The Development of a Lao-based orthography for Jru'[1]

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Abstract

This paper presents my proposed Lao-based orthography for a West Bahnaric language—Jru', developed primarily for the Jru'-Lao-French-English dictionary I am compiling. The reasons for choosing a Lao-based system rather than Roman alphabet or Quôc-ngữ script are discussed briefly in section two. In section 3, I discuss the various problems that arise when a Lao orthography is applied to the Jru' word structure and phonemic inventory. Although many of the Lao characters can be simply applied to similar sounds/phonemes in Jru', the characters of the Lao system will in some cases have quite different applications to the Jru' language. For example three Jru' phonemes are not common to Lao, and many sounds which are restricted to initial position in Lao (such as palatal nasal, and glottal or apical fricatives), are permitted in a broader range of positions in the Jru' word. To solve these problems, either new characters are to be created for these, or else different conventions will need to be applied to the Lao characters if we are to maintain as phonemic an orthography as possible. I discuss these issues and solutions to these problems in section three. An appendix is provided with a list of Jru' words written using the proposed Lao-based orthography, illustrating the new conventions of particular characters.

1. Background

1.1 Jru' as a Mon-Khmer language

Jru' (a.k.a. Jruq, Laven, Loven, Boloven) is a West Bahnaric

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[1]Thanks go to Paul Sidwell and Tony Diller for useful advice and suggestions in the preparation of an earlier draft of this paper (May 2002). Since then, however I have made a few amendments. In December 2002, Paul Sidwell surveyed local attitudes towards the orthography I proposed, and subsequently passed on to me a few changes suggested by Jru' first language speakers from Meuang Paksong and Ban Katuat areas of the Boloven Plateau. I have amended my earlier orthographical conventions to incorporate these suggestions. My thanks go to the Jru' people for their suggestions, patience and their enthusiasm and eagerness in developing an orthography for their language. Any errors or failings in the final version of this paper are mine and mine alone.

language (eastern Mon-Khmer) spoken by the majority of the 40,000 Jru' people listed in the 1995 Lao National Census. Jru' is spoken in Champassak, Attopeu and Sekong provinces in Southern Lao PDR. My research over the past 5 years has been conducted mostly in Paksong district of Champasak Province on the Boloven Plateau, and the phonemic system and word structure presented here is based on the Jru' language spoken in that region.

1.2 The Jru' phonemic system

The Jru' language is a 'typical' West Bahnaric language in respect to its word structure and phonemic inventory. There are no phonemic tones or registers, and the word shape is typically monosyllabic—allowing a sequence of up to three word initial consonants, which are of the same sonority[2], or increasing sonority ('R' in the following structure) towards the rime:

Monosyllabic Word Structure: $W = (C_1)C_2(R)V(C_3)$
C_1 =   voiceless consonant (including /ʔ, h/)
C_2 =   any consonant (not identical to C1 or R if present)
R   =   /r/, /l/
V   =   any vowel
C_3 =   any consonant other than a voiced or aspirated oral stop

In addition, there are less than twenty sesquisyllabic words I have recorded where there is an intermediary phonemic vowel, reduced in length and articulatory quality[3] between two initial consonants where the second is one of /h, r, l/.

Sesquisyllabic Word Structure[4]: $W = C_1 \ni C_2V(C_3)$
C_1 =   /p/, /k/ or /t/
C_2 =   /h/, /r/ or /l/
V   =   any vowel
C_3 =   any consonant other than a voiced or aspirated oral stop

1.2.1 Consonants

The Jru' consonants are typical for Bahnaric languages, with a distinction for 5 places of articulation (labial, apical, laminal, dorsal, glottal), and a voicing and aspiration contrast for obstruents. Initial sequences, which I treat phonemically as a series of /h/+consonant and /ʔ/+consonant, have a variety of phonetic realisations, which may vary depending on the kind of

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[2]Only the first two of the maximal 3 initial consonants may share the same sonority. Non-phonemic vowel-like segments tend to be pronounced between consonants of the same sonority (i.e. 'sonority plateau') in slow speech.

[3]For convenience I write this as /ə/.

[4]The numbers for the consonants (C_1, C_2, C_3) are important for the choice of character in the proposed orthography (discussed section 3).

consonant which occurs in second position, the length of the following vowel or with ideolectal differences between speakers (see Jacq (2002) for detailed examination of these onset sequences). All consonants listed in Table 1 below may occur in C2 position of the monosyllabic word.

