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**Volume 1**

# JSEALS

Journal of the Southeast Asian Linguistics Society

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JSEALS is the peer-reviewed journal of the Southeast Asian Linguistics Society, and is devoted to publishing research on the languages of mainland and insular Southeast Asia.

JSEALS was formally established by decision of the SEALS 17 meeting, held at the University of Maryland in September 2007. It supersedes the Conference Proceedings, previously published by Arizona State University and later by Pacific Linguistics.

JSEALS welcomes articles that are topical, focused on linguistic (as opposed to cultural or anthropological) issues, and which further the lively debate that characterizes the annual SEALS conferences.

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Submission is open to all, although we expect that most JSEALS articles have been formally submitted for peer review and publication after having the opportunity to be presented and discussed at the SEALS conference. Note that papers are expected to be written in English.

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# Editorial

Welcome to JSEALS Volume 1, the first issue of the *Journal of the Southeast Asian Linguistics Society*. From the inception of the Society in 1991, until 2006, papers presented at the annual SEALS meetings were published as proceedings volumes, first by the Arizona State University, and later by Pacific Linguistics and at the Australian National University. From now on JSEALS will be the principal organ of the Southeast Asian Linguistics Society.

This change follows a history of difficulties with the proceedings; some issues were delayed by years for editorial and financial reasons, and those which were printed were not sold widely. It became evident that it would take a significant commitment of resources, for which there was no obvious source, to continue the old publication model. At the 2006 and 2007 meetings (20-21/9/06 Atma Jaya University, Indonesia and 31/8-2/9/07 University of Maryland, USA) conference committee members and attendees engaged in discussions about the future of the proceedings, with many ideas canvassed.

At the Maryland meeting, it was finally decided that SEALS should pursue a two pronged strategy: (1) to adopt electronic publication as the primary distribution mechanism to reduce costs and improve access, and (2) to move to peer review in order to ensure consistent high quality content. The second of these is particularly important; more than ever, scholars must demonstrate their research output with the publication of refereed journal articles, while traditional conference proceedings increasingly count for less. At the same time, there is still scepticism about the quality and status of electronic publications, so the adoption of a robust quality control mechanism is essential. Consequently, the Society decided to take action by ending the old proceedings series and relaunching publication as JSEALS. A new website was created at [www.jseals.org](http://www.jseals.org), and Pacific Linguistics agreed to publish the journal online for free, and also offer a printed version for sale on demand.

Subsequently, an editorial board and executive editors were recruited, and we set about preparing the first issue. This was slated to take papers from the 2007 meeting, as well as being open to other contributions that might pass editorial criteria and the review process. The plan was simple enough: papers submitted by the end of the year would be reviewed in the first half of the following year, and the journal would come out before year's end. That implied a first publication date of late 2008 for the birth of the new journal.

However, the initial process of starting a refereed journal took much longer than anticipated. Collecting papers from dozens of authors, enlisting the unpaid aid of even more reviewers, and maintaining contact with all of them was a complex and time-consuming task. We have learned much from our experience so far and have already made some procedural changes which are reducing the holdups somewhat. For this issue we decided to go to press once a minimum number of finalized papers were compiled and typeset. The half dozen or so still unfinalized papers will have priority for the next issue of the journal.

In addition to refereed papers, we will also accept data papers, book reviews, and conference reports (subject to internal editorial review). For the first issue of JSEALS we

are very pleased to include a substantial data paper on Semnam, an endangered Aslian languages of Malaysia.

We hope that the results of our labours are satisfactory, and we thank everyone who has contributed papers and reviews for their efforts and patience through the process. The second volume of JSEALS should be published later in 2009, and the publication process will then hopefully become routine. Ultimately our success will be realised as increased status for the journal and a secure future for our annual SEALS meetings.

Mark Alves (Executive Editor)  
Paul Sidwell (Managing Editor)  
March 2009

# SINO-VIETNAMESE GRAMMATICAL VOCABULARY AND SOCIOLINGUISTIC CONDITIONS FOR BORROWING

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## Abstract

Vietnamese has been demonstrated to be a Mon-Khmer Austroasiatic language (Haudricourt 1954, Shorto 2006), albeit one which differs substantially from the typical Austroasiatic phonological template (Alves 2001). Some of that linguistic transformation was most likely due in part to language contact with Chinese, primarily through the massive lexical borrowing that took place over the past two millennia. However, the question of the sociolinguistic conditions under which this borrowing occurred over this large period of time has nevertheless been little described. The main purpose of this paper is to consider the borrowing of grammatical vocabulary in particular from Chinese into Vietnamese to exemplify the long-term Sino-Vietnamese language contact. This requires an exploration of the socio-historical context in which the elements of Chinese came into Vietnamese and a sorting out of the spoken versus literary means of transmission of linguistic borrowing. This case study in the borrowing of grammatical vocabulary sheds light on the issues of language contact and linguistic borrowing when a prestigious written language is accessible to a linguistic community.

## Overview

A database being amassed by this author<sup>1</sup> indicates that well over 400 Vietnamese words, considered native vocabulary today, were most likely borrowed via a spoken means of transmission around the time of the Han Dynasty (though some possibly as late as the beginning of the Tang Dynasty, which began in the 7<sup>th</sup> century CE). This large number of early loanwords at least in part the result of the immigration of some twenty thousand Chinese soldier-settlers who were sent to Vietnamese and brought with them many of the cultural customs and material trappings of Chinese civilization (Taylor 1983:49). The Han Dynasty was, however, the only period in which such a large quantity of spoken Chinese was directly borrowed without the powerful influence of written Chinese. It is the assertion here that the early foundation of Chinese culture in the Han Dynasty coupled with the second major spread of Chinese culture during the powerful Tang Dynasty (7<sup>th</sup> to 10<sup>th</sup>

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<sup>1</sup> The database is based on work by numerous scholars, including primarily Haudricourt 1954, Wang 1958, Mei 1970, Pulleyblank 1981 and 1984, and Nguyễn T. C. 1995. Admittedly, complete certainty of loanword status of the words in the database is impossible to achieve. Instead, the author has evaluated a range of high to low certainty based on the overall phonetic and semantic patterns, coupled with historically documented details about the kinds of social contact at that time. Of the over 500 words, nearly 300 have been evaluated as highly likely Old Chinese loanwords, about 150 are at medium certainty, and about 40 are at low certainty.



centuries CE) in Vietnam served as a socially prestigious platform from which Vietnamese literate in Chinese could spread Chinese vocabulary, including grammatical vocabulary, into Vietnamese regardless of the number of actual bilingual Chinese speakers in Vietnam.<sup>2</sup>

Material borrowing, in contrast with borrowing of syntactic and phonological patterns, may occur from languages of high status even without a bilingual population (Sakel 2007). This appears to be the case in Vietnam, in which the initial era of Chinese political domination was marked by a substantive and influential population of Chinese settlers. Subsequently, the direct influence of the Chinese population was diminished as they were nativized (Taylor *Ibid.*:52). There have been numerous instances throughout history when groups of Chinese maintained small but financially influential communities in Vietnam, and written Chinese has constantly been an important part of the upper levels of Vietnamese society, but there has never been an era in which Chinese was spoken throughout Vietnam. Thus, it must be concluded that, over the past thousand years since the time of Vietnamese political independence from China, the time during which the bulk of Chinese vocabulary was borrowed into Vietnamese, written texts have been the primary source of this borrowing.

The focus of this paper, transfer of grammatical vocabulary, is particularly telling of the increased borrowing via literary texts. While Vietnamese syntactic structure has largely been unaffected by Chinese and maintains a primarily Southeast Asian template (Alves 2001), the amount of grammatical vocabulary in Vietnamese of Chinese origins is significant. They constitute several major categories, including connective words, passive voice markers, classifiers and general measure words, among others (Lê 2002, Alves 2005 and 2007).

The earliest well-known linguistic description of Vietnamese appears in the 1651 Vietnamese-Portuguese-Latin dictionary of Alexandre de Rhodes, the “*Dictionarium Annamiticum, Lusitanum, et Latinum*”.<sup>3</sup> The introduction to the text contains a grammar section, and grammatical words and examples of their usage are provided throughout the dictionary’s 9,000 entries. Exploration of the data (referring to a 1991 translation into Vietnamese of the original Latin text) shows that, structurally, Vietnamese syntax has changed little since the 1600s. While the dictionary was influenced to a good deal by Central Vietnamese, with some lexical and phonological characteristics specific to that region, the text can still be considered representative of general Vietnamese grammar. Overall, the data in the dictionary clearly show that Vietnamese at that time was a topic-comment language with other typological characteristics similar to Vietnamese today.

The Vietnamese grammatical vocabulary inventory, on the other hand, has changed noticeably over the past three and a half centuries. In a comparison of the grammatical vocabulary of the 1600s (both de Rhodes’ work and a dictionary of archaic Vietnamese by Vuong 2002) and that of today, in some cases, there are preservations or minimal semantic and phonetic changes of some grammatical words. In other cases, some words have changed more substantially in their semantico-syntactic functions and are in the ongoing process of grammaticalization. Finally, there are grammatical words in the pre-modern era which do not exist today or which have very limited usage in modern Vietnamese, and a

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<sup>2</sup> Consider the Latin loanword “via,” which is considered a formal register word in English, in contrast with the more neutral English word “through”.

<sup>3</sup> Other works that precede de Rhode’s work are discussed in Jacque 2002.



noticeable number of those words are *not* of Chinese origins. It is this last category of words that are of particular interest in this study.

In the following sections, the eras of socio-historical Sino-Vietnamese contact are described, and then linguistic data are provided to demonstrate how Sino-Vietnamese grammatical vocabulary were borrowed over the past few centuries through biliteracy rather than spoken bilingualism.

### **Historical Sociolinguistic Background**

The eras of Sino-Vietnamese contact are here divided into four general categories based on the nature of the sociolinguistic contact: (a) the Han Dynasty era (1<sup>st</sup> century BCE to 2<sup>nd</sup> century CE), (b) the Tang Dynasty era (7<sup>th</sup> to 10<sup>th</sup> centuries CE), (c) the era of Vietnamese independence (11<sup>th</sup> century to the modern era), and (d) the modern era (20<sup>th</sup> century to the present). Besides the first era, all the other eras are marked by situations in which Chinese is largely transmitted via writing rather than an influential Chinese vernacular community.

Documented Sino-Vietnamese language contact begins early in the Han Dynasty. The ancestors of the modern Vietnamese resided, at that time, primarily in modern day northern and north-central Vietnam, with a cultural center in the Red River Delta. In the Eastern Han dynasty at the beginning of the Christian era, the Chinese administration mandated the adoption of Chinese cultural customs throughout Vietnam, including Chinese family and household customs and accoutrements (e.g., Taylor *Ibid.*:33-34). The tools of administration left lexical imprints (e.g., *giấy* “paper” (Sino-Vietnamese *chĩ*; Chinese 纸 *zhǐ*), *họ* “family name” (Sino-Vietnamese *hộ*, Chinese 戶 *hù* “household”), etc.), though these etyma were nativized and later reborrowed with standardized, Sino-Vietnamese literary readings (the second readings in the previous examples).

Another crucial burst of language contact occurred during the time when large groups of Chinese soldier-settlers and the establishment of an elite Sino-Vietnamese class, who, despite their eventual “Vietnamization,” maintained some sense of Chinese identity for centuries. As noted, there are perhaps hundreds of these words which belong to a core of Vietnamese culture, and thus this contact was indeed significant. During this period, there occurred the borrowing of at least a few hundred Chinese words, mostly nouns and some verbs, but almost no grammatical words.

Chinese power wavered after the Han dynasty. To what extent sociolinguistic contact led to borrowing before and into the early Tang dynasty several centuries later is less clear, though there were certainly Chinese leaders, armies, and traders in Vietnam in this era, and this was the period during which Chinese-style Buddhism began to flourish (Taylor *Ibid.*:80-84). At the very least, it can be said that Vietnam’s continuing status as part of China coincides with a progression into further sinicization of culture and language, a process which was complete among the modern varieties of Chinese spoken in Southern China, where there had been numerous non-Chinese groups prior to the Han Dynasty.

China regained its political strength in the Tang Dynasty, and a large-scale spread of Chinese writing ensued throughout East Asia—including Japan, Korea, and Vietnam—via the Chinese rhyme dictionaries. These texts, containing tens of thousands of Chinese characters, provided access to the entirety of the Chinese lexicon. From this era on, the vast majority of Chinese loanwords have maintained their official, standardized, literary readings, in contrast with the vernacular pronunciations of the Han Dynasty loans.

At the end of the Tang Dynasty, Vietnam gained political independence. While there continued to be Sino-Vietnamese contact through trade, politics, religion, and

education and some amount of Chinese immigration (Luong 1988, Châu 2006), with few exceptions, there are no instances of large-scale migrations of Chinese into Vietnam in this era that would have resulted in widespread spoken bilingualism. This combination of factors—little Chinese immigration and ready access to Chinese vocabulary without the need for native speakers—supports the idea of a mainly literary means of transmission. Perhaps somewhat ironically, at the same time that the Vietnamese increasingly sought political independence from China, the Chinese political and educational model grew in influence in Vietnam. This is exemplified by the creation of the Confucian university, the *Văn Miếu* (文廟 *wén miào*) “Temple of Literature,” shortly after independence from China, thereby establishing a long-term literary Chinese tradition in Vietnam.

With this simultaneous independence from China but strengthened ability of Chinese writing as a center of education in Vietnam in the Post-Tang Dynasty era, it can be assumed that borrowing from Chinese continued to be primarily through biliteracy of the Vietnamese literary elite. Modeling of the Chinese socio-political and cultural systems continued even into the 1800s (Woodside 1971). This was the case regardless of the size of the Chinese population in Vietnam, which did increase at times, particularly in the late 1800s under French interest in Chinese labor and managerial skills. The influential Chinese merchant class moved easily throughout Vietnam, but also continued to establish permanent family-managed properties and businesses (Ibid. 272). However, over a period of several decades, the immigration of many dozens of thousands of Chinese, many of whom came from neighboring Guangdong and Guangxi provinces, did not result in massive lexical borrowing of spoken Cantonese or indeed any other Southern variety of Chinese. Over the centuries, larger numbers of Chinese loanwords entered daily, spoken Vietnamese, but these were literary, non-dialectal readings. Loanwords from Cantonese are few in number,<sup>4</sup> a few dozen at most, and are limited mainly to the domain of food (e.g., *chiên* “to pan fry” (Sino-Vietnamese *tiên*; Chinese 煎 *jiān*; Cantonese *jīn*), *lạp xưởng* “Chinese sausage” (Sino-Vietnamese *lạp trường*; Chinese 臘腸 *là cháng*; Cantonese *lahp cheung*)). This situation is in sharp contrast with the hundreds of Han Dynasty era loanwords which span numerous semantic domains and which have remained part of the Vietnamese lexicon for two thousand years. Finally, it is worth noting that these loanwords are clearly recent borrowings based on their close phonetic matches, and none of them appear to be typical Yue or Cantonese dialectal words.

In the modern era, from the early 20<sup>th</sup> century, it is clear that borrowing from Chinese into Vietnamese occurred mainly as a result of biliteracy among Vietnamese. The large-scale spread of “Sino-neologisms” (i.e., translation by Chinese and Japanese of Western concepts and terms using Chinese morphs, typically combinations of two morphs) led to the borrowing of many thousands of “Chinese” words, but these came from both Japanese and Chinese texts. A number of influential Vietnamese studied in Japan in the early 20<sup>th</sup> century, helping to stimulate the spread of these words (Sinh 1993). As these loanwords were borrowed primarily from writings, they are consistently pronounced with literary Sino-Vietnamese readings, and notably not with any dialectal pronunciations. At the same time that Sino-neologisms entered Vietnamese, there was massive growth in

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<sup>4</sup> One possibility considered by this author is that the neighboring Pinghua Chinese, distinct from Yue Chinese, spoken in modern day Guangxi province, where Chinese schools existed, could have been a source of the so-called “southern koine” (Hashimoto 1978). Exploration of Pinghua lexical and phonological data in Li 1998 shows no traces.

literacy rates in Vietnam—from 5% to 20% prior to World War II (DeFrancis 1977:218) to 90% today. This increase in literacy also corresponds to the time when the national Vietnamese *Quốc Ngữ* alphabet became an important aspect of literacy campaigns (Marr 1981:137 and 181). Finally, the intentional standardization of the massive quantities of new vocabulary of largely Chinese origins (the Vietnamese lexicon grew from 40,000 in 1945 to hundreds of thousands within a few decades (Marr 1981:168, Nguyễn et. al. 2002:19) further magnified the impact of these Chinese lexical imports on both the spoken and written Vietnamese lexicon. All in all, the borrowing of Chinese words came into Vietnamese via the written word.

### **Linguistic Data and Grammatical Vocabulary**

The Vietnamese lexicon has been described as being 70% Chinese in origin, with technical vocabulary constituting 80%. However, in a loanword typology project utilizing a list of about fifteen hundred words, only 27% of Vietnamese vocabulary was shown to be from Chinese (Alves 2007a). However, this number must be considered low since that study did not include grammatical vocabulary, names, common vocabulary in the region, among other categories of words to which the Chinese lexicon is the source in Vietnamese. Still, by focusing on a set of more core vocabulary, as the study did, it does suggest that 70%, which includes the entirety of a dictionary, is not a realistic figure either if the goal is to determine the depth of influence on spoken Vietnamese in contrast with specialized vocabulary. No studies thus far have indicated the percentage of vocabulary of Chinese origin based on a set of high-frequency Vietnamese vocabulary. Such a study would logically be expected to show a number somewhere between 27% and 70% and more accurately and realistically portray the role Chinese has played in the Vietnamese lexicon. Regardless, the number of words of Chinese origin must be considered substantive even if little more than a third of core Vietnamese vocabulary is Chinese in origin.

As for grammatical vocabulary, no studies have been found to quantify the percentage of function words of Chinese origin, though the percentage must indeed be substantial. Based on collections of such words in Lê 2002 and Alves 2005 and 2007a, connective words are largely of Chinese origin, dozens of measure words and some major classifiers are from Chinese, a number of preverbal grammatical morphs are Chinese, and a majority of the words in the complex system of pronoun reference come from Chinese. However, Chinese grammatical vocabulary, which entered Vietnamese at different times, did so for the most part in the Post-Tang era since most are pronounced with their literary readings from this era. In fact, it may be the case that a majority of Chinese grammatical vocabulary entered Vietnamese after the 1600s and even as late as the turn of the 20<sup>th</sup> century.

Nguyễn Đình Hòa (1991) identified archaic lexical items in de Rhodes' dictionary which are not part of modern Vietnamese. Exploration in the dictionary of Vương (2002), which is based on numerous ancient Vietnamese writings from the past several centuries, also reveals additional archaic vocabulary in Vietnamese which has been replaced over the centuries. Unfortunately, more detailed statistical studies of the timing of the historical changes in written records, which would serve to clarify and verify the ideas in this study, are non-existent. Still, the position that some of the words in Vietnamese in the 1600s are not in modern, standard usage is feasible and can be confirmed by native speaker intuitions and simple corpus queries. Both lexical loss and replacement did take place over the past few centuries, and the realm of grammatical vocabulary also shows this kind of change.

Such is the case for the archaic Vietnamese words *bèn* “but” and *âu là* “or”, which have the modern Sino-Vietnamese counterparts *nhưng* “but” (仍 réng) and *hoặc* “or” (或 huò).

Of particular note in this study are the numerous examples in de Rhodes’ dictionary of non-Chinese grammatical vocabulary which were subsequently replaced by synonymous Chinese vocabulary. The grammatical functions are wide ranging, including a number of important grammatical lexical categories. Examples are shown in Table 1, which contains grammatical words found in de Rhodes’ dictionary which are not Chinese in origin and their mainstream, modern counterparts of Sino-Vietnamese origin. Forms in the 17<sup>th</sup> century column marked with an asterisk are extremely literary and/or have very limited usage in modern Vietnamese.

**Table 1:** 17<sup>th</sup> Century Grammatical Words in Vietnamese and their Modern Sino-Vietnamese Replacements

Grammatical Functions	17 <sup>th</sup> Century	Modern Era
<i>Quantity</i>	đòi* “every” phô “the various (higher social status)”	mỗi “every” (每 měi) các “the various” (各 gè)
<i>Sentence connecting</i>	bèn “but” chung* “because” âu là* “or”	nhưng “but” (仍 réng) vì <sup>5</sup> (non-literary reading) “because” (为 wèi) hoặc “or” (或 huò)
<i>Negation</i>	chẳng* <sup>6</sup> “no/not”	không “no/not” (空 kōng)
<i>Location</i>	ca “at”	tại “at” (在 zài)
<i>Comparison and intensification</i>	ngắt “equal to”	bằng (Old-Sino-Vietnamese) (平 píng)
<i>Time terms</i>	chung (progressive marker) đặc “time/instance”	đang (progressive marker) (當 dāng)  lần “time/instance” (輪 lún)
<i>Grammatical adverbs</i>	bui “only” chín “truly” nghĩ “by oneself”	chỉ “only” (只 zhǐ) thật “truly” (實 shí) tự “by oneself” (自 zì)

Data in de Rhode’s 1651 Vietnamese-Latin-Portuguese Dictionary reveal the following. First, de Rhodes’ dictionary highlights the diglossic distinction between Chinese vocabulary and Vietnamese, with Chinese morphs having a formal status even higher than

<sup>5</sup> This particular form is a nativized reading with the *huyền* tone. The standard literary pronunciation is *vì*, with the *nặng* tone. The native *huyền* tone vs. the literary *nặng* tone is seen in a number of forms, as discussed in Alves 2005.

<sup>6</sup> The form *chẳng* “no/not” in particular has more widespread usage in modern Vietnamese, though statistically, it has significantly lost its status to *không* “no/not.”

it is today. With literacy in the pre-modern era at a minimum, a small fraction of the entire population, it must be assumed that only biliterate Vietnamese could have been those in control of initiating the spread of such vocabulary, both content words and grammatical vocabulary. Next, de Rhodes' dictionary shows that Cantonese or other varieties of Yue had contributed extremely little in terms of lexical content by that time, again suggesting that spoken bilingualism in Chinese was relatively unimportant after the first few centuries of Sino-Vietnamese language contact.

While the de Rhodes' dictionary highlights the highly formal status of Chinese vocabulary in Vietnam in the 17<sup>th</sup> century, modern era Sino-Vietnamese grammatical vocabulary supports the idea of the literary means of transmission by their notably literary status. In a collection of 156 grammatical Vietnamese words of Chinese origin (Lê 2002: 397-403), many belong to a very formal and/or written register (e.g., *nhược* (若 *ruò*) "if," *giả sử* (假使 *jiǎ shǐ*) "in the event that", and *sở dĩ* (所以 *suǒ yǐ*). Another characteristic of these words is that some are prefixes in Vietnamese but free morphs in Chinese (e.g., *bất* "un-" (不 *bù*), *tái* "re-" (再 *zài*), and *tối* "-est" (最 *zuì*)),<sup>7</sup> which suggests that such morphs were not borrowed as part of a grammatical system but rather simply by borrowing the morphs in words, again suggesting borrowing through literacy in Chinese (and in some cases, in Japanese). Some of the borrowed words differ in part of speech from the Chinese forms. For example, the Chinese adverb 果然 (*guǒ rán*) "as expected" is an adjective in Vietnamese *quả nhiên*, and the Chinese adverb 實在 (*shí zài*) "truly/really" is in Vietnamese *thực tại* both an adverb "really" and noun "reality". Finally, it is important to note that some of these grammatical words, which are common in Mandarin, spoken far to the north of Vietnam, are not spoken Cantonese (though they appear in literary Cantonese), for instance, *bị* (passive marker) (被 *bei*) and *tại* "at" (在 *zài*). This might seem counterintuitive as Mandarin has never been spoken widely in Vietnam, while Cantonese is a virtual lingua franca among Chinese in Vietnam, unless one accepts the idea that the borrowing came via written Chinese texts, which contain essentially Mandarin-style grammar and grammatical vocabulary.

### Conclusions

While at some points, some borrowing via spoken transmission did take place, primarily during the initial contact in the early Han Dynasty and a limited scope of borrowing from Cantonese in the modern era, most Sino-Vietnamese borrowing has taken place via a written means of transmission. The limited immigration of Chinese into Vietnam, the substantial adoption of the Chinese written tradition and cultural patterns, and the tendency towards literary status of Chinese vocabulary in Vietnamese all support this position. Among the borrowed grammatical Chinese vocabulary, the vocabulary is higher register, not borrowed from dialectal varieties of Chinese in or near Vietnam, and show unexpected semantico-syntactic shifts from loan source, all highlighting this more literary status and route for borrowing.

These data not only portray a portion of the linguistic history of Vietnam but also serve as a case study of language contact (both spoken and written), of the sociolinguistic

<sup>7</sup> Spoken Cantonese, like Vietnamese but in contrast with Mandarin Chinese, does not use the free morph 不 *bù* "no," which only occurs in bound form in words or in highly literary Cantonese. The other grammatical words noted, however, are free morphs in Cantonese, like Mandarin Chinese but in contrast with Vietnamese.

history of the peoples in East and Southeast Asia, and of broader psycholinguistic issues (i.e., spoken versus written language, semantico-syntactic categories of words).

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## AGREEMENT IN LAIZO

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Laizo, together with Lai and Mizo, belongs to the Central Chin subgroup of the Kuki-Chin languages.<sup>1</sup> Like them, it has a system of particles which accompany verbs and show agreement with the subject and one object. The agreement systems of Lai and Mizo have been described in Bedell (1995) and (2001). In this discussion we will outline the Laizo agreement system and compare it with those of Lai and Mizo. The systems are quite similar but nevertheless show differences of some interest. The categories of agreement are the same in all three languages: person (first, second and third) and number (singular and plural). The free pronouns of Laizo are shown in (i):

(i)	s	pl
1	<i>kei</i> 'I'	<i>kanni</i> 'we'
2	<i>nang</i> 'you'	<i>nanni</i> 'you'
3	<i>ani</i> 'he/she/it'	<i>anni</i> 'they'

The corresponding Lai pronouns are slightly different, as shown in (ii). In Lai the third person singular and the plural forms end in a glottal stop absent in Laizo.

(ii)	s	pl
1	<i>kei</i> 'I'	<i>kannah</i> 'we'
2	<i>nang</i> 'you'	<i>nannah</i> 'you'
3	<i>anih</i> 'he/she/it'	<i>annah</i> 'they'

The corresponding Mizo pronouns are also slightly different, as shown in (iii). Like Laizo, the Mizo forms lack a final glottal stop; the first and second person plural forms have stems identical to the corresponding singulars.

(iii)	s	pl
1	<i>kei</i> 'I'	<i>keini</i> 'we'
2	<i>nang</i> 'you'	<i>nangni</i> 'you'
3	<i>ani</i> 'he/she/it'	<i>anni</i> 'they'

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<sup>1</sup> Laizo is spoken primarily in Falam Township, Chin State, Myanmar and adjoining areas of Myanmar, India and Bangladesh. Laizo can be distinguished from Zahao and from the language spoken in the town of Falam. Gordon (2005) gives a speaker count of 18,600 for Laizo and 14,400 for Zahao and uses 'Falam Chin' as a cover term for both, together with several other Central Chin dialects. The Laizo forms in (i) through (xxxii) represent the usage of Khar Thuan, and are given in standard Laizo orthography. We are grateful to F. K. Lehman for help with Mizo.

Laizo and Lai have a second set of pronouns as shown in (iv). These are formed with a suffix *-mah*, which originally meant ‘self’. (i) and (iv) are not completely interchangeable.<sup>2</sup>

(iv)	s	pl
1	<i>keimah</i> ‘I’	<i>kanmah</i> ‘we’
2	<i>nangmah</i> ‘you’	<i>nanmah</i> ‘you’
3	<i>amah</i> ‘he/she/it’	<i>anmah</i> ‘they’

Mizo has similar pronouns.<sup>3</sup>

(v)		
1	<i>keimah</i> ‘I’	<i>keimahni</i> ‘we’
2	<i>nangmah</i> ‘you’	<i>nangmahni</i> ‘you’
3	<i>amah</i> ‘he/she/it’	<i>anmahni</i> ‘they’

Laizo, but not Lai, has sets of genitive pronouns as shown in (vi) and (vii). These are combinations of the pronouns in (i) and (iv) with the Laizo genitive particle *ih*, which is lacking in Lai.

(vi)	s	pl
1	<i>kei(z)i</i> ‘my’	<i>kanni(h)</i> ‘our’
2	<i>nangi</i> ‘your’	<i>nanni(h)</i> ‘your’
3	<i>ani(h)</i> ‘his/her/its’	<i>anni(h)</i> ‘their’

(vii)	s	pl
1	<i>keimai</i> ‘my’	<i>kanmai</i> ‘our’
2	<i>nangmai</i> ‘your’	<i>nanmai</i> ‘your’
3	<i>amai</i> ‘his/her/its’	<i>anmai</i> ‘their’

In Mizo, there is a similar genitive particle *a*, with high tone. When preceded by a *-mah* pronoun, it suppresses the usual glottal stop and merges with the preceding vowel, as in (viii).

(viii)	
1	<i>keima</i> ‘my’
2	<i>nangma</i> ‘your’
3	<i>ama</i> ‘his/her/its’

The paradigm of an intransitive Laizo verb is given in (ix); the verb is *feh* ‘go’ and the preceding particle in each form shows agreement with the subject whether or not it is overt. An intransitive verb has no objects and therefore shows no object agreement.

<sup>2</sup> See Ceu Hlun and Lehman (2002) for the distinction in Lai.

<sup>3</sup> Chhangte (1993, page 65) calls them ‘emphatic’. The Mizo distinction seems different from Lai, where the *-mah* pronouns are much more frequent.

(ix)	s		pl
1	<i>ka feh</i>	‘I go’	<i>kan feh</i> ‘we go’
2	<i>na feh</i>	‘you go’	<i>nan feh</i> ‘you go’
3	<i>a feh</i>	‘he/she/it goes’	<i>an feh</i> ‘they go’

The corresponding Lai paradigm is as in (x). The subject agreement particles in Lai are the same as in Laizo, but the lexical verb *kal* ‘go’ differs.

(x)	s		pl
1	<i>ka kal</i>	‘I go’	<i>kan kal</i> ‘we go’
2	<i>na kal</i>	‘you go’	<i>nan kal</i> ‘you go’
3	<i>a kal</i>	‘he/she/it goes’	<i>an kal</i> ‘they go’

The corresponding Mizo paradigm is as in (xi). The lexical verb *kal* ‘go’ is the same as in Lai, but the second person subject agreement particles *i* (singular) and *in* (plural) differ from the corresponding *na* and *nan* in Laizo and Lai.

(xi)	s		pl
1	<i>ka kal</i>	‘I go’	<i>kan kal</i> ‘we go’
2	<i>i kal</i>	‘you go’	<i>in kal</i> ‘you go’
3	<i>a kal</i>	‘he/she/it goes’	<i>an kal</i> ‘they go’

To illustrate object agreement, we begin with the first person subject forms, shown for Laizo in (xii). In (xii) the verb is *hmu* ‘see’, and *ka* and *kan* mark agreement with the first person subject just as in (ix). If the object is second person, the particle *lo* appears between *ka* or *kan* and the verb. If the object is third person, no person agreement particle appears. The number of a second person object is unmarked, but a third person object may optionally be marked plural with the postverbal particle *hai*. If the object is first person, it is understood as a reflexive (or, if it is plural, as a reciprocal), and marked with the postverbal particle *aw*.

(xii)	1s		1pl
1	<i>ka hmu aw</i>	‘I see myself’	<i>kan hmu aw</i> ‘we see ourselves/each other’
2	<i>ka lo hmu</i>	‘I see you’	<i>kan lo hmu</i> ‘we see you’
3	<i>ka hmu</i>	‘I see him/her/it/them’	<i>kan hmu</i> ‘we see him/her/it/them’
3pl	<i>ka hmu hai</i>	‘I see them’	<i>kan hmu hai</i> ‘we see them’

The corresponding Lai forms are as in (xiii). The Lai second person object agreement particle is *in*, which combines with the first person singular subject agreement particle *ka* into *kan*. As in Laizo, a third person object is not marked. But plurality of a second or third person object is marked by the postverbal particle *hna*. Unlike Laizo *hai*, Lai *hna* is not optional. The reflexive or reciprocal particle in Lai is *i*, which combines with the first person singular subject agreement particle *ka* into *kaa*. Lai reflexives and reciprocals also show a morphological change in the verb: *hmuh* ‘see’ becomes *hmu*.

(xiii)	1s		1pl
	1s	<i>kaa hmu</i> ‘I see myself’	x
	2s	<i>kan hmuh</i> ‘I see you’	<i>kan in hmuh</i> ‘we see you’
	3s	<i>ka hmuh</i> ‘I see him/her/it’	<i>kan hmuh</i> ‘we see him/her/it’
	1pl	x	<i>kan i hmu</i> ‘we see ourselves/each other’
	2pl	<i>kan hmuh hna</i> ‘I see you’	<i>kan in hmuh hna</i> ‘we see you’
	3pl	<i>ka hmuh hna</i> ‘I see them’	<i>kan hmuh hna</i> ‘we see them’

The corresponding Mizo forms are as in (xiv). The Mizo second person object agreement particle is *che*, and unlike Laizo *lo* or Lai *in* it follows the verb. As in Laizo and Lai, there is no Mizo third person object agreement particle. In Mizo, plurality of a second person object is marked by *u* following *che*, but plurality of a third person object is unmarked. The Mizo reflexive or reciprocal particle is *in*.

(xiv)	1s		1pl
	1s	<i>ka in hmu</i> ‘I see myself’	x
	2s	<i>ka hmu che</i> ‘I see you’	<i>kan hmu che</i> ‘we see you’
	3	<i>ka hmu</i> ‘I see him/her/it/them’	<i>kan hmu</i> ‘we see him/her/it/them’
	1pl	x	<i>kan in hmu</i> ‘we see ourselves/each other’
	2pl	<i>ka hmu che u</i> ‘I see you’	<i>kan hmu che u</i> ‘we see you’

Laizo has eight first person object agreement forms corresponding to ten in Lai and eight in Mizo.

The Laizo forms with a second person subject are shown in (xv). In (xv) the forms with a third person object are unmarked for agreement in person and optionally marked for agreement in number with that object, and the reflexive or reciprocal forms are marked with *aw*, just as in (xii). A first person object is marked with *i* or *in*; unlike the second person object agreement particle *lo* in (xii), Lai *in* in (xiii) or Mizo *che* in (xiv), these object agreement particles exclude any subject agreement particles. They partially mark the number of the first person object: *i* is used only when the first person object is singular, but *in* may be used if either the subject or the first person object is plural. If the subject is plural and the first person object is singular, either *i* or *in* may appear.

(xv)	2s		2pl
	1	<i>i/in hmu</i> ‘you see me/us’	<i>i/in hmu</i> ‘you see me/us’
	2	<i>na hmu aw</i> ‘you see yourself’	<i>nan hmu aw</i> ‘you see yourselves/each other’
	3	<i>na hmu</i> ‘you see him/her/it/them’	<i>nan hmu</i> ‘you see him/her/it/them’
	3pl	<i>na hmu hai</i> ‘you see them’	<i>nan hmu hai</i> ‘you see them’

The corresponding Lai forms are as in (xvi). In (xvi), the forms with a third person object are unmarked for agreement in person, *hna* marks plurality of a third person object, and the reflexive and reciprocal forms are marked with *i*, just as in (xiii). A first person object is marked with *ka* if singular and *kan* if plural, which come between the subject agreement

particles *na* and *nan* and the verb. As in (xiii), object number agreement increases the Lai forms with respect to Laizo.

(xvi)	2s		2pl
1s	<i>na ka hmuh</i> ‘you see me’		<i>nan ka hmuh</i> ‘you see me’
2s	<i>naa hmu</i> ‘you see yourself’		x
3s	<i>na hmuh</i> ‘you see him/her/it’		<i>nan hmuh</i> ‘you see him/her/it’
1pl	<i>na kan hmuh</i> ‘you see us’		<i>nan kan hmuh</i> ‘you see us’
2pl	x		<i>nan in hmu</i> ‘you see yourselves/each other’
3pl	<i>na hmuh hna</i> ‘you see them’		<i>nan hmuh hna</i> ‘you see them’

The corresponding Mizo forms are as in (xvii). In (xvii), the forms with a third person object are unmarked for agreement in person or number, and the reflexive and reciprocal forms are marked with *in*, just as in (xiv). A first person object is marked with *mi* or *min*, but unlike Laizo *i* and *in* in (xiv) or Lai *ka* and *kan* in (xv), these are interchangeable and do not mark number for first person objects. Like Laizo *i* and *in*, and unlike Lai *ka* and *kan*, they exclude subject agreement particles.

(xvii)	2s		2pl
1	<i>mi(n) hmu</i> ‘you see me/us’		
2	<i>i in hmu</i> ‘you see yourself’		<i>in in hmu</i> ‘you see yourselves/each other’
3	<i>i hmu</i> ‘you see him/her/it/them’		<i>in hmu</i> ‘you see him/her/it/them’

In Laizo there are eight second person object agreement forms corresponding to ten in Lai but only to five in Mizo.

The Laizo forms with a third person subject are as in (xviii). In (xviii) a first person object is marked with *i* or *in* just as in (xv); a second person object is marked with *lo* just as in (xii); a third person object is unmarked and a reflexive or reciprocal object is marked with *aw* just as in (xii) or (xv). When the subject is third person, there may be either an ordinary third person object (if the subject and object refer to different things) or a reflexive or reciprocal object (if the subject and object refer to the same thing).

(xviii)	3s		3pl
1	<i>i/in hmu</i> ‘he/she/it sees me/us’		<i>i/in hmu</i> ‘he/she/it/they see me/us’
2	<i>a lo hmu</i> ‘he/she/it sees you’		<i>an lo hmu</i> ‘they see you’
3	<i>a hmu aw</i> ‘he/she/it sees him-/her-/itself’		<i>an hmu aw</i> ‘they see themselves/each other’
	<i>a hmu</i> ‘he/she/it sees him/her/it/them’		<i>an hmu</i> ‘they see him/her/it/them’
3pl	<i>a hmu hai</i> ‘he/she/it sees them’		<i>an hmu hai</i> ‘they see them’

The corresponding Lai forms are as in (xix). Just as in Laizo (xviii), Lai (xix) illustrates the same object agreement patterns as in (xiii) and (xvi). Here too the ordinary third person object agreement and the reflexive or reciprocal third person object agreement are both possible.

(xix)	3s		3pl
	1s	<i>a ka hmuh</i> ‘he/she/it sees me’	<i>a kan hmuh</i> ‘he/she/it sees us’
	2s	<i>an hmuh</i> ‘he/she/it sees you’	<i>an hmuh hna</i> ‘he/she/it sees you’
	3s	<i>aa hmu</i> ‘he/she/it sees him-/her-/itself’	x
		<i>a hmuh</i> ‘he/she/it sees him/her/it’	<i>a hmuh hna</i> ‘he/she/it sees them’
	1pl	<i>an ka hmuh</i> ‘they see me’	<i>an kan hmuh</i> ‘they see us’
	2pl	<i>an in hmu</i> ‘they see you’	<i>an in hmuh hna</i> ‘they see you’
	3pl	x	<i>an i hmu</i> ‘they see themselves/each other’
		<i>an hmuh</i> ‘they see him/her/it’	<i>an hmuh hna</i> ‘they see them’

The corresponding Mizo forms are as in (xx). Just as in Laizo (xviii) and Lai (xix), Mizo (xx) illustrates the same object agreement patterns as (xiv) and (xvii) and contains both the ordinary third person object agreement and the reflexive or reciprocal third person object agreement.

(xx)	3s		3pl
	1	<i>mi(n) hmu</i> ‘he/she/it/they see me/us’	
	2s	<i>a hmu che</i> ‘he/she/it sees you’	<i>an hmu che</i> ‘they see you’
	3	<i>a in hmu</i> ‘he/she/it sees him/her/itself’	<i>an in hmu</i> ‘they see themselves/each other’
		<i>a hmu</i> ‘he/she/it sees him/her/it/them’	<i>an hmu</i> ‘they see him/her/it/them’
	2pl	<i>a hmu che u</i> ‘he/she/it sees you’	<i>an hmu che u</i> ‘they see you’

In this case Laizo has ten forms, Lai has fourteen and Mizo has nine.

Laizo imperatives with an intransitive verb are as in (xxi). The preverbal agreement particles in (ix) are not used in imperatives; instead there are postverbal particles. There is a distinction between exclusive and inclusive in first person plural imperatives not found elsewhere in the language. The particle *hai* used to mark optional plurality of third person objects is used obligatorily to mark plurality of third person imperative subjects.

(xxi)	s		pl
		<i>feh keng</i> ‘let me go’	<i>feh uh si</i> ‘let us (exclusive) go’
		<i>feh aw</i> ‘go!’	<i>feh kung</i> ‘let us (inclusive) go’
		<i>feh seh</i> ‘may he/she/it go’	<i>feh uh</i> ‘go!’
			<i>feh hai seh</i> ‘may they go’

The corresponding forms in Lai are as in (xxii). Lai lacks a distinction between exclusive and inclusive first person plural and has no counterpart to Laizo *aw* as a second person singular imperative marker. Lai *hna*, like Laizo *hai*, marks plurality of a third person imperative subject. The particle *hna* differs from *hai* in one other respect: it functions as a



general noun phrase plural particle in Lai, but in Laizo the corresponding particle is *pawl* rather than *hai*.

(xxii)	s	pl
1	<i>kal ning</i> ‘let me go’	<i>kal u sih</i> ‘let us go’
2	<i>kal</i> ‘go!’	<i>kal u</i> ‘go!’
3	<i>kal seh</i> ‘may he/she/it go’	<i>kal hna seh</i> ‘may they go’

The corresponding forms in Mizo are as in (xxiii). Mizo lacks a first person singular form, any distinction between exclusive and inclusive, and does not mark number for third person. It has an imperative particle *rawh* which, unlike Laizo *aw*, appears in all second and third person forms.

(xxiii)	s(pl)	pl
1		<i>kal ang u</i> ‘let us go’
2	<i>kal rawh</i> ‘go!’	<i>kal rawh u</i> ‘go!’
3	<i>kal rawh se</i> ‘may he/she/it/they go’	

Laizo has seven intransitive imperative forms, Lai has six, and Mizo has five.

Laizo transitive imperative forms with a first person subject are as in (xxiv). The postverbal particles *keng*, *uh si* and *kung* are the same as in the corresponding portion of (xxi) combined with object agreement particles as in (xii). The particle *hai* is used obligatorily to mark plurality of a third person imperative object.

(xxiv)	1s	1pl
1	<i>zoh aw keng</i> ‘let me look at myself’	<i>zoh aw uh si</i> ‘let us (ex) look at ourselves’ <i>zoh aw kung</i> ‘let us (in) look at ourselves’
2	<i>lo zoh keng</i> ‘let me look at you’	<i>lo zoh kung</i> ‘let us look at you’
3s	<i>zoh keng</i> ‘let me look at him/her/it’	<i>zoh kung</i> ‘let me look at him/her/it’
3pl	<i>zoh hai keng</i> ‘let me look at them’	<i>zoh hai kung</i> ‘let us look at them’

The corresponding Lai forms are as in (xxv). Just as in Laizo, these forms combine the subject agreement pattern of the intransitive imperatives in (xxii) with the object agreement pattern of the transitive declaratives (xiii).

(xxv)	1s	1pl
1	<i>i zoh ning</i> ‘let me look at myself’	x
2	<i>in zoh ning</i> ‘let me look at you’	<i>in zoh u sih</i> ‘let us look at you’
3	<i>zoh ning</i> ‘let me look at him/her/it’	<i>zoh u sih</i> ‘let us look at him/her/it’
1pl	x	<i>i zoh u sih</i> ‘let us look at ourselves’
2pl	<i>in zoh hna ning</i> ‘let me look at you’	<i>in zoh hna u sih</i> ‘let us look at you’
3pl	<i>zoh hna ning</i> ‘let me look at them’	<i>zoh hna u sih</i> ‘let us look at them’

The corresponding Mizo forms are as in (xxvi). Mizo lacks first person imperatives and uses a distinct lexical verb; otherwise it fits the same pattern as Laizo and Lai.

(xxvi)		1pl
3		<i>en ang um</i> 'let us look at him/her/it/them'
	1pl	<i>in en ang u</i> 'let us look at ourselves'

Laizo has nine transitive imperative forms with a first person subject, Lai has ten, and Mizo has only two.

Laizo transitive imperative forms with a second person subject are as in (xxvii). Just as with the first person forms in (xxiv), these have subject agreement like the second person forms in (xxi) and object agreement like the declarative forms in (xv).

(xxvii)	2s	2pl
1	<i>i zoh aw</i> 'look at me!'	<i>i/in zoh uh</i> 'look at me/us!'
2	<i>zoh aw aw</i> 'look at yourself'	<i>zoh aw uh</i> 'look at yourselves/each other!'
3	<i>zoh aw</i> 'look at him/her/it!'	<i>zoh uh</i> 'look at him/her/it!'
3	<i>zoh hai aw</i> 'look at them!'	<i>zoh hai uh</i> 'look at them!'

The corresponding Lai forms are as in (xxviii). These have subject agreement as in (xxii) and object agreement as in (xvi).

(xxviii)	2s	2pl
1	<i>ka zoh</i> 'look at me!'	<i>ka zoh u</i> 'look at me!'
2	<i>i zoh</i> 'look at yourself!'	x
3	<i>zoh</i> 'look at him/her/it!'	<i>zoh u</i> 'look at him/her/it!'
	1pl <i>kan zoh</i> 'look at us!'	<i>kan zoh u</i> 'look at us!'
	2pl x	<i>i zoh u</i> 'look at yourselves!'
	3pl <i>zoh hna</i> 'look at them!'	<i>zoh hna u</i> 'look at them!'

The corresponding Mizo forms are as in (xxix). These have subject agreement as in (xxiii) and object agreement as in (xvii).

(xxix)	2s	2pl
1	<i>min en rawh</i> 'look at me/us!'	<i>min en rawh u</i> 'look at me/us!'
2	<i>in en rawh</i> 'look at yourself!'	<i>in en rawh u</i> 'look at yourselves!'
3	<i>en rawh</i> 'look at him/her/it/them!'	<i>en rawh u</i> 'look at him/her/it/them!'

Laizo has eight transitive imperative forms with a second person subject, Lai has ten, and Mizo has six.

Laizo transitive imperative forms with a third person subject are as in (xxx). Here the subject agreement pattern is as in (xxi), but the object agreement pattern differs from

that in (xviii) in that *hai* obligatorily indicates a plural third person object. The form *zoh hai seh* is used when either the subject or the object, or both, is plural.

(xxx)	3s		3pl
	1	<i>i zoh seh</i> ‘may he/she/it look at me’	<i>i/in zoh hai seh</i> ‘may they look at me/us’
	2	<i>lo zoh seh</i> ‘may he/she/it look at you’	<i>lo zoh hai seh</i> ‘may they look at you’
	3s	<i>zoh aw seh</i> ‘may he/she/it look at him-/her-/itself’	
			<i>zoh aw hai seh</i> ‘may they look at themselves/each other’
		<i>zoh seh</i> ‘may he/she/it look at him/her/it’	
	3pl	<i>zoh hai seh</i> ‘may he/she/it/they look at him/her/it/them’	

The corresponding Lai forms are as in (xxxii). These have the subject agreement pattern of (xxii) and the object agreement pattern of (xix). Lai *zoh hna seh*, like Laizo *zoh hai seh*, is used when either the subject or the object, or both, is plural.

(xxxii)	3s		3pl
	1	<i>ka zoh seh</i> ‘may he/she/it look at me’	<i>ka zoh hna seh</i> ‘may they look at me’
	2	<i>in zoh seh</i> ‘may he/she/it look at you’	
	3	<i>i zoh seh</i> ‘may he/she/it look at him-/her-/itself’	
		<i>zoh seh</i> ‘may he/she/it look at him/her/it’	
	1pl	<i>kan zoh seh</i> ‘may he/she/it look at us’	<i>kan zoh hna seh</i> ‘may they look at us’
	2pl	<i>in zoh hna seh</i> ‘may he/she/it/they look at you’	
	3pl	<i>i zoh hna seh</i> ‘may they look at themselves’	
		<i>zoh hna seh</i> ‘may he/she/it/they look at him/her/it/them’	

The corresponding Mizo forms are as in (xxxiii). These again have the subject agreement pattern of (xxiii) and the object agreement pattern of (xx).

(xxxiii)	3	
	1	<i>min en rawh se</i> ‘may he/she/it/they look at me/us’
	2s	<i>en che rawh se</i> ‘may he/she/it/they look at you’
	3	<i>en rawh se</i> ‘may he/she/it/they look at him/her/it/them’
		<i>in en rawh se</i> ‘may he/she/it/they look at him/her/it/themselves’
	2pl	<i>en che u rawh se</i> ‘may he/she/it/they look at you’

Laizo has eight transitive imperative forms with a third person subject, Lai has ten, and Mizo has five.

We will close this discussion with a few examples from parallel translations to highlight the differences in the agreement patterns of Laizo, Lai and Mizo.<sup>4</sup> Most of them

<sup>4</sup> Examples (1) through (10) are cited from *Baibal Thianglim* (The Holy Bible [Laizo], 2000), *Lai Baibal Thiang* (The Holy Bible in Lai, 1999), and *Pathian Lehkhabu Thianglim* (God’s Holy Book [Mizo], 1964). The numbers refer to chapter and verse of Matthew, and the orthography is as in the originals.

have to do with object agreement. Examples (1) to (4) show first person object agreement. In the Mizo sentences both *mi* and *min* appear, and correspond to English ‘me’ and ‘us’. But the Mizo object agreement particles are not distinguished in number; they could be interchanged. In the Lai sentences we see *ka* and *kan*, but these do distinguish number and cannot be interchanged. In the Laizo sentences we see *i* and *in*; since both subject and object are singular in (1), only *i* is possible. In (2) and (4) the object is plural and only *in* is possible. In (3) the subject is plural and the object singular; *in* is used in this example, but *i* would also be possible.

- (1) [Laizo] *Ziang thil thra so, tiah ziangah so i sut?* (19:17)  
 [Lai] *Zeicaahdah zei rian thra dah ti na ka hal?*  
 [Mizo] *thil thra thu engahnge mi zawh?*  
 Why do you ask me about what is good?
- (2) [Laizo] *‘Ziangah so Johan cu nan zum lo?’ in ti ding.* (21:25)  
 [Lai] *‘Ziah a bia nan ngaih kun lo?’ a kan ti lai.*  
 [Mizo] *‘Engahnge a thu in awi loh le?’ min ti si ang a.*  
 He will say to us, ‘Why then did you not believe him?’
- (3) [Laizo] *Hi mi pawl hin an kaa lawngin in upat ih* (15: 8)  
 [Lai] *Mah hna nih hin an kaa lawngin an ka upat i,*  
 [Mizo] *He miteho hian an ka in mi chawimawi a*  
 This people honors me with their lips,
- (4) [Laizo] *nan zinan in thren ve uh,* (25: 8)  
 [Lai] *Nan zinan kha tlawmpal in kan pe ve u,*  
 [Mizo] *In khâwnvâr tui kha min pe ve rawh u,*  
 Give us some of your oil,

Examples (5) and (6) show second person object agreement. In the Mizo sentences *che* indicates agreement with a second person object, followed by *u* if that object is plural. In the Lai sentences, the *-n* of *an* and *kan* indicates second person object agreement, and *hna* appears after the verb if that object is plural. Second person object agreement *che* in Mizo follows the verb, but in Lai *-n* combines with the subject agreement (*a* or *ka*) and precedes it. Notice that in Mizo the *che* not only follows the adverbial particle *ve* ‘also’ but also the future tense particle *ang*. In Lai the postverbal number agreement particle *hna* follows *ve* but precedes the future tense particle *lai*. In the Laizo sentences *lo* indicates second person object agreement, but there is no number agreement in this case.

- (5) [Laizo] *Zo in so thu a lo pek?* (21:23)  
 [Lai] *Hi nawl ngeihnak hi ahodah an pe?*  
 [Mizo] *tuinngge thu pe che?*  
 Who gave you this authority?

- (6) [Laizo] *zo ih thu in hi bangtuk thil hi ka tuah tiah ka lo sim ding*, (21:24)  
 [Lai] *aho nawl ngeihnak in dah ka tuah ti kha kan chimh ve hna lai*.  
 [Mizo] *kei pawh in thu kam khat ka zâwt ve ang che u*  
 I also will tell you by what authority I do these things.

Examples (7) to (10) show third person object agreement. None of the three languages has an overt third person object marker, and in Mizo the number of a third person object is also not marked. In Lai, *hna* marks plurality of a third person object just as it did of a second person object in (6); it is in the same postverbal position. In Laizo, *hai* marks the plurality of a third person object, and is also postverbal. (7) is a declarative clause, and Mizo *hai* is optional unlike Lai *hna* which is obligatory. (8) is an intransitive imperative with a plural subject and both *hai* and *hna* obligatorily mark the plurality of the subject. (9) and (10) are transitive imperatives with a plural subject and (10) also has a plural object; *hai* and *hna* are obligatory here too.

- (7) [Laizo] *An pumkhawmnak inn ah a zirh hai ih* (13:54)  
 [Lai] *an sinakok ah khan a cawnpiak hna i*  
 [Mizo] *an inkhâwmna inah chuan anmahni a zirfîr ta a*,  
 he taught them in their synagogue
- (8) [Laizo] *Nauhak pawl cu ka hnen ah ra ko hai seh*, (19:14)  
 [Lai] *Ngakchia hna kha ka sinah ra ko hna seh*,  
 [Mizo] *Naupang têtê ka hnênah han kaltîr ula*,  
 let the children come to me
- (9) [Laizo] *Mi in kan parah tuah hai seh ti nan duh vekin mi dang parah tuah ve uh*. (7:12)  
 [Lai] *Nan cungah tuah hna seh ti nan duh bantuk in mi cung zongah tuah ve u*;  
 [Mizo] *thil engkim miin chung a an tiha in duh tûr ang apiang chu, mi chungah pawh ti ve rawh u*;  
 whatever you wish that men would do to you, do so to them
- (10) [Laizo] *I thlun sawn aw, mithi pawl in mithi cu phum ko hai seh*, (8:22)  
 [Lai] *Rak ka zul ko, mithi nih an mithi cu rak vui ko hna seh*,  
 [Mizo] *Mi zui rawh; mitthiin anmahni mitthi chu vui rawh se*,  
 follow me, and leave the dead to bury their own dead

Examples (4), (8), (9) and (10) also illustrate some differences in subject agreement in imperative sentences. In (10), the first clause is a second person singular imperative with Mizo *rawh* and Laizo *aw*; Lai has no corresponding particle. (4) and the second clause in (9) are second person plural imperatives with the imperative plural particle *u* in Mizo and Lai or *uh* in Laizo. Mizo has *rawh* in this form, but Laizo does not use *aw*. The second clauses in (9) and (10) are third person imperatives with the imperative particle *se* in Mizo or *seh* in Lai and Laizo. Again Mizo has *rawh* in this form, but Laizo does not use *aw*. (8) is a parallel construction in Lai and Laizo, but Mizo uses a second person imperative with the causative verb *kaltîr* ‘let go’. The following *u* is the second person imperative plural

marker seen in (4). The first clause in (9) is another parallel construction in Lai and Laizo which serves as a complement clause to the verb *duh* ‘want’; here Mizo does not use an imperative at all, but a relative construction similar to the English version. In addition to the details of agreement as examined above, a comparison of the three languages in examples (1) through (10) will reveal many other differences. It may not always be clear whether a particular difference which appears in such material reflects a genuine difference in the grammar or lexicon of the languages rather than different styles, or even the individual usages of translators. Still we may appreciate how different closely related languages like those considered here can be.

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# INFLUENCE OF LEXICAL SEMANTICS ON REFLEXES AND ALLOMORPHS OF \*<UM> AND \*<IN> IN BONGGI

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## 0 Abstract<sup>1</sup>

The reflexes of Proto-Austronesian \**in* and \**um* can occur as both a prefix and an infix in many daughter languages. In Bonggi,<sup>2</sup> both the position (prefix or infix) and the phonological shape (/i/, /n/, or /in/) of the forms are predictable. Linguists who have looked at similar alternations between prefixes and infixes in related Austronesian languages have focused on providing phonological explanations for both the position and the variant shapes of the alternations. While phonology is an important part of the explanation for the alternate forms in Bonggi, the position and shape of the forms are conditioned by the lexical semantics of the verb as well as the phonology. Any analysis which does not account for the lexical semantics of verb classes will be unable to account for the position and the form of these morphemes.

## 1 Introduction

Two infixes have been reconstructed for Proto-Austronesian: the voice-marking infix \*<um>, and a tense/aspect/modality-marking infix \*<in> which is glossed in various daughter languages as ‘past tense’, ‘perfective aspect’, ‘completive aspect’, or ‘realis modality’.<sup>3</sup> Most of the languages of the Philippines and northern Borneo have morphemes which are reflexes of Proto-Austronesian \*<um> and \*<in>. In many daughter languages, the reflexes of Proto-Austronesian \*<um> and \*<in> occur as either a prefix or an infix. For example, the first column of table 1 shows that Bonggi has six distinct forms for marking past tense (or realis modality): the three prefixes *i-*, *n-*, and *in-* in rows (a-c); the two infixes <i> and <in> in rows (d-e); and ablaut in row (f).

With the exception of ablaut which is a suppletive form, both the position of these forms (prefix or infix) and the phonological shape (/i/, /n/, or /in/) are predictable. The position and shape of the inflected forms in table 1 are conditioned by the lexical semantics of the verb and phonology.

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<sup>1</sup> I am indebted to Paul Kroeger and Steve Parker for their comments on an earlier version of this paper.

<sup>2</sup> Bonggi is a Western Austronesian language spoken by approximately 1,500 people on Banggi and Balambangan islands in Sabah, Malaysia. Bonggi reflexes of \*<in> are glossed as ‘past’ (tense) or ‘realis’ (modality). See Boutin (1991) for a discussion of the semantics of this morpheme.

<sup>3</sup> For proto-forms, see Wolf (1973:73), Blust (2002:66), Himmelmann (2002:9), and Ross (2002:49). For a past tense analysis, see Wolf (1973:86). See Reid (1992) for a discussion of realis modality, past tense, and perfective and completive aspect.



**Table 1:** Six forms for marking past/realis in Bonggi<sup>4</sup>

	Past/realis marker	Verb stem		Inflected form	Modification type
a.	i-	pesaʔ	‘broken’	i-pesaʔ	prefix
b.	n-	tutuŋ	‘burnt’	n-tutuŋ	prefix
c.	in-	ala	‘defeat someone’	in-ala	prefix
d.	<i>	bubus	‘pour something’	b <i> ubus	infix
e.	<in>	bereit	‘tear something’	b <in> ereit	infix
f.	e	mati	‘die’	meti	ablaut

Linguists who have looked at alternations between prefixes and infixes that share a common meaning in Austronesian languages have primarily focused on the phonology-morphology interface. Crowhurst (1998) claims that the occurrence of *um* as an infix or prefix in Toba Batak is conditioned by constraints on consonant clusters rather than prosodic structure as argued by Prince & Smolensky (1993). Blevins (1999) analyzes a Leti nominalizing morpheme whose allomorphs look very similar to the forms in table 1. She provides evidence that some sound patterns that result from infixation are opposite of those predicted in an optimality approach. Blevins shows how allomorphs are determined by verb class and phonology, and she suggests that verb semantics plays a role in some forms (1998:388).

Goudswaard (2004) examines the allomorphs of Ida’an-Begak morphemes which are derived historically from Proto-Austronesian \*<in> and \*<um>. She claims that the synchronic surface forms cannot be derived from underlying abstract morphemes, but are best explained in terms of suppletive allomorphy. Paster (to appear) examines phonologically conditioned suppletive allomorphy in a number of languages including Kwamera, a language of Vanuatu. She states that the perfective prefix in Kwamera has two suppletive allomorphs (/in-/ and /uv-/) which are conditioned by the initial vowel/segment of the stem. Yu (2007) discusses <um> in Tagalog and the Leti data in Blevins (1999) as he describes how phonology influences morphology, especially infixes.

These linguists have focused on providing phonological explanations for both the position and the variant shapes of the alternations. With the exception of Blevins (1999), they have sought to account for the allomorphs of \*<um> and \*<in> in terms of strict phonological conditioning. Although phonology is an important part of the explanation for the alternate forms in table 1, phonology is not the whole story. The position and shape of the forms are conditioned by the lexical semantics of the verb as well as the phonology. Any analysis which does not account for the lexical semantics of Bonggi verb classes will be unable to account for the position and the form of the past tense morpheme in table 1 or the position and the form of the reflexes of \*<um>.

<sup>4</sup> The abbreviations and glossing conventions used follow the Leipzig Glossing Rules which are available at <http://www.eva.mpg.de/lingua/files/morpheme.html>. Infixes are separated by angle brackets in both the text and the gloss as seen in table 1. Bonggi has seventeen consonant phonemes, /p t k b d g ʔ s dʒ m n ɲ ŋ l r y w/ and five vowel phonemes /i u e o a/. The data is shown in phonemic form using the International Phonetic Alphabet (IPA) except ‘g’ is used for /g/ and ‘r’ is used for the flap /r/. Phonological processes are briefly described in §4. The data for this paper is from unpublished texts and an unpublished dictionary which were collected by the author and his wife.

Of the accounts summarized above, this paper is closest to Blevins (1999). However, I claim that verb semantics plays a primary role in determining which of the variant forms in table 1 occurs. Verbs are subcategorized according to their semantic representation.

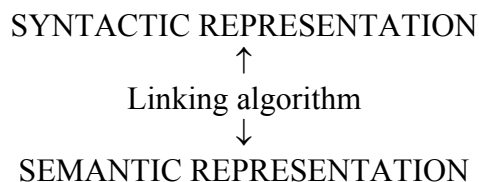
Section 2 provides a very brief introduction to Role and Reference Grammar (RRG) which is the theoretical framework used in this paper.

Section 3, which is the heart of this paper, shows how a lexical semantic description of verbs results in classes of verbs which share the same lexical semantic template. All verbs which share the same template belong to the same verb class, and all verbs that belong to the same verb class are morphologically marked the same (apart from phonologically conditioned alternations). Section 3 also provides evidence of correlations between lexical semantics and verb morphology by showing how different lexical semantic representations correspond to different verb classes which are morphologically marked.

Section 4 describes phonologically conditioned alternations which account for the surface phonetic shapes of word-forms. The verb classes described in §3 together with the phonological conditioning described in §4 account for the position and form of the past/realis markers in table 1, as well as a number of other morphological markers. Section 5 provides some general conclusions including how derivational processes change the lexical meaning, while inflectional processes do not.

## 2 Role and Reference Grammar

The general structure of an RRG-based theory of grammar is presented in figure 1. RRG only recognizes one level of syntactic representation which is directly linked with a semantic representation.<sup>5</sup>



**Figure 1:** *General structure of RRG (Van Valin & LaPolla 1997:21)*

The primary mechanism in the RRG approach to semantics is a system of lexical representation involving predicate decomposition. The RRG system of lexical representation is based on the classification of predicates into *Aktionsart* classes; i.e., classes based on inherent aspectual properties (Van Valin 1993:34). Vendler (1967) devised a universal four-way semantic distinction between: 1) states, 2) accomplishments, 3) achievements, and 4) activities. The distinctive features of the four *Aktionsart* classes are shown in table 2.

<sup>5</sup> Because the focus of this paper is primarily on the relationship between lexical semantics, morphology, and phonology, very little is said about syntactic representations.

**Table 2:** *Distinctive features of basic Aktionsart classes*

State	Accomplishment	Achievement	Activity
+static	-static	-static	-static
-telic	+telic	+telic	-telic
-punctual	-punctual	+punctual	-punctual

These four *Aktionsart* classes correspond to major verb classes which are encoded in the verbal morphology. States are static situations with no activity. Bonggi has several subclasses of states. While condition states and attributive states are described in this paper,<sup>6</sup> possessive states, internal experience states, locative states, and existential states are mentioned briefly. The English sentence in (1) illustrates a condition stative clause.<sup>7</sup>

(1) My boil is ruptured.

English condition state clauses like (1) contain a subject (e.g. *my boil*), a form of the copula *be*, and a predicate complement (e.g. *ruptured*). Bonggi does not have a copula verb; instead, condition state clauses like (2) contain a condition stative verb (e.g. *tedak* ‘ruptured’) and a single argument (e.g. *busul ku* ‘my boil’) which is syntactically the subject.

(2) Tedak na busul ku.  
 ruptured now boil 1SG.GEN  
*My boil is ruptured.*

In RRG, the relationship between a predicate and its arguments is expressed by **logical structures** (LSs) which provide a formal semantic representation for each verb. Logical structures consist of predicates, their arguments and a small set of operators (Van Valin 1990:223). Each of the four *Aktionsart* classes in table 2 has two possible logical structures depending on whether the predicate has one or two arguments. For example, single argument condition stative verbs like *tedak* ‘ruptured’ in (2) have a generic LS **predicate'** (x), whereas two argument possession stative predicates have a generic LS **have'** (x, y). The variables ‘x’ and ‘y’ represent arguments of the predicate. The generic logical structure for condition stative verbs is shown in (3a), while the LS for the verb *tedak* ‘ruptured’ is shown in (3b). The semantic representation (SR) for the clause in (2) is given in (3c).<sup>8</sup> Adverbials like *na* ‘now’ take the logical structure of the core as their argument. In a more enriched semantic representation, possession within NPs (e.g. *busul ku* ‘my boil’ in (2)) is represented semantically as possession within clauses as shown in (3d).

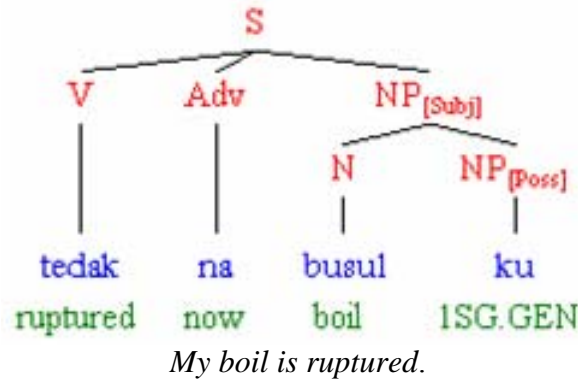
<sup>6</sup> See Boutin (2007) for a discussion of locative states and verb classes which have a locative state in their semantic representation.

<sup>7</sup> Kroeger (2005:175) refers to clause like (1) as attributive clauses, whereas RRG distinguishes condition states from attributive states. Condition states are a resulting state, whereas attributive states are an inherent state. Compare (3a) and (36a) for semantic distinction, and tables 3 and 11 for morphological differences.

<sup>8</sup> Logical structures (LSs) show the relationship between predicates and their arguments, whereas semantic representations (SRs) for a sentence include the LS of the verb, the arguments of the verb, and adjuncts including adverbials.

- (3) a. Generic LS for condition stative verbs: **predicate'** (x)  
 b. LS for *tedak* 'ruptured': **ruptured'** (x)  
 c. SR for (2): **now'** [**ruptured'** (*busul* 1SG)]  
 d. Enriched SR for (2): **now'** [**ruptured'** (**have'** [1SG, *busul*])]

The syntactic representation of (2) is shown in figure 2.<sup>9</sup>



**Figure 2:** Syntactic representation of (2)

The heart of the grammar in RRG is the linking between semantic representations like (3c) and syntactic representations like figure 2 (Van Valin & LaPolla 1997:645). This linking between semantics and syntax is governed by the Completeness Constraint in (4) (Van Valin & LaPolla 1997:325).

(4) *Completeness Constraint*

All of the arguments explicitly specified in the semantic representation of a sentence must be realized syntactically in the sentence, and all of the referring expressions in the syntactic representation of a sentence must be linked to an argument position in a logical structure in the semantic representation of the sentence.

The first step in linking from semantics to syntax is to determine the actor and undergoer assignments. Actor and undergoer are semantic macroroles. **Actor** refers to the entity which instigates, controls or effects the action expressed by the verb. **Undergoer** indicates the entity affected by the action or state expressed by the verb (Walton 1986:45). The prototypical Actor is an agent, whereas the prototypical Undergoer is a patient (Van Valin 1993:46). The principles for determining the number and nature of macroroles are shown in (5) (Van Valin & LaPolla 1997:152).

<sup>9</sup> The tree structure in (2) follows Kroeger (2005), rather than standard RRG trees.

## (5) DEFAULT MACROROLE ASSIGNMENT PRINCIPLES:

- a. Number: the number of macroroles a verb takes is less than or equal to the number of arguments in its LS.
  1. If a verb has two or more arguments in its LS, it will take two macroroles.
  2. If a verb has one argument in its LS, it will take one macrorole.
- b. Nature: for verbs which take one macrorole,
  1. If the verb has an activity predicate in its LS, the macrorole is actor.
  2. If the verb has no activity predicate in its LS, the macrorole is undergoer.

According to principle 5.a.2, the verb *tedak* ‘ruptured’ in (2) has one macrorole since its logical structure in (3b) has one argument. By principle 5.b.2, the single macrorole in (2) is an undergoer since the LS in (3b) does not contain the activity predicate **do**’.

As shown in figure 1, linking is bidirectional. To link from syntax to semantics, link the core syntactic arguments to semantic macroroles. Because (2) only has one core syntactic argument (*busul ku* ‘my boil’), it is linked to the undergoer. In (4), the phrase “referring expressions in the syntactic representation” refers to the NPs in the sentence. The two NPs in figure 2 are linked to the two argument positions of the predicate **have**’ in (3d) satisfying the Completeness Constraint.

### 3 Lexical semantic conditioning and Bonggi verb classes

In their description of the relationship between lexical semantics and morphology, Levin and Rappaport Hovav (1998:252) adopt an aspectually motivated predicate decomposition system which is comparable to the RRG system. The lexical semantic representations in this paper are very similar to the lexical conceptual structures of Levin and Rappaport Hovav (1998).

#### 3.1 Condition stative

The condition stative verb *tedak* ‘ruptured’, which is illustrated in (2) and described in (3), is morphologically unmarked as are other condition stative verbs some of which are listed in table 3.

**Table 3:** *Condition stative verbs*

<i>bela?</i>	‘split’	<i>kakas</i>	‘uncovered’	<i>pesa?</i>	‘broken’
<i>bereit</i>	‘torn’	<i>kotop</i>	‘broken off’	<i>puan</i>	‘satisfied’
<i>binasa</i>	‘broken’	<i>loput</i>	‘snapped’	<i>tedak</i>	‘punctured’
				<i>tutuŋ</i>	‘burnt’

The decomposition in (3a) provides a **lexical semantic template** for all condition stative verbs (cf. Levin and Rappaport Hovav 1998:252). All verbs which belong to the same class share the same template. For example, *tedak* ‘ruptured’ in (3b) and *bela?* ‘split’ in (6) are both condition stative verbs so they share the lexical semantic template in (3a).

(6) LS for *bela?* ‘split’: **split**’ (x)

The difference in meaning between verbs in the same class is captured by replacing **predicate**’ in the template with a specific verb in bold face such as **ruptured**’ in (3b) or **split**’ in (6). Levin and Rappaport Hovav (1998:253) refer to **ruptured**’ in (3b) and **split**’

in (6) as **constants**. Constants are English words since English is the semantic metalanguage used.

In their discussion of lexical decomposition, Levin and Rappaport Hovav (1998:258) point out that lexical representations can be related in two ways. First, they can share the same lexical semantic template, but have a different constant, such as *tedak* ‘ruptured’ in (3b) and *belat?* ‘split’ in (6). Second, they can contain the same constant, but have a different lexical semantic template, such as *tedak* ‘ruptured’ in (3b) and *n-tedak* ‘RLS-ruptured’ in (7). As stated above, logical structures consist of predicates, their arguments and a small set of operators. One of these operators is INGR in (7) which is described in §3.2.

(7) LS for *n-tedak* ‘RLS-ruptured’: INGR **ruptured'** (x)

### 3.2 Achievements with an underlying condition stative predicate

Achievements are punctual situations which result from a single change of state. Achievements contain an underlying stative predicate in their LS. The LS for achievements varies depending upon the type of stative from which a particular achievement verb is derived. The lexical semantic template for achievement verbs which are derived from condition stative predicates is shown in (8).

(8) Lexical semantic template for achievements with underlying condition stative predicate: INGR **predicate'** (x)

Achievements are derived from states by the addition of the logical operator INGR which is an abbreviation for ‘ingressive’ and refers to punctual or instantaneous changes (Van Valin & LaPolla 1997:104).<sup>10</sup> Because achievements are derived from states, states are considered basic. This section shows how the addition of the logical operator INGR to the condition stative predicates described in §2 and §3.1 affects both the semantic and morphological structure. Example (9) illustrates an English condition stative clause and its LS, whereas (10) illustrates the corresponding achievement clause and its LS.

(9) My boil is ruptured. **ruptured'** (**have'** [1SG, boil])

(10) My boil ruptured. INGR **ruptured'** (**have'** [1SG, boil])

The Bonggi clauses which correspond to (9) and (10) are (2), repeated as (11), and (12). Whereas the difference between states and achievements is indicated periphrastically in the English examples, the difference is indicated morphologically in Bonggi. Bonggi condition stative verbs are morphologically unmarked as illustrated by *tedak* ‘ruptured’ in (11), whereas the achievement verbs *n-tedak* ‘RLS-ruptured’ in (12) and *me-tedak* ‘IRR-rupture’ in (13) are morphologically marked by a prefix indicating tense-modality. Achievement verbs do not have an overt verb class marker. In other words, there is no morphological form which corresponds to the logical operator INGR in the logical structure of achievement verbs. However, achievement verbs are obligatorily marked for realis or irrealis modality, whereas condition stative verbs are never marked for tense-modality.

<sup>10</sup> In early versions of RRG, achievements were derived from states by the addition of the logical operator BECOME (e.g., Walton 1986:21, Van Valin 1990:223).

- (11) Tedak na busul ku.  
 ruptured now boil 1SG.GEN  
*My boil is ruptured.*
- (12) N-tedak na busul ku.  
 RLS-ruptured COMPL boil 1SG.GEN  
*My boil ruptured.*
- (13) M-olok ow me-tedak.  
 ST-afraid 1SG.NOM IRR-rupture  
*I am afraid it will rupture.*

Table 4 provides a list of achievement verbs which have an underlying condition stative predicate in their logical structure.<sup>11</sup> As seen in table 4, realis and irrealis are always marked by prefixes on achievement verbs.<sup>12</sup> The variant shapes of these prefixes are accounted for in §4.

**Table 4:** Achievements derived from underlying condition statives

Condition stative verbs		Achievement verbs	
		‘IRREALIS’	‘REALIS’
bereit	‘torn’	m-bereit	i-bereit
binasa	‘broken’	m-binasa	i-binasa
	‘burnt’	m-pali?	i-pali?
pesa?	‘broken’	m-pesa?	i-pesa?
	‘extinguished’	m-puda?	i-puda?
kakas	‘split open’	mu-guab	i-guab
	‘uncovered’	ma-kakas	i-kakas
kotop	‘broken off’ (e.g., branch)	mo-kotop	i-kotop
	‘choked’	ma-lagan	i-lagan
	‘snap’ (e.g., rope)	mo-loput	i-loput
	‘broken loose’	mu-rupus	i-rupus
	‘die’	mati	meti
	‘drunk’	m-elu	n-elu
	‘damp’	mo-domos	n-domos
tedak	‘struck’	mu-suat	n-suat
	‘punctured’ (e.g., tire)	me-tedak	n-tedak
	‘astray; lost’	me-teirn	n-teirn
topu	‘brittle; fragile’	mo-topu	n-topu
	‘pierced’	mu-tuguun	n-tuguun
tutuŋ	‘burnt’	mu-tuŋ	n-tutuŋ

<sup>11</sup> The absence of an underlying condition stative verb form for some achievement verbs reflects the absence of such forms in my corpus. Undoubtedly, more unaffixed forms could be elicited and added to tables 3 and 4.

<sup>12</sup> The only exceptions are irrealis *mati* ‘die’ and realis *meti* ‘die’ in which the stem vowel alternation results from ablaut, a suppletive process that is in complementary distribution with prefixes and infixes (Blust 1997:7).





The lexical semantic template for achievements with an underlying condition stative predicate is shown in (8), repeated as (16a). The LS for the achievement verbs *n-tedak* ‘RLS-rupture’ in (12) and *me-tedak* ‘IRR-rupture’ in (13) is shown in (16b). The semantic representation (SR) for (12) is shown in (16c). According to (5a.2), the verb in (12) takes one macrorole since it has only one argument in its LS in (16b). The nature of the single macrorole is predictable from (5b.2). Since there is no activity predicate in the LS in (16b), the single macrorole has to be an undergoer. Thus, ‘x’ in (16b), or more specifically *busul ku* ‘my boil’ in (12), is an undergoer. Since the undergoer in (12) is the only possible candidate for subject, it is linked to the subject.

- (16) a. Lexical semantic template for achievements with underlying condition stative predicate: INGR **predicate'** (x)  
 b. LS for *n-tedak* ‘RLS-rupture’ & *me-tedak* ‘IRR-rupture’: INGR **ruptured'** (x)  
 c. SR for (12): INGR **ruptured'** (**have'** [1SG, *busul*])

A comparison of (16b) with (3b) is instructive. The only difference in semantic representation is the addition of the logical operator INGR in the LS of the achievement verb. However, no change occurs in the assignment of macroroles or syntactic relations. In both instances, the single argument ‘x’ is an undergoer which is linked to the syntactic subject. The logical structures in (3b) and (16b) contain the same constant (i.e., **ruptured'**), but have a different lexical semantic template.

Achievements are semantically derived from states by the addition of the operator INGR to the logical structure. Achievement verbs are morphologically derived from states by zero-derivation. The derived achievement verb stem (e.g. *tedak* ‘ruptured’ in (12) and (13)) is identical to the bare root of condition stative verbs (e.g. *tedak* ‘ruptured’ in (11)). In subsequent sections, changes in verb class are marked overtly, rather than by zero-derivation.

Achievement verb stems are obligatorily inflected for either realis modality (e.g. (12)) or irrealis modality (e.g. (13)), whereas condition stative verbs cannot be inflected for either realis or irrealis modality. The difference in meaning between realis and irrealis modality is not lexical. As seen in (16b), realis and irrealis forms of a verb share the same logical structure.

A fundamental difference between derivational and inflectional morphology is derivation results in either a change in syntactic category or a change in lexical meaning, while inflection does not. Different lexical semantic templates result in different verb classes. Differences in verb class are marked by derivational morphology including zero-derivation.

Achievement verbs such as *n-tedak* ‘RLS-rupture’ in (12) have a single core syntactic argument which is semantically the undergoer (cf. (16b)). However, achievement clauses can have optional adjuncts as illustrated by the PP *ga? ku* ‘by me’ in (17).

- (17) Tilug i-pesa?      ga?    ku.  
 egg    RLS-broken    by    1SG.GEN  
*An egg was accidentally broken by me.*

The LS for the achievement verb *i-pesa?* ‘RLS-broken’ in (17) is shown in (18a) (cf. (16a)). In (17), the NP *ga? ku* ‘by me’ is syntactically an oblique adjunct. The *ga?* marked adjunct refers to an entity that does something non-volitionally to bring about a resultant state. The semantic representation for (17) is shown in (18b) where the logical

predicate **from'** has two arguments with the second argument ([INGR **predicate'** (y)]) being the LS of the verb. Because the adjunct modifies the core as a whole, it takes the LS of the verb as one of its arguments. Indirect/antecedent causality is syntactically marked by *ga?* 'by/from'. It can occur with achievements, accomplishments (§3.5), and other non-volitional intransitive verbs (e.g. (37)).

- (18) a. LS for *i-pesa?* 'RLS-broken': INGR **broken'** (x)  
 b. SR for (17): **from'** (1SG, [INGR **broken'** (*tilug*)])

According to (5a.2), the verb in (17) takes one macrorole since it has only one argument in its LS in (18a). The nature of the single macrorole is predictable from (5b.2). The single macrorole must be an undergoer which is linked to the syntactic subject.

### 3.3 Adversative achievements with an underlying condition stative predicate

Sentences (19) and (20) illustrate two types of achievement verb constructions. The verb *i-puda?* 'RLS-extinguished' in (19) is a regular achievement verb like those described in §3.2 (cf. table 4). The verb *i-puda-an* 'RLS-extinguished-ADVRS' in (20) is an adversative construction which is the topic of this section.

- (19) I-puda?                      lampu ku                      kerebi.  
 RLS-extinguished lamp 1SG.GEN last.night  
*My light went out last night.*
- (20) I-puda-an                      ow                      lampu ku                      kerebi.  
 RLS-extinguished-ADVRS 1SG.NOM lamp 1SG.GEN last.night  
*My light went out on me last night.*

The lexical semantic template for achievements with an underlying condition stative predicate is shown in (16a). The LS for *i-puda?* 'RLS-extinguished' in (19) is shown in (21a), and the SR for (19) in (21b). Adverbials like *kerebi* 'last night' in (19) take the LS of the core as their argument. Possession within NPs (e.g. *lampu ku* 'my lamp' in (19)) is represented semantically as possession within clauses in (21b).

- (21) a. LS for *i-puda?* 'RLS-extinguished': INGR **extinguished'** (x)  
 b. SR for (19): **last.night'** [INGR **extinguished'** (**have'** [1SG, *lampu*])]

Because adversatives are a type of achievement, their LS must include an achievement. Furthermore, since the LS in (21a) for the achievement verb in (19) includes an underlying condition stative predicate, the LS for the adversative in (20) must also include an underlying condition stative predicate. The lexical semantic template for adversatives with an underlying condition stative predicate is seen in (22a), the LS for *i-puda-an* 'RLS-extinguished-ADVRS' in (20) is seen in (22b), and the SR for (20) in (22c).

- (22) a. Lexical semantic template for adversative achievements with an underlying condition stative predicate: **feel'** (x, [INGR **predicate'** (y)])  
 b. LS for *i-puda-an* 'RLS-extinguished-ADVRS': **feel'** (x, [INGR **extinguished'** (y)])  
 c. SR for (20):  
**last.night'** [feel' (1SG, [INGR **extinguished'** (**have'** [1SG, *lampu*])])]

In (22a), the achievement is embedded in an internal experience stative. Internal experience statives have two argument positions 'x' and 'y', but only one argument 'x'.

The second argument position in (22a) is filled by a predicate (i.e., [INGR **predicate'** (y)]). In (22a), 'y' is an argument of the embedded predicate (i.e., **predicate'**), not an argument of **feel'**. The lexical semantic template in (22a) correctly predicts that adversative achievements have one macrorole, an undergoer.

In RRG, transitivity is defined in terms of the number of macroroles that a predicate takes, not in terms of the traditional notion of syntactic valency. Transitive verbs have two macroroles, whereas intransitive verbs have one macrorole. Because adversatives have only one macrorole, they are intransitive clauses in RRG terms.<sup>13</sup>

Adversatives are peculiar syntactically and semantically (Kuno 1973:24). Syntactically, they have an extra noun phrase when compared with regular achievements. However, non-macrorole NPs such as *lampu ku* 'my lamp' in (20) are adjuncts. They do not bear the grammatical relation object, and cannot be passivized, questioned, or fronted. Semantically, the subject in adversative constructions is usually adversely affected as in (20) (cf. Payne 1997:208). Table 6 lists some regular achievement verbs which have a corresponding adversative achievement verb.

**Table 6:** *Achievement verbs and adversative achievement verbs*

Meaning of achievement	Achievement		Adversative achievement	
	'IRREALIS'	'REALIS'	'IRREALIS'	'REALIS'
'spilt'	m-bubus	i-bubus	m-bus-an	i-bus-an
'broken'	m-pesa?	i-pesa?	m-pesa-an	i-pesa-an
'extinguished'	m-puda?	i-puda?	m-puda-an	i-puda-an
'dead'	mati	meti	m-piti-an	i-piti-an
'split open'	mu-guab	i-guab	mu-guab-an	i-guab-an
'uncovered'	ma-kakas	i-kakas	ma-kakas-an	i-kakas-an
'broken off'	mo-kotop	i-kotop	mo-kotop-on	i-kotop-on
'escape'	me-lepas	i-lepas	me-lepas-an	i-lepas-an
'snap'	mo-loput	i-loput	mu-luput-an	i-luput-an
'fall over'	me-reba?	i-reba?	me-reba-an	i-reba-an
'broken loose'	mu-rupus	i-rupus	mu-rupus-an	i-rupus-an
'finish'	m-abis	n-abis	m-ibis-an	n-ibis-an
'fall'	ma-dabu?	n-dabu?	mu-dubu-an	n-dubu-an
'become'	ma-dadi	n-dadi	mi-didi-an	n-didi-an
'pinched'	mi-sipit	n-sipit	mi-sipit-an	n-sipit-an
'struck'	mu-suat	n-suat	mu-suat-an	n-suat-an
'fall into'	me-tabuŋ	n-tabuŋ	mu-tubuŋ-an	n-tubuŋ-an
'punctured'	me-tedak	n-tedak	me-tedak-an	n-tedak-an
'astray'	me-teirn	n-teirn	mi-tirn-an	n-tirn-an
'capsized'	mo-togob	n-togob	mo-togob-on	n-togob-on
'burnt'	mu-tuŋ	n-tutukŋ	mu-tuŋ-an	n-tuŋ-an

All the verbs in table 6 can occur as regular achievement verbs such as *meti* 'died' in (23) or adversative achievement verbs marked by *-an* 'ADVRS' such as *ipiti-an* 'died on' in (24). Adversative achievement verbs, like other achievement verbs, are

<sup>13</sup> Van Valin (1993:87) argues that Japanese adversatives are intransitive constructions with one macrorole. Compare Kroeger (2005:279) for a different perspective.

morphologically marked by a prefix indicating modality.<sup>14</sup> However, unlike regular achievement verbs which do not have an overt verb class marker, adversative achievement verbs are marked by *-an* ‘ADVRS’. The alternations between *-an*, *-on*, *-arn*, and *-orn* in tables 6 and 7 are phonologically conditioned, so they are described in §4.

(23) Meti na anak nya.<sup>15</sup>  
die\RLS COMPL child 3SG.GEN  
*His child died.*

(24) Sia i-piti-an anak.  
3SG.NOM RLS-die-ADVRS child  
*He had a child die (on him).*

While most of the achievement verbs in table 6 have an underlying condition stative predicate in their logical structure, some of them are derived from other types of stative predicates. For example, the motion verbs *ma-dabu?* ‘IRR-fall’ and *n-dabu?* ‘RLS-fall’ have an underlying locative stative in their logical structure (Boutin 2007), and the verbs meaning ‘finish’ and ‘become’ have an underlying existential stative in their logical structure.

Not every adversative achievement verb has a corresponding regular achievement verb. The adversative achievement verbs in table 7 are derived from noun roots. Example (25) illustrates an adversative achievement verb derived from a noun root.

**Table 7:** *Adversative achievement verbs derived from noun roots*

	Meaning	Activity	Meaning’	Adversatives <i>not</i> derived from achievements	
				‘IRREALIS’	‘REALIS’
dolok	‘rain’	d < om > olok	‘raining’	mo-dolok-on	n-dolok-on
sidu	‘urine’	s < im > idu	‘urinate’	mi-sidu-an	n-sidu-an
dusa	‘sin’			mu-dusa-an	n-dusa-an
togor	‘rust’			mo-togo-orn	n-togo-orn

(25) Sia n-dolok-on.  
3SG.NOM RLS-rain-ADVRS  
*He got rained on.*

### 3.4 Induced achievements with an underlying condition stative predicate

Sentences (26), (27), (28), and (29) illustrate induced states of affairs, specifically induced achievements with an underlying condition stative predicate. Induced states of affairs are complex in that one state of affairs brings about another. The verbs in (26), (27), (28), and (29) are semantically induced state of affairs involving someone doing something (an activity) which results in a lamp being extinguished (an achievement).

<sup>14</sup> See footnote 12 regarding suppletive ablaut forms (e.g. irrealis *mati* ‘die/IRR’ and realis *meti* ‘die/RLS’) which are in complementary distribution with prefixes.

<sup>15</sup> The Leipzig Glossing Rules use a backslash to separate the stem gloss and the grammatical category label when a morphophonological change of the stem such as ablaut occurs.

- (26) M-uda?                      ow              lampu.  
 ISA.AV-extinguish 1SG.NOM lamp  
*I will extinguish the lamp.*
- (27) Kirobi, i-m-uda?                      ow              lampu.  
 last.night PST-ISA.AV-extinguish 1SG.NOM lamp  
*Last night, I extinguished the lamp.*
- (28) Puda-an                      ku              gulu.  
 extinguish-ISA.UV 1SG.GEN first  
*I will extinguish it first.*
- (29) Lampu p<i>uda?                      ku.  
 lamp <PST>extinguish 1SG.GEN  
*The lamp was extinguished by me.*

The lexical semantic template for induced achievements with an underlying condition stative predicate is shown in (30a). As seen in (30b), the logical structure is the same for the four verbs meaning ‘to extinguish something’ (i.e., *muda?* in (26), *imuda?* in (27), *pudaan* in (28), and *piuda?* in (29)). All four verbs refer to an induced state of affairs in which an activity results in an achievement. Since the causing activity is unspecified, it is represented as  $\emptyset$  in the LS in (30b). The semantic representations for the clauses in (26)-(29) which contain the verb meaning ‘to extinguish something’ are shown in (30c)-(30f).

