ABSTRACT

Writing technology is a central issue for Human Language Technology (HLT) both in terms of theory and actual implementation. Two issues that neatly divide theory and practical implementation are what and how to represent. What to represent takes us into the realm of linguistic analysis. Once the question of what to represent is answered reasonably well, the question of how to represent has to be addressed. This is where computer technology comes in. Challenging issues that have to be addressed in alphabetic writing systems are how to felicitously represent difficult graphemes and other diacritics. These issues are discussed with reference to two African languages — Dagaare and Twi. After reviewing works for the development of orthography for these languages (Bodomo, 1997, 2000; GLASC, 1990; Hartell, 1993), we propose a set of Unicode graphemes for Dagaare and Twi, respectively, based on a discussion of the phonemic systems of the languages. We then indicate how these conceptualized Unicode graphemes that we have proposed can be developed practically into a real keyboard system for the two languages.

Keywords: African languages; Dagaare; human-computer interaction; input/output; keyboard; literacy; normalization; Twi; Unicode issues; writing systems

INTRODUCTION

Dagaare and Twi are spoken mainly in Ghana but also in other parts of West Africa. Both languages belong to the Niger-Congo language family, but Dagaare is a member of the Gur branch, while Twi belongs to the Kwa branch. Like most African languages, Dagaare and Twi are encoded in the alphabetic writing system.

In documents written in Dagaare or Twi, some phonemes in the languages are represented by different graphemes from
Indeed, the issue of diverse graphemic representation of some of the phonemes is an old one. It began with the European missionaries (and other non-native speakers of Dagaare and Twi) who started writing the languages using their own writing systems; specifically, the alphabetic writing system. We believe that the European missionaries and other non-native speakers were unable to correctly perceive some difficult phonemes that are unique to the languages. Thus, such phonemes were represented differently from one writer to the other on the basis of how each writer conceptualized them. It is also possible that it was convenient for the European missionaries to adapt some sounds/graphemes in their languages to represent a similar but unique sound in Dagaare or Twi. There is more to this writing problem on the part of native writers, as well. Unguided adoption and use of the orthography bequeathed to them by the European missionaries also have contributed to the diverse representation of some phonemes as graphemes. In the present age of technology, however, the problem generally has been due to the unavailability of a keyboard system that provides a defined set of graphemes for Dagaare and/or Twi.

In this article, we review earlier works on the development of orthography for Dagaare and Twi. Based on the review, we attempt to identify which speech units (segments and suprasegments) to represent and how each phoneme should be represented as a grapheme. In other words, we will propose a set of Unicode graphemes for each of the languages. In the face of current technological advancements, we believe that a proposal of a set of graphemes is not enough for the advancement of a language’s orthography. Thus, just as sets of graphemes of many European languages have been developed, we indicate how the set of graphemes proposed for each of the two languages could be developed practically into one real keyboard system.

Without doubt, the development of a keyboard system for Dagaare and Twi will facilitate more writing in the languages. A real keyboard system for Dagaare and Twi is also necessary for a better expression of Dagaare and Twi in texts, which will also go a long way to enhance the learning of these languages.

WRITING SYSTEMS FOR DAGAARE AND TWI: A SURVEY AND SUGGESTIONS

There is no known evidence that other writing systems besides the current alphabetic writing systems have been used before to express Dagaare and Twi. We know, however, that the adoption of the alphabetic writing system for Dagaare and Twi actually stems from convenience in writing on the part of the colonial rulers and early European missionaries. In their bid to write Dagaare and Twi (and indeed, many other African languages), these early writers found it easier and more comfortable to employ their native writing systems. Accordingly, they reduced Dagaare and Twi to the alphabetic writing system\(^2\). As Bodomo (1997) notes, therefore, one would not be far from right to say that the choice of the alphabetic writing system for Dagaare and other West African languages is not based on linguistic appropriateness, but purely on historical reasons. At present, the alphabetic writing system could be described as the most suitable for Dagaare and Twi, since there has not been any other known writing system to compare it to. There also has not been any attempt to adopt any other writing system.
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