Table 1. Jru' Consonant phonemes.

	labial	apical	laminal	dorsal	glottal
voiceless obstruents	p	t	c	k	ʔ
aspirated obstruents	pʰ	tʰ		kʰ	
voiced obstruents	b	d	ɟ	g	
nasals	m	n	ɲ	ŋ	
approximants		l, r	j	w	
fricatives			s		h

1.2.2 Vowels

Typical for the West Bahnaric languages of the area, the Jru' vowel system distinguishes three degrees of backness and tongue height, with prosodic length contrastive for all vowel places (unmarked versus extra-short[5]). In addition, Jru' has innovated additional back vowels /ʌ/ and /ʌ̆/ (not reconstructed for Proto West-Bahnaric by Jacq and Sidwell (2001)), expanding the inventory of monophthongs to 20. In addition to these, three diphthongs /ia/, /ɨə/ and /ua/ (common to all West Bahnaric languages) are found in Jru'. In my grammar of Jru' (Jacq 2001), I demonstrated (with distributional and spectrographic analyses) how Jru' is in the process of diphthongising /i/ and /u/ to [ie] and [uo] in some environments, yielding new phonemes of restricted distribution, such that the phonemic contrast remains weak. The emerging contrast between the front vowels /ĭ/, /i/, /ie/, /ia/ can be demonstrated before final /t/ with the following set:

/pĭt pjuol/ 'anteater', /hpit/ 'ear', /piet/ 'knife', /piat/ 'tongue'

Between most obstruents or in open syllables[6], the vowels can be freely interchanged between [i~ie] and [u~uo], e.g. [ku~kuo] 'stay, be located', and these may contrast with the low diphthongs /ia/ and /ua/, e.g. [hkit~hkiet] 'small frog' vs. /hkiat/ 'scabies' and [rik~riek] 'chubby' vs.

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[5]Extra-short is the marked length in Jru', with all such vowels being consistently 100ms length or less. Vowels unmarked for length are consistently between 140-200ms (longer in open syllables) (Jacq, 2001:94).

[6]Low diphthongs /ia/ and /ua/ do not occur in open rimes and Jacq & Sidwell (2000) reconstruct these phonemes in West Bahnaric as originating from long */ɛ/ and */ɔ/ respectively. Note that two Jru' words (borrowed from Katuic and other West Bahnaric languages) have not diphthongised: /bru/ 'mountain' (< Katuic) is never pronounced *[bruo], and /pti/ 'slow(ly)' (< Oi) is never pronounced *[pətie].

/riak/ 'large net', [hut~huot] 'rice steaming basket' vs. /huat/ 'remove' etc. Sometimes this is not the case, however, and an /i/ may contrast with an /ie/, e.g. /rit/ 'ritual' vs. /riet/ 'bind'. In some environments, especially before sonorants, [ĭ~i] may be in free variation versus /ie/, and similarly [ŭ~u] versus /uo/, e.g. [bĭl~bil] 'forget' vs. /biel/ 'mat', [rĭn~rin] 'regret' vs. /rien/ 'dizzy', [hŭr~hur] 'head cold' vs. /huor/ 'hurl a spear'. But in similar environments, an /ie/ may contrast with an /ia/, e.g. /hlieŋ/ 'stop' vs. /hliaŋ/ 'slide' (note also the minimal pair /lĭŋ/ 'naughty', /lieŋ/ 'party (< Lao)'), or an /ŭ/ may contrast with an /u/ and /ua/, e.g. /mŭn/ 'confused (< Lao)' vs. /mun/ 'pimples' vs. [muɲ~muoɲ] 'want to' vs. /muan/ 'nephew'.

Table 2. Jru' monophthong phonemes.

ĭ , i	ɨ̆ , ɨ	ŭ , u
ĕ , e	ɜ̆ , ə	ŏ , o
ɛ̆ , ɛ	ʌ̆ , ʌ	ɔ̆ , ɔ
	ă , a	

Table 3. Jru' diphthong phonemes.

[ie]	iə	[uo]
ia		ua

The following sections discuss the creation of a standard orthography for Jru', based upon contemporary Lao script. The proposed script is evaluated according to Smalley's (1976) criteria for a successful orthography, in particular:

- **Optimum representation of the language** (such that all 45-47 phonemes in Jru' are distinguished in the script)
- **Maximum ease of learning** (that is, avoiding redundancy and complicated conventions)
- **Optimum transfer** (matching the conventions of the borrowed script (in this case Lao) to the same sounds in Jru' so that bilingual speakers will have little difficulty in using the two orthographies)

Firstly, I discuss the various past attempts at writing Jru' using Roman-based orthographies and why these are not suited to the Jru' language or its speakers. I then illustrate the different ways my informants have transcribed Jru' words using Lao characters and what were the problems and their intuitions in using these characters for Jru'. In section 3, I present a Lao-based orthography for Jru', drawing on my informants' intuitions and regularising the differences in their application of the Lao characters— creating an almost phonemic orthography.