- (30) a. Lexical semantic template for induced achievements with underlying condition stative predicate: **do'** (x, [**predicate'** (x)]) CAUSE [INGR **predicate'** (y)]  
 b. LS for *muda?*, *imuda?*, *pudaan*, and *piuda?* ‘to extinguish something’:  
           **do'** (x,  $\emptyset$ ) CAUSE [INGR **extinguish'** (y)]  
 c. SR for (26): **do'** (1SG,  $\emptyset$ ) CAUSE [INGR **extinguish'** (*lampu*)]  
 d. SR for (27): **last.night'** [**do'** (1SG,  $\emptyset$ ) CAUSE [INGR **extinguish'** (*lampu*)]]  
 e. SR for (28): **first'** [**do'** (1SG,  $\emptyset$ ) CAUSE [INGR **extinguish'** ( $\emptyset$ )]]  
 f. SR for (29): **do'** (1SG,  $\emptyset$ ) CAUSE [INGR **extinguish'** (*lampu*)]

The four induced achievement verbs in (26)-(29) belong to the same verb class. They share the same lexical semantic template and the same logical structure. Induced achievements have two macroroles either of which can be the subject. The actor is the subject in (26) and (27), whereas the undergoer is the subject in (28) and (29).<sup>16</sup> Actor and undergoer voice options are only relevant for verbs that have two macroroles. Differences in voice and tense-modality do not change logical structures. Because a change in voice does not result in a change in lexical meaning, this suggests that voice is an inflectional affix. However, the voice affixes also have a derivational function as seen by the addition of the actor voice prefix *ɲ-* ‘ISA.AV’ in (26) and (27) which changes the underlying achievement verb stem *puda?* ‘extinguished’ (cf. tables 4 and 6) into a derived verb stem *m-uda?* ‘ISA.AV-extinguish’, and the addition of the undergoer voice suffix *-on* ‘ISA.UV’

<sup>16</sup> In (28), the undergoer is the subject even though it is unspecified (i.e., represented by  $\emptyset$ ) in the semantic representation.

in (28) which changes the underlying verb into a derived verb stem *puuda-an* ‘extinguish-ISA.UV’.<sup>17</sup>

As seen in (27) and (29), past tense is overtly marked for induced states of affairs, in contrast to non-past tense which is not overtly marked as seen in (26) and (28). The absence of an overt verb class marker in past tense, undergoer voice induced states of affairs (e.g. (29)) is a well-known feature of Philippine languages. Table 8 lists some induced achievements which have an underlying condition stative. Both actor and undergoer forms in past and non-past tense are included.

**Table 8:** *Induced achievements with an underlying condition stative predicate*

Root	Meaning of induced forms	Actor voice		Undergoer voice	
		‘NON-PAST’	‘PAST’	‘NON-PAST’	‘PAST’
ala	‘defeat someone’	ŋ-ala	i-ŋ-ala	olo-on	in-ala
elu	‘get someone drunk’	ŋ-elu	i-ŋ-elu		in-elu
berelit	‘tear something’	m-ereit	i-m-ereit		b < i > ereit
binasa	‘break something’	m-inasa	i-m-inasa	binasa-an	
bubus	‘pour something’	m-ubus	i-m-ubus	bus-un	b < i > ubus
pali?	‘burn someone’	m-ali?	i-m-ali?	pili-in	p < i > ali’
pesa?	‘break something’	m-esa?	i-m-esa?	pesa-an	p < i > esa’
puda?	‘extinguish something’	m-uda?	i-m-uda?	puda-an	p < i > uda’
guab	‘split something open’	ŋu-guab	i-ŋu-guab	guab-an	g < i > uab
kakas	‘uncover something’	ŋ-akas	i-ŋ-akas	kakas-an	k < i > akas
kotop	‘break something off’	ŋ-otop	i-ŋ-otop	kotop-on	k < i > otop
lagan	‘choke someone’	ŋa-lagan	i-ŋa-lagan	lagan-an	l < i > agan
lopud	‘snap something off’	ŋo-lopud	i-ŋo-lopud	lupud-un	l < i > opud
lomos	‘choke something’	ŋo-lomos	i-ŋo-lomos	lomos-on	l < i > omos
sekat	‘detach something’	n-ekat	i-n-ekat	sekatan	s < i > ekat
tedak	‘puncture something’	n-edak	i-n-edak	tedak-an	t < i > edak
terin	‘lead someone astray’	n-eirn	i-n-eirn	tirn-an	
tobuk	‘stab something’	n-obuk	i-n-obuk	tubuh-un	t < i > obuk
togob	‘turn something over’	n-ogob	i-n-ogob	tegob-on	t < i > ogob
tutuŋ	‘burn something’	n-utuŋ	i-n-utuŋ	tutuŋ-un	t < i > utuŋ

Because induced states of affairs have an activity predicate **do**’ as part of their logical structure (see (30a)), they can occur in imperative clauses as illustrated by the actor voice clause in (31) and the undergoer voice clause in (32).

- (31) Dei pu-n-utuŋ!  
do.not IMP-ISA.AV-burn  
*Don’t burn it!*

<sup>17</sup> The suffix *-on* is realized as */-an/* due to vowel harmony (cf. §4). The voice system of Philippine languages is viewed as derivational by Starosta (1986, 1988) and as inflectional by De Guzman (1978, 1991). This paper agrees with Sells (1997) who claims that the voice markers have both inflectional and derivational properties.

- (32) Dei            tutuŋ-a?!  
do.not    burn-ISA.UV.IMP  
*Don't burn it!*

Imperative mood is only compatible with irrealis modality. Imperative forms are never inflected for tense-modality. The imperative verbs in (31) and (32) share the lexical semantic template in (30a) with all induced achievements that have an underlying condition stative predicate.

Causative verbs can be derived from some achievement verbs with an underlying condition stative predicate such as *m-elu* 'IRR-drunk' in table 4. Causative verbs are formed by prefixing *p-* to verb roots as illustrated in (33) which contrasts with the non-causative induced achievement verb in (34). Causative verbs are normally overtly marked for past tense as in (33) or non-past tense (e.g. *m-p-elu* 'NPST-CAU-drunk'). That causative verbs can only be derived from some achievements and that all causative states of affairs can be inflected for tense reflects a well-known difference between derivational and inflectional morphology. "Inflectional morphology tends to be more productive than derivational morphology" (Aronoff & Fudeman 2005:161).

- (33) Sia            i-p-elu            diaadn.  
3SG.NOM PST-CAU-drunk 1SG.ACC  
*He made me get drunk.*

- (34) Sia            i-ŋ-elu            diaadn.  
3SG.NOM PST-ISA.AV-drunk 1SG.ACC.  
*He got me drunk.*

Causative verbs are a type of induced state of affairs whose meaning includes an additional CAUSE in its logical structure. The logical structures for the verbs in (33) and (34) are shown in (35a) and (35b), whereas the semantic representations for (33) and (34) are shown in (35c) and (35d). Since the causing activity is unspecified, it is represented as  $\emptyset$  in (35a)-(35d). The verbs in (33) and (34) are in actor voice; however, causative verbs can occur in undergoer voice just like non-causative induced states of affairs.

- (35) a. LS for i-p-elu 'PST-CAU-drunk' in (33): **do'** (x,  $\emptyset$ ) CAUSE (**do'** (y,  $\emptyset$ ) CAUSE [INGR **drunk'** (y)])  
b. LS for i-ŋ-elu 'PST-ISA.AV-drunk' in (34): **do'** (x,  $\emptyset$ ) CAUSE [INGR **drunk'** (y)]  
c. SR for (33): **do'** (3SG,  $\emptyset$ ) CAUSE (**do'** (1SG,  $\emptyset$ ) CAUSE [INGR **drunk'** (1SG)])  
d. SR for (34): **do'** (3SG,  $\emptyset$ ) CAUSE [INGR **drunk'** (1SG)]

The discussion of verb classes throughout §3 has shown that different verb classes can be derived from a single root as illustrated in table 9 using the two roots *tutuŋ* 'burnt' and *elu* 'drunk' to illustrate all the verb classes described thus far in §3.

**Table 9:** *Verb classes with an underlying condition state*

Verb class	Form	Meaning	Voice	Tense/ Modality	Section
Condition state	tutuŋ	<b>burnt'</b> (x)			§3.1
Achievement	mu-tuŋ	INGR <b>burnt'</b> (x)		irrealis	§3.2
Adversative achievement	mu-tuŋ-an	<b>feel'</b> (x, [INGR <b>burnt'</b> (y)])		irrealis	§3.3
Induced achievement	n-utuŋ	<b>do'</b> (x, Ø) CAUSE [INGR <b>burnt'</b> (y)]	actor	non-past	§3.4
Causative state of affairs	tutuŋ-un m-p-elu	<b>do'</b> (x, Ø) CAUSE ( <b>do'</b> (y, Ø) CAUSE [INGR <b>drunk'</b> (y)])	undergoer actor	non-past non-past	§3.4

Five verb classes are shown in table 9: 1) condition states; 2) achievements with an underlying condition stative predicate; 3) adversative achievements with an underlying condition stative predicate; 4) induced achievements in which an activity induces an achievement with an underlying condition stative predicate; and 5) causative states of affairs in which a causer does something which influences a causee to do an activity that induces an achievement with an underlying condition stative predicate. All five of the verb classes described in §3.1, §3.2, §3.3, and §3.4 share one semantic feature – an underlying condition stative predicate, **predicate'** (x), is part of their lexical semantic template. Some verb classes which do not share this feature are briefly introduced in §3.5.

### 3.5 Brief introduction to verb classes without an underlying condition stative predicate

As stated in §2, the four basic *Aktionsart* classes shown in table 2 correspond to verb classes which are encoded in the verbal morphology of Bonggi. Thus far, evidence for this claim has been presented from one class of stative verbs and achievement verbs. I have not yet proven that accomplishments and activities are semantically and morphologically distinct from states and achievements. Induced states of affairs (including causatives) are not basic *Aktionsart* classes. States and activities are the most basic *Aktionsart* classes since both achievements and accomplishment have an underlying stative predicate in their logical structure.

Limitations of space prevent me from elaborating on other verb classes in this paper. If I were to do so, we would find that induced states of affairs (including causative states of affairs) which are derived from accomplishment verbs or activity verbs are marked the same morphologically as the induced forms described in §3.4. Thus, morphological contrasts between the basic *Aktionsart* classes are neutralized in induced states of affairs. Such events are semantically transitive involving both an actor and an undergoer, either of which can be the subject.

**Accomplishments** are nonpunctual changes of state which have an endpoint. **Activities** involve a participant doing something and have no clear endpoint. Accomplishments are frequently derived from attributive states which have the lexical semantic template shown in (36a). The lexical semantic template for accomplishments is shown in (36b), and the template for one-place activity verbs is shown in (36c).



- (36) a. Lexical semantic template for attributive statives: **be'** (x, [**predicate'**])  
 b. Lexical semantic template for accomplishments: BECOME **be'** (x, [**predicate'**])  
 c. Lexical semantic template for one-place activity verbs: **do'** (x, [**predicate'** (x)])

Table 10 lists sample motion activity verbs in indicative and imperative mood. Activity verbs in indicative mood are marked by an infix *-m-* or a prefix *m-*, whereas imperative forms are bare roots. [Compare the imperative forms of induced states of affairs in (31) and (32).] The indicative forms are only inflected for past tense. Non-past tense is morphologically unmarked.

**Table 10:** *Sample motion activity verbs*

Meaning	Indicative mood		Imperative mood
	'NON-PAST'	'PAST'	
'ACY-lie.down'	m-ilaŋ	m < in > ilaŋ	ilaŋ
'ACY-sit.down'	m-upug	m < i > upug	upug
'ACY-return.home'	m-uli?	m < i > li?	uli'
'ACY-stand.up'	m-usag	m < i > usag	usag
'ACY-walk; go'	m-panu	i-panu	panu
'ACY-send'	m-piit	i-piit	piit
'ACY-descend'	d < um > ua?	d < i > < m > ua?	dua'
'ACY-swim'	l < om > oŋi	l < i > < m > oŋi	loŋi
'ACY-exit'	l < um > uas	l < i > < m > uas	luas
'ACY-ascend'	s < em > elekei	s < i > < m > elekei	selekei
'ACY-enter'	s < um > uak	s < i > < m > uak	suak
'ACY-stop.to.rest'	t < em > erana	t < i > < m > erana	terana
'ACY-dive'	t < om > olop	t < i > < m > olop	tolop
'ACY-turn.at.intersection'	t < im > indiaŋ	t < i > < m > indiaŋ	tindiaŋ
'ACY-depart'	t < um > ulak	t < i > < m > ulak	tulak

Table 11 lists some attributive stative verbs and derived accomplishment verbs which have an underlying attributive stative predicate in their logical structure. Attributive stative verbs are marked by the prefix *m-* which undergoes assimilation (cf. §4). Like the condition stative verbs described in §3.1, attributive stative verbs, and other stative verbs as well, are not inflected for tense-modality. Because accomplishment verbs do not have an activity predicate **do'** as part of their logical structure (see (36b)), they cannot occur in imperative clauses. Accomplishments are marked by an infix *-m-* (cf. §4). They are inflected for past tense; however, non-past tense is morphologically unmarked.

One interesting feature of accomplishment verbs is they require an infix. Usually, infixes are inserted after the initial consonant of a root or stem unless the root or stem is vowel-initial. In this case, a prefix occurs. For example, table 10 contains several vowel-initial activity verb roots such as /upug/ 'sit.down'. In indicative mood, these verbs are marked by a prefix /m-/ 'ACY', rather than an infix /-m-/ 'ACY'. Similarly, past tense, undergoer voice, induced achievement verbs are marked by a prefix /in-/ 'PST' rather than an infix /-i-/ 'PST' when the stem is vowel-initial as in *in-ala* 'PST-defeat.someone' in table 8. Table 11 contains several vowel-initial roots such as /ayad/ 'pretty'. Accomplishment verbs are formed by prefixing /km-/ to vowel-initial roots and roots



morphology are summarized in table 12. Items to the left of the arrow in the third column refer to the semantic representation and items to right show how that semantic representation is realized in the verb morphology. For example, **feel'** in the lexical semantic representation for adversative achievements is realized morphologically as *-an* 'ADVRS'.

**Table 12:** *Correspondences between lexical semantics and morphology*

Verb class	Lexical semantic template	Correspondence between semantic representation & derivational morphology	Examples
condition stative achievement	<b>predicate'</b> (x) INGR <b>predicate'</b> (x)	<b>predicate'</b> → verb root INGR → ∅	table 3 (12), (13), table 4
adversative	<b>feel'</b> (x, [INGR <b>predicate'</b> (y)])	<b>feel'</b> → <i>-an</i> 'ADVRS'	(20), table 6
induced achievement	<b>do'</b> (x, ∅) CAUSE [INGR <b>predicate'</b> (y)]	<b>do'</b> ... CAUSE → η- 'AV', -on 'UV' <sup>19</sup>	table 8
causative	<b>do'</b> (x, ∅) CAUSE ( <b>do'</b> (y, ∅) CAUSE [INGR <b>predicate'</b> (y)])	<b>do'</b> ... CAUSE ... <b>do'</b> ... CAUSE → 'p-'	(33)
attributive stative accomplishment	<b>be'</b> (x, [ <b>predicate'</b> ]) BECOME <b>be'</b> (x, [ <b>predicate'</b> ])	<b>be'</b> → <i>m-</i> 'ST' BECOME <b>be'</b> → <i>-m-</i>	table 11 table 11
activity	<b>do'</b> (x, [ <b>predicate'</b> (x)])	<b>do'</b> → <i>-m-</i>	table 10

As seen in table 12, Bonggi has two morphemes which are reflexes of \*⟨um⟩: *-m-* 'ACL' and *-m-* 'ACY'. A comparison of the accomplishment verbs in table 11 with the activity verbs in table 10 shows that the allomorphs of *-m-* 'ACL' and *-m-* 'ACY' are identical before consonant-initial roots whose initial consonant is /t/, /d/, /s/, /l/, or /r/. However, contrasts occur before roots whose initial consonant is /p/ or /b/ and before vowel-initial roots. An invariant analysis which claims that *-m-* marks intransitive verbs would miss an important distinction between the two verb classes.

#### 4 Phonologically conditioned alternations

Stress is penultimate; it shifts when a suffix is added; e.g. /i-/ + /kusut/ + /-an/ → /ikusutan/ [iku'suta<sup>d</sup>n] 'RLS-fall.through.hole-ADVRS' in table 6.

Vowels are nasalized following nasal consonants; e.g. /tutuŋ/ + /-on/ → /tutuŋun/ [tu'tuŋũn] 'burn-ISA.UV' in table 8. Nasality spreads from nasal consonants to following vowels in the same word until it is blocked by a non-nasal consonant; e.g. /m-/ + /tumaŋ/ → /mutumaŋ/ [mũ'tumãŋ] 'IRR-stranded' in table 6. Word-final nasals are simple if the preceding vowel is nasalized; e.g. /tutuŋun/ [tu'tuŋũn] 'burn-ISA.UV' in table 8. Word-final nasals are preploded if the preceding vowel is non-nasalized; e.g. /puan/ [pʰua<sup>d</sup>n] 'satisfied' in table 4.

Syllable onsets are always simple. Epenthetic vowels are inserted to break up impermissible consonant clusters. Epenthetic vowels are a copy of the following vowel; e.g. /m-/ + /guab/ → /muguab/ [mũ'guab] 'IRR-split.open' in table 4; /ŋ-/ + /loput/ → /ŋo-loput/ [ŋã'loɸut] 'ISA.AV-snap.something.off' in table 8; /-m-/ + /loŋi/ → /lomõŋi/

<sup>19</sup> As shown in table 8 and described in §3.4, *-on* 'UV' only occurs with non-past tense. Undergoer voice is unmarked in past tense.

[ləmõŋĩ] ‘ACY-swim’ in table 10; /m-/ + /gia/ → /migia/ [mĩ'gia] ‘ST-big’ in table 11; and /-m-/ + /basaʔ/ → /kambasaʔ/ [kəm'basaʔ] ‘ACL-wet’ in table 11.

In prestressed syllables, the contrast between nonhigh vowels (/e/, /o/, and /a/) is neutralized as [ə]; e.g. /m-/ + /lepas/ + /-an/ → /melepasan/ [mələ'pasa<sup>d</sup>n] ‘IRR-escape-ADVRS’, /m-/ + /kotop/ + /-an/ → /mokotopon/ [mõkə'tofo<sup>d</sup>n] ‘IRR-broken.off-ADVRS’, and /m-/ + /kakas/ + /-an/ → /makakasan/ [mõkə'hasa<sup>d</sup>n] ‘IRR-uncovered-ADVRS’ in table 6.

Vowel harmony operates in terms of the effects of root vowels on affixes; i.e., root vowels are the controlling vowels. Only non-high vowels can be changed by vowel harmony. High vowels are never targets for vowel harmony. High vowels /i/ and /u/ spread from the root replacing the mid vowel /o/ in the suffix /-on/ ‘ISA.UV’; e.g. /tutuŋ/ + /-on/ → /tutuŋun/ [tu'tuŋũn] ‘burn-ISA.UV’ in table 8. As seen in table 11, when the first vowel of a root is /i/ (e.g. /tikuŋ/ ‘crooked’), the contrast between non-past and past tense accomplishment verbs is neutralized (e.g. /timikuŋ/ ‘<ACL>crooked’ and /timikuŋ/ ‘<PST><ACL>crooked’).

If the last vowel of a root is high and it is separated from the preceding vowel by at least one consonant, then the high vowel spreads left within the root onto preceding non-high root vowels when the root is suffixed; e.g. /loput/ + /-on/ → /luputun/ [lu'putu<sup>d</sup>n] ‘snap.something.off-ISA.UV’ in table 8.

The mid back vowel /o/ spreads from left to right to replace the low vowel /a/ in the suffix /-an/ ‘ADVRS’; e.g. /m-/ + /kotop/ + /-an/ → /mokotopon/ [mõkə'tofo<sup>d</sup>n] ‘IRR-broken.off-ADVRS’ in table 6.

When the final vowel of the root is /a/ and the suffix /-on/ is added, the low vowel /a/ spreads from the root to the suffix; e.g. /pesaʔ/ + /-on/ → /pesaan/ [pə'saa<sup>d</sup>n] ‘break-ISA.UV’ in table 8.

Final glottal stops are deleted when a suffix is added; e.g. /i-/ + /pudaʔ/ + /-an/ → /ipudaan/ [i'pu'daa<sup>d</sup>n] ‘RLS-extinguished-ADVRS’ in (20) and table 6.

The prefix *m-* ‘ATTRIBUTIVE STATIVE’ assimilates to the same point of articulation as a following non-sonorant consonant; e.g. /m-/ + /dalam/ → /ndalam/ [n'dala<sup>b</sup>m] ‘ST-deep’ and /m-/ + /kapal/ → /ŋkapal/ [ŋ'kaʔal] ‘ST-thick’ in table 11.

The prefix /ŋ-/ ‘ISA.AV’ and root-initial voiceless consonants are replaced by a nasal homorganic to the root-initial consonant; e.g. /ŋ-/ + /tobuk/ → /nobuk/ [nõβuk] ‘ISA.AV-stab’ in table 8. Root-initial voiced bilabial plosives also coalesce with /ŋ-/; e.g. /ŋ-/ + /bubus/ → /mubus/ [mũβus] ‘ISA.AV-pour’ in table 8.

Alveolar sonorants /r/, /l/, and /n/ metathesize with the following vowel before /n/; e.g. /m-/ + /raŋgar/ + /-an/ → /maraŋgaarn/ [mãrə'gaar<sup>d</sup>n] ‘IRR-collide-ADVRS’, /n-/ + /terin/ → /nteirn/ [n'teir<sup>d</sup>n] ‘RLS-lost’, and /m-/ + /tandan/ + /-an/ → /matandaan/ [mãtən'daa<sup>d</sup>n] ‘IRR-stuck-ADVRS’ in table 6.<sup>20</sup>

Voiced labial stop /b/ weakens to fricative [β] intervocalically within roots; e.g. /m-/ + /guab/ + /-an/ → /muguaban/ [mũgu'aβadn] ‘IRR-split.open-ADVRS’ in table 6. However, root-initial /b/ does not weaken to [β] intervocalically following a prefix; e.g. /i/ + /bubus/ → /ibubus/ [i'buβus] ‘RLS-spilt’ in table 6.

<sup>20</sup> Nasal deletion occurs following the metathesis of /n/ and /a/ in /m-/ + /tandan/ + /-an/ [mãtən'daa<sup>d</sup>n] ‘IRR-stuck-ADVRS’ because homorganic nasal clusters are only permitted word-initially.

Voiceless labial stop /p/ weakens to fricative [ɸ] intervocalically and word initially; e.g. /i-/ + /paliʔ/ → /ipaliʔ/ [i'ɸaliʔ] 'RLS-burnt' and /puan/ ['ɸua<sup>d</sup>n] 'satisfied' in table 4.

Voiceless velar stop /k/ weakens to glottal fricative [h] intervocalically in unstressed syllables within roots; e.g. /i-/ + /kakas/ → /ikakas/ [i'kahas] 'RLS-uncovered' in table 4. The weakening of /k/ to [h] intervocalically results in root-final /k/ weakening to [h] when a suffix is added; e.g. /i-/ + /rumbak/ + /-an/ → /irumbakan/ [irum'baha<sup>d</sup>n] 'RLS-collapse-ADVRS' in table 6. However, root-initial /k/ does not weaken to [h] when a suffix is added; e.g. /i-/ + /kotop/ + /-an/ → /ikotopon/ [ikə'toɸo<sup>d</sup>n] 'RLS-broken.off-ADVRS' in table 6.

## 5 Conclusion

This paper has discussed both derivational and inflectional verb morphology. One difference between derivational and inflectional morphology is that derivational morphology may correlate with a change in syntactic category or a change in meaning. Apart from the examples in (25) and table 7 which illustrate verbs that are derived from nouns, no change of syntactic category has been discussed. The syntactic category of all the forms described throughout this paper is 'verb'. However, each subclass of Bonggi verbs has a different meaning with each subclass being characterized by a unique lexical semantic template which accounts for the lexical meaning of every member of the class. Differences in lexical semantic templates correspond to differences in meaning and derivational morphology. Inflectional morphology does not result from changes in lexical meaning. Morphological processes related to the formation of verb classes are derivational and occur before those processes related to tense and modality which are inflectional. Inflectional morphology occurs outside of derivational morphology.

According to Beard (1995:8), the core concern of morphology is the relation of linguistic sound and meaning. The motivation for the verb subclasses described in this paper is semantic. The emphasis has been on semantic and morphological differences between verb classes. Very little has been said about syntactic differences between the classes other than defining transitivity in terms of the number of macroroles that a verb takes.<sup>21</sup>

Linguists have long known that a simple classification of verbs into transitive and intransitive verbs is inadequate (cf. Baker 1992:96). It would also be inadequate to subclassify intransitive verbs in Bonggi into only two classes, those whose single argument is an actor, and those whose single argument is an undergoer. Intransitive verbs whose single argument is an undergoer do not form a homogenous class. They include condition states, attributive states, accomplishments, and achievements. Distinguishing states from events would not leave one class of intransitive verbs whose single argument is an undergoer. As seen by comparing the achievement verbs in table 4 with the accomplishment verbs in table 11, the morphology of Bonggi clearly distinguishes these two classes of intransitive verbs. Apart from the morphological differences between achievements and accomplishments, my analysis correctly predicts that adversative constructions are formed from achievements, not accomplishments (cf. §3.3).

Any analysis which does not account for the verb classes described in this paper will be unable to account for the derivational morphology of Bonggi, nor will it be able to account for the various forms of \*<in> which are shown in table 1. With the exception of

<sup>21</sup> Intransitive verbs have one macrorole, and transitive verbs have two macroroles.

ablaut which is suppletive, both the position (prefix or infix) of the forms in table 1 and the phonological shape (/i/, /n/, or /in/) are predictable. The position of the inflected forms in table 1 is conditioned by the lexical semantics of the verb. Because states are not inflected for tense-modality, none of the forms in table 1 occur with condition states (cf. table 3) and attributive states (cf. table 11). Achievements (cf. table 4), including adversative achievements (cf. table 6), and actor voice induced states of affairs (cf. table 8) are always marked by a prefix. Infixes can only occur with undergoer voice induced states of affairs (cf. table 8), activity verbs (cf. table 10), and accomplishment verbs (cf. table 11). The position of the tense-modality affix provides information about the possible verb class. In other words, part of the functional yield of these affixes is carried by their templatic position, rather than exclusively by their segmental make-up. Once the verb class has put the inflectional morpheme in the right position, the rest of the story is phonological (cf. §4).

In summary, semantics drives the system. I have shown that a lexical semantic analysis leads to a number of semantically defined verb classes which are uniquely marked by derivational morphemes. These semantically defined verb classes impact the syntax which is responsible for the position of inflectional morphemes whose surface form is determined by the phonology. The relationship between form and meaning is not a simple, one-to-one relationship. The position and the form of the inflectional tense-modality markers are contingent upon a verb's subclass as well as the phonological operations described in §4. More specifically, the position of tense-modality marking morphemes is primarily determined by a verb's subclass, whereas phonological principles determine the shape of these markers.<sup>22</sup>

### Abbreviations

1	first person	PP	prepositional phrase
2	second person	PST	past tense
3	third person	RLS	realis modality
ACL	accomplishment verb	SG	singular
ACT	actor	SR	semantic representation
ACY	activity verb	ST	state
AV	actor voice	UND	undergoer
ADVRS	adversative	UV	undergoer voice
CLASS	classifier		
COMPL	completive		
DET	determiner		
GEN	genitive case		
IMP	imperative mood		
INGR	ingressive		
IRR	irrealis modality		
ISA	induced states of affairs		
LS	logical structure		
NOM	nominative case		
NP	noun phrase		
NPST	non-past tense		
NVOL	non-volitional		
PL	plural		

<sup>22</sup> See Bradshaw (2001) for a different approach to accounting for the alternations in realis and irrealis forms in a distantly related Austronesian language.

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# NORTHERN AND SOUTHERN VIETNAMESE TONE COARTICULATION: A COMPARATIVE CASE STUDY

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## 0 Abstract

Vietnamese dialects have diverse tonal systems that can include voice quality distinctions. For this reason, they constitute good test cases for the hypothesis that the direction and magnitude of coarticulation is shaped and constrained by phonological contrast. As dialects that have voice quality distinctions in their tone systems rely less on pitch than dialects that do not make use of voice quality, they should exhibit stronger pitch variation. A comparative acoustic study of Northern and Southern Vietnamese reveals that it is the case and further shows that long and short distance coarticulation should be distinguished.

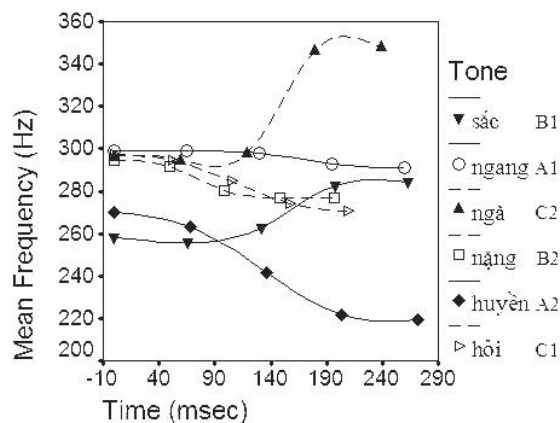
## 1 Tonal coarticulation

Lexical tones are often described in terms of fixed isolation forms. However, it is well-known that tones vary considerably depending on intonation and focus, segmental environment and neighbouring tones. In this paper, we will discuss the effects of coarticulation on the realization of adjacent tones in two Vietnamese dialects and show how Vietnamese tone coarticulation sheds light on our understanding of the relation between phonological contrast and phonetic realization. We will first review the acoustic properties of Northern and Southern Vietnamese tones (§1.1) and a few models of coarticulation that can frame the interpretation of our experimental results (§1.2). We will then present an experiment designed to measure the direction and magnitude of tone coarticulation in Northern and Southern Vietnamese (§2 and §3). Finally, we will show how the organization of tonal contrasts in the two dialects seems to account for the observed coarticulation patterns and argue that long distance and short distance coarticulation must be distinguished (§4).

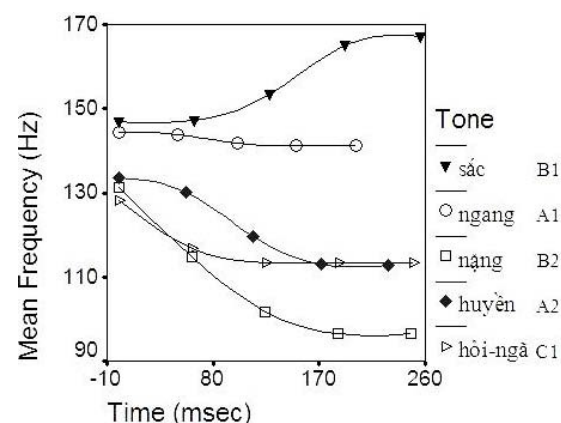
### 1.1 Vietnamese tones

Vietnamese dialects have widely divergent tone systems (Vũ 1981; Vũ 1982 for an exhaustive acoustic description). While Northern Vietnamese (NVN) has six tones that combine pitch and voice quality contrasts, Southern Vietnamese (SVN) has 5 tones that rely exclusively on pitch. These tone systems are illustrated in charts (1) and (2), with data taken from one NVN and one SVN subject. The tone curves in the charts are averages of ten utterances of each tone embedded in a frame sentence and preceded and followed by level tones. The two speakers are representative of their respective dialects, but it must be kept in mind that there can be a surprising amount of sociolectal and idiosyncratic variation in the realization of Vietnamese tones, even in a single dialect. For the sake of simplicity, we will refer to the tones with alphanumeric labels (Michaud 2004), but the native names of the tones are also given in chart (1) and (2).

(1) Tone system of a female NVN speaker



(2) Tone system of a male SVN speaker



Besides the trivial fact that tones do not have identical pitch curves in the two dialects, there are two important differences between the NVN and SVN tone systems. First, NVN has six tones whereas SVN only has five (C1 and C2 are merged). Second, some NVN tones combine pitch and voice quality distinctions. In NVN, tone C2 has a medial creak and tone B2 has a strong final glottalization, while tones C1 and A2 exhibit more variable glottal constriction and breathiness, respectively (Nguyễn and Edmondson 1997; Michaud 2004; Vũ, d'Alessandro et al. 2005; Michaud, Vũ et al. 2006).

There is well-documented contextual and indexical variation in Vietnamese tones (Trần 1967; Seitz 1986; Đỗ, Trần et al. 1998; Ingram and Nguyễn 2006; Nguyễn and Ingram 2006; Brunelle and Jannedy 2007). As for tone coarticulation proper, two studies focusing on NVN have shown that it exhibits more progressive than anticipatory effects and that the patterns of tonal contrasts are maintained in identical tonal environments (Han and Kim 1974; Brunelle 2003). Both the height and slope of tones are affected by their tonal context, but the relative position of each tone in the tonal space is overall stable. In contrast, we do not yet dispose of evidence on tonal coarticulation in SVN.

Tone coarticulation has also been studied in other languages (Abramson 1979; Shih 1988; Shen 1990; Gandour, Potisuk et al. 1992; Gandour, Potisuk et al. 1992; Laniran 1993; Gandour, Potisuk et al. 1994; Xu 1994; Potisuk, Gandour et al. 1996; Peng 1997; Xu 1997). Overall, it seems to be bidirectional in all the languages that have been studied, but progressive coarticulation is usually stronger (Gandour, Potisuk et al. 1992; Gandour, Potisuk et al. 1992; Gandour, Potisuk et al. 1994; Xu 1994; Potisuk, Gandour et al. 1996; Xu 1997). Shen (1990) suggests that the magnitude of progressive and anticipatory coarticulation might be similar in Mandarin, but this is systematically disproved by Xu (1997). Further, while progressive coarticulation is always assimilatory, dissimilatory anticipatory coarticulation is common in Thai and Chinese, at least in some tones (Shih 1988; Gandour, Potisuk et al. 1992; Gandour, Potisuk et al. 1994; Peng 1997; Xu 1997). Xu (1997) attributes this dissimilatory effect either to the great articulatory effort necessary to reach a low tonal target, which is reduced by raising the preceding tone, or the functional need to distinguish coarticulation and downstep. However, the fact that no such dissimilatory coarticulation was found in NVN (Han and Kim 1974; Brunelle 2003), suggests that these strategies are not universal.

Finally, tonal slope is affected to various degrees by coarticulation in different languages. The effect is strong in Vietnamese (Han and Kim 1974), but limited in Thai and Mandarin (Shen 1990; Gandour, Potisuk et al. 1994).

### ***1.2 Direction and magnitude of coarticulation***

The main models of coarticulation have been developed for non-contour supraglottal segments. For this reason, they do not make clear predictions about tone coarticulation, which involves a complex interaction of laryngeal articulators and have dynamic shapes. Nevertheless, some elements of these models can help us better understand the behaviour of tone in connected speech.

First, a general assumption in the literature is that phonological contrast should impose constraints on coarticulation. If a phonetic difference between two segments or types of segments is used to distinguish them, this difference should be preserved even in coarticulated contexts to allow the interpretation of phonemic contrast. For example, nasalization of vowels adjacent to nasal consonants tends to be stronger in languages that contrast nasal and oral vowels than in other languages (Clumeck 1976; Cohn 1990). The claim that phonemic contrast constrains coarticulation (output constraints) was made in two studies of vowel-to-vowel coarticulation which demonstrated that the magnitude of coarticulation is greater in languages with smaller vowel inventories (Manuel and Krakow 1984; Manuel 1990). This effect was also captured in models of phonetic underspecification (Keating 1990; Choi 1995). However, later studies showed that the relation between contrast and coarticulation is not automatic (Bradlow 1994; Han 2007). Output constraints only seem to be a part of the story: crowded phonetic spaces tend to restrict variation, but languages with sparse inventories might choose to restrict variation for independent reasons (Farnetani 1999; Manuel 1999). In contrast, the factors contributing to the direction of coarticulation are usually assumed to be bio-mechanical (Recasens, Pallarès et al. 1997; Recasens and Pallarès 1999; Recasens 2002). To our knowledge, there have been no attempts at relating phonemic contrast and directionality.

Another aspect of previous models that will be relevant for the Vietnamese data is the nature of anticipatory coarticulation. *Time-locked* models hypothesize that an articulation always has a fixed duration, regardless of its environment (Bell-Berti and Harris 1979). On the other hand, *look-ahead* models assume that anticipatory coarticulation should start as early as possible, through neutral segments (Henke 1967). After some debate in the 1970s (Farnetani 1999; Farnetani and Recasens 1999 for an overview), a *hybrid* model reconciling the two types of anticipatory coarticulation was proposed based on lip-rounding data (Perkell and Chiang 1986). The central tenet of the hybrid model is that anticipatory coarticulation is a two-phase phenomenon combining a weak and long-distance look-ahead anticipatory phase with a stronger, more abrupt time-locked effect. Perkell and Chiang's results have since been reinterpreted (Perkell and Matthies 1992) and the current consensus is that anticipatory coarticulation takes place in a single-phase with scalable gestures that cannot be compressed beyond a certain point (Abry and Lallouache 1995). However, as we will see below, both Vietnamese dialects under study exhibit weak and long-distance anticipatory tone coarticulation, which suggests that some insights of the look-ahead models might still be useful.

## 2 Experiment

An acoustic study designed to measure the magnitude and direction of coarticulation in NVN and SVN was conducted. The goals of the experiment are 1) to try to determine universal tendencies by comparing Vietnamese to Thai, Taiwanese and Mandarin and 2) to see if the patterns of tonal contrast can predict the magnitude of coarticulation. The choice of NVN and SVN was specifically made to test the second claim. Since NVN tones combine pitch and voice quality cues, the functional load of their pitch curves should be lower than in SVN, which relies exclusively on pitch. As voice quality can also be used by listeners to identify NVN tones, their pitch is less important than the pitch of SVN tones. Therefore, NVN should tolerate more variation in pitch, i.e. more f<sub>0</sub> coarticulation<sup>1</sup>.

### 2.1 Subjects

Five NVN speakers (3 women, 2 men) and six SVN speakers (3 women, 3 men) were recorded in Hà Nội and Hồ Chí Minh City, respectively. NVN subjects were born and raised in the Red River delta and SVN subjects were born and raised south of Phú Yên province. All subjects were born between 1976 and 1985 and had been living in Hồ Chí Minh City or Hà Nội for at least four years at the time of the experiment.

### 2.2 Recordings

In order to control for as many factors as possible, two constant tone bearing vowels were chosen (/i/ and /a/). They were separated by the sonorant /m/, which has no effect on the f<sub>0</sub> of the neighbouring vowels and has a measurable f<sub>0</sub> of its own, contrary to obstruents. A set of frame sentences containing the sequence (/i ma/) was thus designed so that all possible two-tone combinations could be superimposed on a constant segmental string. As there are six tones in NVN and five tones in SVN, these dialects have 36 and 25 frame sentences, respectively. The general structure of the frame sentences is exemplified in (3). While their beginnings exhibit a limited amount of variation, the two words immediately following the target sequence are always identical. Further, the target sequence is always preceded by at least four words and the overall length of the different frame sentences is similar. The prosodic structure was also kept constant.

- (3) “...W W W W Ci **ma** sem oŋ W kɔ W (W) xoŋ”  
Where C = consonant and W = word)

Since subjects tended to emphasize the target syllable /ma/, it is typically more stressed and realized with a fuller tone curve than the preceding syllable (Potisuk, Gandour et al. 1996). In theory, this should favour anticipatory coarticulation.

The frame sentences are all semantically well-formed and grammatical. In order to have meaningful sentences, syllables composed of the string /ma/ combined with the six tones were created. The subjects were instructed to treat these as proper names when reading the wordlist. Also for reasons of semantic well-formedness, one of the six frame sentences has an /u/ instead of an /i/. Since the two vowels are high, the difference in intrinsic F<sub>0</sub> should be minimal.

The subjects were asked to read the word list ten times in a quiet room. The randomized list was read at a normal speech rate and the subjects were asked to make a

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<sup>1</sup> The reader should of course keep in mind that f<sub>0</sub> is not the only correlate of pitch.

short pause between sentences. Two filler sentences were added at the beginning and the end of the list.

## 2.3 Analysis

### 2.3.1 Data processing

Recordings were analyzed in Praat 4.4.1.6. The fundamental frequency of the vowels /i/ (V1) and /a/ (V2) was measured at their onsets, endpoints and at three equidistant intermediate points. The end of second formant was used to determine vowel endpoints. Utterances with apparent f<sub>0</sub> doubling and halving were entirely excluded rather than manipulated<sup>2</sup>. Spectral measurements of voice quality and duration were also made but are not reported here.

### 2.3.2 Normalization and statistical analysis

In order to be able to compare the pitch ranges of the different speakers, f<sub>0</sub> values were normalized using a Z-score method (Rose 1987)<sup>3</sup>. In this paper, the normalized pitch curves are used to illustrate the overall magnitude of coarticulation. However, as normalization does not filter out idiosyncratic tone productions, speaker effects were also controlled for statistically (see below).

The model used to evaluate the magnitude of tone coarticulation is inspired by a technique previously used for Thai (Gandour, Potisuk et al. 1994). However, instead of using an ANOVA, a general linear model (GLM) analysis was conducted (in SPSS 11.0). The advantage of the GLM is that it can simultaneously treat both categorical and gradient predicting variables. Therefore, gradient f<sub>0</sub> values can be used as a predicting variable instead of a categorical *tone* variable that is blind to f<sub>0</sub> variations inside a tonal category.

The statistical model is relatively simple. In each dialect, utterances were divided into groups defined by the tone of V1 (anticipatory coarticulation) or the tone of V2 (progressive coarticulation). The normalized f<sub>0</sub> of this constant tone was used as the dependant variable. Two types of independent variables were used as predictors for the variability in the f<sub>0</sub> of the constant tone. The first one is the identity of the subject, which is included to control for idiosyncratic differences in the contour of certain tones (especially B1 and C1 in NVN). The second one is the normalized f<sub>0</sub> at the onset of V2 (for anticipatory coarticulation) or the offset of V1 (for regressive coarticulation).

A statistical analysis measuring the effect of the same independent variables on the slope of Vietnamese tones was also carried out. The slope was calculated by subtracting the normalized f<sub>0</sub> of tone onsets from the normalized f<sub>0</sub> of tone offsets.

The magnitude of tonal coarticulation will be evaluated with F-values, as was done by Gandour et al (1994). As F-values are relative, they can be used to compare the magnitude of coarticulation across measurement points, types of coarticulation and dialects. However, the F values reported in Gandour et al. are not directly comparable with

<sup>2</sup> Most subjects show no doubling/halving. The subject who has the most is a female NVN speaker for which 22 utterances out of 360 had to be excluded.

<sup>3</sup> I would like to thank Jerold Edmondson for suggesting this normalization. Although it does not significantly affect the results of the statistical analysis (because speaker effects are also controlled for), normalization greatly facilitates visual comparison of tone curves across subjects and makes it possible to plot means for all subjects.

those found in this paper because of the different statistical methods and independent variables included.

### 3. Results

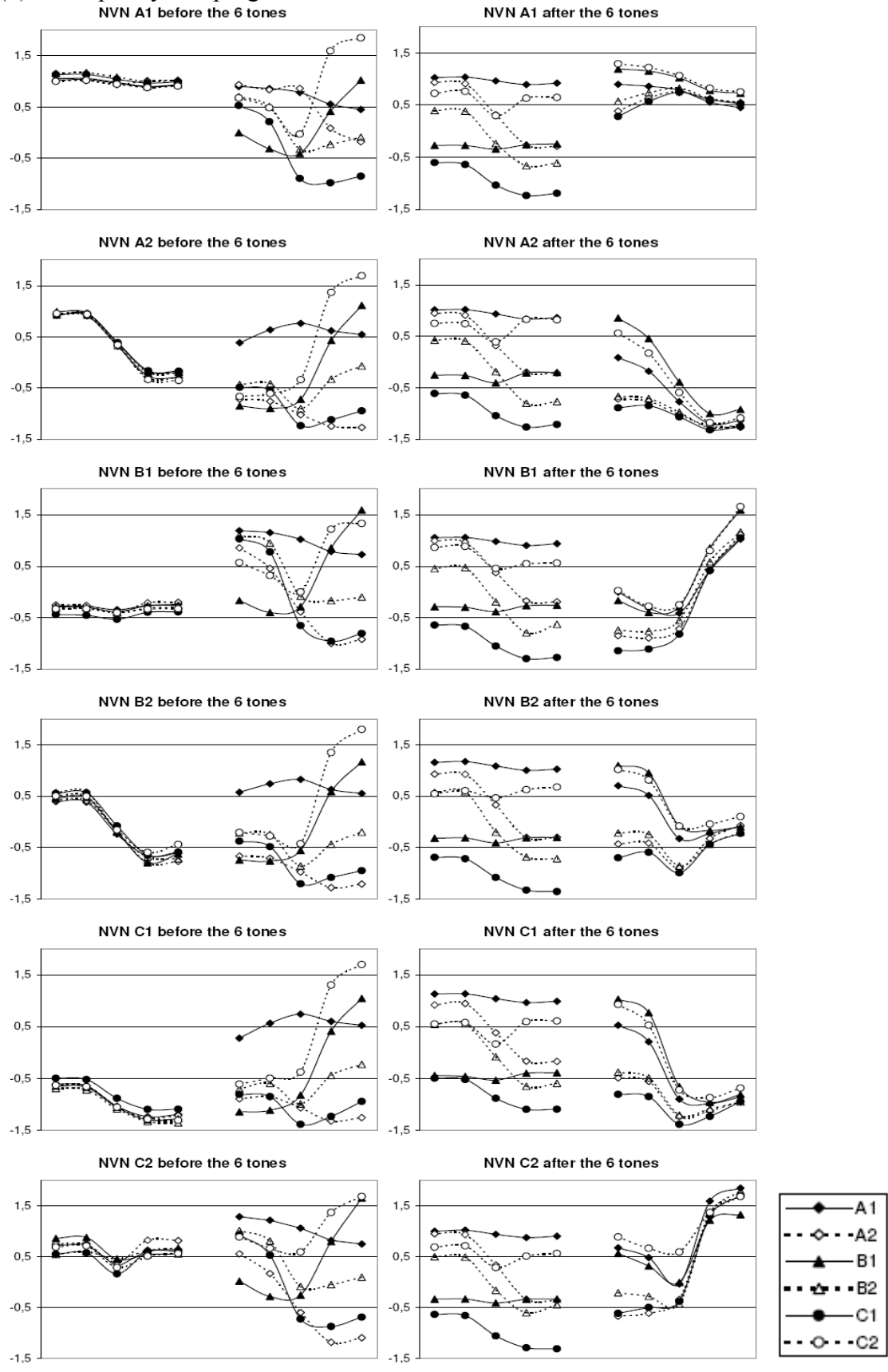
Normalized tone curves show that progressive coarticulation is much stronger than regressive coarticulation in both dialects, despite the fact that the stress pattern of the frame sentence should favour regressive coarticulation<sup>4</sup>. This can be seen by comparing the left (anticipatory coarticulation) and the right (progressive coarticulation) columns in figures (4) and (5). The endpoint of the first tone in the left-hand column is much less variable than the onset of the second tone in the right-hand column.

Figures (4) and (5) must be taken with a grain of salt, as their tone curves are mean normalized values that could hide abnormal distributions and subject-specific variation. Further, it is difficult to eyeball potential long-distance coarticulation effects on such charts. For this reason, a quantification of the magnitude of coarticulation effects was conducted with the statistical method described in section 2.3.2. The magnitude of the anticipatory effect of the f0 height at V2 onset on the preceding tones is reported with F values in figure (6). Similarly, the progressive effect of f0 height at V1 offset on the following tones is reported in figure (7).

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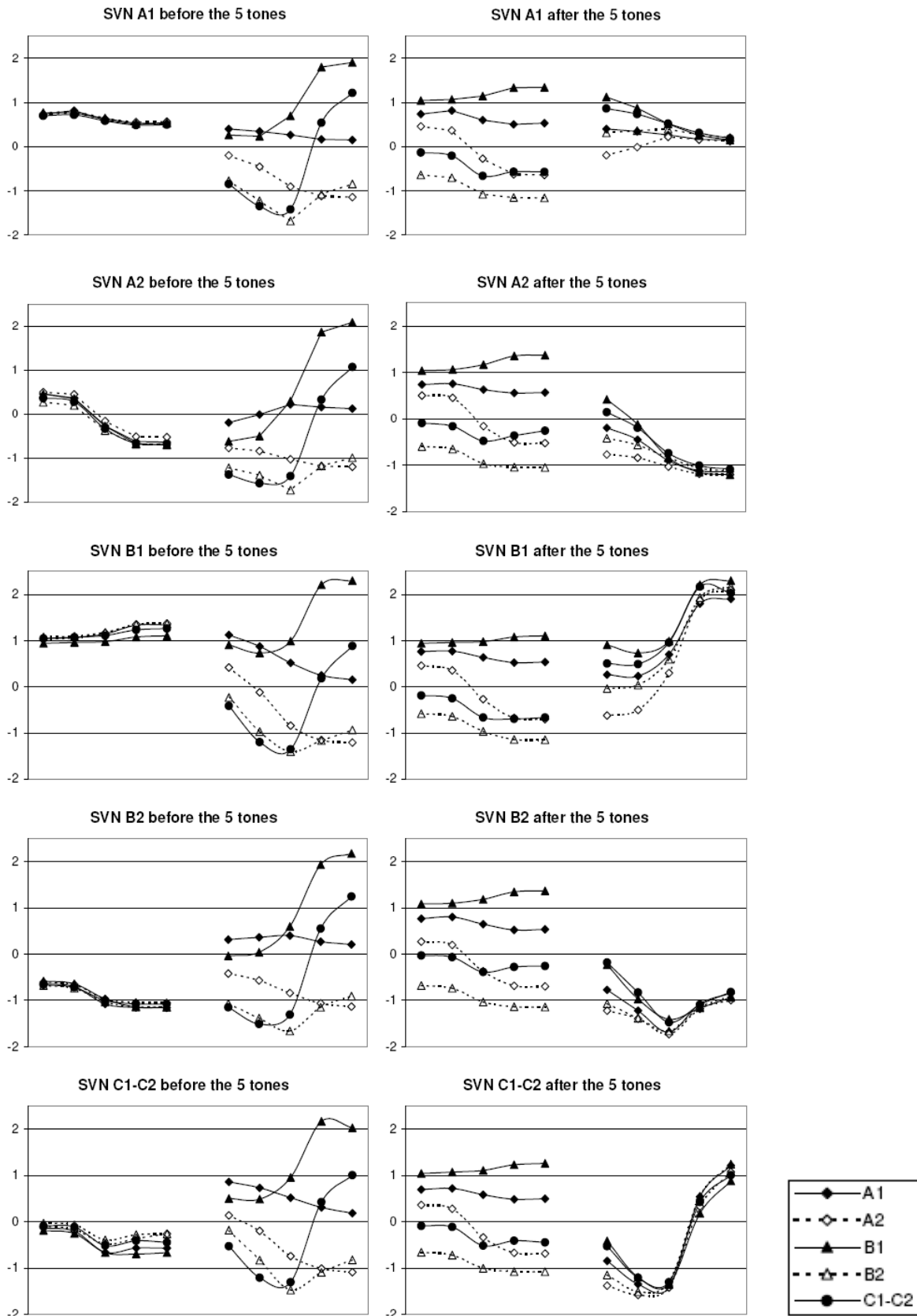
<sup>4</sup> As explained in section 2.2, the second syllable of the target sequence is stressed and therefore has a more fully realized tone curve.

(4) Anticipatory and progressive tone coarticulation in NVN





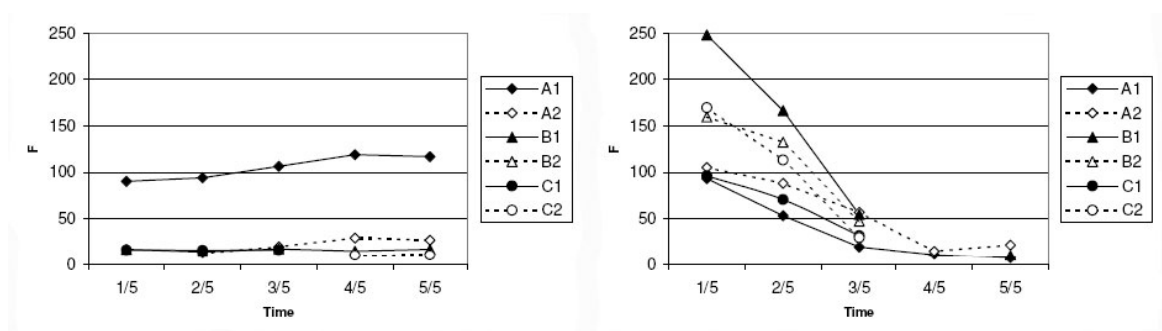
(5) Anticipatory and progressive tone coarticulation in SVN



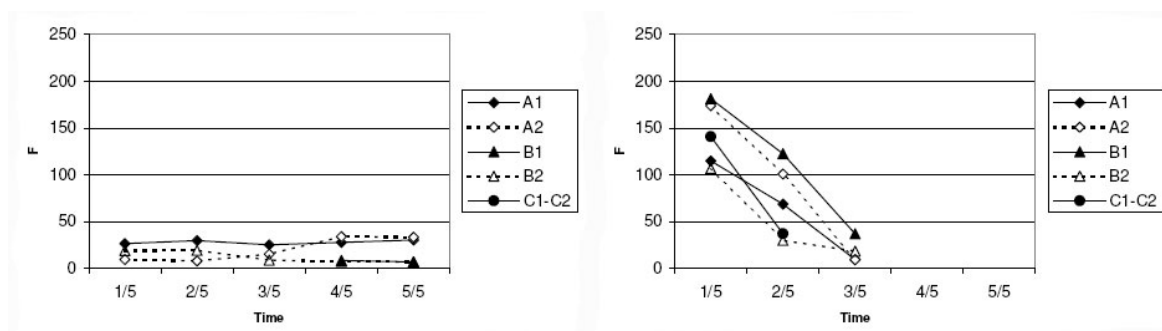
Just like figures (4) and (5), figures (6) and (7) show that in both NVN and SVN, short distance progressive coarticulation is much stronger than its anticipatory counterpart. However, long distance coarticulation is primarily anticipatory in both dialects. More tones show anticipatory coarticulation effects throughout their duration than progressive coarticulation.

The second important observation is that NVN exhibits stronger coarticulation than SVN. In the case of regressive coarticulation, this is mostly due to tone A1 and is probably not very meaningful. Progressive coarticulation, on the other hand, is stronger in NVN than in SVN throughout the tone. Even if we remove tone B1, which has the highest F-value in NVN, progressive coarticulation is still more robust in NVN than in SVN at all measurement points except the onset.

(6) Strength of tonal coarticulation in NVN  
(left: anticipatory, right: progressive,  $p < 0,01$  only)

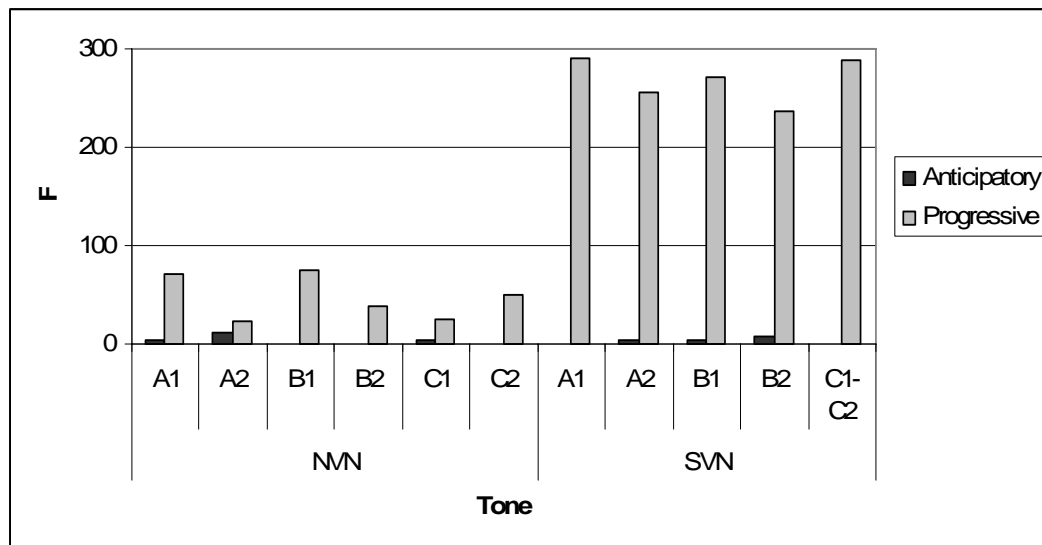


(7) Strength of tonal coarticulation in SVN  
(left: anticipatory, right: progressive,  $p < 0,01$  only)



Slope is also more affected by progressive than anticipatory coarticulation, as illustrated in figure (8). The minor anticipatory effect of the f0 height at V2 onset on the slope of the preceding tone suggests that in both dialects, the entire tone curve is shifted upwards or downwards in anticipation of the following tone, as seen in figures (4) and (5). The progressive effect of the f0 height at V1 offset on the slope of the following tone is robust in both dialects, but it is much stronger in SVN than in NVN. This is not surprising in light of the results showing that progressive height coarticulation tends to affect a relatively large portion of the tones in NVN, as shown in (4) and (6). In SVN by contrast, tone offsets are not affected by progressive coarticulation, as illustrated in (5) and (7).

## (8) Strength of coarticulation in tonal slope in NVN and SVN



#### 4. Discussion

These results show that in both dialects under study, height coarticulation is bidirectional, but with a strong progressive bias. Overall, this confirms what has previously been found for NVN (Han and Kim 1974; Brunelle 2003) as well as Thai and Mandarin (Gandour, Potisuk et al. 1992; Gandour, Potisuk et al. 1992; Gandour, Potisuk et al. 1994; Xu 1997). However, contrary to Thai, Mandarin and Taiwanese (Gandour, Potisuk et al. 1992; Gandour, Potisuk et al. 1992; Gandour, Potisuk et al. 1994; Peng 1997; Xu 1997), Vietnamese does not exhibit dissimilatory coarticulation at all. Progressive and anticipatory effects are equally assimilatory, for all tones and all tone pairs, which raises questions about the validity and/or universality of some of the articulatory mechanisms postulated in Xu (1997).

Results for slope coarticulation lead to two observations. First, the strong progressive slope coarticulation in SVN shows that the onset and offset of a tone can shift independently to a much greater extent in this dialect than in NVN, which suggests that pitch slope is more important in the patterns of tonal contrasts of NVN, while pitch height plays a stronger role in SVN. Second, the very limited anticipatory effects on slope suggests that anticipatory coarticulation shifts the entire tone curve upward or downward rather than just a part of it (in both dialects).

Beyond Vietnamese per se, the greater magnitude of coarticulation in NVN seems to support Manuel's model of output constraints (Manuel 1990; Manuel 1999). While the tone system of SVN relies almost exclusively on  $f_0$ , this acoustic cue plays a relatively smaller role in the patterns of tonal contrast in NVN because three of its six tones are laryngealized to some degree and one is optionally breathy. As a result, variation in the height and shape of the NVN tone contours is less likely to lead to confusion with other tones than in SVN, which seems to result in more tolerance for coarticulation. However, the possibility that SVN limits tonal coarticulation for reasons independent of contrast cannot be excluded.

Besides the magnitude of coarticulation effects, Vietnamese can also contribute to our understanding of the issue of the directionality of coarticulation. The two directions of

tone coarticulation in Vietnamese seem to correspond to two different types of processes. Anticipatory tone coarticulation affects the entire tone curve, shifting it upwards or downwards as a whole. It is a weak, but long distance effect. The speaker seems to be preparing his articulators for the upcoming tone, without overriding the phonetic properties of the tone currently being produced. It is different from what is usually described as look-ahead coarticulation because it affects the entire tone equally instead of being an interpolation between two targets (Cohn 1990; Keating 1990). Progressive tone coarticulation, on the other hand, is strong and gradient, but more local. Ideally, a continuous  $f_0$  realization would link tonal targets at the offset of the first tone and the onset of the second tone. However, these targets are sometimes too far apart to allow a smooth transition. In Vietnamese this conflict between conflicting targets is solved by missing the tonal target at the onset of the second tone. This results in either overshoot or undershoot, depending on the target at the offset of the first tone. However, after this initial mis-shoot, the actual tonal realization quickly converges with the ideal tone target and the amount of overshoot or undershoot is minimal by the end of the tone. In short, the progressive coarticulatory effects found in this study are similar to the effects predicted by time-locked models, despite the fact that they were not originally designed to account for carry-over effects.

The bi-directionality of Vietnamese tone coarticulation supports a *hybrid* view of coarticulation, even if this model is substantially different from the original hybrid model proposed by Perkell and Chiang (1986). On the one hand, there is a long-distance look-ahead effect, that must be very weak to prevent the blurring of tone contrasts. This look-ahead effect is by definition anticipatory. The second type of coarticulation is a short-distance compromise between conflicting targets, and could be either anticipatory or progressive (or possibly both). The reasons determining its direction could be of a universal articulatory nature or could be language-specific and linked to the nature of tone contrasts. If it turns out that short-distance tone coarticulation is mainly progressive in all tone languages, like in Vietnamese, Mandarin and Thai, the first option will have to be considered seriously. However, at this point, there is also a possibility that the dominance of progressive effects be due to the low functional role of the targets located at the onset of the tones. In the case of Vietnamese, we can see in figures (1) and (2), that tone onsets are more similar than tone offsets. They should therefore play a smaller role in differentiating the tones, a claim that is supported by perceptual evidence (Brunelle 2008). In other words, since tone onsets are less functionally important, or more lightly weighted (Xu and Wang 2001), than tone offsets, speakers prefer to miss onset targets, which results in progressive coarticulation.

The fact that tone onsets seem to have more similar  $f_0$ s than tone offsets in all the languages in which tone coarticulation has been studied could explain why progressive coarticulation is consistently stronger than anticipatory coarticulation. However, the relative perceptual role of tone onsets and offsets in these languages must be further tested before we can make such a generalization. There is also a possibility that tone targets are always weaker at tone onsets than at tone offsets because of a universal tendency to progressive local coarticulation. Unfortunately, in the absence of precise phonetic reconstructions of the diachronic evolution of tone systems, this question will remain open.

## 5. Conclusion

The Vietnamese data confirm the results of other studies of tone coarticulation in that tone coarticulation is bidirectional, with dominant progressive effects. However, anticipatory coarticulation is assimilatory, contrary to what was found in Thai and Chinese (Shih 1988; Gandour, Potisuk et al. 1992; Gandour, Potisuk et al. 1994; Peng 1997; Xu 1997).

The output constraints proposed by Manuel (1987, 1990) to account for the relation between phonemic contrast and magnitude of coarticulation seem supported by the Vietnamese data. NVN, which uses both pitch and voice quality contrastively, exhibits stronger articulatory effects in f0 than SVN, which relies on pitch exclusively. This is consistent with the hypothesis that a crowded phonetic space allows less variability. The direction of Vietnamese tone coarticulation could be explained in terms of contrast, more specifically by the relative contrastive role of the different parts of the tone curves. Since tone offsets are more important than onsets in Vietnamese tone perception, anticipatory coarticulation, which modifies the tone onsets, is less detrimental to tone identification.

Tonal coarticulation in East Asian languages is far more complex than the types of coarticulation that have been studied so far because it involves multivalent contrast and dynamic contour targets. Moreover, the various articulators that are involved in tone production (Sagart, Hallé et al. 1986; Erickson 1993; Hallé 1994) probably interact and interfere in coarticulation patterns. For these reasons, tone coarticulation must be integrated to current models of co-production.

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# CONTACT PRAGMATICS: REQUESTS IN WISCONSIN HMONG<sup>1</sup>

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## 0. Abstract

This paper investigates intergenerational changes in the use of pragmatic particles in Wisconsin Hmong. For this project, thirty Hmong-Americans were interviewed with an oral discourse completion task: both speakers of the immigrant generation and college-age young adults were interviewed in Hmong. Results show both continuity and change within Wisconsin Hmong: younger speakers showed continuity with elders; they have acquired pragmatic particles of Hmong, particles that monolingual English speakers would find difficult. However, a close look at the distribution of these particles in data from younger speakers shows a massively disproportionate use of the sentence-initial particle *thov*, in contrast to the elders, who use this particle infrequently. This dramatic increase in use of *thov* can be attributed to its semantic and syntactic similarity with English *please*. Several Hmong elders opted out of requesting a favor from a parent or parent-in-law in interviews, stating that it was embarrassing or shameful. There are indications that younger speakers also knew when to ask for help and when to opt out. But, the data show that Anglo-American teaching about *please* seems to have influenced Hmong metapragmatics as well as Hmong usage of *thov* in bilingual speakers.

## 1. Introduction

Since 1975, the population of Hmong people in Wisconsin has grown to approximately 46,000 (Lo 2001:107). This has put the Hmong language into extended contact with a language with a different pragmatic system, American English. Close examination of responses to an oral discourse completion task shows that as young Hmong-Americans have grown up exposed to two cultural and pragmatic systems, influence from English has affected these speakers' verbal requests in Hmong.

This paper will discuss two types of evidence for this claim: 1) responses to a discourse completion questionnaire, in which both native speakers of Hmong (the immigrant generation) and Hmong-English bilinguals (young adults) are given a scenario and asked what they would say in the situation described. We will see in these responses that the young bilinguals' use of pragmatic particles in requests is different from the usage of the older, monolingual speakers. Second, I will discuss these same speakers' responses to questions about the similarities and differences that both generational groups perceive

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between their own usage and that of the other generational group. From this evidence, it will be seen that exposure to English has prompted one metapragmatic statement about particle usage in requests, and that this speaker's view of appropriate usage differs from the view expressed by other speakers of both younger and older groups.

After the section on data collection, the paper will present the basics on the relevant particles, and then present the data.

## 2. Data collection

For this project, my bilingual collaborator, Hua Yang, recruited 30 members of her extensive social network to be interviewed. Using an oral discourse completion questionnaire, along with questions designed to elicit metapragmatic commentary, we interviewed 20 of the participants in Hmong: 10 elders, 5 male and 5 female, and 10 college-age young adults, 5 male and 5 female. Finally, 10 more young adults, 5 male and 5 female, were interviewed in English, using the English version of the same questionnaire. Hua Yang translated the English version of the questionnaire into Hmong; her translation was checked and its accuracy confirmed by means of a back-translation done by another bilingual. Hua also conducted the interviews that took place in Hmong, and transcribed the resulting tape-recordings, using the Romanized Popular alphabet. I then translated them into English, using Heimbach's (1980) dictionary. I also conducted and transcribed the interviews done in English. The questionnaire contained 14 situations in which requests could be elicited: thus, there were 140 opportunities for each 10-person speaker group to give requests. Seven of these 14 request situations could be considered low imposition: the speaker requested the rice at a family meal; seven more were considered high-imposition: the speaker asked for help carrying groceries into the house.

## 3. Hmong pragmatic particles

Hmong allows the option of adding particles, that is, morphemes that do not fall into the categories of the "traditional parts of speech," to requests or supportive moves to emphasize or "soften" the utterance. According to one anonymous reviewer, this is not uncommon in South East Asian languages. Eight of the ten older speakers used these particles; four speakers (Speakers 1,3,7 and 9) used them extensively. These optional particles were added to 54 of the 140 requests (39%) made by the elders; however, it is possible to use more than one particle per utterance; thus, speakers produced 67 such particles in total. The particles that Wisconsin Hmong speakers use in this fashion are *thov*, *soj*, *seb*, *yom* and *os*. Example (1) is speaker 3's request to her sister to help carry heavy packages into the house.

- (1) *Koj khoom no pab kuv nqa qhov no os. Hnyav hnyav li os.*  
 You free here help me carry thing this POL heavy heavy like POL<sup>2</sup>

<sup>2</sup> Abbreviations used in the glosses include:

CLF	classifier	PRT	particle
CLF.PLU	plural classifier	SFP	sentence-final particle
COMPL	completive particle	TOP	topic marker
EMPH	emphatic particle	bro	brother
NEG	negative	m-i-l	mother-in-law
PAUSE	pause particle	s-i-l	sister-in-law
POL	politeness particle		

‘You’re free, help me carry this thing. It’s very heavy.’ (Speaker 3)

In (1), the particle *os*, by far the most frequently used optional particle in this corpus, here is used at the end of both the request and the statement of need.

The particles in question include, first of all, *thov*, literally, ‘beg,’ but often translated as ‘please’ (see Heimbach 1980:341); this particle typically appears at the beginning of a request utterance, as in:

- (2) *Thov koj muab tais mov cev los rau kuv.*  
 beg you give bowl rice pass return to me  
 ‘Please pass the bowl of rice back to me’ (Speaker 4, to his mother).

In contrast, three of the other four particles that appear in requests typically take sentence-final position:

- (3) *Niamntxawm, zaubmov nyob ntawm ko. Koj sim cev los rau kuv seb.*  
 sister-in-law food stay there by-you you try hand return to me SFP  
 ‘Sister-in-law, [the] food stays there by you; you try to hand it back to me’  
 (Speaker 8)
- (4) *Hlob, txav ze mentsis soj.*  
 older-bro move close a-little SFP  
 ‘Older brother, move [the rice] a little closer.’ (Speaker 7)
- (5) *Niam, koj pab kuv nqa qhov no yom.*  
 mother you help me carry thing this SFP  
 ‘Mother, help me carry this thing.’ (Speaker 9 to her mother-in-law)

Of these particles, only *thov* has an English translation equivalent, literally, ‘to beg or ask for,’ or ‘please.’<sup>3</sup> Heimbach (1980) glosses both *os* and *soj* as ‘final emphatic particle,’ but according to Hua Yang, *os* adds “softness” to an utterance, and perhaps could be seen as a politeness marker. This interpretation might apply to all five of these particles; when we look at the distribution of these particles in the speech of the elders, all 70 of the requests for the rice elicited only 23 politeness particles, while an equal number of requests for help carrying the packages—a higher imposition request—elicited 44 particles.

<sup>3</sup> One reviewer has questioned whether *thov* should be considered a particle, given that it usually is glossed as a verb. There are several reasons to consider *thov* a particle: first, in sentences such as (2) and (7), *thov* precedes the subject of the sentence, *koj*, and does not form a part of the post-subject verb or verb series. In this pre-sentence-core position, *thov* is completely lacking in arguments; it has no subject, object, or complement. Second, the fact that *thov* is a verb does not prevent it from acquiring a second function as a pragmatic particle (as *please*, also a verb, has done in English); indeed the process of pragmaticization seems to have produced exactly this result in both languages, even before contact with English helped increase the frequency of use of *thov* as a particle. This explanation is in accord with the claims of scholars of grammaticization, who represent a view of grammar as “emergent from experience, mutable and ever coming into being rather than static, categorical and fixed” (Bybee 2006:714).

Heimbach (1980) glosses both *soj* and *yom* as “completive” particles, with the further note that the speaker uses *yom* “when an affirmative answer is known or expected” (Heimbach 1980: 429). While it is clear that the pragmatic uses of Hmong particles need much more exploration (see Fuller 1987, 1988 for evidence of the controversy in determining the pragmatic function of the particles *mas* and *ces*, for example), the fact that Speaker 9 would use *yom* to her mother-in-law argues for its also having an interpretation of added politeness. Heimbach does not include sentence-final *seb* at all, and notably, glosses none of these sentence-final particles as ‘please.’

The fifth particle, *os*, seems to be more flexible in its placement in the sentence; *os* can appear as phrase-final, although it frequently appears in sentence-final position.

(6) *Tub es, muab mov los rau kuv os.*  
 son PAUSE give rice return to me POL  
 ‘Son, give the rice back to me.’ (Speaker 3)

(7) *Maiv Yaj, os koj ib puas khoom os. Khoom no koj los*  
 Mai Yang pol you one are you free POL free here you come

*pab kuv soj. Thov koj los pab kuv nqa kuv cov khoom no.*  
 help me SFP beg you come help me carry my CLF-PLU package this  
 ‘Mai Yang, are you free? When free, you come help me! Please come help me carry my packages.’ (Speaker 1)

Here, sentence (6) shows *os* in sentence-final position, while example (7) shows *os* used in two places in one sentence—as well as having both *soj* and *thov* in the utterance.

Both older and younger generation speakers include these particles in their requests. The count and distribution of these five politeness particles across the generations show both continuity and change in Hmong politeness practices. However, in the data from the younger speakers, we will see that cross-linguistic identifying of the particle *thov* with English *please* has led to an increase in the use of *thov* in the Hmong of younger generation speakers.

Both generations of Hmong speakers in Wisconsin use all five of these particles. The ten elders used a total of 67 particles in their request utterances. As (7) shows, it is possible to use more than one particle per utterance, particularly if the utterance contains a supportive act as well as the head act; there were 9 utterances with more than one particle given by the elders. Altogether, 54 request utterances exhibited at least one of these five particles; of all the request responses in the corpus from older speakers, 39% have at least one particle.

Similarly, the younger speakers used 66 particles in 49 utterances; fifteen of these utterances had more than one particle. As the younger generation speakers also had 140 request opportunities, this amounts to using particles in 35% of these occasions. If we concentrate on overall frequency of particle use, the younger generation of speakers shows continuity with the elders in this politeness practice.

However, a focus on the individual particles tells a different story. Table 1 shows the number of each particle used by the ten speakers of both age groups, and the percentage of the total particle count for that generational group.

**Table 1:** Use of Five Politeness Particles by Two Generations of Speakers

Particle	Number used by Elders		Number used by Young Adults	
	n	%	n	%
os	33	49%	34	51%
seb	6	9%	3	4%
soj	17	25%	5	8%
thov	6	9%	20	30%
yom	5	7%	4	6%
total	67	100%	66	100%

A look at the frequencies of *soj* and *thov* shows change between the generations: in both numbers and percentages, use of *soj* has greatly decreased from the older generation to the younger. In contrast, *thov* has gained in usage; the elders used *thov* quite rarely, only 6 times in 140 opportunities, i.e., the elders used *thov* in only 4% of those opportunities. The younger speakers, however, used *thov* 20 times out of 140 opportunities, or 14%. For the elders, *thov* forms only 9% of the total particle count (i.e. of the 67 particles used), whereas for the younger speakers, *thov* accounts for 30% of all the particles used.

Thus, while the overall count of politeness particles is almost the same for the two age groups, the distribution of individual particles shows a change in usage between the generations, with the younger speakers using *thov* more than three times as often as the elders do. A plausible explanation is that *thov* is making gains in frequency of use under contact with *please*, particularly if the rough translation equivalency of the two particles is known, since *please* usage is frequently stressed by English-speaking adults.

This explanation gains in plausibility if we look at the results of the young Hmong-American adults who were interviewed in English, and compare their use of *please* and its placement in sentences with the use and placement of *please* by Anglo-American speakers. In the English data of young Hmong-American bilinguals (speakers 11 through 20), there were 20 instances of *please* out of 140 request responses: of these, three were initial, or following an alerter, as in (8):

- (8) “Nyab, *please* give me some of the rice,” (Speaker 15)  
 “Mom, *please* hand the rice over.” (Speaker 17)  
 “*Please* come help me, um, get some groceries.”(Speaker 15 to older brother)

Ten instances of *please* were medial or immediately before the verb, as in (9):

- (9) “Father, can you *please* hand over the rice?” (Speaker 17).

And seven requests had sentence-final *please*, as in (10):

- (10) “Sister-in-law, can you hand over the rice, *please*?” (Speaker 19)  
 “Mother-in-law, could you help me bring the bags in, *please*?” (Speaker 19)

For the sake of comparison, we investigated the usage by non-bilingual native speakers of American English.<sup>4</sup> In the native-speaker American English data, there were 51 instances of *please* in 140 request responses; *please* could appear initially, as in (11), medially, as in (12), and finally, as in (13):

- (11) “Please pass the potatoes.”  
 (12) “Mom, could you please pass the potatoes?”  
 (13) “Nikki, could you pass the potatoes, please?”

Sixteen of the 51 *please* instances were sentence-initial (31.4%), 27 of them were medial (52.9%), and only 8 (15.7%) were final. This distribution of *please*—heavy in the preverbal part of the sentence, light in final-position—would make the identification of sentence-initial *thov* with *please* even more compelling to bilingual speakers.

**Table 2:** Use and distribution of *please* by Hmong-Americans and Anglo-Americans

	initial (%)	medial (%)	final (%)	total
Hmong-American	3 (15%)	10 (50%)	7 (35%)	20
Anglo-American	16 (31.4%)	27 (52.9%)	8 (15.7%)	51

Table 2 compares the placement in the sentence of English *please* by college-age Hmong-American bilinguals and college-age monolingual speakers of American English (Anglo-Americans). If we take the Anglo-American distribution of *please* as a possible native speaker target, the Hmong-American speakers are close to the native percentage mark with the prevailing medial placement in their English requests—and with the conventionally indirect request (*Can you please V*, *Could you please V*) that medial *please* co-occurs with. The distribution of peripheral *please* (i.e., *please* at beginning or end of the sentence), on the other hand, does not match the native speaker pattern, but since one speaker (Speaker 19) is responsible for 6 of the 7 final *please* instances in the Hmong-American data, we should probably not over-interpret this distributional pattern.

On the other hand, young Hmong-Americans do not match the native speakers of English in terms of overall frequency of use of *please*. Young Hmong-American adults use *please* much less frequently than native speakers, only 20 times out of 140 request responses, compared with the Anglo-Americans’ 51 times. However, the young Hmong-Americans’ frequency of the use of *please* matches exactly their use of *thov*; as shown above, the ten young Hmong-Americans interviewed in Hmong used *thov* twenty times out of 140 request responses, and the young Hmong-Americans interviewed in English used *please* twenty times. It would appear that in both their languages, the young Hmong-American bilinguals have constructed a compromise between the high English native-speaker frequency of *please* and the low Hmong native-speaker frequency of *thov*, settling on an intermediate frequency of use for both particles. The construction of such a compromise argues strongly for pragmatic transfer, or at least for a cross-language identification of *please* and *thov*.

In summary, a close look at the distribution of the five Hmong particles by two generations of speakers shows that the younger speakers interviewed in Hmong use one

<sup>4</sup> The author thanks Jennifer Loster for collecting and transcribing the Anglo-American data.

particle, *thov*, more than three times as often as the older speakers do. In fact, its frequency matches the frequency of use of the particle *please* by the younger Hmong-Americans interviewed in English. Whether or not this constitutes pragmatic transfer, it looks as if young Hmong-Americans have identified *thov* with *please* functionally. In the next section, we will see further evidence for this.

#### 4. Opting out or Avoidance

In this section, we will look at the strategy of deciding not to utter the request at all in the situation described. We will look first at what some elders told us when confronted with the description of certain request situations. We will see that at least some Hmong elders think that the appropriate response is not to make the request at all. We then look at comparable responses for the younger speakers, and find that while several of them voice similar restrictions on who may be asked for help, one younger speaker seems to think that the use of *thov* in the request can override such restrictions. Her metapragmatic statement is a significant departure from the metapragmatic statements by the elders.

Five of these avoidance situations were in requests addressed to parents, and five were for requests addressed to the mother-in-law (the one remaining case was a father who, rather than request the rice from his son, said that he would stretch to reach the rice, since his son would not mind). Three of the speakers who opted out of request situations were female, and one was male. Speaker 2, for example, told us that she would not bother her mother-in-law with a request for the rice:

- (14) *Yog niampoj ho nyob ze ntawm tais mov, tejzaum kuv yuav sawv*  
If mother-in-law and-then stay near there bowl rice maybe I will stand-up

*mus hais. Muab kuv lub tais mus hais los rau ntawm kuv xubtiag.*  
go scoop take my CLF bowl go scoop return to there my front-of-body

‘Then if my mother-in-law is near the rice bowl, maybe I will stand up, go scoop. Take my bowl, go scoop, come back to my place.’ (Speaker 2).

This same speaker was also hesitant about asking her mother-in-law for help in the higher-imposition package-carrying situation, and gave a report of what she would do, rather than an example of what she would say:

- (15) *Pog, tejzaum yog niampog hluas lawm ces kuv yuav txib tau.*  
Mother-in-law, maybe if m-i-l young COMPL and I will enlist-help able.

*Yog nws laus lawm ces tejzaum kuv yuav ua kuv. Kuv kuj tsis txib nws thiab.*  
if she old COMPL and maybe I will do I I also not enlist-help her also

‘[As for the] mother-in-law, maybe if mother-in-law is young, I can enlist her help. If she is old, maybe I will do [it] myself, and moreover, not enlist her help.’ (Speaker 2)

Speaker 8 seemed to feel similar compunction against asking the mother-in-law for help in the package-carrying situation:

- (16) *Tseem niampog nyob los yus yeej nqa yus xwb. Yus yeej tsis txib.*  
still m-i-l live TOP one will carry one simply one will NEG enlist-help

*Rau qhov tias yog niampog lawm ces yus tsis xav txib.*  
because that if m-i-l COMPL PAUSE one not want enlist-help

‘[Even if] mother-in-law is right there, one simply carries oneself. One will not enlist her help. Because she is the mother-in-law, one does not want to enlist her help.’ (Speaker 8).

This speaker made a similar case against asking parents for help in a high-imposition request situation such as carrying heavy things:

- (17) *Rau qhov tias yog yus tebcaws mas txawm hnyav npaum twg los yus*  
because say if one’s country TOP so heavy equal which or one

*yeej tsis txib yus niam. Yus yeej paub tias yus niam thiab yus txiv*  
will NEG enlist-help one’s mother one will know that one’s mother and one’s father

*nkawv laus ces yus yeej nqa yus tshuag tshuag hauv tsev xwb.*  
pair old PAUSE one will carry oneself quickly inside house simply

‘[In] my country, no matter how heavy [the load], one will not enlist the help of one’s mother. One knows that one’s mother and father are an old couple, and one will simply carry [the load] quickly inside the house oneself.’ (Speaker 8)

- (18) *Kuv txiv los kuv yeej tsis txib. Kuv txiv laus lawm ces hnyav npaum*  
my father TOP I will not ask my father old COMPL PAUSE heavy equal

*twg los kuv nqa kuv xwb.*  
which TOP I carry I simply

‘My father, I will not ask. My father is old, and no matter how heavy, I simply carry [it] myself.’ (Speaker 8)

Speakers 6 and 7 each opted out of asking their respective fathers for the rice, as shown in (19) (with a bit of codeswitching) and (20):

- (19) *Usually peb cov Hmoob mas yog tias yus loj lawm no ces yus txiv mas*  
usually we CLF.PLU Hmong TOP if say one big COMPL here PAUSE one father TOP

*yus yeej tsis tshua nug na.*  
one will not like ask SFP

‘Usually we Hmong [think] if one is big, one does not like to ask one’s father.’ (Speaker 6)

- (20) *Ib yam nyob ze ntawm kuv txiv ces kuv yog tus laus lawm.*  
one type stay close there my father TOP I is CLF old COMPL

*Yog tus laus ces kuv hos hluas ces kuv yuav tau ua siab ntev ncav*  
If CLF old TOP I then young PAUSE I will able be patient stretch

*mentsis los tau rau qhov tias nws laus lawm na.*  
a-little or able because say he old COMPL SFP

‘If [food] is close [to] my father, I—he is the old one. If he is old, and I am young, I will be able to be patient and to stretch a little, since he is old.’ (Speaker 7)

Opting out of the request altogether looks like a politeness practice particularly appropriate to use for older addressees. Indeed, ten of these avoidance instances were for requests addressed to mother, father or mother-in-law; there were sixty request situations directed to these addressees, so the ten avoidance instances constitute 17% of request responses directed to older addressees. Opting out of the request occurred eleven times out of the total 140 request opportunities (or 8% of the time).

There were 11 instances when four of the elders told us that they would not make the request we hoped to hear, since requesting the particular favor of the particular addressee (usually parents or mother-in-law) was not polite or appropriate. Of the younger speakers interviewed in Hmong, only Speaker 28 opted out of specific request elicitations, and he opted out of four of the 14 request situations posed in the interview questionnaire, and made clear that he might opt out of a fifth, depending on the age of the addressee. Clearly, in response to the oral questionnaire, the elders opt out more than twice as often as the younger speakers do. It is important to note, also, that Speaker 28 immigrated at the age of 12, and assessed his abilities in Hmong as much better than his abilities in English, so it is probably not coincidental that his responses stand out from those of the rest of his age cohort. An example of his responses is in (21):

- (21) *Thaum ntawd ces...um...ze yus niam tias lawm no ces.*  
time that TOP um near one m-i-l COMPL this PAUSE

*Kuv tsis tau muaj dua niam tais nawb. Kuv muaj ntsis txaj muag thiab ces*  
I NEG able have before m-i-l EMPH I have a-little embarrassed also TOP

*tsis tshua hais thiab. Ces li um.--ces li hais rau yus tus pojniam,*  
NEG much say also let-it-be let-it-be say to ‘one’ CLF m-i-l



*ibyam li noj mov ntawd ces yeej hais tus pojniam kom nws muab tais mov*  
 like eat rice there TOP will say CLF wife cause her give bowl rice

*los rau yus xwb. Ibyam li kuv tsis tau muaj pojniam nawd,*  
 return to one simply same way I NEG able have m-i-l EMPH

*tabsis ibyam li tus pojniam ces lawv hu hais tias tus hlub los honey no los mas,*  
 but same way CLF wife TOP they call say that CLF love or this TOP

*Koj pab muab tais mov los ntawm no.*  
 you help give bowl rice return here

‘When [the rice] is near one’s mother-in-law, I have not had a mother-in-law before, I would also be a little embarrassed to say much. Leave it—leave it, [I’ll] say to my wife, like [we’re] eating rice there, speak to [my] wife [so as to] cause her to simply pass the rice bowl back. Like, I do not have a wife. But like, a wife, they will call ‘lover’ or ‘honey’ [and] say ‘You help hand the rice bowl back here.’” (Speaker 28)

Here, Speaker 28 shows that he would seek out an alternative addressee (including an Anglo term of address) so as to avoid having to make a request of his mother-in-law. He shows a similar reluctance to address a request to his sister-in-law, and so, opts out of making that speech act as well:

(22) *Tus niam tij ces tej zaum peb yuav tsis hais rau qhov*  
 CLF s-i-l TOP maybe we will NEG say because

*Hmoob no mas yeej txawv.*  
 Hmong this TOP will differ

‘[To] a sister-in-law maybe we will say nothing, because Hmong are different on this.’

Although Speaker 28 was the only younger speaker who explicitly opted out of specific questions, when we asked the younger speakers specifically about who should not be asked for help, all ten of the younger speakers interviewed in Hmong knew of categories of people from whom one should not ask favors or assistance. All five of the young men interviewed in Hmong said that one should not ask one’s mother-in-law, as shown by these responses:

(23) (a) *Kuv yeej tsis nug kuv pog los pab kuv nqa. Kuv pog laus laus lawm.*  
 I will NEG ask my m-i-l come help me carry my m-i-l old old COMPL

‘I would not ask my mother-in-law to come help me carry. My mother-in-law is very old.’ (Speaker 26)

- (b) *Yog kuv niam or kuv niam tais li ntawd ces kuv yeej tsis nug os.*  
 if my mother my m-i-l like that TOP I will NEG ask POL

‘If [it’s] my mother or my mother-in-law, I will not ask.’ (Speaker 27)

- (c) *tus niam tij tsis zoo nug heev xwb thiab tus niam tais.*  
 CLF s-i-l NEG good ask very simply and CLF m-i-l

*Rau qhov tias niam tij thiab tus kwv ces ua haujlwm uake mas*  
 because that s-i-l and CLF bro TOP do work together TOP

*peb Hmoob muaj ntsis txaj muag.*  
 we Hmong have little embarrassed

*Hos niam tais no mas yus yeej ib txwm tsis txib niam tais heev.*  
 And m-i-l this TOP one will from-the-beginning NEG send m-i-l very

‘It is simply not good to ask your sister-in-law and your mother-in-law. Because if the sister-in-law and younger brother work together, we Hmong are a little embarrassed. And there is simply no way that you should ask your mother-in-law.’ (Speaker 28)

- (d) *Tsis phiv, tabsis txaj txajmuag xwb. Tej zaum*  
 NEG wrong but embarrassed only maybe

*kuv tsis hais kuv pojniam tus niam.*

I NEG say my wife CLF mother

‘Not wrong, but embarrassing. Maybe I wouldn’t ask my wife’s mother.’ (Speaker 30)

When we asked the five young women whom we interviewed in Hmong whether there were people whom one should not ask for help, their answers were more varied: one said not to ask one’s mother-in-law, another listed the sister-in-law, the third listed parents, and the fourth listed elders in general: help should be solicited from younger people rather than elders.

- (24)(a) *Umm...I think kuv yeej ...kuv tsis txib kuv niam pog.*  
 I will I NEG send my m-i-l

*Rau qhov...I don’t know. Tsis paub.*  
 because NEG KNOW

*Tsis zoo txib yus niam pog los pab na.*

NEG good send one m-i-l come help right?

‘I will not ask my mother-in-law. Because—I don’t know. It is not good to ask one’s mother-in-law to come help, right?’ (Speaker 21)

- (b) *Tejnpam tsis tshua zoo saib yog yus nug yus niam thiab yus txiv.*  
 maybe NEG quite good look if one ask one mother and one father

‘Maybe it doesn’t look quite good [doesn’t seem proper] if one asks one’s mother and one’s father.’ (Speaker 23)

- (c) *Tej zaum nws kuj yuav tsis zoo thiab.*  
 maybe s/he also will NEG good also

*Vim rau qhov feem ntau mas yog tias yus nug yus—*  
 because because part much TOP? that one ask one

*cov hlob yus los pos cov neeg laus, nws tsis tshua zoo nkauj na.*  
 CLF.PLU old one or PAUSE CLF.PLU people old it NEG seem well appropriate, right?

*Ces yog tias muaj cov yau uas pab tau yus ces yus txib cov yau ntau.*  
 PAUSE if that have CLF.PLU young who help can one TOP one send CLF.PLU young more

‘I think it is maybe not good, because many times, one asks one—the elders or the old people, it does not look appropriate, right? If they have young [people] who can help, you get the younger[ones] [to help you].’ (Speaker 25)

If we put these responses together with those given by the elders, a pattern emerges of a general reluctance, among all speakers, to ask elders, whether parents or in-laws, for help with ordinary tasks. Furthermore, there seems to be a reluctance to ask opposite-sex same-generation in-laws for help, although only one of the younger speakers mentioned this before being asked specifically about categories of people who should not be asked for help. So not only is there a certain amount of in-law avoidance in requests, but also some generational barriers to request-making; adults are reluctant to ask parents as well as parents-in-law for help, while feeling free to ask their own children for help, or their siblings. Married women can ask their husband’s brothers’ wives.

If younger speakers perceive the same pattern of askability that adults articulate, do they implement that pattern in discourse? Of the ten young adults interviewed in Hmong, only one chose to opt out of the request elicitations in the embedded Discourse Completion Task, and he opted out of five of the 14 requests, all to female addressees. It is possible that none of the other younger speakers opted out because the interviewer, Hua Yang, works in the public schools as a teacher, and some of the younger speakers may have perceived the interview as a school task. All ten of these speakers, however, were able to name people who should not be asked to help: all five of the young men interviewed in Hmong, and one of the young women as well, named the mother-in-law as someone they would not ask. One young man and one young woman also named the sister-in-law. One woman said that she would not ask her parents for help, and another said she would not ask elders at all, but only younger people.

