CHAPTER 1
INTRODUCTION

1.1 Rationale of Study

Machine translation (MT) which started in the early 1940s has been researched with different intensity during different periods in the past few decades. At one stage in the United States for example, funding for MT was curtailed drastically following a report by the Automatic Language Processing Advisory Committee (ALPAC) of the US National Academy of Sciences. The said report highlighted that then (1960's) the state of the art of linguistics, artificial intelligence, as well as computer software and hardware was such that interpretation and translation of text by the computer was not feasible. Moreover, as we can now see, computational linguistics as an important field for MT was virtually non-existent at that time.

However, despite immense difficulties encountered in MT, today, at the threshold of the twenty-first century, intensity and diversity of MT research are at an all-time high. MT is currently an area of research and development actively pursued

in Japan, Europe and the United States of America. In fact, October 1997 witnessed the commemoration of the 50th anniversary of MT in a conference entitled *MT Summit VI*. The theme of the conference was *Machine Translation: Past, Present and Future*. In October 1998, the same organization, that is, Association for Machine Translation in the Americas (AMTA), organized its third biennial conference with the theme *Machine Translation and The Information Soup*. The aim of the conference was to examine MT in the context of new language technologies.

The present state of MT is obviously the result of enormous developments especially in the domains of computer science, computer engineering, artificial intelligence, computational linguistics, as well as linguistics as a whole. In addition, such continual efforts and progress could rightly be attributed to the dream of many computational linguists and computer scientists to see MT fulfil the increasing need for massive, timely and inexpensive translation.

While it is gratifying to see the progress achieved so far, up to now, the machine has not been able to translate at the discourse

level and to completely replace the human translator. In other words, so far no MT program has been fully developed to produce output which is on par with that of the human mind yet. This is a fact that has been widely acknowledged in much literature on MT.

The human mind is indeed a very complicated and sophisticated system. Many researchers are not at all optimistic that the machine, or rather the computer can ever substitute the human mind in the translation task. On the other hand, as mentioned above, there are scientists and researchers who continue to work on MT despite its deficiencies. Perhaps some of them have the dream of seeing MT substituting human translation (HT) completely and satisfactorily someday. Hand in hand with these optimists are some researchers who are researching into yet the possibility of such a fulfillment coming true. Clearly, the latter researchers on MT are asking three basic questions:

- Can the machine ever work at the level of the human mind in translation ?

- In what ways is the machine inadequate compared to the human mind in translation?

- What are the differences between the process of translating in the human mind and that in the MT system?

It is based on the current inadequacy of MT and the above questions that this study is undertaken. This study draws upon the fact that, while the computer is expected to translate in substitution of the human mind, the human mind basically works differently from the computer: what a computer does is called instructional operation, while what a translator, as a human, does is cognitive operation.

1.2 Main Concepts/Ideas Entailed in Study

1.2.1 Complexity of Cognitive Processes: Instructional Operation vs Cognitive Operation

As pointed out by Stillings, Feinstein, Garfield, Rissland, Rosenbaum, Weisler and Baker-Ward (1989), a computer program works by preserving a representational relationship in some formal operations. For example, a computer program that multiplies numbers or manages database performs formal

operations on symbols that have a well-defined representational relationship to a particular domain. Here the forms of intelligence or understanding are accessible.

On the other hand, things are not so simple with biological organisms like the human brain. The human mind, as described by Stillings et al, "was not built by a team of engineers and programmers who can just hand over the blueprints and programs". (op.cit:4) The processes and representational relationships involved in human intelligence, they argue, are extremely complex and may only be discovered through extensive research.

According to Stillings et al (op.cit:1-4), while the word 'cognitive' could be simply referred to as 'perceiving' and 'knowing,' cognitive scientists view the human mind as a complex system that 'receives', 'stores', 'retrieves', 'transforms' and 'transmits' information. Among other mental phenomena -- such as perceiving, thinking, remembering and learning -- cognitive scientists seek to conceptualize how 'language understanding' is achieved.

