METAPHORS IN THE TRANSLATION OF ENGLISH TECHNICAL TEXTS INTO MALAY: A PRELIMINARY STUDY

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ABSTRACT

Effective and skilful translation of technical texts is not easy to achieve. A translator of technical texts often has to manage the selection of appropriate equivalents such as words, terms, styles, descriptions, proper exposition, discussion and presentation of the scientific concepts and ideas in the target language. This paper is a preliminary study that investigates the extent to which metaphors are used in the translation of English to Malay technical texts the study highlights particular challenges in translating technical texts from English to Malay with the focus on the use and translation of metaphors. Metaphor is significant as it opens alternatives for both translators and authors to present the required information to be in a manner that is more reader-friendly. The discussion of this paper not only centres on metaphors playing an important role in the explanation of scientific and technical concepts but also investigates the extent to which metaphors are used in the translation of English to Malay technical texts. The discussion will look into the hypothesis on how the usage of metaphors in the ST (source text) compares to that in the TT (target text). The analysis will indicate the main ways in which metaphorical expressions are rendered from English to Malay.

Keywords: Translation, Technical translation, Technical texts, Metaphors

INTRODUCTION

This paper describes a tentative pilot study on the translation of technical texts from English to Malay with the focus on the use and translation of metaphors. (Wright and Wright, 1993) state that "Technical Translation encompasses the translation of special language texts, i.e., texts written using LSP (Languages for Special Purposes)". This means a technical text, whether in original or in translation, is different from other texts because technical texts are factual and information-oriented. Pinchuck (1977) emphasizes this point when she states "there is no such thing as a uniform scientific document that is used in all circumstances. Each type of document has its own characteristics, as regards both content and language" (Pinchuck, 1977). Translating technical texts

in the professional environment or in scientific communication is more than just handling terminology. Technical Translating involves more than just replacing a word with its equivalent in another language. (Byrne, 2006) highlights this in his statement "the main concern for technical translators is not only to make sure that information is conveyed accurately but they are also responsible for ensuring that the information is presented in the correct form, that it is complete and that the information can be used correctly and effectively". The translation becomes more difficult when it involves languages which have new and innovative scientific and technology terms. These terms may be more difficult than others to translate mainly due to their very newness, because of which no standard equivalent may yet have been arrived at as in the case of English to Malay Translation of Technical Texts. This study investigates the extent to which metaphors are used in the translation of English to Malay technical texts and how the usage of metaphors in the TT compares to that in the ST. The analysis will indicate the main ways in which metaphorical expressions are rendered from English to Malay.

THEORECTICAL DISCUSSION

Translation. Translation goes beyond the simple concept of merely replacing words in one language with words in another. According to the Concise Oxford Dictionary, The word translation is defined either as a process (Meaning 1) or a product (Meaning 2) as depicted below:

translation n. 1. The act or an instance of translating.

      2. A written or spoken expression of the

         meaning of a word, speech, book etc in

         another language.

           (The Concise Oxford Dictionary)

Hatim and Munday (2004) explain these two dictionary definitions or views of translation well. Translation as a process based on Hatim and Munday (2004) interpretation refers to "the role of the translator in taking the original or ST and turning it into a text in another language, the target text TT. Translation as a product "centres on the concrete translation product produced by the translator" Hatim and Munday (2004).

Shuttleworth and Cowie (1997) on the other hand provide an even wider treatment of the definition. One which takes into consideration the latest trends in translation – "an incredibly broad notion which can be understood in many different ways. For example, one may talk of translation as a process or product, and identify such sub types as literary translation, technical translation, subtitling and machine translation; moreover, while more typically it just refers to the transfer of written texts, the term sometimes also includes interpreting".

For the purposes of this paper, the term translation will be used to refer to a text containing instances of substitution, addition, omission, expansion, or modification and produced on the basis

of a source text in the target language in terms of words, meaning, or sentence structure with the main purpose of making the target text suitable for a particular purpose, genre and audience.

Metaphor

Metaphor has been widely debated within the discipline of Translation Studies, primarily in translatability and transfer methods. Metaphors became widely familiar in cognitive science and linguistics with the publication of Lakoff and Johnson (1980). According to them, metaphors help explain complex and abstract concepts into more clear-cut and concrete notions. This opinion is supported by Pinchuck (1977) in her statement "Metaphor is found in scientific language too and may play an important part in the formation of concepts".