But one young woman's responses were slightly different. When asked whether it was wrong or impolite to ask any of these people for help, Speaker 24 answered:

- (25) *Yuav tsis phiv rau qhov tias tsev neeg no yog kuv tsev neeg,*  
will NEG offend because that family this is my family

*kuv yeej paub lawv ces lawv txaus siab pab kuv thiab.*  
I will know them TOP they enough liver help me also

‘[I] will not offend anyone because this family is my family, and I know them, and they have heart enough to help me, too.’ (Speaker 24)

Here, Speaker 24 was probably referring to her husband's family, the family that she had married into; their having “heart” (literally ‘liver’) enough to help her is not necessarily something a young wife can take for granted in her family of in-laws, and is therefore worth commenting on. Interestingly, this young woman was aware of pragmalinguistic (Thomas 1983) differences between the generations, because she said of the elders:

- (26) *Tej zaum lawv nug txawv rau qhov tias lawv cov lus Hmoob lawv muaj—*  
maybe they ask differ because that they CLF.PLUword Hmong they have

*um...lawv cov laus lawv siv txawv li peb cov hluas.*  
um they CLF.PLU old they use differ like we CLF.PLU young

‘Maybe they ask differently because they have Hmong words, and they use them differently than we young [people do].’ (Speaker 24)

When asked further whether she felt that she knew how to ask correctly, she responded:

- (27) *Um...kuv xav tias yog tamsis yeej yog tsis ntau puas tsawg*  
um I think that correct but will be NEG many that much

*rau qhov tias cov laus lawv hais, um... lawv muaj qhov thov no ces—*  
because that CLF.PLU elder they say um they have way ask this TOP

*thiab tsis tas li ntawd Hmoob lawv yeej hais qhov thov ntawd no ces*  
and NEG complete like that Hmong they will say way ask that this TOP

*yog tias yus hais thov lawm no ces lawv yeej pab yus thiab.*  
if that one say please COMPL this TOP they will help one also

‘Yes, I think [it's] correct, but it may not be that correct, because the elders say—they have ways to request –and also the Hmong have ways to ask, and if you say ‘please,’ then they will help.’ (Speaker 24)

Speaker 24's last statement is intriguing—it looks like the thin edge of the wedge of cultural change, in the form of a politeness prescription that resembles Anglo-American tradition much more than it represents what the other respondents perceive as Hmong practice. Recall how infrequently the Hmong elders used the particle *thov*, in comparison with the relatively enthusiastic use of this particle by the younger speakers. Recall, too, how members of both generations could be reasonably explicit about whom not to ask for help, even though this changes as one grows older and thus becomes entitled to ask an ever greater number of younger people to help. In contrast, this recommendation of *thov* by Speaker 24 looks very much like the Anglo-American “magic word” tradition of politeness instruction (Gleason, Perlmann and Greif 1984)—but now, the instruction is in Hmong, about Hmong. The statement represents a case of metapragmatic transfer, supporting, or arising from the identification of *thov* with *please* in the use of particles that we saw above.

### 5. Conclusions

Young Hmong-Americans, who have grown up speaking both English and Hmong, seem to have identified the Hmong particle *thov* with the English particle *please*. The two words are semantically similar, and both words tend to occur before the verb in requests, although it is possible for *please* to occur at the end of the sentence, as well. Although Hmong adults use *thov* relatively rarely, and although native speakers of American English use *please* relatively often, young Hmong-American speakers seem to have chosen an intermediate frequency of use for both particles, and in our sample, employed both words with equal frequency. Speaker 24 took this identification of *thov* and *please* one step further, and asserted that using *thov* would allow her to ask almost anyone for help, although most of the rest of the Hmong-Americans interviewed identified categories of addressees who should not be asked to help. Speaker 24's claim is therefore a significant change in metapragmatics, and indicates that American English politeness teachings have affected her understanding of politeness conventions in Hmong. The data from the other younger speakers indicates that, in usage practices that follow from this, Speaker 24 may not be alone.

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# ENGLISH LOANWORD ADAPTATION IN BURMESE\*

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## 0 Abstract

This paper provides a descriptive account of the main patterns found in the adaptation of English loanwords in Burmese. First, English segments missing from the Burmese inventory are replaced by native Burmese segments. Second, coda obstruents are represented by laryngealized tones. Third, consonant clusters are resolved through vowel epenthesis or consonant deletion. Finally, various phonotactic gaps native to Burmese, some with rather idiosyncratic distributional properties, are consistently maintained in loanwords via a number of different strategies. The data suggest overall that Burmese phonology heavily constrains the adaptation of English loanwords, and a brief sketch of an Optimality-Theoretic analysis is presented.

## 1 Introduction

Lexical borrowing is a common process across languages. Even so, words borrowed into a language are rarely borrowed faithfully; instead, they typically undergo modification vis-à-vis their form in the source language from which they were borrowed. This process of modification may result from the influence of the phonology native to the borrowing language, from general principles of Universal Grammar, or from a combination of the two. Loanword phonology has been of great interest in recent years due to the implications it holds for phonological grammar in general, and the process of loanword adaptation has been modeled in various ways (e.g. Silverman 1992, Kenstowicz 2003, Peperkamp and Dupoux 2003, Broselow 2004, LaCharité and Paradis 2005, *inter alia*) that make different claims about the stages of adaptation and the relative importance of factors such as the borrower's proficiency in the source language and the veridicality of cross-language speech perception. The phonology of Burmese, however, has not been very heavily studied, and the few sources that do comment on it are generally quite old or brief (e.g. Armstrong and Tin 1925, Stewart 1936: 1-17, Cornyn 1944, Jones and Khin 1953, Jones 1960, Burling 1967, Okell 1969: 241). The present study is the first to provide a systematic description of the phonological patterns in English loanwords that have been incorporated into Burmese.

The paper is organized as follows. This section provides some background on aspects of Burmese phonology that are relevant to loanword adaptation, with special attention to phonological differences from English, and summarizes the methods used in

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this study. Section 2 details the substitutions used to fill inventory gaps, and Section 3 illustrates the repairs made to syllable codas and consonant clusters. Section 4 presents loanword data that show certain Burmese phonotactic gaps to be systematic, rather than accidental. Finally, Section 5 briefly sketches an analysis of competing phonological considerations in loanword adaptation using the framework of Optimality Theory, and Section 6 summarizes the main conclusions.

### 1.1 Background on Burmese phonology

In this section the basics of the Burmese phonological system are laid out in order to highlight patterns and constraints that are reflected in the adaptation of foreign forms.

#### 1.1.1 Inventories

Depending on what one counts, the Burmese language can be said to contain 34 consonants. There is a three-way laryngeal contrast among voiced, voiceless unaspirated, and voiceless aspirated obstruents, as well as a typologically rare voicing contrast in sonorants. A glottal stop and several fricatives round out the inventory (cf. Figure 1). Notable gaps in comparison to English are the lack of labial fricatives, the alveolar approximant /r/, and the voiced palatal fricative /ʒ/.

	labial	dental	alveolar	palatal	velar	glottal
plosive	p p <sup>h</sup> b		t t <sup>h</sup> d		k k <sup>h</sup> g	ʔ
affricate				tʃ tʃ <sup>h</sup> dʒ		
fricative		(t)θ (d)ð	s s <sup>h</sup> z	ʃ		h
nasal	m̥ m		n̥ n	ɲ̥ ɲ	ŋ̥ ɳ	
lateral			l̥ l			
tap/flap			(r)			
approximant	w̥ w			j		

**Figure 1:** Burmese consonant inventory<sup>1</sup>

The Burmese vowel inventory consists of five oral vowels, with nasal counterparts to the “corner” vowels /i a u/, and four oral diphthongs, each of which has a corresponding nasal diphthong. Schwa, which occurs as an allophone of [ɪ, ɛ, a, ʊ], rounds out the inventory (cf. Figure 2).<sup>2</sup> Here there is a notable gap at the mid height, where nasal vowels do not occur. Burmese also lacks the low front vowel /æ/ and the diphthong /ɔi/ of English. Other English vowels missing from Burmese, such as the lax vowels /ɪ, ɛ, ʊ/, have close correspondents in Burmese vowel allophones not included in the chart below.

<sup>1</sup> The interdental fricatives are accurately described by Win (1998) as sounding “more like weak plosives than fricatives”; thus, they are often transcribed in conjunction with a dental stop. The flap is placed in parentheses because it is not a phoneme, but an allophone of /d/ that otherwise appears only in loanwords (Cornyn 1944).

<sup>2</sup> The vowels [ɪ, ɛ, ʊ] are not included in the vowel chart because they appear to be allophones of their tense counterparts that appear in closed syllables. Though Win (1998) considers schwa to have phonemic status, the fact that it alternates with several full vowels and cannot stand on its own suggests otherwise. Therefore, in this study schwa will be considered an allophone of [ɪ, ɛ, a, ʊ], as noted above.

		FRONT	CENTRAL	BACK
MONOPHTHONGS	HIGH	i ĭ		u ũ
	MID	e	(ə)	ɔ
	LOW		a ã	
DIPHTHONGS		ei ěĩ	ai ãĩ	au ãũ ou õũ

**Figure 2:** *Burmese vowel inventory*

Burmese is a tone language, where differences between tones have to do not only with pitch, but also duration, intensity, phonation, and vowel quality (Green 2005). By most accounts (e.g. Cornyn 1944, Khin 1976, Wheatley 1987, Green 1995), there are four distinct tones: low, high, creaky, and a so-called “checked” or glottal tone with the general features of creaky tone followed by glottal stop (cf. Figure 3). The tone that falls on schwa is neutral.

tone	transcription	characteristics
low	à	medium duration, low intensity, low/rising pitch
high	á	long duration, high intensity, high/falling pitch, can be breathy
creaky	ǎ	short duration, high intensity, high/falling pitch, creaky
glottal	aʔ	very short duration, high pitch, sharp glottal closure

**Figure 3:** *Burmese tone inventory*

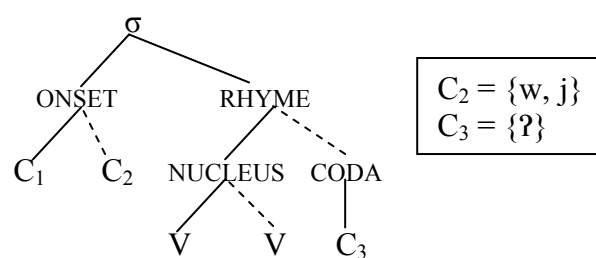
Though it is possible to analyze the glottal tone as an allotone of creaky tone occurring before glottal stop, this study will follow previous ones in adopting a system of four phonemic tones; however, this decision affects little about the analyses presented below.

*1.1.2 Syllable structure and phonotactics*

The basic Burmese syllable structure is C<sub>1</sub>(C<sub>2</sub>)V(V)(C<sub>3</sub>) (cf. Figure 4). An onset C<sub>1</sub> is obligatory and may be optionally followed by an approximant C<sub>2</sub>. The rhyme minimally contains a monophthongal nucleus, and may also contain a diphthong. A coda C<sub>3</sub> is optional, but is limited to the glottal stop occurring with glottal tone.<sup>3</sup>

<sup>3</sup> Green (1995) includes a “placeless” nasal as a possible filler of the coda position C<sub>3</sub>. Under this analysis, nasal vowels are the surface manifestation of oral vowels followed by placeless nasal codas. Indeed, final nasals are represented in orthography and pronounced incidentally as nasals homorganic with the following consonant in rapid speech, but in normal speech these nasals are realized only as nasalization, making it unclear that synchronically there is still a nasal coda underlying what on the surface are just nasal vowels. Here nasal vowels are assumed to be underlying, and glottal stop is taken to be the only permissible coda.





**Figure 4:** *Burmese syllable canon*

Several phonotactic restrictions apply to this basic structure. First, the glide /j/ only occurs after labials; clusters such as \*/tj, kj/ are ill-formed (Green 1995). Second, the diphthongs /ai, au/ only occur before coda glottal stop (i.e. not in open syllables). Third, /ɔ/ does not occur with a glottal coda (Cornyn 1944), while the lax vowels [ɪ, ɛ, ʊ, ʌ] only occur with a glottal coda, or else nasalized (except [ɛ]). Finally, the configuration of a nasalized vowel followed by a coda glottal is disallowed (Cornyn 1944).<sup>1</sup>

Two different syllable types occur in Burmese, distinguished by Green (1995) as major and minor. Major syllables are heavy, containing any vowel except schwa and bearing tone, while minor syllables are light, contain schwa and no other vowel, do not bear tone, and are not word-final. While most Burmese vowels can be found in monosyllabic words, a syllable with a schwa cannot stand on its own and is always bound to a following major syllable (Cornyn 1944). Most Burmese words are either monosyllabic or consist of a minor syllable followed by a major syllable. Words longer than two syllables are mostly compounds or loanwords (Green 1995).

## 1.2 Methods

All data presented below are drawn from a corpus of 280 adaptations comprising 193 established loanword adaptations and 46 non-word adaptations gathered from one main Burmese-English bilingual consultant, as well as 41 additional adaptations from Win (1998) and Green (2005). Non-word adaptations were made online based upon aural input. Examples that come from the data of Win or Green are marked as ‘W’ or ‘G’, respectively.

<sup>1</sup> If nasal vowels are assumed to arise from underlying nasal codas as in Green (1995), then the restriction against nasal vowels co-occurring with glottal stop can be attributed to the presence of only one coda slot in the syllable canon. Here it is simply stipulated that they do not occur with glottal tone, since doing so sacrifices nothing in terms of empirical coverage and does not force us to assume underlying nasal codas. Again, however, the analyses presented below are amenable to either set of assumptions.

Two additional generalizations made by Green (2005) are contradicted by data from native Burmese words and so are not considered further here. First, the diphthongs /ei, ou/ are said to pattern with the diphthongs /ai, au/ by not occurring in open syllables (cf. Cornyn 1944, Win 1998 as well); however, several forms contradict this claim (e.g. /jèi/ ‘water’, /pwéi/ ‘gathering’, /pòu/ ‘to have extra’, /póu/ ‘insect’, /pou/ ‘to send’). Second, the lax vowel /ɛ/ is included in the vowel inventory alongside tense /e/ and is said to occur in open syllables as well as syllables closed by glottal stop; however, /ɛ/ is actually never found to contrast with /e/ in open syllables in either native Burmese or the loanword data examined in this study. This vowel clearly appears to be an allophone of /e/ that occurs in closed syllables.

## 2 Segmental mapping in loanword adaptation

Where an English word contains a segment absent from the Burmese inventory, the segment in question is generally replaced by the closest correspondent from the Burmese inventory. With regard to consonants, the voiceless labiodental fricative /f/ is almost invariably substituted for by the voiceless aspirated bilabial stop /p<sup>h</sup>/ (cf. 1). This pattern of substitution applies regardless of whether /f/ is initial (cf. 1a-b, 1e-f) or medial (cf. 1c-d), holds for either orthographic representation (cf. 1a-d vs. 1e-g), and is the substitution of choice in online adaptation of non-words (cf. 1h).<sup>2</sup>

- (1) Substitution of Burmese /p<sup>h</sup>/ for English /f/ in loanword adaptations
- |    |             |   |                           |    |        |   |                        |
|----|-------------|---|---------------------------|----|--------|---|------------------------|
| a. | feeling     | > | [p <sup>h</sup> i.lĩ]    | b. | film   | > | [p <sup>h</sup> ə.lĩ] |
| c. | coffee      | > | [kə.p <sup>h</sup> i]     | d. | rifle  | > | [rài.p <sup>h</sup> è] |
| e. | Philippines | > | [p <sup>h</sup> ilɪ?pàĩ] | f. | phone  | > | [p <sup>h</sup> óũ]   |
| g. | Sphinx      | > | [sə.p <sup>h</sup> ɪ̃]    | h. | ‘fote’ | > | [p <sup>h</sup> oũ?   |

The voiced labiodental fricative /v/ is usually replaced by a voiced bilabial stop /b/ (cf. 2c-f), which sometimes occurs in a cluster with the labial velar glide /w/ preceding /i/ (cf. 2a-b). Note that there is no similarly restricted distribution of /bw/ in native Burmese. Instead, the complex onset substitution strikes a sort of phonological compromise, essentially “breaking” the fricative into segments lying on either side of it on the sonority hierarchy: /b/ is less sonorous and reflects the obstruency of the fricative, while /w/ is more sonorous and reflects the continuancy of the fricative. In older borrowings, /v/ is replaced by /w/ alone (cf. 2g-h).<sup>3</sup>

- (2) Substitution of Burmese /b, w/ for English /v/ in loanword adaptations
- |    |          |   |                |    |            |   |                  |
|----|----------|---|----------------|----|------------|---|------------------|
| a. | video    | > | [b(w)ì.dì.jə]  | b. | T.V.       | > | [tìb(w)ì]        |
| c. | Harvard  | > | [há.bʌʔ]       | d. | Chevy      | > | [tʰèbì]          |
| e. | David    | > | [déi.brʔ]      | f. | university | > | [jù.nì.bà.sì.tì] |
| g. | Victoria | > | [wì.tòu.rì.jà] | h. | November   | > | [nòu.wì̃.bà]     |

The voiced palato-alveolar fricative /ʒ/ is consistently devoiced to /ʃ/ (cf. 3a-d).

<sup>2</sup> The only apparent exception is the word *conference*, which comes out as [kũ̃.pə.rĩ̃] according to Win (1998). This isolated instance of /p/-substitution may be related to the fact that /f/ here is surrounded by consonants, albeit sonorants, on either side (cf. /kɒnfrəns/), which might have the effect of masking or shortening the duration of the lower-frequency noise typical of /f/.

<sup>3</sup> A couple of different facts suggest that (2g-h) are older borrowings: the anomalous final creaky tones in (2g), and the class of words to which (2h) belongs – namely, words for months of the year, which generally show different patterns of segmental substitution than the majority of words in the corpus (Chang 2003).

As for tones in loanword adaptations, Wheatley (1987: 836) observes that “the assignment of tones in the process is unpredictable”. This statement is not really true of the laryngealized tones (whose occurrence is largely predictable, as detailed below), but is true of the low and high tones (whose occurrence is not neatly correlated with, e.g., stress – see Chang 2003 for further discussion).

## (3) Substitution of Burmese /ʃ/ for English /z/ in loanword adaptations

- |              |   |                 |               |   |                    |
|--------------|---|-----------------|---------------|---|--------------------|
| a. Indonesia | > | [ʔĩ̃.dòù.ní.ʃá] | b. Malaysia   | > | [mə.léí.ʃá]        |
| c. Asia      | > | [ʔà.ʃá]         | d. television | > | [tè.lì.bè.ʃĩ̃] (W) |

Finally, the English rhotic /r/ (typically realized as an alveolar approximant [ɹ]) is either mapped to the palatal glide /j/ (cf. 4a-f) in older adaptations, or mapped to the alveolar flap /r/ (cf. 4g-l) in newer adaptations. There is no apparent conditioning environment for these particular variants, and several words can occur with either.

## (4) Substitution of Burmese /j, r/ for English /r/ in loanword adaptations

- |             |   |                 |             |   |                         |
|-------------|---|-----------------|-------------|---|-------------------------|
| a. radio    | > | [jèì.dì.jòù]    | b. rum      | > | [jà̃]                   |
| c. Russia   | > | [jy.ʃá]         | d. crown    | > | [kə.jáú̃] (W)           |
| e. April    | > | [ʔèì.pjì]       | f. Andrew   | > | [ʔĩ̃.də.jú]             |
| g. rubber   | > | [rà̃.bà]        | h. rifle    | > | [rà̃̃.p <sup>h</sup> è] |
| i. steering | > | [sə.tì.jà.rà̃̃] | j. director | > | [dà.raiʔ.tà]            |
| k. drum     | > | [də.rà̃̃]       | l. brake    | > | [bə.reiʔ]               |

With regard to vowels, the low front vowel /æ/ is replaced by /ɛʔ/ (i.e. /e/ with glottal tone, cf. 5a-b), while the diphthong /ɔi/ is replaced by the sequence /wãĩ/, which always comes out nasalized even in the absence of a nasal in the input (cf. 5c-d).

## (5) Substitution of Burmese vowels for English vowels: /æ/ &gt; /ɛʔ/; /ɔi/ &gt; /wãĩ/

- |         |   |         |            |   |               |
|---------|---|---------|------------|---|---------------|
| a. Jack | > | [dʒɛʔ]  | b. captain | > | [kɛʔ.pə.tèĩ̃] |
| c. boy  | > | [bwãĩ̃] | d. Joy     | > | [dʒwãĩ̃]      |

The substitutions exemplified in (1)-(5) are the major areas where an English segment is mapped to a significantly different Burmese segment. The rest of the English-to-Burmese segment mappings are fairly straightforward. English voiceless plosives generally correspond to Burmese voiceless unaspirated plosives (cf. 6a,c,e), while English voiceless affricates go to Burmese voiceless aspirated affricates (cf. 6g). English voiceless fricatives are mapped to Burmese voiceless fricatives (cf. 6l,n), with English /s/ going to Burmese aspirated /s<sup>h</sup>/ before most unreduced vowels (cf. 6k). English voiced obstruents generally correspond to Burmese voiced obstruents (cf. 6b,d,f,h,j,m). Nasals (cf. 7a-b), laterals (cf. 7c), and glides (cf. 7d-f) remain essentially unchanged.

## (6) Mapping of English obstruents to Burmese obstruents

a. Poland	>	[pòù.là̃]	b. bomb	>	[bóú̃]
c. tire	>	[tà.jà]	d. dollar	>	[dò.là]
e. king	>	[kí̃]	f. guitar	>	[gì.tà]
g. chocolate	>	[tʰó.kə.léʔ]	h. Germany	>	[dʒà.mə.nì]
i. Ethiopia	>	[ʔì.tθì.jó.pí.já]	j. Netherlands	>	[nè.ðà.là̃]
k. size	>	[sʰaiʔ]	l. stage show	>	[sə.teiʔ.ʃóú]
m. Mazda	>	[mà.zə.dà]	n. hamburger	>	[hà̃.bà.gà]

## (7) Mapping of English sonorants to Burmese sonorants

a. May	>	[mèi]	b. national	>	[nèi.ʃí̃.nè]
c. liberty	>	[li.bà.tì]/[lè.bà.tì]	d. wine	>	[wàĩ]
e. queen	>	[kwí̃]	f. Toyota	>	[tòù.jòù.tà]

As for the rest of the vowels, English tense vowels generally correspond to phonetically non-short Burmese vowels – that is, vowels with non-short tones (cf. §1.1.1, Fig. 3). These may be tense monophthongs (cf. 8a-b) or tense diphthongs (cf. 8c-d).

## (8) Mapping of English tense vowels to non-short Burmese vowels

a. CD	>	[sì.dì]	b. university	>	[jù.nì.bà.sì.tì]
c. B.A.	>	[bì.ʔèi]	d. Coca-Cola	>	[kòù.kà.kòù.là]

On the other hand, English lax vowels are represented either by phonetically short or phonetically non-short Burmese vowels. Lax vowels followed by a nasal coda are mapped to phonetically non-short vowels (cf. 9b,h), as are the longer lax vowels /ɑ, ɔ/ (cf. 9i-j). When not followed by a nasal coda, the lax vowels /ɪ, ε, æ, ʌ, ʊ/ are sometimes mapped to phonetically non-short vowels (cf. 9a,c), but more often they are mapped to phonetically short vowels – typically those with glottal tone, which has the effect of laxing/centralizing the host vowel (cf. 9b,d,e,f,g).

## (9) Mapping of English lax vowels to short or non-short Burmese vowels

a. cigarette	>	[sí.kə.réʔ]	b. Living Color	>	[lɪʔ.bí̃.kà.là]
c. sweater	>	[sʰwè.tà]	d. B.Sc.	>	[bì.ʔéʔ.sì]
e. jacket	>	[dʒéʔ.kéʔ]	f. ‘vood’ (/ʊ/)	>	[bʊʔ]
g. bus + car	>	[bʌʔ.sə.ká]	h. number	>	[nà̃.bʌʔ]
i. car	>	[ká]	j. Johnny	>	[dʒò.nì]

The low diphthongs /ai, au/ retain essentially the same quality (cf. 4d, 6k, 7d), while final schwa is always turned into a full vowel, whether in an open syllable (e.g. 2g, 3a-c, 6i,m, 7f, 8d) or a closed syllable (e.g. 2c, 6a,j).

### 3 The treatment of marked structures

#### 3.1 Coda consonants

In the previous section, several patterns of English-to-Burmese segment mappings were laid out. The vowel mappings apply quite generally, but the consonant mappings are mostly restricted to onset position; the treatment of coda consonants differs greatly from the treatment of onset consonants shown above. Coda obstruents, for example, are consistently debuccalized to the glottal stop occurring with glottal tone (cf. 10); they are almost never salvaged via vowel epenthesis.

(10) Adaptation of English coda obstruents with Burmese glottal tone

a.	make-up	>	[meiʔ.kʌʔ]	b.	September	>	[sɛʔ.tĩ̃.bà]
c.	Tibet	>	[t̃i.bɛʔ]	d.	cigarette	>	[sí.kə.rɛʔ]
e.	cake	>	[keiʔ]	f.	Jack	>	[dʒɛʔ]
g.	club	>	[kə.lʌʔ]	h.	card	>	[kaʔ]
i.	plague	>	[pə.leiʔ]	j.	March	>	[maʔ]
k.	clutch	>	[kə.lʌʔ]	l.	college	>	[kɔ̃.leiʔ]
m.	police	>	[pə.leiʔ]	n.	gas	>	[gɛʔ]
o.	size	>	[s <sup>h</sup> aiʔ]	p.	English	>	[ʔĩ̃.gə.leiʔ]
q.	Joseph	>	[dʒóú.s <sup>h</sup> ɛʔ]	r.	Elizabeth	>	[ʔì.lɪʔ.zə.bɛʔ]

This debuccalization occurs regardless of voicing, with both voiced and voiceless segments being debuccalized (cf. 10a-f vs. 10g-i); regardless of place of articulation, with bilabials (cf. 10a-b), alveolars (cf. 10c-d), post-alveolars (cf. 10k,l,p), and velars (cf. 10e-f) all being debuccalized; and regardless of manner of articulation, with plosives (cf. 10a-i), affricates (cf. 10j-l), and fricatives (cf. 10m-r) all being debuccalized as well. This last result is especially noteworthy because the fricatives in (10m-p) belong to the perceptually salient class of sibilants, often exempt from neutralization or deletion processes that apply to other types of foreign segments in loanword adaptation (e.g. /s/ is given special treatment in Cantonese loanword adaptation, cf. Silverman 1992).

Coda sonorants are also treated differently from onset sonorants. Coda nasals at all places of articulation are realized as nasalization on the preceding vowel, both word-medially (cf. 11a,c,e) and word-finally (cf. 11b,d,f). Coda laterals, on the other hand, are simply deleted (cf. 12).<sup>4</sup>

<sup>4</sup> As for coda rhotics, the history of British colonial rule in Burma/Myanmar suggests that the variety of English in closest contact with Burmese was a dialect of British English, in which case coda rhotics were most likely absent in the input to loanword adaptation.

## (11) Adaptation of English coda nasals with Burmese nasal vowels

- |              |   |             |            |   |                         |
|--------------|---|-------------|------------|---|-------------------------|
| a. champagne | > | [ʃã̃.péĩ]  | b. rum     | > | [jã̃]                   |
| c. auntie    | > | [ʔã̃.tĩ]   | d. Spain   | > | [sə.pèĩ]               |
| e. Singapore | > | [sĩ.gà.pù] | f. feeling | > | [p <sup>h</sup> ĩ.lĩ] |

## (12) Deletion of English coda laterals

- |           |   |           |            |   |              |
|-----------|---|-----------|------------|---|--------------|
| a. April  | > | [ʔèi.pjì] | b. e-mail  | > | [ʔí.méi]     |
| c. Nicole | > | [nĩ.kóú] | d. bicycle | > | [bàĩ.sə.kè] |

**3.2 Consonant clusters**

The differential treatment of codas and onsets illustrated in the previous section is reflected in a similar dichotomy between coda cluster resolution and onset cluster resolution. Consonant clusters in onset position are broken up via schwa epenthesis (cf. 13), while consonant clusters in coda position are simplified, like singleton codas, by debuccalization and deletion (cf. 14).

## (13) Resolution of onset clusters via vowel epenthesis

- |           |   |                  |            |   |              |
|-----------|---|------------------|------------|---|--------------|
| a. glider | > | [gə.laĩ.ðà] (G) | b. England | > | [ʔĩ.gə.lã̃] |
| c. Sprite | > | [sə.pə.jaĩ]     | d. disco   | > | [dɪ̃.sə.kòù] |

## (14) Resolution of coda clusters via debuccalization and deletion

- |             |   |           |                |   |                    |
|-------------|---|-----------|----------------|---|--------------------|
| a. August   | > | [ʔð.goũ] | b. Quaker Oats | > | [kwèĩ.kà.ʔoũ]    |
| c. golf     | > | [gaũ]    | d. Egypt       | > | [ʔĩ.dʒĩ]         |
| e. 'lasked' | > | [lã]     | f. Charles     | > | [t <sup>h</sup> á] |

Onset clusters that are permitted in Burmese (i.e. certain stop-glide clusters) are adapted faithfully with no epenthesis into the cluster (cf. 7e, 9c, 14b).

**4 Clarifying the status of distributional gaps**

In §1.1.2, several phonotactic gaps in Burmese were identified that seemed like they could simply be accidental. For instance, only three of the five Burmese monophthongs have nasal counterparts; /e, ɔ/ do not occur nasalized. Why should this be? It is not possible to conclude on the basis of this static pattern that there is a constraint against nasal mid vowels since there is no way to tell whether this distribution is the result of a systematic ban or a historical accident. On the other hand, loanword data help adjudicate between these two possibilities. As seen in (15), English words containing sequences of /ɛ/ or /ɔ/ and a coda nasal are altered in a variety of ways instead of being mapped to /ẽ/ or /õ/, indicating that a constraint against nasal mid vowels is active in the grammar. The gap is systematic and causes the vowel to be raised (cf. 15a-c) or diphthongized (cf. 15d).

## (15) Avoidance of nasal mid vowels in loanword adaptations

- |             |   |              |             |   |                      |
|-------------|---|--------------|-------------|---|----------------------|
| a. November | > | [nòù.wĩ̃.bà] | b. December | > | [dì.zĩ̃.bà]          |
| c. John     | > | [dʒũ̃]       | d. form     | > | [p <sup>h</sup> àũ̃] |

The low diphthongs provide another example of this sort of distributional gap. While the mid diphthongs /ei, ou/ are allowed in open syllables, the low diphthongs /ai, au/ only occur with coda glottal stop. There is no clear phonetic reason for this kind of distribution, so it could simply be the accidental result of layers of historical change (its origins are in fact historical, cf. Wheatley 1987). Again, however, this gap turns out to be systematic and the result of constraints whose effects can be plainly seen in loanword adaptations. In order to avoid a low oral diphthong in an open syllable, either a coda glottal stop is inserted (cf. 16a-c) or the diphthong is nasalized (cf. 16d-j).

## (16) Avoidance of low oral diphthongs in open syllables in loanword adaptations

- |            |   |                  |               |   |                                  |
|------------|---|------------------|---------------|---|----------------------------------|
| a. glider  | > | [gə.laiʔ.dà] (G) | b. typhoon    | > | [taiʔ.p <sup>h</sup> ú̃] (G)     |
| c. Michael | > | [maiʔ.kè]        | d. cyclone    | > | [s <sup>h</sup> àĩ.kə.lóú̃] (G) |
| e. bicycle | > | [bàĩ.sə.kè]     | f. Diana      | > | [dàĩ.jà.nà]                     |
| g. diary   | > | [dàĩ.jà.jì]     | h. Thai(land) | > | [t <sup>h</sup> áĩ]             |
| i. style   | > | [sə.tàĩ]        | j. powder     | > | [pàũ̃.dà]                        |

Glottal stop codas are yet another example. They have an asymmetrical distribution, co-occurring with high vowels, low vowels, and the mid front vowel /e/, but never with the mid back vowel /ɔ/. Given this negative evidence, we might hypothesize that there is a constraint in the language against mid back vowels before tautosyllabic glottal stops, and this hypothesis is confirmed by positive evidence from loanword data. English words containing sequences of /ɔ/ and a coda obstruent are altered in a variety of ways rather than being mapped to ɔʔ]₆, indicating that a constraint against mid back vowels before coda glottal stop is active in the grammar. In (17a), the vowel is raised; in (17b), it is diphthongized; and in (17c-e), creaky tone is used instead of glottal tone as the strategy for adapting the coda obstruent.

## (17) Avoidance of mid back vowels before coda glottal stop in loanword adaptations

- |            |   |                     |             |   |              |
|------------|---|---------------------|-------------|---|--------------|
| a. Ford    | > | [p <sup>h</sup> ʊʔ] | b. New York | > | [nə.jú.jauʔ] |
| c. George  | > | [dʒɔ̃]              | d. Scott    | > | [sə.kɔ̃]     |
| e. hot dog | > | [hɔ̃.dɔ̃]           |             |   |              |

Finally, nasal vowels are associated with a distributional gap as well. Though they occur with low, high, and creaky tones, they never occur with glottal tone, and this phonotactic restriction is reflected in the adaptation of English words with coda clusters comprising a coda nasal and a (voiceless) coda obstruent. Since the coda nasal must be rendered with a nasal vowel, creaky tone is used instead of glottal tone to represent the coda obstruent (cf. 18), in similar fashion to the alternate adaptation strategy used to

represent coda obstruents following mid back vowels (cf. 17c-e). On the other hand, in ND(Z)]<sub>σ</sub> clusters the voiced obstruents are simply deleted (e.g. 1e, 6a,j, 13b).

(18) Avoidance of glottal tone with nasal vowels in loanword adaptations

- a. Sphinx > [sə.p<sup>h</sup>ĩ]                      b. count > [kãũ]

### 5 An Optimality-Theoretic analysis of loanword adaptation in Burmese

The phonological restrictions of Burmese that apply to the adaptation of English borrowings are simple to formalize and analyze in the constraint-based framework of Optimality Theory (henceforth, OT: Prince and Smolensky 1993/2004). The central tenet of OT is that surface outputs result from the interaction of markedness constraints against disfavored structures and faithfulness constraints against departures from the input, with the form of the ultimate output depending on how well it satisfies the most important (i.e. highest ranking) constraints in the phonology. From the loanword data presented above, we can deduce that there are several constraints against illicit structures. These markedness constraints are summarized in (19). For details on the formalisms, see Kager (1999).

(19) Markedness constraints active in loanword adaptation

- a. \***NOONSET**: ‘Syllables are not onset-less.’
- b. \***CODA[place]**: ‘Coda consonants do not have an oral place of articulation.’
- c. \***COMPLEXONSET**: ‘Onsets are not complex.’
- d. \***COMPLEXCODA**: ‘Codas are not complex.’
- e. \***Õ**: ‘Mid vowels are not nasal.’
- f. \***ai/au]**<sub>σ</sub>: ‘Low oral diphthongs do not occur in open syllables.’
- g. \***O?**]<sub>σ</sub>: ‘Mid back vowels do not occur with glottal tone.’
- h. \***Ã?**]<sub>σ</sub>: ‘Nasal vowels do not occur with glottal tone.’
- i. \***ə(C)]**<sub>PrWa</sub>: ‘Minor syllables do not occur word-finally.’

These markedness constraints are counterbalanced by a set of faithfulness constraints penalizing alterations to the input. These faithfulness constraints are summarized in (20) and fall into three main families of constraints: DEP(ENDING), militating against additions to the input; MAX(MIMIZE), militating against subtractions from the input; and IDENT(ITY), militating against featural changes to the input.



- (20) Faithfulness constraints active in loanword adaptation
- DEP**: ‘Output segments have input correspondents (i.e. no epenthesis).’
  - MAX-ONSET**: ‘Input onsets have output correspondents.’
  - MAX-CODA**: ‘Input codas have output correspondents.’
  - MAX[nasal]**: ‘An input [+nasal] feature corresponds to some output [+nasal] feature (i.e. no denasalization).’
  - IDENT[tense]**: ‘Tense vowels stay tense; lax vowels stay lax.’
  - IDENT[place]**: ‘Input segments keep the same specification for [place] in the output (i.e. no debuccalization, no changing of place).’

In general, the markedness constraints dominate the faithfulness constraints (M » F), resulting in changes to the marked structure in the input. For example, it is worse to have a syllable without an onset (cf. 19a) than it is to insert a new segment into the output (cf. 20a), which leads to the winning output candidate having a glottal stop onset in (21).

(21)	/bi.ɛs.si/ ‘B.Sc.’	*NOONSET	DEP
a.	bì.ɛʔ.sì	*!	
☞ b.	bì.ʔɛʔ.sì		*

Furthermore, it is worse for coda consonants to have an oral place of articulation (cf. 19b) than it is to delete the place specification of an input segment (cf. 20f), which leads to another possible output for /bi.ɛs.si/ ‘B.Sc.’ losing in (22).

(22)	/bi.ɛs.si/ ‘B.Sc.’	*CODA[place]	IDENT[place]
a.	bì.ʔɛs.sì	*!	
☞ b.	bì.ʔɛʔ.sì		*

Consonant clusters are always repaired, suggesting that constraints (19c-d) are undominated.<sup>5</sup> Onset clusters in particular are repaired by epenthesis rather than deletion. In other words, it is worse to delete onset segments to resolve a cluster (cf. 20b) than it is to insert vowels to save onset segments, which leads to the ranking seen in (23).

<sup>5</sup> This is not exactly right, as certain stop-glide clusters are in fact allowed (cf. §1.1.2). The ban in (19c) is analyzed as more general here only to simplify the OT formalization.

(23)	/glai.də/ 'glider'	*COMPLEXONSET	MAX-ONSET	DEP
a.	glaiʔ.dà	*!		*
☞ b.	gə.laiʔ.dà			**
c.	laiʔ.dà		*!	*
d.	gaiʔ.dà		*!	*

On the other hand, coda clusters are resolved by deletion rather than epenthesis. It is worse to insert vowels to save coda segments than it is to delete coda segments (cf. 20c). This ranking is shown in (24).

(24)	/i.dʒiʔt/ 'Egypt'	*COMPLEXCODA	DEP	MAX-CODA
a.	ʔi.dʒiʔʔ	*	*!	
b.	ʔi.dʒi.pə.tə		**!*	
c.	ʔi.dʒi.pə		**!	*
☞ d.	ʔi.dʒiʔ		*	*
e.	ʔi.dʒi		*	**!

Returning to the case of *glider* in (23), the constraint  $*ai/au]_{\sigma}$  and the constraint  $*\emptyset(C)]_{PrWd}$  prevent other possible outputs from surfacing. It is worse to have a low oral diphthong in an open syllable or a minor syllable at the end of a word than it is to insert (coda) segments or to change the place of a vowel (cf. 25-26).

(25)	/glai.də/ 'glider'	*ai/au] <sub>σ</sub>	DEP
a.	gə.lai.dà	*!	
☞ b.	gə.laiʔ.dà		*

(26)	/glai.də/ 'glider'	*∅(C)] <sub>PrWd</sub>	IDENT[place]
a.	gə.laiʔ.də	*!	
☞ b.	gə.laiʔ.dà		*

Constraint (19h) against nasal vowels with glottal tone appears to be undominated as well. It is worse for this structure to appear in the output than it is to delete the input coda obstruent ( $*\tilde{A}ʔ]_{\sigma} \gg \text{MAX-CODA}$ ), and deletion of the coda obstruent is preferred as the repair to this structure over denasalization ( $\text{MAX}[\text{nasal}] \gg \text{MAX-CODA}$ ), cf. (27).

(27)	/kaunt/ 'count'	* $\tilde{A}?$ ] <sub><math>\sigma</math></sub>	MAX[nasal]	MAX-CODA
a.	kãũ?	*!		*
b.	kau?		*!	*
☞ c.	kãũ			**

However, given that the correspondent of the coda obstruent is deleted, there is actually a choice among three tones for the vowel. In this case, creaky tone is usually chosen over high or low tone, since the perceptual distance between an English ANT] <sub>$\sigma$</sub>  sequence (where the sonorant portion is likely to be significantly laryngealized in anticipation of the final voiceless closure) and a Burmese nasal vowel with creaky tone is smaller than that between the same sequence and a Burmese nasal vowel with high or low tone. In OT these relationships of perceptual similarity are encoded in terms of intrinsically ranked correspondence constraints pairing segments or structures that are perceptually more vs. less similar to each other (cf. Steriade 2001). A subset of the correspondence constraints that are relevant in the above case is shown in (28).

- (28) Subset of correspondence constraints responsible for adaptation of English ANT] <sub>$\sigma$</sub>
- \*CORR(ANT] <sub>$\sigma$</sub> ~ $\tilde{A}$ ): 'A vowel + nasal + voiceless obstruent sequence in the input does not correspond to a nasal vowel with creaky tone in the output.'
  - \*CORR(ANT] <sub>$\sigma$</sub> ~ $\tilde{A}$ ): 'A vowel + nasal + voiceless obstruent sequence in the input does not correspond to a nasal vowel with high tone in the output.'
  - \*CORR(ANT] <sub>$\sigma$</sub> ~ $\tilde{A}$ ): 'A vowel + nasal + voiceless obstruent sequence in the input does not correspond to a nasal vowel with low tone in the output.'

Of these three constraints, \*CORR(ANT] <sub>$\sigma$</sub> ~ $\tilde{A}$ ) is ranked lowest, since the substitution of a creaky nasal vowel for ANT] <sub>$\sigma$</sub>  represents the smallest departure from the input (cf. 29).

(29)	/kaunt/ 'count'	*CORR(ANT] <sub><math>\sigma</math></sub> ~ $\tilde{A}$ )	*CORR(ANT] <sub><math>\sigma</math></sub> ~ $\tilde{A}$ )	*CORR(ANT] <sub><math>\sigma</math></sub> ~ $\tilde{A}$ )
☞ a.	kãũ			*
b.	káú~	*!		
c.	kàù~		*!	

As for the treatment of mid vowels, formalized in (19e) and (19g) are constraints against nasal mid vowels and mid back vowels before coda glottal stop, structures which are both illicit in Burmese. Loanword data reveal that preserving either of these structures is worse than altering the place of the input vowel (cf. 30-31).

(30)	/dʒɔn/ ‘John’	* $\tilde{O}$	IDENT[place]
	a. dʒɔ̃	*!	
☞	b. dʒò		*

(31)	/fɔ:d/ ‘Ford’	* $O?$ <sub>σ</sub>	IDENT[place]
	a. p <sup>h</sup> ɔʔ	*!	
☞	b. p <sup>h</sup> uʔ		*

However, changing the quality of the vowel is not the only possible repair for the configuration of a mid back vowel before coda glottal stop; deletion of the coda is also attested. Thus, fixing this structure also appears to be more important than preserving coda segments (\* $O?$ <sub>σ</sub> » MAX-CODA). In the present analysis, this variation in repair strategies is modeled by keeping MAX-CODA and IDENT[place] unranked with respect to each other. As shown in (32), this allows both the candidate with coda deletion and the candidate with vowel quality changes to emerge as possible winners.

(32)	/skɔt/ ‘Scott’	* $O?$ <sub>σ</sub>	MAX-CODA	IDENT[place]
	a. sə.kɔʔ	*!		
☞	b. sə.kɔ		*	
☞	c. sə.kuʔ			*

What determines which of these candidates ultimately wins, then, is the ranking of perceptually based correspondence constraints similar to those in (28). In the case of *Ford*, [uʔ] is apparently a closer match for the rhyme than [ɔ] (\*CORR([ɔ:d]~[ɔ]) » \*CORR([ɔ:d]~[uʔ])). On the other hand, in the case of *Scott*, [ɔ] is a closer match for the rhyme than [uʔ] (\*CORR([ɔt]~[uʔ]) » \*CORR([ɔt]~[ɔ])).

Vowel quality is quite faithfully adapted otherwise. Lax vowel quality is maintained, even though doing so often requires inserting new segments not present in the input (i.e. IDENT[tense] » DEP, cf. 33).

(33)	/li.vɪŋ.kə.lə/ ‘Living Color’	IDENT[tense]	DEP
	a. lí.bí̃.kà.là	*!	
☞	b. líʔ.bí̃.kà.là		*

In addition, tense vowel quality is maintained in obstruent-final syllables, though it is lax in nasal-final syllables. In other words, maintaining vowel tenseness (cf. 20e) is more important than representing an input (obstruent) coda, but less important than representing input nasality (cf. 20d): MAX[nasal] » IDENT[tense] » MAX-CODA, cf. (34)-(35).

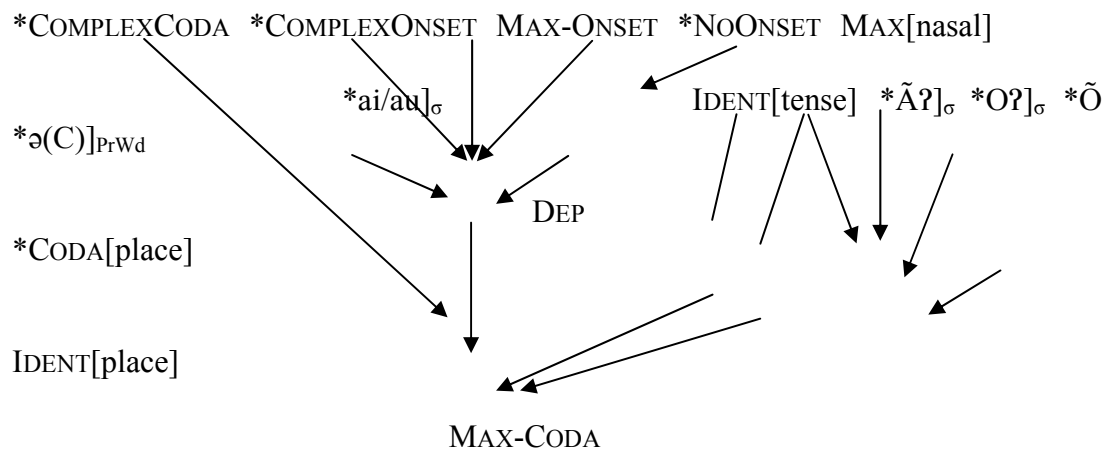
(34)	/kwin/ ‘queen’	MAX[nasal]	IDENT[tense]
a.	kwí	*!	
b.	kwí̃		*
c.	kwiʔ	*!	*

(35)	/vit/ ‘veet’ (non-word)	IDENT[tense]	MAX-CODA
a.	bᵊ		*
b.	biʔ	*!	

The choice of creaky tone in (35) is again modeled with a set of perceptually based correspondence constraints (e.g. \*CORR(AT]<sub>σ</sub>~Á), \*CORR(AT]<sub>σ</sub>~À) » \*CORR(AT]<sub>σ</sub>~A)). A full account of these correspondence constraints is beyond the scope of this paper, but as noted above, they play a critical role in narrowing down the pool of possible outputs to the optimal candidate that ultimately surfaces.

Abstracting away from these correspondence constraints, the constraint rankings shown in the above tableaux can be summarized as in (36). At the center of this network of constraints is the ranking MAX-ONSET » DEP » MAX-CODA, which captures the fact that onset segments are saved (by epenthesis when they occur in clusters), while coda segments are not – a dichotomy that reflects the typically stronger cues for consonants in onset position as compared to coda position.

(36) Hierarchy of markedness and faithfulness constraints (cf. 19-20)



## 6 Conclusion

The results of this survey of loanword adaptation have revealed four main patterns in accord with the observation of Wheatley (1987: 836) that loanwords in Burmese “tend to be fully adapted to Burmese segmental phonology”. First, English segments with no close counterpart in the Burmese inventory are replaced by native Burmese segments rather than being imported into the language. Second, coda obstruents translate into glottal tone or, when glottal tone is not compatible with the vowel or would change the quality of the original vowel, by creaky tone. Third, consonant clusters in syllable onsets are resolved

through vowel epenthesis, while consonant clusters in syllable codas are repaired through consonant deletion. Finally, phonotactic gaps native to Burmese are maintained in loanwords via a number of different strategies even when they do not have clear phonetic motivations. Thus, the data in the present study indicate that the adaptation of English loanwords in Burmese is severely restricted by the constraints of Burmese phonology.

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# A LAYER OF DONGSONIAN VOCABULARY IN VIETNAMESE

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## 0 Abstract

The present paper aims at demonstrating by means of linguistic evidence how the pestle used to husk rice was invented by the Dongsonians, the ancestors of the Vietnamese. That innovation spread in Southeast Asia as far as India, through the Austroasiatic continuum.<sup>1</sup>

## 1 Background

The place of the Vietnamese language (or Viet in its shortened form) in the Asian phylogeny has varied significantly since the first research on the topic was carried out. After being classified among the Chinese or the Tai-Kadai languages, it was finally bound to the Mon-Khmer family [for historical insight see Alves 2006] and more widely to the Austroasiatic family. The discovery (scientifically speaking) of conservative languages related to Vietnamese, made it possible to elaborate a Viet-Muong group (henceforth VM), or Vietic, and to reconstruct a Proto Viet-Muong (henceforth PVM).

Some authors shed light on the close lexical relationship between the VM and the Katuic groups. Historically, it is highly probable that the VM group is the result of an ancient expansion of a form of Katuic coming from Northeast Thailand, which would have covered an Austroasiatic substratum localized in the North Vietnam (corresponding to the ancient *Giao Chi* and *Cru Chân*).

Vietnamese and Mường, its offshoot, include vocabulary and phonetic features which differentiate them from other languages of the same group. The subject covered here relates precisely to Vietnamese vocabulary with the initial *x*- supposed to belong to that particular substratum.

## 2 Languages and dialects of the Viet-Muong (Vietic) group

A simple and practical classification of the VM is presented below.

- 1- *Maleng* : Maleng proper, Malang, Pakatan, Măliêng, Maleng Brô, Kha Phong (or Maleng Kari).
- 2- *Arem* : Arem (or Cmrau/Cmbrau).
- 3- *Chút* : Sách (or Chút, or Salang), Rục.
- 4- *Aheu* : Thavung, Phôn Soung, Sô (or Sô Thavung).
- 5- *Pong* : Pong (or Phong), Toum, Liha, Đan-lai.
- 6- *Thổ* : Làng Lữ, Cuối Châm, Mọn.
- 7- *Mường* : Mường (or Mọl/Mọn); comprises many dialects of which, Mường Đăm, Mường Khói and Mường Tân Phong and Nguồn.
- 8- *Viet* : written standard Vietnamese and its dialects.

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<sup>1</sup> I cordially thank Frédéric Pain (Catholic University in Leuven, Belgium), a linguist specialist in Southeast Asia, who read the text over with the greatest attention.



### 3 PVM initial consonants: an outline

PVM comprised monosyllables CV(C) and sesquisyllables C-CV(C). The PVM phonemes (bold) and their modern Vietnamese reflexes (in italic and *quốc ngữ* spelling) are tabled below.

<b>p<sup>h</sup></b> <i>ph</i>	<b>t<sup>h</sup></b> <i>th</i>	<b>s</b> <i>t~r</i>		<b>k<sup>h</sup></b> <i>kh</i>	<b>h</b> <i>h</i>
<b>p b</b> <i>b~v</i>	<b>t d</b> <i>đ~d</i>	<b>c ʃ</b> <i>ch~gi</i>	<b>tʃ</b> <i>x~gi</i>	<b>k g</b> <i>c/k~g/gh</i>	<b>ʔ</b> <i>#</i>
<b>ɓ</b> <i>m</i>	<b>ɗ</b> <i>n</i>	<b>f</b> <i>nh</i>			
<b>m</b> <i>m</i>	<b>n</b> <i>n</i>	<b>ɲ</b> <i>nh</i>		<b>ŋ</b> <i>ng/ngh</i>	
<b>v</b> <i>v</i>		<b>j</b> <i>d</i>			
	<b>r</b> <i>r</i>	<b>l</b> <i>l</i>			

The aspirated plosives **p<sup>h</sup> t<sup>h</sup> k<sup>h</sup>** are not frequent and must have evolved from clusters of the type /*plos.* + **h**/.

Obstruents **p-b**, **t-d**, **c-ʃ**, **s**, **tʃ** and **k-g** underwent two types of phonetic changes, (i) normal changes of initials in monosyllables, (ii) spirantization of medials in sesquisyllables [Ferlus 1982]. For example, the pair of initials **p-b** is on the whole represented now by *b~v* (*b* in monosyllables and *v* in ancient sesquisyllables). It must be noticed that, in the 17th century, *v* was rendered by *ɸ/ɸě* in Alexandre de Rhodes' dictionary [1651].

### 4 The PVM initial tʃ and its place in Mon-Khmer

PVM **tʃ** (Viet. *x*) while not frequent is attested in significant vocabulary. That proto phoneme is only attested in the northern branch (Viet + Mường). The comparison shows some correspondences between Viet *x*- and Khmu **c-** [Ferlus 1994]:

Vietnamese	Khmu
<i>xum</i> 'to get together'	<b>cu:m</b> 'classifier for groups'
<i>xuong</i> 'bone'	<b>cʔaŋ</b> 'bone'
<i>xoi</i> 'to dig, to sow, to pierce'	<b>cmɔ:l</b> 'to dig, to sow in holes'
<i>xẻ</i> 'to split'	<b>ceh</b> 'to square off'

To support the correspondences put forward above, it should be added that Khmu underwent the following chain of phonetic changes:

*s > <b>h</b>	*sa:l > <b>ha:l</b>	'to peel' (Phong Kenieng <b>sa:l</b> )
-- *c > <b>s</b>	*cɔʔ > <b>sɔʔ</b>	'dog' (Viet <i>chó</i> )
-- -- *tʃ > <b>c</b>	*tʃu:m > <b>cu:m</b>	'classifier for groups' (Viet <i>xum</i> )

Apart from those correspondences, Khmu also attests many other examples of words with the initial **c-**: **cit** 'grass', **cat** 'sour', **caŋ** 'bitter', **cuʔ** 'to want, be sick', **cam** 'to weave a piece of thatch', **crna:m** 'a piece of thatch', ...

In Sino-Vietnamese, *x-* rendered the Middle Chinese \*tɕʰ [Ferlus 1992].

The place of \*tʃ in Viet and Khmu raises some problems. That proto phoneme is poorly represented if compared to the major units in the system, but, nevertheless, it exists in basic vocabulary. As far as we are concerned, \*tʃ is a residual phoneme originating in a North-Austroasiatic substratum partially preserved in Khmu and Vietnamese.

## 5 Morphological pairs of words (verb in *x-*, dérivative in *ch-*)

5.1 One of the most remarkable characteristics of the Vietnamese lexicon is to possess a short list of five morphological pairs made up of a verbal base in *x-* associated with a derivative in *ch-* with an instrumental meaning.

Verbal base	Nominal derivative
- <i>xáy</i> ‘dig, hollow, excavate’ / <i>xay</i> ‘grind, husk (rice)’	<i>chày</i> ‘pestle’
- <i>xeo</i> ‘lift up with a crowbar’ ‘to propel (a boat) with a long pole’	<i>chèo</i> ‘oar’
- <i>xum</i> ‘gather, form groups’ / <i>xúm</i> ‘gather, form groups’	<i>chùm</i> ‘bunch, cluster’ <i>chụm</i> ‘assemble, gather’
- <i>xĩa</i> ‘pick, jab, to put on a stip’	<i>chĩa</i> ‘pitchfork, trident’
- <i>xỏ</i> ‘sting, pierce’	<i>chõ</i> ‘pan to cook sticky rice’

How could a nominal derivative in *ch-* (PVM ʃ), with a low serie tone, derive from a verbal base in *x-* (PVM tʃ), with a high serie tone? Correspondences between the attestation of ‘pestle’ among the VM languages suggest an old **-r-** infix:

Mường	k <sup>h</sup> aj <sup>2</sup>
Cuối Chặm	re: <sup>1</sup>
Sách	ri: <sup>1</sup>
Arem	<sup>n</sup> ri:

Another example can be found in Nguồn (a Mường dialect whose speakers were resettled in Quảng Bình): to the Viet *chõ* ‘pan to cook sticky rice’ corresponds the Nguồn rɔ:<sup>6</sup>.

The change /tʃ+ r/> ʃ is necessary to understand the relation between *x-* and *ch-* in the morphological pairs. That change is an isolate specific to Vietnamese ; in the other VM languages it evolved like current clusters /plos.+ r/ whose some examples are given below:

PVM	Proto Pong	Rục	Mường	Viet	
p-ri:	p <sup>h</sup> ri: <sup>1</sup>	pri: <sup>1</sup>	k <sup>h</sup> aj <sup>1</sup>	<i>say</i>	‘be drunk’
k-ro:ŋ <sup>2</sup>	k <sup>h</sup> ro:ŋ <sup>3</sup>	kro:ŋ <sup>3</sup>	k <sup>h</sup> o:ŋ <sup>3</sup>	<i>sống</i>	‘ridge, back’
k-rap	k <sup>h</sup> rap: <sup>7</sup>	k <sup>h</sup> rap: <sup>7</sup>	k <sup>h</sup> a:p <sup>7</sup>	<i>sáp</i>	‘wax’
ʃ-ru:	k <sup>h</sup> ru: <sup>2</sup>	cəru: <sup>1</sup>	k <sup>h</sup> u: <sup>1</sup>	<i>sâu</i>	‘deep’

5.2 The phonetic history of Lao attests a similar change which supports the change /tʃ+ r/> ʃ in Viet. Proto Tai possessed the two voiced palatal initials \*ʃ and \*z which respectively evolved into c<sup>h</sup>- (ʃ) and s- (ʃ or ɲ) in Thai, but merged in s- (ʃ) in Lao [Fang Kuei Li 1977]. A short list of Lao words with the initial s (<\*z) underwent the change /plos.+ r/> z, the initial of the cluster being a coronal.

**se:**<sup>A2</sup> (<\*ze:) ទេ ‘river’ < Old Khmer \*sre: ‘ricefield’ (through the semantic change ‘ricefield’ > ‘ricefield + canal’ > ‘canal’ > ‘river’). Not represented in Thai.

**saj:**<sup>A2</sup> (<\*zaj) ខ្សាច់ ‘sand’ < Old Chinese \*sCraj [C-raj], *shā* 沙 [Baxter 1992: 785]. Thai ทราบ.

**saj:**<sup>A2</sup> (<\*zaj) ខ្សាច់ ‘hog deer (*Cervus porcinus*)’ < Old Mon *drāy*, Modern Mon *drāy* **kràj**. Thai ทราบ.

**so:**<sup>A2</sup> (<\*zo:) ខ្សែ ‘two-stringed violin’ < cf. Modern Mon *draw* **krò**. Thai ฆอ.

**saj:**<sup>A2</sup> (<\*zaj) ខ្សែ ‘banyan tree’ < Old Khmer *jrai*, Modern Khmer *jrai* **crej** / Old Mon *jrey*, *jreai*. Thai ไม้ท้อ.

**5.3** The instrumental infix **-r-** can only be reconstructed after the PVM initial **tʃ**. That infix has only been detected in the North-Austroasiatic substratum of Vietnamese. In the Mon-Khmer languages of Southeast Asia, the most commonly attested infix is **-rn-** (in its full form) or **-n-** (in its reduced form). The origin of the infix **-r-** and its place in Austroasiatic morphological system are a new subject of research which will not be dealt here.

## 6 The morphological pair ‘to husk (rice) - pestle’ in PVM

<p><i>xáy</i> ‘dig, hollow, excavate’ /  <i>xay</i> ‘grind, husk (rice)’ &gt; <i>chày</i> ‘pestle’</p>
--

**6.1** PVM presents two basic verbs from which *chày* ‘pestle’ can have derived: (i) PVM **tʃe?** (*xáy*) ‘dig, hollow, excavate’ and (ii) PVM **tʃe:** (*xay*) ‘grind, husk (rice)’. The root **tʃe:**, which has a specialized meaning, must probably derive from **tʃe?**, which has a general meaning. Let’s now try to explain the phonetic change which led **tʃe?** (*xáy*) ‘dig, hollow, excavate’ to **tʃe:** (*xay*) ‘grind, husk (rice)’.

It is a well known fact in general linguistics that a repetitive action is generally expressed by a reduplication of the basic verb indicating the simple motion. We can consequently supposed the following change **tʃe?** > **tʃe?-tʃe?**. Thereafter, the reduplicate form was reduced to **tʃ-tʃe?**, which is nothing else than a structural adaptation to a sesquisyllabic constraint.

**6.2** Before going further in the explanation of phonetic changes which brought PVM to Vietnamese, it is necessary to point out some phonetic changes that affected Chinese and which occurred between the stage of Old Chinese and Middle Chinese. The formation of the Vietnamese language since its origin has been strongly influenced by some phonetic changes that affected the Chinese language. One could even say that the phonetic changes in Vietnamese are aftereffects of the phonetic changes that affected the Chinese language.

Between the final stage of Old Chinese (2nd-1st BC) and that of Middle Chinese (7th AD), a phonetic feature of tenseness developed in sesquisyllables as a consequence of the coalescence of primary tenseness of initials in each syllable. Both separate tenseness merged into one stronger tenseness. By contrast, the feature of laxness developed in monosyllables. Consequently to monosyllabization, the *tense~lax* contrast (henceforth T~L) became relevant in creating two types of syllables which most sinologists name A and B.

C-CV(C)	>	CV(C)/T	( <i>tenseness</i> )	A
CV(C)	>	CV(C)/L	( <i>laxness</i> )	B

Thereafter, the T and L features modified the apertures of the vocalic onsets, lowering in A, raising and associated with breathiness in B. That theory was developed in our two communications at the *31st and 39th International Conference on Sino-Tibetan Languages and Linguistics* [Ferlus 1998, 2006]. It should be mentioned, however, that our theory is far from being accepted in the sinologists' world.

**6.3** By the Han time, the T~L contrast in the Chinese syllables was transferred to PVM in the same context: sesquisyllables developed a *tenseness* feature, while monosyllables developed a *laxness* feature. T~L contrast on PVM, however, acted differently than on Chinese. Those rather complex changes brought us to view two stages for PVM: an Early PVM and a Late PVM (the traditional PVM). That theory was presented at the *11th Annual Meeting of the Southeast Asian Linguistic Society*, Mahidol University at Salaya, 2001 [Ferlus 2004].

In Early PVM, the tenseness on sesquisyllables caused the final -ʔ loss, creating so open syllables. Let us point out some examples illustrating those changes:

Early PVM	(Khmu)	Late PVM	Rục	Viet	
*k-maʔ	(kmaʔ)	*k-ma:	kəmæa <sup>2</sup>	mua	'rain'
*c-ruʔ	(jruʔ)	*c-ru:	cəru: <sup>1</sup>	sâu	'deep'

Concerning the vocabulary which interests us here:

*tʃeʔ>tʃ-tʃeʔ	---	*tʃ-tʃe:	---	xay	'to husk(rice)'
*tʃ-reʔ	(cn <sup>d</sup> reʔ)	*tʃ-re:	nri: <sup>2</sup>	chày	'pestle'

In monosyllables, on the other hand, the final glottal stop was preserved (the presyllabic vowel was not taken into account as a presyllable):

*əcɔʔ	(sɔʔ)	*cɔʔ	acɔ: <sup>3</sup>	chó	'dog'
*əkaʔ	(kaʔ)	*kaʔ	aka: <sup>3</sup>	cá	'fish'
*tʃeʔ	---	*tʃeʔ	---	xáy	'dig, excavate'

#### 6.4 To summarize:

\*tʃeʔ (*xáy*) 'dig, hollow, excavate'.

\*tʃeʔ > (reduplication) tʃeʔ-tʃeʔ > (sesquisyllabization) tʃ-tʃeʔ > (tenseness and loss of final -ʔ) tʃ-tʃe: > (monosyllabization) tʃe: (*xay*) 'to husk (rice)'.

\*tʃeʔ + infix -r- > tʃ-reʔ > (tenseness and loss of final -ʔ) tʃ-re: > tʃre: > (reduction) je: (*chày*) 'pestle'.

It is clear that *xay* 'to husk (rice)' is the result of an old process of reduplication of *xáy* 'dig, hollow, excavate', while *chày* derive from *xáy* by the infixation of -r-. All changes involved in the demonstrations are in conformity with the regularity of the phonetic laws.

### 7 The morphological pair ‘to husk (rice) - pestle’ in Austroasiatic

The vocabulary analyzed here comes from personal collected materials [Ferlus, Martin] and from linguists’ publications [Sidwell, Zide, Diffloth, ...] as well as of non linguists’ ones [Baradat, Skeat & Blagden]. The authors implied in works of linguistic reconstruction were conveniently not quoted.

It was quite difficult to collect the two words for ‘to husk (rice)’ and ‘pestle’, particularly when they were scattered in general studies or lexicons in which target language is placed in input. There are often ambiguities between ‘to husk’ and ‘to pound’ ; the Western authors being sometimes not accurate on those technical actions, while are so fundamental in the concerned societies.

Group/Language	‘to husk’	‘to pound’	‘pestle’
<b>VIETIC</b> [Ferlus]			
PROTO VIET-MUONG	(tʃeʔ >) tʃe:		(tʃreʔ >) ʃe:
Viet	(xáy >) xay		chây
Mường [Nguyễn VK 2002]	saj <sup>1</sup> (xay)		k <sup>h</sup> aj <sup>2</sup> (khây)
Cuối Châm	saj <sup>1</sup>		re: <sup>1</sup>
Làng Lỡ	saj <sup>1</sup>		ʃe: <sup>1</sup>
PROTO PONG		təp <sup>8</sup>	re: <sup>1</sup>
Thavung	mu: <sup>1</sup>		ahə: <sup>1</sup>
Sách	cuk <sup>7</sup>	tu:ŋ <sup>2</sup>	əri: <sup>1</sup>
Arem	tluh	tù:ŋ	<sup>n</sup> ri:
Maleng Kari	kəlu: <sup>56</sup>		səre: <sup>1</sup>
<b>KATUIC</b> [Ferlus]			
Suei		ntap	n <sup>d</sup> rè:
Ong	kloh		ndraj
Kantou	kloh		ntre:
Sô	cikloh		ntɹi:
<b>KATUIC</b> [Sidwell]			
PROTO KATUIC [2005]	kloh	tap	ʔn <sup>d</sup> ree
Souei		ntap	ntɹee
Sô/Bru	kloh		ntɹii
<b>BAHNARIC</b> [Sidwell]			
PROTO BAH. [1998]	pəh		ʔənrəj/r(ən)aj
<b>NORTH BAHNARIC</b> [Sidwell]			
PROTO NORTH BAH. [2002]	pəh		ʔəraj
Jeh	pəh <sup>T</sup>		ʔədraj <sup>T</sup>
Halang	pəh <sup>T</sup>		hədraj
Rengao	pih <sup>T</sup>		hədrii <sup>L</sup>
Sedang	pej		draj <sup>T</sup>
Bahnar	pəh		hdəj
<b>SOUTH BAHNARIC</b> [Sidwell]			
PROTO SOUTH BAH. [2000]	pəh		r-n-aj
Mnong	pəh		ne
Stieng	pəh		rənaj
Chrau	pəh		rənaj

<i>WEST BAHNARIC</i> [Ferlus]		
Laven	tpeh	ʔrej
Nhaheun		ʔre:
Brao	tveh	raj
Sapouan		araj
Lave	tveh	araj
Cheng	tveh	raj
<i>WEST BAHNARIC</i> [Sidwell, Jacques]		
PROTO WEST BAH. [2000]	təpeh	ʔraj
PROTO WEST BAH. [2003]	tʔpeh	ʔraj
Laven/Jru'	təpeh	ʔraj
Nyaheun		ʔree
Sapuan		ʔraj
<i>BOLYU</i> [Edmondson 1995]		xuɔk <sup>31</sup>
<i>MANG</i>	tə:	tuj
<i>KHMUIC</i> [Ferlus]		
Khmu	hic	cn <sup>d</sup> reʔ
Phay	k <sup>h</sup> ət	ŋgleʔ
Thin	k <sup>h</sup> ət	ŋgreʔ
Pray	k <sup>h</sup> ət	ŋgiaʔ
Lamet	peh	ntro:
Keneng	kal	kanre:
Hat	suʔ	ndra:
Khang	təpe:	he <sup>?</sup>
Kesing Mul	bək	hagè:
<i>PALAUNGIC</i> [Ferlus]		
daʔa:k	aduh	ŋkrej
taʔa:ŋ	dəh	gre:
raʔa:ŋ	dih	gləŋ achom
<i>WAIC</i> [Ferlus]		
pəzaək	tah	griʔ
va <sup>?</sup>	kujh	ŋiʔ
Sem	taoh	gliʔ
Phalək	dəh	ŋiʔ
Samtao	tih	nreʔ
lavia <sup>?</sup>	blouh	k <sup>h</sup> ou <sup>?</sup>
La-ooop	toh	grei <sup>?</sup>
Lawa	pouh	k <sup>h</sup> o: toh
PROTO WA [Diffloth 1980]	toh	ŋriʔ
<i>RIANG</i> [Luce 1965]		rèʔ
<i>DANAW</i> [Luce 1965]		réʔ
<i>MONIC</i>		
Môn [Shorto 1962]	yàik [jàc]	ri <sup>?</sup>
	yāk	ri
Nyah Kur [Theraphan 1984]	jà:k	ŋri: <sup>?</sup>

<i>KHMER</i>			
Khmer	<b>bok</b> <i>puk</i>	<b>kɤn</b> <i>kin</i>	<b>ʔəŋre:</b> <i>'aŋræ</i>
<i>PEARIC</i> [Baradat 1941]			
Pear, Kpg Speu	<i>chhâk</i>	<i>ken</i>	<i>rôhi-i</i>
Pear, Kpg Thom	<i>bok</i>	<i>ken</i>	<i>rê</i>
Pear, west	<i>chhâk</i>		<i>rôhi-i</i>
Pear, east	<i>chhâk</i>		<i>rôhik</i>
<i>PEARIC</i> [Martin]			
Samray	<b>chuuk</b>	<b>ken</b>	( <i>rôhi-i</i> )
Somree	<b>chœk</b>	<b>kum</b>	( <i>rôhik</i> )
<i>PEARIC</i> (various)			
Pear [Headley 1978]	<b>čha:k</b>		<b>rəhi:</b>
Saoch	<b>t<sup>h</sup>a:k</b>		<b>ri</b>
Chong [Siriphen 2001]	<b>c<sup>h</sup>œ:k<sup>R1</sup></b>	<b>bot</b>	<b>kəhi:<sup>R1</sup> [kə<sup>h</sup>hi:]</b>
<i>KHASI</i> [Singh 1920]			
			<i>synrei</i>
<i>ASLIAN</i>			
Jahai [Burenhult 2001]	<b>sntip/tiʔ/sih/patim/til</b>		<b>gul</b>
Tembi [Skeat & B. 1906]			<i>rentik</i>
Serau [Skeat & B. 1906]			<i>kěnöh, kěnu<sup>?</sup>(?)</i>
<i>NICOBAR</i>			
	-		-
<i>NORTH MUNDA</i> [Zide 1976]			
Korku	<b>rum-</b>		<b>toko / tuki</b>
Ho	<b>ruuŋ-</b>		-
Santali	<b>ruŋŋ-</b>		-
Santali [Macphail 1954]	<i>hurŋ</i>	<i>sok<sup>?</sup></i>	<i>tok</i>
<i>SOUTH MUNDA</i> [Zide 1976]			
Kharia	-		<b>ě(n)ri / enđi</b>
Remo	-		<b>tiŋeʔ</b>
Gtaʔ	-		<b>toŋkæ</b>
Gorum	-	<b>taŋlad</b>	<b>in(d)ri</b>
Sora	-	<b>taŋlad</b>	<b>ɔŋrij</b>
<i>PROTO MON-KHMER</i>			
[Shorto 2006]	<b>pis/pøs</b>	<b>[k]bok</b>	<b>nrøyʔ / nrœy</b>

General remarks: (see *Summarized chart* and map at the end of article)

A remarkable fact arises from the reading of the table: the verbal base ‘to husk (rice)’ and the nominal derivative ‘pestle’ form a morphological pair only in the subgroups of Vietnamese, Mường and Thổ (Cuối Chặm, Làng Lỗ), i.e. in the most septentrional languages of the VM group. On the other hand, the same derivative ‘pestle’, recognizable by the presence of *r* in its various forms, is attested in the other VM languages and in most groups of the Austroasiatic family.

The languages or groups of languages which attest other roots for ‘pestle’ are Bolyu (Guangxi - Zhuang Autonomous Region), Mãng (Lai Châu, Vietnam), the Aslian group (Peninsular Malaysia) and North Munda (India). As far as Nicobarese is concerned, it does

not seem to have proper vocabulary for rice and its culture ; the word for ‘rice’ (Nancowry *arōsh*, Teressa *aros*) is genuinely Portuguese [de Röpstorff 1875].

It is obvious that the derivation which produced the word ‘pestle’ took place in a northern VM language, direct ancestor of Vietnamese. From there, the object and its name spread through most Austroasiatic languages, as far as in India.

In current classifications, Munda forms a clearly characterized branch within the Austroasiatic family. However, it seems surprising that the word for ‘pestle’ reached South Munda and missed North Munda. The Munda branch might be the result of a symbiosis of several waves of Austroasiatic languages coming from the Austroasiatic *Urheimat*, somewhere in the heart of China.

- |   |
|---|
| <p>8     <i>xeo</i> ‘lift up with a crowbar,<br/>to propel (a boat) with a long pole’ &gt; (<i>cái</i>) <i>chèo</i> ‘paddle, oar’</p> |
|---|

PVM **tʃɛ:w** (*xeo*) and **tʃ-r-ɛ:w** > **ʃɛ:w** (*chèo*) must be reconstructed.

*Chèo* must have originally named the long pole used to propel boats ; today, it means ‘to paddle, to row’, while *cái chèo* means ‘paddle, oar’.

The word *chèo*, verb or noun, is quite common among the VM languages and many languages of Vietnam and neighbouring countries. It is represented in Khmer by **caew** *cæv* ‘to paddle, to row, paddle’, while ‘oar’ is **crəva:** *cravā*. In Lao we find **se:w**<sup>A2</sup> (<\***ʃɛ:w**) 𑜄𑜂𑜆𑜃 ‘to row’.

To the same word family we must add *neo* ‘anchor’, formed by the insertion of an old **-rn-** infix with an instrumental meaning:

**tʃɛ:w** > (infixation) **tʃ-rn-ɛ:w** > (monosyllabization) **nɛ:w** *neo* ‘anchor’.

Note: (i) The infix **-rn-** has been preserved in some Maleng dialects of the VM group. For exemple, in Maleng Brô [Ferlus 1997]:

**sək** - **srnək** ‘to comb - a comb’  
**taj**<sup>2</sup> - **trnaj**<sup>2</sup> ‘to light with a steel lighter - a lighter’  
**ko**<sup>2</sup> - **krno**<sup>2</sup> ‘to dwell, to stay at - a house’

(ii) The Vietnamese vocabulary attests many examples of the type *xeo-neo* which reinforce the reconstruction of an infix **-rn-**:

*đan* - *nan* ‘to plait - bamboo split’  
*đút* - *nut* ‘to cork (a bottle) - a cork’  
*chọc* - *nọc* ‘to shake down (with a long pole) - a long pole’  
*xếp* - *nép* ‘to fold - a fold’

- |   |
|---|
| <p>9     <i>xum</i> ‘gather, form group’     &gt;     <i>chùm</i> ‘bunch, cluster’<br/>          <i>xúm</i> ‘gather, form groups’ &gt;     <i>chụm</i> ‘assemble, gather’</p> |
|---|

The place of *xum* in dictionaries needs some further remarks. *Xum* is not attested in the modern Vietnamese dictionaries, while in others, *xum* and *xúm* are presented as synonyms.



Father E. Gouin [1957] was the only one to establish a clear distinction between (in French) *xum* ‘se réunir, rassembler’ and *xúm* ‘se réunir, réunir, rassembler, convoquer, grouper’. This distinction can be interpreted as *xum* ‘to meet, to get together’, with an intransitive meaning, and *xúm* ‘to gather, to collect, to call together’ with a causative aspect.

We can then reconstruct PVM **tfum** (*xum*) as the basic root with the meaning ‘to meet, to get together’ and suppose a causative derivation, **p-tfum** with the following chain of changes:

**tfum** > (prefixation) **p-tfum** > (tenseness and glottalization) **p-tfum<sup>2</sup>** > (monosyllabization) **tfum<sup>2</sup>** (*xúm*). On the circumstances of the occurrences of glottalization in sesquisyllables, see Ferlus [2004].

Formation of derivatives with the infix **-r-**: **tf-r-um** > **jum** (*chùm* ‘bunch, cluster’) and **(p-)tf-r-um<sup>2</sup>** > **jum<sup>2</sup>** (*chum* ‘assemble, gather’).

The prefixed form **p-tfum** gave *giùm* ‘give help, help’ by spirantization of **tf** in medial position: **p-tfum** > (spirantization) **p-ju:m** > (monosyllabization) **jum** (*giùm*). Old dictionaries also attest *gium* ‘help’, *giúm* ‘to help each other’ and *gium* ‘to put together’.

The prefixed form passed in Khmer, **prəcum** *prajum*, then in Thai **prac<sup>h</sup>um<sup>A2</sup>** ปราชูม and in Lao, **pasum<sup>A2</sup>** ປະຊຸມ.

10  *xía* ‘pick, jab, to put on a stip’ > *chĩa* ‘pitchfork, trident’

PVM **tfeh** (*xía*) and **tf-r-eh** > **jeh** (*chĩa*) must be reconstructed.

Derivative formed with **-rn-** infix: **tfeh** > (infixation) **tf-rn-eh** > (monosyllabization) **neh** *nĩa* ‘fork’.

These words remain confined in the Vietnamese area.

11  *xỏ* ‘sting, pierce’ > *chõ* ‘pan to cook sticky rice’

PVM **tfoh** (*xỏ*) and **tf-r-oh** > **joh** (*chõ*) must be reconstructed.

These words remain confined in the Vietnamese area.

## 12 Conclusions

The PVM proto phoneme **tf** is specific to the Vietnamese language and to some very close VM languages. Words opening with the initial **\*tf** (*x-*) are very few but belong to the significant vocabulary of everyday life. Correspondences with Khmu have been noticed.

In Vietnamese, there are five morphological pairs of words associating a verb in *x-* with a nominal derivative in *ch-*. These five pairs are: (1) *xáy/xay* - *chày*, (2) *xeo* - *chèo*, (3) *xum/xúm* - *chùm/chum*, (4) *xía* - *chĩa* and (5) *xỏ* - *chõ*. The verb expresses a basic action, while the derivative indicates an object or a concept related to the exercise of the action. Correspondences in VM make it possible to highlight an old nominalizing **-r-** infix with an instrumental meaning.

Among these morphological pairs, the most striking is *xáy/xay* - *chày*. It was explained how from PVM **tfex?** (*xáy*) ‘to dig, excavate’ was formed the derivative **tfex:** (*xay*) ‘to husk (rice)’ with a more specialized meaning, and also was formed **tfre?** > **je:** (*chày*) ‘pestle’.

It was also noted that, in the primordial PVM pair **tʃe?** - **tʃre?**, the reflexes of the basic verb (**tʃe?**>) **tʃe:** ‘to husk (rice)’ remained restricted to Vietnamese, while the reflexes of the derivative **\*tʃre?** ‘pestle’ spread in the most Austroasiatic languages. Bolyu, Mãng, Aslian, Nicobarese, North Munda and some languages of South Munda did not receive that derivative. We are faced to a rather exceptional case, considering the antiquity of the phenomenon, where a word created in a limited area invaded the quasi totality of a linguistic family.

This phenomenon is not only of linguistic nature, it is also necessary to take into account also the technological component and more generally the level of civilization in the area of origin. It is obvious that the word for ‘pestle’ spread with the object itself. Such an expansion does not have any equivalent in the old times. It is the object itself more than the carrying languages, that spread through the Austroasiatic family. That means that the pestle was an innovating invention, the technical superiority of which was higher than all that preceded in the manner of husking rice. The complex ‘pestle - mortar’ (in French ‘pilon - mortier’), made possible a better husking of the grain than the complex ‘saddle quern - rubber stone’ (in French ‘meule dormante - molette mobile’) which might exist before. The other advantage is that utensils out of wooden are easier to make than those out of stone.

The continuity of the morphological pairs in a layer of the Vietnamese vocabulary (the layer of PVM **tʃ**) can only be explained if one population went on speaking the same language in the same place. Moreover, the verbs of the morphological pairs imply current actions, the nominal derivatives of which are utensils or concepts useful in the everyday life: : ‘pestle’, ‘oar’, ‘group’, ‘trident’ and ‘pan to cook sticky rice’. The speakers of that language belonged to a culture which encouraged them to innovate.

As the Đông Sơn culture (c. 7th BC to 1st AD), famous for its bronze drums [Parmentier 1918: *Pl. IV, fig. 1*], was precisely located in the North of Vietnam, at the same place as the area of origin of our morphological pairs, one can conclude from it that this layer comes from the Dongsonians’s language.

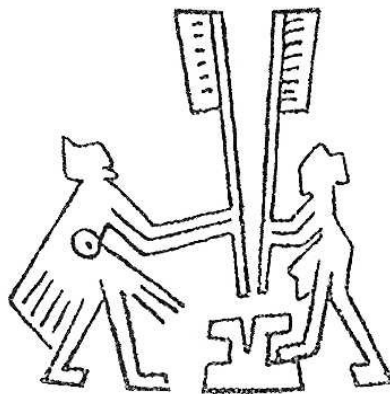
In conclusion: the Vietnamese language preserved a part of the Dongsonians’ language, and the Vietnamese are the most direct heirs of the Dongsonian culture.

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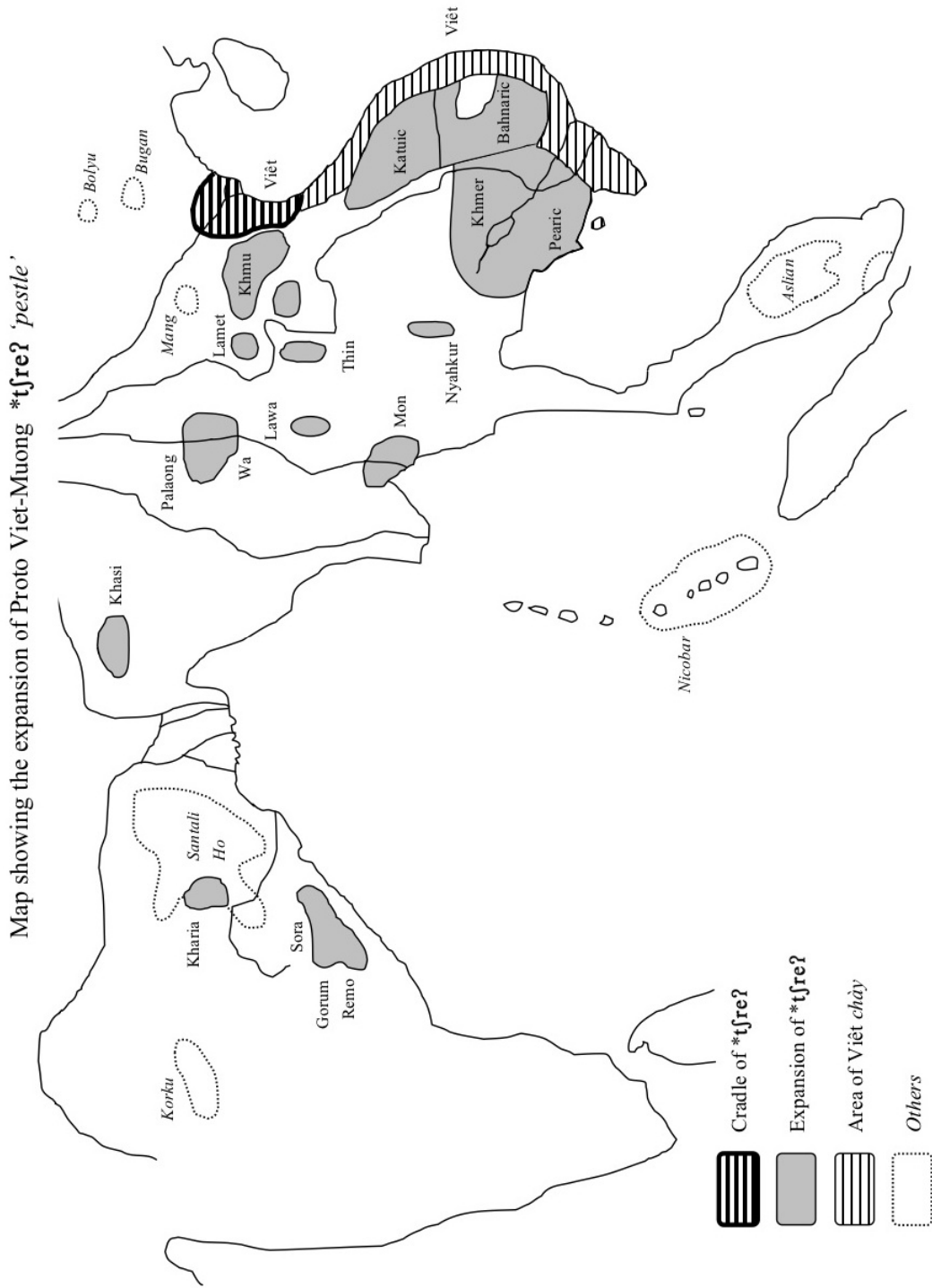
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A husking rice scene engraved on a Dongsonian bronze drum [Parmentier 1918: Pl. IV, fig. 1]. Museum of History in Hanoi.

## Summarized chart: 'to husk (rice) - pestle' in Austroasiatic

<i>Groups/Languages</i>	<i>to husk (rice)</i>	<i>to pound</i>	<i>pestle</i>
PROTO VIET-MUONG Viet Mường Bì	(tʃeʔ >) tʃe: (xáy >) xay saj <sup>1</sup> (xay)		(tʃreʔ >) ʃe: chày k <sup>h</sup> aj <sup>2</sup> (khày)
Sách Arem	cuk <sup>7</sup> tloh	tuj <sup>2</sup> tù:ɲ	əri: <sup>1</sup> <sup>n</sup> ri:
PROTO KATUIC	kloh	tap	ʔn <sup>d</sup> ree
PROTO BAHNARIC PROTO NORTH BAH. Rengao Bahnar PROTO SOUTH BAH. Stieng PROTO WEST BAH. Laven/Jru'	pəh peh pih <sup>T</sup> peh pəh peh tʔpeh təpeh	jaʔ	ʔənɾəj/r(ən)aj ʔəraj hədrii <sup>L</sup> hdɾəj r-n-aj rənaj ʔraj ʔraj
BOLYU		tən <sup>53</sup>	xuək <sup>31</sup>
MANG	tə:		tuj
KHMUIC Khmu Thin Keneng	hic k <sup>h</sup> ət kal		cn <sup>d</sup> reʔ ŋgreʔ kanre:
PALAUNGIC taʔa:ŋ PROTO WAIC	doh toh		gre: ŋriʔ
RIANG	-	-	rèʔ
MÔN	yàik [jàc]		riʔ
KHMER	bok	kɤn	ʔɔŋre:
PEARIC Saoch Chong	t <sup>h</sup> a:k c <sup>h</sup> ɔ:k <sup>R1</sup>	bət	ri kəhi: <sup>R1</sup> [kə'hi:]
KHASI			synrei
ASLIAN Jahai Tembi	sntip/tiʔ/sih/...		gul rentik
NICOBAR	-		-
NORTH MUNDA Korku Santali	rum- huruj	sok'	toko / tuki tok
SOUTH MUNDA Kharia Sora	- -	taŋlad	ē(n)ri/əndi ɔŋrij
PROTO MON-KHMER	pis/pəs	[k]bok	nrəyʔ/nrəəy





# MODALITY IN BURMESE: ‘MAY’ OR ‘MUST’ – GRAMMATICAL USES OF YÁ ‘GET’

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## 0. Abstract

The topic of this study is the grammaticalised uses of the verb *yá* ‘get’ in Burmese. Occurring in postverbal position, *yá* covers a number of functions, which are distinguished by syntactical means. I will look at the historical development of the processes involved, as well as parallels in neighbouring languages which suggest influence on or from Burmese. The main points to be investigated are 1. the semantics of *yá* ‘get’, 2. the difference between free and bound auxiliaries, and 3. the future vs. non-future distinction made by verbal markers, all of which contribute to the grammatical uses of *yá* as marker of OBLIGATION or PERMISSION/POSSIBILITY. Finally an attempt is made at explaining the grammaticalisation processes in historical and general cognitive terms. 1

## 1. The semantics of the verb *yá* ‘get’

As a full verb, *yá* ‘get, receive’ expresses a non volitional event, excluding control by the actor. The semantics of *yá* can be summarised as follows:

BECOME **have**’ (x,y);

x = recipient (actor) [-volition], [-control], [+human/high animate]

y = theme (undergoer) [± desirable]

The ACTOR/RECIPIENT remains inactive (physically or metaphorically), THEME comes to RECIPIENT without his effort or influence, as seen in (1). Usually, but not necessarily, the theme is conceived as something desirable. The expression in (2) sounds odd to some native speakers, but is accepted by others.

- (1) *θú ʔəphé shi θwà tǎi θu paiʔshǎ yá tɛ.*  
3:gen father:gen prox go each 3 money get NF  
‘Each time he goes to see his father he gets some money.’

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<sup>1</sup> Most colloquial Burmese data were collected with language consultants from southern Burma. Although mostly monolingual native speakers of Burmese with high school education, they might exhibit some regional differences from speakers of standard Rangoon Burmese in the use of grammatical elements including the ones described in this study. Transcription is in standard IPA, but [y] is used for [j]. Tones are indicated by acute [á] for the short high tone and gravis [à] for the long falling tone. The low-mid level tone is unmarked. Voicing of intervocalic consonants is indicated only where lexically relevant.

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- (2) ? *θà ʔətɕáũ ʔəme douʔkhá ʔə-myà tɕì yá tɛ.*  
 son because mother suffering DVL-much big get NF  
 ‘The mother has to suffer a lot because of her son.’

The actor has no control/volition, so there are no imperative/prohibitive occurrences, as seen in (3, 5).<sup>2</sup> The verb *yá* does not normally occur in desiderative contexts, as in (7), which, depending on context, is accepted by some speakers but not by others.

If control or volition of the actor is involved, *yá* is replaced by the activity verbs *yu* ‘take’ as in (4) or *khã* ‘accept’ as in example (6), or the inherently desiderative *lo* ‘want, need’ (example (8)).

