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**Report of Research on
Two Mofu Orthography Concerns**

Kenneth R. HOLLINGSWORTH

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0. Introduction

This paper is a report of the outcome of two different investigations concerning two concerns regarding the Mofu¹ orthography. Both investigations occurred during the 1991-93 research period.

The first concern dealt with whether or not a morphophonemic or a phonetic presentation of "collapsed vowels" was easier to read, especially for oral reading. An explanation of the question and how it was investigated is found in Section 1.

The second concern dealt with whether tone marked on a text really made a necessary difference for a native Mofu reader. The feasibility or non-feasibility of teaching a native Mofu speaker to write tone was not considered in this investigation. An explanation of the concern and how it was investigated is found in Section 2.

A summary of the conclusions drawn from these investigations is found in section 3. The texts used in the different tests are found in the Appendix.

1. Whether or not a morphophonemic orthography is easier to read

The original concern had to do with whether or not the orthography as currently written was best for a mother-tongue speaker of Mofu. Of particular concern were how to write "collapsed vowels." Digraphs /ay/ and /ey/ become [i] and /aw/ becomes [u], in certain contexts. For example, *bay* 'chief' or *ley* 'field,' pronounced [ba¹] and [le¹] respectively in isolation, become [bi] and [li] when in a noun phrase.

Would the orthography would be easier to read, especially for beginners, if the orthography were written phonetically to show when these "collapsed vowels" occur? The current orthography, written morphophonemically, did not show these vowel changes and the (oral) reader had to insert them on the basis of reading ahead to look for word groupings before pronouncing. Sarah Gudschinsky (1973:124) *A Manual of Literacy for Preliterate Peoples* [Ukarumpa, Papua New Guinea: Summer Institute of Linguistics], 1973:124) advises: "There may be built into the language itself a preference for a phonemic transcription

or a morphophonemic one. The orthography, to be effective, must reflect the people's natural preference for one or the other." The original study was conceived in order to try to determine whether the Mofu prefer a morphophonemic or phonetic orthography.

Test design. The test was designed to have subjects read orally a set of texts. Two sets of texts were prepared, one text written in the current, standard orthography, another text written in a modified, phonetic orthography. Fourteen people were asked to read. As recommended by Gudschinsky (1973:126-27), these readings were recorded on audio cassette. Later, they were evaluated by two independent evaluators using a predetermined scoring system, evaluating hesitations and misreading.

Unfortunately one cassette recording with the majority of the test subjects' reading was lost. This means that the mistakes and hesitations in reading both the current and proposed orthography can not be calculated. In spite of the fact that no calculations can be made, some casual observation of the readers' mistakes have shed insights on how Mofu readers process their orthography.

Some observations during testing. Contrasting the reading styles of two readers, called A and B, provide some insights as to whether reading depends mostly on morphophonemic clues or phonetic clues. Reader A had some elementary schooling (and was presumedly an experienced reader in French). He had just finished the second primer, and was certified as able to read in Mofu. He was an excellent reader: new words (i.e., those not found in the primers) were read with ease, he was able to group words together properly and pause in the right places, and do elisions in the appropriate places. His reading was as if he were talking. Reader A read both the morphophonemic and phonetic versions of texts with aplomb. If memory serves correctly, he may have read slightly better with the morphophonemic script, but in the researcher's mind the difference in ability was due to A's non-familiarity to the phonetic orthography.

The eye-opener to what processes were occurring in a Mofu's mind while reading came with Reader B. Reader B had also finished the second primer, but was still at the hesitant reading stage, i.e., reading word-for-word without grouping phrases together. She was not able to read the standard orthography and change the vowels as one would when speaking. It was assumed that the phonetic orthography would aid this reader to read more like she was speaking. On the contrary, when Reader B read the modified orthography, with the vowel changes written in, the opposite took place. When she came to an altered word,

Reader B would pause, then pronounce the word as if it was in isolation. Reader B was somehow recognizing the word, even in its altered form, and changing it back to the morphophonemic form and pronouncing it as such.

One's conclusion from such an experience has to be that Reader B was showing preference for a consistently written form because she converted altered forms and pronounced their isolation form. If this is happening with all readers consistently, then the morphophonemic orthography should be the easier to read.

In general, the on-site observation was that all beginning readers, who were reading word-for-word, reacted much as Reader B. They did not read any smoother with the phonetic orthography than with the standard morphophonemic one. As for the good readers, most read both Mofu orthographies correctly, but they tended to hesitate on some phonetic forms. This is perhaps due to the fact they were unused to recognizing the shapes of words written phonetically.

General conclusions. While there are no statistics to validate hard conclusions, the reading patterns which were observed in most subjects indicate that the morphophonemic form in the current orthography was the easiest for most readers. From this one could say there is no need to change the morphophonemic aspect of the orthography. But further tests should be done in order to have valid statistical results.

