A new interpretation of the *Bru Vân Kiêu* vowel system[1]

Vương Hữu Lễ
University of Huế

0. Introduction

The Bru vowel system has attracted the attention of many linguists because of its complexity. It contains a high incidence of phonemic vowel nuclei. This paper will review the findings of previous studies of the vowel system of the Bru language as it is spoken in Vietnam and will attempt to give a new interpretation of it.

1. Review of previous studies

1.1 R. Phillips, John and Carolyn Miller's view

1.1.1 The American linguists of the Summer Institute of Linguistics are the first ones to have given us an interesting article and have certainly brought a serious contribution to the phonemic analysis of Bru. Their work, "The Bru vowel system: alternate analyses" carried out in the early 1960s was only published in 1976 in *Mon-Khmer Studies V* (203-218).

In that study the authors assume that the Bru vowel system lends itself to several possible phonemic descriptions. Four of these possibilities are presented: Register System, Extra Levels System, Gliding System and Vowel States System. The strong and weak points of each description are noted. In the conclusion the authors observe, "The Register System gives us a more complete and accurate ordering of the total data than do any of the other three systems" (216).

The Register System, represented by Carolyn Miller and Nuan in *Bru Language Lessons* (1974), is given in Table 1. below.

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[1]This paper is part of an unpublished monograph entitled *A Study of Bru Phonology* dedicated to Professor *Nguyễn Tài Cẩn* on his 65th birthday. I am indebted to Prof. *Cẩn* and Mr. *Hoàng Dũng* for reading through the manuscript at various stages and for making a number of valuable suggestions that have been incorporated into the text.

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Table 1. Chart of Bru vowels in *Bru Language Lessons*

	Front			Central			Back		
	Short	Reg.	Glided	Short	Reg.	Glided	Short	Reg.	Glided
High Loose	ɪ̆	i	iə	ɯ̆	ɯ	ɯə	ŭ	u	uə
High Tight		ᵉi	ɪə	ə̆	ᵊɯ	ɯ̃ə		ᵒu	ũə
Mid Loose	ĕ	e	ia	ʌ	ə	ᵊʌ	ŏ	o	ua
Mid Tight		ɛe	ɪa		ʌᵊ			ɔo	ũa
Low	ɛ̆	ɛ	ă a ᵊa		ɒ̆ ɒ ᵊɒ		ɔ̆	ɔ ᵊɔ	

1.1.2. In this table there are only three degrees of tongue height. This treatment led the authors to introduce two intermediate tongue positions: front-central (for ă, a, ᵊa) and back-central (for ŏ, ɒ, ᵊɒ). This seems to be the weakest point of the solution. G. Fant pointed out that, "Even the maximally compact vowel [a] can be regarded as a back vowel from the articulatory point of view" (1963:143). Thus, there is no reason to consider /ŏ, ɒ, ᵊɒ/ as back-central, whereas phonetically as well as functionally they considerably resemble back vowels /ŏ ɔ, ᵊɔ/.

The limitation of degrees of tongue height results in the authors having to accept /ə̆/ as a short, tight vowel in correspondence with its loose counterpart /ŭ/ while recognizing that "there is no clear tight-loose contrast between short /ŭ/ and /ə̆/." In my opinion, there is in fact no register difference at all between /ŭ/ and /ə̆/. Besides, it is obvious that /ə̆/ differs completely from the tight vowel series /ᵉi, ᵋe, ᵊɯ, ʌə, ᵒu, ᵓo/ in that its length is half the quantity of each member of this series, and also its distribution is limited, i.e. it does not occur in open syllables. Nonetheless, through the detailed analyses of the authors, the Register System is indeed a noteworthy interpretation.

1.2. John D. Miller's view

1.2.1. After sharing the co-authors' opinion that "none of the systems which can be used to describe the vowels in Bru is without asymmetries and discrepancies," Miller attempts to apply the results of experimental phonetics on the rearrangement of Bru vowels in "An acoustical study of Bru vowels" (1967:149-177).