The word metaphor comes from the Greek word metaphora which is derived from *meta*, meaning "over" and *pherein*, "to carry", which means to carry or to transfer something. The etymology above implies that metaphor has the quality of transference of one or more characteristics of a concept to another concept, thus creating a mental expression, statement or judgment. This particular characteristic is echoed by both Newmark (1988) and Macadam (1975). Newmark (1988) defines metaphor as: "Any figurative expression: The transferred sense of a physical word; the personification of and abstraction; the application of a word or collocation to what it does not literally denote. Metaphors may be 'single' (one-word) or 'extended' (a collocation idiom, a sentence, a proverb, an allegory, acomplete imaginative text)". Macadam (1975) affirms this in his statement "Metaphor (translatio) occurs when a word applying to one thing is transferred to another because the similarity seems to justify this transference".

Goatly (1997) further elaborates "Metaphor occurs when a unit of discourse is used to refer unconventionally to an object, process or concept, or colligates in an unconventional way. And when this unconventional act or reference or colligation is understood on the basis of similarity, matching or analogy involving the conventional referent or colligates of the unit and the actual unconventional referent or colligates". He associates the term colligate to "one kind of collocate". From the quotations above, it can be seen that metaphor basically is a result of a cognitive process of understanding that is based on experience. The metaphor operates as a conceptual mapping between two domains - the 'source' domain and the 'target' domain. The source domain is generally expressed in literal language via related words and expressions. In contrast, the 'target' domain tends to be abstract. The target domain builds its structure from the source domain via a metaphorical mapping. An example to demonstrate this is given by Al-Harrasi who observes that "what has been traditionally referred to as a metaphor, such as the word *rose* in *I saw a rose* (the rose here refers to a beautiful woman) is but an expression or instantiation of a deeper conceptual process of mapping the source domain - *rose* onto the target domain – *woman*" (Al-Harrasi, 2001). Metaphor in (Arabic-into-English) Translation With Specific Reference to Metaphorical Concepts and Expressions in Political Discourse. Unpublished PhD Thesis: Aston University). Similarly, Kovecses (2002) emphasises that understanding one domain in terms of another involves a set of

fixed mappings between a source and a target domain. This set of mappings is obtained between basic constituent elements of the source and target [11].

In agreement with Aristotle, metaphor provides us a way of learning about how the world may be perceived and understood via similarity or resemblance. It is this characteristic of metaphor i.e. the perception of similarity that makes metaphor a powerful tool in translation.

Classification of Metaphors

Over the years, metaphors have been classified in a variety of ways by different linguists. Aristotle discussed between 'common or unused metaphors', 'simple or double metaphors', and 'current or strange metaphors' (quoted in (Kittay, 1987). Black (1962) on the other hand stressed that the only distinction is '*dead* and *live* metaphors'. Within this basic distinction, he further categorizes the metaphors as 'dormant' (*when the meaning of a metaphor becomes unclear because the sentence has been shortened*); 'active' (*when the metaphor is newly formed and fresh*), 'strong metaphor' (*which has high emphasis*); and 'weak metaphor' (*which has low emphasis*) [italics added]. van den Broeck (1981) introduced his version. He presents three categories of metaphor – *lexicalized* (metaphors that have lost their uniqueness and have become part of the semantic stock or 'lexicon' of the language), *conventional* (also known as traditional metaphors, and which belong to a restricted area of literature and are only conventional within the period, school or generation to which they belong) and *private* (the so called 'bold', innovating creations of individual poets).

For the purposes of this paper however, Newmark`s classification of metaphors is used as the basis of analysis on the one hand he distinguishes more categories than van den Broeck [14] and on the other, his categorisation is considered to be easier to apply to the analysis of translated metaphorical expressions because of the practical manner in which the definitions are provided. Newmark (1988) classifies metaphors into the following six types:

Dead Metaphor

Newmark places idioms, metonyms and synecdoche in this group. Dead metaphors have lost their images due to overuse. In time, they lose their figurative and connotative meanings and are used like ordinary words. (Tajalli, 2003) adds such metaphors include "concepts of space and time, the main parts of the body, general ecological features and the main human activities". e.g. *square the circle, at the foot of the hill, the arm of a chair.*

Cliché Metaphor

Similar to dead metaphor, this type of metaphor is overused and no longer conveys any figurative meaning which means that the figurative force has been significantly reduced. It stands between dead and stock metaphors and "is used as a substitute for clear thought, often emotively, but without corresponding to the facts of the matter" (Newmark, 1988). Cliché metaphors however do indicate to the reader a word or expression that is not ordinary. Some prominent examples *'a transparent lie', 'stick out a smile' and 'explore all avenues'.*

