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# Challenges and Prospects of Translating Scientific-Technical Concepts into Igbo: The Case of an English-Igbo Translation of selected texts from Nosiri and Nwaogwugwu's Pharmacology

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## Abstract

This paper on translation studies, involving the practical translation of the aforementioned texts, accompanied with a justificative analysis of the translation techniques adopted in the operation, is envisioned to contribute to efforts to bridge the language barriers to the transfer of scientific knowledge from English to Igbo, on one hand, and the spread of scientific information across the different language and cultural communities of the world, on the other hand. it is also targeted at arousing the interests of the students of Igbo, especially in Nigerian tertiary institutions, with its potentials to be a tool in their hands both as stakeholders in the project of promoting Igbo language and culture and prospective partners of electronic and other mass media practitioners, for the orientation of the illiterate Igbo population on drugs and their applications in healthcare. The practical aspect of the study is based on the interpretative and skopos theories of translation. Methodologically, the study follows the traditional translation process of the assimilation of the content of the source language text, the mental conversion of the textual content into the target language, the practical drafting of the perceived equivalent message of the source language text in the target language, and subjecting the translated text to verification, to ensure as much its closeness to the original text as possible. The study further reflects on the typology of the original text and advocates a recourse to the transemic approach to the translation of texts of such type, highlighting lack or paucity of equivalent terms in Igbo for the expression of scientific concepts and conclusively underscoring the imperative of terminological researches in Igbo, in the various fields of science and technology.

**Keywords:** Scientific-technical Translation, Language Barriers, Terminological Research, Source Language Text, Target Language Text, Pharmacology

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## Introduction

It is important to state the background to this study, thus: Amano et al. (2016) recognize the fact that languages are still a barrier to global science, as they pose a serious barrier to the transfer of scientific knowledge, and thus remark:

> Another consequence of language barriers that becoming increasingly important operates in the opposite direction: much scientific knowledge is now unavailable in local languages as publication in English has become prevalent. A factor this is that even scientists whose mother tongue is not English aim to produce papers in English for publication in high impact journals given the clear advantage for their careers. (11)

## Conceptual and theoretical Framework

This introductory part of our discourse will not be complete, without establishing the fact that the study is based on a framework of theoretical reflections on some of the above stated key concepts driving it, such as Translation, Scientific-technical Translation, Interpretative Theory of Translation, Skopos Theory of Translation and Pharmacology.

## Translation

Oxford Advanced English Dictionary defines *Translation* simply as a written communication in a second language having the same meaning as the written communication in a first language. This implies that translation, basically involving two languages- the source language and the target language, aims at the transfer of the meaning or message of a given source language text into the target language. However, there cannot be an absolute (100%) realization of the meaning of a source language text in a target language, as there cannot be a perfect translation. Thus, Translation can at best only achieve the reproduction in the receptor language, the closest natural equivalent of the source language text in the target language. This is what Nida as quoted in Ezuoke (2019, P. 59) refers to as *dynamic equivalent. For Leornardi Vanessa(http://en.wikipedia.org/Vanessa Leonardi):*

> Dynamic equivalent is defined as a translate principle according to which the translation seeks to translate the meaning of the original in such a way that the Tl(Target Language) wording will trigger the same

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> impact on the TL audience as the origin wordings did upon the SL(Source Language) audience**.**

***Text Typology***

Being a medical text, the source language text in this study qualifies its translation as a scientific-technical translation, as different from the other two main domains of translation, namely, literary translation and pragmatic or general translation. Scientific-technical translation involves the translation of texts in all the various fields of science and technology, featuring the scientific language, described as language of symbols, as characteristically, it involves the use of symbols, numbers, chemical names, etc.

Ajunwa (2014, P. 141) observes thus:

> The language of science is, at times, highly specialized, but often structured logically, impersonal, unequivocal, clear, precise, objective, impartial and restricted. Compared with literary language, it is totally devoid of flowery
> expressions such as figures of speech, idioms and proverbs, which are susceptible to multiple interpretations.