1.2.2 Translating as a Cognitive Phenomenon

While cognitive scientists view the human mind as a complex system that 'receives', 'stores', 'retrieves', 'transforms' and 'transmits' information, this study sees all these cognitive tasks as part and parcel of the process of translating. At the very least, and on a superficially non-technical level, translating can be seen as transforming and transmitting information; and it is achieved with the combined effort of retrieving the encyclopedic knowledge/old information that has previously been received and stored in the human mind.

In essence, this study takes a cognitive view of translation. Specifically, this study takes the challenge to apply a cognitive theory to explain translation and particularly problems related to MT. The cognitive theory used towards this end in the study is Sperber and Wilson's (1986) **Relevance Theory.**

1.2.3 Relevance Theory: Its Application in Study

While there is a host of concepts and theses in **Relevance Theory**, this study selectively applies only the following three of them:

i) Verbal communication is a cognitive phenomenon;

ii) Verbal communication consists of two (2) communication processes, that is, encoding-decoding and inferencing;

iii) The human mind focuses on the most relevant [1]information available

1.2.3.1 Verbal Communication as a Cognitive Phenomenon

In **Relevance Theory**, verbal communication is perceived to involve no transportation of thoughts at all from one mind to another. As argued by Sperber and Wilson, should the above be the case -- just as programs and data stored on a magnetic disk can be transported from one computer to another -- then communication would be unnecessary. Sperber and Wilson's assertion is that verbal communication takes place in the

human mind. More precisely, they assert that communication takes place in the [2]mutual cognitive environment of the [3]speaker and the [4]hearer.

In this study, translation is recognized as a form of verbal communication. Therefore, in applying the above concept of **Relevance Theory**, this study sees the task of translating as taking place between the minds of the source text author (speaker) and the translator (hearer), as well as between the minds of the translator (speaker) and the translated text reader (hearer). Here the translator is seen as playing the roles of the speaker and hearer respectively at different stages of the translating process.

1.2.3.2 Two Communication Processes in Verbal Communication

According to **Relevance Theory**, verbal communication consists of two processes, namely coded communication process and inferential communication process. Coded

communication process is based on the encoding and decoding of meaning; on the other hand, inferential communication process is based on intention (on the part of the speaker) and inference (on the part of the hearer).

The above could be depicted as follows:
Firstly, on the speaker's side, meanings in utterances are encoded in the form of linguistic strings (i.e. linguistic descriptions). Then on the hearer's side, the linguistic strings are decoded to recover the semantic representations and hence the linguistic meanings. This encoding-decoding mechanism makes up the first communication process, which is based on the code model.

Thereafter, the second communication process, which is based on the inferential model, takes place on the hearer's side only. This sees the hearer drawing upon three elements -- namely the ostension (i.e intention) of the speaker, [5]explicatures of the utterance and the contexts -- to make inferences from the linguistic meanings that have been derived from the first communication process. As a result, the pragmatic meanings of the utterance are brought forth.

Comprising two different communication processes, the above is a complete course of verbal communication from the perspective of **Relevance Theory**.

However, in the context of this study, the above is perceived as merely the first part of a 'two-tier communication process' involved in translation. In other words, in this study, translation is deemed to comprise two tiers of communication, where each tier of communication consists of the two communication processes maintained in **Relevance Theory**.

The following is this study's account of the aforementioned notion of 'two-tier communication' in translation, including how analogies are made with regard to elements in translation and verbal communication:

ANALOGIES:

* **First Tier of Communication** is identified with communication between the source text author and the human translator or the MT software in the case of MT.