Further testing. A major improvement in the research procedure in any further tests would be to enlarge the number of subjects tested. The larger group would decrease the likelihood of a non-test variable influencing the results.

Gudschinsky (1973:127) suggests that most orthography testing requires a fluent reader. Other suggestions by Gudschinsky (1973:127) which will be included in any further testing will be: (1) Texts that are "reasonably difficult" and not too short. (2) Question the reader (and tape record his responses) as to his comprehension of the text. Also question what was happening when he made such and such mistake.

2. Whether or not marking tone is a necessary help for the reader

Observations in literacy classes, indicate that most students have a difficult time hearing tone and relating it to the way it is written. It is rare that a student learns to mark tone well enough to write it consistently and

correctly. For this reason, knowing how to write tone has not been made mandatory to obtain a reading certificate in Mofu, but tone has continued to be marked on printed materials. However, whether or not tone needs to be written at all has been called into question.

Nida, while stressing the importance of writing tone where it marks important distinctions, also makes a case for not marking tone where appropriate.

One of the most commonly omitted phonemic features of a language is tone...it might be argued that if such tones were marked the people would read such languages with greater facility. This might be true, but the point is that people do read them quite well; and in the case of the vast majority of such languages there seems to be no recognition of any need of writing tone.

Advocating the omission of diacritics to mark tone, stress, and length may seem like linguistic heresy to some persons. Actually it is not. We simply need to recognize that for the speaker of a language it is not necessary to mark everything which is meaningful. In fact, the marking of such contrasts often seems unnecessarily cumbersome and awkward. (1964:26-27)

Nida notes the conditions under which not writing tone would be valid.

If there are only a relatively few tonal minimal pairs in the language (such minimal pairs are words which differ in meaning only because of difference of tone) and if in most instances the meanings are quite clear from the context, there seems to be little or no reason for making the tones on each syllable. (ibid.)

Nida's conditions fit the Mofu situation; Mofu has only lexical tone and not grammatical tone. The second test was set-up to attempt to ascertain how important tone is for the Mofu reader. In this study the method of testing was similar to the previous one.

The research method. Four short texts were prepared containing minimal word pairs according to tone. Each text was written with tone marked and without tone markings. A set of two texts were to be read orally onto audio cassette, and two other texts were to be read silently and the reader checked for comprehension. The comprehension texts were not recorded.

Twelve subjects were tested. First, they were given an hour of orientation to Mofu orthography with tone marked in order to be sure they understood tone marking and could use it in their reading. Afterwards, six subjects were given a set of four texts, two with tone marked and two without tone. Six other subjects were given the same texts, but where the tone had been marked on the first set, this set was not marked and where the tone had not been marked on the first set, this set had tone. This was to attempt to

neutralize any advantage or disadvantage inherent in the text. For example, subject 1 orally read text A with tone and text B without tone. Subject 2 orally read text A without tone and text B with tone. As a comprehension check, subject 1 read text C with tone and text D without tone; subject 2 read text C without tone and text D with tone.

The subjects' oral reading was recorded and later evaluated by two different evaluators according to a predetermined point system. The errors rated by both evaluators were totaled. The subjects' responses to the comprehension questions were also graded.

Checking comprehension. The subject's comprehension of two texts were tested by posing two questions after the subject had had an opportunity to read a text, either orally or silently. The responses to the comprehension questions were also graded. The results of the comprehension testing did not indicate a great discrepancy of comprehension of texts written with tone and those without it. In summary, all but three readers answered all questions correctly on the first try. One reader missed one question from Text B with tone and another reader missed one question from Text D without tone. A third reader, a weak reader, needed to look again at both texts a second time in order to answer the questions correctly.

The statistical results of oral reading. The results did not indicate a great discrepancy in oral reading between a text an orthography with tone and one without it. Charts 1 and 2 present the total errors made for each passage read by each person.

Chart 1 - Total errors for Text Set 1

subject	Text A with tone	Text C without tone
1	7	4
2	9	7
3	8	11
4	3	0
5	2	0
6	6	2
7	7	2
Average number of errors made while reading:		
Text A/tone = 6 Text C/no tone = 3.7		
Standard deviation: Text A = 2.4 Text C = 3.7		

Chart 2 - Total errors for Text Set 2

subject	Text A without tone	Text C with tone
8	12	4
9	24	24
10	2	not done
11	10	6

Average number of errors made while reading:
 Text A/no tone = 12 Text C/tone = 11.3
 Standard deviation: Text A = 9 Text C = 7.9

In the first group of subjects, the average number of errors in the text unmarked for tone was lower than the number of errors made in text with tone. The actual figures were 3.7 errors versus 6 errors. In the second group the figures were 12 errors without tone and 11.3 errors with tone, practically the same. From these statistics one could make a case that marking tone makes no difference in ease of reading or even hinders it! However, other variables should be considered. One should especially note that the standard deviation for both sets is high, but especially high for the second set.