Scientific concepts, Ajunwa further observes, are believed to be universal, irrespective of the language or culture in which it was originally conceived." Well written scientific texts are devoid of emotive language, connotations, sound-effects and original metaphors, as commonly found in literary texts''

**Interpretative Theory of Translation**

Also known as the theory of meaning, the interpretative theory as applicable to translation, originated mainly from Danica Seleskovitch and Mariane Lederer of ''L'école de Paris'', based on the view that to speak is to communicate, and: ''Si l'on parle, c'est avec l'intention de communiquer, il n'y a pas de message qui ne vise pas transmettre un sens''.(If we speak, it is for the purpose of communicating. There is no message without a meaning.) (Our translation).

This explains why this theory is also known as the theory of meaning, its proponents recommending three main steps to follow in every translation operation, viz: Comprehension, Reformulation and Justification.

***Skopos theory of Translation***

This theory is based on the view that translation should be guided by its functionality in the target language culture, ''Skopos'' being a Greek word meaning ''Goal'' or ''Purpose''.

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Vermeer who originated this theory, sees translation as a sort of behaviour as seen in actions. Thus, the actor should (potentially) be able to explain why he acted the way he or she did, and not otherwise. That is to say that the authentic reasons for actions can always be perceived from the objectives or expression of goals behind them.

**Pharmacology**

Defined by the Department of Pharmacology, University of Alberta as:'' The scientific study of the effects of drugs and chemicals on living organisms, where a drug can be broadly defined as any chemical substance, natural or synthetic, which affects a biological system, pharmacology may involve how organisms handle drugs, identification and validation of new targets for drug action, and the design and development of new drugs to prevent, treat and cure disease.(www.ualberta.ca)

Oxford Advanced English Dictionary defines Pharmacology as the science or study of drugs: their preparation and properties and uses and effects. (advanced english=dictionary.en.softonic,com)

**Background Information on the translated text**

The translated texts, also herein referred to as the original texts, were randomly extracted from the first edition of the book Pharmacology, written by Chidi Ijeoma Nosiri and Caleb Joel Nwaogwugwu, published by Excellent Print Production Enterprises, Owerri, Imo State of Nigeria, in 2022. They are by nature of basic information, orientation and educational values, and are selected on that premise in an order of preference by estimation. We understand from the authors' preface to the book, that it is aimed at preparing students for basic but rudimentary understanding of the interpretation of action and toxicity of drugs on life process. This understanding or knowledge is worth being transferred and shared to the illiterate Igbo audience, as partly or indirectly targeted through the instrumentality of translation as the thrust of this paper.

**The imperative and challenges of Igbo medical translation**

Explaining the importance of medical translation for the healthcare industry generally, and why it has to be done by professional translators. Osoblivaia (2022) informs us that:

> Medical translation is an essential part of healthcare because it helps in providing accurate information to patient and other healthcare workers, The accuracy of the information can be affected by several factors, such as cultural differences, different terminologies and even different languages, Medical translation is also very important as it helps in reducing the chains of miscommunication between doctors, nurses and patients. Miscommunication can result

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> in wrong diagnosis and treatment plans, or even lead to serious health problems like infections and diseases.

Lack of access to information of health value, due mainly to illiteracy and deficiency in English and other foreign languages vehiculing most of them related to diseases prevalent in Africa, as a whole, and Nigeria, in particular-prevention, causes, signs, symptoms, treatment, management, etc., accounts for why majority of the Igbo population down with or affected by these diseases, are of this class. A major factor behind this trend is lack or paucity of these health guidelines in Igbo, as could be an important tool for the information and orientation of this class of the Igbo population. Worse still, most of the doctors, nurses and other health workers lack the capacity to relate with such people in Igbo, the language they understand, on how best to go about their cases.

