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跨領域整合型研究計畫之前置規劃案成果報告

計畫名稱：語言雙向翻譯之認知與腦神經機制的分析

跨語言雙向翻譯之認知與腦神經機制的分析 ：比較英中及德的筆譯比較英中及德的筆譯

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計畫召集人：陳欣蓉特聘教授

共同召集人：蕭富仁特聘教授

計畫參與人員：

1. 中山醫學大學心理學系暨臨床心理學碩士班 田意民教授
2. 中國醫藥大學放射科 陳君明博士
3. 朝陽科大資工系 吳世弘教授
4. 中正大學師資培訓中心曾玉村教授
5. 國立高雄第一科技大學資管系　黃文楨教授

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目錄

中文摘要

目前仍無公認的翻譯評量標準，而且老師通常隨機採用某篇文章來讓學生翻譯，以便測試學生的翻譯程度。由此可見，仍未找到翻譯評量的關鍵。由於一篇文章的基石是詞彙，要懂得翻譯的外文文章，基本上每個詞彙的意思均要認識。因此本計畫首先(a)地毯式的分析英中及德中翻譯的文章中，出現哪些英文及德文的詞彙類型(例如搭配詞，專有詞彙，多義詞等等)，(b)藉由大數據分析各個種類的詞彙，在翻譯資料庫中所佔的比例(例如專有詞彙佔 20%，多義詞佔 36%等)。之後(c)藉由學生的翻譯錯誤，去分析，哪些錯誤是由哪種類的詞彙引起，並且依照其重要性排列，並且算出其百分比例(以上由第 3 子計畫執行)。由於學生翻譯時，不懂的詞彙如同空白點，由於一詞多種意思(多義詞)，選錯意思時，常導致扭曲或誤解整篇文章(陳欣蓉 2005:6-8)，再者陳欣蓉將多義詞列為引起翻譯錯誤的首要原因(2005:6)，因此本計畫先分析多義詞，且預估多義詞的掌握跟翻譯程度正相關。分析多義詞主要是面對一詞多義(多義詞)，學生必須認知翻譯情境，才能選對詞的意思。由於翻譯的因素很多，本計畫先以多義詞為主，並且作深層的分析，之後再研究其他影響翻譯的因素(例如專有詞彙代表專業知識，常用詞彙代表一般的知識等)。

翻譯歷程前所需要的詞意辨識，句意理解，語言間概念轉換等，均需要許多證據的支持與累積，以便深入了解翻譯過程，才能改善翻譯的困境。翻譯目前幾乎還是質化研究，尚缺少量化分析，且尚缺少翻譯過程中的生理證據(例如腦的翻譯處理過程)，尚未知道哪些多義詞及哪些種類的多義詞是翻譯的關鍵，本計畫除了(a)質性研究外，(b)初步研究翻譯的量化研究，藉以建立翻譯的量化資料庫的基礎(例如「辨識翻譯程度的多義詞詞庫」)，再(c)藉由行為及腦造影工具的方式建立一個較客觀的基礎，以便質化，量化及腦分析構成一個完整的研究架構。

總計劃第的核心任務：

(1) 分析翻譯程度評量有哪些關鍵元素?

(2) 比較第 1 子計畫及第 2 子計畫哪些多義詞及哪些種類的多義詞能辨識英中及德中翻譯的不同程度

(3) 再者比較第 1 子計畫及第 2 子計畫跟第 3 子計畫的分析結果。分析重點是排列出「多義詞的數量」,「多義詞的種類(抽象 vs 具體，相關 vs.不相關)」對翻譯程度的辨識程度之影響力的排序

(4) 分析英中及德中的相關翻譯腦區有何異同?

(5) 比較第 1 子計畫及第 2 子計畫的英中筆譯及德中筆譯的針對多義詞的腦區數據分析及腦區差異，以便分析英中及德中的不同翻譯程度辨識的關鍵

目前很多腦研究只有分析哪些腦區跟哪些行為相關，本計畫除了分析哪些腦區跟翻譯行為相關外，也分析此腦區的貢獻，例如本計畫不但分析出翻譯相關腦區，也研究哪些腦區的網絡模式可辨識不同翻譯程度，及如何藉由腦分析結果，開發辨識翻譯程度的機制。

關鍵詞: 翻譯程度評量，fMRI, MEG,大數據，深層學習，翻譯錯誤分析，多義詞

Abstract

Currently, a set of academic criteria for translation has not been established, and teachers randomly choose articles for students to translate as a test. Hence, the key to successful translation remains unstandardized. Because vocabulary size serves as a cornerstone, translators must acquire a good knowledge of vocabulary before doing translation. As the result, this project focuses on (a) a thorough analysis of the terms (such as collocations, proper nouns, and polysemy) in the articles translated from English to Chinese or from German to Chinese, (b) a calculation of percentage of each type of terms (such as proper nouns accounting for 20%, and polysemy 36%) in the database through Big Data Analytics, and (c) an analysis of errors made in students' translation in order to identify the errors arising from the types of terms, and to list the errors in order of priority, as well as to calculate the percentage. While doing translation, students do not fully understand the vocabulary in the articles, so that they misunderstand or misinterpret the whole article due to errors in recognizing polysemy, which is the main cause for errors in the translation. Therefore, the project first analyzes the polysemous words and measures how polysemous words are related to translation.

Tasks of this projects:

(1) To identify key elements in translation

(2) To identify key factors in translation quality by comparing English-Chinese and German-Chinese translation in the first sub-project and the second sub-project

(3) To compare the results of the first sub-project and the second sub-project with the third sub-project. The analysis focuses on ranking the importance between "the number of polysemous words" and "the types of polysemous words (abstract vs specific, relevant vs. unrelated)".

(4) To analyze the differences of the brain areas regarding English-Chinese and German-Chinese translation.

(5) To compare the differences between the first sub-project and the second sub-project regarding the analyses on brain area for English-Chinese and German-Chinese translation, in order to analyze the key factors in English-Chinese and German-Chinese translation.

Translation processing includes word recognition, sentence comprehension, and conceptual transfer between languages. To improve translation quality, the process of translation needs to be thoroughly understood before sufficient evidence is accumulated. Translation, still a qualitative research, lacks quantitative analysis and physiological evidence (such as how the brain processes translation). Yet, which polysemous words and what types of polysemous words serving as key factors in the

translation remain unknown. In addition to being (a) qualitative study, (b) quantitative study of translation by establishing a basis for quantifying the database (such as "identifying the polysemous words by degree"), and build (c) a more objective basis by means of behavioral and brain imaging tools, so that qualitative, quantitative and brain analysis constitutes a complete research framework.

At present, many studies on the brain only analyze the relation between the brain areas and behavior, while this project studies which brain regions of the network model can identify different degrees of translation, and how to use the results of the brain analysis to develop a mechanism for identification of quality of translation.

Keywords: criteria for translation, fMRI, MEG, big data, translation errors, polysemous words