Stock or Standard Metaphor

Newmark (1988) states "a stock metaphor has certain emotional warmth and which is not deadened by overuse" like *'he sees fear in my heart'*, *'his life hangs on a thread'"*. Such metaphors are usually applied in non-formal texts. This type of metaphor functions as an established metaphor, which in an informal context is an efficient and concise method of covering a physical and/or mental situation both referentially and pragmatically. Examples: *'keep the pot boiling'* and *'to oil the wheels'*

Adapted Metaphor

A stock metaphor that has been adapted into a new context by its speaker or writer. Proverbs can be placed in this category. Example of a stock metaphor turned into an adapted metaphor:

> stock metaphor   : *'carrying gold to London'*
> adapted metaphor   : *'almost carrying gold to London'*

Recent Metaphor

Newmark (1988) categorises this metaphor as a live metaphor. Recent Metaphors are produced via coining or as Newmark (1988) elaborates ""they are neologisms fashionable in the source language community". Often categorized as slang and colloquial, they are specific to each language. Some examples are 'greenback', 'groovy', 'pissed','fuzz'.

Original Metaphor

The absolute metaphor is also known as a *paralogical metaphor* or *antimetaphor*. It is a live metaphor and there is absolutely no connection between the subject and the metaphor. It is created from the SL's (source language's) own original thoughts and ideas. It is new and fresh. Some famous examples: *'I am the dog end of every day'*, *'a forest of fingers'*. *'They faced a scallywag of tasks'*

Metaphor Identification Procedure (MIP)

An MIP was proposed by the Pragglejaz (2007). The name Pragglejaz derives from the first letter of the first names of the ten original members of the group: Peter Crisp, Ray Gibbs, Alan Cienki, Graham Low, Gerard Steen, Lynne Cameron, Elena Semino, Joe Grady, Alice Deignan, and Zoltan Kövecses. This is the group of scholars on whose work the MIP is based. They elaborated a detailed method of identifying metaphors. Their MIP involves the development of a reliable procedure for finding metaphorically used words in natural discourse. It can be used to recognize metaphors in both oral and written discourse. The procedure aims to determine the relationship of a particular lexical unit in the discourse and recognize if its use in a particular context is metaphorical. A mentioned in earlier, many words can be considered metaphorical in different contexts. Use of MIP is able to provide a clear distinction between words that convey metaphorical meaning and those that do not.

Metaphor Identification Procedure's (MIP) Suggested Strategies For Identifying Metaphorically-used Words

Pragglejaz (2007) strongly recommend the following strategies for identifying metaphors. These strategies are as follows:

1. Read the entire text/discourse to establish a general understanding of the
   meaning.

2. Determine the lexical units in the text/discourse

3. (a) For each lexical unit text/discourse to establish its
   meaning in context,
   i.e. how it applies to an entity, relation or attribute
   in the situation evoked by the text (contextual
   meaning). Take into account what comes
   before and after the lexical unit.

   (b) For each lexical unit, determine if it has a more
   basic contemporary meaning in other contexts
   than the one in the given context. For our
   purposes, basic meanings tend to be:
   - more concrete, what they evoke is easier to imagine, see, hear, smell and taste
   - related to bodily action
   - more precise (as opposed to vague)
   - historically older

   Basic meanings are not necessarily the most frequent meanings of the lexical unit

   (c) If the lexical Unit has a more basic current/contemporary meaning in other contexts
   than the given contexts, decide whether the contextual meaning contrasts with the basic
   meaning but can be understood in comparison with it.

4. If yes, mark the lexical unit as metaphorical [16].

AIMS

This present study aims:

1. To determine the existence or presence of metaphors in English technical source texts and their translations into Malay.

2. To investigate which of the metaphors or metaphorical expressions used in the source (English) and Target (Malay) technical texts:
   2.1 Appear in both the ST and the TT
   2.2 Appear in the ST but not in the TT
   2.3 Appear in the TT but not in the ST

METHODOLOGY

Data Collection

As mentioned, this paper is the preliminary stage of a long research project which is my PhD. Thirty (30) out of (300) identified Metaphors were used as research data for this paper. The metaphors were extracted from an English Engineering Textbook (Source Text) – 'Foundations of Engineering' by Mark Holtzapple and Reece (2000) and its translated version in Malay Language (Target Text) – 'Asas Kejuruteraan' translated by Zawawi (2010)

Data Analysis

The identification of metaphors in both the source text and target text data for this particular study was investigated in two main stages as listed below.

