited reading materials in science and technology written in the Malay language. To complete their assignments, they have to read books and articles written in the English language which are found in abundance in the libraries and the World - Wide Web.

Azizah Mokhzani (1984:7) writes that at present translation is done on a somewhat ad hoc and part-time basis by individuals. In 1982, the National Action Council called a meeting between **Dewan Bahasa dan Pustaka or DBP** (Institute of Language and Literature) and the universities to step up translation. However, the proposed secondment of university staff to DBP for translation purposes has not materialised.

In an effort to overcome this problem, on 27th December 1993, the Prime Minister of Malaysia, Datuk Seri Dr. Mahathir Mohamad announced the government's decision to allow science and technology to be taught in the English language at all Institutions of Higher Learning. This is a pragmatic decision based on the government's aim to "remain competitive at the international level" (*The New Straits Times*, December 28, 1993).

The decision was made because science textbooks and materials in the Malay language are very limited in Malaysia and students who sit for so many courses in this field have to resort to English language textbooks and materials. This decision which was made by the government is to keep abreast of the knowledge explosion in science and technology so that Vision 2020 can be achieved to make Malaysia an industrialised and developed nation with adequate skilled manpower in the form of skilled engineers and technicians. The Malaysian Prime Minister, Mahathir Mohamad (1993), stresses the need to aspire to the highest standards in many aspects, that is, skills of the people, devotion to know-how and knowledge upgrading and self-improvement; language competence; work attitudes and discipline, managerial abilities and attitude towards excellence.

According to Chitravelu (1985:i), "English is needed in this country for purposes of higher education, for communication with the world intellectual community, for

research, for science and technology, for the maintenance of trade and diplomatic relations". Furthermore, she pointed out that, "according to a U.K.M. lecturer, the fact remains that less than 5% of academic writing in Malaysia is in Malay" (1985: 36). The U.K.M. lecturer wishes to remain anonymous. She adds that in Malaysia, the majority of textbooks, reference materials and professional journals are written in the English language.

In an effort to fulfill the objectives of the government's vision for Malaysia, education principles have been designed by the education ministry to accommodate to the needs of the time as shown below:-

1. 1950's to 1960's - give emphasis to unity and fight for the Malay language
2. 1970 - give emphasis to academic progress and work force preparation
3. 1980 - give emphasis to the balanced development of the individual as stated in the National Philosophy of Education
4. 1990's - 2000 - give emphasis to higher education and expertise in science and technology

(Wan Aziz Wan Bakar, 1994:5)

One of the problems faced by Malaysian students in tertiary education in the fields of science and technology is the lack of sufficient texts in the Malay language. Other problems are their lack of command of the English language which hinders them from understanding the reference materials on science and technology which are found in abundance in libraries in Malaysia, their attitude of just depending on the lecturers' notes given during lectures to pass exams etc. To investigate the causes for the slow process of translating English language scientific texts to the Malay language in Malaysia, this study was undertaken by the researcher to investigate the problems affecting the translation process of scientific texts from English to Malay.

1.1 The Translation of Scientific Texts in the Malaysian Context

From the researcher's interviews with some part-time translators, students who have used translated science books in the Malay language, and from the findings of some past studies (Azizah Mokhzani 1984, Aziz Nordin and Khatijah Zakaria 1995, Rashidah Begum and Akhiar Salleh 1993), it is a known fact that in Malaysia, the process of translating English language scientific texts to the Malay language is inefficient, unstructured and too slow to cope with the timely transfer of scientific information which is expanding at a mind-boggling speed. According to Azizah Mokhzani (1984:8), not many people are interested in translation as it is time-consuming and not much recognition is given to translators at professional, governmental and societal levels. Furthermore, she reported that the quality of translation is poor due to lack of training, translating on a part-time basis, having inadequate science terminology in the Malay language etc. Translators feel that they are better rewarded by getting themselves involved in direct selling or part-time teaching.

However, Azizah Mokhzani (1984:11) and Abdullah Hassan (1997:2) strongly feel that translation should be made into a National Agenda in Malaysia. According to Abdullah Hassan (1997:3), the Translators Association of Malaysia (PPM-*Persatuan Penterjemah Malaysia*) sees the translation of books to the Malay language as a matter of primary importance, one that will affect the future development of the country positively. According to Azizah Mokhzani (1984:11), a totally new approach is required to upgrade translation production to the level where it can meet the demands of the country. This new approach should include producing translated texts in quantity, maintaining quality and accelerating production by publishing. To achieve these objectives, it is necessary to place translation on the priority list for national development.

While these efforts to place translation on the priority list for national development are commendable, the researcher feels that national development in Malaysia will also require the encouragement and promotion of first hand authorship. The researcher feels that it is here that DBP can play its role in promoting the use of Malay in first hand writing of scientific ideas gained from vast experience of teaching and research by Malaysian academicians. Translation follows in the footsteps of innovation. Hence, the researcher proposes that parallel emphasis be also put on first hand research and authorship in the Malay language. The good news is that DBP, the Malaysian Language Academy, is currently undertaking this role for Malaysia.

Shahrir Mohamad Zain (in Asiah Idris, 1990:6), reports that writing and translation in the fields of science and technology in the Malay language are very slow. Due to this, he writes that there is a very limited number of translated books in the Malay language in these fields at university level, whereas the number of courses offered in these two fields keeps on increasing every year. He concludes that one can only be a little proud of the use of the Malay language at the level of formal teaching of science and technology, but the culture of using the Malay language at Institutions of Higher Learning has failed and it is also not exported to Institutions of Research and Development situated outside these institutions.

Annuar Zaini, Wan Abu Bakar, and Nik Rashid (in Asiah Idris, 1990:6) discussed the issue of using the Malay language at Institutions of Higher Learning. They all reiterated the fact that the Malay language can be used in science and technology with confidence if there is a positive effort from all sides. They feel that the use of the Malay language especially in Law must be seen as a social, economic and political problem. They feel that these social, economic and political problems can be overcome if there is a "political will" (in Asiah Idris, 1990:7). According to them, other problems

include that of publishing translated books for Higher Education in the Malay language and the unrewarding experience of some of the Malaysians in writing and translation. Tajul Ariffin discussed the possibility of the Malay language being recognised as an international language in the future (in Asiah Idris, 1990:7).

Abdul Razak Ismail (1997:5), Ariffin Samsuri (1997:13) and Issham Ismail (1997:25) strongly feel that translation of English language scientific texts into the Malay language is necessary if the government of Malaysia hopes to achieve Vision 2020 when it will be a developed and industrialised nation. They feel that the government, translators and the people of Malaysia must take translation seriously, and every sector must give support to this industry so that the knowledge in science and technology can be disseminated effectively in the national language, which is the Malay language. The main problem now is that the process of translating English language scientific texts into the Malay language is very slow.

1.1.1 Translation as a National Agenda

Abdullah Hassan (1997:3) writes that an insufficient number of higher education books translated into the Malay language has resulted in the failure of the Malay language as the medium of instruction in universities in Malaysia. Consequently, he reports that Malaysian political leaders readvocated the use of English language as the medium of instruction in these institutions. He feels that this has caused national apprehension as similar English-focused approaches taken by former British, French and Spanish colonies, such as India, Vietnam and The Philippines, have produced negative results in three ways.

First, Abdullah Hassan feels that these countries (the ex-colonial countries of Britain, France and Spain) failed to democratise education. He feels that the poor

simply failed to acquire a foreign language as it is outside their environment and were thus deprived higher education. The researcher feels that this might be true as the poor had to look after their basic needs first and had no resources to study a foreign language.