Truth is that there is barely enough terms in Igbo for the expression of most scientific concepts that exist in English, especially in the field of medicine or healthcare. This underscores the need to push forward with the attempts to empower all the stakeholders in the Igbo project, including indigenous mass media practitioners with Igbo translations of as many medical texts featuring Igbo medical terminologies, as possible. Further on the imperative of medical translation globally, Osoblivaia observes that ‘’Medical translation helps in communicating with non English patients who come from different countries or regions where English is not their first language. It also helps in communicating with people who cannot read or write on their own, due to age or disability issues’’**.**

According to Tarasiewicz Joanna (2023):

> In medical translation, communication is vital. A simple misunderstanding can lead to severe complications and even life threatening situations. The same applies to medical documents and reports that must be translated into different languages for patients who speak a foreign language or come from a different culture**.**

The importance of medical translation cannot be overemphasized. It is vital in ensuring that patients receive the correct diagnosis and treatment. Tarasiewicz further observes, however, that ‘’accurately translating medical terms from one language to another can be challenging, due to lack of medical terminology in common languages, making it difficult for translators to maintain consistency and accuracy. Glossaries and translation memory tools can help ensure accurate translations. (top problems with medical terms-translation:www.atltranslate.com>blog>medi…)

One of those common languages lacking sufficient medical terminology as mentioned above, is Igbo.

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**Table 1: Igbo Translation of the original Texts**

| Serial Number | English Text | Igbo Translation |
|---|---|---|
| 1. | Anti-inflammatory drugs suppress the inflammation that narrows the airways and they include Corticosteroids (which can be inhaled, taken by mouth, or given intravenously), Leukotriene modifiers and Mast cell stabilizers. | Ọgwụ ndị e ji akwụsị okuko anụahụ na-akpagbu okuko anụahụ, bụ nke na-akpachi ụzọ ikuku si apụgasị ma na-abatagasi n'ahụ. Ha gụnyere ndị a na-akpọ Corticosteroids (bụ nke a pụrụ ikuru n'ikuku, nke nụọ n'ọnụ maọbụ nke a pụrụ ịgba n'akwara), Leukotriene modifiers, nakwa Mast cell stabilizers, n'asụsụ bekee. |
| 2. | Diclofenac sodium is marketed under various brand names like Voltaren SR®, Diclocare®, Cofenac®, etc. | E ji aha orireahịa dị iche iche dịka Voltaren SR®, Diclocare®, Cofenac® na ndị ọzọ, ere Diclofenac. |
| 3. | Drugs are derived from various sources which include plants, animals, chemicals, macroorganisms, recombinant DNA technology | A na-esi n'ụzọ dịgasi iche iche emepụtasi ọgwụ, nke gụnyere osisi, anụmanụ, ihe ndị e mepụtara site na ngwakọta ihe na ibe ya, a kpọrọ chemical n'asụsụ bekee, ihe ndị nwegasiri ndụ n'ime ha, nke anya nkiti na-apụghi ihu, tekunuzu njikọtaghari nje ndi e sitere na nnyocha nchọpụta agbụrụ nke ihe ndị dị ndụ dị iche iche nweta |
| 4. | Drugs that have made it through development testing and regulatory acceptance are given trademarks by the pharmaceutical companies,eg. Lipitor, Atocor(Atorvastatin), a drug used in lowering cholesterol. | Ọgwụ ndị nwetarala nkwado ka e mechara nwale mmepụta ha n'ozuzu oke ha n'ukpuru nnyocha ka ụlọọrụ ndị na-emepụta ọgwụ na-enyegazi aha orireahịa. N'iji maa atụ,ndị a na-akpọ Lipitor, Atocor(Atorvastatin), n'asụsụ bekee, nke ikpeazụ a wee bụrụ ọgwụ e ji ebelata ihe na-akpata ọrịa obimgbu. |