The steady state (SS) is taken as a dimension of classification. As defined by Lehiste, a steady state is "that period of time during which the formants are parallel to the time axis" (Miller 1967:154). So, there are two main types of vowel nuclei: non-complex (being single SS nuclei) and complex (showing at least two SS). The non-complex nuclei are divided into two groups: short and non-short. The complex nuclei are also divided into two categories: those whose first SS is lower than their second SS, and those whose first SS is higher than their second SS. The former category is further subdivided into two parts: those nuclei which show two SS, and those nuclei which show three SS. The latter category is also subdivided into two groups: one group showing the first SS as the longest single formant, and the other groups showing the second SS as the longest. It should be noted that the short vowel nucleus /ə̆/ is considered as a "deviant" vowel, because it could be classified in several ways—as short, as complex or as offglided.

The total vowel inventory may be summarized as follows:

Table 2. Chart of vowels by acoustical characteristics

Non-complex nuclei

(1) short : /ĭ, ĕ, ɛ̆, ʌ, ă, ŏ, ɔ̆, ŏ, ŭ/

(2) non-short : /i, e, ɛ, ə, a, ɒ, ɔ, o, u/

Complex nuclei

(1) first SS lower than second SS
  (A) two SS : /ᵉi, ᵋe, ᵊɯ, ʌə, ᵒu, ᵓo/
  (B) three SS : /ĭə, ĭa, ŭə, ŭə, ŭa/

(2) first SS higher than second SS
  (A) first SS longer : /iə, ia, ɯə, uə, ua/
  (B) second SS longer : /ᵊʌ, ᵊa, ᵊɒ, ᵊɔ/

Deviant nucleus : /ə̆/

1.2.2. In the above chart there is really no place for the "deviant" vowel /ə̆/. It is a residue which any linguistic analysis cannot accept, and it seems to be the weakest point of the interpretation. Besides, perhaps this way of classification is only useful for the sake of experimental phonetics, and therefore, it does not shed light on articulatory and functional characteristics of Bru vowels. While considering one of four possibilities, Phillips, Miller and Miller suggest, "Even apart from the asymmetries of the Vowel States System, a basic weakness of the system is that it obscures important internal relationships" (Phillips, Miller and Miller 1967:216). It is possible to raise this criticism against the experimentalist interpretation.

1.3. Bru language textbook

1.3.1. In a Bru language textbook (*Nguyễn Văn Tài*, et. al.1986:13) the authors have given an interpretation that resembles that of the American linguists. It differs only in the arrangement of the vowel nuclei:

Table 3. Arrangement of Bru vowels in a Bru language textbook

ĭ	i	ᵉi	ŭ̆	ɯ	ᵊɯ		ŭ	u	ᵒu
ĕ	e	ᵋe	ə̆	ə	ʌə		ŏ	o	ᵓo
				ʌ					
ɛ̆	ɛ		ă	a	ŏ	ɒ	ɔ̆	ɔ	
iə	ĭə		ɯə	ŭ̆ə	ᵊɒ		uə	ŭ̆ə	
ia	ĭa		ᵊʌ	ᵊa			ua	ŭa	ᵊɔ

1.3.2. Although the authors do not speak clearly of tongue positions, it is possible that they accept an intermediate position (back-central) for /ŏ, ɒ, ᵊɒ/. The presence of this position, as discussed above, is unnecessary. As to aperture, it seems that

according to them, there are four degrees of tongue height, with an additional degree reserved only for /ʌ/. The case of this phoneme, as well as the case of the deviant nucleus /ə̆/ in the chart of John D. Miller's acoustic study, makes the system seriously asymmetric.

When speaking of the principle of 'neatness of pattern' (one of the four principles of establishing the phonological system of a language), Charles F. Hockett notes that, "There is always the danger that in following this principle an analyst will follow a 'drive towards symmetry' which resides within himself rather than within his data" (Hockett 1958:109). We must always prevent that danger from happening, but it is impossible to ignore this principle.

A similarity between the view of these authors and that of the American linguists is that the two groups of vowels /iə, ĩə, ia, ĩa, ɯə, ɯ̃ə, uə, ũə, ua, ũa/ and /ᵊa, ᵊʌ, ᵊɒ, ᵊɔ/ are encompassed jointly in a category called glided or diphthong.

From the articulatory point of view, the two groups of vowels show only one common feature, which is downglided, but this is not a basic characteristic of diphthong (to use this term for convenience). An important characteristic of diphthong is that its quality is represented clearly in its first or second part, i.e. where its syllable peak is. Therefore, the differentiation of onglide/offglide is much more important than that of upglide/downglide.