Second, Abdullah Hassan (1997) suggests that those who acquire education through a foreign language become captive in the foreign culture, that is, become good consumers of ideas and products of those countries. He feels that they do not contribute creatively towards the development of their countries. This view is supported by Darwish (1988: 17) who suggests that, "...education is not merely a process of accumulating or assimilating information. It is in addition, a process of assimilating methodologies, thought patterns, ideologies, scientific approaches and above all, social values". However, the researcher feels that these are harsh words written by Abdullah Hassan (1997) and his ideas might just not be accepted by everyone as each of us are brought up differently in our various cultures, religions and social upbringing and we uphold different beliefs and it is up to us to show our patriotism to our country irrespective of the language we pursue our education in.

Thirdly, Abdullah Hassan (1997) writes that the language of instruction is also a vehicle of political beliefs. To him, this will nurture a different political breed, even one that is not sympathetic to the present. However, the researcher does not quite agree with this view because she feels that one's political beliefs need not necessarily have to do with the language of instruction in a country.

Abdullah Hassan (1997) feels that translation is very important so that future generations will be able to acquire the same knowledge, which is now in English language, in the Malay language. Due to the three reasons proposed by Abdullah Hassan (1997:3), he himself strongly feels that translation should be made into a

national agenda. He suggests that knowledge has to be translated to the Malay language so that Malaysians can achieve faster development and political stability. Translation has to be given priority and the Malaysian National Institute of Translation (ITNMB- *Institut Terjemahan Negara Malaysia Berhad*) has to be made responsible in playing this role effectively.

Abdullah Hassan's opinion is also supported by Azizah Mokhzani (1984:11) who suggests that by making translation into a national agenda, encouragement can be given to produce translations in quantity, maintain quality and accelerate production of translated works. She feels that translation should be made a priority for national development and the government should help in funding this project.

The researcher agrees with their idea that translation should be made into a national agenda in Malaysia so that all Malaysians can keep themselves abreast with the latest scientific and technological innovations discovered by researchers in the developed countries, which are generally published in the English language. At the same time, the government should also encourage the writing of books in the national language by our own scholars who have done research in these fields and are competent enough to produce their ideas in the Malay language.

1.1.2 Problems Faced by Translators in Malaysia

Azizah Mokhzani (1984:3) writes that the need for translation in Malaysia is monumental and this need is most felt and apparent in the field of education. She feels that at primary and secondary levels, the need for Malay books has been somewhat met through the efforts of the Ministry of Education. However, she notes that it is at the higher education level that the availability of materials in the Malay language is at a crucial stage. The researcher agrees with her. According to Azizah Mokhzani (1984: 4), a brief look at the number of subjects taught in the six institutions of higher learning

in Malaysia reveals that as many as 8,451 subjects are taught. This is shown in Table 1.1 below.

Table 1.1
List of Subjects Taught at Institutions of Higher Learning

Institutions	Subjects
MARA Institute of Technology	2,464
Universiti Malaya	1,202
Universiti Kebangsaan Malaysia	2,302
Universiti Sains Malaysia	1,121
Universiti Pertanian Malaysia	932
Universiti Teknologi Malaysia	430
Total	8,451

(taken from Azizah Mokhzani 1984:4)

Azizah Mokhzani (1984:4) points out that the number of Malay book titles published for higher education by DBP, the main publisher for higher education is only 277. Add to this another 10% - 15% published by other institutions. The situation is indeed critical. Of the DBP figure of 277 titles, 170 titles are translations. Of these, 112 titles are translated science books. Between writing original works in the Malay language and translating texts to Malay, there is a clear preference for translating to Malay. This is shown in Table 1.2 on page 11.

The composition of the DBP titles indicates further that the majority of the titles are confined to a few disciplines such as Biology, History and Political Science, Geography etc, while the majority of disciplines show very few or no Malay titles. Azizah Mokhzani (1984:4) suggests that while no real study has been made to find out the reasons for the existing distribution of titles, some of the contributing factors that account for certain disciplines having more Malay titles than others seems to be:

1. There are more qualified persons in these disciplines.
2. There are more individuals competent to write in Malay in these disciplines.

Table 1.2

Published Malay titles (Dewan Bahasa dan Pustaka: January, 1984)

No.	Subject/Areas	Original Books in Malay	Translation into Malay	Total
1.	Anthropology and Sociology	2	17	19
2.	Biology	7	32	39
3.	Chemistry	3	7	10
4.	Economics and Finance	9	15	24
5.	Linguistics and Education	26	10	36
6.	Geography	7	17	24
7.	History and Political Science	8	34	42
8.	Islamic Studies	21	10	31
9.	Mathematics	4	9	13
10.	Medicine	10	7	17
11.	Physical Sciences	8	8	16
12.	Public Administration and Law	2	4	6
	TOTAL	107	170	277

(taken from Azizah Mokhzani 1984:5)

3. Malay terminologies in some disciplines are still lacking, making it difficult to translate for such disciplines.
4. There is a deep-rooted conviction in some quarters that only English texts can explain the subjects and translating such texts to Malay is a futile exercise.
5. There is no real commitment even to attempt to write or translate texts to Malay.

As such, Azizah Mokhzani feels the need for translation in the education field in Malaysia. As the need is felt by students and educationists, it is widely discussed and becomes the concern of the general public as well. Thus, there is some indication of the size of the need.

Azizah Mokhzani (1984:8), the President of the Malaysian Translators Association (PPM), reported that translators in Malaysia do not produce good quality translations in the Malay language as their translated work requires heavy editing and

rewriting and this further slows down the production of translated texts in the Malay language.

1.1.2.1 Reasons for Poor Quality Translations

The researcher agrees with Azizah Mokhzani's (1984:7-8) reasons for the present quality of translation which are due to the following factors:-

- i. **Lack of Training.** Most of the part-time translators have not attended a formal training course in translation.
- ii. **Part-Time Commitment.** Translation is mostly done on a part-time basis. It is not the main profession of the translators, who by profession, are university lecturers, college lecturers and teachers.
- iii. **Lack of Personal Development.** The majority of translators translate a book and then stop. There is very little self-development or the upgrading of expertise. There is no continuity.
- iv. **Lack of Professional Recognition.** Translation is regarded as a sub-academic activity. Greater prestige is accorded to the original author. There is very little professional standing and achievement to be gained by doing translation.
- v. **Lack of Recognition by the Government.** There is little or no recognition given to translators by the universities or government. No extra remuneration is given by the government for this extra skill.
- vi. **Lack of Societal Recognition.** There is hardly any status or societal recognition accorded to translators. Publishers are hesitant to put the names of the translators on their books. In many cases work is given to various types of people to be translated as a matter of duty for the department in which they work. No remuneration or recognition is given for the time, effort, and expertise needed for the process. Generally, translators remain as ghostly figures hovering

around in the background. They feel unappreciated and show no real professional pride in or satisfaction from their translation and thus are not interested in upgrading the quality of their translation.

- vii. **Private Publishers Involvement.** Private publishers involvement in the publication of translated works to the Malay language is limited largely to school books. This is due to a limited market volume which makes it a poor business proposition. Furthermore, the lack of good translators leads to the need for heavy editing and rewriting which incurs a lot of time and further expenditures. Thus, the private publishers are not fully committed to the growth and development of translation for the country.
- viii. **Inadequate Terminology.** Due to the fact that the terminology created by the terminology committee at DBP is inadequate to cope with the knowledge explosion in the fields of science and technology, translators are left to use their own devices to create terminologies that are not produced by DBP. This has given rise to a number of complications such as, more time is needed for translation, uncertainties emerging as to the acceptability or unacceptability of the newly created terms and this might cause confusion among target readers of the translated version.