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| | | |
|---|---|---|
| 5. | For acute attacks in the emergency department, magnesium is often given. | Maka ọrịa ndị dị oke njọ na ngalaba na-ahụ maka mberede, a na-enyekari magnesium. |
| 6. | For chronic asthma, other drugs that may be administered include Hidocaine or Heparin given with a nebulizer, cholchicines and intravenous immune globulin. | Ọgwụ ndị ọzọ e nwere ike inye onye nwere ụkwara umeọkụ dị oke njọ gụnyere Hidocaine maọbụ Heparin, nke e nyekọtara ya na ihe mgbaze, ọgwụ ahụmgbu, ndị a kpọrọ cholchicines n'asụsụ bekee, nakwa ọgwụ maka ọdịnma akwara nke e si n'ihe na-edozi ahụ a kpọrọ ''protein'' n'asụsụ bekee, bụ nke sitere n'ọbara, mmiriaraehi , ọkpụrụkpụahụ nakwa mkpụrụosisi. |
| 7. | Laxatives are drugs that help in resolving constipation or emptying the bowel of fecal matter, before procedures or surgery involving the lower bowel. | Ọgwụ ndị na-enye aka na mgbaza nri e riri eri maọbụ na inyu nsi tupu a waa mmmadụ afọ na mgbada afọ ka a na-akpọ ''Laxatives'' n'asụsụ bekee. |
| 8. | Most drug excretion undergoes renal filtration and close to one fifth of the plasma getting to the glomerulus is filtered via the porcs in the glomerular endothelium | Akụrụ na-ebukari ụzọ zachaa ọgwụ tupu a nyụpu ya na nsi. A na-aza ihe na-eruchaghi otu oke n'ime ise nke ọbara dị mmiri mmiri na-erute na glomerulus (ihe na-azachaa ọgwụ n'usoro ọnyụnyụ maamiri), ka a na-aza n'usoro a kpọrọ ''glomerular Endothelium'' n'asụsụ bekee. |
| 9. | Occular Pharmacology deals with the treatment of ocular disorders by administering drugs systematically or through the eye. | Ọmuụmụ maka ọrụ ọgwụ maka anya na ịhụ ụzọ gbasara ọgwụgwọ nke ọrịa anya, isite n'ọnụnụ, n'ọgbụgba maọbụ n'anya nye ọgwụ. |
| 1o. | Other drugs that directly alter the immune system (Immunomodulators) are sometimes used for patients with severe asthma, but most people do not need immunomodulators. | Ọgwụ ndị ọzọ na-agbanwe ọnọdụ nchekwa ahụ kpọmkwem(nke akpọrọ immunomodulators n'asụsụ bekee)ka a na-enye ndị nwere oke ụkwara umeọkụ mgbe ụfọdụ, mana, ndị mmadụ kachasị n'ọnụọgụgụ enweghi mkpa ọgwụ ndị na-agbanwe ọnọdụ nchekwa ahụ. |
| 11. | Recombinant DNA Technology or Genetically Engineered Drugs: This is a | A na-esi n'ihe nakwa n'ụzọ ndị dịgasi iche iche emepụtagasi ọgwụ, |

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| | | |
|---|---|---|
| | field though relatively new that has been developed by discoveries from Recombinant DNA Technology, Molecular Biology, DNA Alteration, Gene Splicing Immune Pharmacology and Immunology. | bụ nke gụnyere osisi, anụmanụ, ihe ndị emepụtara site na ngwakọta ihe na ibe ya, a kpọrọ ''Chemical'' n'asụsụ bekee, ihe ndị nwegasiri ndụ n'ime ha, nke anya nkiti na-apụghị ịhụ, tekunuzu njikọtaghari nje ndị e sitere na nnyocha nchọpụta agbụrụ nke ihe ndị dị ndụ dị iche iche nweta. |
| 12. | Synthetic drugs are produced using chemical synthesis where chemical derivatives are rearranged to form a new compound. | A na-emepụtagasi ọgwụ ndị na-enweghi akụrụngwa ọnatarachi, site na ngwakọrịta ihe dị iche iche, nke na-ewe ịhazịgharị ihe e sitere na ngwakọrịta ahụ nweta, iji nweta ihe sitere na ngwakọrịta ihe na ibe ya dị ọhụrụ. |
| 13. | The main organs responsible for the excretion of water-soluble substances are the kidney. | Akụkụahụ ndị ọrụ ha kacha dịrị mkpa n'iji mmiri zachaa ihe e riri eri maka ịnyụpụ ya na nsi, bụ akụrụ, bụ nke a na-akpọ ''Kidney'' n'asụsụ bekee. |
| 14. | The pharmacodynamics of a drug can be affected by aging, physiologic changes due to disorders or other drugs. | Nka, mgbanwe a na-enwegasi n'ọnọdụ ahụ sitere afọ na nkwaru maọbụ ọgwụ ndị ọzọ daputa puru imetuta site mgbanwe a na-enwe n'ọrụ ọgwụ. |
| 15. | With the help of Biotechnology, using living organisms, Genetically Engineered Drugs are developed hence known as Biologics, Recombinant DNA expressed products, Biopharmaceuticals, Bioengineered or Genetically Engineered Drugs. | Site na enyemaka nke tekunuzu nke isite na njikọ nke ihe ndị si na sayensi ọnatarachi na sayensi njinia mepụtagasia ihe ndị bara uru, na-emepụtagasi ọgwụ ndị sitere na njikọ nke nje agbụrụ dị iche iche, bụ nke a na-akpọ Biologics, Recombinant DNA expressed products, Biopharmaceuticas, Bioengineered maọbụ Genetically Engineered Drugs n'asụsụ bekee. |
| | | |