The standard deviation for Set 1 is 2.4 for Text A and 3.7 for Text C. In Set 2, Text A has a standard deviation of 9 and Text C has a standard deviation of 11.3. The standard deviation for Set 2 is high because of the small sample. For more reliable results the testing should have involved more subjects.

Another variable that should be noted for future tests is the length of text. Text A was longer than Text C and that could be the reason for the dramatic increase in errors for Text A as opposed to Text C. The difference in length should have been compensated by Set 2, but by coincidence, most of the readers for Set 2 were less skillful readers and tended to make the average number of errors higher. By oversight the best reader of Set 2 was not asked to read Text C which may have skewed the average slightly.

3. Conclusions of both tests

Even though there are no statistics to substantiate the conclusions for the first study, informal observations during the testing indicate that the majority of Mofu readers have an innate preference to a morphophonemic orthography rather than a phonetic one. In the tone test, the statistics seem to indicate that tone does not really help the reader. Assuming the trend spotted in the first test is a correct analysis of the situation, the first test calls into question the current tone system because it is phonetic in nature. Our current tone system is written so that a word may not consistently appear with the same tone

marking. However, Gudschinsky (1973:124-25) warns that while there may be a preference for a morphophonemic orthography on one level, "there is more than one level in many languages, and the decision need not be the same for every level."

When six of the subjects were queried as to whether they preferred tone written or not, most responded affirmatively. Should tone be written for sociological reasons, the results of our first test strongly hint that the tone writing system should be changed, but that will need to be researched.

One value of this study has been to give some rough indications of the way the majority of Mofu people process the orthography. It seems that the current morphophonemic system is best suited to their reading and cognitive style. It also seems possible that the current system of marking tone is not helpful or necessary. Perhaps a more morphophonemic way of indicating tone would be more helpful. However, before a major change in the writing system is effected, more subjects need to be tested in order to decrease the margin of error.

It is hoped that more subjects can be tested soon and the results re-evaluated. This study has also served to suggest improvements in the test design. In addition to an increased number of subjects to be tested there are other improvements to be made: (1) Use slightly longer texts that are "reasonably difficult." (2) Use good readers. (3) Do orthography training on a different day and give subjects an opportunity to practice with texts before test day. (4) In addition to comprehension questions, question the reader (and tape record his responses) as to what he was thinking when he made such and such mistake. (It is expected that not everyone will be able to respond to these sorts of questions.) (5) Test for morphophonemic representation of tone vs. phonemic tone.

NOTES

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Appendix

Test 1 - Morphophonemic vs. phonetic orthography

Standard orthography, Text A

Gwezem a daw a wáy ngá tá zémay dá ray. A sawa dá léy. A wúdey nga ləmey way máwíya, amá majá ta píyá, a gwáw dǎa bá.

Fá dǎbá ha nékédey, áa fá daw tá cəved ma daw tǎa léy ngá gágémáy ngá. Gágémáy ngá ta key máaya máaya dǎa ba. Banáy ngá dáha. May fá car.

Á nékéy dey aa gázlávay, á lévey: «Bay Gázlávay dá vad, jéníya, majá léy daw ta key máaya dǎa ba. Kwá yah ndaw máaya bá, cəndá méy daw.»

Fá dǎbá ha nékédey ná, vár tá', a páwa gá. Léy ngá, tá', a key máaya.

Phonetically altered orthography, Text A

Gwezem a daw a wí ngá tá zémay dá ray. A sawa dá léy. A wúdey nga ləmey wí máwíya, amá majá ta píyá ná, a gwáw dǎa bá.

Fá dǎbá ha nékédey, áa fá daw tǎa cəved ma daw tǎa lí ngá gágémí ngá. Gágémí ngá ta key máaya máaya dǎa bá. Baní ngá dáha. Mí fá car.

Á néki dey aa gázlávay, á lévey: «Bí Gázlávay dá vad, jéníya, majá lí daw ta ki máaya dǎa bá. Kwá yah ndu máaya bá, cəndá mí daw.»

Fá dǎbá ha nékédey ná, vár tá', a páwa gá. Lí ngá, tá', a ki máaya.

Translation:

Gwezem was going to his house with grass on his head. He was coming from the fields. He wanted to build a new house, but because it was rainy season, he couldn't.

After a short while, he was walking on a path that went by his cotton field. His cotton wasn't doing well. He was suffering hardship. He was hungry.

He looked up to the sky and said: "Lord on high, help me because my field is not doing well. Even though I am not a good man, hear me."

After a while, the rains came well. His field did well.