* **Second Tier of Communication** is identified with communication between the human translator or the MT software and the translated text reader

First Tier of Communication:

Analogies:

	Identified with
source text author	speaker
human translator/MT software	hearer

Communication Processes Involved:

The source text author encodes meanings of utterances in the form of linguistic strings in the source text. The translator/MT software then decodes the linguistic strings to recover the linguistic meanings of the utterances in the source text. This completes the first communication process i.e. coded communication process. Next, the translator (supposedly also the MT software) recovers the pragmatic meanings of the utterances in the source text through the ostension-inferential communication mechanism as maintained in **Relevance**

Theory. This completes the second communication process, i.e. inferential communication process

Second Tier of Communication

Analogies:

	identified with
human translator/MT software	speaker
translated text reader	hearer

Communication Processes Involved:

The translator/MT software encodes meanings of utterances/sentences in the form of linguistic strings in the translated text. The translated text reader then decodes the linguistic strings in the translated text to recover the linguistic meanings of the utterances/sentences in the translated text. This completes the first communication process i.e. coded communication process. Next, the translated text reader recovers the pragmatic meanings of utterances (supposedly present in the translated text) through the ostension-inferential communication mechanism as maintained in **Relevance Theory**. This completes the second communication process, i.e. inferential communication process.

1.2.3.3 'Relevance' in Human Communication

Cognitive processes, according to Sperber and Wilson (1986), are geared to achieve the greatest possible cognitive effects for the smallest possible processing effort. To achieve this, Sperber and Wilson believe the **human mind** focuses on the most relevant **information available**. As such, they maintain that the key to an explanation of **human communication** lies in the notion of 'relevance': **to communicate** is to claim an individual's attention; and hence, to communicate is to imply that the **information communicated** is relevant.

In this study, a few elements of the above thesis are identified with elements in translation (HT and MT), that is, at the level of communication between the translator and the translated text reader:

* human mind -- the mind of the translated text reader
* information available -- information present explicitly or implicitly in the translated text
* human communication -- translation
* to communicate -- to translate

* information communicated -- information relayed in the translated text

1.2.4 Context

One very important fundamental in this study is the close relation between context and 'relevance': 'relevance' is a notion based on context. Also, information may be relevant in one context but irrelevant in another context.

1.2.4.1 Context in Relation to 'Relevance' (Cognitive Sense)

In **Relevance Theory**, 'context' is a psychological construct just like 'relevance'. As Sperber and Wilson describe it, "a context is a psychological construct, a subset of the hearer's assumptions about the world" (op.cit:15). More precisely, according to Sperber and Wilson, a context is not limited to information about the immediate physical environment or the immediately preceding utterance; it includes a host of other cognitive elements such as expectations, hypotheses, beliefs,

memories and assumptions of the hearer, as well as beliefs about the mental state of the speaker.

Being a psychological construct, context plays a crucial role in the inferential process, and thus in the interpretation of utterances. Also, according to Sperber and Wilson, the interpretation of each new utterance in a discourse requires a rather different context as the interpretation of the previous utterance has become part of the context.

Lastly, in **Relevance Theory**, 'context' is not only part of the cognitive environment of the hearer, but also part of the mutual cognitive environment that he shares with the speaker.

1.2.4.2 Context in Relation to Verbal Communication (Linguistic Sense)

In the linguistic sense, context is also a weighty concept. To many linguists, context is important in sorting out ambiguities in spoken and written language. Equally important, as pointed

out by Mey (1993), context differs markedly from language to language.

Describing the concept of context as "notoriously hard to deal with", Mey (1993:8-10) asserts that a context is 'dynamic', 'non-static' and 'proactive': it is an environment that is steadily developing, prompted by the continuous interaction of the users of the language. According to him, it is precisely this dynamic development of the communication process that provides the clue to understanding in communication. Context, in his words, is:

> *the surroundings, in the widest sense, that enable participants in the communication process to interact, and that make the linguistic expressions of their interaction intelligible.* (op.cit:38)

From Mey's words, it can be derived that a context is 'user-oriented' and 'not grammatical': in a concrete setting of context, one looks at how linguistic elements are used, and not at the linguistic elements in isolation. Also, as indicated by Mey, purely linguistic descriptions can never record the

abundant developments that take place in verbal communication between people. As he puts it: "... [a purely linguistic description] is retroactive and static: it takes a snapshot of what is the case at any particular moment, and tries to freeze the picture." (op.cit:10).