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Commentary on the Igbo Translation of the Original Texts

This commentary focuses on the techniques of translation to which we had recourse in translating the source language texts numbered 1-15, in part or in full, as follows:

| | **Source Language Text** | **Target Language Translation** |
|---|---|---|
| 1 | Anti-inflammatory drugs suppress the inflammation that narrows the airways. | Ọgwụ ndị na-egbochi mfuli ahụ na-akpachilata ụzọ ndị ikuku si abata ma na-apụkwa |

Here, the English adjective ‘’inflammatory’’ is translated as ‘’mfuliahụ’’, a noun, in Igbo, showing the technique of transposition, while it is a case of stuffing in the Igbo translation of the four word English expression’’…that narrows the airways’’ with eight words: ‘’na-akpachilata ụzọ ndị ikuku si abata ma na-apụkwa.

| | | |
|---|---|---|
| 2. | Diclofenac is marketed under various names… | E ji aha orireahịa dị iche iche ere Diclofenac… |

This is a case of literal or word for word translation technique.

| | | |
|---|---|---|
| 3 | Drugs are derived from various sources which include….Recombinant DNA Technology. | A na-esi n’ihe nakwa n’ụzọ ndị dịgasi iche iche, nke gụnyere tekunuzu njikọtaghari nje ndị e sitere na nnyocha nchọpụta agbụrụ nke ihe ndị dị ndụ dị iche iche nweta |

The Igbo translation of the three word English term ‘’Recombinant DNA Technology’’ here involves eighteen words: ‘’ tekunuzu njikọtaghari nje ndị e sitere na nnyocha nchọpụta agbụrụ nke ihe ndị dị ndụ dị iche iche’’, showing stuffing, while the English adjective ‘’Recombinant’’, translated as a noun ‘’njikọtagharị’’ (Recombination), is rather a case of transposition.

| | | |
|---|---|---|
| 4 | Drugs that have made it through development testing… | Ọgwụ ndị nweterela nkwado ka e mecharala nnwale mmepụta ha… |

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Though the entire English could be said to have been literally translated into Igbo, this part of it involves modulation, wherein the view of the word ‘’development’’ changes from that of ‘’growing’’(act of improving by expanding or enlarging or refining’’, or ‘’ a process in which something passes by degrees to a different stage(especially a more advanced or mature stage)(Advanced English Dictionary) to that of ‘’Production’’, translated as ‘’mmepụta’’ in Igbo.

| | | |
|---|---|---|
| 5 | …Magnesium is often given….. | …..A na-enyekarị magnesium….. |

This is a case of literal translation.

| | | |
|---|---|---|
| 6 | Other drugs that may be administered include…. | Ọgwụ ndị ọzọ e nwere ike inye gụnyere…. |