Standard orthography, Text B

Bay Gázlávay áa dá vad. A nákey Gwézem ma daw tá céved gweegwe tá léy ngá gágémáy ngá. A lávey: «Gwézem ná, ndaw máaya, ala méy bá. A wúdey céved ngá Bay Gázlávay kaláh. Máaya ná, sí ya key vár máaya fá gágémáy ngá, majá áa dá bánay, mey fá car.»

Nékədey, nékədey, gágémáy ngá fá gəley máaya. Gwézem á lávey: «Léy daw ta key lá máaya máaya. Bay Gázlávay ta cəndá méy daw lá. Nékədey ná, ya gwaw ya ləmey way máwíyá.»

Phonetically altered orthography, Text B

Bi Gázlávay áa dá vad. A nákey Gwézem ma du tá céved gweegwe tá lí ngá gágémi ngá. A lávey: «Gwézem ná, ndu máaya, ala mí bá. A wúdey céved ngá Bi Gázlávay kaláh. Máaya ná, sí ya ki vár máaya fá gágémi ngá, majá áa dá bánay, mi fá car.»

Nékədey, nékədey, gágémi ngá fá gəley máaya. Gwézem á lávey: «Lí daw ta ki lá máaya máaya. Bi Gázlávay ta cəndá mí daw lá. Nékədey ná, ya gwaw ya ləmey wi máwíyá.»

Translation:

The Lord was in the sky. He saw Gwezem going along a path near his cotton field. He said: "Gwezem is a good man, and that's the truth. He wants the path of the Lord. It is good that I make good rains on his cotton because he is suffering, he is hungry."

Little by little, the cotton grew well. Gwezem said: "My field has grown well. The Lord heard my words. Soon, I can build a new house."

Test 2 - Marked tone versus unmarked tone
(The texts will only be presented with tone. Tone pairs are italicized.)

Text A

Gwezem ta bəzá nga hay

Gwézem bəzá nga hay cew dáha. Gwézem á nəká ná, *metəfey* zána nga gwágway ngáda bəzá hay á ná, máaya. Anda kéde, a *təfey* zána cew á bəzá hay á.

Fá dēba há nəkədey, á zəltərwa bəzá hay á fa méy nga. Á ləvtár nga jádámara zána nga gwágway á. Bəzey lánkar á *təfey* méesleb sáw aa hwáyak. Gwézem a cəfda, á ləvar: «Gwágwába fa kaká daw?» Bəzey á, a mbédára, á ləvar: «Aháw.»

Translation:

Gwezem had two children. Gwezem saw that to sew clothes for a festival for his children would be good. So, he sewed two outfits for his children.

After a little while, he called his children to him. He told them to try on the clothes for the festival. One child spit on the ground. Gwezem asked him: "Do you have a cold?" The child answered and said: "Yes."

Text B

Bəzá hay fa kam máway

Ndaw mahurá dáha manjátákáya tá bəzá ngá hay fá kam máway dásí wudéz. Amá ndaw masa *mawáy* ngá dáa bá manjákáya daa way pal máava ngá. Aa fa wúlkey majá ndaw ngá key wása tá ngá daá bá.

1. Ma kam máway ná, wa hay wa?
2. Ndaw manjákáya dá way pál máava ngá ná, wa?

Translation:

There was an important man sitting with his children playing a game under a tree. But a man without a mother's family was sitting at his house by himself. He was concerned because he had no one to play games with him.

1. Who was playing games?
2. Who was the man sitting in his house by himself?

Text C

Mana tá dam ángá hay

Mána dam ángá hay cew dáha. Dam hay á ta mbékdámara lakwál sém, amá Mána a *bərkwáta* ámba a *bərkwam* á lakwál sayá. Dam hay á, á gémam sabá. Tá', a diyám a way zel.

Translation:

Mana had two daughters. These daughters quit school. He begged them that they would return to school again. The girls wouldn't hear of it. Finally, they went and got married.

Text D

Dáw ngá bay

Dáw ngá bay táləmlá ta key máaya lá. A sləkéy dáw aa léy a ná, dáw *galan*. Ndəhay ta samawa lá ta lúma nga mafaw ngá dəgey dáw a. Amá *məslərey*

gədak ná, ta lúma nga Zamay. Ndəhay meslərey ngá bay ta kamará sləra há lá máayá. Dáa mbaw ná, gálán ngá dáha sayá. A revéy tapá áa dəma.

1. Ta lúma nga Zamay ná, a kam me?
2. Makamará slərə ngá bay ná, wa hay wa?

Translation:

This season the sorghum of the chief did well. He planted in his fields galan sorghum. People came on Tuesday to thresh it. But they started singing the threshing song on Monday. The messengers of the chief did the work well. Outside, the chief had a garden also. He raised tobacco there.

1. What did they do on Tuesday?
2. Who did the chief's work?