What can be succinctly summarized from Mey's assertion on context in relation to verbal communication is this: verbal communication should never be viewed merely from the linguistic perspective but 'in context'.

[The above notions of 'context' by Mey are singled out in this section designedly for the formulation of some of the questions raised in relation to MT in the next section (Section 1.3): they will be used as the basis of the questions.]

1.3 Questions Raised in Study: MT in Relation to Context

1.3.1 MT in Relation to Context: Linguistic Sense

Based on Mey's assertions about the close connectivity between 'context' and verbal communication, a specific question with regard to MT could be raised:

> Does MT take into consideration the relevancy of context in verbal communication?

Paraphrased in more precise terms, the question would be:

> Does MT treat all seemingly similar information in verbal communication alike, regardless of whether the information is relevant to the particular context it is in?

From the above, further questions raised in this study are:

1. Is MT sensitive to ambiguities in the discourse it is dealing with? Can it resolve ambiguities in the discourse, or does it attempt to resolve them at all?

2. Does MT take into consideration the marked differences in the linguistic as well as social-cultural contexts of the two languages it is dealing with?

3. Is MT of a dynamic, non-static and proactive nature, like context, to cater for the varying contexts it is faced with?

4. Does MT take into consideration the interconnectivity of parts of the discourse in the source text in an attempt to understand the total discourse it is dealing with?

In other words:

Does MT attempt to understand the discourse in the source text at all by making sense of its development from the beginning, that is, the unfolding context of the source text?

5. Does MT look at linguistic expressions in the source text in isolation? - Does it understand these linguistic expressions in relation to the discourse it is dealing with or, in a wider sense, in relation to the context of the source text?

6. Is MT user-oriented? Is it user-oriented in the sense that its products are intelligible to the end-users? Is it user-oriented in the sense that it takes into account the end-users' socio-cultural settings? Is it user-oriented in the sense that it takes into account the functional aspect of translation, and hence of the translated text to the end-users?

1.3.2 MT in Relation to Context: Cognitive Sense

Based on the close connectivity between the notion of 'relevance' and context, one of the fundamental inquiries into cognitive process is the role of context in [6]information processing. Specifically, in this study, this fundamental

inquiry is perceived to be applicable to at least three aspects of the translation process in MT. These three aspects are:

i) whether a certain piece of source text information from the source text context is relevant to the 'machine translator' (i.e. MT software) in the same manner and degree as it is relevant to the source text reader;
[Here both the machine translator and the source text reader are the hearers]

ii) whether a certain piece of source text information as relayed in the translated text context -- by the 'machine translator' -- is relevant to the translated text reader in the same manner and degree as the presentation of the said information in the source text context -- by the source text author -- is relevant to the source text reader.
[Here both the 'machine translator' and the source text author are the speakers]

iii) whether a certain way of relaying a piece of source text information in the translated text actually reflects the use

of the target language in the real world (i.e. relevant to the target language context) and thus relevant to the translated text reader (i.e. target language reader).

With the above questions and those in Sections 1.3.1 being raised specifically in relation to context, any answers to them will shed some light as to whether MT is anywhere near HT in addressing the pervasive phenomenon of context.

1.4 Objectives of Study

Based on all the rationale, concepts/ideas and line of inquiries mentioned above, this study aims to fulfil four objectives.

The first objective is to compare translations produced by a MT software with translations produced by a professional human translator. In other words, the study will utilize human translation (HT) corpora and Machine Translation (MT)

corpora to find out the differences and similarities (if any) between HT products and MT products.

Based on the similarities (if any) and especially differences derived from the above, the second objective of this study is to carry out a **comparative evaluation** of the said HT products and MT products. This will be carried out specifically from the perspectives of the selective concepts/theses of **Relevance Theory** as identified in Section 1.2.

Due to the significance of context to the above-mentioned concepts/theses, it will be given much consideration in the evaluation attempts.