1.1.2.2 Grievances of Translators

According to Phillips (in Ainon Abu Bakar, 1993:6-7), all translators, that is who are involved in the translation in any field be it science, literature, arts etc are underpaid, ill-treated, that is they are not given the same status as writers and in many aspects are always blamed and often criticised but never praised. Translators are often blamed by the readers and media if their work is bad and no praise is given for their sweat, dedication and their role in the translation of knowledge if their work is good.

Most of them are not acknowledged properly in the published translated version and generally none of them are given a write-up of their biodata in the blurb or introduction.

Snell-Hornby (1998:1) agrees with Phillips when she says:

a universal of the translator's condition today is stress, whether caused by time-pressure, defective texts, lack of access to essential background material or whatever. His work is actually of a hybrid nature; it is not only a linguistic activity, but involves, besides the necessary cultural knowledge, specific subject-area expertise, often in non-academic domains. The translator's work is not only interlingual, but also interdisciplinary and international.

1.1.2.3 Terminology Phobia

According to Rusli (1990:44), some translators are afraid of translating English language scientific texts into the Malay language on the grounds of inadequate terminology. According to him, a good translated work does not only comprise terminology but also entails a good organisation of sentences, an appropriate choice of words and delivery which can be achieved by having a good command of the Malay language. Using terminology as a scapegoat in not wanting to translate materials in science and technology is termed *terminophobia* which means, afraid of terms. The translators are afraid of using terminology that has not been made uniform and terminology that has not yet been created or coined.

Here, the researcher feels that it is the responsibility of a translator to introduce new terms and even concepts into translation and further research in this area is most needed to enhance terminology development in the fields of science and technology in Malaysia.

1.1.3 Translation Accreditation Boards/Institutions in Malaysia

Presently there are no Translation Accreditation Boards in Malaysia. The researcher was informed of this by Puan Siti Rafiah bt. Sulaiman, the Head of the

Translation Section of the Malaysian National Institute of Translation (ITNMB). According to her, ITNMB is still in the process of drawing up translation programmes with the help of accredited translation authorities in America, New Zealand and Australia, that is the American Translators Association, New Zealand Translators Association and the Australian Translators Association. According to her, the authorities at these associations will be contacted to evaluate ITNMB's translation programmes and finally the authorities at ITNMB can get their translation courses accredited by authorities at the Malaysian Board of Accreditation or *Lembaga Akreditasi Negara* (LAN) who will issue the certificate of accreditation for ITNMB's translation courses. The authorities at LAN can do this because even though ITNMB is under the government, it is registered under the Registra of Companies and thus is still considered a private institution offering its own courses to the public. This has not been achieved as yet and steps are now being taken to achieve this.

According to Puan Siti Rafeah, presently there are around 700 registered part-time translators in ITNMB and there are no accredited translators in Malaysia. The authorities at ITNMB have yet to apply through the government via an Act to empower them to give accreditation to their registered translators. The authorities at ITNMB are still in the process of applying for this permit to issue accreditation certificates to accomplished translators and this procedure is still being investigated by the authorities at ITNMB. This will involve meetings at the ministerial level and working papers must be submitted to the cabinet before it can be approved via an Act.

The two institutes that train translators and provide translation courses both in the science and arts fields and provide certificates to successful students in translation in Malaysia are the Malaysian National Institute of Translation (ITNMB) and the Institute of Language and Literature Malaysia (DBP). ITNMB, which was established on 14th

September 1993, deals solely with translation activities and DBP which was formerly involved in translation activities is now solely into the promotion of the Malay language and in publishing academic and general books written in the Malay language. The following pages investigate the activities of these two Institutes.

1.1.3.1 The Malaysian National Institute of Translation (ITNMB)

All the information regarding ITNMB is taken from the ITNMB Brochure published in 2001 and as presented by Hamidah Baba, the managing director of ITNMB in her paper entitled, "*ITNMB Penentu Masa Depan Industri Terjemahan dan Kejurubahasaan Negara*" (ITNMB – The Future Determiner of the Translation and Interpreting Industry in Malaysia) which was presented on 17th October 2002 at the International Conference on Language, Linguistics and The Real World at the Petaling Jaya Hilton Hotel in Malaysia. For further details on ITNMB, refer to **Appendix A**.

The Malaysian National Institute of Translation (ITNMB–*Institut Terjemahan Negara Malaysia Berhad*) which is situated in Wangsa Maju in Kuala Lumpur was established on the 14th of September 1993. It's aim is to provide the infrastructure for Malaysia's translation industry, in line with the Malaysian Prime Minister's 2020 Vision to see Malaysia a fully developed and industrialised country. ITNMB has been entrusted to undertake translation, interpretation and information exchange work at national and international levels.

1.1.3.1.1 Reasons for the Establishment of ITNMB

ITNMB was established for the following reasons:-

- (i) Due to calls from the authorities at a Semiconductor company who said, "We need a centre that can efficiently translate technical manuals from German/French/Japanese to English and Malay. This is currently one of the drawbacks to industrialization".

- (ii) Due to the realisation that the weakness of our current Information Technology System is caused by foreign language barriers that prevent access to international information.
- (iii) To achieve the Sixth Strategy of Vision 2020 which is to establish a scientific and progressive society that possesses a high change and competitive advantage, looking forward not only as a technology user but also as a contributor to the future development of science and technology.
- (iv) Based on a report by the Royal Air force of Malaysia which said that, "Many of the translations on manuals for Aircraft Servicing in Malaysia are from English to Malay. Lack of translation work into Malay makes it difficult for technicians and engineers to understand the manuals especially for those who are not proficient in the English language".
- (v) For universities, translation will help to increase the number of academic books in Malay.

Due to many calls from various authorities as mentioned above that is from (i) to (v), ITNMB was thus officially established.

1.1.3.1.2 Objectives of ITNMB

The objectives of ITNMB are to:

- i. provide translation, interpretation and information exchange services at national and international levels;
- ii. translate knowledge materials into the Malay language with emphasis on high quality works;
- iii. translate important local works into other languages to enhance the country's image;
- iv. offer training and guidance in the translation field.

1.1.3.1.3 Corporate Statement of ITNMB

The corporate statement of ITNMB comprises its identity, vision and mission which are described below:

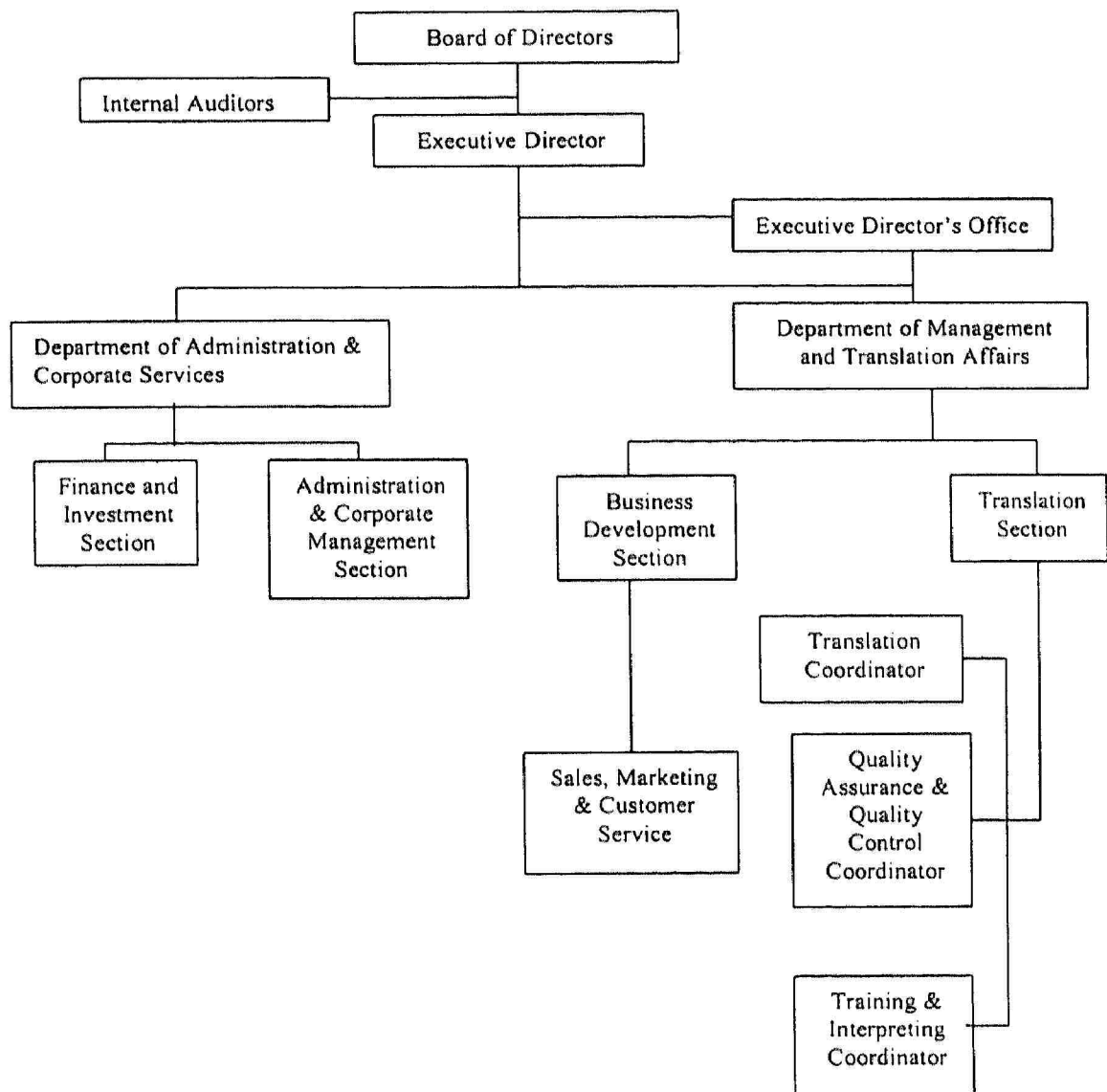
- a. **Identity.** ITNMB strives to provide quality translation to produce a knowledgeable society. It ensures good service so that its customers are satisfied. It ensures excellent products to uphold its dignity.
- b. **Vision.** ITNMB's vision is to become an excellent professional translation body in Malaysia.
- c. **Mission.** ITNMB's mission is to strive to eliminate language barriers in the dissemination of knowledge through translation in order to cultivate a more progressive, dynamic and cultured society. Furthermore, it wishes to enhance the Malay language as the medium of thought in culture, science and technology through translation.

1.1.3.1.4 Organisation of ITNMB

ITNMB's latest Structural Organisational Chart is presented in Figure 1.1 on page 19. It shows that ITNMB is headed by a Board of Directors (comprising the Chairman, Vice-Chairman and six other members). The internal auditors come under their jurisdiction and are directly responsible to them. The Executive Director who is under the supervision of the Board of Directors is directly responsible to them while executing his or her duties in ITNMB. The office staff of the Executive Director are directly responsible to the Executive Director. Under the supervision of the Executive Director is the Department of Administration and Corporate Services. Under this department, comes the Section on Finance and Investment and the Section on Administration and Corporate Management. The Department of Management and Translation Affairs is

Figure 1.1

ITNMB'S ORGANISATIONAL CHART EFFECTIVE 2002



also taken care of by the Executive Director. Under this department, come the Translation and Business Development Sections.

The activities undertaken by the Section on Finance and Investment are managing the current account of the company, controlling the cost of projects and tenders and dealing with investment.

The activities undertaken by the Section on Administration and Corporate Management are administration of the buildings, taking care of staff welfare, managing the information system, payment of salaries, monitoring the internet and web pages, handling claims by staff, preparing the reports for the Board of Directors meetings and taking care of corporate affairs.

The Section on Business Development deals with sales, marketing and customer services. Under the Translation Section come the coordinator for translation (for science, technology, military, documents dealing with multilanguages), the coordinator for quality assurance and quality control and finally the coordinator for training and interpreting. For further details on ITNMB such as the address and names of the board of directors of ITNMB etc, see **Appendix A**.

1.1.3.1.5 Functions of ITNMB

The functions of ITNMB as determined by the Cabinet are to:

- i. plan, implement, manage as well as coordinate matters pertaining to translation, interpretation and information exchange in various languages at national and international levels;
- ii. assist in the development and distribution of translation projects as well as other projects related to multilingual translation, interpretation and information exchange from all over the world to the translators and private sectors in Malaysia;

- iii. promote the science, technology and art of translation, interpretation and information exchange in various languages;
- iv. develop and improve the expertise of translators, editors, interpreters and related careers to meet the country's needs at national and international levels;
- v. provide commercial and social services for books, documents, computer software and reading materials from various languages into the Malay language utilising the services of translation and computer/computer-aided translations;
- vi. provide interpretation service commercially and socially for local and international clients;
- vii. encourage translation, interpretation and information exchange in various languages and also organise various activities to attract, inform and promote the growth of translation and interpretation services in Malaysia;
- viii. establish standards and provide quality assurance and recognition services for multilingual translations, interpretations and information exchange in Malaysia.

(taken from ITNMB Brochure: 2001)

1.1.3.1.6 Grading System for Translators

Translators who are registered with ITNMB are graded based on a short test which they have to take. According to Puan Siti Rafiah binti Sulaiman, the head of the translation section at ITNMB, there is a grading system to evaluate the skills of translators who wish to translate documents, especially those from English to Malay. This is a new system that has just been implemented to fulfill ITNMB's need to identify translators for translating books. A translator has to sit for a short examination in the specific and general fields that he intends to translate. This is to assess his proficiency in the Malay language. The translated product is then evaluated and graded

according to the marks obtained in the examination. The format of the short test is as follows:

The test which carries 100% is divided into three parts which are:

- (i) Test based on Malay Grammar which carries 10%
- (ii) Test based on General Text Translation which carries 45%
- (iii) Test based on Specific Text which carries 45%

All the candidates who sit for this test are required to answer all the above three parts. The first part on Malay Grammar tests their competence in the Malay language whereby they have to sit for an objective test which has 100 questions which test various Malay grammatical rules such as affixes, transitive verbs etc to see if the candidate is knowledgeable in all the grammar rules as this is important while translating.

The second part which deals with General Text Translation involves the candidate translating a general text of about 500 words if it is a document and about 8-10 pages if it is a book.

In the third part which deals with specific texts in a specialised field, a candidate is required to translate a text of about 500 words for a document and about 8-10 pages if it is a book which is relevant to the candidate's field of specialisation.

The second and third parts can be done at home by the candidates under a stated time period and the texts chosen by ITNMB can be either from real clients' work or from chapters of books which are being translated.

Based on their performance in the tests, the candidates are classified according to their grades as shown in Table 1.3 on page 23. Candidates who score As and Bs are usually called upon by the translation authorities at ITNMB to join their pool of translators to help them in translation tasks for which they are paid well. Those who do

not perform well are asked to improve themselves and to sit for the tests again once they are ready.