- (3) \* *paiʔshã θwà yá laiʔ pa!*  
 money go get IMPL POL  
 ‘Go and get some money!’
- (4) *paiʔshã θwà yu laiʔ pa!*  
 money go take IMPL POL  
 ‘Go and get some money!’
- (5) \* *di lo douʔkhá mə-yá pa né!*  
 this sim suffering NEG-get POL PROH  
 \* ‘Don’t get that suffering!’
- (6) *di lo douʔkhá (lɛʔ) mə-khã pa né!*  
 this sim suffering (hand) NEG-accept POL PROH  
 ‘Don’t accept that kind of suffering!’
- (7) ? *tɕəno paiʔshã yá tɕhĩ tɛ.*  
 1m money get DES NF  
 ‘I want to get some money.’
- (8) *tɕəno paiʔshã lo tɕhĩ tɛ.*  
 1m money want DES NF  
 ‘I want to get some money.’

Modal extensions are only possible with epistemic reading:

- (9) *tɕəno paiʔshã yá nãi tɛ.*  
 1m money get POT NF  
 ‘I might get some money.’

Summary of *yá* ‘get’:

X, which is always human or human-like, receives Y without own effort, control or volition. Y can be desired (as in (1)) or (in many cases less idiomatically) undesired (as in

<sup>2</sup> Some speakers accept imperative and prohibitive uses of fixed expressions containing *yá*, e.g. *θətí yá* ‘remember’.

(2)). Some backgrounded (often unidentified) entity (AGENT or FORCE) is implied as giver of Y. The transfer of Y to X (from Z) may be physical or metaphorical, i.e. X may be EXPERIENCER rather than RECIPIENT and Z may be STIMULUS rather than AGENT. The verb *yá* can said to have anti-causative semantics, backgrounding an underlying agent.

Expressions involving *yá* can alternatively be expressed with *pè* 'give', adding the backgrounded giver as subject and turning the original subject X into a marked object (*ko*):  
*X Y yá* → *Z X ko Y pè*

## 2. Free vs. bound auxiliaries (V2s)

Burmese syntax is strictly verb-final. The pre-(main)verbal position in the verbal syntagma is reserved for (partly grammaticalised) serial verbs indicating manner. Modal, aspectual and other auxiliaries always appear after the main verb and may be either free or bound morphemes. Some V2s behave like free morphemes in some constructions and like bound morphemes in others. There is also some fluctuation between the two types. It may be more accurate to speak of a continuum of boundness rather than seeing it as a binary feature. Operators expressing aspect (changed vs. unchanged situation), politeness and plurality are always bound morphemes and cannot be clearly seen as derived from full verbs. The final slot is reserved for verbal markers (VM) indicating tense/status (see section 3). As all V2s are believed to originate in full verbs, free morphemes are historically more recent than bound morphemes. Most of the free and some of the bound V2s still occur as full verbs, so that most modal constructions are semantically transparent, as in (10), where the V2 *give* expresses a benefactive activity 'buy for (someone)' involving a physical transfer, while in (11) it functions as main verb.

(10) *tɕənɔ θú ko sa.ʔouʔ tə-ʔouʔ wɛ pè tɛ.*  
 1m 3:GEN OBJ book one-cl buy GIVE NF  
 'I bought a book for him.'

(11) *tɕənɔ θú ko sa.ʔouʔ tə-ʔouʔ pè tɛ.*  
 1m 3:GEN OBJ book one-cl give NF  
 'I gave him a book.'

Bound V2s are seen as older constructions exhibiting stronger grammaticalisation and being linked more tightly to the main verb, both syntactically and semantically. Many bound V2s occur as free morphemes in older stages of the language. While (12) is normal spoken language, (13) is acceptable only in LB and sounds rather old fashioned.

(12) *tɕənɔ θú ko pyò khài tɛ.*  
 1m 3:GEN OBJ speakorder NF  
 'I order him to speak.'

(13) ??*tɕənɔ khài tɛ.*  
 1m order NF  
 'I ordered (it).'

## 2.1 Syntactic differences between free and bound V2s

### a. Subordinator

Free V2s can (in some cases must) be separated from the main verb by a subordinator as in (14) and (15), while bound V2s always occur next to the main verb without intervening subordinator, as in (16). The choice of subordinator can vary according to the semantics of the auxiliary verb.

(14) *tɕənɔ pyð (lɔ) yɛ̃ tɛ.*  
 1m speak (sub) dare NF  
 ‘I dare (to) speak.’

(15) *θu gəzà (lɔ) taʔ tɛ.*  
 3 play (sub) know.how NF  
 ‘He knows how to play.’

(16) *tɕənɔ mɔ̃u sà tɕhĩ tɛ. (\*mɔ̃u sà lɔ tɕhĩ tɛ)*  
 1m sweets eat DES NF  
 ‘I’d like to eat some sweets.’

### b. Negation

The negation pattern for free V2s is either NEG-V V2 as in (17) or V (SUB) neg-V2 as seen in (18). The latter negation pattern is more common in CB and the only possible construction for some V2s. Bound V2s can be negated only with the pattern neg-V V2, as in (19).

(17) *tɕənɔ mə-pyð yɛ̃ phù. (= pyð mə-yɛ̃ phù)*  
 1m NEG-speak dare NEG  
 ‘I don’t dare to speak.’

(18) *θu gəzà (lɔ) mə-taʔ phù. (= mə-gəzà taʔ phù)*  
 3 play (SUB)NEG-know.how NEG  
 ‘He doesn’t know how to play.’

(19) *tɕənɔ mɔ̃u mə-sà tɕhĩ phù. (\*mɔ̃u sà mə-tɕhĩ phù)*  
 1m sweets neg-eat DES NEG  
 ‘I don’t want to eat any sweets.’

### c. Stand-alone

Only free V2s can occur as one word expressions, e.g. as a short answer to a question containing the same auxiliary, as shown in (20). Bound auxiliaries must always occur with a main verb, as seen by the ungrammaticality of (21).

(20) *yɛ̃ tɛ̃ ~ mə-yɛ̃ phù, taʔ tɛ̃ ~ mə-taʔ phù*  
 ‘I dare ~ I don’t dare’, ‘I can ~ I cannot’

- (21) ?? *khài tɛ* ~ ?*mə-khài phù*, \**tɕhĩ tɛ* ~ \**mə-tɕhĩ phù*  
 'I ordered ~ I didn't order', 'I want to ~ I don't want to'

### 3. Verbal markers (VM) *tɛ* and *mɛ* - modality, status or tense?

#### a. REALIS vs. IRREALIS or NON-FUTURE vs. FUTURE

The verbal syntagma in Burmese ends in a VM, i.e. an operator indicating tense and/or status. The VM is the only obligatory element in a verbal syntagma besides the main verb, while aspect, direction, manner, and modality markers are syntactically optional. The main VMs in colloquial Burmese are the following:

<i>tɛ</i>	NON-FUTURE (NF)
<i>mɛ</i>	FUTURE
<i>pi</i>	NEW SITUATION (NSIT)
<i>phù</i>	NEGATIVE
<i>né</i>	PROHIBITIVE
<i>só</i>	HORTATIVE

Lack of a VM is usually interpreted as IMPERATIVE. The NEGATIVE and PROHIBITIVE VMs always occur with a negated verb (main verb or auxiliary), while the HORTATIVE VM is only used with the verbal plural marker *tɕá*. The NF/FUT distinction is lost in negative contexts, unless the verbal syntagma is nominalised or used attributively (with some marginal exceptions).

In the present discussion the two VMs indicating NON-FUTURE and FUTURE are of special interest.

#### b. NON-FUTURE

The non-future marker *tɛ* (and its attributive form *tɛ́* and nominalised form *ta*) indicates that a situation holds at the time of speaking (22) or has occurred earlier (23), or that it is construed as certain or generally true. Burmese grammars explain *tɛ* simply as a "sentence closing word" (Myanmar Language Commission 1999:335) or as a verbal affix (*kəríya-wíbaʔ*) of "past" and "present" tense:

*θi, ʔiʔ* and *pi* cannot be used on their own as present tense or past tense verbal suffixes. The [temporal] meaning of the sentence depends on the temporal phrases in the same sentence to distinguish past and present meanings. (Myanmar Language Commission 2005:15)

This VM has been described as realis marker by most western authors (e.g. Allott 1965:288 "realized", F. K. L. Chit Hlaing and other papers in Watkins (ed.) 2005). This label is challenged by (24), which describes a past-unrealised situation. Sentence (25) clearly has future reference, thus challenging the analysis as NON-FUTURE. This expression seems to be rather isolated and the use of the nf VM may be explained by the fact that it is now already clear that the speaker will be free the next day. Another possible explanation is that *tɛ* expresses certainty rather than reality or past-present tense. Gärtner states that the marker *tɛ* fulfils

a twofold task: [...] it marks events happening at any time except the future, under certain circumstances it can also indicate determination with respect to future action, overweighing tense. (Gärtner 2005:109)

This double function explains the seemingly contradictory use in sentence (25).

(22) *ʔəkhú tɕəno thəmĩ̀ sà ne tɛ.*  
 now 1m rice eat STAY NF  
 ‘I am eating now.’

(23) *mənɛ́ ká tɕəno yã.kõu θwà tɛ.*  
 yesterday ABL 1m Rangoon go NF  
 ‘Yesterday I went to Rangoon.’

(24) *mənɛ́ ká tɕəno ʔà yĩ tɕəno di ko la ta pɔ́.*  
 yesterday ABL 1m free COND 1m this OBJ come NF:NML RINF  
 ‘If I had been free yesterday I would have come here.’

(25) *mənɛʔ.phyã tɕəno ʔà tɛ.*  
 tomorrow 1m free NF  
 ‘I’ll be free tomorrow.’

#### c. FUTURE

Labelled FUTURE tense by older authors (including Burmese indigenous grammars, e.g. Myanmar Language Commission 1999:242 as “word indicating future tense”), the VM *mɛ* (with the attributive and nominalised variants *mɛ́* and *hma* respectively) is often analysed as IRREALIS marker (e.g. Allott, 1965:288 “unrealized”, Watkins (ed.) 2005). While (26) is plain FUTURE, there are obvious non-future contexts, such as (27) and (28). The former can be seen as expressing uncertainty (the same sentence with the VM *tɛ* instead of *mɛ* indicates a stronger assumption), the latter probably indicates relative future tense (if the second clause is not to be translated as ‘... I would give you some money’, i.e. FUTURE-IRREALIS). According to some speakers, *hma* can be replaced in this sentence with *ta* without obvious change in meaning. As a the notion of ‘predictiveness’ is part of the semantics of future tense, modal use (hypothetical, assumptive, speculative) of future tense markers is very common cross-linguistically.

(26) *mənɛʔ.phyã tɕəno yã.kõu θwà mɛ.*  
 tomorrow 1m Rangoon go FUT  
 ‘I will go to Rangoon tomorrow.’

(27) *ʔəkhú θu sa yè ne mɛ/tɛ thĩ tɛ.*  
 now 3 letter write stay FUT/NF think NF  
 ‘I think he is writing letters right now.’

- (28) *məné ká ?əlou? la lou? yĩ tɛəno pai?shã pè hma pɔ.*  
 yesterday ABL work come do COND 1m money give FUT:NML RINF  
 ‘If you had come to work yesterday I would have given you money.’

The difference NF-FUT is neutralised in some kinds of subordinate clauses, as can be seen in the conditional clause of (28).

The distinction made by the VMs *tɛ* and *mɛ* seems to be one of tense intermingled with degree of certainty, i.e. *tɛ* indicates NON-FUTURE/CERTAIN and *mɛ* FUTURE/SPECULATIVE. This description is compatible with Gärtner’s analysis (Gärtner 2005:107) of *mɛ* (and related forms) as indicating “hypothetical events: things that might happen or might have happened”. Events that, given other circumstances, would have happened as in (24) are marked as NON-FUTURE/CERTAIN, as there is no uncertainty or speculation about their happening (or rather not having happened). I prefer the analysis as tense rather than modality (REALIS/IRREALIS, s. Comrie 1985:50f, cf. also Bybee 1998) for a number of reasons, including the compatibility of *tɛ* with past counterfactual events and the obligatoriness of *mɛ* in future contexts, but not in modal contexts. Further research is required in this field, as in most aspects of Burmese grammar.

#### 4. Grammaticalisation of *yá* ‘get’

Grammaticalised *yá* appears already in Pagán period inscriptions of the 11th and 12th centuries. The Old Burmese (OB) text is given here in traditional transliteration together with a Colloquial Burmese (CB) translation.

- (29) *nĩrĩ ?alum ron ruy way ra so mliy* (OB)  
*nĩ ko ?à.lòu yãu pĩ wɛ yá tɛ mye* (CB)  
 y.brother OBJ all sell SEQ buy get NF:ATTR land  
 ‘the land which I was able to buy after I had sold everything to my younger brother’  
 (Ohno 2005: 295)

- (30) *min taw mū piy rakā pukam̄ niy ra ?e?* (OB)  
*méi tɔ mu pè yəkà bəgã hma ne yá tɛ.* (CB)  
 order royal do give since Pagán LOC stay GET NF  
 ‘Since the king has ordered it, he could stay in Pagán.’ (Ohno 2005: 295)

- (31) *?arimittiyā purhā skhañ ?a-phū ra ciy.* (OB)  
*?arími?tèyá phəyà θəkhĩ mə-phù yá pa se.<sup>3</sup>* (CB)  
 Arimetteya holy lord NEG-beholdGET POL let  
 ‘Let them not be able to behold the Lord Arimetteya.’  
 (Taw Sein Ko and Duroiselle 1919: 23, 25)

In all these examples *yá* <ra> expresses deontic modality, i.e. the ability as in (29) or possibility/permission as in (30) and (31) of the subject to do something. In (29) and (30) <ra> occurs with the NON-FUTURE operator. The absence of a subordinator and the preverbal position of the negation marker <?a-> suggest that grammaticalised <ra> was used as a

<sup>3</sup> The word order in modern Burmese optative expressions is irregular, with the causative marker after the politeness particle.

bound V2 already in OB. OBLIGATIVE modality ‘must’ in OB is expressed by the unrelated operator «*rā*», originally maybe a nominaliser.

The use as potential modal can also be seen in classical Literary Burmese (LB), e.g. in the 19th c. *Konbaungzet Mahayazawin-daw-kyi* chronicle:

- (32) *θu tó phāu-tə the? twī lai? yá θi.*  
 3 PL raft-ROY aboveLOC follow GET NF  
 ‘They could/were allowed to go with them on the royal raft.’ (MYK2:121)

- (33) *mí bá tó sò.ʔou? θí t̃ai-ñai.ŋã ko hmyá*  
 mother fatherpl rule NF:ATTR dominion-country OBJ as.much.as  
  
*mə-sò.ʔou? yá pa, hãθawəti ñai.ŋã ko sò.ʔou? yá pa θi.*  
 NEG-rule GET POL Pegu country OBJ rule GET POL NF  
 ‘I cannot rule over the whole country which my parents ruled, but I can rule over Pegu country.’ (MYK2:238)

Sentence (34) shows *yá* with the future VM, indicating obligative modality:

- (34) *ʔəphò ŋwe khuni? pei?tha ñà she pè yá myi.*  
 value silver seven viss 5 10 give GET FUT  
 ‘They had to give the value of seven viss and fifty [ticals] in silver.’ (MYK2:111)

Both potential and obligative uses show *yá* as a bound V2, i.e. occurring directly after the main verb in (32) and employing the negation pattern *mə-V yá* as in (33).

The 20th century Burmese version of the historical novel *Yazadayit* gives an altered picture of the use of *yá* as a modal auxiliary, corresponding to present day LB or Formal Burmese (FB) usage. While the OBLIGATIVE operator is still a bound morpheme as seen in (35), the POTENTIAL operator is separated from the verb by a subordinator, i.e. it has developed into a free morpheme, as in (36) and (37).<sup>4</sup>

- (35) *[shĩ myà ko] ɲá.ne t̃á hlyĩ myó twĩ hnai? θa thà*  
 elephant PL OBJ evening fall when town inside LOC only keep  
  
*yá myi hú byĩ.ɲà nwé m̃éi θi.*  
 GET FUT QUOT lord Nwe order NF  
 ‘Byinnya Nwe ordered: “In the evening you must keep the elephants inside the town.”’. (YDY:115)

- (36) *tə.kha.tə.yã khələ ɲo θo t̃hó.mó ywé mə-yá.*  
 sometimes child cry COND sooth SUB NEG-GET  
 ‘Sometimes when a child weeps one cannot sooth him.’ (YDY:224)

<sup>4</sup> POTENTIAL *yá* is used as a bound morpheme in FB in some conventionalised expressions involving verbs of perception (*t̃á yá t̃e* ‘can hear’, *myĩ yá t̃e* ‘can see’ etc.).

- (37) *tə-phɛ?*    *hní* *tə-phɛ?*    *ʔənãi-ʔəçòu*    *yu ywé mə-yá*    *ʔá pa.*  
 one-side    with one-side    victory-defeat    take SUB NEG-GET    PL    POL  
 'Neither side could win or lose.' (YDY:227)

In CB, there seems to be a strong tendency (maybe dialectal southern Burmese?) to drop the subordinator in POTENTIAL contexts and to restrict the NON-FUTURE operator to the POTENTIAL reading, while OBLIGATIVE *yá* remains a bound operator which most commonly co-occurs with the fut marker. Compare the FB and CB expressions in (38) and (39).

- (38) a. *ʔənɔdi né pwè θwà ló yá θə là?* (FB)  
 b. *ʔənɔ di né pwè θwà yá là?* (CB)  
 1m this day festival go SUB GET NF Q  
 'May I go to the temple fair today?'
- (39) a. *di né ʔənɔ ʔəu tɛ? yá mə/θə là?* (FB)  
 b. *di né ʔənɔ ʔəu tɛ? yá mə là?* (CB)  
 this day 1m school go.up GET FUT/NF Q  
 'Do I have to go school today?'

The affirmative and negative answers to the above questions are given in (40) and (41):

- (40) a. *θwà ló yá tɛ. θwà ló mə-yá phù.* (FB)  
 b. *yá tɛ. mə-yá phù.* (CB)  
 go SUB GET NF go SUB NEG-GET neg  
 'Yes.' 'No.'
- (41) *tɛ? yá mə. mə-tɛ? yá phù.* (FB & CB)  
 go.up GET FUT NEG-go.up GET NEG  
 'Yes.' 'No.'

The modal uses of *yá* can be summarised as follows:

**Table 1:** *Development of yá*

	Potential	Obligative
<b>OB (11th c.)</b>	V- <i>ra</i> [+bound], NF (?)	(V- <i>rā</i> )
<b>LB (19th c.)</b>	V- <i>yá</i> , [+bound], NF (?)	V- <i>yá</i> , [+bound], FUT (?)
<b>FB (20th c.)</b>	V SUB <i>yá</i> [-bound]	V- <i>yá</i> [+bound]
<b>CB (21st c.)</b>	V (SUB) <i>yá</i> [-bound], NF	V- <i>yá</i> [+bound], FUT



## 5. Explanations

Three points require an explanation:

1. Semantic development ('get' > POTENTIAL and OBLIGATIVE)
2. Development from bound morpheme to free morpheme in FB and CB
3. The unusual exploitation of the NF-FUT distinction for POTENTIAL-OBLIGATIVE

### 5.1 The semantics

As shown above, the verb *yá* indicates a situation that occurs to the subject without his own efforts and is beyond his control. Allott (1965:305) states that “*ya*. denotes a predetermined course (of action) about which the agent of the verb (if there is one) has no choice.” She goes on giving examples of different uses, some requiring the translation ‘have to’ while others must be interpreted as ‘can, may’. Allott then concludes that

[i]f we examine a series of sentences containing the auxiliary verb *ya*. we get a large variety of translation equivalents, but it seems clear that we are dealing with only one word in Burmese. (ibid.)

There is no question that from the Burmese point of view we are dealing with a single lexeme *yá* which covers a rather wide range of meanings and functions, but still the POTENTIAL and OBLIGATIVE functions are kept apart syntactically (s. 5.2). A conceptual parallel can be seen in Tagalog NON-VOLITIVE mood (named POTENTIVE by some authors), which is used to express actions or events over which the actor has no control or which the actor does not initiate (s. Kroeger 1993:80ff).

The verb ‘get’ has developed grammatical functions in many Southeast Asian languages (s. especially Enfield 2003), usually as a postverbal modal indicating ABILITY and POSSIBILITY. This is easily explainable as grammaticalised function of a serial verb construction such as (42):

- (42) *khǎw càp plaa dǎy.* (Thai)  
 3 catch fish get  
 ‘He can catch fish’ (< ‘he catches fish and gets one/some’)

The use is then extended to purely modal contexts (with some languages retaining the old construction with different syntax), in some languages covering both deontic and epistemic modality. In most languages the postverbal modal GET is a free morpheme.

The other common development is into a preverbal auxiliary, indicating that

“V is true, and that this is because of something else that had happened or had become the case prior to this.” (Enfield 2003:142).

Enfield’s description is kept rather vague in order to cover all functions of preverbal GET in his language sample (which does not include Burmese). The translations obtained range from ‘have (had) an opportunity to V (and thus V)’ to ‘V-ed in the past’, ‘get to V’ and ‘have to V’ in some instances. The latter is seen by Enfield as a pragmatic implicature or possible connotation rather than as an entailment of GET V, as is the past connotation

present in many contexts. Preverbal *get* is a bound morpheme in most (if not all) languages exhibiting this morpheme.

In Burmese the form *V-yá* can have the same function as *get V* in other Southeast Asian languages in some (usually negated) contexts, but this use is rather marginal and may be a more recent development under influence from Mon (or Thai/Shan).

In Burmese there are two possible explanations for the grammatical functions of *yá*:

1. *V-yá* developed out of a grammaticalised serial verb construction or resultative verb compound, as the postverbal *GET* in Thai and other languages.
2. *V-yá* describes the result of some (prior) causative situation, which is beyond the control of the subject. This implicit causative situation is backgrounded.

While the first development can explain the potential use of *yá* (which indeed seems to be the original function of *V-yá*) it fails to explain the obligative reading and the boundness of *yá* in older texts. The second approach is more promising in both respects and corresponds well with Enfield's explanation for preverbal *get* and with the semantics of *yá* outlined in section 1 above.

We may explain the *V-yá* construction as a kind of "anticausative", i.e. the focus is taken away from an entity or situation causing the event described by *V*:

$$Y \text{ CAUSE } X V \rightarrow X \text{ (DO/MAY/MUST) } V$$

or (in Burmese)

$$Y \text{ X-obj } V\text{-se} \rightarrow X \text{ V-}yá$$

The implicit causing event can be foregrounded and expressed in FB by the postverbal auxiliary *se* 'let, make so. do sth.', a standard translation for Pali causatives (s. Okell 1965:203). The causative expression can have permissive or jussive reading, explaining the ambiguity of the *V-yá* construction.

In CB *V-se* is replaced by *V-khài*, with the semantically transparent *khài* 'command, order' in jussive contexts and the syntactically irregular *pè V* (with preverbal 'give') in permissive contexts.<sup>5</sup> This latter construction is obviously a very recent innovation not used in standard language and is seen by some authors as being the result of influence from Mon (s. Okano 2005).<sup>6</sup>

Applying the notion of Talmy's force dynamics analysis (Talmy 2000 vol. 1, ch.7), one can say that an expression *X V-yá* indicates that

- a. an unnamed Antagonist (Y) fails to overcome the Agonist's (X) disposition towards motion (i.e. *V*) [if it is X's desire to *V*] or
- b. an unnamed Antagonist (Y) overcomes the Agonist's (X) disposition towards rest (i.e. not-*V*) [if it is X's desire not to *V*] or

<sup>5</sup> For some speakers at least preverbal *pè* can also have jussive meaning, corresponding to Thai and Mon usage.

<sup>6</sup> The parallelism is more perfect in Thai and Mon, where the causative expression involves the preverbal operator *GIVE*, i.e. the semantic opposite of 'get', with both *JUSSIVE* and *PERMISSIVE* readings. The corresponding *GET-V* construction does not have *OBLIGATIVE* reading in either language, though.

- c. an unnamed Antagonist (Y) causes the Antagonist (X) to V [if X's disposition toward motion or rest is neutral or unspecified].

Semantically, a. appears to be the older use in Burmese. The use b. is a pragmatically based extension, i.e. a logic interpretation in situations where V is seen as unwanted by X. The common factor is that V-*yá* expresses a caused situation, differing in the disposition of the Agonist (and therefore the direction of the causing force or Antagonist). The third (marginal) function of *yá* (corresponding to preverbal GET in other languages) shows a neutral or unspecified disposition of the Agonist towards motion or rest, and a (rather weak) Antagonist causing the Agonist to V. This explanation is perfectly in line with Enfield's analysis of preverbal GET in other Southeast Asian languages quoted above.<sup>7</sup> As especially a. and b. came to be perceived as different notions, different means came to be applied to keep these notions apart. The means employed will be discussed in 5.2 and 5.3.

The semantic development or extension from POTENTIAL to OBLIGATIVE readings or vice versa, though cross-linguistically rare, is not cognitively impossible and can be seen in some other languages. Swedish *få* (from a verb meaning 'catch') means both 'may' and 'must', depending on context, and *dürfen* means 'may' in New High German, but its meaning in Old High German was 'need', showing the inverse development.

### 5.2 The syntactic development

We have seen above that in older stages of the language *yá* appears as a bound operator, while in later stages it is a free operator in one function (POTENTIAL). This development is rather unusual, as it seems to go against the normal paths of grammaticalisation processes (unidirectionality: a free form can become a bound form, but not the other way round).

One possible explanation for this unexpected development may be internal restructuring. As the constructions involving grammaticalised 'get' are transparent in all languages of the region ('get' is never fully grammaticalised, i.e. it always also retains its lexical meaning), restructuring of the expressions is always possible. As V-*yá* took over a new meaning as OBLIGATIVE, the POTENTIAL could have been re-invented along the lines of the explanation given above, i.e. as a serial verb construction, in order to keep the two functions more clearly apart. The use of the subordinator *ywé* in LB, which corresponds to both *ló* 'that, because' and *pì* 'SEQUENTIAL' in CB obviously supports this explanation. The expression in (43) could be paraphrased as 'Because he (tried to) catch fish, he got one.' or 'He (tried to) catch fish and then he got one.'

- (43) FB *θu ηà phà̃ ywé yá θi.*  
 CB *θu ηà phà̃ ló/pì yá tɛ.*  
 3 fish catch SUB/SEQ GET NF  
 'He can/may catch fish.'

This re-invention of the pre-existing construction may have been reinforced by corresponding expressions in the neighbouring languages (especially Thai and Mon), with which Burmese has had intensive contact for many centuries. It is remarkable that the (preverbal) OBLIGATIVE marker in Mon (*tèh* from '(be) hit') also is a bound operator, while

<sup>7</sup> c. is here tentatively added to cover the third meaning of *yá* constructions. Further detailed investigation is needed to account for this function in Burmese and other SE Asian languages.

postverbal GET for POTENTIAL is a free form. The situation in Burmese thus corresponds syntactically to Mon, although the lexemes involved are different. Sentences (44) and (45) are Mon translations of the Burmese examples given in (38) and (39) above, together with the corresponding positive and negative answers.

(44) *ɲuə nɔʔ ʔuə ʔa wəŋ puə kɔʔ haʔ (ʔa) kɔʔ. / (ʔa) hɔʔ kɔʔ.*  
 day this 1s go play festival GET Q (go) GET (go) NEG GET

(45) *ɲuə nɔʔ ʔuə tɛh tɔn phèə haʔ tɛh tɔn. / hɔʔ tɛh tɔn.*  
 day this 1s HIT go.up school Q HIT go.up NEG hit go.up

Burmese in turn has obviously influenced Shan, where preverbal get together with FUT/IRREALIS marking is used to indicate obligation (46) (unlike other Tai languages, which employ other auxiliaries to express obligation and necessity) and postverbal potential GET is used as a bound morpheme like in older Burmese but unlike other Tai languages (47).

(46) *tě lei hɛu kón pěn nón wêi.*  
 FUT GET GIVE person be(.sick) lie.down KEEP  
 'You must let the sick person lie down.'

(47) *nôŋ ʔəm lám lei.*  
 y.sibling NEG guess GET  
 'I cannot guess it.'

There seem therefore to be two layers of grammaticalisation, the results of both still being used in modern Burmese. The first development was an extension of the semantic structure of *yá* to take a sentential complement, first expressing permission (corresponding to a desired theme), later including obligation (corresponding to the more marginal use with undesired themes). Later a serial verb construction was grammaticalised to cover the ability meaning. A more extensive analysis of available historical linguistic data both within and outside Burmese is likely to shed more light on the direction of influence and path(s) of grammaticalisation involved.

### 5.3 The NF-FUT distinction

The last point to be explained is the grammaticalisation of the NON-FUTURE/FUTURE distinction in CB (at least in some areas). This distinction is present only in CB, where the subordinator *lɔ* (obligatory in FB in most contexts) is usually dropped (but it is retained in example (50) below). Compare the similar situations expressed in sentences (48)-(49), the first without modal and NF VM, the second with OBLIGATIVE modality and FUT VM. (46) has the same temporality (this week) but the choice is for the NF VM to be used with potential modality. The FUTURE/FUTURE distinction is used for POTENTIAL/OBLIGATIVE distinction consistently only in present time or general contexts. In past and future contexts the tense distinction is retained, overriding the modal function of the VM *mɛ* and *tɛ*.

- (48) *di ?əpa? tɔ̌ nǎ.ne pǎi ?əlou? shĩ̃ tɛ.*  
 this week CHNG evening part work go.down NF  
 ‘This week I work evening shift.’
- (49) *di ?əpa? né tǎi mənɛ?khĩ̃ ?ə-sə̌ tɕĩ thá yá me.*  
 this week day every morning DVL-early big get.up GET FUT  
 ‘This week I have to get up early every day.’
- (50) *di ?əpa? ?ei?-ya thá nau?tɕá ló yá tɛ.*  
 this week sleep-place get.up late SUB GET NF  
 ‘This week I can get up late.’

Apart from being a means to keep different functions apart, there might be some deeper cognitive reason behind the choice of NF for POTENTIAL and FUT for OBLIGATIVE modality. Probably obligative expressions are more closely linked with future tense in that it makes more sense pragmatically to talk about a situation that has to occur at some point in the future than situations that had to occur in the past. Many Burmese speakers avoid constructing sentences expressing NECESSITY or OBLIGATION with past reference. In these cases the plain verb is preferred. Bybee *et al.* (1994:258) state that apart from DESIRE “the other common agent-oriented pathway to future is that of **obligation**.” This can be seen in many languages around the world, indicating the rather strong link between the two notions. In Burmese the pre-existing category FUTURE seems to have favoured the OBLIGATION reading of the modal auxiliary rather than the other way round. A similar connotation can be seen in German sentences like (51), where the future tense is used to (indirectly) express an obligation:

- (51) *Du wirst das heute noch machen.*  
 2s FUT:2S DEM:ns today yet do:INF  
 ‘You will (= have to) do this today.’

Ability on the other hand is rarely exploited to express future (Bybee *et al.* have only one language, Cantonese in their sample). They state (p. 266) that

grams marking one or more of the meanings ability, root possibility, permission, and epistemic possibility are quite common, but their development into future markers is apparently not common.

Permission or ability to do something is obviously more closely related to non-future tense. This distinction may have psychological reasons: The (desired) permission to V is seen to be present before the event has started, while the (undesired) obligation is put off to the future i.e. the actual start of the situation/activity (‘I will have to V’). The NF-FUT distinction to disambiguate the different kinds of modality is not fully grammaticalised, but it seems to be enough conventionalised that some speakers are unsure as to the correct expression of FUTURE POTENTIAL situations. Some prefer V *yá nf* while others insist on V *yá FUT*. In both cases *yá* remains a free operator. Without context, most speakers interpret *yá tɛ* as ABILITIVE and *yá me* as OBLIGATIVE.

In epistemic function (NECESSITATIVE/ASSUMPTIVE), V-*yá* FUT is preferred, probably expressing a lower degree of certainty expressed by the FUT VM.<sup>8</sup> POTENTIAL epistemic modality is expressed by another V2 (*nāi* 'win, overcome'), as seen in sentence (9) above.

## 6. Conclusion

In Burmese, like in most or all languages of Southeast Asia, the verb meaning 'get' has developed different modal meanings. This grammaticalised use of get can be observed already in Old Burmese inscriptions. The stages of the grammaticalisation of the verb 'get' can be summarised as follows:

- V-*yá* expresses non-volitional, uncontrolled events (anticausative), usually positive for the actor → POTENTIAL modality (parallel to semantics of full verb *yá* with theme wanted/desired by RECIPIENT),.
- Use is extended to OBLIGATIVE modality (corresponding to main verb use of *yá* with THEME unwanted by RECIPIENT); old obligative marker is gradually replaced (still present in literary language).
- Potential modality is re-introduced from grammaticalised use of biclausal construction expressing ACTIVITY (volitional, conative) and RESULT (non-volitional, no control), possibly influenced by Mon and/or Thai usage (constructions semantically transparent in all languages) → new free operator for potential modality, occurring with subordinator.
- Subordinator is dropped in colloquial language, leading to ambiguity in some constructions → new distinction made based on pre-existing NON-FUTURE/FUTURE distinction (not fully grammaticalised, maybe dialectal), consistent mainly in present or general contexts, much less in past and future, where NONFUTURE and FUTURE are used to marked tense distinction.

The development of potential modality (root possibility) in modern Burmese has been shown to be a case of re-grammaticalisation of the lexeme 'get' rather than direct development from a bound to a free operator. It seems possible that neighbouring languages such as Thai and especially Mon had their share of influence in the latter development. It is obvious that mutual influence including structural and semantic borrowing (calques) plays an important part in the history of the Southeast Asian languages, which have been in close contact for at least a thousand years. This influence in many cases resulted in reinforcing or accelerating language internal change such as grammaticalisation and restructuring of functional morphemes. Much of this mutual influence remains to be investigated, taking into account a greater corpus of historical stages of Burmese as well as of the neighbouring languages.

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<sup>8</sup> The epistemic function of V-*yá* *mε* is secondary and seems to be a more recent innovation, maybe an example of English influence in Burmese structure.

**Abbreviations:**

<b>ATTR</b>	Attributive	<b>IMPL</b>	Impulsive action	<b>POL</b>	Politeness particle
<b>CHNG</b>	Change of event/topic	<b>INF</b>	Infinitive	<b>PROX</b>	Proximative
<b>CL</b>	Classifier	<b>LOC</b>	Locative	<b>QUOT</b>	Quotation marker
<b>COND</b>	Conditional	<b>NF</b>	Non-future	<b>RINF</b>	Reinforcement of proposition
<b>DES</b>	Desiderative	<b>NML</b>	Nominaliser	<b>SEQ</b>	Sequential
<b>DVL</b>	Deverbaliser	<b>OBJ</b>	Object	<b>SUB</b>	Subordinator
<b>FUT</b>	Future	<b>PL</b>	Plural		

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# SINGAPORE ENGLISH WH-QUESTIONS: A GAP IN THE PARADIGM

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## 0 Abstract

In this paper, we illustrate and explain a gap in the paradigm of *wh*-question formation in Singapore English (SE). We show that the simple assumption that SE question formation strategies are the union of the strategies employed by its parent languages, Standard English (StdE) and Chinese, is not sufficient to derive all the facts in SE. While SE *wh*-arguments can *wh*-move like StdE *wh*-phrases or stay in situ like Mandarin *wh*-phrases, SE *wh*-adjuncts have only the single option of *wh*-moving like their StdE counterparts. We claim that the lack of SE *wh*-adjuncts in situ is due to a universal principle, the Overt-over-Covert Movement Principle (OCMP). The OCMP is shown to regulate the influence that StdE and Chinese exert on SE, and produces the *wh*-question formation pattern in SE.

## 1 Introduction

Singapore English (SE) is considered to be a variety of English which Standard English (StdE) has transformed into over time under the constant influence of various Chinese languages spoken in Singapore<sup>1</sup> (Bao 2001, and virtually all the literature about SE). To use terms from contact linguistics, the superstrate, StdE, has shifted into SE under the influence of the substrates, the Chinese languages. Due to the mixed nature, SE generally employs more than one strategy to implement what appears to be the same construction. Let us consider how a relative clause is formed in SE for illustration:

- (1) Relative NPs:  
a. [the book [<sub>RC</sub> that I buy]] is on the table.  
b. [the book [<sub>RC</sub> I buy one]] is on the table.

In SE, a relative clause (RC) can be formed in one of the two ways.<sup>2</sup> The RC construction in (1a) is identical to its StdE counterpart, and thus its source is no mystery. However, SE can also form a RC with *one*, as shown in (1b).

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<sup>1</sup> SE is also found in contact with Malay and Tamil, but their influence is limited to lexical borrowings. Since our focus here is on the structural properties found within SE, we exclude these languages from the discussion.

<sup>2</sup> SE has all the other ways of forming relative clauses StdE has, i.e., by using relative pronouns such as *who*, *which*, and etc. or a null operator. We do not discuss them since they are not relevant to the discussion at hand.



The existence of a deviating construction such as the one in (1b) makes SE theoretically significant, because an analysis of the construction will necessarily involve addressing important questions such as (i) what is its structure?, (ii) why SE has come to have this structure, and (iii) why are the other logically possible structures not attested? Answering these would lead to a better understanding of how relevant individual languages interact to create the deviating construction and the role of universal grammar in its making. Turning back to the specific case in (1b), we may, following Alsagoff and Ho (1998) and Bao (manuscript), assimilate SE *one* to the Chinese relativizer *de* in (2a) which takes its sentential complement to its left and the SE order between the RC and its head to that of English counterpart in (2b), which captures the word order in (2c(=1b)):

- (2) Relativized NPs in Chinese, StdE, and SE:
- |             |                                  |         |
|-------------|----------------------------------|---------|
| a. Chinese: | [I buy <i>de</i> ] book          | [S-R]-N |
| b. StdE:    | the book [ <i>that</i> I bought] | N-[R-S] |
| c. SE:      | the book [I buy <i>one</i> ]     | N-[S-R] |
- (S=Sentence, R=Relative Marker, N=Noun)

Attributing the deviating structure in (2c) to the properties of the RCs in StdE and Chinese seems to be the right approach, especially given the origins of SE. This approach, however, will also need to address questions such as (i) why *one*, which can never be used as a relativizer in StdE, can be used as a relativizer in SE and (ii) why the English word order is chosen for the order between the RC and its head, not the Chinese word order, as in the following logically possible but ungrammatical construction:

- (3) \*[I buy one] the book. [S-R]-N

In the process of answering these questions, we will attain an understanding of how a simple pronominal element *one* in one language (StdE) can extend its ability to take on an additional role as a relativizer in another language (SE) and why a specific word order gets to be chosen among the competing options.

In this paper, we investigate *wh*-question formation in SE, which raises similar sorts of questions to the ones we illustrated above with regard to the SE relative clause formation. Whereas previous studies on SE question formation (Bao 2001, Chow 1995, Ho 2000, among others) have focused on the discursal properties of question formation, here we examine the formal syntactic properties of question formation in the language. Our main claim is that SE *wh*-question formation is best understood as a combination of the StdE and Chinese strategies with a universal principle regulating the combination.

In section 2, we show that SE employs two strategies to form a *wh*-question when the *wh*-phrase is an argument, which raises the question of how to account for the strategy that deviates from the StdE strategy. However, when the *wh*-phrase is an adjunct, only one strategy which is the StdE strategy can be used. The deviating strategy is not allowed. We illustrate this argument-adjunct asymmetry, and show that although the behaviour of *wh*-arguments can be explained by simply attributing it to the influences of StdE and Chinese, the behavior of *wh*-adjuncts cannot be handled in the same way. In section 3, we address the question of why only one strategy is employed for *wh*-adjuncts and propose, as an answer, a principle called the Overt-over-Covert Movement Principle. The proposed

principle makes language-internal and cross-linguistic predictions regarding movement. In Section 4, we show that the predictions are correct. Section 5 concludes the paper.

## 2 Argument and adjunct asymmetry in SE *wh*-questions

### 2.1 SE *wh*-arguments – two question formation strategies

In a SE question, the *wh*-argument can be overtly realized at the front of a clause, as in (4), or left in-situ, as in (5):

*SE fronting of wh-arguments*

- (4) a. What Mary eat?  
b. Who Mary like?

*SE wh-in-situ*

- (5) a. Mary eat what?  
b. Mary like who?

One strategy involves the *wh*-argument displaced from its thematic position, while the other involves the *wh*-argument remaining in the thematic position.

### 2.2 SE *wh*-fronting is StdE *wh*-movement

The fact that SE can have the *wh*-argument at the initial position of a sentence is not surprising, given the fact that StdE is a parent language of SE and that it forms a question with a *wh*-phrase at the initial position of a sentence, as shown in (6) and (7):

*wh-question in StdE*

- (6) a. What did Mary eat?  
b. \*Mary eats what?

- (7) a. Who does Mary like?  
b. \*Mary likes who?

The similarity between (4) and (6a/7a) suggests that the mechanism responsible for *wh*-question formation in StdE is also at work to produce the *wh*-argument at the initial positions of the sentences in (4) in SE.

*Wh*-fronting in SE shares other defining properties associated with StdE *wh*-questions. In StdE, a *wh*-phrase undergoes obligatory movement to [Spec, CP] and, in doing so, it obeys subadjacency constraints (successive cyclic movement). The following example indicates that a *wh*-phrase must occupy [Spec, CP]:

*wh-movement to [Spec, CP] of StdE*

- (8) [<sub>IP</sub> John knows [<sub>CP</sub> (\*that/\*whether/\*if) *who*<sub>i</sub> Mary kissed.]]

When *who* in the embedded clause follows *that*, *whether*, or *if*, the sentence is ungrammatical. They must be absent in order for the sentence to be grammatical. The ungrammaticality of the sentences with *who* following the realized complementizer is standardly attributed to the fact that *who* is not in [Spec, CP]. When the complementizers

are absent, *who* can be in [Spec, CP] and the sentence is grammatical<sup>3</sup>. Sentence (9), SE's counterpart of (8), shows that SE *wh*-questions also face the same restriction when the *wh*-element is fronted:

*Wh-movement to [Spec, CP] of SE*

- (9) John know [<sub>CP</sub> (\*that/\*whether/\*if) *who*<sub>i</sub> Mary like.]

*Wh*-movement in StdE is constrained by the Subjacency Condition (Chomsky 1986): *wh*-phrases cannot move out of islands (Ross 1967). For instance, a *wh*-phrase cannot move out of a Complex NP (Complex NP Constraint (CNPC)), as illustrated in (10a). Contrast (10a) with (10b) in which no islands are crossed by the fronted *wh*-phrase:

*CNPC and StdE wh-arguments*

- (10) a. \*Who<sub>i</sub> did the boy say [<sub>IP</sub> John likes [<sub>DP</sub> the man that [<sub>IP</sub> beat *t*<sub>i</sub>]]]?  
 b. Who<sub>i</sub> did the boy say [<sub>IP</sub> John likes *t*<sub>i</sub>]]?

SE *wh*-fronting behaves in exactly the same way as StdE, indicating that the same mechanism is at work in both languages:

*CNPC and SE wh-arguments*

- (11) a. \*Who<sub>i</sub> the boy say [<sub>DP</sub> John like the man that [<sub>IP</sub> beat *t*<sub>i</sub>]]]?  
 b. Who<sub>i</sub> the boy say [<sub>IP</sub> John like *t*<sub>i</sub>]]?

We have shown that fronting of SE *wh*-arguments behaves exactly like StdE *wh*-movement with respect to its landing site and the Subjacency Condition. With this, we conclude that *wh*-fronting in SE is the same as *wh*-movement in StdE.

### 2.3 SE *wh-in situ* is Chinese *wh-in situ*

Since StdE *wh*-questions cannot have a *wh*-element in situ,<sup>4</sup> it clearly cannot be the reason why CSE has *wh*-in-situ as one of its question formation strategies. Chinese, which is another parent language for SE, is the natural source that could have contributed to this strategy in SE.

Chinese *wh*-arguments can only be in-situ. As shown by the contrast in (12), a *wh*-argument must stay in the position where it receives its thematic role:

*Chinese wh-argument in-situ*

- (12) a. Meili      chi shenme?  
          Meili      eat WHAT  
          *What did Mary eat?*  
 b. \*Shenme Meili chi?

<sup>3</sup> A parallel point to this is that even if we were to switch the position of the complementizer and the *wh*-element such that the *wh*-element precedes the complementizer, the sentence will still be ungrammatical. But, this ungrammaticality is due to an independent constraint, the Doubly Filled Comp Filter.

<sup>4</sup> We do not consider questions with multiple *wh*-phrases in this paper.

Besides, Chinese *wh*-arguments are known to be not subject to any movement diagnostics such as intervention effects (Hagstrom 1998) or Subjacency. Sentence (13) illustrates the lack of intervention effects with Chinese *wh*-arguments:

- Absence of intervention effects for Chinese wh-in-situ*
- (13) Meili meiyou chi shenme?  
 Meili NEG eat WHAT  
*What didn't Meili eat?*

Even if the NEG *mei* intervenes between the *wh*-element and its scope position, the sentence can still be interpreted as a question. The insensitivity of Chinese *wh*-arguments to islands is illustrated in (14). In sentence (14), the *wh*-element *shenme* can appear inside an island, CNPC, and the sentence is still grammatical:

- Absence of subjacency violation for Chinese wh-arguments*
- (14) Mama da-le [DP [IP chi shenme de] nanhai]?  
 Mother hit-LE eat WHAT COMP boy  
 Intended meaning: *For which x, mother beat the boy who ate x?*

SE *wh*-arguments in-situ behave exactly the same as Chinese *wh*-arguments in-situ with respects to intervention effects and the CNPC. First, they are impervious to intervention effects:

- Absence of intervention effects for SE wh-in-situ*
- (15) John doesn't like *who*?

In (15), the SE *wh*-argument *who* can occur after negation and still be interpretable as a question just like the Chinese example in (13).

Furthermore, SE, which does obey the Subjacency Condition when the *wh*-element is fronted, does not obey this condition when the *wh*-element is in-situ. This can be seen in (16):

- Absence of subjacency violation for SE wh-arguments in-situ*
- (16) The boy see [DP the man that [IP beat *who*]]?

We conclude that *wh*-arguments in-situ in SE come from Chinese. To put the conclusions together drawn in this subsection and the previous subsection, the *wh*-fronting in SE comes from StdE *wh*-movement and the deviant structure of *wh*-in-situ in SE comes from Chinese.

#### **2.4 SE *wh*-adjuncts – asymmetrical behavior with *wh*-arguments**

Turning to *wh*-adjuncts in SE, unlike *wh*-arguments which can move or remain in-situ, they can only be fronted, as shown in (17) and (18):

*Wh-movement in CSE wh-adjuncts*

- (17) a. Why<sub>i</sub> Mary like Tom t<sub>i</sub>?  
 b. \*Mary like Tom why?  
 (18) a. How<sub>i</sub> Mary do her work t<sub>i</sub>?  
 b. \*Mary do her work how?

As with their argument counterparts, the fronting of SE *wh*-adjuncts exhibits the characteristics of StdE *wh*-movement. SE *wh*-adjuncts can move only to [Spec, CP], as shown in (19), and they are sensitive to island constraints, as shown in (20):

*wh-movement to [Spec, CP] of SE wh-adjuncts*

- (19) [<sub>IP</sub> John know [<sub>CP</sub> (\*that/\*whether/\*if) [<sub>IP</sub> why Mary like him t<sub>i</sub>]]]?

*Complex NP Constraint (CNPC) in SE wh-adjuncts*

- (20) \*Why<sub>i</sub> the boy see [<sub>DP</sub> the girl that [<sub>IP</sub> kill the fish t<sub>i</sub>]]?

Given the fact that SE *wh*-adjuncts cannot remain in-situ, the question of why this should be the case becomes pertinent. If SE *wh*-arguments can either *wh*-move or remain in-situ due to StdE and Chinese influence, why is this not the case for SE *wh*-adjuncts? After all, Chinese *wh*-adjuncts also remain in-situ, as shown in (21) and (22).

*Chinese wh-adjunct in-situ*

- (21) Meili weishenme chi pingguo?  
 Meili WHY eat apple  
*Why did Meili eat the apple?*  
 (22) Meili zenme zhidao zhenxiang?  
 Meili HOW know truth  
*How did Meili know the truth?*

It seems that a simple replication of the question formation structures in StdE and Chinese into SE is not a viable option. There is a restriction that prevents SE *wh*-adjuncts from following Chinese *wh*-adjuncts, and being in-situ. Furthermore, there is the question of why it should be Chinese *wh*-adjunct in-situ which is forming the gap in the paradigm of SE *wh*-questions. In other words, is there a principled reason why StdE *wh*-movement was adopted by SE *wh*-adjuncts rather than Chinese *wh*-adjuncts in-situ? The various *wh*-question formation strategies in SE and their influences are summarized in Table 1 below.

**Table 1:** *the SE Wh-Question Formation Strategies*

	StdE <i>wh</i> -Movement	Chinese <i>wh</i> -in-situ
SE <i>wh</i> -Arguments	Yes	Yes
SE <i>wh</i> -Adjuncts	Yes	<b>No</b>

Recall the Relative Clause data discussed in the introduction. We showed how a simple adoption of StdE and Chinese RC formation strategies cannot be the complete answer as to how the SE RCs are formed. This is because there is a gap in the full

paradigm of RCs allowed in SE. To reiterate, while the internal RC structure of Chinese and the position of the nominal head relative to the RC of StdE is adopted by SE as can be seen in (23c), both internal RC structure and position of the nominal head relative to the RC of Chinese is not seen in SE. This is shown in (23d). While we do not have an answer for why this gap exists for the RC structure in SE, we believe we have the solution for why SE *wh*-question formation shows the gap illustrated in Table 1 and this is dealt with in the next section. Specifically, we will answer the following two questions, i) why can't SE *wh*-adjuncts remain in-situ like their Chinese counterparts, ii) what is the reason for the gap to be with Chinese *wh*-adjunct in-situ and not StdE *wh*-adjunct movement?

*Relativized NPs in Chinese, StdE, and SE*

- (23(=2))
- |             |                                  |         |
|-------------|----------------------------------|---------|
| a. Chinese: | [I buy <i>de</i> ] book          | [S-R]-N |
| b. StdE:    | the book [ <i>that</i> I bought] | N-[R-S] |
| c. SE:      | the book [I buy <i>one</i> ]     | N-[S-R] |
| d.          | *[I buy one] the book.           | [S-R]-N |

### 3 Overt-Over-Covert Movement Principle

#### 3.1 Two types of Chinese *wh*-in-situ

The simple assumption that SE adopted *wh*-movement from StdE and *wh*-in-situ from Chinese respectively cannot account for the lack of in-situ *wh*-adjuncts in SE, especially since Chinese *wh*-adjuncts are located in-situ, as illustrated in (21-22), much like the Chinese *wh*-argument data in (12). In order to determine why SE *wh*-adjuncts have not adopted the Chinese in-situ strategy, we first need to scrutinize the mechanism of Chinese *wh*-in-situ.

It is well known that Chinese *wh*-arguments and *wh*-adjuncts, while they look the same on the surface, behave differently in terms of movement possibilities (Soh 2005). While the *wh*-argument *shenme* in (24) can appear inside an island, a complex NP, and still take matrix scope, the *wh*-adjunct *weishenme* in (25) cannot appear inside an island:

*CNPC and Chinese wh*-argument in-situ

- (24) Mama da-le [DP [IP chi shenme de] nanhai]?  
 Mother hit-LE eat WHAT COMP boy  
 Intended Meaning: *For which x, Mother beat the boy who ate x?*

*CNPC and Chinese wh*-adjunct in-situ

- (25) \*Mama da-le [DP [IP weishenme chi pingguo de] nanhai]?  
 Mother hit-LE WHY eat apple COMP boy  
 Intended meaning: *For which reason x, Mother beat the boy that ate apples x?*

Given the standard assumption that island violations are evidence for movement,<sup>5</sup> while *weishenme* remains in-situ on the surface, it is actually moving covertly. Another piece of evidence for this covert movement of Chinese *wh*-adjuncts comes from intervention effects. When the negation intervenes between *weishenme* and its scope

<sup>5</sup> Pesetsky (2000) has shown that covert movement, like overt movement, also violates subjacency.

position, as in (27), the sentence becomes ungrammatical. Contrast this with Chinese *wh*-argument in-situ illustrated earlier and reproduced here as (26). This is another crucial difference between Chinese *wh*-arguments and *wh*-adjuncts:

(26) *Absence of intervention effects for Chinese wh-argument in-situ*

Meili meiyou chi shenme?  
 Meili NEG eat WHAT  
*What didn't Meili eat?*

(27) *Presence of intervention effects for Chinese wh-adjunct in-situ*

\*Ta mei weishenme jian-guo Lisi?  
 He NEG WHY meet Lisi  
*Why didn't he meet Lisi?*

To summarize, Chinese *wh*-arguments and *wh*-adjuncts exhibit different properties in terms of movement possibilities; *wh*-argument in-situ is impervious to both subjacency violations and intervention effects, *wh*-adjuncts in-situ, on the other hand, exhibit both subjacency violations and intervention effects. This shows that Chinese *wh*-adjuncts move covertly.

### 3.2 *The Overt-over-Covert Movement Principle*

Chinese *wh*-arguments and *wh*-adjuncts show a split in behaviour; *wh*-arguments do not move whereas *wh*-adjuncts undergo covert movement. SE *wh*-arguments and *wh*-adjuncts show a similar split, but the split is not the same. While Chinese *wh*-adjuncts undergo covert movement, SE *wh*-adjuncts must undergo overt movement. We propose that there is a principle which we call the Overt-over-Covert Movement Principle (OCMP), given in (28), and claim that it is what is responsible for the fact that SE *wh*-adjuncts can only undergo overt movement:

(28) **Overt-over-Covert Movement Principle (OCMP)**

Overt *wh*-movement blocks covert *wh*-movement.

The OCMP says that in a particular language, if overt *wh*-movement can occur, then covert *wh*-movement will not be possible. It should be noted that OCMP is not an altogether novel proposal. The OCMP can be subsumed under Pesetsky's general Earliness Principle (Pesetsky 1989):

(29) **Earliness Principle:** Satisfy filters as early as possible on the hierarchy of levels:

(DS >) SS > LF > LP

The Earliness Principle requires that if there are transformational derivations with identical number of steps involved to reach a similar 'end-product', the one that can be derived the earliest in terms of the hierarchy of levels is always preferred over another that can be derived at a later level. The hierarchy further illustrates that the operations on the level of surface structure always takes place earlier than LF, entailing that overt operations are always preferred by a language over covert operations (with other conditions being equal), which is what the OCMP has outlined in a specific form. By positing that overt

movement will prevent covert movement from taking place, given that both operations are available choices for a language, the OCMP thus provides a specific application of the Earliness Principle.

### 3.3 Summary and Predictions

#### 3.3.1 SE *wh*-adjuncts and the OCMP

Let us reconsider the *wh*-phenomena in SE with respect to the OCMP. We have shown that SE *wh*-arguments have the option to either *wh*-move overtly (due to StdE *wh*-movement) or stay in-situ (due to Chinese *wh*-argument in-situ). However, SE *wh*-adjuncts can only *wh*-move but cannot stay in-situ like Chinese *wh*-adjuncts. In section 3.1, we have shown that Chinese *wh*-adjuncts, unlike their argument counterparts, move covertly. We claimed in the previous section that the reason why covert movement of Chinese *wh*-adjuncts is not replicated in SE is due to the OCMP in (28). Since SE has the option of overtly moving *wh*-phrases, (28) bars any form of covert movement of *wh*-adjuncts. This explains why SE *wh*-adjuncts cannot remain in-situ. The covert movement option of *wh*-adjuncts Chinese imparted to SE is blocked by the overt movement option imparted by StdE.

We have answered the first question posed at the end of section 2.4 as to why SE *wh*-adjuncts cannot remain in-situ. We showed that this is due to OCMP, a universal principle which forces overt movement over covert movement. However, OCMP does not provide a principled explanation for why it is that covert movement of SE *wh*-adjuncts is blocked and not overt *wh*-movement. After all, OCMP does not say anything about why overt movement should be preferred over covert movement. This is where we allude to Pesetsky's Earliness Principle in (29). (29) amounts to saying that operations are satisfied as early as possible in the derivation. Since SE *wh*-adjuncts can move overtly in the syntax, this would satisfy (29) and we would expect movement at no other level of the derivation. This effectively rules out covert movement of SE *wh*-adjuncts and explains why SE *wh*-adjuncts, given the choice between overt and covert *wh*-movement, have chosen StdE *wh*-movement over Chinese covert movement.

#### 3.3.2 Predictions of the OCMP

The OCMP predicts that a language cannot have both overt and covert *wh*-movement simultaneously. This provides us with a convenient way of testing the validity of the OCMP. We formulate (30) as a way of capturing the prediction that the OCMP makes regarding languages with optional *wh*-movement:

#### (30) Prediction of the OCMP

If a language has optional *wh*-movement, the *wh*-in-situ will never be subject to island constraints.

If there was a language which had the option of moving its *wh*-phrases and allowing them to remain in-situ, the in-situ option could not be an instance of covert movement due to the OCMP. Therefore, the in-situ *wh*-phrases are predicted to show no island violations.

In the next section, we will proceed to test this prediction of OCMP with several languages which have optional *wh*-movement, namely SE itself, Malay, Babine Wisuwit'en, and French, and show that it is correct.



#### 4 Optional *wh*-movement

Before we proceed to provide cross-linguistic support for the OCMP, we first examine how it fares with the in-situ *wh*-arguments in SE.

##### 4.1 *SE wh-arguments and the OCMP*

In section 2.1, SE *wh*-arguments were shown to optionally *wh*-move. According to the prediction in (30), the in-situ strategy adopted by SE *wh*-arguments is predicted to be free from island constraints. This prediction is borne out:

###### *CNPC and SE wh-arguments*

(31(=16)) The boy see [<sub>DP</sub> the man that [<sub>IP</sub> beat *who*]]?

###### *Adjunct island and SE wh-arguments*

(32) Mary left [because John did *what*]?

###### *Factive island and SE wh-arguments*

(33) John discover [the scandal about *who*]?

(31-33) show that SE *wh*-arguments can appear inside any islands in line with the prediction in (30).

##### 4.2 *Malay and the OCMP*

According to Cole & Hermon (1998), Malay *wh*-arguments show optional *wh*-movement, as shown (34):

###### *Malay Wh-arguments*

(34) a Apa      Fatimah    makan?  
       What      Fatimah    eat  
       *What did Fatimah eat?*

b. Fatimah makan      apa?

[Cole & Hermon 1998: 226]

Given that Malay *wh*-arguments have optional movement, the in-situ *wh*-arguments are predicted to show no island violations. This prediction is borne out, as shown in (35) and (36):

###### *Subject island and Malay wh-arguments in-situ*

(35) [[Yang    Ali    menghawini    siapa]    mengecewakan    ibunya]  
       that    Ali    married            Who    upset            his mother  
       *That Ali married who upset his mother?* [literal]

###### *CNPC and Malay wh-arguments in-situ*

(36) Kamu sayang [perempuan [yang telah    berjumpa siapa]]]  
       you    who    woman    that    already    meet    who  
       *You love the woman who met who?* [literal]

[Cole & Hermon 1998: 228]

Unlike the in-situ arguments, their moved counterparts give rise to island violations, as shown in (37) & (38):

*Subject island and fronted Malay wh-arguments*

- (37) \*[Siapa<sub>i</sub> [t<sub>i</sub> yang [Ali menghawini t<sub>i</sub>]] mengecewakan ibunya]  
 Who that Ali married upset his mother  
*That Ali married who upset his mother?* [literal]

*CNPC and fronted Malay wh-arguments*

- (38) \*Dengan siapa<sub>i</sub> [kamu sayang [perempuan [yang telah berjumpa t<sub>i</sub> ]]]  
 With who you love woman that already meet  
 Intended meaning: *You love the woman who met who?*  
 [Cole & Hermon 1998: 227]

The OCMP correctly predicts the behaviour of the *wh*-in-situ of Malay *wh*-arguments.

### 4.3 Babine Wisuwit'en and the OCMP

Denham (2000) shows that Babine Wisuwit'en, an Athabaskan language, has optional *wh*-movement, as illustrated in (39):

*BW wh-in-situ*

- (39) a. Lillian ndu yunket?  
 Lillian WHAT bought?  
*What did Lillian buy?*

*BW wh-fronting*

- b. ndu Lillian yunket?  
 WHAT Lillian buy  
*What did Lillian buy?*

[Denham 2000: 201]

In accordance with the prediction of the OCMP, the in-situ *wh*-phrases do not induce island violations, as shown in (40), whereas the fronted *wh*-phrase does induce island violations, as shown in (41):

*Subject island and BW wh-in-situ*

- (40) [[George Mbi yudilyhe] Lillian yilhggi]?  
 George WHO knows Lillian surprised  
*That George knows who surprised Lillian?* [literal]

*Subject island and BW wh-extraction*

- (41) \*Mbi<sub>i</sub> [[George t<sub>i</sub> yudilyhe] Lillian yilhggi]?  
 WHO (that) George knows Lillian surprised  
*That George knows who surprised Lillian?* [literal]

[Denham 2000: 206-207]

Babine Wisuwit'en is, therefore, another language that supports the OCMP.

#### 4.4 French “optional movement” – A case against the OCMP?

Malay and Babine Wisuwit'en have attested to and affirmed the prediction made by the OCMP. French is another language which also seems to exhibit optional *wh*-movement. Consider the different word order variants of a simple French *wh*-question in the following examples:

*wh-in-situ – French*

- (42) Elle a donné la montre à qui?  
*She gave the watch to who?*

*wh-fronting – French*

- (43) qui a-t-elle donné la montre?  
*Whom did she give the watch?*

[Lassadi 2003:83]

On the surface, it appears that French does allow for both *wh*-in-situ, as in (42), as well as *wh*-fronting, as in (43). If we were to assume that French *wh*-fronting was an instance of *wh*-movement, the OCMP predicts that *wh*-in-situ will not be an instance of covert movement. However, there is evidence to suggest that French *wh*-in-situ is an instance of covert movement and consequently a potential counterexample to the OCMP. Cheng & Rooryck (2000) show that French *wh*-in-situ is vulnerable to intervention effects such as the presence of negation in (44). Such vulnerability means that French *wh*-in-situ has to be instance of covert movement:

*Negated wh-question – French*

- (44) \*Il n' a pas rencontré qui?  
 He NE has not met WHO  
*Who hasn't he met?*

[Cheng & Rooryck 2000:11]

Does this mean that French is a counterexample to the OCMP? This doesn't seem to be the case. First, consider the fact that the *wh*-in-situ phenomenon in French is very restricted; a *wh*-in-situ element is not allowed in an embedded clause, as shown in (45).

*Embedded clause with wh-in-situ – French*

- (45) a. \*Pierre a demandé tu as embrassé qui?  
 Pierre has asked you have kissed who  
*Pierre asked who you kissed?*

*Embedded clause with a wh-fronting – French*

- b. Pierre a demandé qui tu as embrassé?  
*Pierre asked who you kissed?*

[Bošković 2000: 8]

This suggests that in at least complex sentences, the OCMP holds. This is because only *wh*-fronting is allowed in such sentences and this poses no trouble for the OCMP.

As for the cases with simple clauses, there is controversy in the field regarding the nature of French *wh*-fronting. Lassidi (2003) has argued that the *wh*-fronting phenomenon in French is not *wh*-movement at all. Lassidi treats French *wh*-fronting in simple clauses as movement of *wh*-phrases “triggered by a focus feature that must be checked before the derivation reaches the interfaces” (Lassidi 2003:69). He concludes his findings by stating that French “lack(s) *wh*-movement that is triggered by a strong [+*wh*] feature.” (Lassidi 2003:89). If Lassidi is correct, then even the cases of optional *wh*-movement in simple clauses will not be a counterexample to the OCMP because *wh*-fronting is not *wh*-movement at all and the OCMP says nothing about fronting that is not *wh*-movement.

## 5 Conclusion

In this paper, we have examined the various question formation strategies in SE by means of showing StdE and Chinese influence. We have shown that a simple adoption of the question formation strategies in StdE and Chinese into SE does not account for the gap in the paradigm of SE *wh*-questions. While SE *wh*-arguments can move like StdE *wh*-arguments and stay in-situ like Mandarin *wh*-arguments, SE *wh*-adjuncts have only the single option of moving like their StdE counterparts. We explained this gap by means of the OCMP, which is a specific implementation of Pesetsky’s Earliness Principle. We provided empirical evidence for the OCMP not only from SE, but also from other languages, such as Malay, Babine Wisuwit’en and French. If our claim is correct, a language created in a contact situation is shaped not only by the influences of its parent languages but also by universal principles.

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# STRUCTURAL AND PRAGMATIC FUNCTIONS OF KUKI-CHIN VERBAL STEM ALTERNATIONS

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## 0 Abstract

While the Kuki-Chin languages of India and Myanmar are primarily characterized by agglutinative morphology, their widespread use of verbal stem alternations provides an interesting counterexample. These alternations exist as verbal pairs which differ only by the addition or alteration of one phoneme (e.g., *pe~pek*). Since they were first noted, many attempts have been made to define how the stems are used. Historical evidence indicates that stem 2 developed from nominalizing and valence-increasing morphemes, functions which still exist today. However, some Kuki-Chin languages have (to use Cooreman's terminology (1994)) "co-opted" stem 2, adapting it for subject/object disambiguation in relative clauses and WH questions. Other languages have also developed a pragmatic function, using stem 2 in ergative independent clauses. This paper compares and contrasts the use of stem alternations in five Kuki-Chin languages: Lai, Mizo, Falam, Tiddim, and Sizang Chin. The results suggest four basic functions of stem alternations: 1) *nominalization*; 2) *subordination*; 3) *disambiguation in relative clauses/WH questions*; and 4) *valence-changing*. Furthermore, the uses divide naturally by agentive vs. nonagentive focus. It seems that verbal stem alternations are in fact the morphosyntactic manifestation of the *agentive voice* and its logical counterpart, the *nonagentive voice*.

## 1 Introduction

The division of Tibeto-Burman known as Kuki-Chin<sup>1</sup> manifests a form of fusional morphology uncharacteristic of these typically agglutinative languages. *Verbal stem alternations*, as they are called, take shape as two distinct variations in the verb stem, formed by the addition or alternation of a single final morpheme.<sup>2</sup> These variations are known as *stem 1* and *stem 2*.

- (1) that ~ thah  
to kill<sup>3</sup>

---

<sup>1</sup> These languages are spoken primarily in the hills of western Burma and neighboring northeast India.

<sup>2</sup> While both tone and vowel length are also frequently in variation (and in a large percentage of verbs are the sole distinguishing factors) they are not considered in depth here.

<sup>3</sup> Personal Falam Chin field data, written in the practical orthography of that language. I am deeply grateful to my language helpers, Paul Van Hre, Mang Herh, and Peter Lal Din Thar for their patient assistance.

The nature of verbal stem alternations is rooted in their historical derivation. In §2, I propose an account of the original functions and how the various types were formed. In §3, I compare and contrast data from five Chin languages—Mizo, Lai, Falam, Tiddim, and Sizang Chin—to show how Kuki-Chin languages use the stems for different functions. In §4, I suggest that while the languages have developed various structural and pragmatic functions, stem alternations are fundamentally the morphosyntactic manifestation of the *agentive voice* and its logical counterpart, the *nonagentive voice*.

## 2 Clues from Phonology and Historical Linguistics

### 2.1 The Phonological Forms

Verbal stem alternations are formed in various ways, which, though not completely predictable, can be grouped into characteristic types.<sup>4</sup> These are shown in Table 1:<sup>5</sup>

**Table 1:** *Types of Verbal Stem Alternations in Five Kuki-Chin Languages*

Alternation Type	English	Central Chin Languages			Northern Chin Languages	
		Mizo	Lai	Falam	Tiddim	Sizang
1) addition of final oral stop to vowel/diphthong	<i>to give</i> <i>to sing</i>	pee ~ peek sa ~ sak	pee ~ peek	pe ~ pek sa ~ sak	saa ~ sak	pia ~ piak
2) /ŋ/ ~ /n/	<i>to cook</i> <i>to be tall</i>		tshuaŋ ~ tshuan	suang ~ suan	saan ~ saan	saan ~ saan
3) final stop ~ glottal stop	<i>to kill</i>	that ~ tha?	that ~ tha?	that ~ thah	that ~ tha?	that ~ thaa
4) glottalization of final sonorant	<i>to see</i>	hmuu ~ hmu?	hmuu ~ hmu?	hmu ~ hmuh	muu ~ mu?	muu
5) nasal ~ stop	<i>to look at</i>				en ~ et	en ~ et

The majority of Kuki-Chin languages have two orthographically distinct forms for at least some of their verbs.<sup>6</sup>

<sup>4</sup> See Henderson (1965), Melnik (1997), and Osburne (1975) for further discussion of the phonological types.

<sup>5</sup> Examples are drawn from Bright (1957), Patent (1997), Osburne (1975) and personal data, Henderson (1965), and Stern (1963). Throughout this paper I have standardized phonological representation for ease of comparison. In the case of Falam Chin examples drawn from personal data, however, the representations are orthographic.

<sup>6</sup> Hyman & VanBik (2002) report that 80% of Lai verbs have two distinct forms (754 out of a verbal corpus of 910).

## 2.2 An Historical Perspective

Although clearly grammaticalized now, the stem alternations are rooted in formerly productive Proto-Tibeto-Burman (PTB) morphology. As noted previously, the formation of stem 2 is somewhat unpredictable.

- (2a) Falam: <sup>7</sup> ti ~ tit                    to lay eggs  
 (2b)            thi ~ thih                to die

Even though the stem 1 forms are phonologically similar, the stem 2 forms diverge. This indicates that the stem 2 forms resulted from (at least) two separate processes.

### 2.2.1 Nominalizing and Valence-Changing Morphemes

Chhange (1993) was among the first to suggest the possibility of two derivations. Historically, she said, a nominalizer and a “valence-changing morpheme” were in operation. As evidence, she notes that a few Mizo verbs have retained three separate forms,<sup>8</sup> of which stem 2 is identical to the nominalized form, and stem 3 is an invariant causative or benefactive version.

**Table 2:** *Verbs with Three Forms: Central Chin*

	S1	S2/Nominalized	S3/Valence Change
Lai	keŋ ~	ken    to bring along	keʔn    to make bring along
Mizo	ʔii ~	ʔit    to be fearful	ʔiʔ    to fear someone

Chhange proposed that the PTB causative suffix *-t* shows up in Mizo as a glottal stop (*-ʔ*), and suggests *-d* as the nominalizing morpheme.

More recently, Matisoff (2003) has also pointed to a PTB causative, although he identified it as *-s* which developed into Proto-Chin *-ʔ*. Matisoff’s analysis also differs from Chhange’s in that he sees the stem 2 and 3 forms as derived from a subordinating *-ʔ* and a causative *-ʔ*, each of which operated at different points diachronically.

The best solution results from a synthesis of Chhange and Matisoff’s analyses. Two processes acted separately on the verbs: a nominalizing *-t* (a well-attested PTB morpheme; Matisoff 2003:454; Benedict 1972:97) and a causative/benefactive *-ʔ*. While a few verbs have produced and kept three distinct forms, most likely only a subset of verbs ever derived forms using both morphemes.

**Table 3:** *Comparison of Suggested PTB Morphemes and Their Functions*

	S2	S3
Chhange	nominalizing <i>/-d/</i>	valence-changing <i>/-t/ → /-ʔ/</i>
Matisoff	subordinating <i>/-ʔ/</i>	causative <i>/-s/ → /-ʔ/</i>
<b>synthesis</b>	<b>nominalizing <i>/-t/</i></b>	<b>causative/benefactive <i>/-s/ → /-ʔ/</i></b>

<sup>7</sup> Examples from here on, unless otherwise noted, are from Chhange 1993 (Mizo), Patent 1997 and Kathol & VanBik 1999 (Lai), personal field data (Falam), Henderson 1965 (Tiddim), and Stern 1963 (Sizang).

<sup>8</sup> In fact, “stem 3” functions as a separate verb.



For those that did, most Kuki-Chin languages collapsed the nominalizing and causative/benefactive processes, retaining either one or the other of the forms as stem 2. For every cognate verb, some Kuki-Chin languages chose the causative/benefactive form, while others chose the nominalized form (Chhange 1993).

- (3a) Mizo: fiŋ ~ fiŋ            *to be clever*  
 (3b) Bawm: fiŋ ~ fiŋʔ        *to be clever*<sup>9</sup>

### 2.2.2 Northern Chin

Type 5 alternations, nasal ~ stop, occur solely in Northern Chin languages. Furthermore, glottalized nasals appear only in Central Chin. As the two seem to be in complementary distribution, it is likely they reflect different outcomes of the application of the same affix.

**Table 4:** *Northern Chin vs. Central Chin*

	S1	S2/Nominalized	S3/Valence Change
Lai	keŋ ~	ken ‘to bring along’	keʔn ‘to make bring along’
Sizang	keŋ ~	ken ‘to have’	ket ‘to bring for someone’

It seems probable that while ŋ ~ n alternations are a product of *-t* affixation, nasal ~ stop alternations are a product of *-ʔ* affixation.

### 2.2.3 Phonological Processes

Thus, the phonological derivation of the verbal stem alternation types is as follows: types 1-2 form from the nominalizing *-t*, and types 3-5 from the causative/benefactive *-ʔ*.

## 3 Functions of Verbal Stem Alternations

In order to determine the current functions of the stems, I compiled a list of pertinent verbal contexts in which to examine stem use. My final list included: *independent, indicative clauses; relative, complement, adverbial, and non-finite*<sup>10</sup> *clauses; yes-no and WH questions; nominalizations and verbal nouns; negatives; and imperatives*. Using this list, I examined all the available data for five Chin languages representative of the Central and Northern branches of Kuki-Chin:<sup>11</sup> Mizo, Lai Chin, and Falam Chin (Central) and Tiddim and Sizang Chin (Northern).

As I compared and contrasted the five languages according to their use of verbal stem alternations, four general functions emerged: 1) *nominalization*, 2) *subordination*, 3) *disambiguation in relative clauses and WH questions*, and 4) *valency-changing*. However, *irrealis mood* can neutralize stem 2 use.

<sup>9</sup> Löffler 1973.

<sup>10</sup> There is no formal distinction between infinitives, gerunds, and participles in Kuki-Chin languages.

<sup>11</sup> Unfortunately, little work has been done on the Southern Chin languages at the time of this writing.

### 3.1 Nominalization

There are three basic types of nominalizations, one of which is characterized by stem 1, the other two by stem 2.

#### 3.1.1 Agentive Nominalizations

The first type, agentive nominalizations, are those in which the noun formed is the agent of the action. This type uses stem 1 plus an agentive nominalizer, such as *-tu* or *-mi* (“one who”).

- |     |        |             |                |            |                 |
|-----|--------|-------------|----------------|------------|-----------------|
| (4) | Mizo:  | sa ~ sak    | <i>to sing</i> | hla-sa-tuu | <i>singer</i>   |
| (5) | Falam: | that ~ thah | <i>to kill</i> | that-tu    | <i>murderer</i> |

#### 3.1.2 Nonagentive Nominalizations

Nonagentive nominalizations are those in which the noun formed is the object of the verb or, in the case of stative verbs, its abstract nominal realization. Usually, this type is a combination of stem 2 plus a nominalizing morpheme such as *na/nak* (“place, manner, quality of \_\_\_”).

- |     |        |             |               |         |              |
|-----|--------|-------------|---------------|---------|--------------|
| (6) | Mizo:  | ṭhuu ~ ṭhut | <i>to sit</i> | ṭhut-na | <i>seat</i>  |
| (7) | Falam: | cing ~ cin  | <i>to sow</i> | cin-nak | <i>field</i> |

#### 3.1.3 Verbal Nouns

Verbal nouns convey a variety of nominal ideas related in some way to the verb: the outcome or the instrument, for example. These also are expressed by stem 2, but usually lack a nominalizing morpheme.

- |      |         |                  |                   |              |                                |
|------|---------|------------------|-------------------|--------------|--------------------------------|
| (8)  | Mizo:   | rethey ~ rethey? | <i>to be poor</i> | rethey?-(na) | <i>poverty</i>                 |
| (9)  | Falam:  | tla ~ tlak       | <i>to fall</i>    | nitlak       | <i>sunset</i> (lit., day fall) |
| (10) | Tiddim: | zunun ~ zunun    | <i>to feast</i>   | zunun        | <i>feast</i>                   |

### 3.2 Subordination

I examined four main types of subordinate clauses: *complement*, *relative*, *adverbial*, and *non-finite*. Complement clauses in Kuki-Chin languages are treated exactly like independent clauses. Relative clauses will be dealt with in §3.3.

#### 3.2.1 Adverbial Clauses

Adverbial clauses appear in stem 2, unless they reflect irrealis mood (see §§3.5.4-3.5.6). Adverbial subordination is always indicated by an adverbial subordinator, most frequently with a temporal, locative, or reason significance.

- |      |       |              |                           |
|------|-------|--------------|---------------------------|
| (11) | Mizo: | kan-zin      | chuunjin,                 |
|      |       | 3P-travel.II | while                     |
|      |       |              | <i>While we traveled,</i> |

- (12) Lai: Mangkio ?a-?i? tik-?a?,  
Mangkio 3S-sleep.II when,  
*When Mangkio slept,*
- (13) Falam: a-har-tuk veekin,  
3S-difficult.II-too since,  
*Because it's too hard,*
- (14) Sizang: ka-va tiaŋ,  
1S-go.II when,  
*When I went,*

### 3.2.2 Non-Finite Verbal Clauses

Main clauses with psychological verbs of desire, feeling, or perception often take non-finite verbal complements. These are distinguished from complement clauses or adverbial clauses by their lack of any complementizer or adverbial subordinator.<sup>12</sup> As with adverbial clauses, unless they reflect irrealis mood, non-finite verbal clauses always take stem 2.

- (15) Mizo: i-zin ka-du?  
your-travel.II 1S-want  
*I want you to travel.*
- (16) Lai: Lawthlawpaa ?a-?i? ka-hmu?  
farmer 3S-sleep.II 1s-see.II  
*I saw the farmer sleep.*
- (17) Falam: Kim cu hlasak a zir.  
Kim DEI song-sing.II 3S learn.I  
*Kim learned to sing.*
- (18) Hlasak cu a nuam zet.  
song-sing.II DEI 3S fun.I very  
*Singing is fun.*

### 3.3 Disambiguation in Relative Clauses and WH Questions

Relative clauses in Kuki-Chin languages are frequently formed as a full sentence followed by a relative pronoun. They can also take the form of a non-finite verb without subject agreement prefixes, and with or without the relative pronoun. In either case, studies of Lai and Mizo relative clauses have shown that when the relativized element is the subject, stem 1 is used; but if the relativized element is the object or an oblique, stem 2 is used (Hillard 1977; Lehman 1996; Kathol 1999). This generalization holds true for Falam, as well.

<sup>12</sup> Both Chhangte 1993 and Kathol 2003 identify these clauses as complement clauses. However, they are distinct from complement clauses, as noted, by not having any complementizer.

### 3.3.1 Relative Clauses: Relativized Subject

Relative clauses where the subject is the relativized element look and act quite similar to agentive nominalizations. As with agentive nominalizations, it is the agent of the action that is in focus. The relative pronouns used (if any) are *-mi* or *-tu*, just as in agentive nominalizations, and they occur with stem 1.

(19) Lai: lawthlawpaa ?a-that mii ?uitsow  
farmer 3S-kill.I REL dog  
*the dog that killed the farmer*

(20) Mizo:<sup>13</sup> hmei chiaa ui vo tuu a  
woman dog beat.I REL REL  
*the woman who beat the dog*

(21) Falam: zunghruk a ru tu pa  
ring 3S steal.I REL man  
*the man who stole the ring*

### 3.3.2 Relative Clauses: Relativized Object or Oblique

Likewise, relative clauses where the object or oblique is relativized look quite similar to nonagentive nominalizations. Here, the argument receiving the action is in focus. The relative pronouns used may be *-mi* (Lai, Falam) or *-a* (Mizo). With obliques only, *-na(ak)* is sometimes used. Just as with nonagentive nominalizations, they occur with stem 2.

(22) Lai: lawthlawpaa ni? ?a-tha? mii ?uitsow  
farmer ERG 3S-kill.II REL dog  
*the dog that the farmer killed*

(23) Mizo: zir-tiir-tuu in le?-kha-buu a-lei na khuaa  
teacher ERG book 3s-buy.II REL village  
*the village where the teacher bought the book*

(24) Falam: a ruk mi zunghruk  
3S steal.II REL ring  
*the ring which (he) stole*

(25) Tiddim: ka sial gawh a vom hi  
1s mithian kill.II 3S black.I PAR  
*The mithian which I killed is black.*

(26) Sizang: danka na piak numei  
money 2S give.II woman  
*the woman to whom you gave the money*

<sup>13</sup> Relative clause examples for Mizo are from Hillard 1977.

### 3.3.3 WH Questions

Unlike yes-no questions, which always appear in stem 1 (see §3.5.1), WH questions take different stems depending on which element is questioned. Just as in relative clauses, if the subject is in focus, stem 1 is used.

- (27) Mizo: eŋ      ŋee    tlaa  
           what    Q      fall.I  
           *What fell?*
- (28) Lai:    ?a-how da?    ?a-?it?  
           who            3S-sleep.I  
           *Who slept?*
- (29) Falam: Zo so    vainim    vok    a      pe?  
           who    corn      pig    3S    give.I  
           *Who fed the pig corn?*

If, on the other hand, an object or oblique is questioned, stem 2 is used.<sup>14</sup>

- (30) Mizo: eŋ    ŋee    i-ti??  
           who    Q      2S-do.II  
           *What are you doing?*
- (31) Falam: Khui mi    ramsa    so    vainim    na    pek?  
           Which    animal      corn      2S    give.II  
           *Which animal did you feed the corn to?*

### 3.4 Valency-Changing Operations

So far in this discussion of stem functions, with some slight variations, all of the languages surveyed have seemed unified. Now, we come to a use category not equally distributed in every Kuki-Chin language—that of valency-changing operations.

#### 3.4.1 Causatives and Benefactives

Just as the nominalization function of one PTB morpheme continued to influence stem usage, so did the causative/benefactive function of the other. As the original valence-increasing morpheme became grammaticalized, however, new structures developed.

<sup>14</sup> It must be stated that not all the WH question data available conforms to this model. Some Lai data, for example suggests that topicalization of a non-questioned element can override the default configuration.

(32a) **Mang**kiō      ta??  
       **Mang**kiō      Q  
       *What about Mangkiō?*

(32b) ?a-how ni? da?            (**Mang**kiō)      ?a-bom??  
       who                    **Mang**kiō      3s-help.II  
       *Who helped Mangkiō?*

See §3.4 for further explanation of this Lai-specific phenomena. In Falam, some questioned obliques (postpositional phrases, time and locative expressions) take stem 1.

**Table 5:** Comparison of Causative/Benefactive Forms Across Five Kuki-Chin Languages

	Central Chin			Northern Chin	
	Mizo	Lai	Falam	Tiddim	Sizang
causative	tur (S2)	ter (S2)	ter (S1)	sak (S1)	sak (S1)
benefactive	sak (S2)	sak (S2)	sak (S2)	sak (S2)	sak (S2)

For the Northern Chin languages, the morpheme *sak* is now used both for benefactive and causative meanings, and stem 2 morphology became the distinguishing factor between them. So, *sak* + stem 1 = causative, while *sak* + stem 2 = benefactive.

(33) Tiddim: a dām sak hi  
 3S heal.I CAUS PAR  
*He healed (him).*

(34) na lo kong khawh sak hi  
 your field you cultivate.II BEN PAR  
*I'll cultivate your fields for you.*

(35) Sizang: koŋ pài sak hi  
 I come.I CAUS PAR  
*I made (them) come.*

(36) koŋ pái sak hi  
 I come.II BEN PAR  
*I come for (them). (on their behalf)*

The Central Chin languages, however, developed separate morphology for causative and benefactive structures: *tur/ter* and *sak* respectively. Both motivate the use of stem 2 in Mizo and Lai, while in Falam, only *sak* does.

(37) Mizo: keel min-veen-tur  
 goat me-watch.II-CAUS  
*He made me watch the goats.*

(38) kor mi-ley-sak  
 dress me-buy.II-BEN  
*She bought a dress for me.*

(39) Falam: Thing i cing-ter  
 ginger 1S plant.I-CAUS  
*He made me plant ginger.*

(40) Thing ka lo cin-sak  
 ginger 1S 2S plant.II-BEN  
*I planted ginger for you.*

Peterson (1998) has shown that in other Lai applicative contexts there is a similar valence-increasing effect, and thus stem 2 is used there as well.

### 3.4.2 Ditransitive Verbs

A similar stem shift occurs in Falam when a transitive verb becomes ditransitive by promotion of a postpositional phrase to an indirect object.

(41a) A    falanui    hnenah    a    pe.  
 His girlfriend to        3S    give.I  
*He gave (it) to his girlfriend.*

(41b) A    falanui        a    pek.  
 His girlfriend    3S    give.II  
*He gave his girlfriend (it).*

### 4.4.3 Ergative and Antipassive Structures

Lai Chin has been shown to have an *ergative/absolute* argument orientation<sup>15</sup> (Kathol and VanBik 2001; others). Like many other ergative languages, Lai has developed a detransitivizing structure that has been identified as an *antipassive* (Peterson 1998; Kathol and VanBik 2001; Kathol 2003)<sup>16</sup> to serve as an alternative to the transitive form. This antipassive structure is used for pragmatic reasons of discourse prominence—to allow shifting of topic status from the object of a transitive sentence to the subject of the derived intransitive sentence.

In examples 42-44, below, the intransitive, transitive/ergative, and detransitivized antipassive structures are shown. The object-focused ergative structure uses stem 2, while the subject-focused intransitive and antipassive structures use stem 1. It seems that the development of the antipassive motivated use of stem 2 in the ergative structure to help distinguish the two.

(42) Intransitive: Subject has topic status  
**Maŋkio**    ?a-?it.  
**Mangki**    3S-sleep.I  
*Mangki slept.*

(43) Ergative: Object has topic status  
**Maŋkio**    ni?    vok        ?a-tsook.  
**Mangki**    ERG pig    3S-buy.II  
*Mangki bought a pig.*

<sup>15</sup> Hillard (1974) has suggested that Tiddim, Lushai (Mizo), and Sizang Chin also seem to be drifting toward ergativity, and that this may be a Kuki-Chin language trend.

<sup>16</sup> There are several reasons to be hesitant about calling this structure an antipassive. See discussion in §4.

- (44) Antipassive: Subject has topic status  
**Maŋkio** vok ʔa-tsoo  
**Mangki** pig 3S-buy.I  
*Mangki bought a pig.*

### 3.5 Irrealis Mood

A few environments can neutralize the verb stem, causing it to appear as stem 1 when it would normally be stem 2. Yes-no questions, imperatives, and negatives affect ergative structures in this way.<sup>17</sup> Certain special types of adverbial clauses also appear in stem 1 when we might expect stem 2: some conditionals, contrafactuals, and circumstantial clauses. The common theme among these contexts is their low register on a scale of reality factor, or *irrealis* mood.

#### 3.5.1 Yes-No Questions

Lai data (Kathol 2003) demonstrates that yes-no questions are consistently in stem 1, even when the ergative structure would normally predict stem 2.

- (45) Maŋkio ni? vok ʔa-tsoo ma?  
 Mangki ERG pig 3S-buy.I Q  
*Did Mangki buy a pig?*

#### 3.5.2 Imperatives

Lai also consistently uses stem 1 for imperatives.

- (46) Tii ding tua?!  
 water drink.I IMP  
*Drink the water!*

#### 3.5.3 Negatives

When an ergative structure in Lai is negated, the verb appears in stem 1.<sup>18</sup>

- (47) Maŋkio ni? ʔa-tsoo low.  
 Mangki ERG 3S-buy.I NEG  
*Mangki did not buy (it).*

#### 3.5.4 Conditionals

Kathol (2003) and Chhange (1993) both note that certain types of conditionals always appear in stem 1. Stern (1963) likewise notes that “polite conditionals” are in stem 1.

- (48) Mizo: vo-rhep ma? i-la a-soot-cuaŋ-low-aŋ  
 beat.I-INT EMPH if 3S-improve.I-CF-NEG-FUT  
*Even if we give him a good licking, he will not improve.*

<sup>17</sup> This is a reanalysis of Kathol’s (2003) system of competing constraints.

<sup>18</sup> Negatives do not appear to affect adverbial clauses, relative clauses or WH questions.



(49) Lai: Maŋkio ni? vok tsoo koo,  
 Mangkio ERG pig buy.I if  
*If Mangkio bought a pig,*

(50) Sizang: ka pài le  
 1S go.I if  
*If I go,*

However, conditionals can appear in stem 2 as well.

(51) Mizo: koŋ a-chiat poʔ-in kan-kal-thow-aŋ  
 road 3S-bad.II even-if 1P-go-still-FUT  
*Even if the road is bad, we will still go.*

(52) Falam: Ka pa a thih asile, kan farah ding.  
 my father 3S die.II if 1P poor FUT  
*If my father died, we would become poor.*

(53) Tiddim: Na sial a vom leh ka deih hi.  
 Your mithian 3s black.II if, 1s want.I PAR  
*If your mithian is black, I want (it).*

(54) Sizang: noŋ pái lek,  
 you come.II if  
*If you come,*

Perhaps the explanation for this disparity lies in a subtle distinction in the meaning of ‘if’ related to its probable reality. In the first set of examples, *if* means ‘if (assumed to be untrue),’ falls in the realm of irrealis, and takes stem 1. In the second set of examples, *if* means ‘if (assumed to be true),’ is treated as a normal adverbial clause, and therefore takes stem 2. In support of this argument is the fact that different particles are used for *if* in example set 1 than are used in example set 2.

### 3.5.5 *Contrafactuals*

Chhangte (1993) gives some evidence that contrafactuals (what she calls “imaginary conditionals”) always appear in stem 1 in Mizo. This is also true of Falam.

(55) Mizo: ʃhian ʃhaa ni-low i-la cuan mi-seʔ-may-aŋ.  
 friend good be.I-NEG if if 1o-bite.I-just-FUT  
*If I had not been a good friend, he would just eat me.*

(56) Falam: Rul that lo la, a lo cuk ding.  
 snake kill.I NEG if 3S 2S bite FUT  
*If you do not kill the snake, it will bite you.*

3.5.6 Circumstantial Clauses

Similarly, clauses which clearly never took place are in stem 1 in Mizo and Falam.