I) Stage 1: The identification of Metaphors

This stage will answer Research Aim 1: To determine the existence or presence of metaphors in the English to Malay translated technical texts and the source texts.

METHOD

The "Metaphor Identification Procedure" (MIP) will be utilised in the metaphor identification process which is a critical step for the purposes of this particular research.

II) Stage 2: Categorisation and Analysis of Metaphors

Once the metaphors are identified, the next step will be categorising each metaphor according to its type in both ST and the TT in the attempt to investigate Research Aim 2: To investigate which of the metaphors or metaphorical expressions used in the source (English) and Target (Malay) technical texts:

2.1 Appear in both the ST and the TT

2.2 Appear in the ST but not in the TT

2.3 Appear in the TT but not in the ST

Apart from the above, instances where the translation carrying a different message from that intended by the source text author or the message being misinterpreted by the translator will also be dealt with.

The results obtained will not be a solution rather to highlight how the usage of metaphors in the TT compares to that of the ST, what procedures translators use, how translators decide to translate already existing ones and what are the problems that arise during the process of translating the metaphors.

DISCUSSION OF RESULTS

This section of the paper presents the findings and outcomes of the data analysis of this tentative pilot study .

Research Aim 1

To determine the existence or presence of metaphors in the English to Malay translated technical texts and the source texts.

Table 1 below demonstrates the presence of metaphors in both the ST and TT technical texts. Metaphors were extracted from the preface right up to the first chapter of both technical texts. Analysis of these sections affirms that they do both contain metaphors. This is seen in Table 1 below, 30 metaphors were identified in the ST and only 11 metaphors in the TT.

Table-1. Number of Metaphors Identified in the St and TT

Type of Technical Text	Number of Metaphors in the text
Source Text (ST) - English	30
Target Text (TT) – Malay	11

The researcher however did not read both the ST and TT independently. Just the ST was read and analysed to identify the use of any metaphors in it. Then the translation of each metaphor or metaphorical expression that were identified in the ST were looked up in the TT. It must be highlighted that though both the ST and TT revealed that metaphors are used, however, the percentage and frequency of usage differs from each other. As depicted in the results above, metaphors are used more in the ST (30) and much less in the TT (11). A major factor that contributed to this outcome is mainly due to the fact that the result is tentative as it is based on a complete analysis of the ST only. This means that there could also be metaphorical expressions that only occur in the TT. Hence, may provide a different set of results than the one presented here.

Research Aim 2

To investigate which of the metaphors or metaphorical expressions used in the source (English) and Target (Malay) technical texts:

> 2.1 Appear in both the ST and the TT
> 2.2 Appear in the ST but not in the TT

Appear in the TT but not in the ST

In order to investigate Research Aim 2, the metaphors that were identified from both the ST and TT were first classified according to its type using Newmark (1988) categorizations. Please refer to Appendix 1 for the full list and analysis of metaphors identified in the ST and TT. Table 2 below depicts the number of each type of metaphor that were identified in the ST and TT.

Table-2. Type and Number of Metaphor in ST and TT

TYPE OF METAPHOR	ST	TT
1. DEAD METAPHOR	5	-
2. CLICHÉ METAPHOR	2	-
3. STOCK /STANDARD METAPHOR	19	9
4. ADAPTED METAPHOR	-	-
5. RECENT METAPHOR	1	-

6. ORIGINAL METAPHOR	3	2

Analysis reveals a large number of stock metaphors for both the ST and TT compared to the other 5 types of metaphors. It is obvious that the variety in the use of different types of metaphors in the TT limited. Conversely in the ST, almost all of Newmark's types of metaphors were utilized in the ST. This gap in the type of metaphor used between the ST and TT indicates the kind/s of translation procedure that are being used by the translator.