Table 1.3

Classification of Translators According to Grades

Grade	Percentage
A+	85-100
A	80-84
B+	75-79
B	70-74
C+	61-69
C	50-60
D	40-49
E	0-39

1.1.3.1.7 Publication of Translated Books

To date, ITNMB has published 43 books in various fields. Of these, only 2 translated science books in Malay have been published for institutions of higher learning while 7 have been translated and published for general reading and these can also be used as reference books for Form 6 students and for students in institutions of higher learning.

Presently, the translation services in ITNMB are catered for the private sector where the profits are greater. Where textbook translation is concerned, ITNMB is not very interested as the translated books do not sell well in the market and ITNMB has to bear the cost of publishing and later stockpiling the books as they just cannot be sold. ITNMB has learnt a lesson from DBP when two million translated books published by

DBP could not be sold as reported in the Malay newspaper - *Berita Harian* dated 19th September 1995. Furthermore, copyright approval has to be obtained from the original author and a specific time limit is given to translate, failing which, the copyright approval has to be requested for again. The translators assigned to translate the English language scientific texts to the Malay language sometimes cannot meet the deadlines given, as they are professionals doing translation on a part-time basis and have other commitments and this causes difficulties for ITNMB.

According to Abdul Razak Ismail (1997:49), translated English language scientific books to the Malay language mainly cater for students in the technical and vocational fields in Institutions of Higher Learning. The general public is not interested in buying such books which generally do not have much relevance to their work. The students in the fields of science and technology are very few in number. Most of them prefer to photocopy the relevant chapters in a book because not all the chapters are covered for their courses. This cuts their costs. Also, some seniors who have bought translated books sell them at half-price to the junior students who, therefore, do not buy new translated books which are more expensive. For working people, they would rather buy the original books written in English language which are easier to understand rather than invest their money in poorly translated Malay books which may contain terminology terms which they are not familiar with.

1.1.3.2 Dewan Bahasa dan Pustaka (DBP)

The researcher feels that a discussion of DBP – *Dewan Bahasa dan Pustaka* or the Institute of Language and Literature Malaysia (the Language Academy for Malaysia) is very important to serve as a background to this study. This is because DBP is a very important resource centre for translators who are involved in translating texts from any source language to the Malay language. From DBP, they can get the latest in the Malay

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1.1.3.2.2 Mission of DBP

The mission of DBP is to develop Malay into a language of knowledge in the process of building a Nation State.

1.1.3.2.3 Motto of DBP

The motto of DBP is “Language is the Soul of the Nation”.

1.1.3.2.4 Objectives of DBP

The objectives of DBP (CITRA 2002:11-13) are to:

1. develop and enrich the national language in all fields including science and technology
2. promote literary talents especially in the national language
3. print or publish or assist in the printing or publication of books, magazines, pamphlets and other forms of literature in the national language as well as in other languages
4. standardize the spelling, pronunciation and coining of appropriate terminologies in the national language
5. encourage the correct use of the national language
6. encourage the extensive use of the national language for all purposes, in accordance with the existing laws

1.1.3.2.5 Organisational Structure of DBP (taken from CITRA DBP 2002: 6)

DBP is governed by a body known as the DBP Board of Control. The Board which was established under the DBP Ordinance 1959, formulates and implements policies aimed at achieving the objectives of the Institute.

The DBP Board of Control comprises the following members:

1. a Chairman who is appointed by the Minister of Education
2. the Chief Secretary of the Ministry of Education

3. the Director General of Education or his representative
4. the Attorney General or his representative
5. the Chief Secretary to the Treasury or his representative
6. the Director General of Public Services Department or his representative
7. a member appointed by the Council of Rulers
8. ten members appointed by the Minister of Education

Each appointed member shall hold office for three years and is eligible for reappointment thereafter. The Education Minister in selecting members to sit on the Board can appoint whosoever in his opinion has knowledge and ability to make positive contributions towards the attainment of DBP's goals. The management and administration of DBP is the responsibility of the Chief Executive Officer - namely, the Director-General. The Board of Control shall be the sole coordination authority pertaining to the coining and standardizing of Malay terminologies.

Based on DBP's organisational chart shown in Figure 1.2 on page 28, we see that the Director General heads all the branches of DBP in Malaysia. Under his jurisdiction are the Internal Audit Division and the Legal Affairs Unit. The Language, Literature, Publication, Malay Documentation Centre and Policy and Corporate Development Departments also come directly under the Director General and the Deputy Director General. For details on these see **Appendix B**.

The Language Department comprises the following:

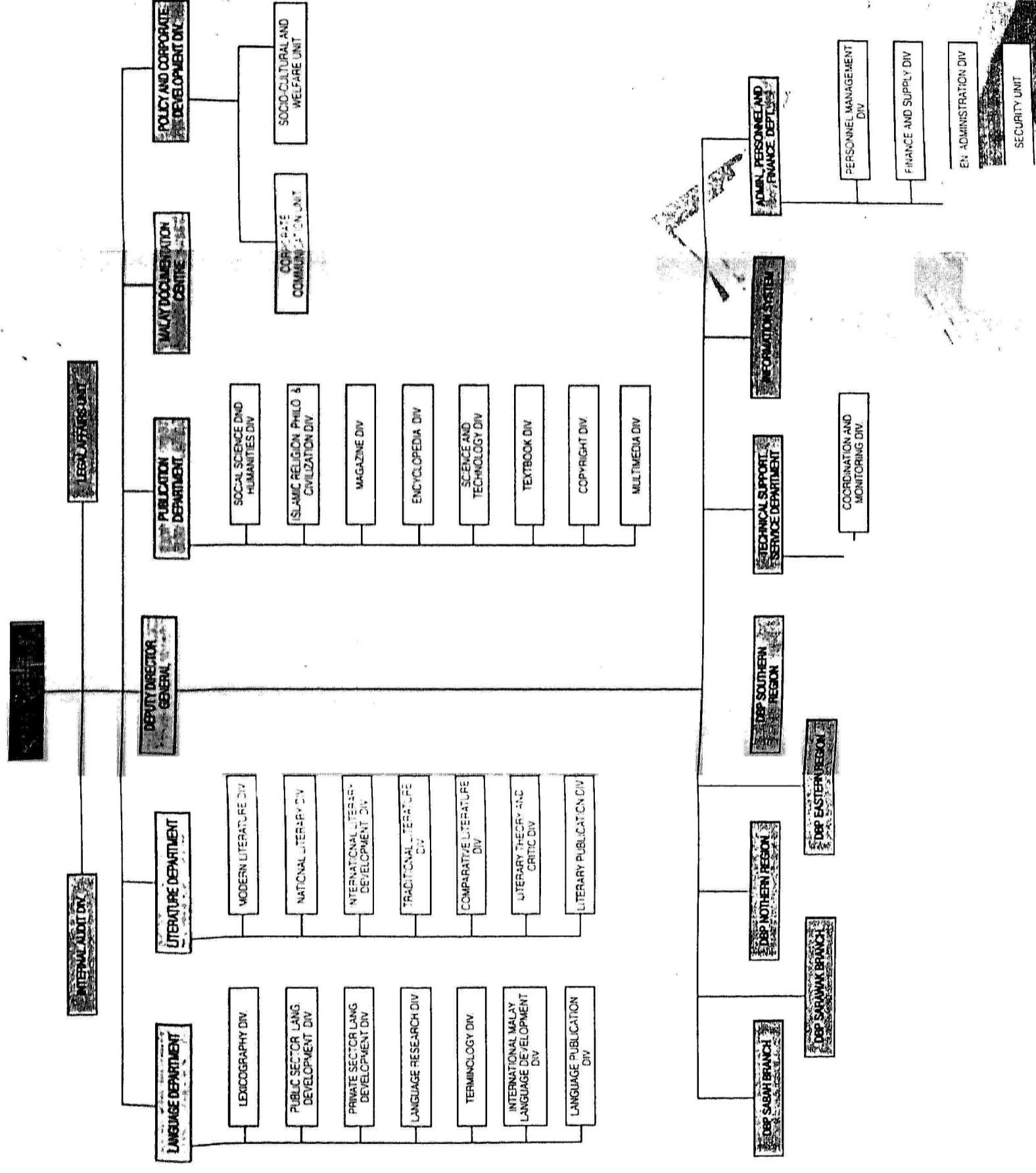
1. Lexicography Division
2. Public Sector Language Development Division
3. Private Sector Language Development Division
4. Language Research Division
5. Terminology Division