2. Transcriptions of Jru' used in the literature

Jru', like the majority of Mon-Khmer languages, is a language without an established writing system. However, over the last century, there have been various attempts at developing an orthography for the language.

2.1 The 'Khom' script

In the period of the ethnic uprising and Kommadam revolution (1905-1935), the self proclaimed King of the Jru' people, Ong Kommadam, devised a writing system for the Jru' language (used also for writing other languages such as Laotian). This script had over 300 characters—a single character representing the rime, and distinct characters representing single consonants and also the various combinations of consonants with /r/. This 'Khom' writing system (see Jacq (2001, Appendix II)) was invented for political reasons; a) to legitimise the language and thus the cultural group in order to gain recognition as a free state, and b) to spread anti-colonial propaganda in order to amass a revolutionary army. However, the script was only used by a select few leaders and scribes, and only for a period of about 10 years. Most Jru' people know of the writing system and its legendary creator, yet have never seen an example of it, or if they did, they have forgotten many of the characters. Due to the vast number of characters, the scripts' political history, and the fact that it would only be recognisable to very few speakers, this would not be an appropriate basis for a modern Jru' orthography.

2.2 The Quốc-ngữ script

After the French pacified the region, the first description of the Jru' language was written by Bondet de la Bernadie (French Co-Administrator of Thakhek) and published postmortem in BSEI in 1949. This article included some sketch grammar remarks and several hundred 'Boloven' lexical items written using the Roman-based Quốc-ngữ script devised for Vietnamese. Although Vietnamese is a Mon-Khmer language, its monosyllabification has created sounds and many combinations of sounds which are different to those found in Bahnaric word structure. The main differences in application of the Vietnamese symbols to Jru' were: *a*) 'diphthongs' (some of which included initial /ɟ/ and /j/) were written with up to 4 vowels (e.g. *uơ, uou, iai, iou, iuêi,* etc.), b) the unbarred '*d*' was used instead of barred '*đ*' for plain /d/, c) the '*j*' was used as voiced palatal stop, *d*) '*sh*' was used to symbolise the final /h/ (Vietnamese does not have final /h/ or /s/).

In addition, de la Bernadie (1949:59-60) made various remarks about the different phonetic values of Boloven sounds in comparison to those in Vietnamese. For example, the schwa '*ơ*' is longer and more open than that of Vietnamese, the '*r*' is rolled, there is a final '*sh*', and the consonants '*t*' and '*k*' are often adjacent in word initial position (either order) and are transcribed with an intermediate apostrophe (indicating an epenthetic vowel). Although

this shows de la Bernadie was very sensitive to the sounds of various foreign languages, he was an untrained linguist, and as a result, he mistranscribed many Jru' sounds and often confused final /h/ and /s/[7]. Glottal stop is not marked at all in the data, the apostrophe being reserved for the epenthetic vowel in the onset clusters, or for vowels which are weakly articulated (such as for the offglide in high diphthongs, e.g. /ʔjuo/ 'what?' is transcribed as *yù'r* 'quoi'). Vowel length is not reliably marked (using grave accent for 'long' inconsistently, and before final '*sh*' where length is not distinctive). The vowel quality in many words is often mistranscribed, such that central vowels are written as back vowels (e.g. /pɨt/ 'behind' is written as *put* 'derrière', /rɤp/ 'good' is written *rôp* 'bien'. The /ʌ/ vowel is not distinguished from /ɔ/, both written with '*o*' (e.g. *ho* /hɔʔ/ 'dans, dedans', *hoi* /hʌj/ 'hors de', *tom* /tʌm/ 'mais'), and /ɔ/ is written variously as '*o*' or as '*à*' (e.g. *làsh* /lɔh/ 'ou'). Final /c/ is often not distinguished from final /t/ (e.g. *i bit* /ʔih bĭc/ 'impossible'). /h/+C and preglottalised consonants are not distinguished from plain single consonant initials.