It is worth noting that the vowels /iə, ĩə, ia, ĩa, ɯə, ɯ̃ə, uə, ũə, ua, ũa/ are offglided, the syllable peak being on the first part of the diphthong, whereas the vowels /ᵊa, ᵊʌ, ᵊɒ, ᵊɔ/ are onglided, the syllable peak being on the second part. These two groups also differ from each other in that the former has a register contrast for each pair of vowels, while the latter has no register contrast and all four of these vowels are glided from vowel [ə]. So, it would be rather unreasonable to put these two series into a single category.

2. Proposed interpretation

2.1. Discussion

For the reasons mentioned above it is necessary to separate the group of vowels /ᵊa, ᵊʌ, ᵊɒ, ᵊɔ/ and to treat them in another way. In fact, their low timbre resembles as the acoustical effect of the tone 2 (*huyền*) in Vietnamese, as witnessed by the fact that a number of Bru and Vietnamese people assume that Bru is a tone language. One of my informants has identified pseudo-tones of Bru in the following words:

Words		**Vowels**	**Tones**
mpong	'banana flower'	ɔ	*ngang*
póng	'young'	ɔ̆	*sắc*
poong	'manioc, potato'	ᵊɔ	*huyền*

About six years ago when we checked the Bru phonology, Prof. Cao Xuan Hao, Mr A. Ju. Efimov and I suspected that the vowels /ᵊa, ᵊʌ, ᵊɒ, ᵊɔ/ would be 'lax' vowels. If one compares this lax group with the tight group /ᵉi, ᵋe, ᵊɯ, ʌə, ᵒu, ᵓo/, one will observe many interesting points. Both groups are onglided, showing two SS, and the syllable peak falls on the last part. According to the results of experimental phonetics realized by Miller (1967:156-160), the second SS of each nucleus of both groups dominates the spectral pattern and is longer in duration than the first SS. For instance, the second SS is the predominating portion of /ᵉi/ as is shown by the duration measurements, which show the second SS to occupy 54% of the total nucleus duration, while the first SS accounts for only 23%. These two groups differ only in that one group is upglided [ᵉi, ᵋe, ᵊɯ, ʌə, ᵒu, ᵓo] and the other group is downglided [ᵊa, ᵊʌ, ᵊɒ, ᵊɔ].

So, if the former group /ᵉi, ᵋe, ᵊɯ, ʌə, ᵒu, ᵓo/ were treated as 'tight', this is 'tight' only in relation to the regular vowel group /i, e, ɯ, ə, u, o/, and, therefore, one would be able to treat the latter group /ᵊa, ᵊʌ, ᵊɒ, ᵊɔ/ as 'lax' in correlation with the regular vowel group /a, ʌ, ɒ, ɔ/. In order to conform with the phonetic facts, the latter vowels should be marked with a grave accent instead of composed symbols: /à (əa), ʌ̀ (əʌ), ɒ̀ (əɒ), ɔ̀ (əɔ)/. It should be noted that tightness occurs only in the high and high-mid vowels, whereas laxness occurs only in the low and low-mid vowels.

Besides this, there is in the front position (in the dialect studied) another lax vowel /ɛ̀/ that is in contrast with the regular counterpart /ɛ/ in the following minimal pairs:

lɛh	'to untie'	lɛ̀h	'slope'
tɛh	'stick of wood'	tɛ̀h	'leech'

2.2. Proposed system

2.2.1. From the solution of lax vowels as suggested above we could be so bold as to propose an alternative system that includes 32 single vowels and 10 diphthongs. In the arrangement of nuclei, whether the diphthongs are presented apart from or together with single vowels is less important. Here, for the sake of simplicity and clarity, we choose to separate nuclei into two distinct charts. Another possibility will be presented below.