The above constitutes **comparison of product** between HT and MT. The third objective of this study is to carry out a **comparison of process** between HT and MT. It will be carried out from the same perspectives and with the same consideration as those of the comparison of product.

A point to highlight here is that the comparative evaluation of both translation product and translation process will be carried out simultaneously and not separately. In other words, the data analysis of this study consists in concurrent comparative evaluation of HT product/MT product and HT process/MT process. This will be carried out in Chapter 4.

Generally speaking, and in broad terms, throughout the comparative evaluation attempt, an attempt will be made to explore the cognitive aspects of the translating activity with regard to natural language, verbal communication, language understanding and utterance interpretation.

Thereafter in Chapter 5, based on the findings of the comparative evaluation of HT product/MT product and HT process/MT process, this study will attempt to answer the questions put forward in Section 1.3 of this dissertation. This is in effect the ultimate objective of the study.

In a nutshell, the ultimate objective of the study is to postulate as to whether MT is anywhere near HT in terms of addressing two phenomena, namely: i) context; ii) 'relevance'.

Due to the interconnection between context and 'relevance' in utterance interpretation, this study deems it necessary that the phenomenon of context be addressed in the HT and MT processes. With regard to MT process specifically, this study takes the following standpoint: It is only when context is addressed that MT can be postulated to be anywhere near to being an adequate mechanism of translation. Otherwise, an alternative mechanism that accounts for 'context in utterance interpretation' has to be sought and developed to provide an explanatorily more adequate model for MT.

1.5 Areas of Study

According to Sager (1994), MT is nowadays often researched in specially created computational linguistics research centers, if not in the departments of linguistics. This is the result of

much development in computational linguistics by the end of the 19th century. In addition, artificial intelligence, commonly known as AI and a sub-field of computer science, is one of the components in MT research. In fact, since its inception in the 1960s', AI has been widely applied in MT programs.

Nevertheless, in this study, MT is addressed within the field of linguistics, specifically pragmatics and translation studies (applied linguistics).

1.5.1 Pragmatics

This study is attributed to the area of pragmatics for a number of obvious reasons.

Firstly, this study is concerned with the relations between language and context in the interpretation of utterances. As Levinson (1983) defines it, "pragmatics is the study of the relations between language and context that are basic to an account of language understanding" (op.cit:21). Also, in Levinson's words, "pragmatics is the study of those relations

between language and context that are [7]grammaticalized, or encoded in the structure of a language" (op.cit:9).

As an integral part of the above definitions of pragmatics, language understanding is taken to involve a great deal more than knowing the semantic representations of words uttered and the grammatical relations between them; above all, it involves the making of inferences. This point of view obviously corresponds with one major fundamental of this study that concerns the role of inferencing in verbal communication (refer to Section 1.2.3.2). Such a correspondence can rightly be seen as the basis of attribution of this study to pragmatics.

Thirdly, this study is very much concerned with application of non-linguistic knowledge besides linguistic knowledge in utterance interpretation. The importance accorded to non-linguistic knowledge sees this study fit into the domain of pragmatics, in line with the following assertion of Blakemore (1992):

> *... there is a distinction between a hearer's knowledge of her language and her knowledge of the world... it is this*

distinction that underlies the distinction between semantics and pragmatics. (op.cit:39)

Fourthly, the attempt in this study to address utterance interpretation (in translation) from the cognitive perspective accords with yet another view of Blakemore (1992:26) concerning pragmatics. This view can be worded as follows: A universal theory of utterance interpretation which is based in human cognition should be placed on par with an account of how socio-cultural factors affect interpretation. The underlying basis for this view of Blakemore can be traced to yet another viewpoint of hers which could be summed up as follows: Although there is no conflict between the social approach (by Leech, 1983) and the psychological approach to pragmatics, the socio-pragmatics phenomena necessarily hinge on some answers within the framework of a psychological theory of utterance interpretation. (Blakemore, 1992: 47-48)

1.5.2 Translation Studies

With one of its objectives being the comparison and evaluation of MT products against HT products, this study necessarily concerns translation studies.

