Language, Science and Translation within a Socio-Developmental Context in Lesotho

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Abstract: In the world of industrialisation and mass production, technological designers invent ideas and products to satisfy human needs while in various technical domains specialists communicate in unison as they employ a well-established European technical jargon intelligible only to the initiated. However, in the African context, due to absence of cultural equivalence and differing educational backgrounds, highly technological concepts are not always easy to communicate to the ultimate consumer, the common man. This is exacerbated by the fact that vernacular languages are not always used at all levels of education to teach scientific and technological studies and the fact that existing scientific terminology is not sufficiently employed by the local scientific community. In Lesotho, this situation has demarcated and established a visible diametrical polarity between the specialist and the consumer (the common person), between the literate and the illiterate. The study endeavours to show the importance of language and terminology development in a predominantly monolingual society. It demonstrates how use of English as the only medium of instruction at all levels of education and social development limits the development of Sesotho in techno-scientific terminology. It manifests how this practice impairs capacity building initiatives and how it hinders collaboration and community participation in the overall development of the country among semi-literate and illiterate consumers. It further proposes a mechanism of how to create scientific terminology. Lastly, it encourages collaboration among linguists, technical translators and scientists with the aim to attempt a usable but precise Sesotho techno-scientific lexicon in various scientific fields.

Keywords: Language, Translation, Techno-scientific terminology, Cultural equivalence, Creation of scientific terminology.

1. Introduction

The importance of language in the human development at any point in time cannot be overemphasised. Without language, sharing of scientific information and knowledge would be almost impossible since all scientific communication can only be accomplished within the linguistic competences of the communicator as well as that of the recipient of the scientific information. Thanks to translation as a linguistic bridge that fills the gap between cultures, scientific information has been communicated across different cultures with the same result and impact thus affording technological designers in countries that invent and export ideas and concepts a chance to be understood beyond the borders of their own culture. Concomitantly, it has also allowed importing cultures access to information which would otherwise be conceptually inaccessible as it does not exist in the target culture.

The present paper endeavours to demonstrate how important language is in the process of social development, especially in semi-literate or illiterate communities in Lesotho. It strives to show how use of English as the primary medium of instruction impacts on the development of Sesotho in techno-scientific terminology, how it affects capacity building initiatives, collaboration and community participation in the overall national developments. The paper advocates for change of attitude towards use of Sesotho as a parallel medium of instruction most especially in socio-developmental issues. The paper further strives to propose mechanisms through which scientific terminology can be created in Sesotho and encourages coordinated collaboration among linguists, technical translators and scientist with the aim to attempt a usable but precise Sesotho techno-scientific lexicon in various scientific fields.

2. Translation and Acquisition of knowledge

Most African countries are predominantly marked by historical diversity and multilingualism. To these characteristics is added another factor - use of European languages such as English, French and Portuguese as either a national medium of instruction at all stages of education or a unifying lingua-franca among the many ethnic groups. Whatever the socio-

historic reality of any given people, the main function of any language remains the same - to communicate. However, Klikenberg [1] clarifies that even as a communication tool, language has to respond to various human needs. In mathematico-scientific fields, it employs precise and straight to the point terminology to express clear cut notions while in humanities, it becomes abstract and colourful as it expresses reality in figurative terms. In the same logic, Baboya [2] identifies three functions of language - to describe the world around man, to express things and to argue. To these functions, I would like to propose the fourth function which is in line with the objectives of the present study - to register information. What makes this function important is the fact that language is the tool through which all learnt information, be it cultural, artistic, historical, developmental or techno-scientific, is transferred and stored in the memory. It is also the tool used to recall information and re-express it. This view is shared by Ademowo [3] who argues that language is so essential to human existence, education and socialisation that such abstract aspects of culture and identity as tradition, proverbs, science and mathematics, etc. are conceived and passed from generation to generation through language.

It is in this context that I advocate for use of Sesotho in techno-scientific development issues and education as recommended by UNESCO [4] and Ademowo [5]. I argue and hypothesize that it can contribute towards the development of Lesotho only if it is undertaken with utmost preparation, a wider, longer and sustainable vision that can be upheld and defended by the majority of the stakeholders because, like any other revolutionary policy, it will meet with resistance at its introduction and because for some people, the notion of being educated is almost always associated with the ability to speak the English language. This argument is validated by the fact that, according to Lesotho National Development Corporation (LNDC) [6], Lesotho boasts the advantage of being a predominantly monolingual and monocultural since Sesotho speaking population constitutes 99.7% while the 0.3% includes Nguni dialects, Europeans, Asians and other African expatriates. It is therefore my argument that this advantage has not been fully exploited and that there is no point in putting English in the forefront in all socio-developmental issues and particularly in earlier years of education, since the majority of the population is more conversant in Sesotho than it is English. As for use of Sesotho in education, I base my argument upon the experiences of Sesati *et al* [7] and Setati and Moschkovich [8] who conclude that, in their early day of schooling, the main challenge in learning mathematico-scientific concepts was use of a foreign language (English) as the only medium of instruction as they not only had limitations but were forced to

memorise concepts instead of understanding them. Thus, in the case of Lesotho, use of Sesotho would render these concepts accessible since in their conceptual and abstract forms, mathematico-scientific concepts require mastery of a complex and demanding technical language, most especially if the language of instruction is foreign to both the student and the instructor.