Figure 1.2

DEWAN BAHASA DAN PUSTAKA ORGANISATIONAL CHART

(Effective 1st June 2002 - taken from Citra DBP 2002: 15)

DEWAN BAHASA DAN PUSTAKA ORGANISATIONAL CHART (1 JUNE 2002)



6. International Malay Language Development Division
7. Language Publication Division

The **Literature Department** comprises the following:

1. Modern Literature Division
2. National Literary Division
3. International Literary Development Division
4. Traditional Literature Division
5. Comparative Literature Division
7. Literary Theory and Critic Division
8. Literary Publication Division

The **Publication Department** comprises the following:

1. Social Science and Humanities Division
2. Islamic religion, philosophy and Civilization Division
3. Magazine Division
4. Encyclopedia Division
5. Science and Technology Division
6. Textbook Division
7. Copyright Division
8. Multimedia Division

The Publication Department with its eight divisions is important for the focus of my study as it deals with the publication of resources which are useful to translators for their translation tasks. Therefore the details of each of the eight divisions are given in **Appendix B**. The other departments are not dealt with in detail because they do not deal directly with my research.

The **Malay Documentation Centre** is on its own with no divisions.

The **Policy and Corporate Development Division** comprises the following:

1. The Corporate Communication Unit
2. The Socio-Cultural and Welfare Unit

Branches in East Malaysia

In 1977, DBP extended its wings to East Malaysia, that is in Sabah and Sarawak

Branches in the Northern, Eastern and Southern Regions of West Malaysia

DBP opened its other branch offices in the Northern Region in Bukit Mertajam, Penang in 1999, the Eastern Region in Kota Bharu, Kelantan in 1999 and the Southern Region in Johor Bharu, Johore in 2000.

1.1.3.2.6 Services Provided by DBP

The services provided by DBP by the various divisions, the translation programmes offered to translators and the modernization and computerization of the Malay language corpus are discussed in **Appendix A**.

1.1.4 The Coining of Terminology

This research does not deal with terminology coinage. Under this section, the researcher will give the viewpoints on how terminology is coined at DBP as given by Hasnah Mohamad, a DBP Language Planning Officer. However the steps involved in terminology coinage given by an officer of the terminology division at DBP who wishes to remain anonymous and by the experienced linguist, Asmah (1979) in a documented form can be found in **Appendix B** under DBP (the Institute responsible for terminology coinage in Malaysia). A **sample terminology list** is also given in **Appendix B**.

The researcher e-mailed Hasnah Mohamad, a language planning officer in the terminology division in DBP and asked her for the latest process involved in terminology coinage at DBP. In her e-mail to the researcher dated 7th May 2003, given in **Appendix C**, Hasnah (2003) gave the steps involved in the process of terminology

coinage in the fields of science and non-science, which according to her is the same. In short, the process as interpreted from Hasnah Mohamad's e-mail by the researcher is as follows:

1. there must be a source language term first (whether in English or any other foreign language)
2. find the meaning of the source language term first and then find its equivalent term in the target language (Malay language) according to the following order of priorities:
 - a. choose a term in standard Malay or if it cannot be found, then choose the term from any other Malay dialect
 - b. if choice (a) above is not possible, then choose a term from the Malay language family for example from the Indonesian or Javanese languages
 - c. if even (b) is not possible, then retain the source language term but modify its spelling according to the Guidelines for Malay Language Spelling which is published by DBP
 - d. if choice (c) is not possible, the last choice is to borrow the term fully as it is in the source language without any change in spelling

According to Hasnah Mohamad, presently the process of terminology coinage involves a lot of translation work because there have been no innovations or breakthroughs, for example in inventing a new tool or in finding a panacea for a new disease. She feels that presently we are still borrowing the source language terms and translating them. She suggests that if we can find a new tool, then we can give the Malay term immediately for processes, things etc. According to Hasnah Mohamad, DBP, with the help from authorities in Brunei and Indonesia, has published a book

entitled *Pedoman Umum Pembentukan Istilah Bahasa Melayu* (1972) and she recommends it for further details on terminology coinage.

1.2 Statement of the Problem

The main problem that the researcher wants to investigate is the reasons for the slow process of translating scientific texts from English to Malay in Malaysia. Presently, translation cannot cope with the timely transfer of scientific information which is generally published in the English language. The researcher thinks that the problems in translation are two-fold. One has to do with the translation process itself while the other has to do with the external factors involved in the publication of translated science books in the Malay language.

The main focus of this study is to investigate the internal translation process, that is the processes that go on in the minds of translators while they are translating scientific texts from English to Malay. This will be done using a suggestive case study approach comprising five part-time Malay translators from the University of Malaya who have volunteered to be the participants for this study. The research methods used are think-aloud protocols (TAPs) and interviews. From the findings, the researcher will investigate the problems and identify the sources of the problems that slow down the translators' translation process while translating. These may be related to terminology, style and concord of scientific writing, coping with the different structures of the source language and target language, using inappropriate approaches and strategies, not having sufficient translation tools, lacking the knowledge involved in translating, lacking expertise in the field they are translating, doing translation on a part-time basis and thus not concentrating fully on the translation task etc.

Besides understanding the problems faced by translators during their translation process, the current situation of translation of scientific texts from English to Malay in

Malaysia, which will be the background to this study, will also be investigated. The research methods used will be a questionnaire and interview. The translators who respond to the questionnaire will be the participants for the investigation of the current situation of translation. The questions that will be asked in the questionnaire will be about the translators' backgrounds, training in translation, experience in translation, the translation process, payment for translation and the publication of their translated science books and materials. From the feedback, the researcher will investigate the general problems faced by translators of scientific texts from English to Malay.

Puan Sa'odah, an officer at the translation division of DBP, will be the participant for the interview on the process of publishing a completed translated science textbook by DBP. The purpose of this interview is to get an insight on how translated science books from English to Malay are published and also about the performance of these books in the market. From the feedback, the researcher will get an understanding of the problems involved in the editing process of translated science texts and the problems faced in publishing and later marketing the translated science books and materials in the Malay language.

From this study, the researcher will be able to understand the problems faced by translators and the reasons for the slow translation process of scientific texts from English to Malay. The consequences of this slow translation process may be an inadequate, out-dated supply of translated Malay science texts for the undergraduate and postgraduate students in the universities. As the production is low and slow, it probably may not be able to keep pace with the knowledge explosion that is going on daily at a mind-boggling speed in the fields of science and technology. This slow translation process will result in a slow transfer of knowledge in these fields. This may affect our education system. In an effort to keep our graduates up-dated with the latest in the

fields of science and technology, steps have to be taken by the government to correct this situation now. This is necessary so that our Prime Minister's Vision 2020 to see Malaysia become an industrialized and developed nation, will be realized.