- (57) Mizo: a-faate hmu-lowin a-bowral.  
 his-children see.I-without 3S-die  
*He died without seeing his children.*

**Table 6:** Comparison of Verbal Stem Alternation Functions Across Five Kuki-Chin Languages<sup>19</sup>

	Context	Central Chin Languages			Northern Chin Languages			
		Lai	Mizo	Falam	Tiddim	Sizang		
		Intr.	Atp.	Erg.				
Independent , Indicative	declarative	I	I	II	I	I	I	I
	complement clause	I	I	II	I	I		
	causative/benefactive	II <sup>20</sup>			II	I/II (II-Zahao)	I/II	I/II
	core argument IO					II		
Relative CL/WH Questions	subject Q	I	I	II	I	I		
	nonsubject Q	II	II	II	II	I <sup>21</sup> , II		
	subject relative	I	I	N/A	I	I		
	nonsubject relative	II	N/A	II	II	II	II	II
Irrealis Mood	imperative	I			N/A	N/A		I
	yes/no Q	I			N/A	N/A		I
	negation	I			N/A	N/A		
	conditional clause: Type 2	I			I	I		I
	contrafactual/circumstantial				I	I		
Nominalization/ Subordination	conditional clause: Type 1	II			II	II	II	II
	adverbial subordinate clause	II			II	II	II	II
	non-finite subordinate clause	II			II	II		
	agentive nominalizations				I	I		
	non-agentive nominalizations	II			II	II	II	II

Table 6 contains a summary of the functions discussed in §3.

<sup>19</sup> Blanks indicate that no data, or inconclusive data, was available for that structure in that language.

<sup>20</sup> And other applicative morphemes (Peterson 1998).

<sup>21</sup> Most obliques.

#### 4 Analysis

There are two possible ways to view the results of the data presented in §3: 1) based on how the languages differ and 2) based on how they agree.

##### *4.1 Structural and Pragmatic Functions in Developmental Stages*

The functions addressed in §3 tend to occur in the languages, not randomly, but in specific groupings. It may be that the languages acquired different structural and pragmatic functions through various stages of language development, as follows:

1. A nominalizing morpheme originally served to derive nouns from verbs, while a valence-changing morpheme derived causative and benefactive stems.

2. The derived forms grammaticalized, merged and began to be used in subordinate environments. New morphemes developed for causation and benefaction, but the stem 2 forms were either used along with them (Central Chin) or distinguished between them (Northern Chin).

3. The grammaticalized forms acquired a subject focus and object/oblique focus distinction, which different types of nominalizations reflected.<sup>22</sup> The distinction was then extended to apply in relative clauses and WH questions.

4. By analogy, and with the development of the antipassive, some languages began to use stem 2 to heighten the difference between the ergative and antipassive structures.

In Ann Cooreman's (1994) discussion of antipassives, she notes that antipassives appear in two distinct types: semantic/pragmatic and structural. The use discussed in §3.4.3 (Ergative and Antipassive Structures) is what Cooreman identifies as the semantic/pragmatic use, which serves to background the O argument by detransitivizing the verb, thus investing the S argument with topic status. The second type, the structural antipassive, is used not so much to shift topic status as to make an argument available for some purpose such as coordination or relativization. This is what we see in Kuki-Chin relativization and WH-question patterns.<sup>23</sup> In Cooreman's view, structural antipassives are "co-opted" from semantic/pragmatic ones (Cooreman 1994:75). However, from looking at the Kuki-Chin data, I would suggest that it is possible to move from the structural to the semantic/pragmatic usage as well as the other direction, as at least two Kuki-Chin languages (Mizo and Falam) have the structural use without the semantic/pragmatic use.

##### *4.2 Agentive and Nonagentive Stems*

A second way of analyzing the functions as presented in §3, is to organize them according to general consensus. Table 7, below, lists the main categories of functions divided by stem use. Looking at the types this way, a pattern begins to emerge. The structures which take stem 1 have a clear subject focus, while the structures which take stem 2 have an object/oblique focus. We could characterize them as agentive and nonagentive.

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<sup>22</sup> Perhaps in conjunction with a shift from nominative/accusative to ergative/absolutive argument orientation.

<sup>23</sup> It also occurs in Lai coordination patterns.

**Table 7:** *Functions of the Stems by Focus*

Function	Stem 1 Agentive	Stem 2 Nonagentive
<b>nominalization</b>	agentive	nonagentive/verbal nouns
<b>subordination</b>		adverbial/non-finite
<b>relative clauses</b>	subject relativized	object/oblique relativized
<b>wh questions</b>	subject questioned	object/oblique questioned
<b>valence-changing operations</b>	causatives <sup>24</sup>	causatives/benefactives
	antipassive	ergative

#### 4.2.1 Subordinate Clauses

A few remarks are in order regarding the one-sided distribution of subordinate clauses. At least two explanations could be advanced for why adverbial and non-finite clauses are uniformly in stem 2. As Kathol (2001) points out, “Subordinate environments of this kind are typically closely connected to nominalizations”—specifically, nominalizations of the nonagentive type. An alternate explanation is that topic status is lifted from subordinate clauses and invested completely in the main independent clause (Osburne 1975).

#### 4.2.2 Causatives and Applicatives

Like subordinate clauses, causative, benefactive, and other applicative constructions consistently occur in stem 2 (with some exceptions for Falam, Tiddim, and Sizang). This can be explained by these structures’ inherent nonagentive nature. Since the purpose of such valence-increasing operations is to promote an object or oblique to a higher status (causative promotes the object to subject status; benefactive promotes an oblique to object status), intuitively the argument thus promoted would be the topic of the sentence.

#### 4.3 Agentive and Nonagentive Voice

Up to this point I have continued to use the terminology *antipassive* to describe the detransitivizing counterpart to the ergative structure in Lai Chin. There are, however, some objections to this identification. First, antipassives typically delete the O argument or else demote it to oblique status (with accompanying oblique case marking) (Cooreman 1994). The non-ergative structure in Lai seems rather to operate by noun-incorporation, and deletion of the O argument is ungrammatical. Likewise, the corresponding structural uses in relative clauses and WH questions are not necessarily valency-decreased, as a true antipassive ought to be (Campbell 2000).

In the same vein, the term *active voice* does not adequately describe the transitive ergative structure in Kuki-Chin languages.<sup>25</sup> *Active voice* reflects a nominative/accusative mindset which views the action in terms of the subject. (I.e., active voice indicates the subject performs the action, while passive voice indicates the subject receives the action.) In discourse terms, the subject always equals the topic. The topic slot is, in general, fixed (subject = topic), but which argument (agent vs. patient) falls in that slot is variable. In

<sup>24</sup> Falam, Tiddim, and Sizang

<sup>25</sup> Some authors term this the *ergative voice*.

contrast, in at least some ergative/absolutive languages such as Lai or Falam Chin, the argument slots are fixed (subject always equals agent/experiencer), but location of the topic can vary. Instead of moving an argument into topic slot, these languages switch topic location.

It is possible that better terminology exists. Campbell (2000), in his description of valence-changing derivations in K'iche', notes that along with a normal antipassive structure, K'iche' has what is termed the *agent-focus antipassive*, or *agentive voice*. The agent-focus antipassive behaves remarkably similarly to the "antipassive" in Lai, both for pragmatic and structural functions. Because of the clear agent/nonagent focus distinction implied by verbal stem alternations in Kuki-Chin, I would like to propose that the terms *agentive voice* and *nonagentive voice* be adopted to characterize what have heretofore been termed *stem 1* and *stem 2*, as well as what have been termed *antipassive* and *active* or *ergative voice*.<sup>26</sup>

## 5 Conclusion

While the Kuki-Chin languages surveyed in this paper do not agree one hundred percent in their usage of verbal stem alternations, they clearly agree in dividing them according to an agentive versus nonagentive distinction. I thus would propose the terms agentive voice and nonagentive voice be used to describe the stem alternations in the future. I further propose that voice distinctions based on valence are partially neutralized by irrealis mood (case marking continues to indicate the voice), while voice distinctions in relative clauses and WH questions are not. Neutralization also occurs in some types of subordinate clauses.

While mine is not the first attempt to compare use of verbal stem alternations across Kuki-Chin languages (see Hillard 1974 and Löffler 1973), I have tried to provide a more thorough treatment and more comprehensive solution to the issue of verbal stem alternations than has been suggested up to the present. However, unanswered questions certainly remain. For example, Southern Chin did not figure largely in this analysis because of limited data. It may be that the Southern Chin languages have developed quite differently. I hope this attempt will provide a framework in which to examine other Kuki-Chin languages in the future, thus providing a fuller picture of this unique structure.

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<sup>26</sup> I suggest replacing the terminology only insofar as it has been used for these particular Kuki-Chin-specific structures.

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# THE MIDDLE VOICE IN TAGALOG\*

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## 0 Abstract

The current approaches to the Tagalog focus system attach too much importance to syntactic transitivity, and leave unanswered the question of how the focus system correlates with voice phenomena, thereby failing to elucidate its functional aspects. In this paper, we address this question by examining the middle voice and related voice phenomena in this language. Adopting the conceptual framework for voice phenomena (Shibatani 2006), we claim that Goal Focus (GF) verb forms express active situations, whereas Actor Focus (AF) verb forms represent two different non-active situations, namely, middle situations with introverted verbs and antipassive situations with extroverted verbs. AF verb forms also work for actor nominalization. We argue that these two functions of AF verb forms, non-active voice categories and actor nominalization, stem from their primary function, namely, actor-focusing.

## 1 Introduction

For more than a century the Tagalog focus system has been challenging our understanding of voice phenomena. In this system, a particular participant of an action is singled out as primary focal participant, and receives special marking in two ways. For one thing, the participant selected as focal participant is realized in the nominative case; in addition, its semantic role is marked on the verb by one of the focus affixes. Let us consider (1) for illustration.<sup>1, 2</sup> The examples in (1) respectively pick out an agent (1a), a patient (1b), a

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<sup>1</sup> The following abbreviations are employed in glossing: ABS-absolutive, AF-actor focus, ASP-aspect marker, CAUS-causative, CF-circumstantial focus, DAT-dative, DEF-definite, ERG-ergative, EXC-exclusive, F-feminine, GEN-genitive, GF-goal focus, INC-inclusive, INS-instrumental, LF-locative focus, LK-linker, LOC-locative, NEG-negation, NOM-nominative, OBL-oblique, P-personal name and kinship term, PF-patient focus, PL-plural, PREF-perfectivizing prefix, PRES-present tense, RL-realis, S-subject of an intransitive verb, SG-singular, SP-spontaneous, TRANS-transitive, 1-first person, 2-second person, 3-third person, “<

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location (1c), and a beneficiary (1d) for primary focal prominence. The element so identified is realized as the nominative pronoun form or marked in the nominative case, whereas the semantic role of each focal participant is registered on the verb by different focus affixes, namely, <um> (1a), - $\emptyset$  (1b), -an (1c), and i- (1d), yielding four different forms of the same verb. Note that the term “focus” in this system has no relevance to pragmatic focus (as opposed to presupposition in Lambrecht 1994’s sense); rather it is a manifestation of conceptual focal prominence (Langacker 1991:318-320, 2004:79-81, 2008:380-381, cf. French 1987/1988 and Himmelmann 2002). Reflecting its conceptual import, the focal participant is typically interpreted as referential, often definite, and can be exclusively involved in several syntactic processes (Schachter 1976, 1977, Kroeger 1993).

- (1) a. K<um>ain=ako                      ng=mansanas.  
eat<AF>=1SG.NOM                      GEN=apple  
*I ate an apple/apples.*
- b. K<in>ain- $\emptyset$ =ko                      ang=mansanas.  
eat<RL>-PF=1SG.GEN                      NOM=apple  
*I ate the apple.*
- c. K<in>ain-an=ko                      ang=pinggan      ni=John Rey.  
eat<RL>-LF=1SG.GEN                      NOM=plate      P.GEN=J.R.  
*I ate off of John Rey’s plate.*
- d. I-k<in>ain=ko                      si=Fiona.  
CF-eat<RL>=1SG.GEN                      P.NOM=F.  
*I ate for Fiona (because she could not eat for some reason).*

Four focus types are formally recognized in Tagalog as in Table 1 (Kroeger 1993, Himmelmann 2004, 2005b), although not all verbs have four different focus forms. Semantically, what is in focus is the initiator of an action in Actor Focus (AF) and the endpoint of an action in Goal Focus (GF). GF in turn breaks up into three types: Patient Focus (PF, focusing a patient), Locative Focus (LF, focusing a recipient, location, goal, and source), and Circumstantial Focus (CF, focusing everything else). There is more than one affix for Actor Focus, -um- and mag- being the most productive. Note that in realis mood the PF marker -in is realized as - $\emptyset$  as in (1b), and the AF marker mag- as nag-. The infix -in- in (1b-d) is a realis marker for GF verb forms.

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>”-infix, “=”-cliticization, and “~”-reduplication. The diagraph *ng* represents a velar nasal except that the genitive marker *ng* is pronounced as [naŋ] and the plural marker *mga* as [maŋa].

<sup>2</sup> Technically speaking, the gloss “nominative” is not appropriate for *ang* and *si*; it implies that arguments in question are grammatical subject but they may not be (Schachter 1976, 1977). Nonetheless, we still use the term “nominative” for the sake of convenience. Also, it is common for Philippinists to replace the term “focus” with “voice” (e.g. “Actor Voice” instead of “Actor Focus”). In this paper, however, we use “focus” for language-particular structural categories of verbs and “voice” for conceptual or functional categories expressed by the focus system.

**Table 1:** *Focus affixes*

Focus type		Focus affix
Actor Focus (AF)		<i>-um-, mag-, etc.</i>
Goal Focus (GF)	Patient Focus (PF)	<i>-in</i>
	Locative Focus (LF)	<i>-an</i>
	Circumstantial Focus (CF)	<i>i-</i>

The main function of the focus system is to represent different voice categories.<sup>3</sup> In the literature, the primary voice opposition has been drawn between AF and GF clauses, but different characterizations have been given to each clause type. For example, Bloomfield (1917) and Blake (1925), among others, consider that AF clauses are active, while GF clauses are passive because the primary argument is an agent in AF clauses, but a non-agent in GF clauses. Compare the AF clause in (1a) with the GF clauses in (1b-d).

More recently, however, linguists have realized that GF clauses are more transitive than AF clauses in the sense of Hopper and Thompson (1980), showing typical properties of the active voice (Wouk 1986, Nolasco 2003, 2005, 2006, Nolasco and Saclot 2005, Saclot 2006). Some put forward an analysis that AF clauses are actually equivalent to intransitive or antipassive constructions in ergative languages (Cena 1977, Payne 1982, De Guzman 1988, Liao 2004, Reid and Liao 2004). For example, by comparing Tagalog with Yup'ik Eskimo, Payne (1982) points out functional parallels between several construction types of these two languages: PF clauses in Tagalog correspond to ergative clauses in Yup'ik, and AF clauses to antipassive and intransitive clauses. Nolasco (2003, 2005, 2006) analyzes AF clauses as intransitive and GF clauses as transitive in terms of the transitivity parameters reformulated from Hopper and Thompson (1980). For instance, the AF clause in (1a) is analyzed as syntactically intransitive and the PF clause in (1b) as syntactically transitive.

These antipassive/intransitive analyses of AF clauses, however, have been called into question by Kroeger (1993), Foley (1998), Ross (2002), and Himmelmann (2002, 2005a, b) for the reason that AF clauses are not as intransitive as antipassive clauses are in languages with ergative syntax. Kroeger (1993:Chapter 2) claims that both AF and GF clauses are transitive, showing several pieces of evidence that in AF clauses like (1a) both agent and patient are grammatical arguments. Another reason against the antipassive analyses of AF clauses is that in ergative languages antipassive verb forms are morphologically more complex than basic verb forms, showing their derived status (Dixon 1994:146), but AF verb forms are typically no more complex than their GF counterparts (Foley 1998, Katagiri 2005).<sup>4</sup> As in Table 1, the voice contrasts in Tagalog are made by equally morphologically complex verb forms, and thus often referred to as a “symmetrical” voice system (Himmelmann 2002, 2005a) as opposed to an “asymmetrical” voice system like the active-passive opposition in English and the ergative-antipassive contrast in Dyirbal.

<sup>3</sup> As discussed in Section 6, another equally important function is to mark argument nominalization.

<sup>4</sup> See Cena (1977), De Guzman (1992), and Blake (1988, 1993) for another view of the morphological complexity of AF verb forms.

From our viewpoint, these arguments for or against the antipassive/intransitive analyses of AF clauses have the following problems in common. First, they put too much emphasis on the formal characteristics of the focus contrasts, and do not give enough examination into their conceptual aspects. Of course, it is of significance to determine whether AF and GF clauses are transitive or intransitive, but we should also consider conceptual differences between AF and GF clauses in asserting their voice function.

Second, little attention has been paid to the fact that AF clauses express a self-oriented meaning like (2) and (3). The self-oriented meaning found in these examples is different from the semantics of antipassives, i.e. a lower degree of individuation and affectedness of a patient, but what is known as the middle voice.

- (2) Nag-hubad                      si=Tero.  
 AF.RL-undress                  P.NOM=T.  
*Tero undressed.*  
*\*Tero undressed someone non-specific.*
- (3) B<um>angon      si=Zen.  
 get.up<AF>          P.NOM=Z.  
*Zen got up (from bed).*  
*\*Zen got up someone non-specific (from bed).*

The middle meaning observed in AF clauses (2) and (3), however, disappears in their corresponding GF clauses (4) and (5). The LF verb form *hinubaran* ‘undressed’ in (4) indicates that the agent undressed someone else, not the agent himself, while the CF verb form *ibinangon* ‘got up’ means that the agent got up someone else, not the agent herself.

- (4) H<in>ubar-an                  ni=Tero                  si=Ray.  
 undress<RL>-LF              P.GEN=T.              P.NOM=R.  
*Tero undressed Ray.*
- (5) I-b<in>angon      ni=Zen                  ang=anak=niya.  
 CF-get.up<RL>      P.GEN=Z.              NOM=child=3SG.GEN  
*Zen got up her child (from bed because the child was sick).*

As is illustrated above, the AF-GF distinctions in Tagalog represent an active-middle voice contrast as well as an active-antipassive one. A satisfactory account for the focus system, then, has to take into consideration how middle situations like (2) and (3) are realized in this language, and how they interact with the focus system.

A third and more important problem of the current approaches is that the most fundamental question to the Tagalog focus system has been left unanswered: how does the focus system correlate with voice phenomena? Syntactic transitivity of AF and GF clauses, on which the recent studies have been concentrating, does not really answer this. In this paper, we address this very question by examining the ways middle situations are realized in Tagalog.

The paper is organized as follows: the conceptual framework for voice phenomena developed by Shibatani (2006) is introduced in Section 2, and is applied to Tagalog voice

phenomena in Section 3. It is pointed out that the voice contrast made by AF and GF clauses lies between non-active and active situations: AF clauses realize non-active situations (antipassive and middle), and GF clauses active situations. In Section 4, we examine the middle voice in Tagalog more closely, showing a variety of middle situations represented by AF verb forms. In Section 5, we show that the two different non-active situations, that is, antipassive and middle situations are brought about by the semantic contrast between introverted and extroverted verbs (Haiman 1983). In Section 6, we discuss another function of the focus system, that is, argument nominalization. This function results in neutralizing the voice oppositions made by AF and GF verb forms. In Section 7, it is argued that the two functions of AF verb forms, non-active voice categories and actor nominalization, are rooted in the single basic property of AF verb forms, namely, actor-focusing. Finally, the paper is concluded in Section 8.

## 2 Conceptual framework for voice phenomena

Based on Shibatani (2006) and Shibatani and Artawa (2003, 2007), voice is understood here as the pattern of the form-function correlation along the parameters pertaining to the evolutionary properties of an action. Different voice categories correspond to different conceptualizations of how an action evolves. There are thus marked voice categories pertaining to the origin of an action (spontaneous, passive, causative), the nature of the development of an action (middle, antipassive), and the termination of an action (applicative, external possession).<sup>5</sup>

In this paper we are concerned with the active voice and two voice categories pertaining to the nature of the development of an action, the antipassive and middle voice. The active voice is defined as that in which an action extends beyond the agent's personal sphere and achieves its effect on a distinct patient. For instance, English transitive clauses are active in most cases (e.g. *Mary killed John*).

The active voice contrasts with the antipassive and middle voice in terms of the nature of the development of an action. In the antipassive voice, an action extends beyond the agent's personal sphere, but does not develop to its full extent and fails to achieve its intended effect on a patient (see also Heath 1976, Comrie 1978, Hopper and Thompson 1980, Cooreman 1994, Dixon 1994, and Polinsky 2008). A typical example of the active-antipassive contrast is given in (6). The active/ergative construction in (6a) describes an action which is done toward, and does affect, the distinct patient. In contrast, the antipassive construction in (6b) "indicates that the action is carried out less completely, less successfully, less conclusively, etc., or that the object is less completely, less directly, less permanently, etc. affected by the action" (Anderson 1976:22, see also Hopper and Thompson 1980:268-269 and Cooreman 1994:60).

- (6) Bzhedukh dialect of West Circassian (Anderson 1976:21)
- |    |   |           |                 |
|----|---|-----------|-----------------|
| a. | č'aaλa-m                                      | č'əg°-ər  | ya-ž'a.         |
|    | boy-ERG                                       | field-ABS | 3SG(-3SG)-plows |
|    | <i>The boy is plowing the field.</i> [active] |           |                 |

<sup>5</sup> In this framework, the action is conceived in a broad sense, including non-volitional processes, and the agent is an initiator of such an action. The agent defined as such has been referred to as an 'actor' in the literature of Philippine linguistics (Schachter 1976, 1977). In this sense, "actor focus" is equivalent to "agent focus" in this paper.

- b. č'aaλa-r      č'əg°-əmə      ya-ž'a.  
 boy-ABS      field-OBL      3SG(-3SG)-plows  
*The boy is trying to plow the field.*  
 or *The boy is doing some plowing in the field.* [antipassive]

In Tongan, an antipassive construction indicates that a patient is only partially affected by an action (Hopper and Thompson 1980:263). Compare (7a) and (7b). The active/ergative clause has an ergative-absolutive alignment pattern, showing that the whole fish was eaten; the antipassive construction in (7b), which lacks the transitive marker *-i*, indicates that only part of the fish was eaten.

- (7) Tongan (Clark 1973:600, cited from Hopper and Thompson 1980:263)
- a. Na'e    kai-i                    'a            e            ika            'e            he            tamasi'i.  
 PAST eat-TRANS    ABS    DEF    fish            ERG    the            boy  
*The boy ate the fish.* [active]
- b. Na'e    kai            'a            e            tamasi'i    'i            he            ika.  
 PAST eat            ABS    DEF    boy            OBL    the            fish  
*The boy ate some of the fish.* [antipassive]

Antipassive meanings are often indicated by verbal affixation or case-marking, but may be achieved by the indefinite object deletion, as exemplified in English (Heath 1976). The deletion of the patient in (8) signals an antipassive meaning, that is, the lower degree of identifiability of the patient. It also implies the habitual aspect of the proposition, especially in (8a) and (8b). See also “unspecified object alternations” in Levin (1993:33) and “characteristic property of agent alternations” in Levin (*ibid.*:39).

- (8) English (Heath 1976:203)
- a. He drinks.  
 b. Speed kills.  
 c. The suspect is about to break under questioning.  
 d. Minnesota Fats is about to break (i.e., is about to make the first shot in a game of pool).

In the middle voice, in contrast, the development of an action is confined within the agent's personal sphere so that the action's effect accrues back on the agent itself. This definition of the middle voice resonates with its traditional descriptions. Benveniste (1971:148) says: “In the active, the verbs denote a process that is accomplished outside the subject. In the middle, which is the diathesis to be defined by the opposition, the verb indicates a process centering in the subject, the subject being inside the process.” Since the development of an action is confined within the agent's personal sphere, the action has an effect on its single participant, i.e. the agent. Lyons (1968:373) says: “The implications of the middle (when it is in opposition with the active) are that the ‘action’ or ‘state’ affects the subject of the verb or his interests.” See also Barber (1975), Klaiman (1988, 1991, 1992), and Kemmer (1988, 1993, 1994).

The most well-known instances of the middle voice include those of Indo-European languages like Ancient Greek and Sanskrit, in which the characteristic voice alternation is

active/middle rather than active/passive (Lyons 1968:373, Barber 1975, Klaiman 1991:23-24). See (9) and (10). In active clauses, the action extends beyond the agent's personal sphere and affects the distinct patient. In middle clauses, the action is done within the agent's personal sphere and affects the agent itself. The same contrast can be found in non-Indo-European languages like Fula. See (11).

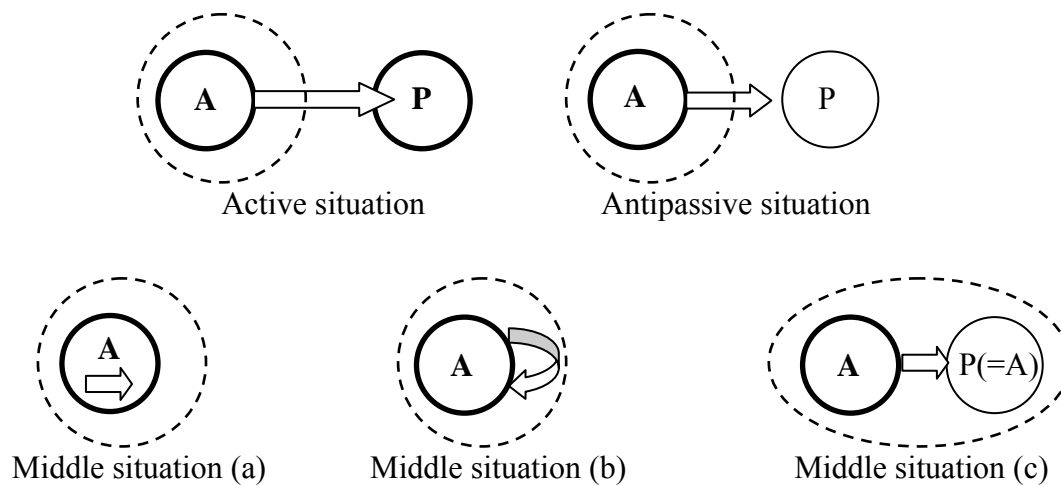
- (9) Ancient Greek (Barber 1975:19)
- a. lou -ō ta himatia  
wash act. the cloaks  
*I wash the cloaks.* [active]
- b. lou -omai  
wash mid. (1sg.)  
*I wash myself.* [middle]
- (10) Sanskrit (Klaiman 1991:93)
- a. So namati daṇḍam  
he-NOM bends-3SG **ACTIVE** stick-ACC  
*He bends the stick.* [active]
- b. Namate daṇḍaḥ  
bends-3SG **MIDDLE** stick-NOM  
*The stick bends.* [middle]
- (11) Fula (Arnott 1970:260, cited from Klaiman 1991:26)
- a. 'o born -ii mo ḡgapalewol  
he dress past **ACTIVE** him gown  
*He dressed him in a gown.* [active]
- b. 'o born -ake ḡgapalewol  
he dress past **MIDDLE** gown  
*He put on a gown.* [middle]

Middle situations can be marked not just morphologically like (9)-(11) but also lexically or periphrastically. They may be expressed by an intransitive verb as in (12a), or by a periphrastic reflexive construction as in (12b). In these sentences, the action is still confined within the agent's personal sphere.

- (12) English (adopted from Haiman 1983:803)
- a. Max washed.
- b. Max kicked himself.

The three situation types, namely, active, antipassive and middle situations can be represented as in Figure 1, where an arrow indicates an development of an action, a dotted circle an agent's personal sphere, an "A" an agent, and a "P" a patient (Shibatani 2006:233). In active situations, both agent and patient are salient. In non-active situations, in contrast, there is no affected patient distinctly delineated from the agent, and the agent is the only salient participant. The difference between antipassive and middle situations is in the existence/absence of a patient outside the agent's personal sphere. There are several

types of middle situations: an action may happen inside the agent itself (a), be reflected on the agent (b), or be carried out toward a patient which is coreferential with the agent (c) (reflexives).



**Figure 1:** Active, antipassive, and middle situations

### 3 Conceptual approach to Tagalog voice phenomena

Let us now consider how the Tagalog focus system, especially, the AF-GF contrast represents different voice categories within our conceptual framework. From our perspective, and as argued by the recent analyses mentioned in Section 1, it is not controversial that GF clauses realize active situations. For example, in (1b), repeated here as (13), the action of eating extends beyond the personal sphere of *ko* 'I' and affects the patient *mansanas* 'apple' totally: the particular apple was completely eaten. The patient is individuated and has a definite interpretation. Morphosyntactically, the agent is marked in the genitive case, and the patient in the nominative case. This is true of (14).

- (13) K<in>ain- $\emptyset$ =ko                      ang=mansanas.  
eat<RL>-PF=1SG.GEN    NOM=apple  
*I ate the apple.* [active]

- (14) P<in>atay- $\emptyset$                       ni=Juan                      si=Kuwan.  
kill<RL>-PF                      P.GEN=J.                      P.NOM=K.  
*Juan killed Kuwan.* [active]

In contrast, AF clauses realize two types of non-active situations. The first type of non-active situation is the antipassive situation, as argued by the antipassive analyses of AF clauses. In AF clause (1a), repeated here as (15), the action of eating is carried out by *ako* 'I' beyond his or her personal sphere and is directed to *mansanas* 'apple'. However, the completion of the action is not specified. The patient is not completely affected and has an indefinite or non-specific reading (McFarland 1978). Also, (15) can have the partitive interpretation that the agent ate some of the apple (Hopper and Thompson 1980, Wouk 1986, Nolasco 2003, 2005, 2006, cf. Tongan antipassive in 7b). Thus, the AF clause in (15)

fits neatly into the conceptual description of antipassive situations. Morphosyntactically, the agent is marked in the nominative case and the patient in the genitive case.

- (15) K<um>ain=ako                      ng=mansanas.  
eat<AF>=1SG.NOM                      GEN=apple  
*I ate an apple/apples/\*the apple.* [antipassive]

In some AF antipassive clauses, individuation of a patient plays a more important role than its affectedness (see Hopper and Thompson 1980:253 for individuation). In (16), the AF verb form *pumatay* ‘kill’ means that the agent committed the action of killing, without mentioning which specific individual the agent killed. As (17) shows, AF verb forms cannot take a highly individuated patient, since such a patient is allowed for active situations, but not for antipassive situations. Compare (14) and (17).

- (16) P<um>atay                      si=Juan                      ng=aso.  
kill<AF>                      P.NOM=J.                      GEN=dog.  
*Juan killed a/\*the dog.* [antipassive]

- (17) \*P<um>atay                      si=Juan                      kay=Kuwan.<sup>6</sup>  
kill<AF>                      P.NOM=J.                      P.DAT=K.  
Intended for *Juan killed Kuwan.*

In her functional typology of antipassives, Cooreman (1994) reports that across languages the antipassive construction tends not just to indicate a lower degree of individuation and affectedness for the patient, but also to describe an action as incomplete or non-punctual. This aspectual characteristic of antipassives is apparent when they are used in an embedded complement clause of the verb of completion *tapusin* ‘finish’ (Smith 1997:Chapter 3). Since they imply that a designated action is completed, GF active clauses can be used in a complement clause of *tinapos* ‘finished’ as in (18a). However, AF antipassive clauses, which describe an action without a discernable onset or conclusion, are not compatible with this verb of completion as in (18b).

- (18) a. T<in>apos-ø=ko=ng                      kain-in                      ang=mansanas.  
finish<RL>-PF=1SG.GEN=LK                      eat-PF                      NOM=apple  
*I finished eating the apple.* [active]  
b. \*T<in>apos-ø=ko=ng                      k<um>ain                      ng=mansanas.  
finish<RL>-PF=1SG.GEN=LK                      eat<AF>                      GEN=apple  
Intended for *I finished eating an apple/apples.* [antipassive]

As is often the case with antipassive constructions in other languages, AF antipassive constructions are often accompanied by a habitual reading with an implicit object (Heath 1976, cf. English examples in 8). To illustrate, the AF antipassive clause in (19a) means that Lyndie drinks as a habit. Also, it implies that she drinks alcohol, although there is no explicit mention to it. Crucially, this interpretation is not possible in its GF active counterpart in (19b). (19b) just describes the situation Lyndie is drinking something

<sup>6</sup> As we note later in Section 6, this AF clause is grammatical when nominalized. See (71).



specific at the moment of utterance. The implicit patient only refers to something recoverable from the context, which may or may not be alcohol. The same contrast is obtained in (20), in which the AF antipassive clause indicates that the speaker's dog does not have the habit of biting people, while its GF active counterpart states that their dog is not biting something specific (for example, a bone) at the moment.

- (19) a. <Um>i~inom                      si=Lyndie.  
           <AF>ASP~drink                P.NOM=L.  
           *Lyndie drinks (alcohol as a habit).* [antipassive]  
           or *Lyndie is drinking (alcohol right now).*
- b. <In>i~inom-ø                        ni=Lyndie.  
           <RL>ASP~drink-PF        P.GEN=L.  
           *Lyndie is drinking (something specific right now).* [active]
- (20) a. Hindi na-nga~ngagat    ang=aso=namin.  
           NEG AF-ASP~bite        NOM=dog=1PL.EXC.GEN  
           *Our dog does not bite.* [antipassive]
- b. Hindi k<in>a~kagat-ø                ng=aso=namin.  
           NEG ASP<RL>~bite-PF        GEN=dog=1PL.EXC.GEN  
           *Our dog is not biting (something specific right now).* [active]

The conceptual contrast between the antipassive and the active becomes clearer in interpretation of reference-tracking. Compare the purpose clause construction in (21a) and (21b), in which *para* 'for' introduces a subordinate clause describing a purpose of the action expressed in the main clause. (21a) means that the speaker bought the apple in order to eat it. This interpretation is not achieved in (21b), which has the AF verb in the purpose clause, because the AF verb *kumain* cannot have an individuated patient to mean 'to eat the apple'. On the other hand, both (22a) and (22b) are grammatically correct but have different interpretations. Since the GF verb *kainin* can only take an individuated patient, (22a) means that the agent called Tuting to eat him, although it is pragmatically (and ethically) unacceptable. In contrast, (22b) is fine; here the AF verb *kumain* means 'to eat a meal (or something one typically eats)'. The sentence indicates that the agent called Tuting so that he would eat a meal.

- (21) a. B<in>ili-ø=ko                      ang=mansanas    para    kain-in.  
           buy<RL>-PF=1SG.GEN        NOM=apple        for    eat-PF  
           *I bought the apple to eat (it).*
- b. \*B<in>ili-ø=ko                      ang=mansanas    para    k<um>ain.  
           buy<RL>-PF=1SG.GEN        NOM=apple        for    eat<AF>  
           Intended for *I bought the apple to eat (it).*

- (22) a. #T<in>awag-ø=ko                      si=Tuting                      para                      kain-in.  
           call<RL>-PF=1SG.GEN              P.NOM=T.                      for                      eat-PF  
           *I called Tuting to eat (him).*
- b. T<in>awag-ø=ko                      si=Tuting                      para                      k<um>ain.  
           call<RL>-PF=1SG.GEN              P.NOM=T.                      for                      eat<AF>  
           *I called Tuting so that he would eat (a meal).*

The second type of non-active situation realized by AF clauses is the middle situation, as we have already seen in (2) *Naghubad si Tero* ‘Tero undressed.’ and (3) *Bumangon si Zen* ‘Zen got up (from bed).’ In these sentences, each action is carried out within the agent’s personal sphere, and the agent is the one who is affected by the action. Another illustrating example is given in (23), which contains the AF verb form *maghilamos* ‘wash one’s face’. This sentence means that the agent washed her own face. Here, the action of washing does not develop beyond the agent’s personal sphere, and the agent herself is affected by the action in the sense that her own face was washed. It does not mean that the agent washed someone else’s face.

- (23) Nag-hilamos                      si=Kath.  
       AF.RL-wash.face              P.NOM=K.  
       *Kath washed her face. [middle]*  
       *(lit. Kath face-washed (herself).)*

In contrast, the corresponding LF verb form realizes an active situation as in (24). The action of washing extends beyond the agent’s personal sphere, and affects the patient distinct from the agent, namely, her child (cf. Ancient Greek examples in 9).

- (24) H<in>ilamus-an                      ni=Kath                      ang=anak=niya.  
       wash.face<RL>-LF              P.GEN=K.                      NOM=child=3SG.GEN  
       *Kath washed the face of her child. [active]*  
       *(lit. Kath face-washed her child.)*

Although there is a strong tendency for AF middle clauses to be intransitive, transitive AF middle clauses still exist. Certain verbs of grooming (Section 4) can have a specific body part as a patient. For example, the AF verb form *magsabon* ‘wash (with soap)’ means that the agent washes her own whole body as in (25a). But it can also be used to mean that the agent washes her specific body part *kamay* ‘hand’ as in (25b). In this case, the body part has to be interpreted to belong to the agent; the interpretation that the agent washed someone else’s body part is not possible. Note that the body part patient here is interpreted as part of the agent and within her personal sphere, and is different from a “distinct patient” involved in active situations. The same is true of (26). See “understood body-part object alternations” in Levin (1993:34-35).

- (25) a. Nag-sabon si=Merla.  
 AF.RL-wash P.NOM=M.  
*Merla washed.* [middle]
- b. Nag-sabon si=Merla ng=kamay(=niya).  
 AF.RL-wash P.NOM=M. GEN=hand(=3SG.GEN)  
*Merla washed her own hand.* [middle]
- (26) a. Nag-sipilyo si=Vicky.  
 AF.RL-brush P.NOM=V.  
*Vicky brushed.* [middle]
- b. Nag-sipilyo si=Vicky ng=ngipin(=niya).  
 AF.RL-brush P.NOM=V. GEN=tooth(=3SG.GEN)  
*Vicky brushed her teeth.* [middle]

Importantly, the patient in (25b) and (26b) has a definite and non-partitive reading: it refers to the specific body part owned by the agent (see also Himmelmann 2005b). Remember that a definite patient is not allowed in AF antipassive constructions like (15) and (16). This means that the constraint on the definiteness of a patient is applicable to AF antipassive constructions, but not to AF middle constructions. Antipassive and middle are related yet distinct voice categories.

Another example of transitive AF middle clauses is a “causative middle”. Let us compare (27a) and (27b). Both of them mean that the speaker was kissed by Kathleen, but are different in terms of who benefits from the action. The AF causative middle clause in (27a) denotes that the action of kissing was carried out for the benefit of the speaker/agent. The speaker may even have made a request to Kathleen. This interpretation is not present in the GF causative active clause in (27b). Here the action was initiated by Kathleen’s request and done for her benefit. More examples of causative middles are given in the following section.

- (27) a. Nag-pa-halik=ako kay=Kathleen.  
 AF.RL-CAUS-kiss=1SG.NOM P.DAT=K.  
*I had Kathleen kiss me (for my interest; I wanted to be kissed by her).* [middle]
- b. P<in>a-halik-ø=ko si=Kathleen.  
 CAUS<RL>-kiss-PF=1SG.GEN P.NOM=K.  
*I let Kathleen kiss me (for her interest; she wanted to kiss me).* [active]

The causative middle plays a significant role in reference-tracking, as does the antipassive-active opposition in purpose clauses (21) and (22). In Tagalog control constructions, for instance, an argument in a matrix clause can control only an agent argument in its complement clause (Schachter 1976, 1977, Kroeger 1993). Thus, the argument in the matrix clause in (28) can be coreferential with the agent gap (“kisser”) in (28a), but not with the non-agent gap (“kissee”) in (28b).

- (28) a. S<in>ubuk-an=ko=ng [halik-an [A] si=Kathleen].  
 try<RL>-LF=1SG.GEN=LK kiss-LF P.NOM=K.  
*I tried to kiss Kathleen.*

- b. \*S<in>ubuk-an=ko=ng [halik-an ni=Kathleen [P]].  
 try<RL>-LF=1SG.GEN=LK kiss-LF P.GEN=K.  
 Intended for *I tried to be kissed by Kathleen.*  
 (lit. *I tried Kathleen to kiss me.*)

For the “kisee” to be coreferential with the argument in the matrix clause, the AF causative middle *magpahalik* must be employed as in (29).

- (29) S<in>ubuk-an=ko=ng [mag-pa-halik [A] kay=Kathleen].  
 try<RL>-LF=1SG.GEN=LK AF-CAUS-kiss P.DAT=K.  
*I tried to be kissed by Kathleen.*  
 (lit. *I tried to get myself kissed by Kathleen.*)

To summarize, GF clauses realize active situations and are, therefore, active voice forms, whereas AF clauses represent antipassive and middle situations and form either antipassive or middle constructions. Although only antipassive meanings of AF clauses have been attracting attention in the literature, their middle meanings constitute an integral part of their voice function. Crosslinguistically it is not uncommon that a single form has both middle and antipassive functions (Dixon 1994, Lidz 1996, Terrill 1997, Shibatani 2006:239-240, Polinsky 2008). Polinsky (2008) reports that in some languages syncretism is observed between the morphology of the antipassive and the morphology of other detransitivizing operations, most commonly reflexivization (middle). In Diyari (Pama-Nyungan, South Australia), for example, the verbal derivational suffix *-tadi* expresses antipassive and middle (reflexive) meanings among others (Austin 1981, Dixon 1994:151). Compare the antipassive in (30a) and the middle in (30b). This is also the case with Lithuanian *-si* in (31).

- (30) Diyari (Austin 1981:152-153, glossing modified, emphasis added)
- a. ṇaṇi kalka-**tadi**-yi ṇaṇkaṇu wiḷa-ṇi  
 1SG.S wait.for-**ANTIP**-PRES 3SG.F.LOC woman-LOC  
*I wait for the woman.* [antipassive]
- b. ṇaṇi muduwa-**tadi**-yi  
 1SG.S scratch-**MIDDLE**-PRES  
*I scratch myself.* [middle]
- (31) Lithuanian (Geniušienė 1987:94, 82, glossing modified, emphasis added)
- a. Petr-as svaido-**si** akmen-imis  
 Peter-NOM throws-**ANTIP** stone-INS.PL  
*Peter is throwing stones.* [antipassive]
- b. Vaik-as su-**si**-žeide  
 child-NOM PREF-**MIDDLE**-hurt  
*The child hurt himself.* [middle]

The question that arises, then, is when do AF clauses realize antipassive situations, and when do they represent middle situations? To answer this question, we first have to

describe AF clauses with a middle reading in more detail, situating them in the context of the realization of a middle meaning in this language.

#### 4 Aspects of middle situations with AF verb forms

In this section, we take a closer look at several representative middle situations expressed by AF clauses, namely, grooming actions, changes in body posture, non-translational and translational motions, inchoatives, reciprocal actions, and causative middles. They are also compared with active situations expressed by the corresponding GF clauses so that their characteristics are well understood.<sup>7, 8, 9</sup>

**Grooming (or bodily care)** Grooming or bodily care actions are prototypical middle situations (Kemmer 1988, 1993, 1994), and are realized by AF clauses in Tagalog. (2), (23), (25) and (26) are also examples of this type. In their corresponding GF clauses, the action of grooming extends beyond the agent's personal sphere and affects others (cf. Fula examples in 11).

- (32) a. Nag-bihis                      si=Katrina.  
       AF.RL-dress                  P.NOM=K.  
       *Katrina dressed.* [middle]
- b. B<in>ihis-an                ni=Katrina                ang=anak=niya.  
       dress<RL>-LF                P.GEN=K.                NOM=child=3SG.GEN  
       *Katrina dressed her child.* [active]
- (33) a. Nag-pulbo=ako.  
       AF.RL-powder=1SG.NOM  
       *I put powder on (my face).* [middle]
- b. P<in>ulbuh-an=ko                ang=anak=ko.  
       powder<RL>-LF=1SG.GEN                NOM=child=1SG.GEN  
       *I put power on (the face of) my child.* [active]

<sup>7</sup> It is noteworthy that certain bare verbs, i.e. non-affixed verbs, which are used only in special sentence types, can represent middle situations. Such special sentence types include an imperative sentence (i), an exhortative sentence (ii), and a volitive sentence (iii).

(i) Ingat=kayo.

take.care=2PL.NOM

*Take care (of yourself)!*

(ii) Upo=tayo.

sit.down=1PL.INC.NOM

*Let's sit down!*

(iii) Ligo=na=ako.

take.bath=already=1SG.NOM

*I am about to take a bath.*

<sup>8</sup> As Seunghun J. Lee (p.c.) points out, sentences like *This book sells well* is often treated as “middle” in some languages. Kemmer (1993:147ff) distinguishes this situation type from the middle, naming it as the facilitative (see Faltz 1985 [1977] for the facilitative). In Tagalog the facilitative is encoded as a spontaneous situation, with which we are not concerned in this paper (see Shibatani 2006 for the spontaneous voice). See Kemmer (*ibid.*) for the close relationship between facilitative and spontaneous situations.

<sup>9</sup> A few verbs only have an AF middle verb form: for example, *magkaroon* ‘have’, *magkasakit* ‘get sick’, and *magtalik* ‘make love’ lack the corresponding GF verb forms.

- (34) a. Nag-sumbrero                    si=Barbie.  
 AF.RL-put.on.hat            P.NOM=B.  
*Barbie put on a hat.* [middle]
- b. S<in>umbreh-an            ni=Barbie            si=Kaiser.  
 put.on.hat<RL>-LF        P.GEN=B.            P.NOM=K.  
*Barbie put a hat on Kaiser.* [active]

**Change in body posture** AF forms of verbs of change in body posture indicate a situation where an agent changes its own body posture, while their GF forms mean that an agent changes someone else's body posture. (3) is also of this type.

- (35) a. <Um>upo                    si=Yang.  
 <AF>sit.down            P.NOM=Y.  
*Yang sat down.* [middle]
- b. I-ni-upo                    ni=Yang            ang=bata.  
 CF-RL-sit.down            P.GEN=Y.            NOM=child  
*Yang sat the child down.* [active]

- (36) a. L<um>uhod                    si=Kim.  
 kneel<AF>                    P.NOM=K.  
*Kim knelt down.* [middle]
- b. I-ni-luhod                    ni=Kim            ang=manika.  
 CF-RL-kneel                P.GEN=K.            NOM=doll  
*Kim placed the doll in a kneeling posture.* [active]

- (37) a. K<um>andong=ako            kay=Macy.  
 sit.on.lap<AF>=1SG.NOM    P.DAT=M.  
*I sat down on Macy's lap.* [middle]
- b. K<in>andong-ø=ko            si=Stef            kay=Macy.  
 sit.on.lap<RL>-PF=1SG.GEN    P.NOM=S.            P.DAT=M.  
*I sat Stef on Macy's lap.* [active]

**Non-translational motion** Kemmer (1994:196) characterizes non-translational motion as “those which denote actions of motor manipulation of the body”, following Leonard Talmy's terminology. AF verb forms of non-translational motion mean that an agent makes such a motion. GF verb forms of this type mean that an agent causes something to make such a motion.

- (38) a. Nag-unat=ako.  
 AF.RL-stretch=1SG.NOM  
*I stretched.* [middle]
- b. In-unat-ø=ko                    ang=kamay=ko.  
 RL-stretch-PF=1SG.GEN        NOM=hand=1SG.GEN  
*I stretched my hand.* [active]

- (39) a. L<um>iko=ako.  
turn<AF>=1SG.NOM  
*I turned.* [middle]  
b. I-ni-liko=ko                      ang=kotse.  
CF-RL-turn=1SG.GEN              NOM=car  
*I turned the car.* [active]
- (40) a. Y<um>uko=ako.  
bow<AF>=1SG.NOM  
*I bowed.* [middle]  
b. I-ni-yuko=ko                      ang=ulo=ko.  
CF-RL-bow=1SG.GEN              NOM=head=1SG.GEN  
*I bowed my head.* [active]

**Translational motion** As opposed to non-translational motion, translational motion includes “actions involving motion of an animate entity under its own power through space” (Kemmer 1994:197). AF verb forms of translational motion express such a motion of an agent; their GF verb forms also express the same type of motion, but the emphasis is put on the endpoint of a motion being affected rather than the motion itself.<sup>10</sup>

- (41) a. P<um>unta      si=Mark      sa=mall.  
go<AF>      P.NOM=M.      DAT=mall.  
*Mark went to the mall.* [middle]  
b. P<in>untah-an      ni=Mark      ang=mall.  
go<RL>-LF      P.GEN=M.      NOM=mall  
*Mark went to the mall. (The mall is focused.)* [applicative]
- (42) a. <Um>akyat      ang=babae      sa=bundok.  
<AF>climb      NOM=woman      DAT=mountain  
*The woman climbed the mountain.* [middle]  
b. <In>akyat-ø      ng=babae      ang=bundok.  
<RL>climb-PF      GEN=woman      NOM=mountain  
*The woman climbed the mountain (and conquered it).* [applicative]
- (43) a. T<um>akas      ang=bata      sa=pulis.  
run.away<AF>      NOM=child      DAT=police  
*The child ran away from the police.* [middle]  
b. T<in>akas-an      ng=bata      ang=pulis.  
run.away<RL>-LF      GEN=child      NOM=police  
*The child ran away from the police. (The police are focused.)* [applicative]

**Inchoative** In our framework, the inchoative, which expresses a change of state, also goes into a middle category in the sense that an agent undergoes a change of state within its

<sup>10</sup> Although we cannot go into details here, we analyze (41b) (42b) and (43b) as applicative, where the action develops further than its normal course, such that an entity other than the direct event-participants becomes a new terminal point registering an effect of the action (Shibatani 2006).

personal sphere, and the agent itself is affected by the process. The AF and GF verb forms of this type express an inchoative situation and a causative situation respectively, resulting in inchoative-causative alternations (Nagaya 2006, see also Sanskrit examples in 10).<sup>11</sup>

- (44) a. H<um>into ang=kotse.  
stop<AF> NOM=car  
*The car stopped.* [middle]  
b. I-h<in>into=ko ang=kotse.  
CF-stop<RL>=1SG.GEN NOM=car  
*I stopped the car.* [active]
- (45) a. S<um>ara ang=takip.  
close<AF> NOM=lid  
*The lid closed.* [middle]  
b. I-s<in>ara=ko ang=takip.  
CF-close<RL>=1SG.GEN NOM=lid  
*I closed the lid.* [active]
- (46) a. L<um>aki si=Osang sa=Caramoan.  
big<AF> P.NOM=O. DAT=C.  
*Osang became bigger (i.e. grew up) in Caramoan.* [middle]  
b. Ni-lakih-an ni=Osang ang=font  
RL-big-LF P.GEN=O. NOM=font  
*Osang made the font bigger.* [active]

**Reciprocal action** Reciprocal actions, where multiple participants act on each other, are also realized by an AF verb form. The corresponding GF verb form, in contrast, expresses a non-reciprocal active situation.

- (47) a. Nag-away si=Flor at Weng.  
AF.RL-quarrel P.NOM=F. and W.  
*Flor and Weng quarreled (with each other).* [middle]  
b. <In>away-ø ni=Flor si=Weng.  
<RL>quarrel-PF P.GEN=F. P.NOM=W.  
*Flor quarreled with Weng. (Flor began the quarrel.)* [active]

<sup>11</sup> One of the reviewers notes that inchoative situations can be expressed by verbs with the prefix *ma-* as in (i). However, we analyze *ma-* as the spontaneous prefix, which indicates an action is brought about accidentally or non-volitionally. Thus, (i) does not simply mean a change of state. Indeed, (i) can take an agent as in (ii), which is not the case with AF inchoatives.

(i) Na-sira ang=laptop ni=Nijan.  
SR:RL-break NOM=laptop P.GEN=N.  
*Nijan's laptop (accidentally) broke.*

(ii) Na-sira=ko ang=laptop ni=Nijan.  
SP:RL-break=1SG.GEN NOM=laptop P.GEN=Nijan  
*I broke Nijan's laptop accidentally/unintentionally.*



- (48) a. Nag-kausap                      si=Mutya              at              Melody.  
 AF.RL-talk                      P.NOM=M.              and              M.  
*Mutya and Melody talked with each other.* [middle]
- b. K<in>ausap-ø                      ni=Mutya              si=Melody.  
 talk<RL>-PF                      P.GEN=M.              P.NOM=M.  
*Mutya talked to Melody. (Mutya began the conversation.)* [active]
- (49) a. Nag-hiwalay                      si=Marcos              at              Imelda.  
 AF.RL-separate                      P.NOM=M.              and              I.  
*Marcos and Imelda separated.* [middle]
- b. H<in>iwalay-ø                      ni=Marcos              si=Imelda              sa=mga      tao.  
 separate<RL>-PF                      P.GEN=M.              P.NOM=I.              DAT=PL      people  
*Marcos separated Imelda from the people.* [active]

**Causative middle** As the Classical Greek middle, one of the important middle situations in Tagalog is the causative middle (“causative reflexive” in Lyons 1968:374). AF verb forms with the causative prefix *pa-* mean that an action is carried out for the benefit of, or in the interests of, the agent (i.e. causer). This interpretation is not present in GF verb forms with *pa-*. See also Nolasco (2003, 2005, 2006) and Saclot (2006).

- (50) a. Nag-pa-gupit                      si=Aldrin              kay=Ria.  
 AF.RL-CAUS-haircut                      P.NOM=A.              P.DAT=R.  
*Aldrin had his hair cut by Ria.* [middle]
- b. P<in>a-gupit-an                      ni=Aldrin              si=Ria.  
 CAUS<RL>-haircut-LF                      P.GEN=A.              P.NOM=R.  
*Aldrin let Ria have her hair cut.* [active]
- (51) a. Nag-pa-luto=ako                      ng=adobo              kay=Tatay.  
 AF.RL-CAUS-cook=1SG.NOM                      GEN=adobo              P.DAT=father  
*I had my father cook adobo (for myself or my guests).* [middle]
- b. I-p<in>a-luto=ko                      ang=adobo              kay=Tatay.  
 CF-CAUS<RL>-cook=1SG.GEN                      NOM=adobo              P.DAT=father  
*I made my father cook the adobo.* [active]
- (52) a. Nag-pa-sama                      si=Ivy              kay=Jessie.  
 AF.RL-CAUS-accompany                      P.NOM=I.              P.DAT=J.  
*Ivy had Jessie accompany her.* [middle]
- b. P<in>a-sama-ø                      ni=Ivy              si=Jessie.  
 CAUS<RL>-accompany-PF                      P.GEN=I.              P.NOM=J.  
*Ivy let Jessie accompany her or someone else.* [active]

## 5 Antipassive and middle

In the previous sections we have argued that AF clauses realize two non-active situations, antipassive and middle. In this section, we examine when AF clauses mean antipassive situations and when they realize middle situations, based on the semantic contrast between introverted and extroverted verbs proposed by Haiman (1983). Through the discussions it

will also be shown that the marking of a middle meaning is economically motivated in Tagalog.

In his seminal work, Haiman (1983) proposes an economic motivation for the marking of a middle meaning (Haiman's "reflexive"), introducing the distinction between "introverted verbs" and "extroverted verbs". Introverted verbs "refer to actions which one generally performs upon one's self" (*ibid.*:803); extroverted verbs "describe actions which the subject usually performs toward others" (*ibid.*:803). For example, there are two markers for a middle meaning in Russian: the reflexive pronoun *sebjja* and the verb suffix *-sja*. According to Haiman (1983:804), extroverted verbs can only use the reflexive pronoun *sebjja* for this purpose as in (53), whereas introverted verbs can employ the verb suffix *-sja*, the reflexive pronoun being reserved for those instances where the patient is in contrastive focus as in (54). In other words, a middle meaning of extroverted verbs is realized by the full reflexive pronoun, while that of introverted verbs is indicated by the reduced verbal suffix.

(53) Extroverted verb (Haiman 1983:804, glossing modified):

- a. \*Viktor nenavidit-sja.  
Victor hates-MIDDLE
- b. Viktor nenavidit sebjja.  
Victor hates self  
*Victor hates himself.*

(54) Introverted verb (Haiman 1983:804, glossing modified):

- a. Ja každyj den' moju-sj.  
I every day wash-MIDDLE  
*I wash every day.*
- b. Ja myl sebjja.  
I washed self  
*I washed myself (not someone else).*

Similarly, in English, a middle meaning of extroverted verbs is expressed by the full reflexive pronoun, whereas such a meaning of introverted verbs can be designated by a zero form. Compare (55) and (56).

(55) Max kicked himself.

(56) Max washed.

Haiman goes on to claim that the marking of a middle meaning is economically motivated: "what is predictable receives less coding than what is not" (Haiman 1983:807). The identity of an agent and a patient is expected or predicted in introverted verbs, and therefore is marked by a reduced (or zero) form. But the disjoint references for an agent and a patient are expected in extroverted verbs. When this expectation is not fulfilled, such a situation is expressed by a full form. A similar idea was also mentioned by Faltz (1985 [1977]) before Haiman, and has been discussed extensively in the literature on the middle voice (Kemmer 1988, 1993, 1994, Shibatani and Artawa 2003, 2007).

This contrast between extroverted and introverted verbs, we argue, plays an important role in the Tagalog middle voice as well. On the one hand, AF verb forms of extroverted verbs cannot express middle situations but only antipassive situations as in (57) and (58). Indeed, all the examples of antipassive constructions we have discussed are AF clauses with extroverted verbs: *kumain* ‘eat’ (15), *pumatay* ‘kill’ (16), *uminom* ‘drink’ (19), and *mangagat* ‘bite’ (20).

- (57) P<um>atay      si=Juan.  
kill<AF>          P.NOM=J.  
\**Juan killed himself.* [middle]  
*Juan killed (someone non-specific).* [antipassive]
- (58) S<um>ampal    si=Marf.  
slap<AF>          P.NOM=M.  
\**Marf slapped himself.* [middle]  
*Marf slapped (someone non-specific).* [antipassive]

On the other hand, introverted verbs can realize middle situations, but not antipassive situations, with AF verb forms like (59) and (60). In fact, the AF verb forms we have looked at in Section 4 are those with introverted verbs such as verbs of grooming and of change in body posture.

- (59) Nag-damit=ako.  
AF.RL-clothe=1SG.NOM  
*I clothed (myself).* [middle]  
\**I clothed (someone non-specific).* [antipassive]
- (60) T<um>ayo      si=Glai.  
stand<AF>        P.NOM=G.  
*Glai stood up.* [middle]  
\**Glai stood up (something non-specific).* [antipassive]

To express a middle meaning with extroverted verbs, which is an unpredictable situation, it is necessary to employ the *sarili* reflexive construction. The *sarili* reflexive construction is a GF clause where coreference between agent and patient is overtly marked by *sarili* ‘self’<sup>12</sup> (Schachter 1976, 1977, Faltz 1985[1977]:30-31). See (61) and (62). The situations the *sarili* reflexive construction realizes are middle situations in the sense that the development of an action is confined within the agent’s personal sphere and the agent him- or herself is affected (cf. English reflexives in 12). But they are “unusual” middle situations, where extroverted verbs have a middle meaning contrary to expectations, being distinguished from “usual” middle situations expressed by AF clauses like (59) and (60).

<sup>12</sup> For some reason, the *sarili* reflexive construction cannot be used with AF antipassive constructions as below.

- (i) \*P<um>atay                      ang=lalaki                      ng=sarili=niya.  
kill<AF>                              NOM=man                      GEN=self=3SG.GEN  
Intended for *The man killed himself.*

Variation in form is taken as a function of the “usualness” of the middle situation (Shibatani 2006:235).

- (61) P<in>atay-ø                      ng=lalaki                      ang=sarili=niya.  
kill<RL>-PF                      GEN=man                      NOM=self=3SG.GEN  
*The man killed himself.*
- (62) S<in>ampal-ø                      ni=Marf                      ang=sarili=niya.  
slap<RL>-PF                      P.GEN=M.                      NOM=self=3SG.GEN  
*Marf slapped himself.*

Interestingly, it is possible to employ the *sarili* reflexive construction with introverted verbs, but the resulting sentences mean “unusual” middle situations with special implications such as the emphasis on a patient and the difficulty of an action. For example, the *sarili* reflexive construction in (63) emphasizes that the agent clothed no one but him- or herself. (64) has the reading that the agent had difficulty in standing up (e.g. because of her sickness). AF middle constructions do not have these implications.

- (63) D<in>amit-an=ko                      ang=sarili=ko.  
clothe<RL>-LF=1SG.GEN                      NOM=self=1SG.GEN  
*I clothed myself (not someone else).*
- (64) I-t<in>ayo                      ni=Glai                      ang=sarili=niya.  
CF-stand<RL>                      P.GEN=G.                      NOM=self=3SG.GEN  
*Glai stood herself up (in spite of the difficulty).*

To summarize, the semantic contrast between extroverted and introverted verbs differentiates two distinct voice categories of AF verb forms. AF verb forms realize antipassive situations with extroverted verbs and middle situations with introverted verbs, whereas GF verb forms represent active situations. Exceptionally, GF verb forms can indicate middle situations, but “unusual” ones, with the *sarili* reflexive construction. See Table 2. To put it differently, the marking of a middle meaning is economically motivated in Tagalog. Middle situations with introverted verbs are predictable and thus expressed by an AF verb form (a zero form); those with extroverted verbs are not predictable and thus indicated by the *sarili* reflexive construction (a full form).

**Table 2:** *Voice oppositions realized by the focus system*

Types of verbs	AF	GF	<i>Sarili</i> -construction
Extroverted verbs	Antipassive	Active	Reflexives
Introverted verbs	Middle		

It is worthy of mention that the contrast between extroverted and introverted verbs is a matter of degree. On the one hand, verbs like *pumatay* ‘kill’ and *sumampal* ‘slap’ in (57) and (58) are completely extroverted verbs, and verbs of change in body posture and translational/non-translational motion are strongly introverted verbs. On the other hand, some verbs may fall between extroverted and introverted verbs, allowing for both middle

and antipassive interpretations. For example, the action of grooming is typically self-directed, but can be carried out toward others in special circumstances. In (65), for example, the AF verb form *nag-ahit* ‘shaved’ means the middle situation that Ricky shaved himself. But when it is employed with a patient possessed by someone else as in (66), the AF verb form is coerced into having the antipassive reading that the patient is partially affected, and the completion of shaving action is not specified.

(65) Nag-ahit                      si=Ricky                      (ng=bigote).  
 AF.RL-shave                      P.NOM=R.                      (GEN=mustache)  
*Ricky shaved (his own mustache).[middle]*

(66) Nag-ahit                      ang=nurse                      ng=buhok                      ng=pasyente.  
 AF.RL-shave                      NOM=nurse                      GEN=hair                      GEN=patient  
*The nurse shaved (part of) the patient’s hair. [antipassive]*

Lastly, we should also note that certain verbs that include a change of state in their meanings, especially inchoative verbs, have more than one AF verb form, one for a middle situation (a change of state) and one for an antipassive situation (an action which induces a change of state of something non-specific).<sup>13</sup> In these verbs, AF and GF verb forms display a three-way voice distinction, that is, middle, antipassive, and active as in (67).

(67) a. B<um>ukas      ang=pinto.  
           open<AF>      NOM=door  
           *The door opened. [middle]*  
 b. Nag-bukas                      si=Rogie                      ng=pinto.  
           AF.RL-open                      P.NOM=R.                      GEN=door  
           *Rogie opened a door. [antipassive]*  
 c. B<in>uks-an                      ni=Rogie                      ang=pinto.  
           open<RL>-LF                      P.GEN=R.                      NOM=door  
           *Rogie opened the door. [active]*

## 6 Voice neutralizations in nominalization

The focus system is not only used for voice phenomena. Another equally important function is to form argument nominalization, by which a clause is converted into a nominal expression profiling a particular argument of the clause (Comrie and Thompson 1985).<sup>14</sup> In

<sup>13</sup> It has been mentioned in Section 1 that there is more than one AF affix, and the most productive ones are *mag-* and *-um-*. As noted above, certain verbs can occur with both affixes, resulting in two distinct AF verb forms like (67). In this case, *mag-* AF verb forms tend to express antipassive situations, while *-um-* AF verb forms are likely to express middle situations, although the antipassive-middle contrast is only one of the functional contrasts between *mag-* and *-um-*. See Pittman (1966), Himmelmann (2004), Reid and Liao (2004), and Brill (2005). Pittman (1966:12) reports that there is a semantic distinction between *umahit* ‘to shave others’ (non-reflexive) and *mag-ahit* ‘to shave oneself’ (reflexive) (cf. 65 and 66). But the Tagalog speakers the present author consulted with do not have this distinction. They only use *mag-ahit*. Thanks to Mathias Jenny (p.c.) for drawing my attention to this point.

<sup>14</sup> What we call nominalization here has been referred to as headless relative clauses in the literature, and it has been claimed that only the nominative argument can be relativized

argument nominalization, the focus system is employed to specify the semantic role of the argument nominalized. Thus, the AF affix indicates actor nominalization like English *-er* (e.g. *sing-er* and *hear-er*), the PF affix patient nominalization like English *-ee* (e.g. *employ-ee*), and so on, as exemplified in (68). Compare the nominalized verb forms in (68) with the non-nominalized verb forms in (1).

- (68) a. Ako                    ang=[k<um>ain                    ng=mansanas].  
       1SG.NOM        NOM=eat<AF>                    GEN=apple  
       *[The one who ate an/the apple] is me.*
- b. Ang=mansanas                    ang=[k<in>ain-ø=ko].  
       NOM=apple                    NOM=eat<RL>-PF=1SG.GEN  
       *[What I ate] is the apple.*
- c. Ang=pinggan    ni=John Rey        ang=[k<in>ain-an=ko].  
       NOM=plate    P.GEN=J.R.        NOM=eat<RL>-LF=1SG.GEN  
       *[What I ate off of] is John Rey's plate.*
- d. Si=Fiona        ang=[i-k<in>ain=ko].  
       P.NOM=F.     NOM=CF-eat<RL>=1SG.GEN  
       *[The one for whom I ate] is Fiona.*

Nominalized clauses can also work as noun-modifying (or relative) clauses by being attached to the noun they modify (cf. Shibatani 2009).

- (69) <Um>alis=na                    ang=lalaki=ng    [k<um>ain        ng=mansanas].  
       <AF>leave=already        NOM=man=LK    eat<AF>        GEN=apple  
       *The man [who ate an/the apple] already left.*

A special fact about Tagalog nominalization is that the voice oppositions made by the focus system are neutralized in nominalized verb forms. Notice that the patient noun of the nominalized AF verb form *kumain* ‘the one who ate’ can be either indefinite or definite as in (68a) and (69). This means that the nominalized AF clause above can receive two different interpretations, namely, the antipassive interpretation that an indefinite apple or some of the apple was eaten, and the active interpretation that a definite apple was completely eaten. Likewise, the AF clause in (70) has two readings: it can express either an antipassive situation with a non-specific patient or an active situation with a definite distinct patient. Compare (16) and (70). The nominalized AF verb form *pumatay* ‘the one who killed’ can even take a highly individuated patient as in (71). Compare (17) and (71). Thus, the antipassive-active opposition made by AF and GF verb forms is not observed in nominalization.

- (70) Na-huli                    ang=[p<um>atay                    ng=aso].  
       SP.RL-arrest        NOM=kill<AF>                    GEN=dog  
       *[The one who killed a dog] was arrested. [antipassive]*  
       or *[The one who killed the (particular) dog] was arrested. [active]*

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(Schachter 1976, 1977, Kroeger 1993). In our analysis, there is no extraction involved in nominalization.

- (71) Si=Juan            ang=[p<um>atay            kay=Kuwan].<sup>15</sup>  
 P.NOM=J.            NOM=kill<AF>            P.DAT=K.  
*[The one who killed Kuwan] is Juan. [active]*

This is also the case with the middle-active opposition. The nominalized clauses in (72) and (73) illustrate the point. Since it is an introverted verb, the AF verb form *nag-ahit* ‘shaved’ indicates a middle situation in a matrix clause like (65). However, when it is used as a nominalized verb as in (72), the situation this AF verb form represents is ambiguous between middle and active situations: it can be interpreted to indicate either that Ricky shaved himself (middle) or that Ricky shaved someone else (active). The same is true of (73) (cf. 34).

- (72) Si=Ricky            ang=[nag-ahit].<sup>16</sup>  
 P.NOM=R.            NOM=AF.RL-shave  
*[The one who shaved (himself)] is Ricky. [middle]*  
 or *[The one who shaved (someone else)] is Ricky. [active]*

- (73) Si=Barbie            ang=[nag-sumbrero].  
 P.NOM=B.            NOM=AF.RL-put.on.hat  
*[The one who put on a hat] is Barbie. [middle]*  
 or *[The one who put a hat on (someone else)] is Barbie. [active]*

Thus, the function of the focus system is different in and out of nominalization. In particular, the AF affixes indicate non-active voice categories (antipassive and middle) in non-nominalized clauses, but mark actor nominalization in nominalized clauses.<sup>17</sup>

## 7 Non-active voice categories and actor nominalization

We opened this paper by introducing the focus system as a mechanism of singling out a particular participant of an action as primary focal participant, and observed that AF verb forms, which focus an actor, have two different functions, namely, non-active voice categories (antipassive and middle) and actor nominalization.

In this section, we discuss how the two functions of AF verb forms are motivated by their basic function, that is, actor-focusing. To begin with, let us think about why two distinct non-active voice categories, antipassive and middle, are realized by the single AF verb form. Recall from Section 2 that within our conceptual framework the antipassive voice and the middle voice are grouped together relative to the active voice in terms of the nature of the development of an action. In both voice categories, there is no totally affected distinct patient and the agent is the single salient participant (Shibatani 2006:239-240).

<sup>15</sup> A highly-individuated patient (e.g. a personal name and a pronoun) in a nominalized clause is marked in the dative case (McFarland 1978).

<sup>16</sup> To be more precise, (72) can even have the antipassive interpretation that the one who shaved some of someone’s mustache is Ricky. Here, the antipassive-middle contrast is neutralized.

<sup>17</sup> Crosslinguistically it seems widespread that an antipassive morphology has a different function in and out of subordinate clauses (e.g. relative clauses). According to Heath (1976:210), often an antipassive construction shows a lower degree of individuation of a patient in main clauses, but involves a syntactic process of changing a transitive subject to an intransitive subject in subordinate clauses. A similar observation is also found in Cooreman (1994:72-81).

This conceptualization is exactly what actor-focusing means, and is what AF verb forms have in common. In other words, since they foreground an agent, backgrounding other roles, AF verb forms are used for representing non-active situations.

Then, the voice contrast between antipassive and middle is brought about by the semantic contrast between introverted and extroverted verbs. Since introverted verbs are inherently self-directed, their AF verb forms realize middle situations, where an action develops only within the agent's personal sphere. On the other hand, AF verb forms of extroverted verbs express antipassive situations: since extroverted verbs are other-directed, an action goes beyond the agent's personal sphere, but still there is no fully affected distinct patient because of the conceptualization of AF verb forms. Having understood the similarity and difference of antipassive and middle voice categories, it is no surprise that the two voice categories are realized by the same formal category.

In fact, the actor-focusing function of AF verb forms is not just shared by non-active voice categories but also by actor nominalization. When they are used for actor nominalization, AF verb forms profile the agent of an action so that the meaning of a clause shifts from an action meaning to a nominal, agent-referring meaning. To put it differently, since they foreground the agent of an action, rarefying the action meaning itself, AF verb forms are employed for turning the meaning of a clause into its agent. Although the two functions seem different, non-active voice and actor nominalization are the same in that an actor is focused.

## 8 Conclusions

At the beginning of this paper, we pointed out that the current approaches to Tagalog voice phenomena pay too much attention to the formal properties of the focus system, especially its syntactic transitivity, and thus fail to take enough account of the relationships between the focus system and voice phenomena in this language. In this paper, in contrast, we took the conceptual approach to voice phenomena and examined the conceptual distinctions that the focus contrasts make, with special reference to the middle voice. With this investigation, we are now in a position to answer how the Tagalog focus system interacts with voice phenomena: GF verb forms realize the active voice, while AF verb forms express non-active voice categories, representing the antipassive voice with extroverted verbs and the middle voice with introverted verbs, respectively. The focus system is not a mere marker of syntactic transitivity, but represents a voice system, namely, how Tagalog speakers conceptualize an action.

We also observed that this voice function is neutralized in argument nominalization, in which the focus system simply marks the semantic role of the argument nominalized. This nominalizing function, however, can be considered as a reflection of the basic focusing function of the focus system, which also motivates the voice contrasts discussed above.

A few comments need to be made about syntactic transitivity and ergativity. This paper did not directly deal with syntactic transitivity, but our conclusion that AF clauses are non-active constructions and GF clauses are active constructions offers some support to the antipassive/intransitive analyses of AF clauses. This also means that our analysis is more or less compatible with the ergative analysis of Tagalog case-marking pattern, although it does not rule out the possibility, either, that Tagalog constitutes a distinct type of alignment. Lastly, in light of our discussions, it should be clear that although it is



morphologically symmetrical, the Tagalog voice system is conceptually asymmetrical. AF-GF contrasts enable different ways of construing an action.

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# REDUPLICATION ASYMMETRIES IN BAHASA INDONESIA AND THE ORGANIZATION OF THE LEXICON-SYNTAX INTERFACE

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## 0 Introduction

In this paper, I discuss reduplication in Bahasa Indonesia (BI). The corpus study of four popular newspapers published in Indonesia reveals that there is a curious asymmetry between nominal and verbal reduplication in this language. Specifically, verbal affixes allow only stem reduplication whereas nominal affixes allow both stem and stem-affix reduplication. This asymmetry and the stem-internal reduplication pattern pose non-trivial architectural and empirical challenges for the traditional lexicalist view of the lexicon-syntax interface as in Chomsky 1970, Anderson 1982, Kiparsky 1982/Mohanan 1986, and Di Sciullo and Williams 1987. I propose that these observations receive a straightforward account under the non-lexicalist view of word formation as in Distributed Morphology (Halle and Marantz 1993). Under the proposed analysis, these patterns can be derived as a natural consequence of a particular hierarchical arrangement of certain morphosyntactic features such as Asp and Num in tandem with independently motivated assumptions concerning the cyclic post-syntactic assignment of phonological features. This result, therefore, provide support for the non-lexicalist view of the lexicon-syntax correspondence that attempts to locate all types of word formation within the sole realm of generative syntax.

## 1 Reduplication Asymmetries in Bahasa Indonesia

To find out existing patterns in nominal and verbal reduplication in BI, Sato and McDonnell in press have conducted a corpus survey of four popular newspapers published in Indonesia. The present corpus contains approximately 160, 000 words, taken from the archives of the following four newspapers: *Tempo*interaktif ([www.tempointeraktif.com](http://www.tempointeraktif.com)), *Suarapembaruan* ([www.suarapembaruan.com](http://www.suarapembaruan.com)), *Mediaindo* ([www.mediaindo.co.id](http://www.mediaindo.co.id)), and *Kompas* ([www.kompas.com](http://www.kompas.com)). The result of this study is given in Table 1 on the next page. I have included here only the results pertaining to derivational affixes; see Sato (2008) and Sato and McDonnell in press for the expanded result that also contains inflectional affixes.

The results given in Table 1 reveal an asymmetry between nominal and verbal reduplication that has not been noted in the literature on the morphology of BI. Verbal affixes such as *ber-*, *meN-*, *di-*, and *ter-* allow only stem reduplication. Nominal affixes behave differently from verbal affixes in that they potentially allow not only stem reduplication but also stem-affix reduplication. Specifically, certain affixes such as *peN-*, *peN-an*, and *ke-an* have strong tendency to feed stem-affix reduplication whereas other affixes such as *-an* and *per-an* allow both stem and stem-affix reduplication. As is true for the corpus study in general, however, it is difficult to know what reduplicative forms that are not attested in the corpus actually *cannot* be produced by the grammar of BI, though the

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study does provide indication that the reduplication asymmetry observed here is real. To address this concern, I have conducted a grammaticality judgement task with one native informant to confirm whether the forms not found in the corpus study are actually unacceptable to the speaker.

**Table 1:** *The Corpus Survey of Four Newspapers in Indonesia (approx. 160, 000 words)*

		Stem Reduplication		Stem-Affix Reduplication	
		Total Tokens	Unique Forms	Total Tokens	Unique Forms
No Affix		1014	312	N/A	N/A
Verbal Affixes	<i>ber-</i>	89	37	0	0
	<i>meN-</i>	30	23	0	0
	<i>di-</i>	23	20	0	0
	<i>ter-</i>	13	9	0	0
Nominal Affixes	<i>-an</i>	32	22	19	15
	<i>peN-</i>	0	0	8	5
	<i>peN-an</i>	0	0	2	2
	<i>per-an</i>	6	2	9	6
	<i>ke-an</i>	1	1	10	8

The following examples show that the corpus study in Table 1 reflects the grammar of BI. For reasons of space, I concentrate on the verbal affix *ber-* and the nominal affix *-an* in this paper. Consider first the reduplication pattern found with *ber-*. Table 1 indicates that this prefix only allows stem reduplication. This result is confirmed by the contrast between (1a-c) and (2a-c).

- (1) Stem Reduplication with the Verbal Prefix *ber-*
- a. belit ‘twist’ ⇒ [ber [belit-belit]] ‘meander’  
 b. cakap ‘talk’ ⇒ [ber [cakap-cakap]] ‘chat’  
 c. jalan ‘walk’ ⇒ [ber [jalan-jalan]] ‘stroll’
- (2) Stem-Affix Reduplication with the Derivational Prefix *ber-*
- a. belit ‘twist’ ⇒ \*[[ber-belit]-[ber-belit]] ‘meander’  
 b. cakap ‘talk’ ⇒ \*[[ber-cakap]-[ber-cakap]] ‘talk’  
 c. jalan ‘walk’ ⇒ \*[[ber-jalan]- [ber-jalan]] ‘stroll’

A similar argument can be made for the finding in Table 1 that the nominal suffix *-an* allows both types of reduplication. That this finding is correct is indeed evidenced by the grammaticality of stem reduplication in (3a-c) and stem-affix reduplication in (4a-c).

- (3) Stem Reduplication with the Nominal Suffix *-an*
- |    |       |             |   |                          |                            |
|----|-------|-------------|---|--------------------------|----------------------------|
| a. | sayur | ‘vegetable’ | ⇒ | [[sayur-sayur]-an]]      | ‘many types of vegetables’ |
|    |       |             | ⇒ | *[[sayur-an]-[sayur-an]] |                            |
| b. | buah  | ‘fruit’     | ⇒ | [[buah-buah]-an]]        | ‘many types of fruit’      |
|    |       |             | ⇒ | *[[buah-an]-[buah-an]]   |                            |
| c. | biji  | ‘seed’      | ⇒ | [[biji-biji]-an]]        | ‘many types of seeds’      |
|    |       |             | ⇒ | *[[biji-an]-[biji-an]]   |                            |
- (4) Stem-Affix Reduplication with the Nominal Suffix *-an*
- |    |       |         |   |                         |            |
|----|-------|---------|---|-------------------------|------------|
| a. | pikir | ‘think’ | ⇒ | [[pikir-an]-[pikir-an]] | ‘thoughts’ |
|    |       |         | ⇒ | *[[pikir-pikir]-an]]    |            |
| b. | tulis | ‘write’ | ⇒ | [[tulis-an]-[tulis-an]] | ‘writings’ |
|    |       |         | ⇒ | *[[tulis-tulis]-an]]    |            |
| c. | masuk | ‘enter’ | ⇒ | [[masuk-an]-[masuk-an]] | ‘inputs’   |
|    |       |         | ⇒ | *[[masuk-masuk]-an]]    |            |

(3a-c) show that the nominal suffix *-an* allows stem reduplication while (4a-c) show that the same suffix can also feed stem-affix reduplication. It is important to observe, however, that the choice between the two forms of reduplication is not entirely free with this suffix; rather, the choice is affected by the type of stem that it is identified with. Thus, when this suffix is combined with nominal stems as in (3a-c), it only allows stem reduplication. On the contrary, when this suffix is combined with verbal stems as in (4a-c), it only allows stem-affix reduplication. Thus, it is not the case that a single nominal affix allows both types of reduplication. We have already observed this pattern in the behaviour of circumfixes such as *peN-*, *peN-an*, and *ke-an*, whose dominant reduplication pattern is stem-affix reduplication, as shown in Table 1.

## 2 Reduplication in Bahasa Indonesia and Lexicalist Theories

The lexicalist theory is one traditional approach to the lexicon-syntax interface. Its central tenet is that there is a strict division of labor between the lexical and syntactic components of the grammar, which can only interact through a restricted set of information that is accessible to both components. Under this view, the products of lexical operations serve as atomic indivisible units that syntactic combinatorial processes operate on as terminal nodes. This view of the lexicon-syntax interface thus yields the so-called *Lexical Integrity Hypothesis*, which states that principles of syntax cannot peek into the internal structure of complex objects created in the pre-syntactic lexical component. This separation comes from the long-standing observation that morphological “words” are somehow distinct from syntactic “phrases” in several dimensions including semantic and phonological idiosyncrasies/compositionality, gaps/productivity, and the derivation vs. inflectional dichotomy.

The purpose of this section is to show that the nominal vs. verbal reduplication asymmetry and the existence of the word-internal reduplication pattern that targets the non-edge of a complex stem cannot be accounted for by several versions of the lexicalist theory as in Chomsky 1970, Anderson 1982, Kiparsky 1982/Mohanan 1986, and Di Sciullo and Williams 1987. I also note that this problem arises precisely because the lexicalist theory



adopts a view of the syntax-lexicon interface that postulates the generative lexicon either as the pre-syntactic component responsible for certain types of word formation or an independent word system whose information is encapsulated from the perspective of the syntactic system.

### 2.1 Chomsky's 1970 Weak Lexicalist Theory

Chomsky 1970 proposes, based on several syntactic and semantic contrasts between derived nominalization (*destroy* ⇔ *destruction*) and gerundive transformations (*destroy* ⇔ *destroying*), that non-productive, irregular processes take place in the pre-syntactic lexical component while productive, regular processes take place in the syntactic/transformational component. This separation of the two types of complex word formation in terms of their regularity/productivity has been widely taken in the generative literature to define the classical version of the weak lexicalist theory (see Marantz 1997, though, for an alternative interpretation of Chomsky's work).

If we adopt Chomsky's version of the lexicalist hypothesis, *ber-*/*-an* affixation as observed in (1-4) counts as a lexical/pre-syntactic process. As noted in the literature on the morphology of BI as in McDonald 1967 and Sneddon 1996, the verbal prefix *ber* may attach to nominal, numeral, and verbal bases that yield highly unpredictable/irregular semantic outcomes. Predicates consisting of this prefix and a nominal base refer to a customary possession of, or to characterization by the referent of the noun, as shown in (5a, b). This type of prefixed predicate can also be used to refer to the act of producing the reference of the noun or making use of it, as shown in (5c, d). When the nominal base refers to a profession or way of life of an animate being, the derived predicate refers to the property of making a living with that possession or by that way of life, as shown in (5e, f).

- (5) *ber*-prefixation: Input = Noun/Output= Verb (MacDonald 1967: 44,45)
- |    |        |           |   |                |                      |
|----|--------|-----------|---|----------------|----------------------|
| a. | anak   | 'child'   | → | [ber [anak]]   | 'have children'      |
| b. | kaki   | 'foot'    | → | [ber [kaki]]   | 'have feet'          |
| c. | kokok  | 'cackle'  | → | [ber [kokok]]  | 'produce a cackle'   |
| d. | sepeda | 'bicycle' | → | [ber [sepeda]] | 'use a bicycle'      |
| e. | kuli   | 'coolie'  | → | [ber [kuli]]   | 'work as a coolie'   |
| f. | tukang | 'artisan' | → | [ber [tukang]] | 'work as an artisan' |

The same prefix can also combine with a numeral, unreduplicated or reduplicated, to yield the complex noun meaning 'forming a group of' and 'in groups of', as shown in (6a-c).

- (6) *ber*-prefixation: Input = Numeral/Output= Numeral (MacDonald 1967: 47)
- |    |        |           |   |                |                |
|----|--------|-----------|---|----------------|----------------|
| a. | dua    | 'two'     | → | [ber [dua]]    | 'two together' |
| b. | ratus  | 'hundred' | → | [ber [ratus]]  | 'in hundreds'  |
| c. | karung | 'sack'    | → | [ber [karung]] | 'in sackfuls'  |

The same prefix also may create intransitive verbs by attaching to verbal bases that otherwise do not occur alone, as in (7a, b). If the root is reduplicated, an additional meaning of variety, repetition or lack of purpose is implied, as in (7c, d).

- (7) *ber*-prefixation: Input = Verb/Output= Verb (MacDonald 1967: 47,48)
- |    |         |         |   |                     |                  |
|----|---------|---------|---|---------------------|------------------|
| a. | -henti- | 'stop'  | → | [ber [henti]]       | 'come to a stop' |
| b. | -pikir- | 'think' | → | [ber [pikir]]       | 'be cogitating'  |
| c. | belit   | 'twist' | → | [ber [belit-belit]] | 'meander'        |
| d. | cakap   | 'talk'  | → | [ber [cakap-cakap]] | 'have a chat'    |

The function of the nominal suffix *-an* is no more complex. It serves as nominalizer when it attaches to verbal bases as in (4a-c). It serves as a kind of classifier meaning 'types of' when it attaches to nominal bases, as in (3a-c). These considerations suggest that the two affixes are irregular morphemes and that the affixation involved is a lexical/pre-syntactic process in Chomsky's sense. In section 3, I show that the two functions of *-an* can be determined by two different attachment sites in the syntax.

By contrast, reduplication is a fully productive, hence syntactic process under Chomsky's productivity-based division of the two types of word formation. Reduplication of any countable noun produces a grammatical form that is specifically plural. Thus, reduplication in BI is a productive realization of the Number in the nominal domain. It is not apparently as clear whether the corresponding argument can be made for the verbal domain to show that verbal reduplication is really productive. The literature on the verbal reduplication in BI as in MacDonald 1976 and Sneddon 1996 notes that reduplication of a verb yields an interpretive consequence of adding emphasis of an action denoted by the base stem and yielding outcomes related to variety, multiplicity, and atelicity. Sneddon 1996, for example, gives a variety of meanings as in (8a-d):

- (8) Semantic Effects of Verbal Reduplication (Sneddon 1996: 20)
- a. With some verbs reduplication gives a connotation of action done in a causal or leisurely way.  
Examples: *duduk* 'sit' ⇔ *duduk-duduk* 'sit about'  
*berjalan* 'walk' ⇔ *berjalan-jalan* 'walk about, go for a stroll'
- b. With many verbs reduplication indicates continued action, either an action done over a period of time or an action performed repeatedly  
Example: Bu Yem mengurut-urut rambut anaknya.  
Mrs Yem stroked-RED hair child-her  
'Mrs.Yem stroked her child's hair.'
- c. With some verbs reduplication gives a meaning somewhat different from that of the single form, usually conveying a sense of intensity.  
Examples: *menjadi* 'become' ⇔ *menjadi-jadi* 'get worse'  
*meminta* 'request' ⇔ *meminta-minta* 'beg'
- d. Accompanied by *tidak* 'not' reduplication of the verb can indicate that the action has not occurred, usually implying that this is contrary to expectation.  
Example: Sudah dua hari Pak Tantotidak muncul-muncul.  
yet two day Mr TantoNeg turn up-RED  
'Mr Tanto has not turned up for two days now.'

The following two considerations show that verbal reduplication in BI is more like a syntactic process rather than a lexical process in the lexicalist sense. First, the examples in (1a-c) seem to all belong to the type (8a) in Sneddon's classification. This semantic effect as well as the other three in (8b-d) are in keeping with the general notion of plurality/emphasized

quantity, a crosslinguistically attested effect of reduplication, as evidenced by the extensive investigation of the function of reduplication conducted by Moravcsik 1978. Though Moravcsik herself concludes (p. 325) that “no explanatory or predictive generalization about the meanings of reduplicative constructions can be proposed,” as Travis 1999 argues, the results of her investigation should be construed as suggesting that reduplication serves some abstract quantificational function which is diversely instantiated as plural, causality, distributivity, multiple iterative event readings, reciprocals, emphasis, and so on. The existence of this quantificational effect of reduplication suggests that reduplication in BI is a syntactic process in Chomsky’s sense, since the quantificational effect can only be dealt with in the phrase-level system (see also section 2.4).

The second related argument to support the syntactic nature of the reduplication in BI comes from the event structural effects of reduplication. Davies 2000 shows that reduplication forces the multiple event reading of a verb based on his examination of reduplicative constructions in Madurese, a Javanic language closely related to BI. There seems to be a general agreement in the lexicalist literature, including Chomsky 1970, at least tacitly, that the lexicon creates complex words based on lexical categories (N, V, A, P) but never on functional categories (Aspect, T, C). This assumption is natural because time or event reference must crucially depend upon the rules of sentence formation. The following examples from BI, modelled after the corresponding examples in Madurese provided by Davies 2000: 127-129, show that reduplication of a verb in BI also creates a variety of new interpretations unavailable to its unreduplicated counterpart, such as multiple event readings, interleaved activity readings, and temporally displaced readings.

(9) Semantic Effects of Reduplication: Multiple Events Readings

- a. Esti meng-elus(-elus) rambut anak-nya.  
Esti AV-stroke-RED hair child-her  
‘Esti stroked her child’s hair many times.’
- b. Aini dan Lina me-motong(-motong) kayu selama dua jam dan menanam bibit  
Aini and Lina AV-cut-RED wood for two hours and plant seed  
‘Aini and Lina cut down trees for two hours and planted seeds.’
- c. Aini dan Lina men-cubit(\*-cubit) adik-nya yang lucu. Aini mem-cubit-nya hari  
Aini and Lina AV-pinch-RED child-their that cute Aini AV-pinch-her day  
Senin Lina hari selasa.  
Monday Lina day Tuesday  
‘Aini and Lina pinched their cute baby. Aini did so on Monday and Lina did so on Tuesday.’