Further analysis which addresses research aims 2.1, 2.2, and 2.3 above (please refer to Appendix 1 for the details of analysis) exposed some interesting results. The present amount of data collected and analysis method used by the researcher were not sufficient nor appropriate to produce results for research aim 2.3. It was discovered from the analysis that the majority of metaphors only appear in the ST and not in the TT. In this case 19 metaphors from the ST when translated in the TT, they either no longer functioned as metaphors or were deleted. 11 metaphors appeared in both the ST and TT. It must be emphasized that out of these 11 metaphors that appeared in both the ST and TT not all retained the same class of metaphors when translated into the TT. The class or type of the metaphor did change for some metaphors. In other words, the metaphor in the ST when translated was categorized as another type of metaphor in the TT. This point is illustrated in the following Example 21 below:

21. The end of the Cold War, (a period of tension between the United States and the Soviet Union following World War II) has dramatically affected engineering	cold war	Dead Meta phor	21. Tamatnya perang dingin (tempoh tegang antara AS dengan Rusia selepas Perang Dunia II) telah menjejaskan kejuruteraan dengan teruknya. Back TranslationThe end of the Cold War (period of tension between the U.S. and Russia after World War II) affected engineering badly.	Dingin	Stock metaphor The metaphor here – dingin to demonstrate a human emotion having similar qualities to the cold icy weather – unfriendly, not talking to each other , the silent treatment , non verbal dispute etc.

As demonstrated by example 21 above, the metaphor 'cold war' which is a dead metaphor when translated into TT still retained the characteristic of a metaphor but the type changed into a stock metaphor. This implies that metaphors do not necessarily retain its class once translated into the TT. Lastly, there was a unique case where the metaphor was present in the TT but absent in the ST. This example is highlighted below:

Dalam kes ini , kami mencadangkan agar anda memberikan "peta panduan" buku ini, menyatakan bahagian mana yang anda rasa bahan boleh uji teras dan bahagian mana yang disajikan untuk tujuan pengayaan semata –mata

Back Translation

In this case, we suggest that you give "guide maps" of this book, stating the areas where you can test the core and sections that are <u>served</u> for enrichment purposes solely.

Metaphor in the TT: disajikan

Metaphor type: Stock Metaphor

In the ST: is a verb –'served'

However, the above is the only example that 1 found, the TT may contain many more, although further work using a different analysis technique would be needed in order to identify more.

CONCLUSION AND RECOMMENDATIONS

This paper presents a tentative pilot study of the extent to which metaphors are used in the translation of English to Malay technical texts. Although only a small number of metaphors were used as data for this particular study, the findings revealed some very interesting outcomes and have highlighted some problems in translating metaphors from the SL to the TL (target language) which will be vital to further improve the course of this long term research. It was demonstrated that metaphors were present in both ST and TT although the percentage and frequency of usage differed from one to the other. More metaphors could be identified if the researcher read both the ST and TT independently rather just the ST and then 'look up' the translation of each expression in the TT though this method of analysis will effect the number of type three metaphors that might be identified. The high number examples in one or two types of metaphors and the absence of any metaphor examples in more than one category indicates that Newmark's classification of metaphors may not be completely suited to the data. Therefore, it would be a good move either to use a different metaphor categorisation system or adapt Newmark's to suit the research purpose. Lastly from this study, it was discovered that the translating metaphors from the ST and TT did pose some challenges in terms of the kinds of translation procedure or strategies that are being used by the translator and the possibilities that are available to the translator during the translation process. Although because of lack of space it has not been possible to include a discussion on this in the paper, in this case three possibilities were discovered: deletion (cases where a metaphor is untranslatable), substitution of a metaphor into a different metaphor or use of an exact equivalent of the ST metaphor.

ACKNOWLEDGEMENTS

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APPENDICES 1

Table-3. List & Analysis of Metaphors Identified in the ST AND TT

Source Text – 'Foundations of Engineering' by Mark T. Holtzapple and Reece (2000) Chapters: -To the Professor -To the Student -Chapter 1 The Engineer			Target Text – 'Asas Kejuruteraan' translated by Zawawi (2010) Bab: -Kepada Professor -Kepada Penuntut -Bab 1 Tugas Jurutera		
Sentence	English Metaphor	Type of Metaphor	Sentence	Malay Metaphor	Type of Metaphor
1. Therefore, we decided to write our own text to fill the void.	void	Dead metaphor	1. Oleh itu ,kami memutuskan untuk menulis teks kami sendiri bagi mengisi kekosongan ini. Back Translation: Therefore, we decided to write our own text to fill this gap.	Not a metaphor	--
2. We hope to stimulate the students' interest in engineering by describing engineering history, challenging them with "brain teaser" problems and explaining the creative process	brain teaser	Stock metaphor	2. Kami berharap kami dapat merangsang minat penuntut dalam kejuruteraan dengan memaparkan sejarah kejuruteraan, mencabar mereka dengan masalah mengusik akal dan menerangkan proses yang kreatif. Back Translation We hope we can stimulate students' interest in engineering by displaying history of engineering, challenging them with problems that tease the mind and explaining creative problems	Mengusik	Stock metaphor
3. Provide a strong foundation in engineering fundamentals	foundation	Stock metaphor	3.Memberikan asas yang kukuh dalam asas kejuruteraan Back Translation Providing a strong foundation in basic engineering	Not a metaphor A word with multiple meanings dependent on the context it is used	The word 'asas' has more than one meaning - 1. foundation – providing adequate training, knowledge 2. basic-

