TRANSLATION VS INTERPRETING IN THE PERSPECTIVE OF NEUROLINGUISTICS

Rochmat Susanto
rachmatjones207@gmail.com

Taufiq Jati Murtaya
taufiqjatimurtaya@gmail.com
Applied Linguistics, Post Graduate Program
Yogyakarta State University
Sleman, Indonesia

Abstract
The following article aims 1) to explain the process of translating and interpreting in the perspective of neurolinguistics (explaining the process underlying the complexity which occur in human brain when translating and interpreting are performed) and 2) to compare or to find out the similarities and differences between translating and interpreting based on the point of view. The process of translation and interpreting are mostly different in terms of neurolinguistics perspective. Translation involves graphic channel (ST) which is processed through the eyes while interpreting involves phonic channel (SE) which is processed through the ears. However both meaning contained in ST and SE are transmitted to wernicke area where the act of re-expressing meaning through choosing appropriate lexicon into TT or TE occurred. Afterward brocca area activates the upper motor nerve to move translator’s hand to re-express the meaning into TT while in interpreting, it activates the lower motor nerve to move interpreter’s mouth and other related speech organs to re-express the meaning into TE.

Keywords: translation, interpreting, neurolinguistics

Introduction
The scientific study of translation, interpreting, and neurolinguistics has been growing rapidly since the 19th century. Unfortunately, until now those three disciplines only have developed sporadically. This means that the development of the three disciplines has never been comprehensively linked each other all at once. In addition, until now the development of the theory of translation is also considered slow. It is proven by the absence of new epistemology that emerged until the present day, so that the theories of translation that existed from the past until present day only always change the term but with the same concept. Judging from the field of study, the theory of translation and interpreting essentially examines how the meaning of the source language can be realized in a form that is in accordance to the target language so that inter-language communication is going properly. Psycholinguistics, which includes a study of the neurological aspects of the language or the neurological aspects of the language, discusses how language can be processed or produced through the performance functions of physical counterparts of the brain and other nervous systems. From those descriptions it can be concluded that the process of translation and interpreting can be emerged because of the support of neurological aspects of the language that occurs in the brain of a translator or interpreter that supports to perceive and produce language. To explain the interrelationships between those disciplines, this article aims to discuss further how the nature of the relationship between translation and interpreting in terms of neurolinguistics, the neurological aspects of language in perceiving and producing language in the process of translation and interpreting. In this paper the authors limit
the study only to the bilingual expressions mechanisms that occur in the translator's and interpreter’s brain. Then the results of the process or mechanism are demonstrated into a more comprehensive translation and interpreting process scheme in the view of the neurological aspects of the language. Further the discussion determines which one is more complex, translation or interpreting in the perspective of neurolinguistics. The findings of this paper are expected to bring contributions and enrich the repertoire of translation studies and also interpreting in general and the process of translation and interpreting in particular. Given that the existing translation process model has so far impressed the simple and no significant renewal, this paper seeks to explain the process of translation and interpreting through another point of view which is in the neurological aspects of language in which it describes the mechanism of involvement of physical parts of the brain and other organs when the translator interpreter performs the act of transferring meaning.

The Process of Translation in the Human Brain (Translator)
As explained on the introduction that the findings of this paper aims to determine the mechanisms that occur in the brain when a translator or an interpreter perform the act of transferring meaning in bilingual text. It will be illustrated on the translation process scheme developed by the authors. In the scheme, it will explain in more detail the process of translation through the neurological aspects of language point of view. So that we can discover which parts of the brain that play a role in the translation and interpreting process of bilingual expressions act.

In explaining the scheme of translation act in terms of neurolinguistics, the authors adopt the scheme of translation process by Susanto and Yulianto (2017). The scheme is demonstrated as follows.

Figure 1. Translation Process in Human Brain (Susanto and Yulianto, 2017)