To remedy this problem, I propose an elaborate and well-researched language and translation policy built around key economic and socio-developmental areas such as agriculture, education, arts, trade and industry, commerce, communication, provision of techno-scientific services, etc. The second step involves a well-funded, coordinated collaborative translation work among technical translators, specialists and educators in these key educational, economic, techno-scientific and socio-developmental areas.

3. Materials and Methods

To put my argument and hypothesis to test, I conducted a quantitative and qualitative interview to 50 primary school teachers in 20 primary schools. The teachers were bilingual with Sesotho as L1 and English L2. The choice for primary schools teachers is justified by the fact that their early primary schooling was under a bilingual schooling system - that is a system where the mother tongue language is used as a medium of instruction while the L2 (English) is learnt later on. This meant they could relate with use of Sesotho (L1) as a primary medium of instruction up to at least Standard 4 or 5 (Grade 4 or 5). The aim of the exercise was to validate the feasibility of bilingual schooling. They were supposed to respond to a number questions indicated in Table 1 with four (4) responses listed below. The responses are coded in the four columns according to the opinion given by the teachers: 1. = *Most definitely;* 2. = *Yes;* 3. = *Maybe;* 4. = *Not at all.*

Development of scientific terminology in Sesotho:

Data has been collected from the below mentioned documents as proof of the fact that they are well established in the Sesotho lexicon. In accordance with the one of the objectives of the present paper and based on the fact that, in African issues, one cannot neglect orality as a vehicle of intangible cultural heritage, I call upon informer-experts chosen on the basis of their specialty:

- Sesotho-English Dictionary (1893) et (2000)

English	Sesotho	Gloss
hearing aids [N1 + N2]N	*lithusa-kutlo* [N1 + N2] N	helpers hearing
thermometer	*sebala-mocheso* [N1 + N2] N	Counter heat

Questions asked	1	2	3	4
1. *Do you think use of L1 (mother tongue language) in earlier stages of schooling has any advantages at all over use of a foreign language as the medium of instruction?*	45	5	0	0
2. *Do you think bilingual schooling would improve understanding of scientific concepts for children?*	25	20	5	0
3. *Would it be helpful to have Sesotho books in the teaching and learning of science and technological studies?*	35	10	5	0
4. *Do you think use of L2 (foreign language - English) as the only medium of instruction at all levels of education has advantages at all over use of L1 (mother tongue language -Sesotho)?*	10	10	20	10
5. *Do you think use of English in all socio-developmental issues affects community participation?*	35	15	0	0
6. *Do you think a collaborative translation work can help Sesotho become a scientific language?*	50	0	0	0
7. *Do you think availability of scientific information in both English and Sesotho can enable communication among scientists and common people?*	50	0	0	0
8. *Is there need for a policy on bilingual schooling built around key economic areas?*	40	5	5	0

- Leselinyane la Lesotho

Informant-experts

- Contractors
- Retired Sesotho Teachers

The analytical approach taken in this study is the one used by Dispaldro et al. [9], who postulate from the Canadian point of view that the dominance of English over French has created a considerable linguistic imbalance in favour of English. In order to bridge the linguistic gap in French in general, they propose a techno-scientific model of lexical creation as a morphological borrowing based on the nominal and syntagmatic structure of the source language but adapted in accordance with the morphosyntactic elements of the target language.

There are a number of reasons for opting for a literal techno-scientific translation but only four have been identified as pertinent in as far as Sesotho is concerned.

- The transcription of the source language model in accordance with the morphosyntactic rules of Sesotho allows for immediate understanding of the material object being referred to by the concept;
- It is a terminology creation method that allows a language to quickly make up for its terminology

insufficiency when a new concept is introduced into the Sesotho culture;

- This transcription renders technical terminology accessible and semantically transparent;
- It showcases the linguistic tools, the vitality of Sesotho as well as its capacity to adapt to new linguistic situations.

In the present study, literal techno-scientific translation is studied as a form of naming and therefore, as a contribution towards the lexical expansion of Sesotho, especially in scientific domains.