This largely word-for-word translation features the technique of transposition, as the past participle form of the English verb ‘’administer’’, being ‘’administered’’, changes to its infinitive form-‘’ to administer ‘’, with its Igbo translation as ‘’inye’’.

| | | |
|---|---|---|
| 7 | (a)…That help in resolving constipation or emptying the bowel… | ….na-enye aka na mgbaza nri e riri eri maọbụ n’inyu nsi… |
| | (b) Laxatives are drugs that help…. | Ọgwụ ndị na-enye aka na mgbaza nri e riri eri maọbụ n’inyu nsi… |

Here, there is a change to the opposite or negative point of view of the English noun ‘’Constipation’’ (irregular and infrequent or difficult evacuation of the bowels’’ with its Igbo translation as …’’mgbaza nri e riri eri…’’, showing the technique of modulation. There is also a recourse to stuffing as one English word. ‘’Laxatives’’ in (b) is translated with more than nine words ‘’ Ọgwụ ndị na-enye aka na mgbaza nri e riri eri maọbụ n’inyu nsi….’’

| | | |
|---|---|---|
| 8 | Most drug excretion undergoes renal filtration… | Akụrụ na-ebukarị ụzọ zachaa ọgwụ tupu anyụpụ ya na nsi… |

Here, from the viewpoint of being the superlative of ‘’more’’ and ‘’much’’, the English word ‘’most’’, translated with the suffix ‘’kari’’ in the Igbo expression ‘’na –ebukari ụzọ’’ changes to the action of ‘’preceding’’, showing modulation. The English noun ‘’excretion’’, translated into Igbo with the verb ‘’nyụpụ’’(excrete)in ‘’anyụpụ’’( is excreted) and the English adjective ‘’renal’’ translated into Igbo as ‘’akụrụ’’(kidney) indicate the use of transposition.

| | | |
|---|---|---|
| 9 | Occular Pharmacology deals with the treatment of ocular disorders… | Ọmụmụ maka ọrụ ọgwuanya na ịhụụzọ bu maka ọgwụgwọ ọrịa anya… |

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The Igbo translation of the English adjective ‘’occular’’ as ‘’anya’’ (Eye), a noun, shows transposition. Stuffing is rather the case in the Igbo translation of the English word ‘’Pharmacology’’ with more than five words, as ‘’ọmụmụ maka ọrụ ọgwụanya na ịhụụzọ.

| | | |
|---|---|---|
| 10 | …but most people do not need immunomodulators | …mana ndị mmadụ kachasi n’ọnụọgụgụ enweghi mkpa ọgwụ ndị na-agbanwe ọnọdụ nchekwa ahụ. |

The Igbo translation of the one word English term ‘’immunomodulators’’ as ‘’ọgwụ ndị na-agbanwe ọnọdụ nchekwaahụ’’, is indicative of stuffing.

| | | |
|---|---|---|
| 11 | …This is a field relatively new | … ọ bụ eziokwu na nkea bụ mpaghara e nwere ike isi na ọ dị ọhụrụ. |

This is another case of stuffing, involving the translation of a sentence of six words with more than ten words in the target language.

| | | |
|---|---|---|
| 12 | (a)Synthetic drugs are produced using chemical synthesis…. | A na-emepụtagasi ọgwụ ndị na-enweghi akụrụngwa ọnatarachi site na ngwakọrịta eluala nke ihe dị iche iche, nke na-ewe ịhazighari ihe e sitere na ngwakọrịta ahụ nweta, iji nweta ihe sitere na ngwakọrịta ihe na ibe ya dị ọhụrụ. |

Here, it naturally calls for stuffing or amplification to translate the English adjective ‘’synthetic’’ into Igbo, as it, one word, takes five words ‘’ ọgwụ ndị na-enweghi akụrụngwa ọnatarachi’’. The two word term ‘’chemical synthesis’’ is amplified in Igbo, taking over twenty five words ‘’ ngwakọrịta eluala nke ihe dị iche iche, nke na-ewe ịhazighari ihe e sitere na ngwakọrịta ahụ nweta, iji nweta ihe sitere na ngwakọrịta ihe na ibe ya dị ọhụrụ’’ to be translated.