In 1999, when compiling a consolidated Jru' dictionary from our fieldnotes and other sources, Jacq and Sidwell decided to opt for a Vietnamese-based orthography in keeping with the tradition of previous Bahnaric research (such as Sedang, Bahnar, Jeh, Rengao, Chrau). Like those sources, the Quôc-ngữ version we used was much simpler, and strictly phonemic. There were new conventions used, such as 'q' for glottal stop in all positions of the word (rather than the apostrophe), and extra-short length was marked systematically with a hacek symbol. The extra /ʌ/ vowel in Jru' was written as *â*, distinguished from the schwa '*ơ*'. /h/ and /s/ written as '*h*' and '*x*' (respectively) in all environments. This system seemed to us to work quite well, however Jru' speakers who knew Vietnamese as a second or third language found these different conventions difficult to cope with. Furthermore, we found that most Jru' speakers did not know how to speak or write Vietnamese, so this transcription method had failed to reach a wide Jru' audience.

2.3 The Lao script

Since 1999, I have had some mail correspondence with my two main informants who have each attempted to write the Jru' language using the Lao script. I noted that each speaker had a different technique of using the Lao-orthography and they also found it difficult to read each other's writing, let alone read their own writing months later. On one hand, both speakers struggled to represent the phonetic differences in word initial consonants (such

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[7]He confused final /h/ and /s/ using the same symbol for /h/ after -*u, o, i* as for final /s/, and wrote no symbol (or sometimes 'sh') for final /h/ after /ɛ/.

as between Jru' /b/ and Lao /b/[8]), causing a very complicated word structure with extra consonant symbols word initially and tone diacritics when there is no tone in Jru'. On the other hand, as Lao permits a much more restricted set of phonemes word finally, many Jru' words had ambiguous readings as final consonants such as /r/, /l/, /n/, and /ɲ/ were written with the one symbol 'ນ', and final /t/ and /c/ were written with 'ດ'. In some instances, both speakers had the same intuitive approach to writing non-Lao sounds, for example the 'mai chattawa' tone marker '˟' (rarely used in Lao) was used consistently to indicate final /h/, and both speakers used the 'ຫ' symbol before other consonants to represent initial preaspiration or voiceless nasals.

The consistent unprompted efforts by my informants to use Lao orthography in writing Jru' (despite their familiarity with Latin script) demonstrates the strong psychological appeal of an established national writing system, and their motivation to write the Jru' language. While their efforts have also highlighted potential difficulties in adapting the Lao script for use with Jru', I am confident that the problems are not insurmountable, especially given the existing precedents of adapting Lao for use with Mon-Khmer languages (Sulavan, Kingsada and Costello (1998), Simana', Sayavong and Preisig (1994)). I therefore decided to create a Lao-based orthography for Jru', one that attempts to be as phonemic and non-redundant as practicable, while satisfying native speaker intuitions.

3.   Proposed Lao-based orthography

The Standard Modern Lao orthography (revised after the 1975 revolution) distinguishes 32 consonants (though only 20 consonant phonemes exist) which divide into three sets: Kang, Tam and Sung, which determine phonemic tone. There are 38 vowel characters although only 21-24 vowel phonemes exist depending on whether both the long and short distinctions for the three diphthongs: /ia, ɯə, ua/ are included. The combination of the initial consonant and the vowel and the additional use of two tone diacritics ('mai ek' and 'mai to') reflects the suprasegmental tone associated with the word. In the new orthography, the former /r/ symbol was removed, though it is still remembered and used by speakers for foreign or Old Lao words. There are additional diacritics x̌ and x̱ which are no longer used in Standard Modern Lao but which are familiar to older generation speakers from the pre-communist era. The reintroduction of these for Jru' orthography was suggested in late 2002 by Sidwell's Jru' informants, in distinguishing final /s/ and the voicing of consonants.

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[8]For example, both my main informants wrote ບuອນ [ᵐbuom] /buom/ 'tuber' (Lit. 'pʰbuam'), and [ⁿduok˺] /duok/ 'canoe' was written variously as ຕຸອກ 'tʰuak' and ໂທຫອກ 'htʰuok' because the initial consonants sound 'heavier' (prenasalised, etc.) than Lao ones.

3.1 Consonant characters

As Jru' has only 22 consonants, and no tones or registers, only a subset of the Lao consonant characters would be needed if we were to keep to a simple phonemic system. In line with the Lao-based orthographies for Katu (Sulavan et.al. 1998) and Kmhmu' (Simana' et.al. 1994), and the orthography proposed by Davis for Nhaheun (Davis n.d. ms.), I use all the Kang characters, and I use the Tang characters for the aspirates and nasals, approximants, and fricatives in C$_2$ position.