From the findings obtained from this study, the researcher hopes to give suggestions on how translators can solve their problems which they face while translating, be it regarding terminology, strategies, approaches etc which will be discussed in this study. The findings from this study and suggestions by the researcher can be used by teaching staff at translator training institutions to further improve their translation programmes. In this way, the researcher hopes that future translators will be able to improve their translation process of scientific texts from English to Malay to ensure clear, accurate and natural translation products. This will ensure that their translated science books will be in demand by science students, science lecturers and other interested parties. From the findings, the researcher will give recommendations for better and speedier translation of scientific texts from English to Malay. This will ensure that their translated science books will be available in the market as soon as possible.

Even though the government has given the green light to allow science and technology to be taught in the English language, Malaysians must never let the spirit of translating scientific texts from English to Malay die because there may be some of our citizens who are weak in English and who would prefer to get this knowledge in the Malay language. Therefore translation must be made into a National Agenda in Malaysia. The translation industry of scientific texts from English to Malay has to be improved via further research in the field of translation. The researcher hopes that this study will be of help to future researchers and our translation officers at DBP and ITNMB so that they can understand the translation process thoroughly and use the ideas

given in this research to further improve their translation programmes. Through this study, the researcher hopes to fulfill the objectives of this study which are listed below in section 1.3

1.3 Objectives of the Study

The general objective of this study was to investigate the problems affecting the translation process of scientific texts from English to Malay in Malaysia. Here the researcher investigated the current situation of translation of scientific texts from English to Malay. This was carried out through the findings obtained from fifty questionnaires and an interview.

The specific objective of this study was to investigate the internal translation process of English language scientific texts to the Malay language. This was an in-depth case study involving five non-professional Malay part-time translators from the University of Malaya. This was carried out through the findings obtained from their think-aloud protocols (TAPs) and interviews.

From the researcher's informal observation as an English language teacher of the strategies that second language learners employ in the classroom, from the researcher's own informal analysis of the translation process of a scientific text by a colleague, from the researcher's own experience of translating and from discussions with translators has led the researcher to believe that **there are similarities in approach and features between language learning and the translation process**. In other words, the researcher will investigate if all the principal direct and indirect strategies proposed by Oxford (1990) and O'Malley and Chamot (1990) in their models on language learning strategies were used by the participants. Based on this intuitive knowledge, the researcher set out to explore the translation process in light of the well-known and proven Oxford's (1990) and O'Malley and Chamot's (1990) models of SILL

or Strategy Inventory for Language Learning. To confirm this intuition, the researcher decided to investigate the internal translation process by mapping Oxford's (1990) and O'Malley and Chamot's (1990) models of language learning strategies on to the translation process or practice via TAP transcripts of five Malay part-time translators of scientific texts from English to Malay.

Therefore based on this intuition, the following objectives were explored:

1. to find out the current situation of translation of scientific texts from English to Malay
2. to find out what are the direct and indirect language learning strategies used by the participants in their Think-Aloud Protocols (TAPs) based on the taxonomies on language learning strategies proposed by Oxford (1990) and O'Malley and Chamot (1990)
3. to find out if there are other strategies used besides the direct and indirect language learning strategies put forward by Oxford (1990) and O'Malley and Chamot (1990)
4. to find out the steps or sequences involved in their translation process
5. to find out the approaches they use in their translation process based on the translation models put forward by Bell (1991), Sager (1994) and Darwish (1989,1995, 1999)

Henceforth, this study aimed to answer the research questions mentioned in section 1.4 below.

1.4 The Research Questions

The research questions for this study based on the objectives which are stated in section 1.3 are as follows:-

1. What is the current situation of translation of scientific texts from English into Malay?

2. What are the direct and indirect language strategies used by the participants in their TAPs based on the taxonomy of language learning strategies proposed by Oxford (1990) and O'Malley and Chamot (1990)?
3. What are the other strategies used in their TAPs besides those provided in the Language Learning Taxonomies put forward by Oxford (1990) and O'Malley and Chamot (1990)?
4. What are the steps involved in their translation process?
5. Based on the translation models proposed by Bell (1991), Sager (1994) and Darwish (1989, 1995, 1999), what are the translation approaches used by the participants while translating?

The research instruments used in this study were Think-Aloud Protocols (TAPs), interviews and a questionnaire.

1.5 Limitations of the Study

This study investigates the process of translating only English language scientific texts to the Malay language in Malaysia. It investigates the current situation of translation of scientific texts from English to Malay in Malaysia, which is the background to this study. Here matters such as the participants' qualifications, training obtained, the sequence used while translating, the duration of time taken to translate a page of about 250 words, the problems faced while translating and the steps taken to overcome these problems, the payment obtained for translating and recommendations by experienced translators, that is those having three or more years of experience in translating and recommendations for better and speedier translation of scientific texts from English to Malay will be discussed.

The internal translation process, that is the processes that go on in the minds of the participants while translating, is the main focus of this study and it will also be

investigated via TAPs and interviews. The transcriptions of the TAPs will be analysed by the researcher and then matched against, in other words mapped on to, the direct and indirect language learning strategies proposed in Oxford (1990) and O'Malley and Chamot's (1990) language learning strategies models to see if all these direct and indirect language learning strategies are used while translating by the participants and also to investigate if there are other strategies used in their translation process besides these.

The language learning strategies are used because the participants in this study are all actually learning the source and target languages further as they solve the problem of finding the closest, natural matching equivalent terms in the target language. All the part-time translators who were the participants for this study are graduates and are thus advanced language learners. Furthermore, the language learning taxonomies by Oxford (1990) and O'Malley and Chamot (1990) have been used for many language tasks and translation is also a language task as it deals with two languages, besides dealing with other aspects such as culture, concepts, linguistics, communication, context and writing. Therefore, the researcher feels that the use of Oxford's (1990) and O'Malley and Chamot's (1990) models of these direct and indirect language learning strategies are relevant as a basis to investigate the translation strategies used by the translators in their translation. The analysis of the transcriptions of the translated texts via TAPs is for the purpose of finding out whether these and other translation strategies are used and also to understand the sequence or steps involved in their translation process.

As this study deals with the process of translating scientific texts from English to Malay, the findings may therefore not be generalised to other texts such as literary texts or to other processes of translating using other pairs of languages. As a result, future researchers using other contexts, that is dealing with other pairs of languages or other

text-types will have to carry out further experimentation and research to prove their findings.

The research instruments used for this study are a questionnaire, interview and think-aloud protocols (TAPs). Even though 120 questionnaires were distributed by hand, via post and e-mail to part-time translators in all institutions of higher learning, colleges, ITNMB, broadcasting stations etc., only 50 part-time translators responded. The researcher waited for two years to get their responses and even though many reminders and phone calls were made, there was no response from them. In the end the researcher had to accept this number and this was a limitation to this study.

For the internal translation process via think-aloud protocols and interviews, even though ten experienced, part-time translators from all local universities in Malaysia were approached, only five from the University of Malaya finally agreed to participate after much persuasion. The others gave excuses such as a heavy work commitment and being not confident enough in articulating their thoughts aloud while translating. TAPs consume a lot of time and it was because of this that many of the part-time experienced translators declined to be participants for these. As the main focus of this study was the internal translation process, the researcher decided to use these five participants only and took on a **suggestive case study approach** to investigate the problems they faced while translating scientific texts from English to Malay. This too was a limitation of this study.

The part-time translators chosen for this study are only those who are involved in the translation of English language scientific texts into the Malay language. They are non-professional, part-time translators.

The translation product in this study is not investigated and the structures of the English language and the Malay language used in the translation task are not analysed and studied.

Techniques of translation and translation procedures are not covered in this study. Machine translation and interpreting are not investigated and thus are not included in this study.