| | | |
|---|---|---|
| 13 | The main organs responsible for the excretion of water-soluble substances are the kidneys. | Akụkụahụ ndị ọrụ ha kacha dịrị mkpa n’iji mmiri zachaa ihe e riri eri maka nnyụpụ ya na nsi bụ akụrụ, bụ nke a na-akpọ ‘’kidney’’ n’asụsụ bekee. |

Here, too, it takes stuffing to translate the three word English expression ‘’ The main organs responsible…’’with seven words in Igbo: ‘’Akụkụahụ ndị ọrụ ha kacha dịrị mkpa…’’.

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Transposition comes into play with the Igbo translation of the English adjective ''responsible'', with a noun ''ọrụ'' (work/role) in the target language. That is also the case with the Igbo translation of the English noun ''excretion'' as a verb ''nyụpụ'' in its infinitive form ''ịnyụpụ'' (To excrete).

| | | |
|---|---|---|
| 14 | The pharmacodynamics of a drug can be affected… | … pụrụ imetụta mgbanwe a na-enwe n'ọrụ ọgwụ… |

Here, the English noun ''Pharmacodynamics'' as one word is translated with more than four words-----''mgbanwe a na-enwe n'ọrụ ọgwụ'' in Igbo, again showing stuffing. The English adjective ''affected'' is translated as a verb in the infinitive ''imetụta'' (to affect) in Igbo, showing transposition.

| | | |
|---|---|---|
| 15 | With the help of Biotechnology, using living organisms, genetic engineered drugs are developed. | Site na enyemaka nke tekunuzu nke isite na njikọ nke ihe ndị si na sayensi ọnatarachi na sayensi njinia mepụtagasia ihe ndị bara uru, na-emepụtagasi ọgwụ |

Here, it takes amplification or stuffing to translate the English words '' Biotechnology'' and ''genetic'' into Igbo. The adjective ''developed'', translated as a verb ''mepụtagasia'' (develop-many) into Igbo, shows transposition.

## Conclusion

Having arguably discussed the main issues in this study exhaustively- motivation for the study, objectives of the study, conceptual and theoretical framework, organizational structure and methodology, it is deemed imperative to underscore the need to translate scientific-technical texts from English to Igbo. This is viewed as a sure means of bridging the language gaps between those proficient in English and the illiterate Igbo target language population, in the spread of scientific-technical information, on one hand, and between those proficient in the use of other source languages and other target language populations deficient in the use of same and for the same purpose, at a global scale, on the other hand.

With the dearth and paucity of equivalent terms in Igbo and most other African languages of narrow diffusion for the expression of scientific concepts, the Igbo translation of the source language texts becomes a potential pool or corpus of terms for Igbo terminological research in medicine and/or pharmacology as well as a tool for the information and orientation of the illiterate Igbo masses in the area in future. We thus suggest for further studies, Igbo terminological researches in the various fields of science and technology. With all foreign

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source languages in contact, such research undertakings can yield bilingual glossaries of terms in the twin areas, as would be replicated when our original text and its Igbo translation in this study are translated into other target languages, thus serving the same purpose of bridging language barriers to achieving the common goal of transferring and spreading scientific-technical information across target languages and cultures globally. The need for terminological researches in Igbo and other such African languages in the various fields of science and technology can thus not be overemphasized.

To grasp the scientific gist of scientific texts more easily, we advocate a recourse to Ajunwa's transemic approach to translation, involving: 1.Thorough reading and understanding of the entire source language text, before attempting to translate it. 2. Segmenting the text into chunks or transemes-the smallest translatable units according to the target language genius. 3. Distinguishing between the technical and nontechnical transemes, using standard specialized dictionaries (where necessary) to try **to match the** source language transemes with their natural equivalents in the target language. 4. Where a technical transeme does not have a natural equivalent in the target language, trying to loan the source language transeme and transferring it to the target language.

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