(9a) illustrates the multiple event reading whereby the telic event of stroking a child’s hair occurred several times. If reduplication does not occur, by contrast, the sentence is ambiguous between the single event reading and the multiple event reading. This event-related property caused by reduplication can also be seen in (9b). Although judgments are subtle, according to my two language consultant, (9b) with reduplication allows the interpretation where the event of tree-cutting is interspersed with the event of seed-planting; for example, this sentence is true in the situation where Aini and Lina continued the activity of tree cutting for one hour, then did seed-planting for some time, and then resumed the tree-cutting activity for another hour. This interspersed activity reading is impossible without reduplication of the verb in (9b). Similarly, (9c) shows that the activity of the reduplicated verb can be spaced over time. For example, (9c)

is acceptable with reduplication under the reading where Aini pinched her baby on Monday but Lina did so on Tuesday. The acceptability of this example with reduplication is what we predict because the reduplication of a verb feeds multiple event readings. This reading, however, is unacceptable without reduplication in the same example. What is important about (9a-c) is that the availability of these three readings, derived by verbal reduplication, makes crucial reference to the notion of time or event. Again, this reference should not be possible in the lexical component to the extent that the above-mentioned assumption holds, namely, that the lexicalist sense of lexicon does not contain functional elements such as Aspect, T and C. The readings forced by reduplication in BI as in (9a-c), therefore, provide an argument for treating BI reduplication as a syntactic/non-lexical process.

With these observations in mind, consider whether the examples of stem-reduplication and the nominal vs. verbal reduplication asymmetry in BI might be accounted for under Chomsky's classical weak lexicalist theory. Examples of stem-reduplication as illustrated in (1a-c) and (3a-c) instantiate the word-internal reduplication, namely, that an affix (either *ber-* or *-an*) is attached to the complex stem created by reduplication. In other words, the affixation applies word-internally. This pattern of reduplication poses an inverse ordering problem for Chomsky's version of the lexicalist hypothesis. The formation of the stem reduplicated forms such as *belit-belit* and *sayur-sayur* requires the syntactic process of reduplication because reduplication is a productive process. The *ber-/an* affixation applies to this stem-reduplicated form to yield the grammatical forms such as [[*ber*-[*belit-belit*]] and [[*sayur-sayur*]-*an*]]. This ordering, however, should be impossible under the lexicalist architecture of the lexicon-syntax interface that posits the lexicon as a pre-syntactic system because the generation of these forms requires that the syntactic process of reduplication precede the lexical/pre-syntactic process of affixation. Furthermore, it seems that Chomsky's variant of the weak lexicalist hypothesis does not have anything to say about why there is an asymmetry between nominal and verbal reduplication in BI, as illustrated in the examples in (1-4) and Table 1, where nouns allow both stem and stem-affixation whereas verbs only allow stem reduplication. Chomsky's 1970 weak lexicalist theory, therefore, has serious architectural and empirical shortcomings in face of the existing reduplication patterns in BI.

## 2.2 Anderson's 1982 Weak Lexicalist Theory

Anderson 1982 develops a different version of the weak lexicalist theory from Chomsky's 1970 version that does not depend on the notion of productivity. He argues that inflectional morphology is treated in the syntax whereas derivational morphology is treated in the lexicon. He defines the inflectional/syntactic nature of a word formation process as follows:

### (10) The Definition of Inflectional Morphology in Anderson 1982

Inflectional morphology is what is relevant to syntax. (Anderson 1982: 587)

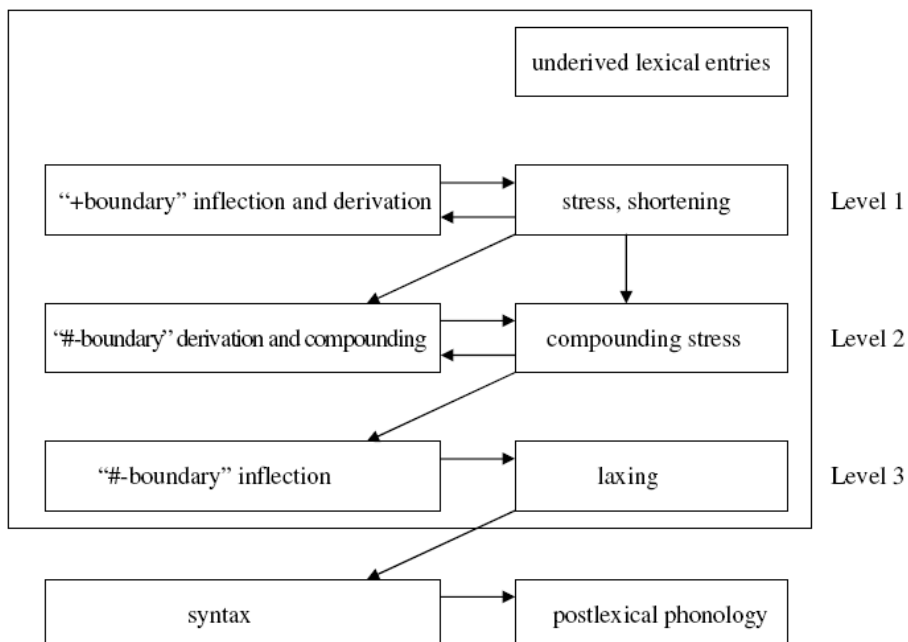
This definition requires that any affixation that has relevance to syntax such as agreement, tense, event structure should be treated in the syntactic manner. This conception of the weak lexicalist theory is particularly problematic in face of BI reduplication. The affixation of *ber-/an* counts as a lexical/pre-syntactic process because it does not seem to have syntactic effects such as agreement, tense, and event structure. However, we have seen in section 2.1 that reduplication in BI has clear event-structural/syntactic accounts in the form of the plural quantification of nominal denotations and the event multiplication of verbal denotation. This means that reduplication is an inflectional process to be treated in the syntax under Anderson's 1982 system.

Then, the word-internal reduplication pattern illustrated in (1a-c) and (3a-c) should be ungrammatical because the generation of such a pattern requires the application of the syntactic rule to be followed by the application of the lexical rule. Anderson's 1982 version of the weak lexicalist theory also has nothing to say about the reduplication asymmetry observed in BI.

### 2.3 Kiparsky's 1982/Mohanan's 1986 Strong Lexicalist Theory

The same reduplication asymmetry and the word-internal reduplication pattern also refute one well-known version of the strong lexicalist theory known as Lexical Phonology (Kiparsky 1982; Mohanan 1986). This theory maintains that morphology and phonology interact in tandem with each stratum/cycle governing operations with certain characteristics. Specifically, affixational/inflectional processes with irregular phonological and morphological consequences occur in Stratum 1 while regular inflectional processes with transparent consequences occur in a later Stratum (Stratum 3 in Kiparsky/Stratum 4 in Mohanan). Kiparsky's 1982 model of the Lexical Phonology is given in (11). See Mohanan 1986 for a further development of Kiparsky's original model, which I am not going to discuss here.

(11) Kiparsky's 1982 Model of Lexical Phonology in English (Kiparsky 1982: 133)



This model assumes that the word formation rules and the lexical phonological rules are partitioned into an ordered series of levels/strata/cycles. "+boundary" inflectional affixes in Level 1 include the umlaut of *tooth-teeth*, the ablaut of *sing-sang* and other stem-changing morphology whereas "+boundary" derivational affixes include what have been called Level 1 affixes in the Level-Ordering Hypothesis of Siegel 1974 such as *-al*, *-ous*, and *-im* (as in *refusal*, *pious*, and *impotent*). "#-boundary" derivation in Level 2 involves what have been called Level 2 affixes in the Level-Ordering Hypothesis such as *-un*, *-ness*, and *-er* whereas compounding is a process of combining two independent root elements such as *black board*, *nurse shoes*, and *red coat*. Finally, "#-boundary" inflection in Level 3 deals with the affixation involving the rest of the regular inflectional affixes such as plural *-s*, and past tense *-ed* in English.

One theoretical tenet of Lexical Phonology which is important for the purposes of this paper lies in the *Bracketing Erasure Convention*. This convention deletes all brackets at the end of each stratum/level of word formation and thus has the effect of rendering access to the previously available internal structure of complex words opaque in later strata/cycles. This convention, thus, derives one version of the lexical integrity hypothesis, namely, that word formation processes in Level 2 and 3 cannot look into the morphological makeup of complex morphological objects created by word formation processes in Level 1 and Level 2, respectively. Lexical Phonology, therefore, makes an explicit prediction that no processes in a particular level should be able to apply *within* a complex object that is derived by word formation processes characteristic of earlier levels. This prediction is clearly falsified by the reduplication pattern attested in BI. We have seen in section 2.1 that reduplication is a fully productive process. Under Kiparsky's model, this process is located in Level 3 on a par with regular inflectional affixes such as plural *-s*, and past tense *-ed*: recall that any countable noun and semantically appropriate verb can be input for reduplication just as any countable noun and verb can be affixed by *-s* and *-ed* in English, respectively. We have also seen there that affixes like *ber-* and *-an* yield a set of semantic irregularities when attached to a stem. This unpredictable behavior leaves affixation of these pieces in Level 1 on a par with irregular umlaut and ablaut rules as in *tooth-teeth* and *sing-sang*. Now, to derive the word-internal reduplication pattern as illustrated in (1a-c) and (3a-c) under Kiparsky's model, the Level 1 affixation (*ber-*affixation and *-an* suffixation) must be preceded by the Level 2 inflectional process (reduplication), an ordering that should be impossible in Lexical Phonology due to its central hypothesis that each level/stratum is strictly ordered and hence cannot be traversed. To illustrate it with *ber-belit-belit*, under Lexical Phonology, the base *belit* is submitted to Level 1, at which *ber-*prefixation would apply to yield [*ber-belit*]. This complex object is submitted to Level 3, at which reduplication applies to the whole object to create the output [[*ber-belit*]-[*ber-belit*]]. Importantly, this output is ill-formed as shown in (2a), even though this is the only output that is predicted to be possible under the strict layering of levels in Lexical Phonology. BI reduplication is also problematic for Lexical Phonology in three other respects. First, due to the Bracketing Erasure Convention, Kiparsky's model above makes a prediction that reduplication must target the right or left edge of the whole complex object because at the time this process applies in Level 3, the input transferred from Level 2 enters the Level 3 as an atomic unanalyzable element as the result of the erasure of all word-internal constituent boundaries. However, the existence of forms like [*ber*-[*belit-belit*]] shows that reduplication does target part of the complex stem rather than the left or right edge of it. Second, Kiparsky's 1982 assumes that the output of each level is itself a full-fledged lexical item. However, the ill-formedness of forms such as *\*belit-belit* shows that this is not always the case. Finally, Kiparsky's theory of Lexical Phonology does not seem to provide us with any way of explaining why the asymmetry between nominal and verbal reduplication obtains in BI.

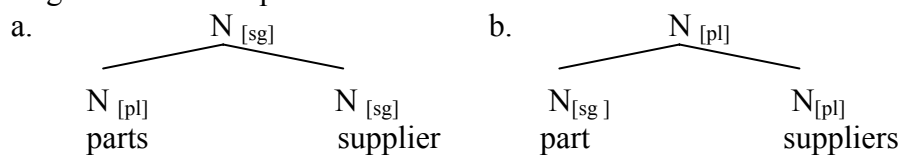
#### **2.4 Di Sciullo and Williams' 1987 Strong Lexicalist Theory**

Di Sciullo and Williams 1987 develop the most comprehensive defence of the strong lexicalist theory. They maintain that morphology and syntax are two different domains of inquiry with two different primes (e.g., stems, affixes, roots vs. NPs, VPs, CPs) and operations (compounding,  $\theta$ -identification vs. movement, quantification). Thus, for Di Sciullo and Williams 1987, the so-called lexicalist hypothesis/the lexical integrity hypothesis/the lexical

atomicity “is not a principle of grammar but rather a consequence of the conception that grammar contains two subparts, with different atoms and different rules of formation” (p.2). Assuming this strict division of labor between the word system and the phrase system, Di Sciullo and Williams 1987 maintain that the morphology and syntax can still communicate with one another through a restricted range of shared vocabulary, specifically, the “topmost properties of words, the features and argument structure of the topmost words.” (p. 45).

Let us consider what their version of the strong lexicalist theory could tell about the reduplication patterns in BI. Note that the argument against their system cannot be made on the basis of relative productivity of reduplication and the lack thereof in *ber-/-an* affixation, as in Chomsky’s weak lexicalist theory, because they argue that morphological objects and syntactic objects alike show productivity. Therefore, I provide an argument based on what they take to be top-most properties of the morphological word that work as shared information between morphology and syntax. Di Sciullo and Williams 1987 illustrate this cross-modular communication with compounding in English. Compounding involves the creation of what they call morphological objects that derive their agreement features from the percolation of the features of the right-hand head (Williams 1981). Crucially, it is the output agreement recorded on the top-most level of the compound (namely, the topmost N in (12a, b)) that is used for the purposes of syntactic subject-verb agreement, as the contrast between (13a) and (13b) shows.

(12) English N + V compounds



- (13) a. Parts-supplier is/\*are mean to me.  
 b. Part-suppliers \*is/are mean to me.

This agreement pattern correctly falls out from Di Sciullo and William’s 1987 system because the feature specification for the non-head member of the compound is invisible from the perspective of syntax. Thus, this pattern is one way in which the syntax and morphology can communicate through a restricted range of shared vocabulary though the atomicity thesis above still blocks the syntax from accessing the internal composition of compounds.

The word-internal reduplication pattern in (1a-c) and (3a-c) pose a serious difficulty for Di Sciullo and Williams’ version of the strong lexicalist theory. Since they assume that affixes are one type of primitive in their morphological system, it is reasonable to think that *ber-/-an* affixation in BI is a morphological operation in this system. We have seen in section 2.1 that reduplication in BI yields new quantification (plural) and event-structural (multiple event) interpretations, which cannot be produced by lexical operations since such an operation belongs to the sentence system. This observation is important because Di Sciullo and Williams explicitly state (p. 50) that “the atomicity of words prevents word-internal time reference from being assigned time values in the way that ‘tense’ is.” Then, the availability of the multiple event readings, interspersed activity readings, and the displaced time reading in (9a-c) in verbal reduplication suggests that reduplication belongs to the sentence system under their system.

Given the foregoing observation, the word-internal reduplication pattern illustrated in (1a-c) and (3a-c) pose an empirical problem for Di Sciullo and Williams's atomicity thesis because *ber-/–an* affixation, a morphological process, takes the output of the reduplication, a syntactic process, as its input. This should not be possible, since the morphological operation must apply only to morphological primitives such as stems, roots, and so on. One might counter that these affixes attach to the top-level object created by syntax but this possibility seems unlikely within their framework in light of the observation that the communication of the word system and the phrase system is asymmetrical because phrases are derived out of words but not vice versa. Another problem for Di Sciullo and Williams's 1987 theory comes from the availability of both stem and stem-affix reduplication with respect to certain derivational nominal affixes such as *–an*. As I show in the next section, the suffix *–an* has two different functions in stem reduplication and stem-affix reduplication, depending on the height of syntactic projections that it is merged within. Thus, the functions of this polysemous suffix are determined by the syntactic environment in which it is found. If this analysis is tenable, it is not clear whether Di Sciullo and Williams' system could capture this correlation between the functions of the suffix *–an* and their structural height because *an*-suffixation should not be able to interact with syntactic information such as structural height that is solely available within the syntactic system due to their atomicity thesis. The arguments developed here thus provide evidence against the general architecture of the lexicon-syntax interface as in Di Sciullo and Williams's 1987 strong lexicalism.

### ***2.5 The Lexicon as the Source of Embarrassment***

To summarize this section, I have shown that the reduplication within lexically/pre-syntactically derived complex stems in BI pose non-trivial empirical and architectural problems for a number of well-known versions of the weak and strong lexicalist theory as presented in Chomsky 1970, Anderson 1982, Kiparky's 1982a/Mohanan 1986, and Di Sciullo and Williams 1987. I have also shown that those lexical approaches would have little to tell about how the asymmetry between nominal and verbal reduplication arises in this language. Thus, those facts on BI reduplication provide strong arguments against certain versions of the weak/strong lexicalist theory. It is important to note that this type of inverse ordering is a problem only when we postulate the lexicon/morphology as the pre-syntactic generative component that is responsible for certain types of word formation characterized by productivity, semantic/phonological compositionality, the relevance of morphological primes to the syntax, and so on. In other words, this problem does not (or cannot) arise in non-lexicalist theories of the lexicon-syntax interface that do not posit such an independent component prior to/in addition to the generative system of syntax. In light of this consideration, in the next section, I pursue an alternative, non-lexicalist analysis of the reduplication in BI within the more recent framework of Distributed Morphology.

### **3 A Distributed Morphology Approach to Reduplication in Bahasa Indonesia**

In this section, I show that the asymmetry between nominal and verbal reduplication and the word-internal reduplication pattern receive a straightforward account within the non-lexicalist theory of Distributed Morphology (Halle and Marantz 1993). Specifically, I propose that these facts are explained as a natural consequence of a particular hierarchical arrangement of morphosyntactic features such as Aspect and Number in BI. I assume, in line with much recent work on reduplication conducted within a number of different theoretical frameworks (see Marantz 1982, McCarthy and Prince 1995, and Travis 1999, among others),

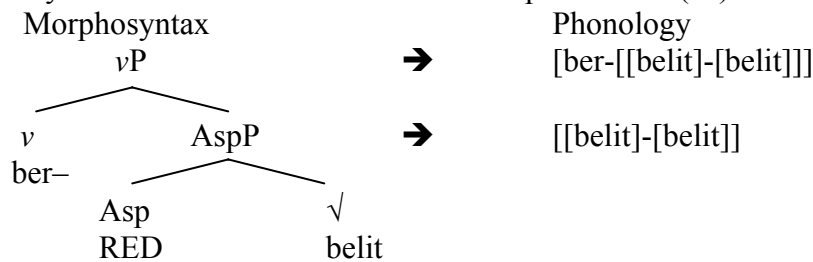


that this process consists in affixation of the reduplicative null morpheme RED (UPLICATION) that triggers copying on a stem on its local environment;

### 3.1 Verbal Reduplication

Consider first verbal reduplication. As we have seen in section 2, verbal affixes can only allow stem reduplication. This pattern is naturally explained if verbal reduplication is mediated by the Inner Aspect head (Travis 1999) that dominates the reduplicative null morpheme. This assumption is supported by the fact that, as noted in section 3.1, verbal reduplication has effects on the event structure of the verb. Under these assumptions, then the morphosyntactic derivation for (1a), [ber-[belit-belit]], will be as in (14).

(14) The Morphosyntactic Derivation of the Stem-Reduplication in (1a)



In this derivation, the Asp head merges with the acatgeorial root *belit* ‘twist’. The object that results from this merger is phonologically realized as the reduplicative form, [[belit]-[belit]], because the only stem that the RED morpheme in the Asp head triggers copying of is the root *belit* within its local c-commanding environment. The Asp head undergoes further merger with the verbalizing prefix *ber-*. The complex morphosyntactic object then is interpreted at the syntax-external phonological component as [ber-[[belit]-[belit]]], as desired. It is important to note that the reduplicative morpheme intervenes between the  $\nu$  head and the root in this derivation. Accordingly, the RED morpheme cannot reach up to the position of the  $\nu$  head to include the verbalizing prefix in its domain for reduplication to yield the ungrammatical form as in \*[[ber-belit]-[ber-belit]]. This derivation thus correctly predicts the unavailability of the stem-affixation reduplication pattern for verbal affixes such as *ber-*. In this way, the fact that verb affixes only allow stem reduplication naturally falls into place once we assume a particular hierarchical arrangement of certain morphosyntactic features/heads.

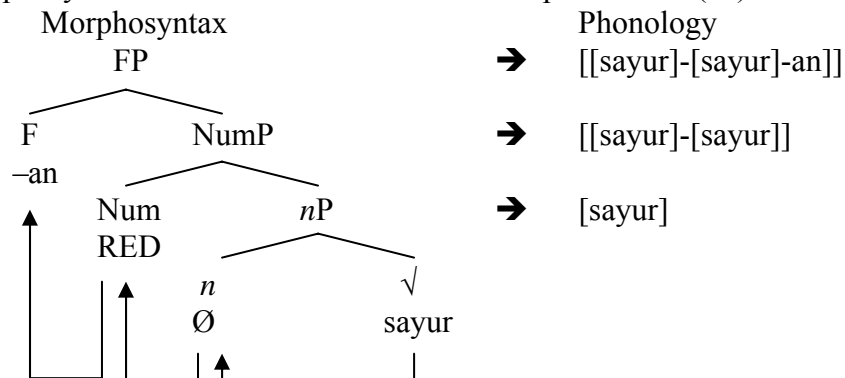
It is also to be stressed here that the state of affairs observed above in which the functional heads are linearized in the direction predicted by the hierarchical alignment of morphosyntactic features is exactly what is expected under the theory of Distributed Morphology. Within this framework, word formation of any kind is conducted by the single generative procedure as the sentence formation of any kind. Accordingly, the verbal reduplication pattern in BI is simply the direct consequence of the grammatical architecture of the Distributed Morphology. On the contrary, under non-lexicalist views of the syntax-lexicon interface, there is no reason to expect that the syntactic structure and the morphological structure match in this manner, as the interface between the lexicon and syntax is indirect. Thus, the reduplication for verb stems in BI can be construed as one good testing ground to tease apart the predictions of the two competing theories. The proposed analysis of verbal reduplication in BI also supports the locality of phonological feature assignment at the syntax-external interface; it crucially rests on the idea that the post-syntactic late insertion of phonological material at the interface closely mirrors the

way the syntactic derivation proceeds; *ber-* cannot be included as part of input for verbal reduplication because it is merged in a structurally higher position than the object (AspP) that becomes the target for reduplication; only the root must be included for reduplication because it is in the c-commanding domain of the RED morpheme. Therefore, the stem-affix reduplication pattern as in \*[[*ber-belit*]-[*ber-belit*]] is simply underivable under the interpretive nature of the phonological component, as assumed in Distributed Morphology.

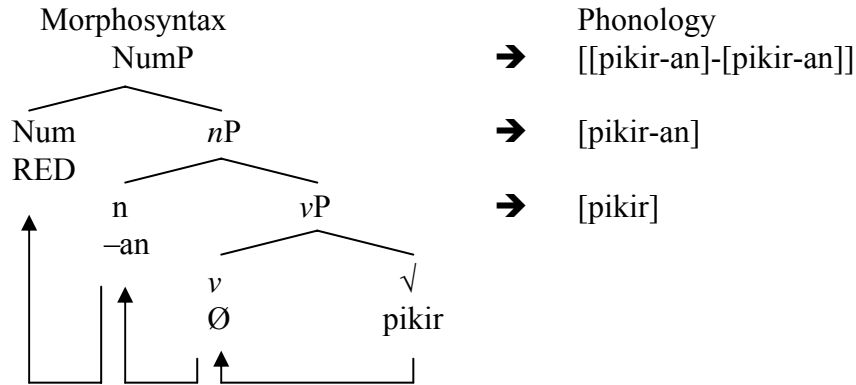
### 3.2 Nominal Reduplication

Nominal suffixes in BI allow both stem and stem-affix reduplication, as we have seen in section 2. The choice between the two types of reduplication is not entirely free but rather is governed by the syntactic category of the input stem. The input nominals in (3a-c) that allow only stem reduplication are all simplex nominals (i.e. *sayur* ‘vegetable’, *buah* ‘fruit’, and *biji* ‘seed’) whereas the input nominals in (4a-c) that allow only stem-affix reduplication are all complex deverbal nominals (i.e. *pikir* ‘think’ ⇒ *pikir-an* ‘thought’, *tulis* ‘write’ ⇒ *tulis-an* ‘writing’, and *masuk* ‘enter’ ⇒ *masuk-an* ‘input’). This difference, I claim, holds a key to a full understanding of why nominal derivational affixes allow the two types of reduplication unlike their verbal counterparts. Let us assume that nominal reduplication consists in the copying of a nominal stem by the reduplicative null morpheme located in the Num head. The Num head selects a nominal stem as its complement, a rather natural assumption that reduplication of a nominal element yields the form that is specifically plural in BI. Under these assumptions, then, simplex nominal stems as in (3a-c) can directly merge with the Num head. Verbal stems as in (4a-c), by contrast, cannot merge with the Num head this way because this head only selects a nominal stem as its complement. Thus, they are nominalized by *-an* before they can merge with the Num head. The morphosyntactic derivations for the examples in (3a) and (4a), then, will be as in (15) and (16), respectively. I assume that *-an* serves the role of classifier in (15); See Sato (2008) for evidence for this assumption from the kind-denotation of bare nominals in BI.

#### (15) The Morphosyntactic Derivation of the Stem-Reduplication in (3a)



(16) The Morphosyntactic Derivation of the Stem-Reduplication in (4a)



In (15), the root *sayur* ‘vegetable’ is instantiated as a noun by adjoining to the null nominalizing head. This stem, being a nominal, can directly merge with the Num head as input for reduplication to yield the reduplicated form [[*sayur*]-[*sayur*]]. The morphosyntactic derivation further continues by merging the NumP with the F that hosts the suffix *-an* to yield the correct final output [[*sayur*]-[*sayur*]-*an*]]. Since the RED morpheme can have access to the nP in its local c-commanding domain, *-an* cannot be included for nominal reduplication. Thus, forms such as \*[[*sayur-an*]-[*sayur-an*]] are simply ungeneratable. The derivation in (16) is crucially different from that in (15) in that the base stems are all verbal. Accordingly, they must undergo zero-derivation into nominal stems by the suffixation of the nominalizing suffix *-an* to serve as the complement that can satisfy the categorial restriction imposed by the Num head. Since the RED morpheme contained in this head includes the nominalizing suffix as well as the base stem in its local c-commanding domain, the syntactic derivation dictates that the phonological component include both elements as input for reduplication, thereby closely following the path curved by syntactic derivation in a local manner and yielding the correct output [[*pikir-an*]-[*pikir-an*]]. Under this derivation, then, the stem reduplication pattern as in the hypothetical \*[[[*pikir*]-[*pikir*]]-*an*] is simply underivable due to the way syntactic derivation proceeds and the way a particular set of morphosyntactic features is organized. This way, the proposed analysis provides a straightforward explanation for the fact that the choice between the stem and stem-affix reduplication correlates with the underlying category of the input stem.

#### 4 Conclusions

In this paper, I have introduced the results of my corpus study of four popular newspapers published in Indonesia. This study has revealed that a) nominal affixes such as *-an* in principle allow both stem and stem-affixation reduplication whereas verbal affixes such as *ber-* allow only stem reduplication and that b) both nominal and verbal stems may allow reduplication to target part of a morphologically/lexically derived complex word rather than its left or right edge. I have also shown that these results of the corpus study are indeed verified by native speakers’ intuition by conducting a grammaticality judgment task. Then, I have demonstrated that these two facts concerning BI reduplication pose non-trivial architectural and empirical challenges for a number of well-known versions of the weak and strong lexicalist theory as in Chomsky 1970, Anderson 1982, Kiparsky 1982/Mohanan 1986, and Di Sciullo and Williams 1987. I have also emphasized that the inverse ordering paradox caused by the word-internal reduplication pattern only arises in a theory of the lexicon-syntax interface that postulates the generative lexicon as an autonomous

pre-syntactic/parallel generative component. Accordingly, the inverse ordering problem ceases to be a problem under non-lexicalist theories of the interface because we do not have such a component in the first place. Based on this consideration, I have argued that the two facts on BI reduplication noted above receive a straightforward explanation within the more recent, non-lexicalist, morphosyntactic theory of Distributed Morphology outlined in Halle and Marantz 1993 if we take seriously a particular hierarchical arrangement of certain morphosyntactic features/heads such as Asp and Num as well as the underlying syntactic category of input stems for reduplication. One key assumption of the proposed analysis is that the post-syntactic phonological feature assignment closely mirrors the bottom-up derivation of morphosyntactic structures; the phonological component requires the reduplicative morpheme to target only the constituent within its c-commanding domain and the assignment of phonological feature applies from bottom up in a strictly cyclic manner. According to this analysis, the stem-affix reduplication as in \*[[[sayur]-an]-[[sayur]-an]] and \*[[[ber-[belit]]-ber-[belit]]] or the stem reduplication as in \*[[pikir]-[[pikir]-an]] are simply underivable as the natural consequence of the way syntactic derivation proceeds. The overall result in this paper, therefore, provides a strong piece of evidence against the traditional lexicalist architecture of the syntax-lexicon interface, and, at the same time, argues in favour of non-lexicalist theories as in the recent Distributed Morphology framework that attempt to locate all types of word formation within the sole realm of the syntactic derivation.

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# PROTO-MON-KHMER VOCALISM: MOVING ON FROM SHORTO'S 'ALTERNANCES'

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## 1. Introduction

While we have had a century of more-or-less consensus views on the nature of the Proto-Mon-Khmer (PMK) consonant inventory, cries of exasperation have accompanied consideration of PMK vocalism. David Thomas, harking back to Pater Schmidt, wrote in the first issue of *Mon-Khmer Studies* that "...comparativists have stated flatly that regular sound-laws simply do not exist in Mon-Khmer vowels, and, indeed, no one has yet succeeded (in print, anyway) in establishing a regular pattern in Mon-Khmer vowel comparisons" (1964:161). Blood (1966:6) cited Piat (1962) as finding in respect of Khmer-Bru correspondences that "...vowel shifts did not conform to predictable rules". Thomas' prescription was that comparativists should proceed from the bottom up, to reconstruct small groupings and sub-branches only, to work progressively towards deeper reconstruction, "...in this way [...] will the Mon-Khmer vowels be able to be solved" (1964:161).

This advice was followed almost to the letter over subsequent decades, so that by the beginning of the 21st century we have access to reconstructions for various Mon-Khmer sub-groups (e.g. North Bahnaric: Smith 1972; South Bahnaric: Sidwell 2000; West Bahnaric: Sidwell & Jacq 2003; Waic: Diffloth 1980; Katuic: Diffloth 1982, Efimov 1983, Peiros 1996, Sidwell 2005; Semai: Diffloth 1977, Phillips 2005; Monic: Ferlus 1983, Diffloth 1984; Vietic: Barker 1966, Thompson 1976, Ferlus 1991; Palaungic: Mitani 1979, Diffloth 1991). Yet at this point in time there has not appeared in press a reconstruction of Proto-Mon-Khmer vocalism based upon the systematic comparison of sub-grouping reconstructions.

However, there has been at least one attempt at reconstructing the PMK vowels; this is the "teleo-reconstruction" of Shorto (1976, 2006), which triangulates from two not-so-closely related branches directly back to the proto-language, skipping over any intermediate sub-groupings. The method is both tremendously powerful and risky, since the reliability of the results depends crucially upon the choice of criterion languages. Shorto based his analysis on a binary comparison of Old Mon and Written Khmer, which produced (consistently with Thomas' lamentation) a body of regular correspondences and a significant residue of chaotic correspondences. Shorto hypothesized that in the latter he could discern a pattern of variation, which reflected an ancient system of vowel gradation, that he called "alternances". In the application of this model Shorto set up a hierarchy of changes which greatly skewed his reconstruction typologically; low vowels are much less frequent in his proto-language than are typically found in the daughters.

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Comparative reconstruction is inherently pursued in a staged manner; initial analyses are done with a manageable data set, preliminary results are carefully considered and revised as progressively more data are drawn in, and in this way, a coherent picture hopefully emerges. From the perspective of approaching the present issue in a scientific manner, we can suggest that it would be especially satisfying if the results of a progressively widened teleo-reconstruction converged on those of independently pursued bottom-up studies, but it does not appear to be the case.

I submit that Shorto's theory of alternances was too powerful. As he brought more languages into his dataset, it allowed him to neglect the reanalysis of correspondences that would otherwise be indicated by their data. Short's comparative lexicon was primarily built upon the nearly a thousand comparisons of Mon, Khmer, Bahnar and Stieng compiled by Schmidt (1905), and he used more extensive and reliable Bahnar and Stieng (and other Bahnaric) data to increase that set (for example, the number of Bahnar items was increased nearly 50% over Schmidt to more than 1350). A logical step would have been to extend the set of criterion languages to include at least Bahnar and Stieng, in effect establishing a preliminary Proto-Bahnaric reconstruction and effective Proto-Mon-Khmer-Bahnaric. In this paper I offer such a reanalysis, focusing on the diphthongs which are so heavily involved in Shorto's alternances. With this first step I hope to demonstrate that we can usefully build directly upon Shorto's achievement by broadening his top-down reconstruction.

## **2. Discussion**

In pursuing his phonological reconstruction of a language family that was (and still is) far from adequately documented, Shorto followed the well established procedure of establishing sound correspondences for several criterion languages for which extensive and reliable sources were available. In this case he selected, Old Mon (for which he had compiled a dictionary) and Khmer as represented in the standard writing system (and which was presumed to more or less faithfully reflect historical pronunciation).

This use of only two criterion languages stands in contrast to the more common practice of comparing at least four languages to determine phonological correspondences, evidenced in such canonical works as Schmidt (1905), Dempwolff (1938), Li Fangkuei (1977) and other. It is also notable that these other scholars consistently assisted their interpretation of the correspondence sets by considering relevant available data from other related languages, a methodological necessity if one is to distinguish phonological history otherwise obscured by parallel changes that may have occurred among the criterion languages.

However, in this case Shorto implemented a novel approach; first he determined his reconstruction based solely upon the binary comparison of Mon and Khmer, and then he applied the results to his wider data set. What he found was a substantial proportion of reflexes that could be accounted for without difficulty, plus a sizable minority of apparently irregular correspondences that did not immediately sit with the preliminary reconstruction.

**Table 1:** Mon-Khmer vowel correspondences from Shorto (2006)**Table 1:** Mon : Khmer correspondences

PMK	Old Mon orthography	Old Mon phonology	Khmer orthography
*i	i, u, a, ī, ū, e, ui, ei	ø	i, u
*-iʔ	-i(?)	-iʔ	-ī
*ii	ī, i	i	i, u <sup>(1)</sup> , ī <sup>(1)</sup> , e <sup>(2)</sup>
*-iiʔ	-ey	ɔy	-ai
*e	e	e	e <sup>(3)</sup> , e <sup>(4)</sup>
*ee	ī, i	i	e <sup>(5)</sup> , e <sup>(6)</sup>
*a	a; e <sup>(7)</sup>	a <sup>(8)</sup>	a, ā <sup>(9)</sup> , ai <sup>(10)</sup> , e <sup>(11)</sup> , _ <sup>(12)</sup>
*aa	ā; e <sup>(13)</sup>	ai <sup>(8)</sup> , a	ā
*ə	i etc.; a <sup>(14)</sup> , o <sup>(12)</sup>	ø; ɔ <sup>(12,14)</sup>	ɔ; ɔ̄ <sup>(9)</sup> ; a <sup>(2)</sup>
*əə	i etc.; u, ū <sup>(10)</sup>	ø; u <sup>(10)</sup>	ɣ
*ɔ	o <sup>(8)</sup> , a	ɔ	ɔ; ɔ̄ <sup>(9)</sup> ; a <sup>(2)</sup>
*ɔɔ	o <sup>(8)</sup> , a	ɔ	ɔ̄; ūv <sup>(15)</sup>
*o	u, ū, o <sup>(8)</sup> ; i etc.	u <sup>(8)</sup> , ø	o
*oo	o; u <sup>(15)</sup>	o; u <sup>(15)</sup>	o
*u	u, ū, o <sup>(8)</sup> ; i etc.; ū, u <sup>(10)</sup>	u <sup>(8)</sup> , ø; u <sup>(10)</sup>	u; ūv <sup>(15)</sup> , ū <sup>(16)</sup>
*uu	ū, u	u	ū, u <sup>(12)</sup> ; o <sup>(2)</sup>
*-uuʔ	-ow	ɔw	-au
*iə	e; a <sup>(17)</sup>	ei; ɔ <sup>(17)</sup> (?); iə <sup>(18)</sup>	iə
*uə	o	o	uə
*ai	a; e <sup>(13)</sup>	ai <sup>(8)</sup> , a	ε

How did he deal with this? Shorto took a crucial step - he supposed that among the problematic correspondences he could discern regular patterns that suggested an explanation which would allow him to maintain his preliminary model more or less without revision. This patterning was of the following kind: where he may have expected, for example, to see a reflex of \*u, he instead sometimes saw what appeared to be a reflex of \*uu; where he expected a reflex of \*uu, he instead sometimes saw what appeared to be a reflex of \*uə; and so forth. these patterns suggesting a pattern of vowel gradation with PMK along the lines of \*u > \*uu > \*uə > \*ɔɔ, and similarly for the front vowels. Assuming that there were co-occurring forms of the same etymon with various vowel grades within PMK, reflecting perhaps some ancient morphophonemic processes, one could posit alternate proto-forms (or alternances), without needing to posit additional proto-phonemes or complicated sound laws to account for the more problematic correspondences. Consequently when one browses Shorto's dictionary a veritable plethora of alternate reconstructions are noted. For example, the following two entries nicely illustrate the pattern of gradation:



†305 \*tiik; \*tiək to lie down, sleep.

- A: (Mon, Khmer, Aslian) Khmer **de:k**, Kensiu **tik**, (or B?) Semnam &c. **tæg**; ~ (probably originally hypothetical) Old Mon **stik** /**stik**/, Modern Mon **toik**; ~ Mah Meri **gətik**, (~?) Semelai **jətek**, by metathesis Jah Hut **ticə:k**.  
 B: (Khasi, Nicobaric) Khasi **thiah**, Central Nicobarese **iteak**, Nancowry **ʔitiák**.

1326 \*cum; \*cuum; \*cuəm; \*cəm matched, complete.

- A: (Palaungic, Khmuic, ?Mon) Literary Mon [**ci**] **cuiṃ** to be complete (or D), Kammu-Yuan **cùm** (!; contaminated by *flock, herd* < 1338 \*bjum), Palaung **sum pair** (MILNE 1931).  
 B: (Mon, Palaungic) Mon **cum pair, set; to be even in number, complete**, Palaung **sum pair** (MILNE 1931).  
 C: (Mon) Old Mon **com** /**com**/ *entirely*.  
 D: (Khmer, South Bahnaric) Khmer **cəm** *exact(ly), directly*; ~ Stieng **tacə:m** *to put together again*.

So one result of this approach is that when reflexes of one etymon in different languages (especially between Mon and Khmer) did not show regular correspondence, multiple proto-forms were posited rather than prompt a reanalysis the vocalism. But another striking fact is that, when Mon or Khmer were absent, the phonological hierarchy (e.g. \*u > \*uu > \*uə > \*ɔ) at the centre of the theory of alternances was applied in a manner that overrode the basic assumption of reconstructing the fewest number of changes needed to account for the observed correspondences (in violation of “Occam’s Razor”).

Referring to Table 1, you will note the otherwise unremarkable correspondence of Old Mon orthographic o to Written Khmer uə and ɔ, ɔ̄, and parallel correspondence of Old Mon orthographic e to Written Khmer iə and ε. Shorto interpreted these as reflecting mergers in Mon, while Khmer retained archaic diphthongs. The straightforward consequence is that wherever the Khmer reflex is diphthonged, so the PMK reflex is presumed to be. Here is a simple example from the dictionary:

1157 \*duən pole, lance.

- A: (Mon, Khmer, Viet-Muong) Literary Mon **don** *lance, pike*, Khmer **tù:ən** *fish-spear*, (**lùmpɛ:ŋ** —) *kind of lance*, Muong **tòn** (BARKER 1966 22), Vietnamese **đòn** *lever, carrying-pole*; → Thai **t<sup>h</sup>uan** *tasselled lance*.

It happens that when Shorto began assembling MK cognate sets, he did so by first extracting the Mon, Khmer, Bahnar and Stieng comparisons compiled by Schmidt (1905) (the latter two languages being related within the Central sub-branch of Bahnaric, see Sidwell 2002). Among these comparisons Shorto noted that for a proportion of etyma for which Khmer has uu and uə, a goodly number of Bahnar and Stieng reflexes show ɔ (or low back vowels). Shorto took this to indicate that in such cases Bahnar and Stieng ɔ reflect a regular development from PMK \*uə- in some cases directly from a primary PMK \*uə (and in some others from an uə alternant of PMK \*uu). A neat example as is seen here:

**822 \*cnuəc** to spit, transfix.

- A:** (Mon, Khmer, North Bahnaric) Kontum Bahnar **hnɔ:c** to sharpen, to stab (GUILLEMINET 1959-63); ~ Mon **kənot canat!** spit (merging **1005 \*t/rn/uut** skewer), Khmer **crənu:əc** meat on spit (& **tranuəc** spit, GUESDON 1930, contaminated by **trənaot** skewer < **\*t/rn/uut**); ~ Khmer **crənu:əc** (& **krənu:əc**) to roast on spit.

So confident was Shorto that he variously reconstructed PMK \*uə to explain correspondences of Old Mon o to Bahnar and/or Stieng ɔ even when a Khmer reflex was lacking, e.g. (note alternate B. immediately below):

**280 \*kuk; \*kuək** egret.

- A:** (Khmer, South Bahnaric) Khmer **kok** heron, egret, Biat **kok** egret.  
**B:** (Bahnaric) Chrau **kɔ:ʔ** cattle egret, Bahnar [**klə:ŋ**] **kɔ:k** generic term for egrets &c. (GUILLEMINET 1959-63); probably → Cham **kɔ:ʔ**; Vietnamese **cò**.

And even in cases when neither a Khmer nor Mon reflex are present:

**878 \*huəc** to flow.

- A:** (Bahnaric, Khasi) Central Rölöm **hɔac**, Biat **hɔ:c** to flow, Bahnar **hɔ:c** [water] to carry away; to unroll, flow out, Khasi **hoit** to flow out, seep out; ~ Bahnar **təhɔ:c** to dispose of by throwing into stream, (GUILLEMINET 1959-63) to overflow.

Parallel considerations also applied to his treatment of \*ii, \*iə such that Bahnar/Stieng etc. **ɛɛ** is frequently treated as a reflex of PMK \*iə even in the absence of a diphthonged Khmer reflex:

**731 \*[k] liəŋ** forehead.

- A:** (Bahnaric) Biat [**ndraŋ**] **kle:ŋ**, Bahnar **kleŋ**, Jeh **kle:ŋ**, Halang **kleaŋ**; by secondary derivation ~ Sre **biŋliəŋ**.

**1010 \*gtit; \*gtiət** lorikeet, parakeet.

- A:** (South Bahnaric; ~ **\*grtit** >) Sre **rətet** green lorikeet, *Loriculus vernalis*.  
**B:** (Bahnaric, ?Viet-Muong) Stieng, Biat **tɛ:t**, Bahnar [**sɛ:m**] **dɛ:t** parakeet (GUILLEMINET 1959-63), perhaps by metathesis (**\*dkiət** >) Vietnamese **két**; ~ (**\*grtiət** >) Chrau **kətiət** parakeet.

On the other hand, there are examples of Bahnaric ɔ corresponding to ɔ in other MK branches, including Old Mon graphic o, and Khmer ɔ (and similar vowels), for which Shorto reconstructs PMK \*ɔ, e.g.:

**25 \*skɔʔ** grey-haired.

- A:** (Mon, Khmer, Bahnaric) Khmer **sko:v** grey-haired, Sre **ko:** to be white-haired, albino, Bahnar **kɔ:** grey[hair]; ~ Old Mon **siŋko'** /**səŋkɔʔ**/ grey-haired, Modern Mon **həkɔʔ** to be grey-haired, Old Khmer **saŋkū** grey-haired.

412 \*prɔ̀k *squirrel*.

A: (Bahnaric, Khmuic, Palaungic, Viet-Muong, North & Central Aslian). Sre **pro** (→ Stieng **prɔ̀h?**), Chrau **prɔ̀?**, Biat, Bahnar **prɔ̀k**, Jeh **pro:k** (GRADIN & GRADIN 1979), Kammu-Yuan **prɔ̀k**, Palaung [ə] **prɔ̀?** (MILNE 1931), Vietnamese [*con*] **sóc**, Sakai **prōk**<sup>n</sup> (i.e. Semai; SKEAT & BLAGDEN 1906 M 136 (c)); → Lao, Ahom \***rook** (BENEDICT 1975 226, *bat...*); Cham, Jarai **prɔ̀?**, Rōglai **pro?**, North Rōglai **pro?**.

Cf. Khmer **kəmprok**, apparently < \***ko:n prɔ̀k**, for which cf. Vietnamese; → Thai **krarɔ̀k** (with **kr-** by hypercorrection) at early stage

466 \*sɔ̀k *to peel*.

A: (Mon, Khmer, Katuic, North Bahnaric, Khmuic) Mon **sək** *to peel, skin*, Khmer **sɔ̀k** *to peel, remove bark, to slough*, Kuy **sa:?** *slough, to slough*; ~ Mon **hənok** *peel, rind, bark, shell, slough*, Khmer **səmnɔ̀k** *slough, [onion-]skin, [bamboo-] sheath*; ~ Khmer **səmbɔ̀k**, (→?) Kuy **mphùə?** *skin, bark, shell, husk*, Kammu-Yuan **həmpɔ̀k** *bark*; ~ (\***smɔ̀k** >) Chrau **mɔ̀?** *bark*, Bahnar **hmɔ̀k** *thick bark of certain trees*; ~ (\***srsɔ̀k** >) Biat **rchɔ̀k** [*egg*]shell; (?\***sɔ̀k** >) Bru **sə?** *to peel*.

547 \*t<sub>1</sub>ɔ̀ŋ *handle*.

A: (Khmer, Katuic, Bahnaric) Khmer **dɔ̀ŋ** (→ Cham **dauŋ**), Kuy **ta:ŋ**, Stieng **to:ŋ**, Chrau **tɔ̀ŋ** *handle*, Biat **tɔ̀ŋ** (— **jrɔ:**) *crutch*, (— **nji:ŋ**) *balance*, Bahnar **tɔ̀ŋ** *quantifier for guns, swords, axes, &c.*, Jeh **to:ŋ** *quantifier for tools*, Halang **toaŋ** *quantifier for long tools*; ~ (\***tntɔ̀ŋ** >) Biat **ntɔ̀ŋ** *handle*.

1634 \*pɔ̀r (& \*pɔ̀r?) *rice-gruel*.

A: (Khmer, Bahnaric) Stieng **pɔ̀r** *soup*, Sre **por** *rice-gruel* (< variant?), Chrau **pɔ̀r** *soup, gruel*, Biat **pɔ̀r** *rice soup*, Bahnar **pɔ̀r**, Jeh **po:l**, Halang **poar** *cooked rice*; ~ Khmer **bəbɔ̀: papar** (→ Stieng **p<sup>o</sup>bɔ̀r**) *soup, rice-gruel*.

So it is evident that Bahnar (or Bahnaric?) ɔ̀ can reflect both PMK \*uə and \*ɔ̀, evidently implying a merger of \*uə and \*ɔ̀ > ɔ̀ in (at least) Bahnar. In the absence of an indicative Khmer reflex (or other helpful indications), it would in principal be impossible to decide whether to reconstruct the diphthong or monophthong on the basis of the Bahnaric reflex. Shorto appears to have dealt with this conundrum by privileging his alternance hierarchy (\*u > \*uu > \*uə > \*ɔ̀), preferring to reconstruct proto-diphthongs, e.g.:

280 \*kuk; \*kuək *egret*.

A: (Khmer, South Bahnaric) Khmer **kok** *heron, egret*, Biat **kok** *egret*.

B: (Bahnaric) Chrau **kɔ̀?** *cattle egret*, Bahnar [**kla:ŋ**] **kɔ̀k** *generic term for egrets &c.* (GUILLEMINET 1959-63); probably → Cham **kɔ̀?**; Vietnamese **cò**.

475 \*huək; \*ʔuək *brains*.

A: (Palaungic) Palaung **hɔ̀?**; ~ (\***huək huək** > \***khuək** >) Riang-Lang **khua:k**.

B: (North Bahnaric, Viet-Muong, ?South Bahnaric) Vietnamese **óc**; ~ Biat **ɲɔ̀:k** (or A?), Bahnar **ʔɲɔ̀:k**.

## 1273 \*rup; \*ruup; \*ruəp to cover.

- A: (Khmer, South Bahnaric, ?Khasi) ~ Khmer **kənrùp kandrup** *dark gloomy place, made dark by overhanging branches &c.*, Biat **ndrup** *lid*; ~ (\*[t] rr- >; or B?) Khasi **tyllup** *to cover up completely* (IVAN M. SIMON PERS. COM.).
- B: (Khmer, Kuy, ?South Bahnaric) ~ Khmer **kraop** *to cover, hide; lid*; ~ Stieng **gru:p** *to cover, stop up* (or A?); ~ Kuy **tro:p** *to cover with e.g. fowl-basket*.
- C: (Mon, Bahnaric) Stieng **ruə:p** *to hide, bury*; ~ West Bahnar **krə:p** *hidden, hiding* (GUILLEMINET 1959-63); ~ Middle Mon **grop /grop/**, Modern Mon **kròp** *to cover*; ~ Old Mon **ginrop** *screen*, Modern Mon **həròp** *cloth cover*.

And the same where a monophthong is evident in South Baharic, e.g.:

## 1374a \*[ ] buəm; \*[ ] b[ə] m cheek.

- A: (South Bahnaric, Khmuic) Biat **[tə:m] bə:m**, Kammu-Yuan **pə:m** (→ Thin **pəm?**).
- B: (Katuic) Kuy **bam**.

The situation may have been complicated by a lack of understanding of the phonological history of Bahnar. I have identified (e.g. Sidwell 1998, Sidwell 2002) that there is tendency to monophthongization in Bahnar, due to a subtle stress shift within Bahnar mainsyllable vowels. This can be seen in examples such as:

Proto-Bahnaric		Bahnar
*puan	>	pwan ‘four’
*ciam	>	hjem ‘to feed’

Where the prevocalic consonant is already a rhotic (or a glide?) the original diphthong becomes a low monophthong:

Proto-Bahnaric		Bahnar
*ruat	>	rət ‘to buy’
*ruay	>	rəy ‘fly’
*ruas	>	roih ‘elephant’
*riah	>	rəh ‘root’

These and similar examples form prominent etymologies among the Bahnaric data. It appears that Shorto did not recognise the phonological conditioning of the monophthongization, and consequently such examples influenced him to think that a Bahnar low back vowel is generally indicative of a PMK \*uə (and similarly a low front vowel indicative of \*iə).

Shorto’s analysis of the relevant phonological correspondences is schematized in the following table:

**Table 2:** *Shorto's Mon:Khmer:Bahnar:Stieng low back correspondences*

	Old Mon	Written Khmer	Bahnar	Stieng*	PMK
1	o	o	ɔɔ	ɔɔ	*ɔɔ
2	o	uə	ɔ(ɔ)	ɔɔ	*uə
3	o	uə	ɔ(ɔ) ~ wa	uə	*uə

\*and other South Bahnaric

Lines 1 and 3 above would be straightforward enough but for the complications caused by the correspondence in line 2. The question reduces to whether the line 2 reconstruction should be \*uə or \*ɔɔ, or something else, particularly depending upon which of Khmer or Bahnaric is the innovator.

In the absence of an obvious conditioning factor, there is not enough data here to decide. All other things being equal, it may be suggested that it is just as likely that Khmer merged \*uə and \*ɔɔ to uə as it is that Bahnaric merged \*uə and \*ɔɔ to ɔɔ. However, not all things are equal, especially in terms of the structural imbalances within Shorto's reconstruction.

Shorto's PMK vowel inventory is as follows:

*/	i		u	ii		uu
	e	ə	o	ee	əə	oo
		a	ɔ		aa	ɔɔ
	iə	[uə]	uə			
		ai				/

Note the complete lack of low front vowels despite the frequent fact of such a contrast in MK languages. This correlates with an imbalance in frequency between Shorto's reconstruction of 365 cases of \*uə versus only 80 cases of \*ɔɔ, whereas it is more typical for ɔɔ to outnumber the back diphthong by about 2:1 in phonologically conservative Mon-Khmer languages (by my counts). A rough count of Shorto's \*uə etymologies also finds that reflexes in Northern Mon-Khmer languages are more often \*ɔɔ than diphthonged.

It is thus apparent that in respect of the line 2 correspondence, the Khmer diphthong reflex is the odd-man-out, and is much more likely to reflect a Khmer innovation via a merger with uə, although the conditioning factors are not yet clear. By implication, a parallel merger of \*iə and \*εε to iə in Khmer is also indicated, requiring us to posit an additional proto-vowel \*εε (and probably also a short \*ε) which would fill the rather odd gap in an otherwise more or less normal inventory for an "unrestructured" MK language (applying the terminology of Huffman 1985).

Accepting this line of reasoning as our present working hypothesis, there is no need to posit a new back vowel phoneme to account for the line 2 correspondences, although a systematic revision and reassignment of proto-forms is certainly indicated. A broader data set is required to determine if a specific conditioning environment can be identified for the hypothetical restricted mergers suggested for Khmer.

### Conclusion

Shorto most likely erred in only basing his vocalism on the comparison of two languages. In my view, if he had more properly used the four languages as laid out in his principal source (Schmidt 1905), he could well have avoided the excessive application of his theory of alternances, and offered a more reasonable reconstruction. As it stands, the phonological and lexical reconstruction offered by Shorto (2006) is skewed away from low vowels in favour of high vowels and diphthongs – this is in serious need of revision. Even within the limits of the data organised and presented by Shorto, it is possible to move more or less quickly to address these issues and produce a much more satisfactory account of PMK vocalism.

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# BASIC SERIAL VERB CONSTRUCTIONS IN THAI

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## 0 Abstract

This paper aims to provide a comprehensive classification of Thai ‘basic serial verb constructions’ (henceforth, basic SVCs) composed of two verb phrases serialized. My claim is as follows. The classification of Thai basic SVCs should be based primarily on temporal relationship between the two sub-events represented by the two verb phrases as well as the degree of assertiveness (or factuality) of each of the two verb phrases. Causation-related classes of verbs, such as ‘agentive verbs’, and restrictedness-related classes of verbs, such as ‘minor verbs’ (Aikhenvald 2006), are not crucial factors for the classification. Rather, the aspectual and modal classes of verbs, such as ‘durative verbs’ and ‘non-implicative verbs’ (Karttunen 1971, Givón 1973), are the most relevant factors.

## 1 Introduction

As Foley 2008 points out, the range of types of complex events expressed by SVCs differs from language to language. To adequately classify SVCs in a verb-serializing language, we must take into consideration the language’s characteristic morpho-syntactic properties and the speakers’ culture-particular conceptualizations of complex events. SVCs are thus language-specific both morpho-syntactically and semantically.

The main purpose of this paper is to demonstrate a comprehensive classification of basic SVCs in Thai. ‘Basic SVC’ is defined as construction in which two verb phrases are serialized with no overt linker (Chuwicha 1993). The two verbs in the construction designate a certain substantial event or situation (action, process, change, state, and so on) and share at least one nominal argument, which may or may not be explicitly expressed. Thai basic SVCs are exemplified in (1) to (4) below.<sup>[1]</sup> All these examples express a single complex event comprising two substantial sub-events, which is construed by Thai speakers.

- (1)    *tòk*     *tèek*  
      fell     be broken  
      *(It) fell off and (it) was broken.*
- (2)    *lǎy*     *maa*  
      flow    come  
      *(It) came flowing.*
- (3)    *tham*    *khǎay*  
      make    sell  
      *(He) made (it) to sell (it).*

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- (4) *yàak*    *kin*  
 want    eat  
 (He) wanted to eat.

Basic SVCs must consist of two verb phrases and must not include a lexical item effecting valency change, i.e., a voice-related lexical item to be used to increase or reduce a nominal argument in the given verb phrase. Examples (5) and (6) respectively have the ‘causative’ marker *hây* ‘CAUSATIVE’ (< *hây* ‘give’) and the ‘benefactive’ marker *hây* ‘BENEFACTIVE’ (< *hây* ‘give’) followed by an additional nominal argument (i.e. *phûan* ‘friend’), and so they are not basic SVCs.

- (5)    *hây*                      *phûan*    *lâaŋ*    *caan*  
 CAUSATIVE              friend    wash    dish  
 (He) caused/allowed (his) friend to wash dishes.

- (6)    *lâaŋ*    *caan*    *hây*                      *phûan*  
 wash    dish    BENEFACTIVE              friend  
 (He) washed dishes for (his) friend.

Similarly, examples (7) through (11) are not basic SVCs either because they are not composed of two verb phrases proper.

- (7)    *chák*                      *hǐw*  
 INCHOATIVE              be hungry  
 (He) is beginning to be hungry.

- (8)    *dây*                      *pay*  
 REALIZATION              go  
 It is realized that (he) goes.

- (9)    *kin*            *dây*  
 eat            POSSIBILITY  
 It is possible that (he) eats.

- (10)    *khít*    *yùu*  
 think    CONTINUOUS  
 (He) is thinking.

- (11)    *?ûan*    *khûn*  
 fat            INCHOATIVE  
 (He) got fatter.

One of the two constituents of these predicates is a functional morpheme that is more or less grammaticalized: example (7) includes the ‘inchoative’ aspect marker *chák* ‘INCHOATIVE’ (< *chák* ‘draw’) in the first position; example (8) includes the ‘realization’ modal/aspect marker *dây* ‘REALIZATION’ (< *dây* ‘emerge’) in the first position; example (9)

includes the ‘possibility’ modal marker *dây* ‘POSSIBILITY’ (< *dây* ‘emerge’) in the second position; example (10) includes the ‘continuous’ aspect marker *yùu* ‘CONTINUOUS’ (< *yùu* ‘be located’) in the second position; and, example (11) includes the ‘inchoative’ aspect marker *khûn* ‘INCHOATIVE’ (< *khûn* ‘ascend’) in the second position.

This paper is organized in the following way. Section 2 addresses the compositional system of the structure of basic SVCs and identifies four main types of complex events represented by the constructions. Section 3 proposes a new perspective from which Thai basic SVCs are properly categorized into ‘symmetrical’ and ‘asymmetrical’ types. Section 4 lists up all subtypes of the four main types of Thai basic SVCs, and examines the semantic and syntactic properties of each type. Discussions in Sections 3 and 4 will reveal that the primary parameters for the classification of the semantic types of Thai basic SVCs are the aspectual distinction ‘durative vs. non-durative situations’ and the modal distinction ‘factual vs. non-factual situations’. On the contrary, the hitherto often examined, famous distinctions ‘agentive vs. non-agentive situations’ and ‘situations denoted by verbs from a restricted vs. non-restricted class’ have little relevance or are at most secondary parameters. In Section 5, I will give concluding remarks.

## 2 Compositional system of the structure of basic SVCs

In my previous study on basic SVCs in general (Takahashi 2006), I posited two primary dimensions for classifying complex events expressed by basic SVCs, namely the dimensions of ‘temporality’ and ‘factuality (or the degree of assertiveness)’. The definitions of these two concepts are spelled out in (12).

- (12) Two most important dimensions for classifying complex events expressed by basic SVCs (Takahashi 2006) are:
- a. Temporality: temporal relation between two sub-events represented by the two verb phrases in a basic SVC, i.e., ‘consecutive’ vs. ‘simultaneous’
  - b. Factuality (the degree of assertiveness): the existential status of each of the two sub-events, i.e., ‘factual (assertive)’ vs. ‘non-factual (non-assertive)’

I would assume that subtypes of complex events denoted by basic SVCs in any verb-serializing languages systematically differ in these two dimensions. Previous studies of Thai SVCs (Chuwicha 1993, Diller 2006, Iwasaki & Ingkaphirom 2005, Muansuwan 2002, Sereechoensatit 1984, Sudmuk 2005, Thepkanjana 1986/2006, Wilawan 1993, *inter alia*) mainly consider the former temporal dimension, leaving the latter modal dimension untouched, which leads to an incomplete classification of the constructions.

Considering the factors of temporality and factuality, we can classify complex events expressed by basic SVCs into the following four main types.

- (13) Four main types of complex events expressed by basic SVCs
- a. Type of ‘complex event of natural consequence’: two factual events occur consecutively, e.g., (1) *tòk tæk* ‘fall (factual) + be broken (factual)’
  - b. Type of ‘complex event with two facets’: two factual events occur simultaneously, e.g., (2) *lǎy maa* ‘flow (factual) + come (factual)’

- c. Type of ‘complex event of purposive activity’: a factual event and a non-factual event occur consecutively, e.g., (3) *tham khăay* ‘make (factual) + sell (*non-factual*)’
- d. Type of ‘complex event integrated’: a factual event and a non-factual event occur simultaneously, e.g., (4) *yàak kin* ‘want (factual) + eat (*non-factual*)’

The dichotomy of ‘factual vs. non-factual situations’ comes from the theory of ‘the ontology of situation’ postulated by Johnson (1981). He rephrases ‘the ontology of situation’ as “the degree to which the situation can be considered as a real part of the course of events in the actual world, as opposed to being part of some projected course of events which has not yet been actualized” (ibid.: 146). According to him, the existential status of a situation is divided into two contrastive categories, as stated in (14).

(14) Two contrastive categories of the existential status of situation (Johnson 1981)

- a. Real, determined or ‘manifest’ (i.e. factual) situation: at least one complete instance of the situation is a historical fact that is known to a human observer
- b. Projected, hypothesized or ‘imminent’ (i.e. non-factual) situation: no complete instance of the situation is a historical fact

In my opinion, the factuality dimension is directly related to what Croft (2001) calls ‘Complex Figure’ vs. ‘Figure-Ground’ constructions. The terms ‘figure’ and ‘ground’ originate in Gestalt psychology. The figure is a part of our experience which we pay attention (a focal entity); in contrast, the ground is a part of our experience to which we do not attend (the background) (Benjafield 1993: 55). Croft (ibid.: 327) considers what is asserted in coordination and adverbial subordination to be figure-like, and relates the basic conceptual distinction between coordination and adverbial subordination with the Gestalt distinction between Complex Figure and Figure-Ground sentences. Specifically, “[I]n coordination, both clauses are asserted, in line with its complex figure construal”, whereas “[I]n adverbial subordination, only the main clause is asserted, because only the main clause is the figure of the sentence” (ibid.: 338). Endorsing his argument for applying the Gestalt distinction ‘Complex Figure vs. Figure-Ground configurations’ to the analysis of complex sentences, I approach basic SVCs from the same perspective. The resultant categorization of basic SVCs is shown in (15).

(15) ‘Complex Figure’ vs. ‘Figure-Ground’ types of basic SVCs

- a. Coordination-like Complex Figure SVCs, (13a) and (13b): the combination of two assertive verb phrases representing a factual situation (VP1: factual + VP2: factual)
- b. Subordination-like Figure-Ground SVCs, (13c) and (13d): the combination of an assertive verb phrase representing a factual situation and a non-assertive verb phrase representing a non-factual situation (VP1: factual + VP2: *non-factual*)

Table 1 below illustrates the two-dimensional classification of basic SVCs that I maintain. The table helps us visualize the systematized structure of basic SVCs with the parameters of temporality (consecutive or simultaneous event construction) and factuality

(construction consisting of two factual events or of a factual event and a non-factual event).

Table 1: *Two-dimensional classification of basic SVCs*

	Symmetrical, <b>Complex Figure</b> construction	Asymmetrical, <b>Figure-Ground</b> construction
<b>Consecutive</b> event construction	Basic SVCs for complex event of <b>natural consequence</b> , e.g. (1) Factual sub-event → Factual sub-event	Basic SVCs for complex event of <b>purposive activity</b> , e.g. (3) Factual sub-event → <i>Nonfactual</i> sub-event
<b>Simultaneous</b> event construction	Basic SVCs for complex event with <b>two facets</b> , e.g. (2) Factual sub-event = Factual sub-event	Basic SVCs for complex event <b>integrated</b> , e.g. (4) Factual sub-event = <i>Nonfactual</i> sub-event

To recapitulate, ‘complex events of natural consequence’ (13a) are represented by Complex Figure SVCs of the consecutive event type; ‘complex events with two facets’ (13b) are represented by Complex Figure SVCs of the simultaneous event type; ‘complex events of purposive activity’ (13c) are represented by Figure-Ground SVCs of the consecutive event type; and, ‘complex events integrated’ (13d) are represented by Figure-Ground SVCs of the simultaneous event type. I will elaborate on the natures of these four main types in Section 4.

### 3 Symmetrical vs. asymmetrical SVCs

Before going on to particularly discuss the two-dimensional classification of Thai basic SVCs in the following section, I would like to clarify how my classification differs from Diller’s (2006), which accords with the analysis of Aikhenvald (2006).

In her cross-linguistic study of SVCs, Aikhenvald (2006) offers two main types of SVCs, namely ‘symmetrical’ and ‘asymmetrical’ SVCs. As indicated in (16), if an SVC encompasses a ‘minor’ verb (a verb from a restricted class, like a motion verb and a posture verb), the SVC is regarded as asymmetrical.

#### (16) Aikhenvald’s (2006) classification of SVCs

- a. Symmetrical SVCs: SVCs consisting of ‘major’ verbs, viz., verbs from an unrestricted class
- b. Asymmetrical SVCs: SVCs including a ‘minor’ verb, viz., verb from a restricted class (e.g. motion verb, posture verb)

Her classification connotes an insightful generalization regarding evolution of linguistic constructions, namely, the combination of two ‘major’ verbs in the symmetrical type tends to become lexicalized while a ‘minor’ verb in the asymmetrical type tends to become grammaticalized.

However, I have found that this classification is not accurately applicable to Thai basic SVCs. For one thing, Thai verbs are largely polysemous or polyfunctional, and so the range of their usage is quite wide. This means that verb classes in Thai mostly have fuzzy boundaries. What is more, Thai verb classes, except for the classes of so-called directional verbs (*khûn* ‘ascend’, *lon* ‘descend’, *khâw* ‘enter’, *ʔə̀ək* ‘exit’) and of deictic verbs (*pay* ‘go’, *maa* ‘come’), are seldom restricted. For example, the class of posture verbs in Thai is

by no means a restricted class. There are many verbs of bodily state and action in Thai (cf. Chuwicha 1993). Naturally, the great majority of Thai basic SVCs comprise two ‘major’ verbs. Based on these facts, I would claim that as for the types of Thai basic SVCs, the dichotomy of ‘symmetrical vs. asymmetrical’ should not be equated with that of ‘lexical-semantic balanced vs. unbalanced’ (basic SVCs consisting of two major verbs vs. of a major verb plus a minor verb) as Aikhenvald (2006) argues for. Rather, the dichotomy of ‘symmetrical vs. asymmetrical’ should be equated with that of ‘modally balanced vs. unbalanced’ or that of ‘Complex Figure vs. Figure-Ground’ in Croft’s (2001) terminology (basic SVCs consisting of two assertive verbs vs. of an assertive verb plus a non-assertive verb) as I have explicated in the preceding section (see Table 1 above).

#### 4 Subtypes of complex events denoted by Thai basic SVCs

In the following subsections, I will examine subtypes of each of the four main types of complex events represented by Thai basic SVCs.

##### 4.1 Complex event of natural consequence

The first main type is the type of complex event of natural consequence. I have attested five semantic patterns of this event type, as exemplified in (17) to (21) below. Though many of these examples have been popularly called ‘resultative constructions’ (e.g. Enfield 2007, Iwasaki & Ingkaphirom 2005, Thepkanjana 2006), I call them ‘accomplishment constructions’ (Takahashi 2007). I have been arguing against the pervasive idea that this construction in Thai corresponds to resultative construction defined in other languages, which is usually regarded as a kind of ‘secondary predication construction’, or more generally ‘adjunct construction’, in which a ‘head’ (or ‘main’) verb phrase is followed by a ‘non-head’ (or ‘subsidiary’) verb phrase. My basic idea is that Thai accomplishment construction encoding complex event of natural consequence like those in (17) to (21) are a kind of coordination-like Complex Figure construction consisting of two assertive verb phrases, each of which is neither ‘head’ nor ‘non-head’.

(17) VP1: action + VP2: change of state/location or state

- a. *cháy môt*  
use come to an end  
(He) used (it) and (it) was used up.
- b. *tii tèek*  
beat be broken  
(He) beat (it) and (it) was broken.

(18) VP1: non-specific but direct action + VP2: change of state/location

- a. *tham hăy*  
do disappear  
(He) directly acted on (it) and (it) disappeared.
- b. *tham tòk*  
do fall  
(He) directly acted on (it) and (it) fell off.

(19) VP1: action/process or state + VP2: accumulation

- a. *càp dâý sǎam tua*  
 catch emerge three CLASSIFIER  
*(He) caught (them) and the number (of them) amounted to three.*
- b. *yen dâý nùŋ chûamooŋ*  
 cool emerge one hour  
*(It) was cool and the period (of being cool) amounted to one hour .*

(20) VP1: sensation-related action + VP2: perception/conception

- a. *mooŋ hěn*  
 look see  
*(He) looked away and (he) saw (it).*
- b. *faŋ rúu rûaŋ*  
 listen understand  
*(He) listened to (it) and (he) understood (it).*

(21) VP1: non-purposive action or process + VP2: change of state/location or state

- a. *dùnum maw*  
 drink be intoxicated  
*(He) drank (it) and (he) was intoxicated.*
- b. *pay thǔŋ*  
 go arrive  
*(He) went away and (he) arrived.*

The second verb phrase in these examples expresses realization of an effect event as the result of a preceding cause event denoted by the first verb phrase. The effect event may or may not be durative, while the cause event is typically durative. Even if the period of the cause event is pretty short (e.g. hitting), it must take some time until the effect event comes into existence. The important point is that even when the cause event involves an agent, the realization of the effect event should not be completely under control of the agent, and there must be something beyond the agent's control, such as suitable circumstances and timeliness helping to bring about a certain resultant situation. The communicative function of this SVC type is to comment on whether or not an effect event arises from a cause event. The speaker must concern himself with the realization of the effect event.

Both the static 'continuous' aspect marker *yùu* 'CONTINUOUS' (< *yùu* 'be located') and the dynamic 'progressive' aspect marker *kamlaŋ* 'PROGRESSIVE' (< *kamlaŋ* 'power') cannot be included in examples (17) to (21), because the telic nature (i.e. entailing a clear endpoint) of this SVC type is incompatible with the imperfective (atelic) aspect. Normally, the negative marker *mây* is inserted between the first and the second verb phrases and the effect event alone is negated, as illustrated in (22).

- (22) *cháy*      *mây*      *mòt*  
 use            NEGATIVE    come to an end  
*(He) used (it) but (it) was not used up.*

It is also possible to negate the whole event by putting the negative marker in front of the first verb phrase, as in (23).

- (23) *mây*      *cháy*      *mòt*  
 NEGATIVE    use    come to an end  
*(He) did not do in such a way that (he) uses (it) and (it) is used up.*  
*It is not correct to believe that (he) used (it) and (it) was used up.*

Note that to express a purposive activity with a clear intention to bring about a certain goal situation in the future (usually in the imperative mood), Thai speakers employ another kind of predicates which utilize the causative marker, as in (24) and (25).

- (24) *cháy*      *hây*      *mòt*  
 use            CAUSATIVE    come to an end  
*(He) used (it) in order to use (it) up.*  
*Use (it) up!*

- (25) *cháy*      *hây*      *lũa*  
 use            CAUSATIVE    remain  
*(He) used (it) to bring about the result that some part (of it) is left.*  
*Use (it) leaving some part (of it)!*

#### 4.2 Complex event with two facets

The second main type is the type of complex event with two facets. There are relatively diverse semantic patterns for this event type, as exemplified in (26) to (29) below.

The first verb in the pattern (26) is a verb for bodily state or action in general, which subsumes not only what is called ‘stance’ or ‘posture’ (cf. ‘stance-activity constructions’ Diller 2006, ‘associated posture constructions’ Enfield 2002, ‘posture SVCs’ Thepkanjana 2006) but also a variety of bodily action which are frequently called ‘manner’ (cf. ‘manner SVCs’ Thepkanjana 2006).

- (26) VP1: bodily state/action + VP2: concurrent action

- a.      *yím*      *hěn dūay*  
 smile    agree  
*(He) smiled; (he) agreed. (He agreed smiling.)*
- b.      *rîp*      *tham*  
 hurry    do  
*(He) hurried; (he) did (it). (He did it in a hurry.)*

The bodily action represented by the first verb in the pattern (26) may be a ‘primary action’ (Chuwicha 1993) in which we can perceive clearly which body part is used (e.g., *yím*

‘smile’, *nâj* ‘sit’, *dəən* ‘walk’) or a ‘non-primary action’ (Chuwicha 1993) in which we cannot perceive so clearly (e.g., *rîp* ‘hurry’, *chûay* ‘help’, *râəm* ‘begin’).

The second verb in the pattern (27) is a deictic verb denoting a concrete motion away from or toward a certain reference point in the physical world.

(27) VP1: action/process + VP2: deictic direction (*pay* ‘go’ or *maa* ‘come’)

- a. *wîj* *pay*  
run go  
(He) ran; (he) went away from a reference point. (He ran away.)
- b. *lɔɔy* *maa*  
float come  
(It) floated; (it) came toward a reference point. (It came floating.)

The first verb in the pattern (28) is a verb of perception (e.g. seeing, hearing).

(28) VP1: perception + VP2: action/process

- a. *hěn* *lăy*  
see flow  
(He) saw (it) flowing.
- b. *dâyyn* *hǎarɔʔ*  
hear laugh  
(He) heard (her) laughing.

The second verb in the pattern (29) is a stative verb expressing the speaker’s view or evaluation regarding the manner or the resultant state of the situation described by the first verb phrase, which entails the event-participants named by the nominal arguments of the verb.

(29) VP1: action/process or state + VP2: state

- a. *phûut* *phìt*  
speak wrong  
(He) spoke (it); (it) was wrong. (He spoke it wrongly.)
- b. *rúu* *dii*  
know good  
(He) knew (it); (it) was good. (He knew it well.)

Previously, predicates of the pattern (29) have been variously named, say, ‘modifying verb serialization’ (Bisang 1995), ‘event-argument constructions’ (Diller 2006), ‘depictive secondary predication’ (Schultze-Berndt & Himmelmann 2004, Enfield 2005), ‘depictive or adverbial complementation’ (Enfield 2007), and so forth.

Although apparently examples (26) to (29) above express quite different kinds of complex events, they do have the following same event structure in terms of temporality and factuality: two factual sub-events arise simultaneously. It is noteworthy that both the



two sub-events must be durative. The reason for this is that there must be a certain time span for the two sub-events to concur.

Owing to their inherent atelic nature (i.e. not entailing a well-defined endpoint), examples (26) to (29) may include the imperfective (continuous or progressive) aspect marker, as illustrated in (30) and (31).

(30) *nɔɔn*      *ʔàan yùu*  
lie          read CONTINUOUS  
*(He) was reading lying.*

(31) *kamlan*          *rîp*          *tham*  
PROGRESSIVE      hurry          do  
*(He) was doing (it) in a hurry.*

Normally, the negative marker is put before the first verb phrase to negate the whole event, as in (32).

(32) *mây*          *nɔɔn ʔàan*  
NEGATIVE lie      read  
*(He) did not do in such a way that (he) reads lying.*  
*It is not correct to believe that (he) read lying.*

The behaviour with respect to negation of the second verb phrase differs among different tokens, as in (33) to (35).

(33) *phûut*      *mây*          *phît*  
speak      NEGATIVE      wrong  
*(He) spoke (it); (it) was not wrong. (He spoke it not wrongly.)*

(34) ? *nɔɔn*      *mây*          *ʔàan*  
lie          NEGATIVE      read  
*(He) lied; (he) did not read.*

(35) ?? *rîp*          *mây*          *tham*  
hurry      NEGATIVE      do  
*(He) hurried; (he) did not do.*

#### 4.3 Complex event of purposive activity

The third main type is the type of complex event of purposive activity. There is only one semantic pattern for this event type, as indicated in (36).

(36) VP1: purposive action + VP2: *intended situation*

a. *khûm*      *rót fây*      *pay*          *chianmây*  
ascend train      go          Chiangmai  
*(He) took a train to go to Chiangmai.*

- b. *yâaŋ kin*  
 roast eat  
 (He) roasted (it) to eat (it).

The terms ‘purposive action’ and ‘intended situation’ in (36) are not the terms for lexical semantic classes of verbs. These nomenclatures imply the event-participant’s desire or hope, as the following. Any factual activity that the person in question is engaged to achieve a goal (goal-oriented action) can be regarded as ‘purposive action’, and any non-factual, albeit substantial, situation that is hopefully expected to bring about after some purposive action (desirable situation) can be considered as ‘intended situation’. This is the reason why we cannot determine a particular lexical aspect of verbs that could be used to express ‘purposive action’ and ‘intended situation’.

To overtly express that the event represented by the second verb phrase is an intended, non-factual event, we may put the linker *phûa* ‘in order to’ before the second verb phrase, as in (37).

- (37) *khûn rôt fay phûa (thî cà?) pay chiaŋmây*  
 ascend train in order to go Chiangmai  
 (He) took a train in order to go to Chiangmai.

This pattern, which involves a positive activity, may be modified by the progressive aspect marker, as in (38).

- (38) *kamlaŋ tham khăay*  
 PROGRESSIVE make sell  
 (He) was making (it) to sell (it).

Normally, this pattern is not negated. Possibly, the negative marker is placed in front of the first verb phrase to negate the whole event, as in (39).

- (39) *mây khûn rôt fay pay chiaŋmây*  
 NEGATIVE ascend train go Chiangmai  
 (He) did not do in such a way that (he) takes a train to go to Chiangmai.  
 It is not correct to believe that (he) took a train to go to Chiangmai.

It is awkward if only the second verb phrase expressing a non-factual situation is negated, as in (40).

- (40)? *khûn rôt fay mây pay chiaŋmây*  
 ascend train NEGATIVE go Chiangmai  
 (He) took a train not to go to Chiangmai.

The second verb phrase in this pattern describes a certain situation intended, or more specifically, a non-factual desirable situation expected to result from a prior purposive action. Such a situation is typically affirmative and has a positive value (cf. Takahashi & Thepkanjana 1997).

#### 4.4 Complex event integrated

The fourth main type is the type of complex event integrated. Only one semantic pattern indicated in (41) belongs to this event type. Many linguists take predicates of this pattern as ‘complementation constructions’ (e.g. Enfield 2007, Thepkanjana 2006).

(41) VP1: mental activity related to a non-factual action + VP2: *action*

- a. *khîi kiat*            *tham*  
 be indolent            do  
 (He) felt indolent to do.
- b. *sǒn cay*            *rian*  
 be interested        study  
 (He) was interested in studying.

This pattern contains a verb of mental activity concerning a non-factual action, such as a verb of desire, dislike, decision, efforts, and the like. Givón 1973 calls this kind of verbs (e.g. want, plan, try, prefer, hate, dread, intend, etc.) ‘non-implicative modality verbs’. The irrealis marker *cà?* may occur in front of the second verb phrase, as in (42).

- (42) *khîi kiat*            (*thîi*) *cà?*            *tham*  
 be indolent            IRREALIS            do  
 (He) felt indolent to do.

It is a static expression specifying a certain feeling, and therefore it is compatible with the continuous aspect marker, as in (43).

- (43) *khîi kiat*            *tham yùu*  
 be indolent            do            CONTINUOUS  
 (He) felt indolent to do.

Normally, the negative marker is put in front of the first verb phrase to negate the whole event, as in (44).

- (44) *mây*            *sǒn cay*            *rian*  
 NEGATIVE    be interested        study  
 (He) was not interested in studying.

It is odd to negate only the second verb phrase representing a non-factual action toward which some feeling is directed, as in (45) and (46).

- (45) ? *sǒn cay*            *mây*            *rian*  
 be interested        NEGATIVE        study  
 (He) was interested in not studying.

- (46) ?? *khîi kiat*                      *mây*    *tham*  
           be indolent                      NEGATIVE do  
           (He) felt indolent not to do.

#### 4.5 Summary

The characteristics of the four main semantic patterns of Thai basic SVCs discussed above are summarized in Table 2 below. From this Table, we can easily see that each pattern has its own characteristics that is shown in each row of the table. What is important is that any tokens of a single pattern, in common, have the same characteristics. This can be regarded as a piece of evidence to prove the adequacy of the way of classifying Thai basic SVCs that I propose.

**Table 2: Characteristics of four main semantic patterns of Thai basic SVCs**

	Progressive reading <i>kamlaj</i> VP1 VP2	Continuous reading VP1 VP2 <i>yùu</i>	Negation of VP1+VP2 <i>mây</i> VP1 VP2	Negation of VP2 VP1 <i>mây</i> VP2
<i>Pattern 1</i> for ‘complex event of natural consequence’ (13a) <b>Factual VP1 → Factual VP2</b>	×	×	(✓)	✓
<i>Pattern 2</i> for ‘complex event with two facets’ (13b) <b>Factual VP1 = Factual VP2</b>	✓	✓	✓	✓/?
<i>Pattern 3</i> for ‘complex event of purposive activity’ (13c) <b>Factual VP1 → Nonfactual VP2</b>	✓	×	(✓)	?
<i>Pattern 4</i> for ‘complex event integrated’ (13d) <b>Factual VP1 = Nonfactual VP2</b>	×	✓	✓	?

The distinctive syntactic and semantic features among the four patterns listed in Table 2 are briefly accounted for, as follows. The pattern 1, representing two factual events concatenated, cannot co-occur with the imperfective (continuous or progressive) aspect marker, and normally only the second verb phrase is negated. The pattern 2, representing two concurrent factual events, can co-occur with the imperfective aspect marker, and normally the combination of the two verb phrases is negated. Only the second verb phrase can be negated, given some fitting referent scene. The pattern 3, representing a prior factual event and a posterior non-factual event, may co-occur with the progressive aspect marker, and normally it is not negated. And, the pattern 4, representing a factual event and a non-factual event that arise at the same time, can co-occur with the continuous aspect marker, and normally the combination of the two verb phrases is negated.

#### 5 Conclusion

Such linguistic notions as ‘event-participant’s agency or controllability’, which is often referred to as one of the main factors forming a causative situation, and ‘the degree of restrictedness of verb classes’, based on which Aikhenvald (2006) distinguishes between minor and major verbs, have been widely recognized as significant, presumably due to the fact that these notions indeed underlie the syntax and the semantics of many languages in

the world, especially of Indo-European languages which most linguists are familiar with. However, the present study has revealed that these notions have little relevance to the fundamental compositional system of Thai basic SVCs.

In conclusion, the central claim of the present study is that complex events represented by Thai basic SVCs should be categorized primarily in terms of temporality (consecutive or simultaneous two events) and factuality (two factual events or a factual event plus a non-factual event), which are two different human perspectives needed in the minimum conceptualization of eventness.

### Notes

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1. The constructed examples in this paper are considered to be acceptable by native speakers of the Thai language.

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# AN ACOUSTIC STUDY OF INTERWORD CONSONANT SEQUENCES IN VIETNAMESE

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## 0 Abstract

Vietnamese learners of French often fail to produce French clusters even after several years of practicing, and even when the French clusters correspond to Vietnamese consonant sequences. The reasons of this continuing difficulty are still unknown. Our aim is to identify the factors which are the main cause of this problem. In a first time, we decided to focus on acoustic realizations of Vietnamese consonants by native speakers. This paper presents a pilot study on consonants in coda positions, pronounced by a single subject. Realizations of final stops (/p/ /t/ /k/) and nasals (/m/ /n/), often unreleased, were examined within both monosyllabic (CVC words) and dissyllabic (syllable 1 of compound words) contexts and compared with their realizations in word-initial position. Results show significant acoustic variations depending on consonant's within-word and syllabic positions, and support the notion that syllable boundaries induce articulatory changes in the pronunciation of consonants. Our findings suggest a clear effect of the word syllabic structure on the final-consonant production, providing evidence of the role of the syllable in speech production, and as a result they warrant further investigations.

## 1 Introduction

One of the difficulties faced by Vietnamese subjects upon learning French is the pronunciation of consonant clusters, which do not exist in Vietnamese. Those clusters are often deformedly pronounced and this problem persists even after several years of practicing (Nguyễn, 2000), even if specific consonant combinations are found in both languages. As a result, what are the main reasons for this barrier to Vietnamese' French cluster acquisition?

Apart from the fact that Vietnamese is a tonal language, other dissimilarity between the two languages refers to their lexical and syllabic structures. By means of computerized analyses of a corpus available from a 17-language syllabified lexicon database developed partly at UCLA (Maddieson and Precoda 1992), then in our laboratory (Rousset, 2004), we obtained information on word syllabic structures in Vietnamese (from a 5.000-word lexicon) and French (22.800-word). Each lexical entry consists of an IPA notation with marks of its syllabic structure, representing the following informations: The division in syllables and for each syllable its conventional sub-syllabic components, namely onset and rhyme (rhyme = nucleus and coda). Additional languages were included to Maddieson and Precoda's (1992) database using similar sources of information and excluding recent loan words as 'telephone', 'football' (Maddieson, 1993:1). The syllabification was done either from published (printed or computer-readable) syllabified lexicons (French: BDLEX-Syll from BDLEX 50.000, Pérennou and de Calmès, 2002) or manually by at least two native



speakers of the language (Vietnamese, Trần 2006). The lexical entries are lemmas only. For each language, we listed the lexical patterns accounting for at least 2% of the lexicon, by classifying them according to their number of syllables (Tables 1 & 2). In the Vietnamese lexicon there were as many monosyllabic words (50%) as disyllabic (49%), (trisyllabic words accounting for 1%), while the French lexicon had few monosyllabic units (10.8%), but a majority of disyllabic (34%) and trisyllabic (36.7%) items; four-syllable and five-syllable words accounted for 15% and 2.9% respectively. The prevalent monosyllabic pattern in Vietnamese as in French was the CVC syllable type, respectively 70% and 34% of the monosyllabic words, and respectively 70% and 20% of the language syllable inventory.

**Table 1:** Main word-internal structures (frequency above 2% in a 5.000-word lexicon), among the 23 word structures observed in Vietnamese, and their respective frequency within their corresponding category (the dot indicates the syllable boundary).

Lexical patterns			
Monosyllabic		Disyllabic	
Type	%	Type	%
CVC	70	CVC.CVC	49
CV	22	CV.CVC	16.3
CCVC*	5.2	CVC.CV	16.3
		CV.CV	7.5

\*(CC- in CCVC structures corresponds to Cw-)

**Table 2:** Main word-internal structures in French (frequency above 2% in a 22.800-word lexicon), and their respective frequency within their corresponding category. 949 word structures were observed in French (the dot indicates the syllable boundary).

Lexical patterns							
Monosyllabic		Disyllabic		Trisyllabic		Others	
Type	%	Type	%	Type	%	Type	%
CVC	34.3	CV.CVC	20.3	CV.CV.CV	18.5	CV.CV.CV.CV	15.3
		CV.CV	19.4	CV.CV.CVC	11.2		
		CCV.CV	6.5	V.CV.CV	6.8		

Đoàn Thiện Thuật (1999) suggested the following internal structure for the Vietnamese syllable, the brackets indicating the optional constituents:  $C_1(w)V(C_2)$ . This pattern implies that the glottal stop which always appears in onset position is phonemic. Syllabic structure diversity is much more present in French, due to the fact that complex onsets and codas are allowed. From Rousset's study (2004), we proposed for the French syllabic structure:  $(C_1)(C_2)(C_3)V(C_4)(C_5)(C_6)(C_7)$ . We pointed out that the pattern  $C_1(C_2)V(C_3)$  made up 96% of the possible syllabic structures in French. It corresponds also to the structure of the monosyllabic words in Vietnamese (if  $/w/ = C_2$ ). However, like other Southeast-Asiatic languages, Vietnamese is typologically an isolating CVC language and therefore shows consonant sequences only in the speech chain at word boundaries. Indeed, disyllabic words are special because all of them are compound words<sup>1</sup> and so are 3-syllable words.

<sup>1</sup> In this study the disyllabic words are either transparent compounds (e.g. xác chết /sək cet/ cadaver is built from /sək/ which means *body* and /cet/ which means *to die*) or opaque ones

Thus, although consonant clusters are never found in Vietnamese (in the sense that “cluster” generally refers to a sequence of consonants that appears in the same syllable, either in onset or in coda position), this study focuses on consonant sequences located at ‘syllable’ edges inside compound words. We investigated several acoustic factors that might reveal differences between different types of boundaries. We considered the segments of 2-consonant sequences taking into account the location of the boundary, either interword (in the case of monosyllabic words) or inside compound words (lexical disyllabic word). Because many experimental studies in phonetics have showed differences in the production of consonants according to their position within the syllable (Lindblom, 1983; Keating, 1983; Krakow, 1999), within the word (Keating, Wright and Zhang, 1999), within prosodic domains *e.g.* utterance (Fougeron and Keating, 1997), we compared the acoustic realizations of Vietnamese segments in consonant sequences with their realizations in word-initial position. In the case of Vietnamese disyllabic lexical compounds, consonant combinations are not realized like French clusters, even if the segments involved are similar in both languages, mainly because they are necessarily distributed among two successive syllables (Trương Văn Chính, 1970; Đoàn Thiện Thuật, 1999; Nguyễn Thị Bình Minh, 2000). Indeed, showing the coarticulation to be stronger inside syllables, many studies have suggested that the syllable might be a basic unit of speech production (Krakow, 1989; Browman and Goldstein, 1995; for a relatively complete review, see Krakow, 1999; also Kühnert and Nolan, 1999). Several studies have provided support for the hypothesis that the syllable corresponds to the domain of anticipatory coarticulation (Kozhevnikov and Chistovich, 1965; Benguerel and Cowan, 1974; Gay, 1978; Sussman and Westbury, 1981), and others studies to the temporal domain of coordinative movements (Kelso, Saltzman and Tuller, 1986; Tuller and Kelso, 1991). In addition, in the MacNeilage’s Frame/Content Theory (1998), syllables are units of speech motor organization in infants and languages (MacNeilage, Davis, Kinney and Matyear, 2000).

The influence of the speakers’ native phonetic inventory on the foreign language acquisition process is now well demonstrated (see Best, 1995; Flege, 1995; Flege, Frieda and Nozawa, 1997; Piske, MacKay and Flege, 2001, for a review). For this reason, we decided to focus on consonant combinations found in both languages. Among the possible consonant sequences in French and Vietnamese appear /syllable-final stop + consonant/ and /syllable-final nasal + consonant/ combinations. In French, the plosive and nasal final consonants /p t k b d g m n ŋ ɲ/, realized with or without vocal fold vibration (voicing), are generally produced by a total obstruction (occlusion) maintained for a while in a place of the vocal tract, then followed by an audible release (burst). However one of the Vietnamese phonetic particularities is that the final consonants /p t k m n ŋ/ are not articulatory released whatever the conditions of their realizations. As a result, the occlusion is not followed by a typical noise of fast and audible explosion (Đoàn Thiện Thuật, 1999). This characteristic in the production of the Vietnamese occlusives in coda position does not change the meaning of the word.