As Jru' has two voiced consonants in C$_2$ position (namely /g/ and /ɟ/), which are not found in Lao, I needed to decide whether to use the voiceless equivalents (thereby writing two phonemes with one symbol, potentially causing ambiguity in the reading), or to create two new symbols. The Katu and Khmhu' languages for which there are dictionaries both used 'ຽ' to distinguish /ɟ/. A /g/ phoneme was found in Khmhu' and was written as ' ꪶ ' (this combination of symbols is not possible with most Lao fonts so it was not convenient for reproduction of the script). Interestingly Davis used 'ຄ' for Nhaheun /ɟ/ and 'ຖ' for /g/ based on the following reasons:

> 'There is a strong visual resemblance between the Lao symbols for voiced and voiceless bilabial stops and alveolar stops ບ and ປ; ດ and ຕ. Therefore symbols were sought for the voiced stops j and g which had a visual resemblance to the voiceless stops c and k, e.g. ຈ and ຄ; ກ and ຖ.' (Davis n.d., Footnote 8)

As the Tam character 'ຄ' is already used for the aspirated /kʰ/, I originally proposed the use of 'ຽ' for /ɟ/ in Jru' (which is still similar in its 'curly' shape to the 'ຈ' /c/), and I followed Davis' lead in the use of 'ຖ' for /g/. However in canvassing this idea with Jru' speakers, almost all first language Jru' speakers (40+ years of age) found these two conventions to be unacceptable. All those speakers preferred instead the use of '�' for /g/ (which is the Old Lao form of writing /g/); and for /ɟ/ most speakers proposed an analogous 'ຽ' (although a couple of Jru' speakers preferred a diagraph 'ຍຈ'). Therefore in keeping with Smalley's (1976) *optimum transfer* criteria, I incorporate the suggestions by these elder Jru' speakers. These C$_2$ consonants are charted in Table 4 below.

Table 4. Jru' C$_2$ consonant characters and corresponding phonemes.

stops	ͽ /g/	ͷ /k/	ȝ /ɟ/	ๆ /c/	ก /d/	ต /t/	บ /b/	ป /p/	ə /ʔ/
aspirates	ฅ /kʰ/		--			ฒ /tʰ/		ฆ /pʰ/		
nasals	ๆ /ŋ/		ย /ɲ/		ม /n/		ม /m/		
approximants	ว /w/		ย /j/		ล /l/, ร /r/				
fricatives					ซ /s/			ร /h/

In C$_1$ position in the word, only a restricted set of the C$_2$ phonemes occur. The oral stops are always pronounced as voiceless, so I use the voiceless Kang characters. In addition to these, the /h/ and /ʔ/ precede all but aspirated consonants in C$_1$ position. My informants consistently used the 'ฒ' symbol for the pre-aspirated position, and especially prefer the Sung nasal consonants 'ฒม' /hn/ and 'ฒม' /hm/ to represent C$_1$+C$_2$. These characters iconically represent a complex single sound such as we find for these onset sequences (Jacq 2002), and which historically reflects Old Thai aspirated nasals[9]. The use of an additional character for /h/ in this environment does mean the orthography is not truly phonemic. However the phonetic effects of /h/+C$_2$ onsets versus single /h/ (C$_2$) onsets are quite different, therefore this variation is justified.

Interestingly, my informants tended to not differentiate /ʔ/+C$_2$ onsets from plain C$_2$ consonants in their writing (though the distinction was always salient in pronunciation). I decided that for a phonemic orthography, I should mark these preglottalised onsets differently from plain ones, and found some precedent for this in the Katu, Khmhu' and Nhaheun orthographies. Sulavan et. al. (1998) adopted the use of Sung characters 'ช', 'ฑ', and 'ฐ' for /ʔb/, /ʔd/, and /ʔj/ respectively, whereas Simana' et. al. (1994) used the 'mai ek' diacritic with the consonant for preglottalisation in Khmhu' (also adopted by Schlatter (1976) for Lavüa' preglottalised consonants). Though this ' ' ' symbol seems to be intuitive to linguists and speakers of European languages for a glottal stop, there is no precedent for it with Jru' speakers, and I searched for an alternative. For a truly phonemic orthography I would need to use the glottal symbol 'ə' (found in C$_2$ position), however this was not well accepted by my informants possibly because the Jru' 'preglottalised' (or laryngealised) onset clusters are

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[9]Li Fang-kuei (1977) reconstructs voiceless nasals and liquids for all dialects of Proto-Tai. Evidence is "(i)n some loanwords in Khmu? from Lao or Siamese, (where) it appears as hn-, for example, hnuɛy 'classifier for lumpy objects', cf. Siamese nuai B1 'unit'. It indicates an early loan when the initial has not yet become n-...The Siamese orthography hn- also indicates originally a voiceless nasal." (Fang-Kuei 1977:113). Rischel (1995:44) also illustrates how words spelt with the Northern Thai (Lanna) /hm/ initials have been borrowed into Mlabri as voiceless nasals, e.g. hmiʌŋ 'fermented tea'.

articulated more like a complex single sound than two distinct sounds (Jacq 2002). Davis (n.d.) used the 'mai chattawa' tone diacritic ('ˇ') to indicate preglottalisation in Nhaheun, and this symbol was readily accepted by my informants for the same onset sequence in Jru'. Table 5 below lists all the characters used for C_1 consonants in Jru'.