Furthermore, an in-depth study of scientific terminology will not be carried out. A short section on how scientific terminology is planned and coined is mentioned in Chapter One and Appendix B but in-depth techniques on how to coin technical and scientific terms using various approaches from English to Malay will not be investigated as terminology is not the focus of this study.

1.6 Definition of Terms

Below are some definitions of terms as used in this study:

1.6.1 Scientific Translation. For this study, scientific translation refers to the translation of English language scientific texts into the Malay language. The word 'scientific' refers to an investigation etc according to rules laid down in exact science for performing observing and testing the soundness of conclusions; systematic and accurate and used in or relating to especially the natural sciences - the sciences used in the study of the physical world e.g. physics, chemistry, geology, biology and botany; assisted by expert knowledge (The Oxford English Reference Dictionary: 1995). The word 'science' is the systematic study of the nature and behaviour of the material and physical universe, based on observation, experiment, measurement and the formulation of laws to describe these facts in general terms. It is the knowledge so obtained or the practice of obtaining it. It is also any particular branch of this knowledge: the pure and applied sciences (Collins English Dictionary, 1991). For this study Scientific

Translation is the translation of special language texts, that is, texts written using Languages for Special Purposes (LSP). As such it includes not only the translation texts in engineering or medicine, but also such disciplines as economics, psychology and law. These texts require not only a firm mastery of both the source and target languages, but also at least an informed layman's understanding of the subject field treated by the text, coupled with the research skills needed to write like an expert on the leading edge of technical disciplines. Scientific translators are typically either trained linguists who develop specialised research skills along with ancillary knowledge in selected areas, or engineers, scientists and other subject-area specialists who have developed a high degree of linguistic knowledge, which they apply to the translation of texts in their fields of specialisation. Because of the diverse know-how demanded for producing high quality scientific translation, collaboration among linguists and subject specialists is not uncommon (Wright 1993:1). For this study, the participants fulfilled this criteria of being subject specialists and being good at both English language and the Malay language.

1.6.2 Text. A text is any passage, spoken or written, of whatever length which forms a unified whole. A text may be considered from the point of view of its structure and/or functions, e.g. warning, instructing, carrying out a transaction. A full understanding of a text is often impossible without reference to the context in which it occurs (Richards et al., 1992:378). The idea of the text as the basic unit of translation was first introduced by Jean-Paul Vinay and Jean Louis Darbelnet (1977). It was their greatest contribution to the field of translation. According to Halliday and Hasan's explanation of the concept of text (1976:18-28), coherence is dependent on the cohesion within the text and the context of situation. Translation, according to them is communication and is always text-bound dealing with text wholes and not items in isolation.

De Beaugrande and Dressler (1981 in Darwish 1989:1) define the text as a communicative occurrence which meets seven standards of textuality. These standards of textual communication according to them are cohesion, coherence, intentionality, acceptability, informativity, situationality and intertextuality. Reiss (1971,1976 in Darwish 1989:2) suggests that there are basically three types of texts, according to whether they place emphasis on content, form or appeal. Similarly Nida (1975 in Darwish 1989:2) distinguishes between the expressive, informative and imperative functions of text, adding that the reader will often be totally reliant on context to determine how to interpret a particular text. For this study, a text refers to a written piece of writing. Only texts on science were used for this study.

1.6.3 TAPs. They are Think-Aloud Protocols, whereby participants who are faced with the task of translating, are asked to say aloud, whatever comes to their minds, while they are working on the translation. Dechert and Sandrock (1986:115) suggest that the verbalisations are recorded and transcribed for analysis to detect the strategies used in the production of a translation. According to them, the claim is that this method “allows particular analyses of the levels, steps, units of processing, the role and the interaction of the source and target languages, the amount of proceduralisation, the origin and course of search processes, and the times used for these processes”. TAPs are useful for studying underlying thought processes (Dechert & Sandrock 1986:115). The TAPs used in this study were implemented in the manner as described above, to understand the internal translation process among translators of English language scientific texts to the Malay language.

1.6.4 Cognitive Processes: Cognitive processes or cognitive strategies are any mental processes which learners make use of in language learning, such as inferencing, generalising, deductive learning, monitoring and memorising (Richards et al.: 1992:60).

For this study, the participants were considered to be learners who had to use mainly cognitive strategies to solve their problem of reproducing the original English language scientific text into the Malay language based on the context of the situation. 'Cognitive strategies' are one of two kinds of learning strategies employed by learners in carrying out language learning tasks, the other being metacognitive strategies. Cognitive strategies according to Richards et al. (1992:60) refer to processes and behaviour which learners use to help them improve their ability to learn or remember something, particularly those which learners use with specific classroom tasks and activities. For example, cognitive strategies which learners may use to assist them in listening or reading comprehension activities include:

- a. repeating key words or phrases silently or aloud
- b. summarising to make sure the important information will be remembered
- c. creating visual images to help them remember new information

(Richards et al.:1992: 60-61)

For this study, the researcher saw that the participants too were coping with two languages and were using mainly cognitive and metacognitive strategies to help them solve their problem of translating the English language scientific texts into the Malay language.

1.6.5 Metacognitive Strategies: Metacognitive strategies involve thinking about the mental processes used in the learning process, monitoring learning while it is taking place and evaluating learning after it has occurred. For example, metacognitive strategies a learner may use when he or she is beginning to learn a new language include:

1. planning ways of remembering new words encountered in conversations with native speakers;

2. deciding which approaches to working out grammatical rules are more effective;
3. evaluating his or her own progress and making decisions about what to concentrate on in the future.

(taken from Richards et al. 1992: 227)

In this study, the researcher actually saw how while translating, the translators used the metacognitive strategies to manage their translation task that is how they planned, made decisions and then implemented their decisions, monitored and evaluated their translation product.

1.6.6 Meme. According to Chesterman (1997:5), translations are survival machines for memes. The concept of meme, according to Chesterman comes from sociobiology, where it was introduced by Dawkins in *The Selfish Gene* (1976). Dawkins explains how he wanted a term which would be parallel to 'gene' to describe the evolution of cultural phenomena, which (he argues) are subject to the same kinds of Darwinian laws of natural selection as genes proper. Chesterman (1997:5) suggests that a meme is a unit of cultural transmission, or a unit of imitation. Examples of memes are tunes, ideas, catch phrases etc. Just as genes propagate themselves in the gene pool by leaping from body to body via sperms or eggs, so memes propagate (increase in numbers) themselves in the meme pool by leaping from brain to brain via a process which in the broad sense can be called imitation. If a scientist or translator hears or reads about a good idea, he passes it on to his colleagues and students. He mentions it in his articles and lectures. If the idea catches on, it can be said to propagate itself, spreading from brain to brain. Thus, memes in translation are basically the transfer of ideas in translation theory (Chesterman 1997:5).

1.6.7 Translation Procedures. Translation procedures according to Darwish (1999:7) consists of procedures that are employed to ensure that the translation process/

activities/tasks are carried out in accordance with a pre-defined business methodology or practice. It is a particular course of action through which the translation process is carried out. For example, in the editing stage, what proofreading marks to use, and who does what are defined as part of a specific procedure to ensure that the translation is free from errors in terms of accuracy of meaning, correct grammar, sound sentence structure, consistent terminology, consistency of style and compatibility of writing style with the subject matter, completeness of information, cross-references, page numbering and so on. Without procedures defining how these activities should be performed, especially where other people besides the translator are involved, the translation event is reduced to an unprofessional and amateurish activity.

1.6.8 Source language. For this study the source language refers to the English language. It is the language out of which a translation is made (Richards et al. 1992: 341).

1.6.9 Target language. For this study the target language refers to the Malay language. It is the language into which a translation is made (Richards et al. 1992:373).