					often used to show the minimal level of a academic subject, course , training

4. Provide a strong foundation in engineering fundamentals	fundamentals	Stock metaphor	4. Memberikan asas yang kukuh dalam asas kejuruteraan <u>Back Translation</u> Providing a strong foundation in basic engineering	Not a metaphor A word with multiple meanings dependent on the context it is used	Noun Here it refers to minimal level of an academic subject, course , training
5. The common threads through all these disciplines are fundamental physical and mathematical laws	threads	Stock metaphor	5.Unsur sepunya bagi semua disiplin ini ialah hukum asas fizik dan matematik <u>Back Translation</u> Common elements for all these disciplines are basic laws in physics and matemathics	Not a metaphor	noun
6. To stimulate their interest in engineering advanced topics are sprinkled throughout the book	sprinkled	Stock metaphor	6.Untuk merangsang minat mereka dalam kejuruteraan , tajuk lanjutan diselang-selikan dalam buku ini. <u>Back Translation</u> To stimulate their interest in engineering, advanced topics are punctuated alternately in this book.	Not a metaphor	verb
7. This will help students to realize that computing is not a separate topic, but is a tool used by engineers to solve the problems	tool	Stock metaphor	7. Hal ini akan membantu penuntut sedar bahawa pengkomputeran bukanlah suatu tajuk yang terasing tetapi salah satu daripada alat yang digunakan oleh jurutera untuk menyelesaikan	Not a metaphor	Noun Alat in Malay language has a very general meaning that can be applied to different contexts

			masalah. Back Translation This matter will help students realize that computing is not an isolated topic but one of the tool used by the engineers to solve		In other words carries one meaning but this meaning can be applied in different contexts
8. Some students may perceive that their freshman science and mathematics classes are a hazing process and may not understand that these courses form the backbone of engineering.	backbone	Stock metaphor	8.Sesetengah penuntut mungkin beranggapan kelas sains dan matematik tahun pertama mereka ialah proses yang kabur dan mungkin mereka tidak faham bahawa kursus ini membentuk tulang belakang kejuruteraan. Back Translation Some students may think science and math classes in their first year is a fuzzy process and maybe they do not understand that this course forms the backbone of engineering.	Tulang belakang	Stock Metaphor
9. Provide "soak time" for difficult topics.	soak time	Original metaphor	9.Menyediakan "tempoh persediaan" bagi tajuk yang sukar. Back Translation Providing "preparatory period/duration" for difficult topics.	Not a metaphor	noun
10. The "road map" in the accompanying figure shows that …	road map	Original metaphor	10. "Peta" dalam rajah menunjukkan… Back Translation "Map" in the figure shows ...	Peta	Original metaphor
11. The Engineering profession blossomed in Eygpt with the construction of	blossomed	Stock Metaphor	11. Profession Kejuruteraan berkembang di Mesir dengan pembinaan system pengairan, jalan dan	Not a metaphor	verb

			pyramid oleh kumpulan jurutera awam yang pertama. <u>Back Translation</u> Engineering Profession developed in Egypt with the construction of irrigation systems, roads and the pyramid by the first group of civil engineers.		
irrigation systems, roads and pyramids by the first civil engineers.					
12. In case your mathematics is rusty, we offer a sister text called *Mathematical Supplement to Foundations of Engineering.*	rusty	Stock Metaphor	12. Sekiranya anda kurang menguasai matematik semasa di sekolah menengah, kami sediakan teks tambahan berjudul *Matematik Supplement to Foundations of Engineering.* <u>Back Translation</u> If you do not master mathematics at secondary schools, we provide additional text entitled *Foundations of Mathematics Supplement to Engineering.*	Not a metaphor	verb
13. In case your mathematics is rusty, we offer a sister text called Mathematical supplement to foundations of Engineering.	sister text	Cliché metaphor	13. Sekiranya anda kurang menguasai matematik semasa di sekolah menengah, kami sediakan teks tambahan berjudul *Matematik Supplement to Foundations of Engineering.* <u>Back Translation</u> If you do not master mathematics at secondary schools, we provide an additional text entitled *Foundations of*	Not a metaphor	noun