Table 4. Chart with proposed analysis of Bru Vowels

Single Vowels

	Front			Central			Back		
	Short	Reg.	Tight/Lax	Short	Reg.	Tight/Lax	Short	Reg.	Tight/Lax
High	ɪ̆	i	ᵉi	ɯ̆	ɯ	ᵊɯ	ŭ	u	ᵒu
Hi-mid	ĕ	e	ᵋe	ə̆	ə	ʌᵊ	ŏ	o	ᵓo
Lo-mid	ɛ̆	ɛ	è		ʌ	ʌ̀	ɔ̆	ɔ	ɔ̀
Low				ă	a	à	ŏ	ɒ	ɒ̀

Dipthongs

	Front		Central		Back	
	Reg.	Tight	Reg.	Tight	Reg.	Tight
High	iə	ɪə	ɯə	ɯ̃ə	uə	ũə
Low	ia	ɪa			ua	ũa

2.2.2. There are some holes that cause asymmetry in the proposed pattern. However, we entirely share the American linguists' opinion that "if there is a resulting loss in symmetry at certain points, the fact may only mirror an essential lack of symmetry in the language at those points" (Phillips et.al. 1976:211).

However, the proposed system shows advantages. Firstly, the admission of an additional degree of tongue height has precluded two complicated positions (front-central and back-central). This means that to a certain extent it is more economical than the American linguists' system. Secondly, the proposed treatment of register contrasts and of glide has permitted us to point out more clearly the internal relationships and at the same time to conserve the symmetry of the phonological system in various points. For instance, all short vowels have no register contrast, all diphthongs are offglided, and all tight or lax vowels are onglided.

Regarding the notation related to the Bru orthography, it needs simply to introduce one diacritic sign (grave accent), which not only mirrors properly the quality of lax vowels and their correlation with regular or tight vowels, it also discards the five composed signs (including vowel /ɛ̀/ recently discovered) of /ᵊɛ, ᵊa, ᵊʌ, ᵊɒ, ᵊɔ/. This labelling is completely satisfactory in many respects.

It may be emphasized that the proposed interpretation is rather flexible. If one arranges Bru vowels following the Register System that Phillips, Miller and Miller rate more highly as compared with other systems, and then introduces some reasonable changes, one will have a neater and more 'accurate' pattern as follows:

Table 5. Chart of Bru Vowels arranged by register contrasts

	Front			Central			Back		
	Short	Reg.	Glided	Short	Reg.	Glided	Short	Reg.	Glided
High Lax	ɪ̈	i	iə	ɯ̆	ɯ	ɯə	ŭ	u	uə
High Tight		ᵉi	ɪə		ɯ̃	ɯ̃ə		ᵒu	ũə
Hi-Mid Lax	ĕ	e	ia	ə̆	ə		ŏ	o	ua
Hi-Mid Tight		ᵋe	ɪa		ʌə			ɔo	ũa
Lo-Mid Lax	ɛ̆	ɛ̀			ʌ̀		ɔ̆	ɔ̀	
Lo-Mid Tight		ɛ			ʌ			ɔ	
Low Lax				ă	à		ɒ̆	ɒ̀	
Low Tight					a		ɒ	ɒ	

The reason why we consider regular vowels /e, a, ʌ, ɔ, ɒ/ as tight vowels in contrast to lax vowels /ɛ̀, à, ʌ̀, ɔ̀, ɒ̀/, and regular vowels /i, e, ɯ, ə, u, o/ as lax vowels, is that if register (that is, the degree of tightness in Bru), is taken as the criterion of classification, then there are phonetically three degrees of tightness: tight, regular and lax. In the high and high-mid vowels, the register contrast is simply the opposition of regular vs. tight; and in the low and low-mid vowels, it is simply the opposition lax vs. regular. Therefore, it is phonemically possible to establish the following contrast proportion:

$$\frac{\text{loose (regular)}}{\text{tight (tight)}} = \frac{\text{loose (lax)}}{\text{tight (regular)}}$$

In this solution, I am indebted to K.J. Gregerson for the initiative in his article "Tongue-root and register in Mon-Khmer" (Gregerson 1976:241) when he solved the phonological problems related to the register of the languages Jeh, Halang and Sedang.

3. Conclusion

Lenin quotes Hegel as saying, "to reject a ... system is not to throw it away, but to develop it; is not to substitute it by another onesided and contrastive one, but to bring it into a higher system" (1976:181). I do not presume to give my proposed system such high position. I only think that it does show basic internal relationships, that it is more economical and more symmetrical than other systems, and that it will be a reasonable improvement over the Register System of the American linguists.

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Department of Linguistics
University of Huế
27 Nguyen Hue
Hue, VIETNAM