This pilot study on acoustic properties of Vietnamese consonants in sequences spanning syllable boundary aimed at achieving to better understanding the Vietnamese

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(bán kết /ban ket/ *semi-final* (sport) from /ban/ which means *half* in compound words but *to sell* when used alone and /cet/ which means *to conclude*). No distinction between these two types of compound words was taken into account in our analyses.

consonant sequence realization. For that purpose, we proposed analyses of voiceless plosives and nasals appearing in the final position, either of a simple word-pattern CVC, or of the first syllable of a disyllabic lexical compound CVC.CVC. Are there acoustic differences in the realization of syllable-final consonants according to word structure? If dissimilarities are observed, what acoustic characteristics make them different from each other? Is the realization of  $C_2$  in  $C_1VC_2$  different from the one of  $C_2$  in  $CVC_2.C_3VC$  due to a more important coarticulation of successive consonants at the syllable boundary of lexical compound rather than at the monosyllabic word boundary?

## 2 Methodology

### 2.1 Corpus and speaker

Fifteen monosyllabic and twenty disyllabic items were selected from the Vietnamese 5.000-word lexicon because they included both one of the five following syllable-final consonants /p t k m n/<sup>2</sup> and the most open vowel /a/, and because they had one of the following three structures: CV, CVC, CVC.CVC (the thirty-five words are listed in the appendix). Moreover, we attempted to control for tone in selecting items under the high-rising tone, B1 or D1, written as an acute accent (for more information about the Vietnamese tones, see Michaud, 2004).

In this way, the five consonants occurred in various within-word positions: i) In onset position ( $C_1$ ) of monosyllabic words, with coda / $C_1aC_2$ / or without / $C_1a$ / (e.g. /tak/, /kat/, /mat/; /ta/, /ka/, /ma/); it should be noted that in Vietnamese the bilabial plosive is never found in syllable-initial position; ii) In coda position ( $C_2$ ) of monosyllabic words / $C_1aC_2$ / (e.g. /nat/, /kak/, /tam/, /fap/) or in coda position of the first syllable of disyllabic compound words / $C_1aC_2.C_3VC_4$ /, (V) was a monophthong or a diphthong (e.g. /fat.zak/, /ʂak.cet/, /ɣam.set/, /dap.ʔan/).

Each selected item was spoken in the carrier sentence '*Bạn sẽ gặp từ ... xuất hiện trong bài khoá*' [ban sẽ gặp từ swɿt hien tɔŋ baj xwa] ('You will find the word to appear in the text'). The speaker read four repetitions of each in a random order, which corresponded to 140 tokens for analysis. A short break of 10 min was taken after the acquisition of a first set of 70 items. The corpus was preceded by a training set consisting of the following 4 items under the high-level tone (A1): /tie/, /ɣwan/, /sin/, /t<sup>h</sup>a/ embedded in the carrier sentence.

The Vietnamese is a language of the Austroasiatic family, Mon-Khmer branch, Viet-Muong group, being made up of three main dialects: Northern, Central and Southern. Our study focused on the Northern variety in which 19 initial consonants are involved, and the retroflexed coronals have been replaced by predorsals.

The speaker was a native Northern-Vietnamese female, aged 26. She was a friend of the first author and was not informed on the purpose of the experiment. The recording was performed in a sound-proof room in the GIPSA-lab's Department of Speech and Cognition (Grenoble, France), using the numerical recorder Marantz PMD 670, micro AKG C1000S. The corpus had been sampled at a rate of 44.1 KHz.

<sup>2</sup> /ŋ/ does not figure in this preliminary study.

## 2.2 Data processing

Praat (4.6.34) software was used throughout to perform the acoustic analyses. Many measurements were made on three segments of the 140 words: /a/, and either the syllable-initial or syllable-final consonant. Several durations were computed as well as spectral parameters:

- All duration of the consonant: C<sub>1</sub> in /C<sub>1</sub>a/ and /C<sub>1</sub>aC<sub>2</sub>/; C<sub>2</sub> in /C<sub>1</sub>aC<sub>2</sub>/ or /C<sub>1</sub>aC<sub>2</sub>.C<sub>3</sub>VC<sub>4</sub>/;
- All duration of /a/;
- Duration of the VOT (Voice Onset Time);
- Duration of the occlusion;
- Duration and amplitude of the burst;

Specific parameters were added for coda (C<sub>2</sub>) because of the frequent unreleased plosives found in this position. Formant transitions and intensity were chosen according to Serniclaes (1987), Cao (1985), in that they contribute to characterize VC transitions:

- Transitions of F<sub>0</sub>, F<sub>1</sub>, F<sub>2</sub> and intensity measured over the three last cycles of the periodic vibrations of /a/ before the occlusion of the following consonant, from an adequate width of window centered on the two points T<sub>1</sub> and T<sub>2</sub> corresponding to the beginning and the end of this time interval.

## 2.3 Alignment and measurements

All duration of C<sub>1</sub> was measured on the spectrogram by taking the time interval between the last periodic pulse of the immediately preceding vowel /a/ aligned with the apparent end of the formant structure, and the start of the glottal vibration for /a/ aligned with the sharp beginning of its formant structure.

C<sub>2</sub> duration was calculated as the difference between the time marked as the voicing termination of the vowel /a/ and the time marked as the beginning of the frication noise of the /s/ in /swʔt/.

The closure duration of the plosives was defined by the time interval measured between the beginning of the consonant closure (located at the last periodic peak of the immediately preceding vowel) and the beginning of the release noise, which coincide with a rising of the intensity curve.

The VOT is the time interval between the release of a stop consonant and the beginning of the glottal vibration (voicing onset) for the following vowel. Measurements of VOT, as release burst durations, were performed from the broad-band spectrograms. In the case of syllable-final consonants (C<sub>2</sub> in /C<sub>1</sub>VC<sub>2</sub>/), the VOT was calculated from the difference between the time marked as the beginning of the release burst (when this one is present) and the time marked of the voicing onset for the immediately following fricative [z] which is the voiced allophone of /s/ in /swʔt/. For the plosives (C<sub>2</sub>) in coda position of the first syllable of dissyllabic compound words /C<sub>1</sub>aC<sub>2</sub>.C<sub>3</sub>VC<sub>4</sub>/, the VOT was calculated both when the burst is present and when C<sub>3</sub> is a voiced consonant.

Measurements of the burst intensity were given in dB relative. The averages were based on the four repetitions when the release noise was visible on the spectrogram. Measurements of the intensity could not be taken whenever the stops were realized as unreleased (absence of burst).

The slopes of F<sub>0</sub>, F<sub>1</sub>, and F<sub>2</sub>, and the slope of intensity in VC<sub>2</sub> transition (V=/a/) were performed on the three last cycles of the glottal vibration for the preceding vowel by calculating, for each, the difference between the time marked as the end of the glottal

vibration ( $T_2$ ) and the time marked as the beginning of the antepenultimate cycle ( $T_1$ ), divided by the duration of the interval ( $T_2 - T_1$ ):

$$\Delta F_0 = \frac{F_{0T_2} - F_{0T_1}}{T_2 - T_1} \quad \Delta F_1 = \frac{F_{1T_2} - F_{1T_1}}{T_2 - T_1} \quad \Delta F_2 = \frac{F_{2T_2} - F_{2T_1}}{T_2 - T_1} \quad \Delta I = \frac{I_{T_2} - I_{T_1}}{T_2 - T_1}$$

#### 2.4 Statistical analysis

The data from the acoustic measurements were analyzed by using SPSS<sup>®</sup> (*Statistical Package for the Social Sciences*). In order to determine whether syllable- and word-boundary effects could be detected in the realization of Vietnamese consonant sequences, two types of analysis were carried out according to:

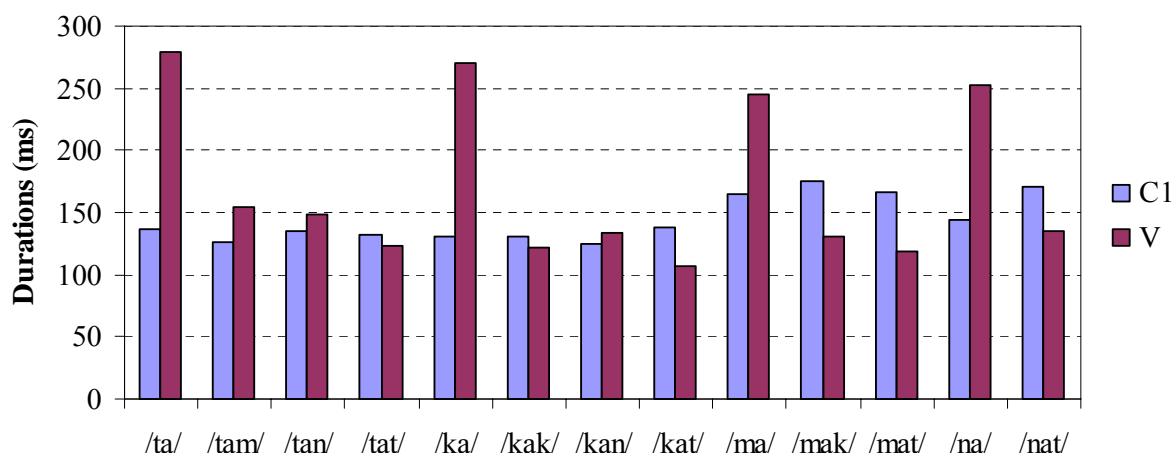
- The effect of both the within-syllable position and the syllabic structure of word on the following parameters: Duration of the consonant, closure duration, burst duration, and burst intensity;
- The effect of the interaction between the syllabic structure of word (monosyllabic or disyllabic compound) and the place of articulation of syllable-final stop (labial, coronal, or velar) on the following acoustic parameters: Slope of intensity, fundamental frequency and the first two formants of the immediately preceding vowel.

### 3 Results

#### 3.1 Stop durations

Duration of word-initial stops was not affected by syllabic structure (Figure 1): There were no significant differences in means between open or closed syllable, except for /n/ (46 ms more (30%) in CV than CVC structure), whereas a great lengthening of the vowel /a/ was observed in CV syllables (almost 2 times longer in CV than in CVC, min: 1.87 when the immediately preceding consonant was /n/, max: 2.25 when it was /k/). Therefore, for the analyses reported below on consonant duration according to within-word position, we decided to not separate the consonant in  $C_1V$  and the one in  $C_1VC_2$  word-initial position.

Whatever the word structure involved (monosyllabic or disyllabic), the results of duration measurements showed that nasals lengthened approximately more 40 ms than plosives in all examined within-word positions, and also that both plosives and nasals were significantly shorter in syllable-final than in syllable-initial position ( $p < .05$ ). The mean duration of the plosives was 132 ms in word-initial position, 97 ms in word-final position and 81 ms in final position of the first-syllable of disyllabic word. The mean duration of the nasals was of 164 ms in word-initial position, 141 ms in word-final position and 122 ms in final position of the first-syllable of disyllabic word.



**Figure 1:** Mean duration (ms) of plosives and nasals in word-initial position ( $C_1$ ), and mean duration of their adjacent vowel on the right ( $V=/a/$ ), according to each monosyllabic word involved.

Table 3 shows that bilabial plosives in all within-word positions reached, on average, a longer duration than the coronal and velar ones: Mean duration for /p/ was almost 50 ms longer than mean duration for /t/ or /k/ in word-final position, and respectively 50 ms and 10 ms longer than /t/ and /k/ before consonant in syllable-final position. This trend was not observed for nasals which had similar duration whatever their position within the word; at the very most, 12 ms lengthening for /m/ over /n/ was noted in initial position. Regarding the two syllable-final positions, located either at the end of monosyllabic words, or at the end of the first syllable of disyllabic compound words, a greater duration was observed for all consonants in final-word position than at the position immediately preceding the syllable boundary of disyllabic compound, except for the velar plosive /k/, which lasted respectively 79 ms and 92 ms. Although the difference in length was not significant ( $p = .308$ ) for plosives whereas it was for nasals ( $p = .001$ ), we can assume that the shorter consonant duration at inside-word syllable boundary should be due to a stronger coarticulation of within-word successive consonants rather than consonants located at word edges.

**Table 3:** Mean duration (ms) of each Vietnamese consonant according to their within-word position: Word-initial ( $C_1$ ), word-final ( $C_2$ ), and first-syllable coda of dissyllabic word ( $C_2.C_3$ ). /p/ never occurs in syllable-initial position.

Consonant	Within-word position		
	$C_1$	$C_2$	$C_2.C_3$
p		128	101
t	132	82	49
k	131	79	92
m	169	142	120
n	158	141	124

Table 4 summarized statistical results on consonant durations in relation to the within-word position factor. Significant differences are marked with an asterisk; no significant ones are indicated by the  $p$  value which is higher than the threshold .05.

**Table 4:** Significant and non-significant differences between the overall consonant durations, and between the closure durations (dependant parameters) according to the within-word position factor.

Parameters	Positions	$C_1$	$C_2$
Plosive duration	$C_1$		
	$C_2$	*	
	$C_2.C_3$	*	$p = .3$
Nasal duration	$C_1$		
	$C_2$	*	
	$C_2.C_3$	*	*
Closure duration	$C_1$		
	$C_2$	*	
	$C_2.C_3$	*	$p = .9$

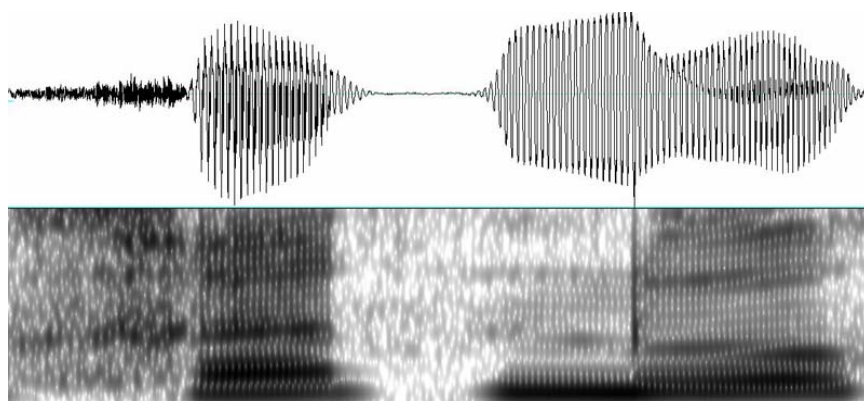
\* indicates a significant difference ( $p < .05$ )

As regard the closure duration of /p t k/, no significant differences were found between the two syllable-final positions ( $p = .9$ ), although for both fronted plosives the closure was shortened in syllable-final position inside word: On average, less 29 ms for /p/ and 18 ms for /t/. On the contrary, velars had a lengthening of the closure inside dissyllabic words: 77 ms vs. 65 ms in word-final position. As for the overall duration of the plosives, a significant lengthening of the closure was found between word-initial and word-final position: It lasted on average 50 ms more for /t/, and 44 ms more for /k/.

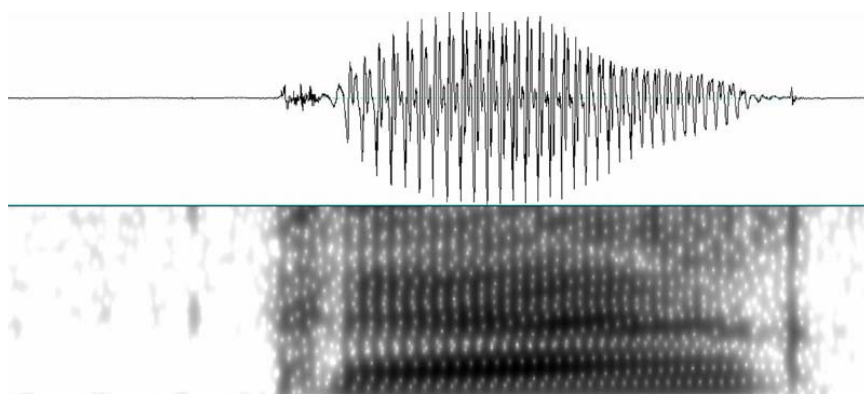
### 3.3 Closure release

One of the Vietnamese language particularities is that each stop consonant has an unreleased allophone in syllable-final position. In our study, the Vietnamese speaker presented three different types of realization for final plosive: Either the burst was absent, and there was no visible closure release on the spectrogram (Figure 2), or a stop release noise of shorter duration was visible and could be regarded as a weakened full plosive (Figure 3), or the burst was accompanied by a laryngealization when immediately followed by a glottal stop (Figure 4).

Figure 5 shows that in word-initial position, no plosives without closure release noise were found in our data, either in open, or closed syllable structure, while such full plosive occurred less frequently in word-final and syllable-final positions. Stop consonant endings were more often unreleased inside word before other consonant: More than twelve percent of the word-final plosives lost their burst, while this was the case for almost one-third of the plosives in the first-syllable coda of disyllabic compounds. This result is surprising regarding the received knowledge on the Vietnamese unreleased plosive and will be discussed in section 4.

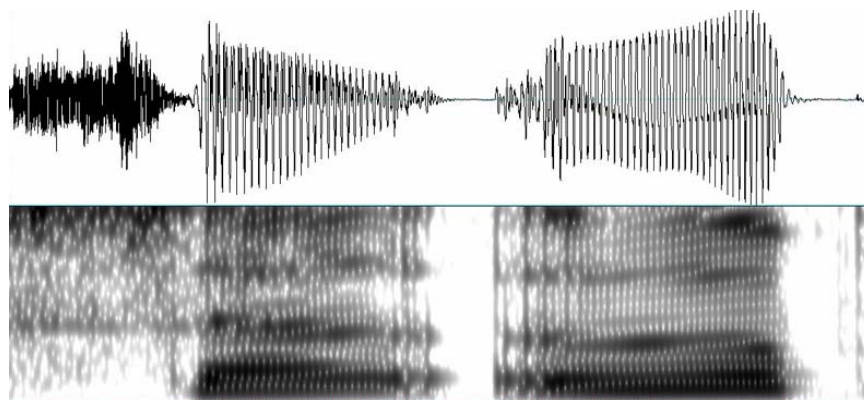


**Figure 2:** *Waveform and spectrogram of /χat-nuək/ a compound word in which the burst of /t/ is absent.*

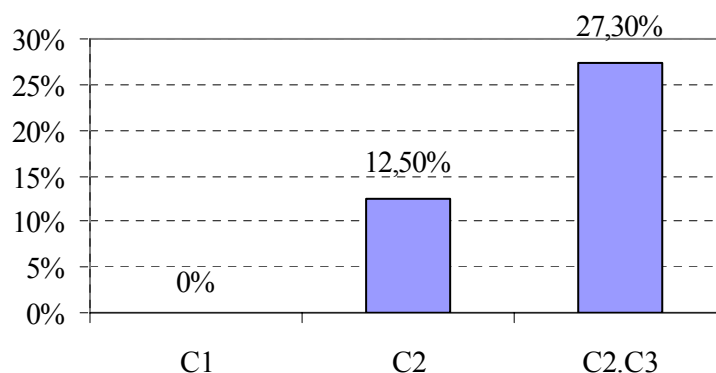


**Figure 3:** *Spectrogram of /kak/. The final /k/ presents short burst duration (2.7 ms).*





**Figure 4:** *Acoustic representation of the compound word /sak-ʔurɣp/. The closure release noise of /k/ is clearly laryngealized.*



**Figure 5:** *Proportion of plosives realized without release burst according to their within word positions.*

Statistical results concerning both burst duration and burst intensity according to within-word positions are summarized in Table 5. Asterisks mark the significant differences; no significant ones are indicated by the  $p$  value (threshold of significance: .05).

Burst duration measured for each plosive was very short: From 4 ms for /p/ at the end of words to 6 ms for /k/ at syllable boundary within words, and inside each position, we observed a lengthening of the release closure noise duration with the consonant backness. The mean difference in burst length between word-initial and word-final position was significant ( $p = .033$ ), a shortened duration being found in the latter for both /t/ and /k/. Between word-final and first syllable coda position, the mean burst duration was significantly different ( $p = .01$ ): It was shorter in word-final position. On the contrary, no significant differences between the mean burst duration were observed between word-initial and first syllable coda position ( $p = .7$ ).

Mean consonant-burst intensity was significantly greater for word-initial plosives ( $C_1$ ) than word-final ( $C_2$ ) and syllable-final ( $C_2.C_3$ ) ones, respectively 72 dB, 57dB, 47 dB for /t/, and 66 dB, 57 dB, 57 dB for /k/ [ $F(2,91) = 44.71$ ,  $p = .00$ ]. Very small differences in

means for the plosive release energy were observed between word-final and first syllable coda position in the case of the bilabial and the velar ( $p = .56$ ), while /t/ showed a decrease of burst intensity between the two positions (from 57 to 47 dB).

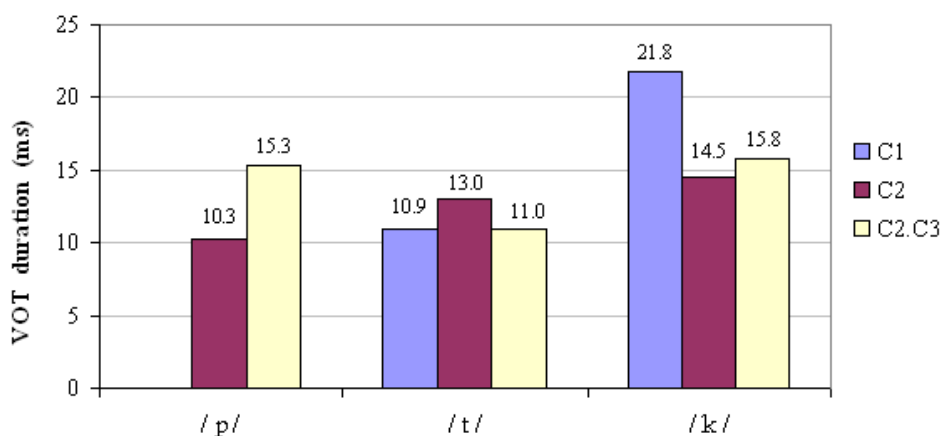
**Table 5.** Significant and non-significant differences between burst parameters according to the within-word position factor.

Parameters	Positions	C <sub>1</sub>	C <sub>2</sub>
Burst duration	C <sub>1</sub>		
	C <sub>2</sub>	*	
	C <sub>2</sub> C <sub>3</sub>	$p = .7$	*
Burst intensity	C <sub>1</sub>		
	C <sub>2</sub>	*	
	C <sub>2</sub> C <sub>3</sub>	*	$p = .5$

\* indicates a significant difference ( $p < .05$ )

### 3.2 VOT

It was not possible to carry out statistical analyses on VOT owing to the fact that, in disyllabic compounds, the syllable-initial consonant which immediately followed the stop in question was sometimes assimilated and realized like a voiceless consonant as in *phát giác* /fat.zak/ “to find out” realized [fat.sak], or *khát nước* /χat.nuɔk/ “thirsty” pronounced [χat.nuɔk] by our speaker. To that may be added the fact that plosive consonant endings were often unreleased before other consonant and for this reason had no visible burst release. In such cases, VOT could not be measured. However, we showed in Figure 6 some results on released plosives having an adjacent voiced segment on the right. In word-initial position, the mean of VOT was longer for the velar plosive (21.8 ms, which is the longest measured for /k/) while it was 10.9 ms for the coronal stop (and the shortest VOT value for /t/).



**Figure 6:** Mean VOT duration for each plosive according to the within-word position (ms).

In word-final position, the mean of VOT for the labial stop was the shortest among the three places of articulation (10.3 ms) while it was 13 ms for the coronal stop and 14.5 ms for the velar one. These results were consistent with other studies in particular those of Lisker & Abramson (1964) in 11 languages (Dutch, Spanish, Hungarian, Tamil, Cantonese, English, English Armenian, Thai, Korean, Hindi, Marathi) and Serniclaes (1987) in Belgian-French: With the same voicing feature, the shortest VOT is generally observed for labial stop consonants, while the longest VOT is observed for velar stops. The value of the VOT for coronal stops is intermediate.

For both labial and velar stops, the mean value of VOT was greater in the first-syllable coda position of disyllabic compound words than in word-final position, while the coronal stop had the longest VOT in the latter. No correlation was found between the length of the VOT and the overall duration of the stop consonants ( $R=0.2$ ). At this stage of the investigation, it was difficult to find an influence of the within-word position on VOT values. Only the mean values of VOT found in word-initial position were consistent with previous studies which showed that the length of the VOT depended on the place of articulation of the consonant, the shortest being for the labial stops and the longest for the velar ones.

### 3.4 Vowel-consonant transition

In the case of stops in word-final ( $C_2$ ) or syllable-final ( $C_2.C_3$ ) positions, we were interested in vowel-consonant transition because of unreleased closures. That is why we measured intensity,  $F_0$ ,  $F_1$ , and  $F_2$  during the three last cycles of the periodic vibrations of the vowel /a/ that immediately preceded the consonant closure.

Statistical analyses are summarized in Table 6. The mean values of the transitions of I,  $F_0$ ,  $F_1$ , and  $F_2$ , were not significantly different ( $p > .05$ ) between the word-final position and the first-syllable coda position of disyllabic words, for the plosive and nasal consonants.

**Table 6:** Significant and non-significant differences between the values of I,  $F_0$ ,  $F_1$ , and  $F_2$  (dependant variables), measured in VC transitions according to: i) the two within-word positions (either word-final, or first-syllable coda of disyllabic word); ii) the consonant place of articulation (labial, coronal, and velar); iii) the interaction between i) and ii).

	Plosives				Nasals	
	$\Delta$ Intensity	$\Delta F_0$	$\Delta F_1$	$\Delta F_2$	$\Delta F_1$	$\Delta F_2$
Within-word position	$p = .881$	$p = .718$	$p = .142$	$p = .168$	$p = .703$	$p = .391$
Place of articulation	*	*	*	$p = .689$	$p = .453$	$p = .531$
Interaction (position * place)	$p = .430$	$p = .244$	$p = .912$	$p = .275$	$p = .804$	$p = .990$

\* indicates a significant difference ( $p < .05$ ).

Significant differences of mean  $\Delta$ Intensity were observed according to the place of articulation, showing a more negative slope for the velar plosives than for the coronal and

labial stop consonants [ $F(2,29) = 8.773, p = .01$ ]. Intensity decreased more progressively when /a/ was adjacent to the latter.

Differences between mean values of  $\Delta F_0$  in VC transitions were significant according to the consonant places of articulation, labial ( $\Delta F_0 > 0$ ), coronal (flat  $F_0$  contour) and velar ( $\Delta F_0 < 0$ ) when the consonant sequences were either at word edges, or inside word ( $p = .00$ ). No such observation was made between the bilabial and coronal nasal consonants: For each, the mean value of  $\Delta F_0$  was around 50.

The means of  $\Delta F_1$  were also significantly different for plosive consonants according to the three places of articulation [ $F(2,73) = 4.024, p = .022$ ]. At the end of the vowel,  $F_1$  sloped sharper from labial to velar consonant closure in both within-word positions.

Though no significant differences of mean  $\Delta F_2$  were found according to both within word-position ( $C_2$ ) and ( $C_2.C_3$ ) in the cases of labial and coronal plosive consonants, the difference was significant when the vowel was followed by a velar stop consonant [ $F(1,26) = 4.498, p = .044$ ]. The great variability of the second formant trajectory can be due to the fact that the closure for velar stops is realized slower by a back rising of the tongue body than ones for labial and coronal, which involves respectively both lips and tongue tip. As a result, formant transitions from /a/ to velar closure, and more specifically the movement of the second formant was not as rapid as the ones for labial and coronal closures.

#### 4 Discussion and future work

The aim of this study was to investigate the acoustic realization of Vietnamese consonant sequences according to their position inside words, and more precisely, we set out to examine the acoustic properties of the first segment of two-consonant sequences. In the Vietnamese language, consonant sequences are found at word boundary, or in the case of lexical compound, at syllable boundary inside word. By the same token, we wondered whether the type of boundary had important implication for the acoustic realization of consonant sequences, and by extension, whether the coarticulation of consonants in sequences at word edges and inside word were different.

In this pilot study, in which we examined data from a single speaker, we compared the acoustic realisation of both Vietnamese plosive and nasal consonants, *i.e.* labial, coronal and velar, in word-initial ( $C_1$  in / $C_1a$ /) vs. word-final position ( $C_2$  in / $C_1aC_2$ /) vs. first-syllable coda position of disyllabic compound words ( $C_2$  in / $C_1aC_2.C_3VC_4$ /). Measurements were made first on the overall duration of the consonant and the duration of the stop closure, then on the duration and amplitude of the release burst, on the VOT, and lastly, on the trajectory of the intensity and formant frequencies during the last three cycles of the periodic vibrations of the preceding vowel.

Results showed that Vietnamese stops tended to be shorter in final position of the first-syllable of disyllabic word, than in word-final position. The differences in the overall length of the consonant were significant for nasals, but not for plosives: The bilabials and coronals plosives followed the tendency while the mean duration of the velar ones was 13 ms longer in word-final position. A similar shortening was also observed for the closure duration of the stops located at syllable boundary inside disyllabic words, except for /k/. This finding supports the hypothesis that consonant sequence inside word was more coarticulated than similar consonant sequence at word edges, even if the succession of consonants spanned syllabic boundary.

Both length and amplitude of release burst revealed also interesting differences. The burst duration of stop consonants increased significantly when the consonant appeared in the coda of the first syllable of a compound word and was longer for word-initial consonant. Differences in the burst amplitude were significant only between the word-final and the word-initial position. Between the word-final position and the first-syllable coda, the mean value of the burst amplitude decreased for the coronal (-10 dB) but was relatively constant for both labial and velar stops (around 56 dB). The amplitude of the noise of the release burst was higher when the stop was in word-initial position (values from 66 to 71 dB). This result is consistent with the fact that unreleased closures never occurred in word-initial position and were more frequent in syllable-final position of a lexical compound than in final position of a simple word. However, the fact that more than 87% of the consonants were realized with burst in word-final position ( $C_2$ ), and they were 72% in coda position ( $C_2, C_3$ ), is not similar to what was commonly described for Vietnamese plosives in coda (Cao Xuân Hạo 1985; Đoàn Thiên Thuật 1999). Even though bursts were particularly present in our data, it is worthwhile to note that they were of short duration (on average 4 ms) and their intensity was weak (on average 52dB) compared with those produced in the initial position. It is not clear why these burst were persistent in coda positions. We do not rule out the possibility of a specific characteristic of the speaker. The phonetic context of the carrier phrase gives no more explanation. Nevertheless this result is consistent with our finding about consonant durations: The within-word syllable-final position was associated with the shortest consonant durations and more often with the unreleased occlusions. This point strengthens the assumption that within-word consonant sequences were more coarticulated than the ones at word edge, even if in this study Vietnamese dissyllabic words were always the coproduction of two CVC lexical items.

Even though it will be necessary to carry on this study with others speakers, these results are consistent with those of many previous studies which have shown that in many languages the pronunciation of phonemes was influenced by their position within syllables, words, sentences (Browman and Goldstein, 1995; Fougeron and Keating, 1997, Keating, Right and Zang, 1999; Redford 1999; for a review: Krakow 1999). Taken together, our results provide articulatory evidence that in Vietnamese the production of two successive consonants across a within-word syllable boundary seems different (with a weak articulation) than the production of two consonants spanning a word boundary. If these findings were confirmed in a multi-speaker study, they would contribute to determine the nature of different boundary types in Vietnamese, and more generally confirm the status of the syllable in phonetics, namely a fundamental unit in the organization of speech articulation.

We observed also the first two formant trajectories, as well as the movement of intensity, and the  $F_0$  trajectories in the transition from /a/ to the closure of the ending consonant. Our results showed that position inside words affected more the stop consonant release burst, and the overall consonant duration, than the formant frequency structure and the relative amplitude of the vowel-consonant transition. The latter did not exhibit significant differences according to the type of boundary, either interword, or within-word. However, significant differences for intensity,  $F_0$ , and first formant movement, were found according to the three consonant places of articulation, except for the second formant transition.

Also in this study, we did not find any clear effect on VOT duration caused by within-word position.

These findings agree with some of the studies on acoustic attributes used for discriminating among the place of articulation of stop consonants which suggested that attributes relating to the release burst were more important in identification stop consonant place of articulation than the acoustic attributes related to formant frequency transitions (Bonneau, Djezzar and Laprie, 1996; Ali, Spiegel and Mueller, 2001; Suchato and Punyabukkana, 2005). These studies pointed out also that the second formant trajectory was not sufficient for classifying stop consonant among the three place of articulation *i.e.* labial, coronal, and velar. Our results show that no significant information on consonant sequence within-word localization was obtained from formant transitions,  $F_0$  and intensity slopes. We presume, therefore, that better results could be obtained by analyzing the spectrum shape of the release burst, when final stop consonants are realized with a rapid release of the closure. However, further investigation of the acoustic attributes of VC transitions will be extended to the third formant movement, according to Serniclaes (2005).

In order to eliminate speaker-dependant effects (rate of speech, pronunciation habits) a similar multi-speaker study is under way. Data were collected among 10 native speakers of Northern Vietnamese (5 males and 5 females). This time, we have added the velar nasal /ŋ/ to the set of consonants. The results will be completed by perception experiments aiming at accounting for the perception of Vietnamese and French consonant sequences by Vietnamese speakers. Findings from acoustic analyses completed with perception investigation will have to be related to articulatory data. In our future work, we plan to carry out production experiments using EMA® (Carstens, electromagnetic articulography) about French and Vietnamese consonant sequences pronounced by native Vietnamese speakers.

In the further experiment, it will be also necessary to investigate the contribution of an assumed stress accent in Vietnamese. A detailed experimental study, realized by Đỗ Thế Dũng (1986), and quoted by Nguyễn (2000), showed evidence of the presence of an accent which falls on the ending syllable of lexical compounds. Nguyễn and Ingram (2006) suggested that the second syllable of Vietnamese reduplicated forms is more acoustically prominent. They concluded in a companion paper (Ingram and Nguyễn, 2006) dealing with acoustic and perceptual characteristics of Vietnamese compound words and their phrasal counterparts, that Vietnamese has “*lexical stress as a phonetic tendency, but not as an active phonological contrast*”. Then it will be interesting to examine the unreleased stop consonants taking into account the accent position in polysyllabic compound words.

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### Appendix

List of the Vietnamese words used in the study. All are under the same high-rising tone (B1 and D1). The measured consonants are highlighted in bold character.

	Orthographic word	API Transcription	Significance
1	tá	/t <b>a</b> /	<i>dozen</i>
2	cá	/k <b>a</b> /	<i>fish</i>
3	má	/m <b>a</b> /	<i>mother</i>
4	ná	/n <b>a</b> /	<i>crossbow</i>
5	tát	/t <b>a</b> t/	<i>to slap</i>
6	cát	/k <b>a</b> t/	<i>sand</i>
7	mát	/m <b>a</b> t/	<i>fresh</i>
8	nát	/n <b>a</b> t/	<i>crushed</i>
9	các	/k <b>a</b> k/	<i>every, all</i>
10	mác	/m <b>a</b> k/	<i>scimitar</i>
11	tám	/t <b>a</b> m/	<i>eight</i>
12	tán	/t <b>a</b> n/	<i>to wheedle</i>
13	cán	/k <b>a</b> n/	<i>handle</i>
14	áp	/ʔ <b>a</b> p/	<i>to press against</i>
15	pháp	/f <b>a</b> p/	<i>French</i>
16	áp suất	/ʔ <b>a</b> p ʃwʂt/	<i>pressure</i>
17	đáp án	/d <b>a</b> p ʔan/	<i>model solution</i>
18	đáp ứng	/d <b>a</b> p ʔuŋ/	<i>satisfy</i>
19	khát nước	/χ <b>a</b> t nurɤk/	<i>thirsty</i>
20	phát giác	/f <b>a</b> t zak/	<i>to find out</i>
21	sát khí	/ʃ <b>a</b> t χi/	<i>murderous air look</i>
22	ác ý	/ʔ <b>a</b> k ʔi/	<i>malice</i>
23	ác tính	/ʔ <b>a</b> k tiŋ/	<i>malignant (medicine)</i>
24	tác chiến	/t <b>a</b> k cien/	<i>operation (military)</i>
25	xác chết	/ʃ <b>a</b> k cet/	<i>cadaver</i>
26	xác ướp	/ʃ <b>a</b> k ʔurɤp/	<i>mummy</i>
27	đám cháy	/d <b>a</b> m cǎj/	<i>fire</i>
28	đám cưới	/d <b>a</b> m kurɤj/	<i>wedding</i>
29	giám sát	/z <b>a</b> m ʃat/	<i>to supervise</i>
30	khám phá	/χ <b>a</b> m fa/	<i>to discover</i>
31	khám xét	/χ <b>a</b> m set/	<i>to search</i>
32	sám hối	/ʃ <b>a</b> m hoj/	<i>to repent</i>
33	bán kết	/b <b>a</b> n ket/	<i>semi-final (sport)</i>
34	gián tiếp	/z <b>a</b> n tiep/	<i>indirect</i>
35	phán quyết	/f <b>a</b> n kwiet/	<i>judgment</i>

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# THE INTEGRATION OF ENGLISH LOANWORDS IN HONG KONG CANTONESE<sup>1</sup>

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## 0 Abstract

Borrowing from English into Cantonese has been the catalyst for change in the Cantonese phonological system and lexicon. Many English loanwords have become fully integrated into Hong Kong Cantonese as demonstrated in this paper. Our research team has compiled a database comprising around 700 English loanwords. This paper presents data demonstrating how extensive has been the integration of English loanwords into Cantonese in terms of the following linguistic features:

(a) Suffixation: The Cantonese suffix 嘍 dei2 is added to reduplicated monosyllabic stative verbs to mean ‘having some quality of the stative verb’. Some English loanwords undergo the same process: HIGH haai1 ‘high’ becomes HIGH HIGH 嘍 hai1 hai1 dei2 ‘a little excited’. Many English loanwords can take the Cantonese aspectual marker 咗 zo2: CHECK cek1 ‘check’ becomes CHECK 咗 cek1 zo2 ‘have checked’.

(b) Change of Syntactic Categories: Upon being borrowed into Cantonese, some loanwords change their syntactic categories. The noun *man* becomes the stative verb MAN men1 ‘manly’ as in 好 MAN hou2 men1 ‘very manly’ and MAN MAN 嘍 men1 men1 dei2 ‘with some manly quality’.

(c) Productivity: A loanword may be incorporated into the Cantonese grammatical structure to generate new lexical items as demonstrated by 撈 lou1 ‘Rolex’ as in 金撈 gam1 lou1 ‘gold Rolex’ and 鑽撈 zyun3 lou1 ‘diamond Rolex’.

(d) Acceptability: Some English loanwords have become so integrated into Cantonese that speakers who know no English assume they are ordinary Cantonese words such as 巴士 baa1 si6/2 ‘bus’.

These features provide solid evidence that many English loanwords have become thoroughly integrated into Cantonese.

## 1 Introduction

Linguistic borrowing is one of the most salient consequences of language contact. English and Cantonese are typologically distinct languages, yet the differences between them have in no way impeded mutual borrowing. Historical contact between English and Cantonese

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began in the late 17<sup>th</sup> century when British traders came to Canton to buy Chinese tea and porcelain and has continued to the present. English loanwords are documented in the first English-Cantonese, Cantonese-English dictionary *A Vocabulary of the Canton Dialect* authored by Robert Morrison and published in 1828.

Borrowing from English into Cantonese has been a catalyst for change in the Cantonese phonological system and lexicon (Bauer, 2006; Bauer and Benedict, 1997; Chan and Kwok, 1982, 1986; Wong, 2006). From our observations it is clear that many English loanwords have become fully integrated into the Hong Kong Cantonese lexicon. Our research team has compiled a database comprising about 700 English loanwords, most of which are nouns. In our study of loanwords we have been concerned with their phonological, syntactic, and semantic aspects; in Bauer and Wong (2009 to appear) we have examined the impact that loanwords have had on the phonological system with the formation of new rimes and syllables in the Cantonese syllabary, while in this paper we have focused on the syntactic and semantic features of loanwords.

There are three methods by which English words have been borrowed into Cantonese: (1) semantic translation in which the English lexical item is translated into Cantonese and the phonetic form of the word bears no relationship to the source word, for example, the English phrase *lame duck* has been translated into 跛腳鴨 *bai1 goek3 aap3* (literally ‘lame’, and ‘duck’) in Cantonese; (2) phonetic transliteration in which the phonetic composition of the ‘borrowed’ English lexical item is transliterated into Cantonese, for example, the English word *store* is transliterated as 士多 *si6 do1* in Cantonese; and (3) the combination of these two, for example, English *egg tart* is 蛋撻 *daan6 taat1* with the first syllable borrowed through semantic translation and the second syllable represented through phonetic transliteration.

It may sometimes be difficult to determine if a semantically-translated loanword has come directly into Cantonese or via standard Chinese; for this reason our database has excluded all borrowings of this type, and we have limited our collection of loanwords borrowed into Cantonese based on the second and third methods mentioned above: phonetically transliterated items and items that have combined at least one phonetically transliterated syllable with one or more Cantonese morphosyllables. Since the sound systems of standard Chinese (i.e., Mandarin or Putonghua) and Cantonese are quite different, it is usually not difficult to decide whether or not phonetically transliterated items have been directly borrowed into Cantonese.

## 2 Database of English Loanwords in Hong Kong Cantonese

Our database of English loanwords comprises about 700 lexical entries. According to our analysis of this database, 85% of our lexical entries are words which include only phonetically-transliterated syllables, while 15% are made up of at least one phonetically-transliterated syllable and at least one Cantonese morphosyllable which bears some semantic relationship to the loanword.

In the process of compiling our database of loanwords we have paid close attention to the syntactic categories and semantic areas to which the loanwords belong. We have classified loanwords according to six syntactic categories and 24 semantic categories. In Table 1 below the six syntactic categories are listed in the descending order of the percentages of loanwords that belong to these categories:

**Table 1:** *Distribution of loanwords by syntactic categories.*

Syntactic category:	%
Nouns	80.5
Verbs	11.7
Attributives	5.5
Classifiers	1.3
Fixed expressions	0.6
Adverbs	0.4

As we see in the above table, the vast majority of loanwords in Cantonese are nouns, with the next largest group being verbs; the two smallest syntactic categories are fixed expressions and adverbs.

Table 2 below presents the distribution of loanwords according to their semantic categorization in the descending order of percentages of loanwords belonging to the categories. As indicated, the two largest semantic categories are Food (11.4%) and Recreation (10.0%).

**Table 2:** *Distribution of loanwords by semantic categories.*

Semantic category:	%	Semantic category:	%
Food	11.4	Activities & states	3.7
Recreation	10.0	Finance & business	3.3
Academic environment	7.6	Chemicals, medicines, & drugs	3.2
Language (descriptive/social)	6.7	Police jargon	2.6
Mechanical instruments & materials	6.4	Office environment	2.1
Fashion	5.8	Address terms	2.0
Technology	5.6	Household	1.8
Daily life	5.2	Garments	1.7
Units of measurement	4.7	Transportation	1.5
Drinks	4.1	Brand names	1.4
Occupations	3.8	Fabrics	1.2
Music	3.7	Animals & plants	0.5

As for the written representation of English loanwords, we have observed that 61% have written Chinese characters associated with them, while 35% are not represented by any Chinese characters.

### 3 Integration of Loanwords into Cantonese

The integration of loanwords into Cantonese can be analyzed according to four criteria: (1) frequency of use, (2) native-language synonym displacement, (3) morphophonemic and/or syntactic integration, and (4) acceptability (Poplack and Sankoff, 1984:103-104). This paper presents data on the integration of English loanwords into Cantonese in terms of their morpho-syntactic and semantic features, as well as their acceptability as reflected by their written representations and productivity. We first examine the written representations associated with English loanwords.

### 3.1 Written Representation of Loanwords

One measure of loanword integration in Cantonese is the sizeable number of loanwords which are conventionally written with Chinese characters. Table 3 below lists some commonly occurring loanwords that belong to this category. We may note that both 巴士 *baa1 si6/2* ‘bus’ and 的士 *dik1 si6/2* ‘taxi’ have an official status in Hong Kong, as the first item is painted on road surfaces to mark bus stops, and the second is written on taxis and signs.

**Table 3:** Examples of loanwords written with standard Chinese and Cantonese characters.

Written form:	Romanized form:	English source:	Written form:	Romanized form:	English source:
巴士	<i>baa1 si6/2</i>	<i>bus</i>	啤酒	<i>be1 zau2</i>	<i>beer</i>
餐屎	<i>caan1 si6/2</i>	<i>chance</i>	打令	<i>daa2/1 ling6/2</i>	<i>darling</i>
的士	<i>dik1 si6/2</i>	<i>taxi</i>	多士	<i>do1 si6/2</i>	<i>toast</i>
菲林	<i>fei1 lam4/2</i>	<i>film</i>	科文	<i>fo1 man4/2</i>	<i>foreman</i>
卡士	<i>kaa1 si6/2</i>	<i>cast</i>	冧巴	<i>lam1 baa1/2</i>	<i>number</i>
孖展	<i>maa1 zin2</i>	<i>margin</i>	柯打	<i>o1 daa2</i>	<i>order</i>
柯崙	<i>o1 leon4/2</i>	<i>orlon</i>	阿華田	<i>o1 waa4 tin4</i>	<i>Ovaltine</i>
安士	<i>on1 si6/2</i>	<i>ounce</i>	柯化	<i>ou1 faa3/4</i>	<i>over</i>
拍檔	<i>paat1 naa2</i>	<i>partner</i>	泡打粉	<i>paau1 daa2 fan2</i>	<i>baking powder</i>
批	<i>pai1</i>	<i>pie</i>	啤牌	<i>pe1 paai4/2</i>	<i>playing cards</i>
甫士	<i>pou1 si6/2</i>	<i>pose</i>	沙紙	<i>saa1 zi2</i>	<i>certificate</i>
沙展	<i>saa1 zin2</i>	<i>sergeant</i>	士的	<i>si6 dik1</i>	<i>stick</i>
士多	<i>si6 do1</i>	<i>store</i>	士多啤梨	<i>si6 do1 be1 lei4/2</i>	<i>strawberry</i>
新地	<i>san1 dei6/2</i>	<i>sundae</i>	梳打	<i>so1 daa2</i>	<i>soda</i>
T恤	<i>ti1 seot1</i>	<i>T-shirt</i>	威化餅	<i>wai1 faa3 beng2</i>	<i>wafel</i>
威乎	<i>wai1 fu4</i>	<i>wife</i>	威也	<i>wai1 jaa5/2</i>	<i>wire</i>
威士忌	<i>wai1 si6 gei6/2</i>	<i>whiskey</i>	窩夫	<i>wol ful</i>	<i>waffle</i>

In contrast, that a loanword is a recent borrowing may be indicated by its lack of Chinese characters as its written form, and the convention is to write it with the word’s original English spelling. Examples of these include CYBER<sup>3</sup> *saai1 baa2* from *cyber*,

<sup>2</sup> The Cantonese pronunciations of English loanwords have been transcribed in the Jyut Ping romanization system devised by the Linguistic Society of Hong Kong. Although the rimes of some loanword syllables do not occur in the standard Cantonese syllabary, the syllables can be still romanized, for example the rime –en is a colloquial rime and occurs in the loanword MAN ‘manly’ as *men1*. When a romanized syllable is accompanied by two numbers separated by a slash, it indicates a tone change. For example, the character 士 *si6* originally has tone 6 but is pronounced with tone 2 in the loanword 巴士 *baa1 si2* ‘bus’ so the second syllable is romanized as *si6/2*.

<sup>3</sup> If a loanword is normally represented by English spelling in written Cantonese, we will show the written representation of the loanword in capital letters to differentiate it from the English gloss.

FORM fom1 from *form*, FIRM foem1 from *firm*, SAMPLE saam1 pou2 from *sample*, WORK woek1 from *work*, WARM wom1 from *warm*.

As for the historical documentation of loanwords in Cantonese, we have attempted to identify the occurrence of Cantonese loanwords in early publications, and we have observed that some loanwords were being written with Chinese characters not long after they had been borrowed into Cantonese. In Robert Morrison's *A Vocabulary of the Canton Dialect*, the world's first English-Cantonese, Cantonese-English dictionary published in 1828, the following English words were listed as having been borrowed into Cantonese (the romanizations reflect the Cantonese pronunciation of that time): *arack* 亞叻酒 aa3 lik1 zau2, *ball* 波球 bo1 kau4, *beer* 卑酒 be1 zau2, *brandy* 罷蘭地酒 baa6 laan4 di6 zau2, *cheese* 支士 zi1 si6, *chocolate* 知古辣 zi1 gu2/1 laat6/1, *coffee* 架啡 gaa3 fi1, *couch* 勾子床 ngau1 zi2 cong4, *flannel* 佛囉仁 fat6 laan4 jan4, *liqueur* 利哥酒 li6 go1 zau2.

The fact that many of these loanwords do have their respective written representations with Chinese characters indicates the high level of their acceptance in Cantonese – as even some native colloquial Cantonese lexical items do not have written representation with Chinese characters.

### 3.2 Morpho-syntactic Processes

If a loanword exhibits the same morpho-syntactic features of native Cantonese lexical items, it is an unambiguous indication that the loanword has been integrated into the Cantonese grammatical system. From our database, we have found a number of loanwords which demonstrate such features.

First, when we examine suffixation, we find that many English loanwords are found to behave like Cantonese words. For example, the Cantonese suffix 哋 dei2 is added to reduplicated monosyllabic stative verbs to mean 'having some quality of the stative verb'; 藍 laam4 'blue' becomes 藍藍哋 laam4 laam4 dei2 'with a shade of blue'. Some English loanwords undergo the same process:

- (1) HIGH haai1 'high' becomes HIGH HIGH 哋 haai1 haai1 dei2 'a little excited'
- (2) Q kiu1 'cute' becomes QQ哋 kiu1 kiu1 dei2 'quite cute'
- (3) 啡 fe1 'brown' (from 咖啡 gaa3 fe1 'coffee') becomes 啡啡哋色 fe1 fe1 dei2 sik1 'brownish'
- (4) SHORT sot1 'crazy' or 'malfunctioning' (from 'short circuit') becomes SHORT SHORT sot1 sot1 dei2<sup>4</sup> 'somewhat crazy' or 'somewhat malfunctioning'

Another very common suffix for Cantonese verbs is the Cantonese aspectual marker of completion 咗 zo2. Many English loan verbs can also take 咗 zo2 as shown in the following examples:

- (5) CHECK cek1 'check' becomes CHECK咗 cek1 zo2 'have checked'
- (6) DOUBLE dap1 bou4 'double' becomes DOUBLE 咗 dap1 bou4 zo2 'have doubled' (in quantity)

Cantonese nouns, on the other hand, can be suffixed with diminutive 仔 zai2, and it also occurs with some English loanwords:

- (7) 啤啤 bi4 bi1 'baby' becomes 啤啤仔 bi4 bi1 zai2 'small babies'
- (8) CADET ket6 det1 'cadet' becomes CADET 仔 ket6 det1 zai2 'a cadet guy'

<sup>4</sup> This loanword originally kept the English meaning which refers to an electric short circuit. It is now more often used metaphorically to refer to someone who is crazy, or to something that has malfunctioned.



(9) E 仔 *ji1 zai2* ‘ecstasy (the drug)’ is formed by the abbreviation of ecstasy ‘E’ plus 仔 *zai2*

(10) K *kei1* from *ketamine* becomes ‘K 仔’ *kei1 zai2* ‘ketamine’

That such morphological features combined with English loanwords well illustrates how many English loanwords have become fully integrated into Cantonese.

In addition to the above morphological characteristics, the syntactic properties manifested by English loanwords also clearly indicate the extent to which English loanwords have been integrated into Cantonese. Most Cantonese stative verbs can be modified by the intensifiers 好 *hou2* ‘very’, or 咁 *gam3* ‘so’, as in 好靚 *hou2 leng3* ‘very pretty’, 咁靚 *gam3 leng3* ‘so pretty’, 好醒 *hou2 sing2* ‘very smart’, 咁醒 *gam3 sing2* ‘so smart’. The intensifiers 好 *hou2* and 咁 *gam3* are found being used in some English loanwords as follows:

(11) HIGH *haai1* ‘high’ becomes 好 HIGH *hou2 haai1* ‘very high in spirit’, or 咁 HIGH *gam3 haai1* ‘so high in spirit’

(12) FIT *fit1* ‘fit’ becomes 好 FIT *hou2 fit1* ‘very fit’ or 咁 FIT *gam3 fit1* ‘so fit’

(13) PRO *pou6* ‘professional’ becomes 好 PRO *hou2 pou6* ‘very professional’, or 咁 PRO *gam3 pou6* ‘so professional’

A prevalent syntactic operation in forming interrogative sentences in Cantonese is the ‘A-not-A’ construction. To form this ‘A-not-A’ structure, the first syllable of a verb is reduplicated, and the negative morpheme 唔 *m4* is inserted. In the case of 冲凉 *cung1 loeng4* ‘to take a bath’, for example, the ‘A-not-A’ structure turns it into a Yes-No question, 你冲唔冲凉 *nei5 cung1 m4 cung1 loeng4* ‘Do you want to take a bath?’ The ‘A-not-A’ construction can also be applied to stative verbs such as 辛苦 *san1 fu2* ‘having a hard time’, for example, 辛苦唔辛苦 *san1 m4 san1 fu2* ‘Having a hard time?’ That English loanwords can also share the ‘A-not-A’ construction provides further evidence that these loanwords have been fully integrated into Cantonese, as in the following examples:

(14) HAPPY *hep1 pi2* ‘happy’ becomes HAP 唔 HAPPY *hep1 m4 hep1 pi2* ‘Are you happy?’

(15) *understand* is clipped to its first syllable UN *an1* as the loanword: 你 UN 唔 UN 呀? *nei5 an1 m4 an1 aa3?* ‘Do you understand?’

The above morpho-syntactic features associated with many English loanwords are summarized in Table 4 below.

**Table 4:** Summary of morpho-syntactic features.

English source:	Loanword:	Examples:	English gloss:
<b>-嘍 -dei2 stative verb suffix:</b>			
<i>high</i>	HIGH haai1	HIGH HIGH 嘍 haai1 haai1 dei2	‘a little excited’
<i>cute</i>	Q kiu1	QQ 嘍 Kiu1 kiu1 dei2	‘quite cute’
<i>coffee</i>	咖啡 gaa4 fe1	啡啡嘍色 fe1 fe1 dei2 sik1	‘a shade of coffee’
<i>short circuit</i>	SHORT sot1	SHORT SHORT 嘍 sot1 sot1 dei2	‘somewhat crazy’
<b>-咗 -zo2 verb marker of completed actions:</b>			
<i>check</i>	CHECK cek1	CHECK 咗 cek1 zo2	‘have checked’
<i>double</i>	DOUBLE dap1 bou4	DOUBLE 咗 dap1 bou4 zo2	‘have doubled (in quantity)’
<b>-仔 -zai2 noun suffix:</b>			
<i>baby</i>	嗶嗶 bi4 bi1	嗶嗶仔 bi4 bi1 zai2	‘small babies’
<i>cadet</i>	CADET ket6 det1	CADET 仔 ket6 det1 zai2	‘a cadet guy’
<i>ecstasy</i>	E 仔 ji1 zai2	E 仔 ji1 zai2	‘ecstasy (the drug)’
<i>ketamine</i>	K 仔 kei1 zai2	K 仔 kei1 zai2	‘ketamine’
<b>好 hou2 / 咁 gam3 stative verb modifiers:</b>			
<i>high</i>	HIGH haai1	好 / 咁 HIGH hou2 / gam3 haai1	‘very / so high’
<i>fit</i>	FIT fit1	好 / 咁 FIT hou2 / gam3 fit1	‘very / so fit’
<i>professional</i>	PRO pou6	好 / 咁 PRO hou2 / gam3 pou6	‘very / so professional’
<b>A 唔 A ‘A-not-A’ construction:</b>			
<i>happy</i>	HAPPY hep1 pi2	HAP 唔 HAPPY hep1 m4 hep1 pi2	‘Are you happy?’
<i>understand</i>	UN an1	你 UN 唔 UN 呀 nei5 an1 m4 an1 aa3?	‘Do you understand?’

### 3.3 Change of Syntactic Categories

Upon being borrowed into Cantonese, some loanwords may change their syntactic categories. The noun *man* changes to the stative verb MAN men1 ‘manly’ as in 佢 MAN咗好多 keoi5 men1 zo2 hou2 do1 ‘he has now become very manly’ and MAN MAN

哋 men1 men1 dei2 ‘with some manly quality’. The noun *friend* also becomes the stative verb FRIEND fen1 ‘friendly’, as in 佢同我好 FRIEND keoi5 tung4 ngo5 hou2 fen1 ‘he and I are good friends’. The first syllable of 啤酒 be1 zau2 can function as a verb in 啤一啤 be1 jat1 be1 ‘Let’s go and have a beer’. *Taxi* is borrowed as 的士 dik1 si6/2, but the first syllable of the noun 的 dik1 becomes the verb ‘to take a taxi’ in 我哋的去啦 ngo5 dei6 dik1 heoi5 laa1 ‘Let’s take a taxi!’. *Okay* OK ou1 kei1 can modify other stative verbs to mean ‘moderately’, as in OK 難 ou1 kei1 naan4 ‘moderately difficult’. *Mug* 嚟 mak1 and *car* 卡 kaa1 ‘a railway carriage’ function as both nouns and classifiers in Cantonese. The unit of measuring weight *pound* can be used as a noun to refer to the scale (磅 bong2) and also the verb meaning ‘to weigh’ (磅 bong6). The vocative expression 拜拜 baai3/1 baai3 ‘bye-bye’ can be used as a verb in Cantonese, as in 你同 AUNTIE 拜拜咗未呀? nei5 tung4 aan1 ti4 baai3/1 baai3 zo2 mei6 aa3 ‘Have you said goodbye to Auntie?’ The noun *cyber* can be used as a stative verb in Cantonese, as in 呢個 DESIGN 好 CYBER ni1 go3 di6 saai1 hou2 saai1 baa4 ‘This design has a cyber feel.’ English *soft* becomes the verb 梳芙 so1 fu4 ‘to enjoy oneself’ in Cantonese: 佢放咗假去曼谷梳芙 keoi5 fong3 zo2 gaa3 heoi3 maan6 guk1 so1 fu4 ‘He is on vacation and is enjoying himself in Bangkok.’

The syntactic adaptation of loanwords described above further demonstrates how they have become fully and intimately integrated into the Cantonese grammatical system. Table 5 below lists and summarizes these example loanwords.

**Table 5:** Examples of loanwords with changed syntactic category.

English source:	Loanword:	Change in syntactic category <sup>5</sup> :	Example:	English gloss:
<i>man</i>	MAN men1	N → SV	好 MAN hou2 men1 MAN MAN 哋 men1 men1 dei2	‘very manly’  ‘with some manly quality’
<i>friend</i>	FRIEND fen1	N → SV	佢同我好 FRIEND keoi5 tung4 ngo5 hou2 fen1	‘He and I are good friends’
<i>beer</i>	啤酒 be1 zau2	N → V	啤一啤 be1 jat1 be1	‘Let’s go and have a beer’
<i>taxi</i>	的士 dik1 si6/2	N → V	我哋的去啦 ngo5 dei6 dik1 heoi3 laa1	‘Let’s take a taxi!’
<i>okay</i>	OK ou1 kei1	Adj → Adv	OK 難 ou1 kei1 naan4	‘moderately difficult’
<i>mug</i>	嚟 mak1	N → Clf	一嚟米 jat1 mak1 mai5	‘a mug of rice’
<i>car</i>	卡 kaa1	N → Clf	兩卡貨 loeng5 kaa1 fo3	‘two cars of cargo’
<i>pound</i>	磅 bong2	M → N	個磅 go3 bong2	‘the scale’
	磅 bong6	M → V	磅吓啲米 bong6 haa5 di1 mai5	‘Let’s weigh the rice’

<sup>5</sup> Adj=adjective; Adv=adverb; Clf=classifier; Exp=fixed expression; M=measure; N=noun; SV=stative verb; V=verb.

<i>bye-bye</i>	拜拜 baai3/1 baai3	Exp → V	你同 AUNTIE 拜拜咗未呀? nei5 tung4 aan1 ti4 baai3/1 baai3 zo2 mei6 aa3	'Have you said goodbye to Auntie?'
<i>cyber</i>	CYBER sai1 baa4	N → SV	呢個 DESIGN 好 CYBER ni1 go3 di6 saai1 hou2 sai1 baa4	'This design has a very cyber feel'
<i>soft</i>	梳芙 so1 fu4	Adj → V	去邊度梳芙? heoi3 bin1 dou6 so1 fu4?	'Where shall we go to enjoy ourselves?'

### 3.4 Clipping

In daily Cantonese speech, long expressions tend to be shortened or clipped. For example, 消費者委員會 *siu1 fai3 ze2 wai2 jyun4 wui2* the 'Consumer Council' is abbreviated to 消委會 *siu1 wai2 wui2*. Clipping also occurs with English loanwords: a polysyllabic source word is reduced to a monosyllabic or disyllabic loanword. One prominent area affected by this process is academic subjects. *Accounting* is aa6 kaang1 (for 'account'); *biology* is bai6 o1 (for 'bio'); *chemistry* is kem1 (for 'chem'); *computing* is kam6 piu1 (for 'comput' with loss of -t ending, since -iut is not a possible rime in Cantonese); *economics* is ji6 kon1 (for 'econ'); *electrical engineering* is ji6 lek1 (for 'elec'); *English literature* is ing1 lit1 (for 'Eng lit'); *geography* is zok1 gaa2 (for 'geogra'), etc. Other examples which are not names of academic subjects include: *fax* is fek1 (from fek1 si2 for 'fax'), *contact lens* is kon1 (for 'con'), *taxi* is dik1 (from dik1 si2 for 'taxi'), *coffee* is fe1 (from kaa3 fe1 for 'coffee'), *professional* is pou6 (for 'pro'), *solicitor* is so6 lit1 (for 'soli'), *tutorial* is tiu6 to1 (for 'tuto'), *promotion* is pou6 mou1 (for 'promo'), etc.

In previous sections we have provided numerous examples showing how English loanwords have integrated into the Cantonese morpho-syntactic system. In the next section, we examine how some loanwords generate additional new lexical items in Cantonese, which we consider to be another piece of evidence indicating that these loanwords have become integrated into Cantonese.

### 3.5 Productivity

Like any native Cantonese lexical item, a loanword can generate new expressions. For example, the *Rolex* brand name of the wristwatches is transliterated as 撈 *lou1* in Cantonese. From this one loanword, terms for different types of Rolexes are now found in Cantonese, such as 金撈 *gam1 lou1* 'gold Rolex' 鑽撈 *zyun3 lou1* 'diamond Rolex', and 鋼撈 *gong3 lou1* 'stainless steel Rolex'. Similarly, from 巴士 *baa1 si6/2* 'bus' have come 大巴 *daai6 baa1*, literally 'big bus', which refers to 'public buses'; 小巴 *siu2 baa1*, literally 'small bus', which refers to 'mini buses'; 飛巴 *fei1 baa1*, literally 'flying bus', which refers to 'mini buses that usually exceed the speed limit'. These very creative examples show that some loanwords have been successfully accepted into the Cantonese lexicon and that they produce new lexical items in the same way that native Cantonese words do.

Another example is 波碇 *bo1 but1* 'sports boots'. While both 'ball' and 'boot' have their respective native terms (球, 靴) but these two native terms are not combined to refer to 'sports boots'. Instead, the loanwords 波 *bo1* 'ball' and 碇 *but1* 'boot' are used to form a new lexical item 波碇 *bo1 but1* 'sports boots'. One more example to show the productivity of English loanwords in Cantonese is the adjective 'cute'. The phrase Q版 *kiu1 baan2* is formed by adding the loanword Q *kiu1* (from English *cute*) to the native Cantonese word 版 *baan2* (which means 'a version of') to refer to a cartoon-like version. A more recent creation is the term 咪咀 *mai1 zeoi2*, the first part of which comes from the loanword 咪

mai1 (from English *microphone*). The loanword is then combined with the native word 咀 zeoi2 ‘mouth’ to refer to ‘lip synchrony’.

New idiomatic expressions are also created based on loanwords. For example, the famous composer *Tchaikovsky* is transliterated as 柴可夫斯基 caai4 ho2 fu1 si1 gei1; the first three syllables 柴可夫 caai4 ho2 fu1 now mean ‘the chauffeur’ because the last two syllables 斯基 si1 gei1 is homophonous with the regular Cantonese word for ‘chauffeur’ 司機 si1 gei1!

The above examples show that some loanwords have been so integrated into Cantonese that they can produce new lexical items the same way as any native Cantonese word. Such productivity is clear evidence that these loanwords have been fully integrated into Cantonese. In the next section, we examine the semantic extension of some English loanwords, which further verifies the integration of these borrowed items in Cantonese.

### 3.6 *Semantic Transfer and Semantic Change in Loanwords*

When English words are borrowed into Cantonese, the meanings of the loanwords usually remain the same as those of the source words, for example, 極力子 gik6 lik6/1 zi2 ‘clutch’, ACCOUNT aa6 kaang1 ‘account’, ‘accountancy’, APARTMENT aa6 paat1 man4 ‘apartment’, IDEA aai6 di1 aa4 ‘idea’, AUNTIE aan1 ti4 ‘auntie’, UNCLE ang1 kou4 ‘uncle’, 奄列 am1 lit6 ‘omelette’, etc.

However, in contrast to this general pattern of meaning transfer, we also observe that the meanings of some loanwords can undergo change by becoming narrower or more specific in relation to the meanings of the original English words as indicated by the following items extracted from our database:

(16) 阿蛇 aa3 soe4

This is the Cantonese borrowing of English *sir* which is originally a polite address term for men. Cantonese 阿 aa3 is the vocative prefix; while 蛇 soe4 has taken on a more specific reference in Cantonese where it is an address term for male teachers and police officers. It can also be used as a common noun to mean male teachers and police officers; and for male teachers it also serves as a term of self reference.

(17) FIRM foem1

This is the Cantonese borrowing of English *firm*, but it is only used in reference to one’s muscles as shown in the example sentence 做咗運動幾個禮拜小腹 FIRM 咗 zou6 zo2 wan6 dung6 gei2 go3 lai5 baai3 siu2 fuk1 foem1 zo2 ‘The abdominal muscles have got firmer after having exercised for several weeks’.

(18) 忌廉 gei6 lim1

This means ‘cream’ but is only used in the context of cake, such as 忌廉蛋糕 gei6 lim4/1 daan6 gou1 ‘cream cake’. However, Cantonese has actually borrowed English *cream* twice, first as 忌廉 gei6 lim1, and then later on as CREAM kwim1 which can mean either ‘face cream’ or ‘drinkable cream made from whole milk’. Cantonese has also borrowed English *creamy* as kwim1 mi4 and the meaning is essentially the same as in English.

(19) 見 BOARD gin3 bot1

Cantonese 見 gin3 means ‘to see’, and BOARD bot1 is the Cantonese borrowing of English *board* as in ‘an interview board that comprises several members’. 見 BOARD gin3 bot1 means ‘to attend an interview for promotion in the police force or civil service’. The following sentence illustrates the use of this item: 你下個禮拜見 BOARD

嗰，緊唔緊張呀？ nei5 haa6 go3 lai5 baai3 gin3 bot1 wo3, gan2 m4 gan2 zoeng1 aa3?  
‘You will have an interview for promotion next week. Are you nervous?’

(20) 柯化 *ou1 faa3/4*

This is the Cantonese borrowing of *over* which is only used in walkie-talkie or short-wave radio exchanges just as in English to indicate that the speaker has finished his/her utterance and is indicating that it is the turn of the other party to speak.

(21) SHORT *sot1*

This term originally referred to an electric short circuit. After it was borrowed into Cantonese, its meaning has been extended to refer to someone who is crazy, as an analogy to an electric malfunction.

The semantic narrowing or extension exemplified in the above clearly illustrates how English loanwords are being adapted into Cantonese.

### 3.7 Acceptability

Some English loanwords have become so integrated into Cantonese that speakers who know no English assume they are native Cantonese words because very often there are no Cantonese equivalents. For example, the loanword for *bus* is 巴士 *baa1 si6/2* and this is the only Cantonese term for ‘bus’. Even the bus companies use this term in their company names: 九龍巴士公司 *gau2 lung4 baa1 si6/2 gung1 si1* ‘The Kowloon Motor Bus Company’. The phrase 巴士站 *baa1 si6/2 zaam6* ‘bus stop’ is painted on Hong Kong’s streets to mark their location.

Another example of the integration of English loanwords into the Cantonese language is the widespread use of individual English letters in many Hong Kong Cantonese expressions. The ease of adaptation of English letters into the Cantonese lexicon may be closely related to the monosyllabic pronunciations of most letters and the primacy of the mono-morphosyllable in the Cantonese phonological system. The Cantonese pronunciations of the English letters and the English meanings of the abbreviations and words in which they occur are listed in Table 6 below.

The two English letters most commonly found in Cantonese are M and X, one reason being that many of the bus routes employ these letters. Bus routes that end in M indicate that the buses terminate at a subway station (the subway system in Hong Kong is called the MTR, the ‘Mass Transit Railway’); X stands for ‘express’ bus routes. The letters M and X are also found in many loanwords such as MC, MP3, MTR, MV, SMS, XO, X光 (for ‘X-ray’). The first 10 or so letters in the English alphabet are also very popular because many housing estates use these letters to name the flats and blocks (i.e. buildings). For example, instead of being named after the Chinese ordering system 甲 *gaap3*, 乙 *jyut3*, 丙 *bing2*, 丁 *ding1*, etc., the flats or blocks are called Flat A, B, C, D or Block A, B, C, D, etc. In restaurants, set meals are also termed as A/B/C/D 餐 *ei1/bi1/si1/di1 caan1*, rather than 甲/乙/丙/丁餐 *gaap3/jyut3/bing2/ding1 caan1*. Other commonly used English letters in Cantonese include G (as in 3G, NG, RPG), K (as in OK, K 仔, 14K, 24K, OK 便利店), L (as in OL, LC), N (as in N 年前, NG), O (as in OK, OL, O 記), P (as in P 場, MP3, PVC, RPG), Q (as in Q 版, 孖 Q), R (as in 3R, RPG), S (as in SMS), T (as in T-恤, T-back, T 字位, TB, OT), U (as in CU, BU, UV), V (as in VCD, MV, V-領, PVC, UV, VIP).

**Table 6:** *Use of English letters in loanwords.*

Letter:	Usage:	English gloss:
A ei1	AA 制 ei1 ei1 zai3	'to go Dutch (usually in paying the bill for a meal)'
	A 座 ei1 zo6	'Flat A' or 'Block A'
	A 餐 ei1 caan1	'set A (one of the set meals on a menu)'
	維他命 A waai4 taa1 ming6 ei1	'Vitamin A'
B bi1	BB 仔 bi4 bi1 zai2	'small babies'
	阿 B aa3 bi1	'someone who is called 'B' (probably a nickname)'
	BU bi1 ju1	'abbreviation for Baptist University'
	TB ti1 bi1	'tomboy / tuberculosis'
	B 座 bi1 zo6	'Flat B' or 'Block B'
	B 餐 bi1 caan1	'set B (one of the set meals on a menu)'
	維他命 B waai4 taa1 ming6 bi1	'Vitamin B'
C si1	PVC pi1 wi1 si1	'poly-vinyl chloride'
	MC em1 si1	'Master of Ceremonies'
	CU si1 ju1	'abbreviation for Chinese University'
	MCC em1 si1 si1	'woolly, befuddled' (from the abbreviation of the Cantonese expression 懵查查 'mong cha cha')
	C 座 si1 zo6	'Flat C' or 'Block C'
	C 餐 si1 caan1	'set C (one of the set meals on a menu)'
	維他命 C waai4 taa1 ming6 si1	'Vitamin C'
	CID si1 aai1 di1	'Criminal Investigation Division'
D di1	落 D lok6 di1	'to go to the disco'
	DDT di1 di1 ti1	'a poisonous chemical for killing insects'
	DJ di1 ze1	'disc jockey'
	D 座 di1 zo6	'Flat D' or 'Block D'
	D 餐 di1 caan1	'set D (one of the set meals on a menu)'
E ji1	E 座 ji1 zo6	'Flat E' or 'Block E'
	E 餐 ji1 caan1	'set E (one of the set meals on a menu)'
	維他命 E waai4 taa1 ming6 ji1	'Vitamin E'
F et1 fu4	F 座 et1 fu4 zo6	'Flat F' or 'Block F'
	F 餐 et1 fu4 caan1	'set F (one of the set meals on a menu)'
G zi1	3G fi1 zi1	'the third generation (cellphone)'
	NG en1 zi1	'no good (in movie shooting)'
	RPG aa1 lou4 pi1 zi1	'role playing games (video games)'
	G 座 zi1 zo6	'Flat G' or 'Block G'
H ik1 cyu4	H 座 ik1 cyu4	'Flat H' or 'Block H'

K kei1	OK ou1 kei1	‘okay’
	K 仔 kei1 zai2	‘ketamine (illegal soft drug)’
	OK 便利店 ou1 kei1 bin6 lei6 dim3	‘Circle K’, name of a local convenience store
	14K sap6 sei3 kei1	‘14K’ name of a triad society
	24K jaa6 sei3 kei1	‘24 karat gold’
	K 座 kei1 zo6	‘Flat K’ or ‘Block K’
L e1 lou4	OL ou1 e1 lou4	‘office lady’
	LC e1 lou4 si1	‘letter of credit’
	L 座 e1 lou4 zo6	‘Flat L’ or ‘Block L’
M em1	70M cat1 sap6 em1	‘Bus route number 70M which terminates at a subway (MTR) station’
	MTR em1 ti1 aa1 lou4	‘Mass Transit Railway’
	MC em1 si1	‘Master of Ceremonies’
	MP3 em1 pi1 fi1	‘MP3’
	MV em1 wi1	‘music video’
	SMS e1 si4 em1 e1 si4	‘short message service’
	維他命 M waai4 taa1 ming6 em1	‘Vitamin M’ (a humorous way to refer to ‘money’)
N en1 zi1	N 年前 en1 nin4 cin4	‘many many years ago’ (‘n’=an indefinite number)
	NG en1 zi1	‘no good (in movie shooting)’
O ou1	OK ou1 kei1	‘okay’
	OL ou1 e1 lou4	‘office lady’
	O 記 ou1 gei3	‘The Organized Crime and Triad Bureau of the Hong Kong Police Force’
	O 字腳 ou1 zi6 goek3	‘bow-legged’
	開 OT hoi1 ou1 ti1	‘to work overtime’
	XO ik1 si4 ou1	‘extra-old (brandy)’
P pi1	P 場 pi1 coeng4	‘party venue’
	開 P hoi1 pi1	‘to hold a party’
	MP3 em1 pi1 fi1	‘MP3’
	PVC pi1 wi1 si1	‘poly-vinyl chloride’
	RPG aa1 lou4 pi1 zi1	‘role playing games (video games)’
Q kiu1	QQ 哋 kiu1 kiu1 dei2	‘quite cute’
	孖 Q maa1 kiu1	‘twin quinella’
R aa1 lou4	RPG aa1 lou4 pi1 zi1	‘role playing games (video games)’
	3R saam1 aa1 lou4	‘3R (size of photo)’
S e1 si4	SMS e1 si4 em1 e1 si4	‘short message service’



T ti1	T-恤 ti1 seot1	‘T-shirt’
	T-back ti1 bek1	‘T-back’
	T 字位 ti1 zi6 wai2	‘the area on the face including the forehead and the nose’
	TB ti1 bi1	‘tomboy / tuberculosis’
	開 OT hoi1 ou1 ti1	‘to work overtime’
	DDT di1 di1 ti1	‘a poisonous chemical for killing insects’
U ju1	CU si1 ju1	‘abbreviation for Chinese University of Hong Kong’
	BU bi1 ju1	‘abbreviation for Baptist University of Hong Kong’
	U 記 ju1 gei3	‘university (student jargon)’
	UV ju1 wi1	‘ultra-violet’
V wi1	VCD wi1 si1 di1	‘video disc’
	MV em1 wi1	‘music video’
	V-領 wi1 leng5	‘V-neck’
	PVC pi1 wi1 si1	‘poly-vinyl chloride’
	UV ju1 wi1	‘ultra-violet’
	VIP wi1 ai1 pi1	‘very important person’
X ik1 si4	70X cat1 sap6 ik1 si4	‘Bus route number 70X, an express bus’
	XO ik1 si4 ou1	‘extra-old (brandy)’
	X 光 ik1 si4 gwong1	‘X-ray’

Most loanword items cited above are sometimes abbreviations which came originally from English, for example, VCD, VIP, etc; however, some are local creations, such as CU, O 記, P 場, etc. The use of the English letters has become so prevalent that even monolinguals quite readily utter them in their daily speech. We should note here that the incorporation of letters of the English alphabet into Hong Kong Cantonese is not unique to this Chinese speech community; quite similar developments have been occurring in Taiwan (and also China) as indicated by Hansell (1994) in his detailed analysis of the features associated with the use of the alphabet in Taiwan and its adoption and integration into the Chinese writing system there; to reflect these developments he has coined the term “Sino-alphabet”.

#### 4 Conclusion

In this paper we have examined from several different perspectives how English loanwords have been borrowed into Hong Kong Cantonese and have demonstrated how they have become fully integrated into Cantonese grammar. First, we have observed how the written representations with Chinese characters are commonly found in many English loanwords. Second, some morphological and syntactic processes are commonly applied to English loanwords. Third, loanwords can change their semantic properties. Fourth, loanwords are highly productive. And, fifth, individual English letters and sets of letters as abbreviations have been conveniently borrowed into written Cantonese and read with appropriate Cantonese syllables.

All of these above features taken together provide solid evidence that many English loanwords have become thoroughly integrated into the Cantonese lexicon. However, at least two issues concerning the extent of acceptance of these items among Hong Kong

Cantonese speakers remain for further study. Are some speakers aware that these are originally loanwords, and are not native Cantonese words? Another question is: How consistent are the pronunciations and meanings of loanwords across the Hong Kong Cantonese speech community? These questions naturally merit thorough investigation, and we are now considering how best to organize this kind of sociolinguistic study in the future.

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# NONEXHAUSTIVE SYLLABIFICATION IN TEMIAR<sup>1</sup>

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## 0 Abstract

Syllabification is often assumed to be exhaustive. In Temiar, all words surface without consonant clusters. Only CV and CVC syllables are available in these languages. Yet, allomorphy paradigms in Temiar suggest that syllabification has to be nonexhaustive. I argue that a superficial inspection of syllable shapes of a language can provide misleading cues about its syllabic organization. The reanalysis presented in this paper challenges the claims and assumptions presented in previous work on Temiar (for example, Itô, 1986, 1989), and the nuclear moraic theory proposed by Shaw (1994) in which exhaustive syllabification is assumed. I argue that three levels of syllabification may be operative in natural language—syllabification at the morphological, phonological, and phonetic levels. The vowels that have been assumed to be epenthetic in earlier analyses are, arguably, excrescent vowels that are inserted at the phonetic level (Levin, 1987).

## 1 Introduction

Previous analysis of Temiar and closely related languages assume that syllabification in Temiar is exhaustive (e.g. Itô 1986, 1989; Shaw 1994). In Temiar, all words surface without consonant clusters. Only CV and CVC syllables are available in this language. A thorough examination of the morphological facts in Temiar, however, suggests that there is in fact no evidence of phonological epenthesis. I argue that vowels in minor syllables that have been assumed to result from epenthesis are more likely to be excrescent vowels (Levin 1987), which can be considered as a very late phonetic epenthesis process or merely epenthetic transitions (Gafos 1996). In this paper, I claim that syllabification in Temiar is nonexhaustive at the morphological and phonological levels, but exhaustive at the phonetic level. I argue that stray consonants in Temiar play an important role in the morphology of the language. Stray consonants have to be visible, and they show that neither extraprosodicity nor stray erasure is operative in Temiar, contra Itô (1986, 1989). I will also argue against Shaw's analysis of nonnuclear syllables by showing that her analysis cannot account for reduplication in derived words that are longer than two syllables. The reanalysis proposed in this paper shows that a superficial inspection of syllable shapes of a language can provide misleading cues about the syllabic organization of the language, and that nonexhaustive syllabification is more pervasive than is currently assumed. The analysis presented in this paper also corresponds better conceptually to the descriptive

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accounts offered by descriptive linguists on Mon-Khmer languages whose work sometimes explicitly addressed morphological sensitivity to syllabification patterns (e.g. Burenhult, 2005; Kruspe, 2004).

This paper is organised in the following ways. Section 2 discusses the problem presented in Temiar. Section 3 presents a review of Itô's (1986, 1989) analysis of Temiar, and Shaw's proposal of nonnuclear syllables (1992, 1994). Section 4 presents a reanalysis of Temiar using allomorphy facts in Temiar that are sensitive to syllable counts and the presence of unsyllabified consonants. The paper concludes that unsyllabified segments in Temiar are not stray-erased and they cannot be marked invisible by extraprosodicity because these segments must remain visible to trigger the right allomorphy rule.

## 2 Words in Temiar

Temiar is classified as a Central Aslian language, and Kruspe (2004) quotes a 1999 census, which indicates that 15,122 Temiar people live in the Malay Peninsula. Verb roots in Temiar fall into three major classes as shown in (1). Monosyllabic roots consist of words with only one underlying vowel while disyllabic roots contain two underlying vowels (Benjamin 1976:167).  $C_1$ -CVC roots contain only one underlying vowel, but these roots and words derived from them surface with more than one vowel.<sup>2</sup> The quality of the unspecified vowel that surface with  $C_1$ -CVC roots is predictable, as discussed in section 3.1. Words in Temiar can have as many as three consonants prior to the final syllable. Examples of words derived from the root /sɔŋ/ in (2) illustrate this fact.

- |     |               |            |          |                                      |
|-----|---------------|------------|----------|--------------------------------------|
| (1) | Monosyllabic: | CVC        | [kɔ:w]   | 'to call'                            |
|     | $C_1$ -CVC:   | C. CVC     | [səlɔŋ]  | 'to sleep or to marry'               |
|     | Disyllabic:   | CV. CVC    | [halab]  | 'to go downriver'                    |
|     |               | CVC.CVC    | [sindul] | 'to float'                           |
| (2) | sɔŋ           | [səlɔŋ]    |          | 'sleep, base perfective verb'        |
|     | sgɔŋ          | [sɛŋlɔŋ]   |          | 'sleep, base imperfective verb'      |
|     | sɾlɔŋ         | [sɛɾlɔŋ]   |          | 'sleep, causative perfective verb'   |
|     | snɔŋ          | [sɛnɔŋ]    |          | 'sleeping, base verbal noun'         |
|     | sɾŋlɔŋ        | [sɛɾɛŋlɔŋ] |          | 'sleep, causative imperfective verb' |
|     | sɾnɔŋ         | [sɛɾɛnɔŋ]  |          | 'marriage, causative verbal noun'    |
- (Benjamin 2001; Matisoff 2003; Means & Means 1998)

It is important to note at the outset that most Mon-Khmer languages, with the exception of the Katuic branch, are monosyllabic or are at best sesquisyllabic.<sup>3</sup> However, as Diffloth (1976a) notes, Aslian languages which are in a sub-branch of Mon-Khmer languages do have true disyllabic forms containing nonpredictable vowels, including the schwa, in nonfinal syllables. I will argue that participation and nonparticipation of disyllabic forms in

<sup>2</sup> In this paper, I will refer to words with "minor syllables" as  $C_1$ -CVC forms because it is counter-intuitive to refer to them as syllables when my claim is that these segments are in fact not syllabified. The notation  $C_1$  indicates that at least one consonant remains unsyllabified in these forms.

<sup>3</sup> Sesquisyllabic words are words with one and a half syllables. The 'half' syllable is also referred to as a weak or a minor syllable.

morphological processes provide insightful evidence for nonexhaustive syllabification in Aslian languages.

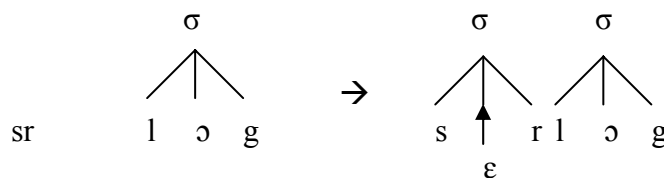
### 3 Previous Analyses

In this section, I will present two previous analyses of Temiar. Both analyses assume that syllabification is exhaustive in Temiar. Itô (1986, 1989) argues for a template-matching approach to syllabification and directional syllabification using surface facts in Temiar. Her account, however, does not consider morphological facts at all; the underlying forms of morphologically related words are assumed to be phonemicised. Her account, therefore, does not address the fact that many words in Temiar are derived. Shaw (1994), on the other hand, addresses the derivation of words in Temiar and other Mon-Khmer languages. Her account also assumes exhaustive syllabification, and she argues for the legitimacy of nonnuclear syllables in the prosodic hierarchy on the basis of her analysis of Temiar and related languages. However, I will show that her analysis fails to account for derived words that are longer than two syllables. A summary of each account is presented next.

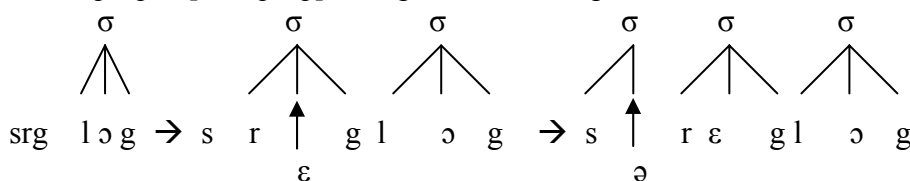
#### 3.1 Itô (1986, 1989): Directional Syllabification And Epenthesis

Benjamin (1976) reports minor syllables in Temiar often surface with either the schwa [ə] or the mid front vowel [ɛ]. He notes that the distribution of these vowels is predictable. When the syllable is open, the vowel is a schwa, and if the syllable is closed, the vowel is the mid front vowel [ɛ] instead.<sup>4</sup> Following this general description of facts, Itô (1986, 1989) argued that syllabification in Temiar is achieved by mapping segments in the underlying representation to the syllable template {CV(C)} from right to left, with onsets obligatory and codas, optional. Following this mapping, different vowels are epenthesised depending on whether the syllable is open or closed, as illustrated below for /srɔŋ/ and /srgɔŋ/.

- (3) /srɔŋ/ [sɛrɔŋ] ‘sleep, causative perfective verb’



- (4) /srgɔŋ/ [səɾɛŋɔŋ] ‘sleep, causative imperfective verb’



Itô's account is successful in describing the surface facts of the language, but her account misses the generalization that most of these words that undergo epenthesis are derived, and that the derivation is sensitive to the syllable count of the root or the stem. In section 4, I show that verbal morphology in Temiar is rather productive (Benjamin 2001:115), and that bisyllabic words also represent part of a complete understanding of the

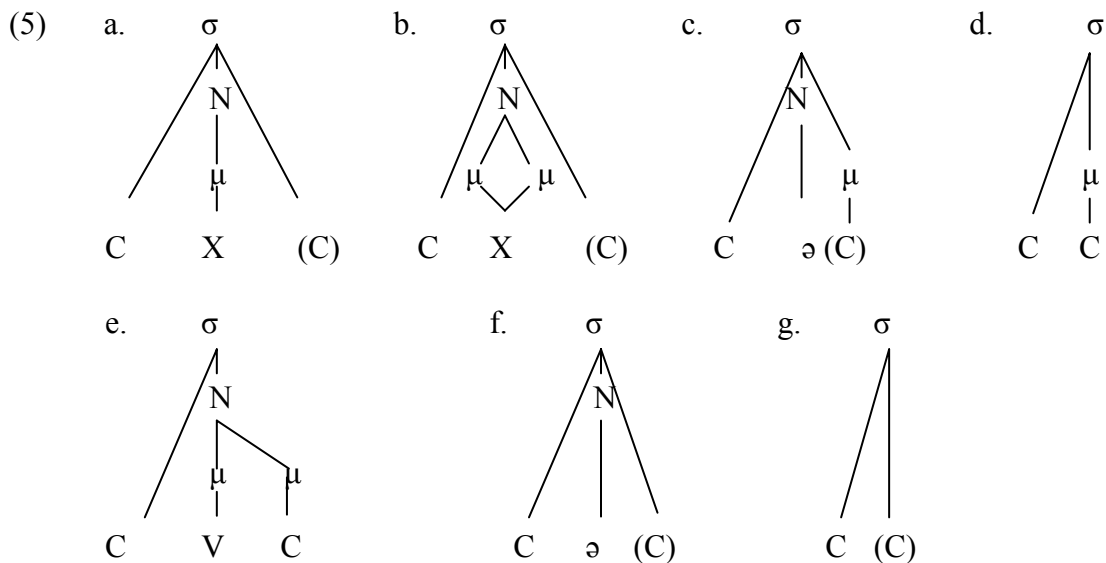
<sup>4</sup> See sections 3.2 and 4.2 for further description and discussion of variability observed with the ‘epenthesised’ schwa.

morphological system in Temiar. I argue that morphological facts on causative and imperfective derivation of Temiar verbs require nonexhaustive syllabification of Temiar roots and stems.

### 3.2 Shaw (1994): Nonnuclear Syllables

The terms major syllables and minor syllables are often used in traditional descriptions of Mon-Khmer languages. Major syllables refer to syllables that surface with full vowels; minor syllables, to unstressed syllables that may or may not surface with any vowel. The vowels in minor syllables can participate in vowel/zero alternations. For example, the schwa is inserted to break up the sl-cluster in /slɔg/ resulting in the surface form [səlɔg] but with /sglɔg/ which surfaces as [sɛglɔg], nothing is inserted to break up the gl-cluster. The quality of the vowels in minor syllables is often reported to be subject to coarticulation variations (e.g., Kruspe 2004; Gafos 1996), and they are often shorter in duration and can sometimes disappear in fast speech (Diffloth 1976b; Benjamin 1976; Svantesson 1983).

Shaw (1994) argues that these minor syllables are legitimate members in the prosodic hierarchy on the basis of facts in Mon-Khmer languages like Semai, Temiar, and Kammu. Her argument relies on two basic assumptions. First, she adopts the idea that reduplication is template-driven, and that these templates are defined in terms of legitimate units of prosody (McCarthy and Prince 1986). Second, she draws upon her nuclear moraic theory (Shaw 1992) in which she claims that in addition to the mora, the nucleus must also be incorporated as a formal constituent of subsyllabic structure. Following Shaw's Nuclear Moraic Theory, seven basic syllable shapes are argued to be attested in North Wakashan languages (Bach et al. 2005:2). These syllable types are listed in (5). What is of interest here is the claim that the syllables schematised in (5d) and (5g) are legitimate syllables.



Shaw (1994) argues that a principled and theoretically coherent analysis of reduplication in the two different paradigms in Semai morphology shown in (6) and (7) is possible if the inventory of well-formed syllables includes those presented in (5d) and (5g). For the paradigm in (6), the reduplicant copies the first and the last segment of the root or stem. The same process applies for the paradigm in (7) for CVC words, but with CCVC words, the final consonant of the root is infixes after the first consonant of the root.