			Mathematics Supplement to Engineering.		
14. We think of our book as a smorgasbord of delightful delicacies.	smorgasbord of delightful delicacies	Recent metaphor	14. Kami menganggap buku kami sebagai bufet juadah lazat. Back Translation We consider our book as a delicious buffet of delicacies.	buffet juadah lazat	Recent metaphor
15. There are so many delicacies, it is impossible for you to eat them all in a single sitting. However, with many sittings, it is possible for you to enjoy them all.	eat	Dead metaphor	15. Juadahnya terlalu banyak, dan mustahil anda dapat menikmati kesemuanya dalam satu majlis. Bagaimanapun, dalam beberapa majlis, anda dapat menikmati kesemuanya. Back Translation The food spread is too much, and it is impossible that you can enjoy them all in one event. However, on many occasions, you can enjoy them all.	Not a metaphor	verb
16. As shown in the "Pyramid of Learning" depicted earlier, all engineering disciplines use knowledge gained in math and science courses.	pyramid	Stock metaphor	16. Seperti ynag ditunjukkan dalam "piramid pembelajaran" sebelum ini, semua disiplin kejuruteraan menggunakan pengetahuan yang diperoleh dalam kursus matematik dan sains. Back Translation Like is shown in the "learning pyramid" before, all the engineering disciplines using the knowledge acquired in the course of that is due to math and science.	Metaphor	Stock metaphor

17. They mistakenly believe that real-world engineers mindlessly plug numbers into handbook formulas with little understanding of the underlying principles.	plug	Stock Metaphor	17. Mereka silap kerana menyangka jurutera hanya tangkap muat sebarang nombor dalam rumus buku panduan dengan kefahaman yang cetek tentang prinsip asas kejuruteraan. <u>Back Translation</u> They are wrong for thinking engineers think only "capture download" any number in formula guidebooks with shallow understanding of basic principles of engineering.	Tangkap muat	Original metaphor
18. In this case we suggest that you give the students a "guide map" through the book indicating which sections you consider to be core testable material and which sections are offered for enrichment purposes only.	guide map	Original metaphor	18. Dalam kes ini , kami mencadangkan agar anda memberikan "peta panduan" buku ini,menyatakan bahagian mana yang anda rasa bahan boleh uji teras dan bahagian mana yang disajikan untuk tujuan pengayaan semata -mata <u>Back Translation</u> In this case, we suggest that you give "guide maps" of this book, stating the areas where you can test the core and sections that are served for enrichment purposes solely	peta	Stock metaphor
19. In this case we suggest that you give the students a "guide map" through the book	core	Stock metaphor	19. Dalam kes ini , kami mencadangkan agar anda memberikan "peta panduan"	Not a metaphor	Word with multiple meanings depending on the context:

			buku ini,menyatakan bahagian mana yang anda rasa bahan boleh uji teras dan bahagian mana yang disajikan untuk tujuan pengayaan semata –mata <u>Back Translation</u> In this case, we suggest that you give "guide maps" of this book, stating which areas you feel are the main test materials and sections that are served for enrichment purposes solely		1. compulsory e.g. courses taken for a academic programme e.g. (kursus-kursus teras /compulsory courses) 2. main –has more importance than the rest
			20. Dalam kes ini , kami mencadangkan agar anda memberikan "peta panduan" buku ini,menyatakan bahagian mana yang anda rasa bahan boleh uji teras dan bahagian mana yang disajikan untuk tujuan pengayaan semata –mata <u>Back Translation</u> In this case, we suggest that you give "guide maps" of this book, stating the areas where you can test the core and sections that are served for enrichment purposes solely	disajikan	Stock metaphor
20. The assembled chair was delivered to you in a truck that was designed by mechanical, aerospace and electrical engineers	plant	Dead metaphor	20. Kerusi yang telah dipasang itu diserahkan kepada anda dengan menggunakan trak yang direka bentuk oleh jurutera	Not a metaphor	noun