While translation products play a role in this study, they however serve mainly as a means towards an end: they are used as the basis for another objective, that is, discussion of the disparities between MT process and HT process in a cognitive framework. This means that this study is mainly about translation as a process rather than as a product.

In essence, the fact that translation is addressed from the cognitive perspective requires that this study perceives translation on the whole as a process. As Edmondson in House and Blum-Kulka (1986: 129) points out, in order to handle cognition, translation and discourse in a unified way, it is necessary to treat translation as a process, that is, as "an exclusively human activity taking place in real time." This, he argues, would require addressing the cognitive processing in the translating activity.

While translation is often said to be at once a science and an art, in this study, translation is certainly addressed as a science. This claim is based on two grounds. Firstly, in this study the translating activity/process is subjected to scientific description, explanation and analysis. Secondly, the translating activity/process is investigated from the cognitive perspective. The following assertion of Wilss (1982) can be seen to support the aforementioned bases of argument:

> *the science of translation is neither a nomologically nor a nomothetically sealed science but rather a cognitive/ hermeneutic/ associative one which captures linguistic utterances in a dynamic way. (op.cit:13)*

Also, according to Bassnett (1980), the myth of translation as a secondary activity against being a science

> *can be dispelled once the extent of the pragmatic element of translation is accepted, and once the relationship between author/translator/reader is outlined.*
> *(op.cit:37-38)*

In addressing translation in the context of pragmatics, and in taking into account the translator's role in the context of speaker-hearer relationship in the channels of communication in translation (as explicated in Section 1.2.3.2), this study doubtlessly fulfils Bassnett's requirements for the science of translation.

1.6 Limitations of Study

As pointed out in the preceding section, although MT very much belongs to the domains of artificial intelligence (a sub-field of computer science) and computational linguistics, this study does not address these two domains. It essentially concerns the functional aspect of MT, that is, its efficacy. As such, this study does not account for the technicalities of MT systems and of the computer as a whole; it does not detail the instructional/procedural operation of these systems. This is the first limitation of the study.

The second limitation of the study is related to the application of **Relevance Theory**. As mentioned in Section 1.2.3, while

Relevance Theory is a comprehensive theory encompassing a host of concepts and theses, this study selectively identifies only three of them for its investigation of the translation process. Nevertheless, it should be pointed out here that, these three concepts/theses are interrelated with some other concepts/theses in the larger picture of **Relevance Theory**. Therefore, the latter concepts/theses will be mentioned whenever necessary in the analysis of data.

While every effort is made to procure a MT software that is considerably sophisticated and established for the purposes of the study, this study in no way claims to assess the state of the art of MT. In the first place, the particular MT software used in this study is not necessarily the most sophisticated/efficient one available as far as the pair of languages involved (English-Chinese) is concerned. This stand is particularly valid in view of the fact that there has been no survey done to identify the most sophisticated/efficient MT software. On the above basis, the term 'MT' throughout this study is not meant to be representational of MT systems as a whole, and this study should be more aptly viewed as a case study of MT

performance. This whole issue constitutes the third limitation of the study.

The fourth limitation is with respect to the source texts used for the study. For the purposes of this study, the themes of the source texts exclude technical and special subjects. This draws upon the fact that, this study is not concerned with MT performance in the translation of technical themes. Its focus is on how MT performs in themes related to human, social or/and societal phenomena. In short, in examining the efficacy of MT, this study is not comprehensive but limits itself to certain subject areas only.

Lastly, there is a limitation in the study's approach to addressing translation. Generally, this study takes a macro view of translation. In this sense, it does not go much into the minute details of translation fundamentals. Neither does it go into details of conventional translation theories. Rather, it concentrates more on exploring the cognitive aspects of the translating activity in relation to natural language, verbal communication, language understanding and utterance interpretation.