Table 5. Jru' C_1 consonant characters and corresponding phonemes.

ກ /k/	ຈ /c/	ຕ /t/	ປ /p/	ˇ /ʔ/	ຫ /h/

Word finally, a restricted set of C_2 phonemes appears. Although oral stops are phonetically voiceless and unreleased, the Lao convention is to use voiced symbols (where they exist) for this position. I follow this precedent for Jru', although I avoided using the newly introduced voiced C_2 symbols �ༀ and ຊ in this position to limit further confusion to the speakers, preferring the voiceless symbols ກ and ຈ[10].

Jru' also permits sounds in word final position which Lao does not. My informants both used one symbol for several phonemes in this position which caused some ambiguity. To avoid this, I propose to use the same characters as their C_2 allophones, thus ຈ, ຍ, ລ, ຣ, and ສ can now be used word finally in Jru' (this convention was also used by Simana' et. al. (1994), Sulavan et. al. (1998) and Davis (n.d.) in their orthographies). Note that /s/ which I write in C1 position as 'ຊ' has a different symbol, namely 'ຍໍ່ຕ', for its C2 word final allophone [jʰ, iʰ] (both reflecting the phoneme /s/). Jru' speakers used 'ສ' or 'ຊ' for initial /s/ but preferred 'ຍໍ່ຕ' or 'ຍຕ' and sometimes 'ຍ'[11] for final /s/, as an attempt to represent the difference in phonetic value, which is highly salient for all Jru' speakers. Due to insistence by Jru' speakers to mark the allophonic variation of /s/, I have proposed to use the more favoured diagraph 'ຍໍ່ຕ' for C2 /s/[12] (such that Smalley's principle of optimum transfer overrides the principles of optimum representation and maximum ease of learning). Table 6 lists the C_3 consonant characters.

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[10]Miller and Miller (1995) and Johnston (1976) also use these two voiceless consonants word finally in their Thai-based orthographies for Katuic.

[11]The symbol 'ຍ' also used for final /j/ so it is often ambiguous what the final consonant is in my informant's writing. For example one informant writes: ປະກຍ /pkŭj/ 'sleep', ປະນຍ /pnus/ 'person'.

[12]Miller and Miller (1995) similarly proposed the diagraph 'ຍສ' to more closely represent the phonetic articulation of [ih] for final /s/ in Katuic.

Table 6. Jru' C3 consonant characters and corresponding phonemes.

stops	ກ /k/	ຈ /c/	ດ /d/	ບ /b/	(*/ʔ/)
nasals	ງ /ŋ/	ຍ /ɲ/	ນ /n/	ມ /m/	
approximants	ວ /w/	ຢ /j/	ລ /l/, ຣ /r/		
fricatives		ຍ໌ /s/			ຫ /h/

*Note that glottal stop does not have its own character in C3 position. Jru' only has extra-short vowels or diphthongs before final consonant /ʔ/, and as Lao has distinct vowel characters for these, I follow the Lao precedent, to maintain *optimum transfer* of the Lao orthography.

3.2 Vowel characters

The Lao system of writing vowels is quite iconic and symmetrical. Most vowels have variants in the symbols used depending on whether they occur in open rimes, in closed rimes before /ʔ/ or whether they occur as long or short vowels in closed rimes before other consonants. Although this is not strictly a phonemic system, it can be easily applied to the Jru' rime shape, and I follow the Lao conventions closely. The one problem which arose is how to write the 'extra vowel' /ʌ/ and its extra-short sister /ʌ̆/ in Jru'. Davis found the same problem in Nhaheun, but came up with a rather ingenious solution (also adopted for Katuic languages by Miller and Miller (1995)) which iconically fits with the Lao conventions. Davis created the symbols: ແx̃ະ /ʌ̆ʔ/, ແx̃y /ʌ̆C/, ແx̃ /ʌ/—with the 'ແ' reflecting the low open articulation (like /ɛ/) and the 'x̃' reflecting central position in the oral cavity similar to /ʌ/. These monophthongs are listed in Table 7—note that *x* stands for C2 consonant position, and *y* (or *C* in the phonemic transcription) for C3 other than final glottal stop.