in plants that industrial engineers optimized to make best of space, capital and labor.			mekanikal, jurutera aeroangkasa dan jurutera elektrik di kilang yang dioptimumkan oleh jurutera industry untuk memanfaatkan sepenuhnya ruang, modal dan tenaga buruh. <u>Back Translation</u> Seats are assembled to be delivered to you by using trucks that are designed by a mechanical engineer, aerospace engineer and electrical engineer at the factories optimized by industry engineers to take full advantage of space, capital and labor force.		
21. The end of the Cold War, (a period of tension between the United States and the Soviet Union following World War II) has dramatically affected engineering	cold war	Dead Metaphor	21. Tamatnya perang dingin (tempoh tegang antara AS dengan Rusia selepas Perang Dunia II) telah menjejaskan kejuruteraan dengan teruknya. <u>Back Translation</u> The end of the Cold War (period of tension between the U.S. and Russia after World War II) affected engineering badly.	dingin	Stock metaphor The metaphor here – dingin to demonstrate a human emotion having similar qualities to the cold icy weather – unfriendly, not talking to each other , the silent treatment , non verbal dispute etc.
22. The end of the Cold War, a period of tension between the United States and the Soviet Union following World War II has dramatically affected engineering	tension	Stock metaphor	22. Tamatnya perang dingin (tempoh tegang antara AS dengan Rusia selepas Perang Dunia II) telah menjejaskan kejuruteraan dengan teruknya. <u>Back Translation</u> The end of the Cold War (period of	Not a metaphor	Word where the meaning is dependent on the context. 1. taut (as in a string or rope or thread) 2. refers to relationships that are tense

			tense relationship between the U.S. and Russia after World War II) affected engineering badly.		
23. There is a magic when a team coalesces and each member builds off ideas and enthusiasm of team mates.	magic	Stock metaphor	23. Ada keajaiban apabila satu pasukan bergabung dan setiap anggota membina idea dan semangat rakan sepasukan. <u>Back Translation</u> There is a magic when a team merges and each member develop ideas and teamwork spirit	keajaiban	Stock metaphor
24. There is a magic when a team coalesces and each member builds off ideas and enthusiasm of teamates.	coalesces	Cliché metaphor	24. Ada keajaiban apabila satu pasukan bergabung dan setiap anggota membina idea dan semangat rakan sepasukan. <u>Back Translation</u> There is miracle when a team merges and each member develop ideas and teamwork spirit	Not a metaphor	verb
25. There is a magic when a team coalesces and each member builds off ideas and enthusiasm of teamates.	builds	Stock metaphor	25. Ada keajaiban apabila satu pasukan bergabung dan setiap anggota membina idea dan semangat rakan sepasukan. <u>Back Translation</u> There is miracle when a team merges and each member build ideas and teamwork spirit	Membina	Stock metaphor
26. One of the key players of this period was Imhotep, known today as the Father of Stone Masonry Construction."	Key	Stock metaphor	27.Seorang daripada penggerak utama pada zaman ini ialah Imhotep, yang dikenali sebagai "Bapa Pembinaan Kerja Batu"	Not a metaphor	adjective

			Back Translation One of the main/prime movers in this age is Imhotep, known as the "Father of Stone Work Construction"		
27. One of the key players of this period was Imhotep, known today as the Father of Stone Masonry Construction."	players	Stock metaphor	28.Seorang daripada penggerak utama pada zaman ini ialah Imhotep, yang dikenali sebagai "Bapa Pembinaan Kerja Batu" Back Translation One of the prime movers in this age is Imhotep, known as the "Father of Stone Work Construction	Not a metaphor	noun
28. One of the key players of this period was Imhotep, known today as the Father of Stone Masonry Construction."	father	Stock metaphor	29. Seorang daripada penggerak utama pada zaman ini ialah Imhotep, yang dikenali sebagai "Bapa Pembinaan Kerja Batu" Back Translation One of the prime movers in this age is Imhotep, known as the "Father of Stone Work Construction	Bapa	Stock metaphor
29. Imhotep served the pharoah Zoser as chief priest, magician, physician and head engineer.	head	Dead metaphor	30. Imhotep berkhidmat untuk firaun Zoser sebagai ketua paderi, ahli sihir, pakar perubatan dan ketua jurutera. Back Translation Imhotep served the pharoah Zoser as chief priests, wizard, a physician and chief engineer.	Not a metaphor	noun

30. Chemical engieners process raw materials (pertoleum, coal, ores corn, tree) into refined products (gasoline, heating oil, plastics, pharmaceuticals, paper).	raw	Stock Metaphor	Jurutera kimia memproses bahan-bahan mentah (petroleum, arang batu, bijih jagung, pokok) ke dalam produk bertapis (petrol, minyak pemanas, plastik, ubat-ubatan, kertas).	Not a metaphor	Noun In this context it does not serve as a metaphor as it refers to any unprocessed materials or food. But becomes a metaphor when used to describe a human being – Budak ini masih mentah lagi/This child is still naive)