The figure explains that translation process firstly begun from translators’ eyes. Both eyeballs capture the visual expressions in the form of graphemes or phonemic rows contained within the Source Text (ST). Then the visual information is transmitted through the optical nerve into the back area of the brain called occipital lobe. In the occipital lobe, visual information is non-linguistically analyzed by the primary visual cortex. This part only works to analyze shapes, colors, and patterns. Then the meaningful units are transmitted to the visual association area. This area serves to perceive the semiotic code of ST captured by the eyes. Then the area can perceive its meaning. While the lingual expressions will be forwarded directly to the wernicke area through the angular gyrus. Once the linguistic information goes into the wernicke area, the SE lingual information will be perceived first. Wernicke will attempt to decipher the meaning within the ST according to the mental lexicon capacity possessed by the translator. Having successfully perceived the meaning of ST, then wernicke seeks to find the equivalent meaning realization into the form of TT. Wernicke tries to find the closest lingual equivalent unit on TT. After determining and finalizing the expressions that are going to be written into TT, the
wernicke orders broca area to produce it into written expressions on TT. After determining and finalizing the expression that will be written into TT, then wernicke ordered broca area to produce it into writing form. Then wernicke sends the final expression through arcuate fasciculous to the broca area. Then broca orders the primary motor cortex to move the lingual organs to write. Since the translator will realize the results of his translation through written language (secondary language), then broca orders the upper part of primary motor cortex to move the hand so that translator can realize the results of the concept into the TT (manual written form or typed through computer). Then seeing the overall explanation, the authors name the relationship between neurolinguistics and translation theory as neuro-translatics.

The Process of Interpreting in the Human Brain (Interpreter)
To give a clear limitation of the study, then this article put its stand point in the simultaneous interpreting and its processes condition in term of neurolinguistics grounded from literature study. As the scope is the linguistics and physical brain counterpart study, then it will be wise to mention what is meant by linguistics phenomena of the brain., this article tried to sum up what has become the core of concentration and draw conceptual model of neuro-interpreting. In this article the neuro-interpreting process consists of three major operations, namely the hearing process of the phonic channel, receptive process or decoding process, and expressive process. Here for the hearing process which derives from the phonic channel in simultaneous interpreting is based mainly from the hearing mechanism process of human ears organs. The process begins with the sound produced by the source-expression producer that flows to the auricle and external auditory canal. Then it goes to the ear canal and continues to hit the eardrum vibration. The vibration moves to the middle ear and then later will activate, or vibrate also, the hammer-anvril-and stirrup. The quiver then transmitted to the cochlea that will shake the membranes filled with watery fluid which then activate the hair cells in motion. These cells transform the vibration into electrical impulses. After all, the auditory nerves send the impulses to the brain. The second process is the receptive process. Through this article adopts neural processes from Wolfe (2001) and Judarwanto (2009). The steps will begin with the electrical impulses that enter the thalamus that sent through auditory nerves. After that the gyrus and auditory cortex will be activated. The gyrus then will cooperate with the association auditory in selecting the meaningful information. Within the gyrus the linguistics aspect and the paralinguistics aspect are separately operated. The linguistics aspect which has been encoded transferred to the left lobus temporalis, and then it will be analyzed in the Wernicke area. Specifically, in simultaneous interpreting, the analysis consists of the phonology decoding which means the identification of the source expressions; grammatical decoding that works on transferring, selecting, ad arranging the source expression into the target expression; and semantic decoding that is transferring and inferring from the source expression to the target expression. Meanwhile, the in the right lobus temporalis will cultivate the aspect in paralinguistics namely intonation, stressing, and other prosody features. All of the processed aspects named as the messages or the intended meaning are later sent to the fasiculusarvelatum. For the third phase is expressive process. Here the intended meaning from the fasiculusarlevatum is processed in the broca area. Later, the broca will order lower motor cortex to move; and then the lower motor cortex will activate the muscles of respiratory, phonic, resonance, and articulatory. For the final brain operation is the encoding processes that form sequentially from semantic to grammatical
and to phonetic phase. Here for the last step, the interpreter selecting the symbols of the intended meaning in the messages formulation that has already in the target expression; and indeed still monitoring for what is being uttered while giving speech production.

Conclusion
The process of translation seen from the point of view of neurolinguistics begins when the translator reads the SE through both eyeballs. Then go to the optical nerves that are transmitted to the occipital lobe. From the occipital lobe the lingual expressions move towards the Wernicke area through the angular gyrus. Then the process of language selection occurs, such as word selection, matching words and so forth. Then forwarded to the brocca area where the area of this language that strung in circulation to the upper motor cortex to move the hand to write or type the TE. A little bit difference occurs in interpreting process when seen from neurolinguistics aspects. The process begins by hearing SE through ears. Then the lingual expressions are transmitted to temporal lobe through the auditory nerves. Then they later are transmitted to Wernicke area to breakdown the SE meaning. After the appropriate meaning of TE are finally determined, then Wernicke will order Broca area to express it. Finally Broca orders the lower motor cortex to move; and then the lower motor cortex will activate the interpreter’s speech organs; muscles of respiratory, phonic, resonance, and articulator to express TE.

References
Kemmerer, David. (2014). Neurolinguistics: Mind, Brain, and Language. West Lafayette: Department of Speech, Language, and Hearing Sciences; Department of Psychological Sciences Purdue University.