1.7 Significance of Study

Based on the Rationale, Objective and Areas of this study as well as the concepts/ideas entailed, this study can be seen to bear significance in several respects, especially from the following perspectives:

1.7.1 Translation as a Science of Cognitive Process

In this study, translation products are used as a means to investigate the translation process, particularly from the cognitive perspective. This means that this study explores translation as an activity, a process rather than a product; a science rather than a linguistic art. In addition, this approach to investigation of translation sees this study going into the deeper dimensions of the translation process and the science of translation as a whole.

Assessing the deeper dimensions, especially the cognitive dimension, of the translation process is deemed necessary in this study. This is in view of the close interrelation between the cognitive process of utterance interpretation and translation.

The according of wider scopes and greater importance to the science of translation is also deemed important in this study. This is based on two considerations. Firstly, translation as a relatively young academic discipline has much room for inquiry and development. Secondly, translation is directly related to modern linguistics which is not only a scientific discipline, but a discipline consisting of other sub-disciplines that are relevant to translation.

1.7.2 Psychological Approach to Pragmatics and Its Pertinence to Translation

The investigation of the close connectivity between utterance interpretation, cognitive phenomena and translation in this study is an application of the psychological facet of pragmatics to translation. Such application in turn brings forth the extensive pertinence of the psychological facet of pragmatics to translation science.

The said pertinence is witnessed in the psychological theories/concepts of utterance interpretation provided in the psychological approach to pragmatics. As demonstrated in this

study, these theories/concepts contribute a very useful framework for the scientific inquiry into the translation process. Specifically, issues related to the cognitive information processing in the translation process can be addressed within this framework.

1.7.3 MT in the Contexts of New Language Technologies and the 'Borderless Word'

In explicating MT process against HT process specifically in communication in the non-technical domains, this study highlights the cognitive phenomena that make a difference between HT and MT in these domains. This in turn will shed light on the status of MT in the contexts of both new language technologies and the 'borderless word' phenomenon -- that is, with regard to whether there is an existent need for improvement of MT performance in the non-technical domains.

The questions that revolve around MT performance in the non-technical domains are deemed important in this study for at least two reasons. Firstly, as the world becomes increasingly 'borderless' as is the trend today, intercultural and interlingual

communication has become increasing necessary. More precisely, the domains of communication across cultural and linguistic differences have become much more varied than before, encompassing more human, social and societal dimensions. Secondly, due to the rapid transformation in modern communications, especially the continuous emergence of new forms of communication (e.g. e-mail, factual database, expert system information etc.), remaining in its conventional technical domains may soon render MT obsolete in relation to some of these new forms of communication. This is especially true in view of the current trend where standardized facilities are being provided by communications engineers and office systems planners to accommodate MT in their communication systems.

[1] In **Relevance Theory**, information is treated broadly, not only as facts, but also as dubious and false assumptions presented as facts.

[2] In Relevance Theory, a 'cognitive environment' of an individual is a set of facts that are 'manifest' to her. A fact is 'manifest' to an individual at a given time if and only if she is capable at that time of representing it mentally and accepting its representation as true or probably true. The same facts and assumptions may be manifest in the cognitive environments of two different persons and result in an intersection of the two cognitive environments called the 'shared cognitive environment' of the two persons concerned. If it is manifest to each person in the shared cognitive environment that the other party is sharing the said environment, then this shared cognitive environment is a 'mutual cognitive environment'. In a mutual cognitive environment, every manifest assumption is 'mutually manifest'.

[3] The speaker is taken throughout this dissertation to be a female. It is used as a technical term to generally mean the author/communicator/addresser.

[4] The hearer is taken throughout this dissertation to be a male. It is used as a technical term to generally mean the reader/listener/audience/addressee.

[5] The term 'explicature' is used by Sperber and Wilson (1986) to mean explicitly communicated assumption

[6] In psychology and psycholinguistics, 'information processing' is a general term for the processes by which meanings are identified and understood in communication.

[7] The term 'grammaticalization' is used by Levinson (1983) in the broad sense to mean the encoding of meaning distinctions