Table 7. Jru' monophthong characters and corresponding phonemes.

	short front	long front	short central	long central	short back	long back
high	x̊ /iʔ/	x̃ /i/	x̃ /ɨʔ/	x̃ /ɨ/	x /uʔ/	x /u/
	x̊y /iC/	x̃y /iC/	x̃y /ɨC/	x̃y /ɨC/	xy /uC/	xy /uC/
mid close	ເxະ /eʔ/	ເx /e/	ເx̃ະ /əʔ/	ເx̃ /ə/	ໂxະ /oʔ/	ໂx /o/
	ເx̃y /eC/	ເxy /eC/	ເx̃y /əC/	ເx̃y /əC/	x̃y /oC/	ໂxy /oC/
mid open	ແxະ /ɛʔ/	ແx /ɛ/	ແx̃ະ /ʌ̆ʔ/	ແx̃ /ʌ/	ເxາະ /ɔʔ/	x̊ /ɔ/
	ແx̃y /ɛC/	ແxy /ɛC/	ແx̃y /ʌ̆C/	ແx̃y /ʌ/	xອy /ɔC/	xອy /ɔC/
low			xະ /ăʔ/	xາ /a/		
			x̃y /ăC/	xາy /aC/		

The diphthongs were more of a problem than the monophthongs due

to the innovation of two partly phonemicised high diphthongs /i~ie/ and /u~uo/. In my earlier draft I proposed to be truly phonemic and to not distinguish [ie] from /i/ and [uo] from /u/, however all Jru' speakers since surveyed insisted on marking the distinction in all words where the sound [ie] and [uo] occur.

Several elder speakers suggested conventions using digraphs of Lao vowels, which break the Lao conventions for writing the Lao language. These suggestions were so strongly favored over the alternative to not distinguish [ie] from /i/ and [uo] from /u/, that I have now incorporated them into the proposed orthography. For [uo], it was proposed either to write 'ໂx' or 'x̃' with a preference for the latter in closed syllables (e.g. [kuo] 'sit' to be written ໂກ and [kuor] 'fiancé(e)' to be written ກ̃ຣ). For [ie], the elders in Paksong and Ban Katuat suggested 'ເxຍ' and 'ເx̃ຍ' (the latter favoured in closed syllables)[13] (e.g. [trie] 'wife' to be written ເຕຣຍ and [trien] 'caterpillar' to be written ເຕຣ̃ຍນ). Thus the principle of *optimum transfer* once again overrides the principle of *maximum ease of learning*.

The phonemic weak vowel, which occurs in the onset of a handful of sesquisyllabic Jru' words, requires a character in order to distinguish minimal pairs such as /klɔ/ 'husband' from /kəlɔ/ 'village bell'. As multisyllabic words (such as loans from Pali/Sanskrit) in Lao are written with the 'xະ' /ăʔ/ vowel symbol, I propose to use the same character. This is also what my informants used for writing the phonemic sesquisyllable vowel in Jru'[14]. Interestingly, my informants also used these symbols to represent the epenthetic vowel between C_1+C_2 sequences in monosyllabic words, despite the fact that this vowel is not phonemic. In environments between consonant sequences of rising sonority (such as /tm/, /pj/) where the epenthetic vowel is not often articulated (except in slow careful speech), my informants continued to use the 'xະ' character. The only place where the epenthetic vowel was never written by my informants was between C_2+R onset sequences (e.g. /tr/, /bl/). Not writing the epenthetic vowel in C_1C_2 sequences was just as firmly rejected by my informants as writing the epenthetic vowel in C_2R sequences—showing that there is a very strong shared intuition by Jru' speakers about the appropriate way to write the Jru' wordshape. I therefore propose to follow my informants' suggestions (although this deviates from Smalley's (1976) overriding principle of *optimum representation of the language*)[15].

A final dilemma was whether to include the Lao system of writing

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[13]One informant (a second language learner) suggested an alternative 'x̃ɟ' or 'x̃ຍ', which was judged acceptable by some Jru' people but not all.

[14]Many older speakers prefer the longer /aː/ symbol 'າ', however for the time being I propose to keep to the 'ະ' convention as it is closer in phonetic value to the shortness of the schwa.