4. Morphosemantic analysis

Naming by exact reproduction of the source language model:

In the first category, neoclassical compounds such as *thermostat, ecosystem, autograph, thermometer,* etc., maintain the [N1 + N2]N construction but the constituents are inversed in a manner that renders them semantically transparent, in accordance with the morphosyntactic rules of Sesotho as it can be observed below:

The morphosemantic analysis of the term *sebala-mocheso* "reader heat = thermometer" [N1 + N2]N,

clearly shows that the two constituents forming the compound noun are a result of a derivative process whereby the determinant on the left (N1) is derived from the verb *ho bala* "to count/calculate" by adjoining the prefix *se-* (C7).[*] The verbal suffix only remains in its place in order to function as an indicator that the word in question is an agent noun even though the word does not exist in isolation. In the second constituent acting as the modifier, *mocheso* "heat" (N2) is derived from the verb *ho chesa* "to heat" whereby the prefix *mo-* C3 is added to the root and the suffix *-a* disappears to allow *-o* to function as a nominal suffix.

The decomposition of this neoclassical compound has rendered it semantically transparent to the common man so much so that if in English one has to peruse the dictionary to understand that a thermometer is actually *an instrument for determining temperature; especially: one consisting of a glass bulb attached to a fine tube of glass with a numbered scale and containing a liquid (as mercury or colored alcohol) that is sealed in and rises and falls with changes of temperature* and that etymologically speaking, the term is derived from *therm* + *o* + *meter* (MWUD[†]), Sesotho names the apparatus in a clear and simple manner that helps make it comprehensible to both the initiated and the common man in that one understands that we are talking about an apparatus that *determines the amount of heat.*

Naming by lexical innovation:

This process consists in translating loosely to obtain a new term that does not resemble the English word in any manner. I consider these terms as having been innovated if they did not exist before the introduction of the material object to which they refer, if they were rendered polysemic and if Sesotho dug into its resources of lexical creation in order to respond to bridge the evident techno-scientific lexical gap brought by new realities that were not part of the indigenous culture.

English	Sesotho	Gloss
Radio	*seea-le-moea*	thing that goes with air
aeroplane	*sefofane*	flying thing

Seea-le-moea "thing that goes with air = radio" is a well-established phrasal noun in Sesotho even though research leads to hypothesise that originally, it may have been coined to translate *wireless*, British English for radio. While *seea-le-moea* is understood to refer to a radio, the phrasal noun *seea-le-moea-pono* "thing that goes-with-air-vision = television" was derived

probably after 15th September 1988, which is the year of establishment of Lesotho Television (LTV). The latter is an abnormal assemblage derived from a syntactic sequence that was recursively transformed into a lexical unit, where *pono* "vision" is added to the phrasal noun to form an even more complex assemblage. From a morphosemantic point of view, the lexical freezing of this combination isolates *seea-le-moea* "radio" and makes it a single independent noun while *pono* "vision" constitutes another single independent noun. The assemblage "radio + vision = television" makes it possible to understand the combination a television as a radio on which you can see images.

5. Conclusions

While the present study does not advocate for total abolition of English in education in Lesotho, a few observations have been made regarding bilingual learning and teaching of techno-scientific concepts. Firstly, some students lose interest in school not because they are below average but because they struggle with the L2 (English) which is used as the only medium of instruction. Secondly, use of Sesotho through translation of key concepts would give all students a fair chance in education since examinations would be set and taken in a language they fully understand. Thirdly, use of Sesotho would result in increased parent participation in issues relating to children's education. It is probable that these observations be applicable across other fields than science and mathematics. On this basis, it is recommended that the Ministry of Education conduct a focused study on bilingual learning as an alternative to English medium teaching or total immersion system that is currently used by private and semi-private schools.

As for techno-scientific terminology development, it is evident that a great deal of translation work in collaboration with specialists in key techno-scientific and economic areas such as agriculture, education, trade and industry, commerce, communication, provision of techno-scientific services, etc. is imperative. The task that concerned authorities, project managers, linguists as well as language users in general are faced with is to allow the language to change and develop concomitantly with new realities surrounding it, whether it be through techno-scientific borrowing of words from other languages, deriving them from the already existing lexicon or coining new terms. This would have trickle-down effects that would fast track the pace of development by increasing the rate of community participation since most people would be talking about the same concepts with minimal ambiguity. Establishment of a technical lexicon in all

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[*] C8 represents (Class 8) of the noun classes of Sesotho.
[†] Merriam Webster Unabridged Dictionary.

fields of specialty would also simplify access to information by specialists and researchers. Considering that Lesotho is a monocultural state, the probability of attaining success in developing scientific terminology through translation may be relatively high, however, it is imperative that there be political will, well-articulated language and translation policy, ample funding and the desire from participating stakeholders to collaborate on such a monumental task as scientification of Sesotho.

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