[15]Note the same symbol 'xະ' /ăʔ/ was used to write the epenthetic (non-phonemic) vowel in Katu and Khmhu' onsets in Sulavan et.al. (1998) and Simana' et.al (1994).

the rimes /ăm/, /ăj/, /ăw/ with distinct symbols or whether to be strictly phonemic, using short /ăC/ 'x̌y' plus final consonant for these. Simana' et.al's Khmhu' dictionary followed the standard Lao practice, although Davis's Nhaheun analysis did not. I decided to apply the Lao conventions so that it would be less of a struggle for a Jru' person to learn (ie. supporting *optimal transfer*), and also so that they would know exactly where to find such words in a dictionary (words are ordered by consonant and rime in a Lao dictionary). Table 8 presents the diphthong symbols and extra rime characters.

Table 8. Jru' diphthongs and extra rime characters and corresponding phonemes.

high diphthongs	⸢xℇ⸣ [ie]	⸢x̌ℇy⸣ [ieC]			ꞁx [uo]	x̌y [uoC]
low diphthongs	xjℇ /iaʔ/	xjy /iaC/	⸢x̊ə /iəʔ/	⸢x̊ə /iə/ ⸢x̊əy /iəC/	x̂ɔℇ /uaʔ/	xɔy /uaC/
extra rimes	ꞁx /ăj/		x̊ꞏ /ăm/		⸢x̊ꞏ /ăw/	

4. Conclusion

The Jru' orthography proposed here is being applied in the preparation of a Jru'-Lao-English-French dictionary, being compiled by the author at the time of writing. The draft dictionary will be circulated among Jru' speakers for their comments prior to publication, seeking their feedback on both the content and the proposed orthographical conventions used for the words. It is hoped that the creation of an orthography for Jru' will serve the Jru' people, and the community of field researchers interested in the language and culture of the Jru', and perhaps other West Bahnaric communities.

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APPENDIX

Jru' words illustrating unusual conventions of the Lao-based orthography

C2 /k/ vs /g/:

ກົຣ /koh/ 'floor'   ຖ໌ຣ /ʔgoh/ 'long (space)'

C2 /c/ vs /ɟ/:

ຈ໌ /ciʔ/ 'return'   ຊ໌ /ɟiʔ/ 'ill'

Plain vs Preaspirated vs Preglottalised initial consonants:

ເມ໌ະ /məʔ/ 'mother'   ເໝືອ /hmiə/ 'bat (animal)'

                                     ເມ໌ອ /ʔmiə/ 'rain'

ຕຸຍ໌ດ /tus/ 'head'   ທຕຸຈ /htŭc/ 'rub'

                                     ຕວຍ໌ດ /ʔtuas/ [ʔtuajʰ] 'shallow'

Final /c/, /ɲ/, /j/, /r/ and /l/:

ປ໌ຈ /pĭc/ 'release (hands)'   ແປ໌ຍ /pĕɲ/ 'shoot (v.tr.)'

                                     ເປ໌ຍ /pəj/ 'bruised'

ປ໌ຣ /păr/ 'fly (v.intr.)'   ປາລ /pal/ 'shoulder'

Final /j/, /s/ and /h/:

ຣວຍ /ruaj/ 'fly (n.)'   ຣວຍ໌ດ /ruas/ [ruajʰ] 'elephant'

                                     ຮ໌ຣ [ruoh] 'occasion'

Monosyllabic vs sesquisyllabic words:

ກລໍ /klɔ/ 'husband'   ກະລໍ /kəlɔ/ 'cleared forest'

Epenthetic vowel between C1 and C2 in monosyllabic words:

ຈະໂປຣ /cnor/ 'tube, straw'   ປະເຊຣ໌ບ /psrăp/ 'decorate'

                                     ຕະແພ /tpʰɛ/ 'destroy'

No epenthetic vowel between C2 and R in monosyllabic words:

ໄປລ ເປຣ໌ອດ /plăj priət/ 'banana'

Extra vowel /ʌ/ and /X/:

ແຽຣຽ /jrʌj/ 'mortar bowl'   ຈະແນືວ /cmXw/ 'vine, creeper'

/ʉ/ vs. [uo] vs. /ua/

ຣູ້ຍຕ /ʔrus/ [ʔruiʰ] 'confuse, mix'   ຣວຍຕ /ruas/ [ruajʰ] 'elephant'

ຣູ້ຕ [ruot] 'pay a visit to'   ຣວຕ /ruat/ 'buy'

/i/ vs. [ie] vs. /ia/

ຣິຕ /rit/ 'rite, ritual, custom'   ເຣັຍຕ [riet] 'bind together, wrap'

                                            ຣຽຍຕ /rias/ [riajʰ] 'root (n.)'