- (6) Continuous/Expressive Reduplication (Diffloth 1976b)
- |    |          |             |           |                              |
|----|----------|-------------|-----------|------------------------------|
| a. | ghup     | gp-ghup     | *gp-hup   | ‘irritation on the skin’     |
| b. | cru:ha:w | cw-cru:ha:w | *cwru:haw | ‘the sound of falling water’ |
- (7) Indeterminate Reduplication (Diffloth 1976a)
- |    |       |          |                       |
|----|-------|----------|-----------------------|
| a. | ci:p  | cp-ci:p  | ‘walk’                |
| b. | kla:d | k-d-la:d | *kd-klad ‘curly hair’ |

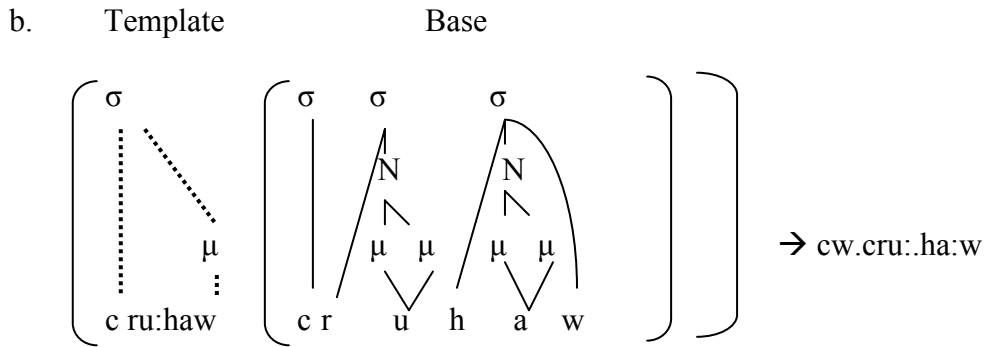
Shaw proposes the analysis summarized in (8) and (9) to unify the reduplication process in these two paradigms by arguing that the process involves the same template, copy, and association processes, and that the only difference in the two paradigms is the difference in the parameter for specification of the base.

- (8) Continuous/Expressive Reduplication
- Template: [nonnuclear] monomoraic syllable  
 Base: morphological stem  
 Copy: (lexically distinctive content of base)  
 Associate: Edge-linking
- (9) Indeterminate Reduplication
- Template: [nonnuclear] monomoraic syllable  
 Base: prosodic circumscription of  $\sigma$  at R edge  
 Copy: (lexically distinctive content of base)  
 Associate: Edge-linking Shaw (1994:121)

The derivations in (10) illustrate how reduplication works according to Shaw. For both paradigms, the template is the nonnuclear monomoraic syllable shown in (5d). The leftmost C is linked as the onset while the rightmost C is linked as the coda of this vowelless syllable.

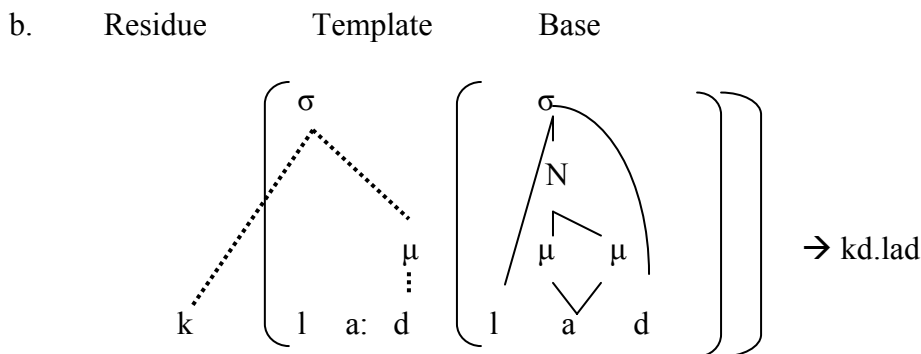
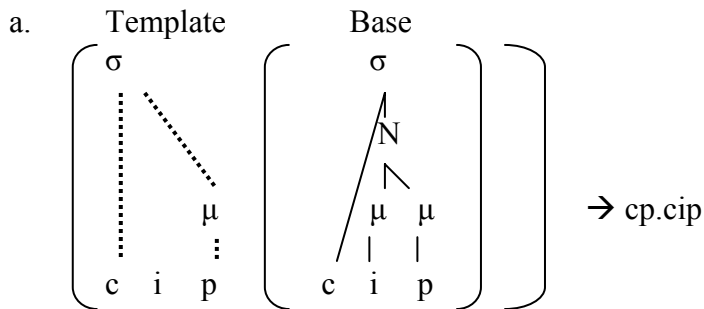
- (10) Imperfective/Expressive Reduplication
- a.
- |   |  |                               |
|---|--|-------------------------------|
| Template  | Base   |                               |
| $\left( \begin{array}{c} \sigma \\ \vdots \\ \mu \\ \vdots \\ \text{g h u p} \end{array} \right)$ | $\left( \begin{array}{cc} \sigma & \sigma \\   & / \\ \text{g} & \text{h} \\ & \backslash \\ & \text{u p} \end{array} \right)$ | $\rightarrow \text{gp.g.hup}$ |





The same processes apply to indeterminate verbs too. The template is also the nonnuclear monomoraic syllable, but for the indeterminate, the base is the “prosodic circumscription of the syllable at the right edge” (Shaw 1994:121). With CVC roots, the first and the last segment of the base is copied, but with CCVC words, since there is a residual consonant, that consonant gets associated as the onset of the reduplicant template as shown below.

(11) Indeterminate Reduplication



Shaw argues that the nonnuclear syllable should be admitted as a legitimate prosodic member since it can account for both reduplication paradigms in Semai. I have argued in Yap (2006) that there is no direct evidence that the segments in these so-called minor syllables are in fact syllabified. Furthermore, there are various alternative accounts for reduplication in Semai (e.g., Raimy 2000; Hendricks 2001) in which no reference is made to any reduplicant or prosodic template. In section 4, I present further evidence to show that Shaw’s account fails in Temiar as it cannot account for reduplication in words that are longer than two syllables.

#### 4 Evidence For Nonexhaustive Syllabification

Two morphological paradigms are presented here as evidence against a simplistic view of syllabification in Temiar. I will argue that syllabification has to be nonexhaustive at the morphological and phonological levels to account for derivation of causative and imperfective verbs in Temiar.

##### 4.1 Causative Allomorphy

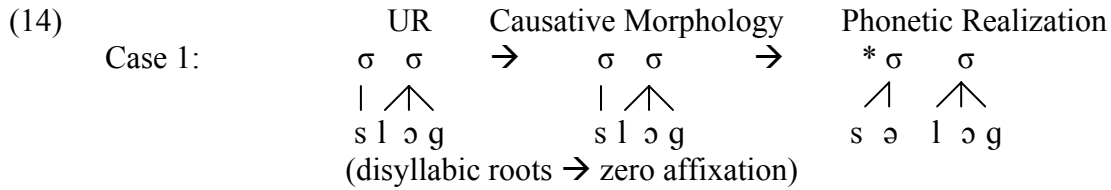
Causative perfective verbs surface with different allomorphs as shown in (12). Monosyllabic roots form the causative by tr-prefixation, while polysyllabic roots do not undergo any affixation. Instead, the causative meaning is derived with the zero morpheme. C<sub>1</sub>-CVC roots, on the other hand undergo r-infixation.

(12)	Perfective (Base form)	Causative Forms	Allomorphs
	kɔ:w	trkɔ:w [tɛrkɔ:w]	prefix tr-
	slɔg	srɔg [sɛrlɔg]	infix -r-
	halab	halab [halab]	zero affixation

This generalization can be stated as an allomorphy rule that is sensitive to the syllable structure of the root or stem, in this case the perfective form of the verb. The allomorphy rule in (13), formulated within the framework of Distributed Morphology (Halle & Marantz 1993), is sensitive to two things in the root, the syllable count and the presence of an extraneous consonant. The allomorphy rule offers some insight to the syllabic organization of C<sub>1</sub>-CVC words. In particular, it is now possible to address the following questions. What is the syllable structure of C<sub>1</sub>-CVC words at the time of affixation? And, are C<sub>1</sub> segments syllabified? Three positions have been offered in the literature. First, Shaw (1994) argues that these consonants project nonnuclear syllables (Shaw 1994). Second, following Itô (1986), one can argue that these consonants are not syllabified, and that they are marked extraprosodic because they occur at word edges. Last but not least, following Vaux (2003), one can assert that these consonants are unsyllabified, but they are associated to higher prosodic structures like the phonological word very late in the grammar. The allomorphy rule provides a way to test the correctness of these hypotheses.

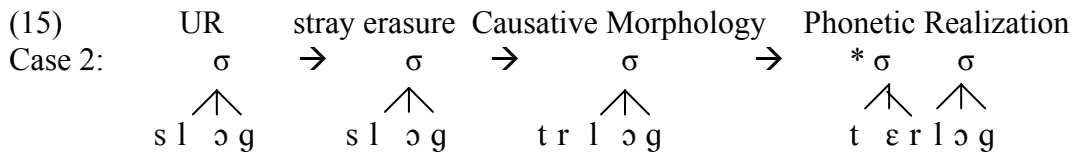
(13)	Vocabulary insertion rules governing causative derivation in Temiar		
	σ	↔	prefix tr-
	C <sub>1</sub> + σ	↔	infix -r-
	Elsewhere	↔	zero morpheme

First, if C<sub>1</sub>-CVC words enter the derivation with extraneous consonants parsed as nonnuclear syllables following Shaw's Nuclear Moraic Theory, the allomorphy rule in (13) predicts that the causative form of C<sub>1</sub>-CVC words should pattern together with disyllabic words. In other words, zero derivation incorrectly derives \*[sɛrlɔg] as shown in (14) as the causative form for the root /slɔg/ instead of the [sɛrlɔg]. This shows that the extraneous consonant, /s/ in /slɔg/, must not be associated to a syllable node at the time of affixation.

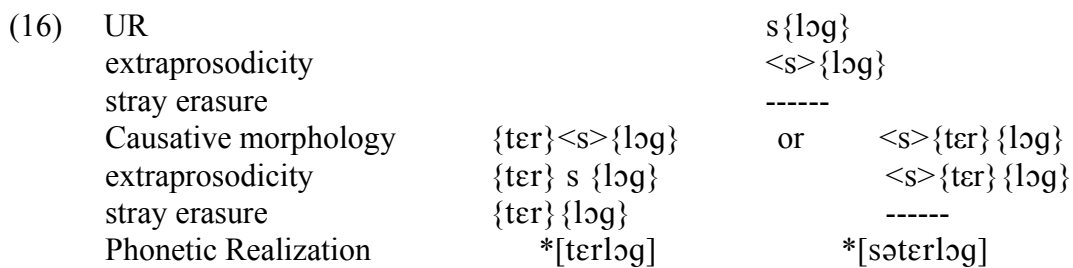


There is, however, one way to salvage Shaw’s proposal. One can claim that the allomorphy rule can be restricted to count only nuclear syllables, and that the existence of nonnuclear syllables triggers infixation. This account will work for the causative facts, but in section 4.2 I will show that this alternative fails to account for reduplication facts in the imperfective paradigm. Shaw’s claim for nonnuclear syllables in Mon-Khmer languages like Temiar will then be rejected.

Next, if the /s/ in /slɔg/ is not syllabified, and extraprosodicity is not invoked, and if unsyllabified consonants are stray erased by the universal stray erasure rule as claimed by Itô (1986), the allomorphy rule predicts the causative form to be \*[tɛrlɔg] as shown in the following derivation.



Alternatively, if the unparsed consonant is saved from stray erasure by being marked extraprosodic, this consonant will not be visible to trigger the correct allomorphy selection. Because only one syllable and nothing else is visible, the allomorphy rule selects the tr-prefix. At the moment, it is unclear whether the prefix is the full syllable [tɛr] or a sequence of two unsyllabified consonants, /t/ and /r/.<sup>5</sup> I will show here that in both cases, the predicted output forms are incorrect. First, if the prefix is a full syllable, the causative form for /slɔg/ is predicted as either \*[sətɛrlɔg] or \*[tɛrlɔg] depending on whether prefixation occurs to the left of the visible syllable or to the left of the word as shown in (16).



In both cases, the predicted forms are incorrect. We can conclude here that segments that are not syllabified in Temiar cannot be saved from stray erasure by invoking

<sup>5</sup> Evidence in the imperfective paradigm that will be presented in section 4.2 suggests that the prefix should in fact be a sequence of two unsyllabified consonants.

extraprosodicity because the wrong allomorph is predicted for the causative of C-CVC roots if that were the case.<sup>6</sup>

Next, I will show that even if the prefix is a sequence of two unsyllabified consonants, the wrong output forms are predicted. Assuming that phonetic epenthesis occurs later in the derivation, two forms are predicted depending on the site of affixation. As shown in (17), if affixation occurs at word-initial position, the predicted form is \*[təlɔŋ]. However, if affixation occurs to the immediate left of the visible syllable, the predicted form is \*[səlɔŋ]. Following Itô, extraprosodicity protects only the leftmost segment from stray erasure; every other segment that is unsyllabified gets stray-erased. Here too, incorrect forms are derived.

(17)	UR		s{ləŋ}
	extraprosodicity		<s>{ləŋ}
	stray erasure		-----
	Causative morphology	tr<s>{ləŋ}    or    <s>tr.{ləŋ}	
		(only one syllable is visible → tr- prefix )	
	extraprosodicity	<t>rs {ləŋ}	<s>tr{ləŋ}
	stray erasure	<t>{ləŋ }	<s>{ləŋ}
	Phonetic Realization	*[təlɔŋ]	*[səlɔŋ]

Only by assuming that these extraneous consonants of the root are unsyllabified, and by further assuming that neither stray erasure nor extraprosodicity is operative, can infixation be correctly selected to form the causative for /slɔŋ/. In this case, the perfective root consists of only one syllable with at least one unparsed consonant to the left of the final syllable. The allomorphy rule correctly selects r-infixation shown in (18).

(18)	UR	s{ləŋ}
	extraprosodicity	OFF
	stray erasure	OFF
	Causative morphology	s-r-{ləŋ} (C <sub>1</sub> + one syllable → -r- infix )
	extraprosodicity	OFF
	stray erasure	OFF
	Phonetic Realization	[sɛrlɔŋ]

In sum, to account for causative allomorphy in Temiar, syllabification must be nonexhaustive, and unsyllabified segments must remain visible to trigger the correct allomorphy rule. Extraprosodicity and stray erasure must not be operative, contra Itô (1986).

<sup>6</sup> Another position to consider is that [s] is saved from Stray Erasure by Extraprosodicity, but it is visible to trigger allomorph selection. I have not discussed this possibility here because it seems stipulative. There is no good explanation for selective visibility of segments under different processes.

#### 4.2 Imperfective Allomorphy<sup>7</sup>

Additional evidence for nonexhaustive syllabification is found in the formation of the imperfective paradigm in Temiar. Like the derivation of causative verbs, there is also a three-way allomorphy for the formation of the imperfective aspect in Temiar, as illustrated in (19). The imperfective of a monosyllabic root is formed by evoking an onset copy and a coda copy. When the imperfective is derived from a root that consists of one syllable and at least one extraneous consonant, the imperfective form surfaces with only a coda copy of the major syllable. Polysyllabic verbs do not undergo reduplication. The above generalization can be summarised in the allomorphy rule in (20).

(19)	Root	Imperfective forms	Allomorphs
	CVC	kɔ:w	kwkɔ:w onset copy and coda copy
	C <sub>1</sub> -CVC	slɔg	sglɔg coda copy
	elsewhere	halab	halab zero allomorph
(20)	Vocabulary insertion rules governing imperfective derivation in Temiar <sup>8</sup>		
	σ	↔	onset and coda copy
	C <sub>1</sub> + σ	↔	coda copy
	Elsewhere	↔	zero allomorphy

Previous analyses of Temiar have concentrated on reduplication found in the imperfective paradigm with CVC and C-CVC roots and have ignored disyllabic roots (e.g., Shaw 1994, Gafos 1998, Raimy 2000). These accounts sought to explain only the reduplication process observed with these roots and have missed the generalization on allomorphy patterns in this paradigm. I will argue that bisyllabic words are not exceptions to but an essential part of the verbal paradigm in Temiar. An understanding of how the morphology treats bisyllabic words provides the missing piece to the puzzle of syllabic organization in Temiar. I will demonstrate that syllabification in Temiar has to be nonexhaustive, and extraprosodicity and stray erasure must not be operative to account for allomorphy facts in this language. For the sake of simplicity in exposition, I will proceed with a simple descriptive account of reduplication. Please see Yap (2006) for a detailed account for reduplication and affixation in Temiar adapted from Raimy (2000). The imperfective paradigm holds another key to three important questions on syllabification in Temiar. Is stray erasure a universal principle, and is extraprosodicity the mechanism that saves all cases of unsyllabified consonants that somehow escape stray erasure, as argued in Itô (1986)? Are the surface vowels in C<sub>1</sub>-CVC words epenthetic vowels and if so, when do they get inserted? If not, what are they?

Consider the examples in (21), where imperfective allomorphy also applies to derived stems. The forms in (21) indicate that causative verbs have to be derived before

<sup>7</sup> As pointed out by both reviewers, Benjamin has revised and expanded his analysis of the morphological paradigm of Temiar verbs; a morphological distinction is available between imperfective and progressive forms of the verb (Benjamin 2001:114; Matisoff 2003:35). The periphrastic *ba*-clitic is used to form the progressive and not the imperfective as presented in earlier versions of this work in Yap (2006).

<sup>8</sup> This rule can be argued to be stipulative. See Yap (2006) for an account of interaction between morphology and phonology instantiated with readjustment rules following Raimy (2000) that relates syllable-counting allomorphy, affixation and reduplication.

imperfective forms are derived. If the order of derivation is reversed, the predicted surface output is \*[krwkɔ:w] instead of [trwkɔ:w], as shown in the derivation below.

(21)	Causative Stem	Imperfective	Allomorph
	C <sub>1</sub> +σ trkɔ:w	trwkɔ:w [təɾɛwkɔ:w]	coda copy only
	srɔg	srgɔg [səɾɛgɔg]	coda copy only
(22)	a. imperfective derivation	kɔ:w →	kwkɔ:w
	causative derivation	→	*krwkɔ:w
	b. causative derivation	kɔ:w →	trkɔ:w
	imperfective derivation	→	trwkɔ:w

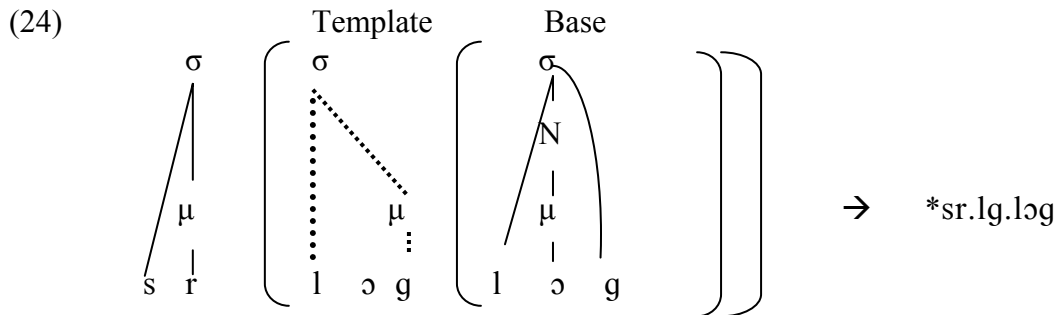
It has been generally accepted that unsyllabified segments are restricted to only one segment at the edge of a well-defined domain. All other unparsed segments are subject to stray erasure. The imperfective aspect in Temiar provides evidence that challenges this position. I will argue that the examples in (22) show that affixes attached at an earlier cycle have to remain unsyllabified because they select the same allomorph as their nonderived C-CVC roots. I have shown that the initial consonant in C-CVC roots has to be unsyllabified for derivation of causative forms in the previous section. I will show that the same is true with the imperfective aspect. To illustrate the above point, consider the imperfective derivation of the stem /trkɔ:w/. As shown in the derivation in (23), if the stem is disyllabic, the allomorphy rule incorrectly selects zero allomorphy as the causative imperfective form for this verb. The causative tr-prefix in /trkɔ:w/ must therefore, not be associated to a syllable node at the time of imperfective affix selection.

(23)	Causative Stem	Imperfective Morphology
Case 1:	σ    σ    →	* σ    σ
	└┘    └┘	└┘    └┘
	t r    kɔ:w	t r    kɔ:w
	(disyllabic roots → zero allomorphy)	

Imperfective derivation from causative stems also provides additional evidence to reject the claim for nonnuclear syllables in Temiar and possibly other Mon-Khmer languages as argued in Shaw (1994). As mentioned in section 4.1, it is possible to claim that the allomorphy rule counts only nuclear syllables, and that it is the existence of nonnuclear syllables instead of unsyllabified consonants that triggers infixation. But I have not adopted this approach because it is unclear whether the existence of nonnuclear syllables can be maintained. I will now show that this approach fails to account for reduplication with causative stems to derive imperfective verbs in Temiar.

First, I will review how Shaw's account works with the simple cases. For example, with causative roots like /kɔ:w/ and /sɔg/, reduplication patterns obtained in the imperfective form can be expressed as an attempt to fill a two-syllable template. However, it is unclear how Shaw would derive the imperfective form derived from the causative stem /trkɔ:w/. If the morphological template is a two-syllable template, no reduplication is predicted because there are no more empty slots left in the two-syllable template. If the morphological template is interpreted as just an additional nonnuclear syllable, reduplication with causative stems is expected to pattern with monosyllabic roots as shown

in the derivation in (24). But the predicted output form is \*[sr.lg.lɔg], which is also incorrect. Hence, I conclude that Shaw’s nonnuclear account cannot be the correct account for allomorphy facts in Temiar.



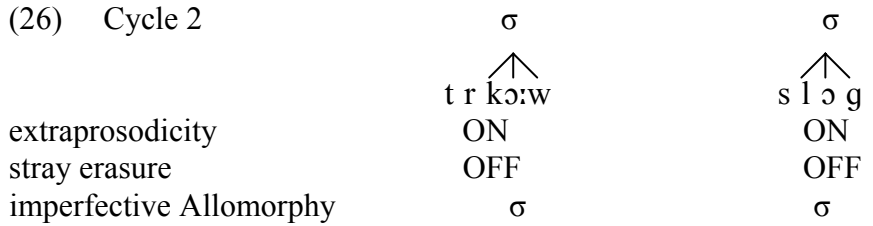
Next, to show the interaction of extraprosodicity and stray erasure for imperfective forms with derived stems, I begin with the formation of the causative for /trkɔ:w/ and /sr.lɔg/, as shown in (25). Causative derivation of C-CVC roots suggests that extraprosodicity is not operative in this cycle to save these unsyllabified segments from being stray-erased. These segments have to remain unsyllabified and visible to trigger the right allomorphy rule.

(25)

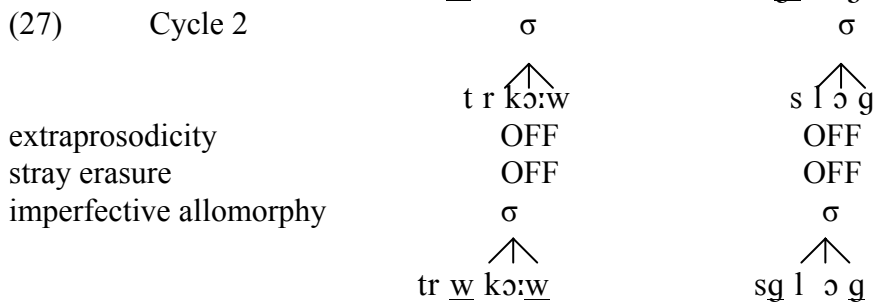
	(a)	(b)
	σ	σ
	↑	↑
	k ɔ: w	s l ɔ g
extraprosodicity	OFF	OFF
stray erasure	OFF	OFF
causative allomorphy	σ	σ
	↑	↑
	tr k ɔ: w	sr l ɔ g
epenthesis	OFF	OFF
stray erasure	OFF	OFF
late epenthesis	[tɛrkɔ:w]	[sɛrlɔg]

Next, the derivation in (26) compares the derivation of the imperfective aspect from a derived C<sub>1</sub>-CVC stem and a C-CVC root. In the second cycle, it is possible to invoke extraprosodicity and epenthesis to get the correct allomorph selection for /trkɔ:w/ → /trwkɔ:w/. This move, however, predicts a different derivation path for C-CVC roots. It would be desirable to preserve the same parameter settings for both C<sub>1</sub>-CVC stems and C-CVC roots, and if so, extraprosodicity must also not be operative in this cycle, as shown in (27) where the correct forms are derived. Derivation of the imperfective aspect from derived stems illustrates the fact that stray erasure cannot be maintained as a universal principle. The above cases also provide additional evidence that extraprosodicity is not the operative mechanism that ensures survival of a sequence of unsyllabified consonants in the surface output.

(26) Cycle 2



(27) Cycle 2



Next, imperfective derivation from derived stems also shows that surface vowels in C<sub>1</sub>-CVC words are not epenthetic vowels that are inserted to break consonant clusters and to ensure exhaustive syllabification of the word. To illustrate this, consider the imperfective derivation from causative stems, as illustrated in (28).

(28) Cycle 1: causative derivation

Root:	kɔ:w
Allomorphy selection	trkɔ:w
Epenthesis	[tɛrkɔ:w]
Cycle 2: imperfective derivation	
Stem:	tɛrkɔ:w
Allomorphy selection	*[tɛrkɔ:w]

If epenthesis were claimed to occur at the end of each cycle of derivation, the surface form of the causative verb would feed imperfective derivation. However, because bisyllabic verbs trigger zero allomorphy, the wrong allomorph is predicted for the imperfective of these stems. Therefore, either the vowels that surface with unsyllabified consonants in Temiar are not epenthetic vowels or epenthesis in Temiar must be a very late process in the grammar.

I will argue that these vowels are not epenthetic vowels but are excrescent vowels following Levin (1987). Levin argues that excrescent vowels have different characteristics compared to epenthetic vowels. For example, epenthetic vowels often interact with other phonological processes. They are usually triggered by stray consonants, and the feature quality of epenthetic vowels is often supplied by default. Phonological processes, on the other hand, do not target excrescent vowels and these vowels are more variable. Surrounding consonants often influence the feature of excrescent vowels. Excrescent vowels are viewed as mediating adjacent articulations that require some degree of constriction in the oral tract.



Benjamin (1976:138) notes that “between /s/ and /l/ or /r/ in prefinal syllables, ... [the schwa] is very short, sometimes disappearing altogether”. Benjamin (in press), further notes that the pronunciation of the epenthetic ‘minor’ vowel in open syllables is indeed more variable between [ə], [i] and zero, depending on the following consonant and the vowel in the word-final major syllable. Similar variability is also reported in related languages. For example, Burenhult (2005) notes that in Jahai, the coda copy in reduplicated forms conditions the nucleus of the penultimate syllable. The vowel is realised as [i] if the coda copy is a palatal (e.g. /c/, /s/, /ɲ/ or /j/). If the coda copy is a glottal (e.g. /ʔ/, /h/), the preceding vowel is realised as [a], and elsewhere it is realised as [ə]. The relevant examples from Jahai are shown below. Similar realization rules are also reported in Semelai (Kruspe 2004) and in Semai (Diffloth 1976a).

- |      |    |         |               |                          |          |                         |
|------|----|---------|---------------|--------------------------|----------|-------------------------|
| (29) | a. | /kwēs/  | ‘to sweep’    | /ks.kwēs/                | [kiswēs] | ‘to be sweeping’        |
|      | b. | /hjej/  | ‘to yawn’     | /hj.hej/                 | [hijhej] | ‘to be yawning’         |
| (30) | a. | /bʔbɔʔ  | [baʔbɔʔ]      | ‘to carry on one’s back’ |          |                         |
|      | b. | /thteh/ | [tahteh]      | ‘oriental pipe hornbill’ |          |                         |
| (31) | a. | /duk/   | ‘pound’       | /dkduk/                  | [dəkduk] | ‘chest’                 |
|      | b. | /səm/   | ‘bird’s nest’ | /smsəm/                  | [səmsəm] | ‘to buzz around a nest’ |

## 5 Conclusion

In sum, allomorphy facts in Temiar suggest the following. First, at the morphological level, syllabification in Temiar must be nonexhaustive, and unsyllabified segments are not limited to one segment at the word edge. Unsyllabified segments in Temiar are not stray-erased and they cannot be saved from stray erasure by invoking extraprosodicity because these segments must remain visible to trigger the right allomorphy rule. Finally, vowels that are inserted in surface forms of C<sub>1</sub>-CVC words are most likely excremental vowels because they must be inserted very late.

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# PRELIMINARY NOTES ON THE PHONOLOGY, ORTHOGRAPHY AND VOCABULARY OF SEMNAM (AUSTROASIATIC, MALAY PENINSULA)

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### Abstract

This paper reports tentatively some features of Semnam, a Central Aslian language spoken by some 250 people in the Perak valley, Peninsular Malaysia. It outlines the unusually rich phonemic system of this hitherto undescribed language (e.g. a vowel system comprising 36 distinctive nuclei), and proposes a practical orthography for it. It also includes the c. 1,250-item wordlist on which the analysis is based, collected intermittently in the field 2006-2008.<sup>1</sup>

### 1. Introduction

Semnam belongs to a cluster of Central Aslian (Aslian, Austroasiatic) varieties sometimes referred to generically as Lanoh, spoken exclusively in the middle and upper portions of the Perak valley, in the state of Perak, Peninsular Malaysia. The Semnam speakers were mobile foragers until the mid-1900s, their territory covering the western side of the Perak valley from just above Kuala Kangsar in the south to the Grik basin in the north. Today virtually all Semnam speakers, who number approximately 250, are settled in the village of Air Bah, located on a ridge between the streams Sungai Bah (*Baal*) and Sungai Kelian (*Klieen*) in the bottom end of the valley of the Kenering (*Knyæk*), a western tributary of the Perak (*Beluum*).

Air Bah is predominantly inhabited by Semnam speakers, and Semnam is its primary language of daily communication. However, its inhabitants are in frequent contact

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<sup>1</sup> This report is based on fieldwork carried out by Burenhult in the resettlement village of Air Bah, Hulu Perak, Peninsular Malaysia. We are grateful to Semnam consultants Alias Semedang, Kassim Ahmad and Shaari Paling for their eager help, and to the Economic Planning Unit (Putrajaya) and the Jabatan Hal Ehwal Orang Asli (Kuala Lumpur) for granting permission to conduct fieldwork. Special thanks to our colleagues Nicole Kruspe and Sylvia Tufvesson for commenting on earlier versions, to Gérard Diffloth for his insightful reflections on several aspects of the analysis, and to Chang Yu Shyun for providing materials for species identification. The research is carried out within the project 'Tongues of the Semang', funded by the Volkswagen Foundation's DoBeS program and hosted by the Language and Cognition group at the Max Planck Institute for Psycholinguistics, Nijmegen.

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with, and intermarry with, speakers of other Aslian languages in the area, notably Temiar, a Central Aslian language ranging along the eastern side of the Perak valley. Most Semnam speakers are therefore fluent in Temiar, and speak it on a daily basis. The Semnam are also in contact with remaining pockets of other Lanoh varieties, spoken in two mixed Temiar-Lanoh settlements on Perak's eastern bank. They were also traditionally in close contact with speakers of Kensiw and Kintaq, two Northern Aslian varieties spoken northwest of the Semnam territory. There is also considerable interaction with speakers of Malay, the Austronesian majority language of Malaysia.

Judging from estimations by early observers (see e.g. Schebesta 1927:93), the number of speakers of Semnam and its close relatives has remained relatively constant over the last century. Also, the co-existence of Semnam society with other ethnic groups such as the Temiar and the Malay most likely has deep historical roots. However, the recent resettlement and change in lifestyle, along with rapid development and modernisation of the Perak valley, poses new challenges to the language. In particular, permanent settlement has led to increased intermarriage with speakers of Temiar, a language with a history of assimilating Lanoh varieties. Semnam must therefore be considered a highly endangered language. Most Semnam speakers have received basic schooling and are literate in Malay. However, Semnam is not a written language.

Previous linguistic work on Semnam and other Lanoh varieties is restricted to occasional and limited wordlists. Early examples include Evans 1915. More recently, Diffloth (1975, 1976a, 1979) and Benjamin (1976a) have used Semnam lexical data in their comparative works on the Aslian subgroup of Austroasiatic. So far no further descriptive work has been carried out. For a detailed and recent anthropological account of the inhabitants of Air Bah, see Dallos (2003). Published accounts of Semnam's Aslian relatives include Benjamin 1976b (Temiar), Diffloth 1976b (Jah Hut), Diffloth 1977 (Semai), Kruspe 2004 (Semelai), and Burenhult 2005 (Jahai).

The present work represents a recently initiated research program aimed at describing and documenting Lanoh varieties. Research is ongoing, and the analysis presented here is preliminary and incomplete. The following sections provide an introduction to the phonemic inventory of Semnam (§2) and propose a practical orthography for the language (§3). Finally, a 1,246-item wordlist documents the Semnam vocabulary collected to date (§4 and Appendix).

## **2. Phonemic inventory**

Semnam has a rich phonemic inventory comprising 20 consonants (§2.1) and possibly as many as 36 or more contrasting vowel nuclei (§2.2). The consonant system represents a rather typical Aslian pattern, while the numerous vowel distinctions form the richest and most saturated vowel system so far attested in the Aslian sub-branch of Austroasiatic. As in other Aslian languages, the full range of phonemes is only to be found in the last, stressed syllable of words.

### ***2.1. Consonant phonemes and their realisation***

The Semnam consonant system consists of 20 phonemes, including nine stops, four nasals, three fricatives, two approximants, and two liquids. The six places of articulation employed include bilabial, alveolar, palatal, velar, uvular, and glottal. Table 1 summarises the system.

**Table 1:** *Semnam consonant phonemes.*

	Bilabial	Alveolar	Palatal	Velar	Uvular	Glottal
Stop	p b	t d	c ɟ	k g		ʔ
Nasal	m	n	ɲ	ŋ		
Fricative			s		ɣ	h
Liquid		r l				
Approximant	w		j			

Eighteen of the consonants occur commonly, while two, the voiced uvular fricative /ɣ/ and the alveolar trilled liquid /r/, are marginal and mostly associated with vocabulary borrowed from Malay and Temiar.

### 2.1.1. Stops

Voiceless stops have five places of articulation: bilabial, alveolar, palatal, velar and glottal. A set of voiced stops contrasts with the voiceless stops in four of the places: bilabial, alveolar, palatal and velar. While voiceless stops can occur in any consonant slot, voiced ones only occur in syllable-initial position. In syllable-initial position, both voiceless and voiced stops are realised as unaspirated plosives, the palatals /c, ɟ/ with a subtle affricate release and the glottal /ʔ/ with an inaudible glottal release identifiable as an abrupt vowel onset: [p, b, t, d, c, ɟ, k, g, ʔ]. In syllable-final position, the voiceless stops /p, t, c, k/ display some variation in realisation. Typically, they are realised as unreleased or ‘checked’ stops (‘occlusives’): [p̚, t̚, c̚, k̚]. Following an open central or back short oral vowel, the velar /k/ is realised as a post-velar or uvular stop [q̚]. However, final stops are also sometimes released, especially if words are uttered in isolation. The nature of this release varies between individuals. In one consultant, final stops often display a voiced release followed by a short neutral vowel, in turn followed by a subtle glottal stop, e.g. [ˈmãd<sup>əʔ</sup>] /mat/ ‘eye’. In other consultants, they sometimes have a voiceless aspirated release, e.g. [ˈmãt<sup>h</sup>] /mat/ ‘eye’. One consultant frequently produces a voiced nasal release, e.g. [ˈmãt<sup>n</sup>] /mat/ ‘eye’. These different realisations are considered here to simply be varying ways of resuming exhalation following closure, and they cannot be assigned any contrastive function at this point.

### 2.1.2. Nasals

Nasals have four places of articulation, corresponding to those of voiced stops: bilabial, alveolar, palatal and velar. In initial position they are realised as simple nasals [m, n, ɲ, ŋ]. The same realisation occurs in final position of pre-final syllables. In final position of word-final syllables they are realised as simple nasals only if preceded by a nasal vowel (either phonemically nasal or phonetically nasalised). Otherwise in this position, they are realised as prestopped nasals [ᵇm, ᵈn, ʲɲ, ᵑŋ] following a long oral vowel, and as unreleased stops [p̚, t̚, c̚, k̚] if preceded by a short oral vowel. Following an open central or back short oral vowel, however, the velar /ŋ/ is realised as a post-velar or uvular stop [q̚] (cf. §2.1.1). Occasionally these stops are released according to the same pattern as that of the final stops described in §2.1.1. The prestopped nasals are nasals whose release involve a short stop-like portion caused by a delayed and abrupt lowering of the velum

simultaneously with, or following, the oral closure. It is sometimes very subtle and barely audible. The prestopping marks the boundary between the oral vowel and the following nasal consonant, and seals off the vowel from anticipatory nasalisation.

The word-final realisations of nasals as stops following short oral vowels present challenges to the analyst, because they are not auditorily distinguishable from true stops in this position. Two types of evidence have been used to determine which of the underlying forms is applicable in such ambiguous cases. First, reduplication of the final consonant frequently reveals which form is the underlying one, since the copy (which is typically prefixed or infixes before the final syllable) of the phonemic nasals is always realised phonetically as a homorganic nasal. For example, the reduplicative imperfective form of the verb [hǔp̚] /hum/ ‘to want’ is [həm'hǔp̚] /hm-hum/ ‘to be wanting’. This test disambiguates quite a number of verbs and nouns from which derived forms can be elicited, e.g. imperfectives, nominalizations, and unitizations. Second, numerous loanwords from Malay which have a final nasal in the source language are pronounced in Semnam with a homorganic stop, e.g. [jʔa'jǔp̚] ‘needle’, from Malay *jarum*, [pə'sət̚] ‘to send order’, from Malay *pesan*, and [pə'gāk̚] ‘to hold’, from Malay *pegang*. In all such cases the nasal is considered to be the underlying form, i.e. phonemically /ɟajum/, /psan/, and /pgaŋ/. Nevertheless, a considerable number of Semnam forms with a short oral vowel and phonetic final stop cannot be disambiguated on these grounds and remain ambiguous. In phonemic transcription, these ambiguous finals are represented by capital stops /P, T, C, K/. See §3.2 for a description of how these finals are treated in practical orthography.

### 2.1.3. *Fricatives*

Fricatives have three places of articulation: palatal, uvular and glottal. The palatal /s/ is a voiceless post-alveolar or pre-palatal fricative [s ~ ɕ] in all positions. The uvular /ɣ/, only found in initial position of a handful of Malay loanwords, is realised as a voiced uvular fricative [ʁ]. The glottal /h/ is a voiceless [h] in initial position and in final position if preceded by a short vowel. Finally, if preceded by a long vowel, it is realised as a subtle aspiration [h̥].

### 2.1.4. *Liquids*

There are two alveolar liquids. The rhotic /r/, found in a few words (all of which are likely to be of Malay or sometimes Temiar origin), is a voiced alveolar trill [r], both in initial and final position. The lateral /l/ is a voiced alveolar lateral [l] in all positions.

### 2.1.5. *Approximants*

Approximants have two places of articulation: bilabial and palatal. The bilabial /w/ is a voiced labio-velar approximant [w] in all positions. The palatal /j/ is a voiced dorsal approximant [j] in all positions.

## 2.2. *Vowel phonemes and their realisation*

### 2.2.1. *Outline of the vowel system*

Phonemically, vowels distinguish three degrees of height for the front, central and back positions, creating a rather typical Aslian three-by-three system of nine basic qualities (cf.

Benjamin 1976b:131 for Temiar, Diffloth 1976b:103 for Jah Hut, Bauer 1991 for Trang Kensiw, and Burenhult 2005:19-22 for Jahai). Front and central vowels are unrounded; back ones are rounded. For each quality there is a distinction between long and short, producing a system of 18 oral monophthongs. In addition, phonemically nasal counterparts exist for seven of the basic qualities of both long and short vowels (the front and back mid-qualities have no such nasal counterparts). This creates a total system of 32 distinctive monophthongs.<sup>2</sup>

Furthermore, there are oral diphthongs involving closed-to-mid articulation for the front and back positions, probably with a long-short distinction for both. The latter cannot yet be fully confirmed: the data contain only one contrasting example each of the short back and short front diphthongs (see examples below). The evidence for nasal diphthongs is so far minimal and unconvincing.<sup>3</sup> Given the regularity elsewhere in the vowel system, however, the existence of such distinctions should not be ruled out. Thus, at this point, the total number of distinctive vowel nuclei is 36, although evidence for some of them is still limited. The full system is given in Table 2.

**Table 2:** *Proposed system of distinctive vowel nuclei in Semnam.*

		LONG			SHORT		
		Front	Central	Back	Front	Central	Back
ORAL	Closed	i:	ɨ:	u:	i	ɨ	u
	Mid	e:	ə:	o:	e	ə	o
	Open	ɛ:	a:	ɔ:	ɛ	a	ɔ
NASAL	Closed	ĩ:	ɨ̃:	ũ:	ĩ	ɨ̃	ũ
	Mid		ẽ:			ẽ	
	Open	ẽ:	ã:	õ:	ẽ	ã	õ
DIPHTHONGS	Closed			uo:			uo
	Mid	ie:		(ũõ:)	ie		
	Open						

Long vowels are more common than short ones, and oral vowels much more common than nasal ones. Consequently, short nasal vowels are especially rare. In particular, the closed short nasal vowels /ĩ, ɨ̃, ũ/ occur only occasionally in the data, and it is difficult to study the contrastive characteristics of them. The system outlined here may therefore be subject to future amendments as data collection continues.

Table 3 describes the phonetic characteristics of each of the nine vowel qualities of the system.

<sup>2</sup> In the phonetic transcription employed here, short vowels are transcribed with a breve diacritic, e.g. [ä], and long vowels with a triangular colon, e.g. [a:]. Phonemic transcription is the same for long vowels, e.g. /a:/, but does not include the breve diacritic for short ones, e.g. /a/. Nasal vowels are indicated by a tilde, e.g. [ã]. In phonetic rendering of short nasal vowels, the breve diacritic is superjacent to the tilde indicating nasal, e.g. [ã̃].

<sup>3</sup> The data contain one example of a long nasal closed-to-mid back diphthong, [bəl̃hũõ:t] ‘to be tasteless’, but it appears to occur in free variation with a monophthong counterpart [bəl̃hũ:t].



**Table 3:** *Phonetic description of vowel qualities in Semnam.*

i	This closed front unrounded quality is realised as such in all of its four phonemic manifestations, [i:, ɨ, ī:, ī̃,]. There is little conditioned variation.
e	This mid front unrounded quality is realised as such in both its long and short versions, [e:, ɛ], with little conditioned variation. It has no phonemically nasal manifestations.
ɛ	This open front unrounded quality is realised as such in all of its four phonemic manifestations, [ɛ:, ɛ̃, ɛ̄:, ɛ̄̃,], with little conditioned variation.
ɨ	This closed central unrounded quality is realised as extra-closed unrounded central vowels in all its four phonemic manifestations, [ɨ:, ɨ̃, ɨ̄:, ɨ̄̃,]. It displays conditioned rounding following the bilabial approximant /w/.
ə	This mid central unrounded quality is realised as closed mid central unrounded vowels in all of its four phonemic manifestations, [ə:, ə̃, ə̄:, ə̄̃,], with little conditioned variation. It is not a truly neutral central [ə].
a	This open central unrounded quality is realised as such in all of its four phonemic manifestations, [a:, ă, â:, ẵ,], with little conditioned variation.
u	This closed back rounded quality is realised as such in all of its four phonemic manifestations, [u:, ʊ, ū:, ū̃,], with little conditioned variation.
o	This mid back rounded quality is realised as such in both its long and short versions, [o:, ɔ], with little conditioned variation. It has no phonemically nasal manifestations.
ɔ	This open-mid back rounded quality is realised as such in its short oral as well as long and short nasal manifestations, [ɔ̃, ɔ̄:, ɔ̄̃,]. The long oral vowel is realised as a more open [ɔ:], or in some speakers as a fully open back rounded [ɒ:].

Contrastive vowel length, nasality and diphthongization only apply to the nucleus of the last syllable of words. The vowels of pre-final syllables are drawn from a restricted set of phonemes.

### 2.2.2. Contrastive length

Phonetically, long vowels can be characterised as unmarked with respect to length. Their realisation is not markedly long, and they display significant free variation as to actual length. Also, consultants accept short realisation of these vowels as a correct pronunciation. Phonemically short vowels, on the other hand, are obligatorily extra-short and thus marked with respect to length. Consultants consistently reject long realisation. This makes it reasonably easy to determine auditorily whether a vowel is phonemically long or short, although it usually requires the consultant's judgement of alternative pronunciations. The contrastive function of the long-short distinction is limited, with only a few minimal pairs in evidence. The following contrastive pairs illustrate the distinction:

SHORT		LONG	
lwej	‘bee’	lwe:j	‘to be dizzy’
kəl	‘to fall’	kə:l	‘CLF: humans’
tūc	‘[a type of fruit]’	tūūt	‘to blow’
koʔ	‘to vomit’	laŋko:ʔ	‘menstruation’
ktōk	‘[name of a river]’	ktō:k	‘rufous-bellied malkoha’
kpieh	‘headgear’	smpie:ʔ	‘to be inedible’
laŋkuoc	‘[a type of owl]’	kuo:c	‘to grasp’

### 2.2.3. Oral/nasal contrast

Phonemically nasal vowels differ from the oral ones in that realisation involves a lowered velum, with the airstream passing predominantly through the nose rather than the mouth. However, conditioned nasalisation of phonemically oral vowels (e.g. adjacent to a nasal consonant) often obscure the phonemic oral-nasal contrast. Like the long-short distinction, the contrastive function of the oral-nasal distinction is marginal. The following contrastive pairs illustrate the distinction:

ORAL		NASAL	
pɛ:t	‘jungle knife’	cpɛ̃:t	‘to squeeze’
kəp	‘to plant’	kə̃p	‘to eat fruit’
tawaj	‘[name of a river]’	wā̃:j	‘loin-cloth’
kapaʔ	‘axe’	pā̃ʔ	‘to have body contact’
wɔ:k	‘to wake up’	wō̃:c	‘caudal vertebra’

### 2.2.4. Diphthongs

Contrastive diphthongization is very apparent and fairly common. As noted, all attested diphthongs involve vowel articulation from closed to mid for both the front and back positions: [i̯e] and [u̯o]. Unusually, probably both long and short distinctions exist (see the contrastive pairs given in §2.2.2). In short diphthongs (to the extent that they can be analysed) the two qualities making up each diphthong are equally short: [i̯ě] and [u̯ō]. In long diphthongs the end quality has longer articulation: [i̯e:] and [u̯o:]. The following pairs contrast the long diphthong /ie:/ with the long monophthongs /i:/ and /e:/, and the long diphthong /uo:/ with the long monophthongs /u:/ and /o:/:

MONOPHTHONG		DIPHTHONG	
pe:t	‘to fasten’	pie:t	‘tick’
te:ʔ	‘husband’	piʔtie:ʔ	‘to offer food’
kiwe:n̩	‘(a type of tree)’	wie:n̩	‘to extinguish fire’
we:l	‘again’	kawie:l	‘(a type of palm)’
paŋi:l	‘to call’	laŋie:n̩	‘(a type of tree)’
bali:n̩	‘to be high’	kli:e:n̩	‘(name of a river)’
ko:m	‘frog’	kuo:m	‘to hug’
glapo:h	‘(a type of tree)’	klapuo:h	‘shoulder’
co:ʔ	‘same’	cuo:ʔ	‘dog’
to:j	‘uncle’	mantuo:j	‘pangolin’
du:s	‘to bump into’	duo:s	‘to move along crest’
hu:h	‘to yell’	huo:ʔ	‘to love’

On the basis of auditory impression alone, diphthongs are not straightforwardly distinguishable from sequences of approximant + mid-quality vowel ([je] and [wo]). Thus, the phonemic and phonotactic differences between diphthongs and such sequences are obscure in pairs like /pjeç/ ‘wing’ ~ /kpieh/ ‘headgear’, and /sje:t/ ‘to be dry’ ~ /sie:p/ ‘to be ready’. One might therefore argue against diphthongs as a category and instead propose a purely monophthongal analysis involving existing phonemes. Consistently, however, morphological evidence speaks in favor of a diphthongal analysis: the auditorily obscure distinctions can be disambiguated by various affixal operations, so that diphthongs can be shown to be nuclei of syllables. For example, sequences of approximant + vowel can be broken up by infixes, whereas diphthongs cannot. Also, monosyllabic forms with diphthongs display a reduplicative pattern identical to those with monophthongs, with copied consonants (onset and coda) prefixed to the root, as in the following examples (unattested roots are marked with an asterisk \*):

ROOT		DERIVED FORM	
kuo:m	‘to hug’	km-kuo:m	‘to be hugging’
*huo:c	‘(to whistle)’	hchuo:c	‘to whistle’
*huo:j	‘(to yawn)’	hjhuo:j	‘to yawn’
tie:l	‘to plait’	tl-tie:l	‘to be plaiting’
cie:k	‘to tear’	ck-cie:k	‘to be tearing’

Also, an analysis of diphthongs as approximant/vowel sequences results in word structures which are not found elsewhere, especially structures involving an open medial syllable preceded and followed by closed syllables. For example, a monophthongal analysis of the form [mantuo:j] ‘pangolin’ will produce the otherwise poorly attested syllabic structure \*/CVC.Cv.CVC/ (\*/man.t.wo:j/). A diphthongal analysis, however, will produce the well-attested syllabic structure /CVC.CVC/ (/man.tuo:j/).

Comparative data also provide evidence in favor of diphthongs. The Semnam diphthongs frequently correspond to monophthongs in other Aslian languages, and not to approximant/vowel sequences, as illustrated by the following comparison with likely cognate forms in the Northern Aslian language Jahai:

SEMNAM	JAHAI	
cie:k	cek	‘to tear’
kawie:l	kawel	‘(a type of palm)’
mantuo:j	mantəj	‘pangolin’
klapuo:h	klapəh	‘shoulder’
kluo:ŋ	kleŋ	‘inside’
suo:k	sək	‘umbilical cord’
hchuo:c	hchəc	‘to whistle’

### 3. Notation and orthography

The phonetic and phonemic notation employed so far in this paper adheres to the International Phonetic Alphabet. However, the project has also developed a practical orthography representing a third level of representation. This is essentially phonemically-based, but with some adaptation to phonetics and to previous orthographical conventions in Aslian and Mon-Khmer linguistics. The following sections describe how this orthography departs from the phonetic and phonemic ones.

#### 3.1. Palatal consonants

In accordance with most practical orthographies of Mon-Khmer languages, the voiced palatal stop /ʃ/ and the palatal approximant /j/ are represented by *j* and *y*, respectively: e.g. *jilaaʔ* [ʃʔiˈlaːʔ] /jilaːʔ/ ‘thorn’, *jayup* [jʔaˈjʊp] /jajum/ ‘needle’, and *ylaay* [jəˈlaːj] /jlaːj/ ‘[name of a river]’.

#### 3.2. Word-final nasals

As noted in §2.1.2, word-final nasals are realised as unreleased stops [p̚, t̚, c̚, k̚/q̚] if preceded by a short oral vowel. The practical orthography here departs from the phonemic one in that it represents these sounds as stops and not nasals, e.g. *pləp* [pəˈlɔ̚p̚] /pləm/ ‘land leech’, *kɔc* [kɔ̚c̚] /kɔ̚p̚/ ‘to sit’, and *dak* [dɔ̚k̚] /daj/ ‘to see’. This is in order to adapt orthography to the actual pronunciation. Thus, the ambiguous finals described in §2.1.2 present no problem in the practical orthography, since they are all represented as stops.

#### 3.3. Long vs. short vowels

The practical orthography represents short vowels with single vowel characters without the breve diacritic (*i*, *e*, *ɛ*, *ɨ*, *ə*, *a*, *u*, *o*, *ɔ*) and long vowels with double vowel characters (*ii*, *ee*, *ɛɛ*, *ɨɨ*, *əə*, etc.), e.g. *kəl* [kəl] /kəl/ ‘to fall’ vs. *kəəl* [kəːl] /kəːl/ ‘[CLF: humans]’. Short diphthongs are represented by a combination of two single mid and central vowel characters (*ie* and *uo* respectively) and long diphthongs with a doubled vowel character for the end quality of the diphthong (*iee* and *uoo*, respectively), e.g. *lan̄kuoc* [lan̄kʷɔ̚c̚] /lan̄kuoc/ ‘[a type of owl]’ vs. *kuooc* [kʷɔ̚c̚] /kuoːc/ ‘to grasp’.

### 3.4. Mid-central vowel

The phonetic and phonemic representation of the mid-central vowel quality is [ə] ~ /ə/, signifying that its realization is more closed than the excrescent and truly neutral mid-central schwas [ə] of pre-final syllables (see §2.2.1). In the practical orthography, however, this phoneme is represented by the more commonly used schwa symbol ə, e.g. *pəʔ* [pəʔ] /pəʔ/ ‘younger sibling’, *bijəən* [biˈjəːn] /bijə:n/ ‘rice (husked)’, *təʔ* [təʔ] /təʔ/ ‘to collide’, and *hʔəʔh* [həʔh] /hʔə:h/ ‘[affirmative particle]’. This is in accordance with previous Aslian orthographic conventions (see e.g. Benjamin 1976b).

### 3.5. Excrescent vowels<sup>4</sup>

The practical orthography adheres to the phonemic one in that it does not include the predictable, excrescent vowels common to pre-final syllables (usually [ə]), e.g. *pkpaak* [pəkˈpa:k] /pkpa:k/ ‘to clap’, *kbεεc* [kəˈbɛːc] /kbɛ:c/ ‘to spit’, *knmɔh* [kənˈmɔːh] /knmɔ:h/ ‘name’.

This convention frequently results in complex consonant clusters and may sometimes impede readability. However, it is preferred because morphological processes apply to underlying forms and not surface forms, and a representation which excludes excrescent vowels thus facilitates the description and portrayal of such processes. Furthermore, reading is made easier by understanding the uncomplicated process of syllabification and vowel epenthesis. Syllabification proceeds from right to left according to a general principle of maximality: in strings of unsyllabified consonants, the syllabification process strives to create maximal [CVC]<sub>σ</sub> syllables, which have precedence over minimal [CV]<sub>σ</sub> syllables. Two adjacent unsyllabified consonants will therefore be syllabified as onset and coda of a maximal syllable, and a single unsyllabified consonant will be syllabified as onset of a minimal syllable. Excrescent vowels can then be inserted as nuclei. For example, the form *klɥkεεŋ* ‘bushy crested hornbill’ is syllabified in the following way: /CCCCVC/ > /C.CC.CVC/ > [CV.CVC.CVC], with a final surface output [kələŋˈkɛːŋ].<sup>5</sup>

## 4. Lexicon

The appendicized glossary contains the 1,246 Semnam lexical items collected to date. Items represent lexeme forms of words, many of which are roots or may at least be regarded as synchronically monomorphemic. Lexeme forms are usually the same as the preferred citation form. Several forms are compounds. Citation forms of names for various biological classes generally include the generic name for the class in question, e.g. *bəəy* ‘vegetable’, *tiis* ‘mushroom’, *tajuuʔ* ‘snake’. Bound morphemes, including affixes and proclitics, are also listed.

Entries are represented in the practical orthography (see §3) and followed by a phonemic representation (in solidi //) and in most cases also a phonetic representation (in square brackets []).<sup>6</sup> Each entry contains information as to form class, and an approximate

<sup>4</sup> The term ‘excrescent vowel’ is introduced in the Aslian context by Yap, this volume, and adopted here to refer to phonetically predictable vowels.

<sup>5</sup> A detailed analysis of phonotactic patterns and syllabification in Semnam is currently being carried out.

<sup>6</sup> Phonetic forms are included where there is a recording available of the item uttered in isolation.

English translation is given. Many of the species identifications given are still preliminary. Definite or likely loans from Malay are indicated as such.

Items are listed initially, i.e. words are arranged according to their initial letter. Letters, in turn, are ordered according to the manner of articulation of the phoneme: vowels, stops, fricatives, nasals, liquids, and approximants. For each manner of articulation, phonemes are ordered according to place of articulation, with 'front' phonemes first and 'back' phonemes last. Vowels are further ordered from high to low. Voiceless consonants precede voiced ones, short vowels precede long ones, and oral vowels precede nasal ones.

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## APPENDIX: Semnam-English glossary

### a

- a-** /a/ *aff\_v.* (**-a-**) middle voice affix.  
 — *pref\_dem.* affix deriving an adverbial demonstrative from a nominal demonstrative.

### p

- p-** /p/ (**piC-**) *pref\_v.* causative prefix.
- pitnuut** [pit<sup>h</sup>ˈnūːt<sup>h</sup>] /pitnuːt/ *v.* to hurt someone.
- piduu?** [pi<sup>h</sup>ˈduːʔ] /piduːʔ/ *n.* base of a plant.
- piʔtiee?** [pi<sup>h</sup>ˈtʰeːʔ] /piʔtieːʔ/ *v.* to offer food.
- piʔŋa?** [pi<sup>h</sup>ˈŋǎʔ] /piʔŋaʔ/ *v.* to turn something around.
- pihbəəh** [pih<sup>h</sup>ˈbəːh<sup>h</sup>] /pihbəːh/ *v.* to say.
- pinaaj** [pi<sup>h</sup>ˈnāːŋ] /pinaːŋ/ *n.* areca palm (*Areca catechu*). From Malay *pinang*.
- pintas** [pin<sup>h</sup>ˈtās] /pintas/ *v.* to cross.
- pinap** [pi<sup>h</sup>ˈnǎp<sup>h</sup>] /pinap/ *v.* to borrow. From Malay *pinjam*.
- pinlōŋ** [pin<sup>h</sup>ˈlōːŋ<sup>h</sup>] /pinlōːŋ/ *v.* to sing.
- pinat** /pinan/ *n.* plate. From Malay *pinggan*.
- pilōk** [pi<sup>h</sup>ˈlōːk<sup>h</sup>] /pilōːk/ *n.* mud hole.
- peha?** /pehaʔ/ *n.* tribe.
- peet** /peːt/ *v.* to fasten.
- peej** [peː<sup>h</sup>ʔ] /peːj/ *v.* to rise (of the sun).
- peet** [peː<sup>h</sup>] /peːt/ *n.* jungle knife.
- peen** /peːn/ *n.* pen, pencil. From Malay *pen(a)*.
- pēēc** [pēː<sup>h</sup>ˈc<sup>h</sup>] /pēːc/ *v.* to crush.
- pə?** [pəʔ] /pəʔ/ *n.* younger sibling.
- pə? mō?** [pəʔ<sup>h</sup> ˈmōːʔ] /pəʔ mōːʔ/ *n.* aunt, younger sister of parent.
- papaa?** [pa<sup>h</sup>ˈpaːʔ] /papaːʔ/ *v.* to be bad.
- padə?** /padəʔ/ *prep.* by, at, near. From Malay *pada*.
- pajēēt** [pa<sup>h</sup>ˈjēːt<sup>h</sup>] /pajēːt/ *n.* a type of tuber.
- pasiij** [pa<sup>h</sup>ˈsiːj] /pasiːj/ *n.* sand. From Malay *pasir*.
- pasa?** /pasaʔ/ *conj.* because. From Malay?
- paʔiih** [pa<sup>h</sup>ˈtʰiːh<sup>h</sup>] /paʔiːh/ *pn.* name of a river (Ayer Jada).
- pamaa?** [pa<sup>h</sup>ˈmāːʔ] /pamaːʔ/ *n.* 1) a type of giant flying squirrel (*Petaurista* sp.) 2) colugo (flying lemur) (*Cynocephalus variegatus*).
- panik** [pa<sup>h</sup>ˈniːk<sup>h</sup>] /paniːk/ *n.* belly button.
- pani?** [pa<sup>h</sup>ˈniːʔ] /paniːʔ/ *n.* baby.
- panaan** [pa<sup>h</sup>ˈnaːn<sup>h</sup>] /panaːn/ *pn.* name of a river.
- panōk** [pa<sup>h</sup>ˈnōːk<sup>h</sup>] /panōːk/ *n.* fan for the fire.
- pancooy** [pan<sup>h</sup>ˈc<sup>o</sup>ːj] /pancoːj/ *n.* waterfall. From Malay *pancur*.
- panjiil** /panjiːl/ *v.* to call, to name, to summon.
- From Malay *panggil*.
- pankal** /pankal/ *n.* beginning. From Malay *pangkal*.
- paliin** /paliːŋ/ *v.* 1) to look aside. 2) to change direction, to switch. From Malay *paling*.
- payi?** [pa<sup>h</sup>ˈjiʔ] /pajiʔ/ *n.* clouded monitor (*Varanus bengalensis*).
- payee?** [pa<sup>h</sup>ˈjeːʔ] /pajeːʔ/ *pn.* name of a river.
- payah** [pa<sup>h</sup>ˈjäh] /pajah/ *v.* to be difficult. From Malay *payah*.
- paak** [ˈpaːk<sup>h</sup>] /paːk/ *v.* to split.
- pā?** [ˈpǎʔ] /pǎʔ/ *v.* to have body contact.
- pusik** /pusiːŋ/ *v.* to turn. From Malay *pusing*.
- pusat** /pusat/ *n.* center. From Malay *pusat*.
- puneey** [pu<sup>h</sup>ˈnēːj] /puneːj/ *n.* a type of pigeon. From Malay *punai*.
- pupaa?** [pu<sup>h</sup>ˈpāːʔ] /pupaːʔ/ *v.* to have. From Malay *punya*.
- puleey** [pu<sup>h</sup>ˈleːj] /puleːj/ *n.* a type of tree.
- pulaaw** [pu<sup>h</sup>ˈlaːw] /pulaːw/ *pn.* name of a river.
- pulōw** [pu<sup>h</sup>ˈlōːw] /pulōːw/ *n.* island. From Malay *pulau*.
- puu?** [ˈpuːʔ] /puːʔ/ *adv.* yesterday.
- poke?** /pokeʔ/ *n.* pocket. From English *pocket*, via Malay.
- pook** /pōːk/ *v.* to open.
- pooh** [ˈpōːh<sup>h</sup>] /pōːh/ *pn.* name of a river.
- pōk** [ˈpōk<sup>h</sup>] /pōŋ/ *v.* to tap poison.
- pōk** [ˈpōːk<sup>h</sup>] /pōːk/ *v.* to forage by fanning smoke into an animal's burrow.
- pō?** [ˈpōːʔ] /pōːʔ/ *n.* mountain.
- pōs** [ˈpōːs] /pōːs/ *v.* to sweep.
- pōn** /pōːn/ (**pn =**) *prep* like. From Malay *pun*.
- pieet** [ˈpiːt<sup>h</sup>] /piːt/ *n.* tick.
- ptii?** [pə<sup>h</sup>ˈtʰiːʔ] /ptiːʔ/ *n.* forehead.
- ptaməh** /ptaməh/ *v.* to be first. From Malay *pertama*.
- pdō?** [pə<sup>h</sup>ˈdōːʔ] /pdōːʔ/ *v.* to hunt.
- pcəy** /pcəːj/ *v.* to insert.
- pka?** [pə<sup>h</sup>ˈkǎʔ] /pkaʔ/ *v.* to throw.
- pkpaak** [pək<sup>h</sup>ˈpaːk<sup>h</sup>] /pkpaːk/ *v.* to clap.
- pgak** [pə<sup>h</sup>ˈgǎq<sup>h</sup>] /pgaŋ/ *v.* to hold. From Malay



*pegang.*  
**pʔpəəʔ** [pʔpə:ʔ] /v. to put one's hand on something.  
**psat** /psan/ v. to send order. From Malay *pesan*.  
**phēēŋ** [pə'hē:ŋ] /phē:ŋ/ v. to be narrow.  
**pmulaʔaan** /pmulaʔa:n/ n. beginning. From Malay *permulaan*.  
**pnaal** [pə'nā:l] /pna:l/ n. temple.  
**pnpət** [pən'pət] /pnpən/ v. to be short.  
**pndapataan** /pndapata:n/ n. profit, income. From Malay *pendapatan*.  
**pŋseet** [pən'se:t] /pŋse:t/ *pn*. Ethnonym: Pemsed.  
**pŋyik** [pən'jɪk] /pŋjɪk/ n. durian (*Durio zibethinus*).  
**pŋpāŋ** [pən'pāŋ] /pŋpāŋ/ n. broadbill, black and red (*Cymbirhynchus macrorhynchus*).  
**pŋyoŋ** [pən'jo:ŋ] /pŋjo:ŋ/ v. to play an instrument.  
**plēeh** [pə'le:h] /plē:h/ *pn*. Ethnonym: Temiar.  
**pləəs** [pə'lə:s] /plə:s/ v. to drop, to let fall.

**planoʔ** [pəla'nōʔ] /planoʔ/ n. greater mouse deer (*Tragulus napu*). From Malay *pelanduk*.  
**planjiʔ** [pəla'ŋi:ʔ] /planji:ʔ/ n. rainbow. From Malay *pelangi*.  
**pluuj** [pə'lu:ʔ] /plu:j/ v. to be straight.  
**pləp** [pə'ləp] /pləm/ n. land leech.  
**pləŋ** [pə'lə:ŋ] /plə:ŋ/ n. thatch.  
**pləc** [pə'ləc] /pləc/ *conj.* after.  
**pltaaw** [pəl'ta:w] /plta:w/ v. to be white.  
— *pn*. name of a river.  
**printaah** /printa:h/ (**pyintaah**) v. to order. From Malay *perintah*.  
**prnceh** /prnceh/ n. feeling, sensation.  
**pwpaaw** [pu'pā:w] /pwpa:w/ n. a type of bird.  
**pyiŋdak** /pyiŋdaŋ/ v. to show.  
**pyec** [pə'jɛc] /pjec/ n. wing.  
**pyək** /pjək/ v. to immerse.  
**pyaləŋ** /pyalə:ŋ/ n. singers, singing ones.

## b

**b-** /b/ *aff.* v. progressive/imperfective prefix.  
**b-** /b/ *aff.* n. property-signaling prefix.  
**bitāy** [bi'tā:j] /bitā:j/ *pn*. name of a river.  
**bitcoot** [bit'cʰo:t] /bitco:t/ *pn*. name of a river.  
**bidiiŋ** [bi'di:ŋ] /bidii:ŋ/ v. to lie.  
**bidook** [bi'dok] /bido:k/ v. to be old.  
**bikool** [bi'ko:l] /biko:l/ n. kidney.  
**bigiiʔ** /bigi:ʔ/ v. to exchange.  
**bihəy** [bi'həj] /bihəj/ n. bush.  
**bintak** [bin'taq] /bintaŋ/ n. star. From Malay *bintang*.  
**bilak** [bi'lak] /bilan/ v. to count. From Malay *bilang*.  
**bilah** /bilah/ *interrogative*. when. From Malay *bila*.  
— *conj.* when. From Malay *bila*.  
**biyən** [bi'jə:n] /bijə:n/ n. rice (husked).  
**biyək** [bi'jək] /bijək/ *pn*. name of a river (Ayer Betong).  
**biic** ['bi:c] /bi:c/ v. to run over (of fluid in container).  
**biim** /bi:m/ v. to wash (dishes).  
**beeʔ** /be:ʔ/ n. suitcase. From Malay *beg*.  
**bees** ['be:s] /be:s/ v. to search.  
**beel** ['be:l] /be:l/ *interrogative*. when.  
**besəh** /besə:h/ n. difference. From Malay *beza*.  
**beŋ** ['be:ŋ] /be:ŋ/ *rn*. outside.  
**beŋ ʔōŋ** ['be:ŋ ʔōŋ] /be:ŋ ʔōŋ/ n. riverbank.  
**bit** [bɪt] /bit/ v. to be hot.  
**bək** ['bək] /bək/ v. to tie.  
**bəʔ** ['bəʔ] /bəʔ/ v. to carry something on one's

back.

**bəy** ['bə:j] /bə:j/ n. generic term for vegetable, greens.  
**bəy pakuʔ** /bə:j pakuʔ/ n. a type of edible fern (*Filex* sp.). From Malay *paku*.  
**bəy bec** /bə:j beC/ n. a type of edible plant.  
**bəy badaak** /bə:j bada:k/ n. a type of edible plant.  
**bəy bageh** /bə:j bageh/ n. a type of edible plant.  
**bəy bayaam** /bə:j baja:m/ n. spinach. From Malay *bayam*.  
**bəy tiis** /bə:j ti:s/ n. edible mushrooms.  
**bəy taduk** /bə:j taduK/ n. a type of edible plant.  
**bəy taʔəʔ** /bə:j taʔəʔ/ n. a type of edible plant.  
**bəy cahcuh** /bə:j cahcu:h/ n. a type of edible plant.  
**bəy cameey** /bə:j came:j/ n. a type of edible plant.  
**bəy cŋkyəŋ** /bə:j cŋkjo:ŋ/ n. a type of edible plant.  
**bəy kaŋkoŋ** /bə:j kaŋko:ŋ/ n. a type of edible plant.  
**bəy kawoon** /bə:j kawo:n/ n. a type of edible plant.  
**bəy klah** /bə:j klah/ n. a type of edible plant.  
**bəy klaap** /bə:j kla:p/ n. a type of edible plant.  
**bəy ʔasiim** /bə:j ʔasi:m/ n. a type of edible plant.  
**bəy səh** /bə:j səh/ n. a type of edible plant.  
**bəy hayaaʔ** /bə:j haya:ʔ/ n. a type of edible plant.  
**bəy hubiiʔ** /bə:j hubi:ʔ/ n. a type of edible plant.

- From Malay *ubi*.
- bəy maman** /bəj maman/ *n.* a type of edible plant.
- bəy ɲkəəʔ** /bəj ɲkəəʔ/ *n.* a type of edible plant.
- bəy labuuʔ** /bəj labuʔ/ *n.* gourd. From Malay *labu*.
- bəy laʔ leŋ** /bəj laʔ leŋ/ *n.* a type of edible plant.
- bəy lhaaw** /bəj lha:w/ *n.* a type of edible plant.
- bəy lweh** /bəj lweh/ *n.* a type of edible plant.
- bapaaʔ** [ba'pa:ʔ] /bapa:ʔ/ *v.* to be big. From Malay *bapak*.
- babooʔ** [ba'bo:ʔ] /babo:ʔ/ *n.* woman.
- bateek** /bate:k/ *pn.* Ethnonym: Batek.
- bataaŋ ɲhūʔ** [ba'ta:ŋ ɲhūʔ] /bata:ŋ ɲhūʔ/ *n.* tree trunk.
- batuuʔ** [ba'tu:ʔ] /batu:ʔ/ *n.* rock, stone. From Malay *batu*.
- batuuʔ ʔisēt** [ba'tu:ʔ ʔisēt] /batu:ʔ ʔisēt/ *n.* pebble.
- bajuuʔ** /baʃu:ʔ/ *n.* coat, shirt. From Malay *baju*.
- bagəh** [ba'gəh] /bagəh/ *pn.* name of a river.
- basəh** [ba'səh] /basəh/ *n.* dusky langur (*Trachypithecus obscurus*).
- bahasəh** /bahasəh/ *n.* language. From Malay *bahasa*.
- baŋəw** [ba'ŋəw] /baŋəw/ *n.* heron. From Malay *bangau*.
- baŋsəəʔ** /baŋsəəʔ/ *n.* race, nationality. From Malay *bangsa*.
- kbaŋsəəʔ** *n.* nationality.
- baliŋ** [ba'li:ŋ] /baliŋ/ *v.* to be high.
- barəŋ** [ba'rə:ŋ] /barəŋ/ *n.* tapir (*Tapirus indicus*).
- bawah** /bawah/ *rn.* below, underneath, downstream. From Malay *bawah*.
- bayaŋ** /baja:ŋ/ *n.* thing, commodity. From Malay *barang*.
- bayuuʔ** [ba'ju:ʔ] /baju:ʔ/ *v.* to be new. From Malay *baru*.
- *adv.* until. From Malay *baru*.
- baaʔ** [ba:ʔ] /ba:ʔ/ *n.* rice (growing).
- baas** /ba:s/ *n.* bus. From English *bus*, via Malay *bas*.
- baah** [ba:h] /ba:h/ *n.* uncle, younger brother of parent.
- baal** [ba:l] /ba:l/ *pn.* name of a river (Bah).
- baay** [ba:j] /ba:j/ *v.* to dig.
- bubuuʔ** [bu'bu:ʔ] /bubu:ʔ/ *n.* fishtrap. From Malay *bubu*.
- budayəəh** /budajə:h/ *n.* culture. From Malay *budaya*.
- bukaan** /bukaan/ *pa.* negation particle. From Malay *bukan*.
- bukuuʔ** /buku:ʔ/ *n.* book. From Malay *buku*.
- buktiih** /bukti:h/ *n.* proof. From Malay *bukti*.
- buh** [büh] /buh/ *v.* to put.
- buŋaaʔ** [bu'ŋā:ʔ] /buŋa:ʔ/ *n.* flower. From Malay *bunga*.
- buŋaaʔ keʔ maah** /buŋa:ʔ keʔ ma:h/ *n.* Rafflesia (*Rafflesia* spp.). From Malay *bunga pakma*.
- buŋkus** /buŋkus/ *n.* packet. From Malay *bungkus*.
- bulaan** [bu'la:ʔn] /bula:n/ *n.* moon, month. From Malay *bulan*.
- buluus** [bu'lu:s] /bulu:s/ *n.* spear.
- buyaaʔ** [bu'ja:ʔ] /buja:ʔ/ *n.* crocodile. From Malay *buaya*.
- buut** [bu:t] /bu:t/ *v.* to eat vegetables.
- buuc** [bu:c] /bu:c/ *n.* diarrhoea.
- boleeh** [bo'le:h] /bole:h/ *v.* to be able to do something.
- *pa.* possibility particle.
- boot** [bo:t] /bo:t/ *v.* to feel lazy.
- bəʔ** /bəʔ/ *conj?* if.
- bəʔ** /bəʔ/ *persp.* he, she, it, third person singular personal pronoun.
- bəc** [bə:c] /bə:c/ *v.* to lie (to tell untruths).
- bəŋ** [bə:ŋ] /bə:ŋ/ *pn.* Ethnonym: Bong.
- buooy** [bʰo:j] /buo:j/ *n.* silvered langur (*Trachypithecus cristatus*).
- bbilaŋ** /bbila:ŋ/ *quan.* numerous. From Malay *berbilang*.
- bteʔ** [bətəʔ] /bteʔ/ *n.* papaya (*Carica papaya*). From Malay *betik*.
- btəəh** /btə:h/ *n.* bottle.
- btaniŋ** [bətə'n<sup>di</sup>:ŋ] /btani:ŋ/ *pn.* name of a river (Bebalik).
- btaay** [bətə:j] /bta:j/ *n.* petai (*Parkia biglandulosa*).
- btool** [bətə:l] /bto:l/ *v.* to be right. From Malay *betul*.
- btləot** [bət<sup>l</sup>lə:t] /btləot/ *v.* to think.
- bdideəh** /bdide:h/ (**dideəh**) ? where.
- bdeel** [bədə:l] /bde:l/ *v.* to shoot. From Malay *bedal*.
- bdaal** [bədə:l] /bda:l/ *v.* to throw. From Malay *bedal*.
- bcuuŋ** [bə'c<sup>u</sup>:ŋ] /bcu:ŋ/ *v.* to be sour.
- bkah** [bəkäh] /bkah/ *v.* to break.
- bgituh** /bgituh/ *adv.* in that way, so, just like that, without effort. From Malay *begitu*.
- bʔet** [bə'ʔēt] /bʔet/ *v.* to be good.
- bʔaak** [bə'ʔa:k] /bʔa:k/ *v.* to overflow (of a river).
- bsikasikap** /bsikasikap/ *v.* to have attitudes. From Malay *sikap*.
- bhiiʔ** [bə'hi:ʔ] /bhi:ʔ/ *v.* to be full (from eating).
- bhet** [bə'hēt] /bhet/ *v.* to be sweet.
- bnaah** /bna:h/ *v.* to be accurate. From Malay *benar*.

**ḅḅbaaḅ jaka?** [bəŋ'ba:ḅḅ ʃ'za'kä?] /bḅba:ḅ jaka?/ *n.* beard.  
**blii?** [bə'li:ʔ] /bli:ʔ/ *v.* to buy. From Malay *beli*.  
**bliiḅ** [bə'li:ḅḅ] /bli:ḅḅ/ *n.* upper arm.  
**ble?** [bə'lɛʔ] /bleʔ/ *n.* upper leg.  
**bleynaana** /blejna:n/ *v.* to be different from, to be apart from. From Malay *berlainan*.  
**bleeḅ** [bə'lɛ:ḅḅ] /ble:ḅḅ/ *n.* blue-crowned hanging parrot (*Loriculus galgulus*).  
**bləeḅ** [bə'lə:ḅḅ] /blə:ḅḅ/ *v.* to remember, to recall.  
**blato?** [bəla'toʔ] /blatoʔ/ *n.* crimson-winged woodpecker (*Picus puniceus*). From Malay *belatuk*.  
**blas** /blas/ *num.* -teen, used for numbers between eleven and nineteen. From Malay *belas*.  
**blanteey** [bəlan'te:j] /blante:j/ *n.* a type of tree.  
**blalec** [bəla'lɛ'c] /blalec/ *v.* to fight.  
**blaaw** [bə'la:w] /bla:w/ *n.* blowpipe.  
 — *pn.* name of a place (Sumpitan).  
**bluum** [bə'lu:ḅḅm] /blu:m/ *pn.* name of a river (Perak).  
**bləʔ baboo?** [bə'ləʔ ba'bo:ʔ] /bləʔ babo:ʔ/ *n.* mother-in-law.  
**bləʔ ḅḅkooḅ** [bə'ləʔ ʔəḅ'ko:ḅḅḅ] /bləʔ ʔḅko:ḅḅ/ *n.* father-in-law.

**blhəeḅ** [bəl'hə:ʔ] /blhə:ʔ/ *v.* to be green.  
**blhak** [bəl'häq] /blhaK/ *v.* to be salty.  
**blhūööt ~ blhūüt** /blhūö:t ~ blhū:t/ *v.* to be tasteless  
**britis** /britis/ *pn.* Ethnonym: British. From English *British*.  
**brubah** /brubah/ *v.* to be altered. From Malay *berubah*.  
**brwas** /brwas/ *v.* to be segmented. From Malay *beruas*.  
**bweey** [bu'wɛ:j] /bwɛ:j/ *n.* thunder spirit.  
**bwah** /bwah/ *pa.* object classifier, meaning fruit, used for e.g. houses. From Malay *buah*.  
**bwaah** [b'wa:h] /bwa:h/ *v.* to talk.  
**byi?** [bə'jiʔ] /bjiʔ/ *n.* forest, woods.  
**byaduu?** [bəja'du:ʔ] /bjadu:ʔ/ *v.* to rest.  
**byanii?** [bija'nɪ:ʔ] /bjani:ʔ/ *v.* to be brave. From Malay *berani*.  
**byana?** [bija'näʔ] /bja'naʔ/ *v.* to give birth.  
**byaloot** /bjalot/ *n.* thinkers, knowledgeable people.  
**bylaay** [bi'la:j] /bjla:j/ *v.* to be high.  
**byraay** [bi'ra:j] /bjra:j/ *n.* grey-chinned minivet (*Pericrocotus solaris*).

## t

**ti-** /ti/ (**tiC-**) *pref.* *v.* causative prefix.  
**tipoon** /tipo:n/ *v.* to hide something.  
**tibəətibəəh** /tibə:tibə:h/ *adv.* suddenly, unexpectedly. From Malay *tiba-tiba*.  
**tigaa?** [ti'ga:ʔ] /tiga:ʔ/ *num.* three. From Malay *tiga*.  
**tijnuuy** [ti'nju:j] /tinu:j/ *v.* to point with one's lips.  
**tijnoow** /tijo:w/ *v.* to look.  
**tiḅgalaan** /tiḅgala:n/ *n.* life. From Malay *tinggalan*.  
**tiləep** /tilə:p/ *v.* to insert.  
**tiis** /ti:s/ *n.* generic term for mushroom.  
**tiis pək** /ti:s pək/ *n.* a type of mushroom (*Lyophyllum/Macrocybe* sp.).  
**tiis tək** /ti:s tək/ *n.* a type of inedible mushroom.  
**tiis tapoos** /ti:s tapo:s/ *n.* a type of mushroom (*Cantharellus* sp.).  
**tiis cat** /ti:s caT/ *n.* a type of edible mushroom.  
**tiis juk klaaḅ** /ti:s juḅḅ kla:ḅḅ/ *n.* a type of edible mushroom.  
**tiis kpook** /ti:s kpo:k/ *n.* a type of edible mushroom.  
**tiis knayuul** /ti:s knaju:l/ *n.* a type of edible mushroom.  
**tiis kntək ʔapōḅ** /ti:s kntək ʔapōḅ/ *n.* a type of

edible mushroom.  
**tiis kḅḅyöök** /ti:s kḅḅjök/ *n.* a type of edible mushroom.  
**tiis kyaboo?** /ti:s kjabo:ʔ/ *n.* a type of inedible mushroom.  
**tiis gasaw** /ti:s gasaw/ *n.* a type of mushroom (*Termitomyces heimii*).  
**tiis siseeh** /ti:s sise:h/ *n.* a type of mushroom (*Schizophyllum commune*).  
**tiis səc** /ti:s səC/ *n.* a type of edible mushroom.  
**tiis snləoc** /ti:s snlə:c/ *n.* a type of mushroom (*Termitomyces microcarpus*).  
**tiis hməəḅ** /ti:s hmə:ḅḅ/ *n.* a type of inedible mushroom.  
**tiis meem** /ti:s me:m/ *n.* a type of seasonal mushroom, appears during the rainy season (*Amanita hemibapha*).  
**tiis mantuooy** /ti:s mantuo:j/ *n.* a type of edible mushroom (*Panus giganteus*).  
**tiis maḅko?** /ti:s maḅkoʔ/ *n.* a type of mushroom (*Hygrocybe conica*).  
**tiis lantā?** /ti:s lantāʔ/ *n.* a type of mushroom (*Auricularia auricula-judae*).  
**tiis lntaak koom** /ti:s lnta:k ko:m/ *n.* a type of edible mushroom.

- tiis ymlaay** /ti:s jmla:j/ *n.* a type of mushroom (*Clavulina* sp.).
- tiis ymlaay buooy** /ti:s jmla:j buo:j/ *n.* a type of poisonous mushroom.
- tiis ymlaay le? looy** /ti:s jmla:j le? lo:j/ *n.* a type of edible mushroom of dark colour.
- tiij** [ti:ʔŋ] /ti:ŋ/ *n.* hand.
- tiij tɔp** [ti:ʔŋ tʔpʔ] /ti:ŋ tɔm/ *n.* right hand.
- tiij wɛɛl** [ti:ʔŋ wɛ:l] /ti:ŋ wɛ:l/ *n.* left hand.
- teh** [tɛh] /teh/ *dem.* demonstrative.
- tee?** [te:ʔ] /te:ʔ/ *n.* husband.
- tɛ?** [tɛʔ] /tɛʔ/ *n.* soil, earth.
- tɛk** [tɛ:kʔ] /tɛ:k/ *v.* 1) to sleep. 2) to marry.
- tic** /tiC/ *v.* to tear meat apart with one's teeth.
- tiin** [ti:ɰŋ] /ti:n/ *v.* to rub.
- tɔp** [tʔpʔ] /tɔm/ *rn.* right.
- tɔt** [tʔtʔ] /tɔt/ *v.* to kick.
- tɔt** [tʔtʔ] /tɔt/ *v.* to stand.
- tɔɔp** [tʔɔpʔ] /tɔ:p/ *v.* to reside.
- tʔ?** [tʔʔ] /tʔʔ/ *v.* to collide.
- tap** [tʔpʔ] /tap/ *n.* egg.
- tapi?** /tapiʔ/ *conj.* but. From Malay *tapi*.
- tapɔ?** [tʔpʔʔ] /tapɔʔ/ *v.* to dream.
- tabii?** /tabi:ʔ/ *v.* to have, to experience.
- tabəəh** [ta'bə:h] /tabə:h/ *v.* to take more food.
- tabəəw** [ta'bə:w] /tabə:w/ *n.* a type of kingfisher.
- tabuuj** [ta'bu:ŋ] /tabu:ŋ/ *n.* dragonfly.
- tabo? tiij** [ta'bɔʔ ti:ʔŋ] /taboʔ ti:ŋ/ *n.* thumb.
- tabo? juk** [ta'bɔʔ ʔʔʔ] /taboʔ ʔŋ/ *n.* big toe.
- tadooj** /tado:ŋ/ *v.* to stumble. From Malay *tadung*.
- tajap** [taʔʔʔ] /taʔam/ *v.* to be sharp. From Malay *tajam*.
- tajuu?** [taʔʔʔ] /taʔu:ʔ/ *n.* snake.
- tajuu? tduk** [taʔʔʔ tʔdʔkʔ] /taʔu:ʔ tduK/ *n.* cobra.
- tajuu? tlat** [taʔʔʔ tʔlʔtʔ] /taʔu:ʔ tlaT/ *n.* python (*Python reticulatus*).
- tajuu? jak baa?** /taʔu:ʔ ʔak ba:ʔ/ *n.* a type of poisonous snake.
- tajɔl** [taʔʔʔl] /taʔɔl/ *n.* long-tailed macaque (*Macaca fascicularis*).
- takoong** [ta'ko:ŋ] /tako:ŋ/ *n.* pond.
- tagooh** [ta'go:h] /tago:h/ *v.* to ascend.
- ta?** /taʔ/ (**tida?**) *pa.* negative particle. From Malay *tak, tidak*.
- tasii?** [ta'si:ʔ] /tasi:ʔ/ *v.* to taste.
- tase?** [ta'sɛʔ] /taseʔ/ *n.* lake. From Malay *tasek*.
- tahaan** /taha:n/ *v.* to endure, to hold out against, to sustain. From Malay *tahan*.
- tampɛɛŋ** [tam'pɛ:ŋ] /tampɛ:ŋ/ *v.* to run.
- tampɛl** [tʔm'pɛl] /tampɛl/ *n.* slow loris (*Nycticebus coucang*).
- tampaay tiij** [tam'pa:j ti:ʔŋ] /tampa:j ti:ŋ/ *n.* palm of the hand.
- tampaay juk** [tam'pa:j ʔʔʔ] /tampa:j ʔŋ/ *n.* sole of the foot.
- tanaa?** /tana:ʔ/ *n.* sign, mark. From Malay *tanda*.  
— *v.* to execute, to kill. From Malay *pertanda*.
- tanaam** [ta'nā:m] /tana:m/ *v.* to plant. From Malay *tanam*.  
— *n.* generic word for crop. From Malay *tanam*.
- tajaa?** [tʔʔnā:ʔ] /tʔa:ʔ/ *v.* to ask a question. From Malay *tanya*.
- tajooy** [ta'ŋɔ:j] /taŋo:j/ *n.* rambutan (*Nephelium lappaceum*).
- taŋliis** [taŋ'li:s] /taŋli:s/ *pn.* name of a mountain.
- taluuŋ** [ta'lu:ŋ] /taluu:ŋ/ *n.* millipede.
- tawaay** [ta'wa:j] /tawa:j/ *pn.* name of a river (Tawai).
- tawāāk** [ta'wā:kʔ] /tawā:k/ *n.* butterfly.
- tawoo?** [ta'wo:ʔ] /tawo:ʔ/ *n.* a type of tree.
- tawoon** [ta'wo:ɰŋ] /tawo:n/ *n.* year. From Malay *tahun*.
- tawooh** [ta'wo:h] /tawo:h/ *n.* gibbon (*Hylobates lar*).
- tayuun** [ta'ju:ɰm] /taju:m/ *pn.* name of a river (Tarum).
- tayɔt** /tajo:t/ *v.* to pick up.
- taa?** [ta:ʔ] /ta:ʔ/ *n.* grandfather.
- taan** [ta:ɰŋ] /ta:n/ *n.* buttock.
- taaj** [ta:ʔŋ] /ta:ŋ/ *v.* to plait.
- tutɔk** [tu'tʔkʔ] /tutɔK/ *n.* beak, bill.
- tujuh** [tu'ʔʔh] /tuʔuh/ *num.* seven. From Malay *tujuh*.
- tukaay** [tu'ka:j] /tuka:j/ *v.* to exchange. From Malay *tukar*.
- tu?** /tuʔ/ *n.* a type, sort.
- tu?** /tuʔ/ *persp.* third person singular pronoun (?).
- tuh** [tūh] /tuh/ *v.* to say, to tell.
- tuhaan** /tuha:n/ *n.* god, deity, spirit. From Malay *Tuhan*.
- tumoo?** /tumo:ʔ/ *v.* to hit with one's fist. From Malay *tumbuk*.
- tunŋkəy** [tuŋ'kə:j] /tuŋkə:j/ *n.* knife.
- tunŋkat** [tuŋ'kāt] /tuŋkat/ *n.* stick. From Malay *tongkat*.
- tuleeh** [tu'le:h] /tule:h/ *v.* to write. From Malay *tulis*.
- tuluk** [tu'lükʔ] /tuluu/ *v.* to help. From Malay *tolong*.
- tuu? mat** [tu:ʔ mātʔ] /tu:ʔ mat/ *n.* tear.
- tuuj** [tu:ʔŋ] /tu:ŋ/ *v.* to eat meat.
- tuuj** [tu:ʔŋ] /tu:ŋ/ *v.* to fear.
- tuuy** [tu:j] /tu:j/ *dem.* demonstrative.
- tūc** [tūcʔ] /tūc/ *n.* a type of fruit.
- tūūt** [tū:tʔ] /tū:t/ *v.* to blow.
- tūūs** [tū:s] /tū:s/ *v.* to collide.
- toop** /to:p/ *n.* lid.

- toon** /to:ŋ/ *n.* can, bin. From Malay *tong*.
- tooy** [t'o:j] /to:j/ *n.* uncle, older brother of parent.
- tooy mɔɔʔ** [t'o:j mɔ:ʔ] /to:j mɔ:ʔ/ *n.* aunt, older sister of parent.
- tɔp** /tɔP/ ? past, yesterday.
- tɔs** [t'ɔs] /tɔs/ *v.* to pluck.
- tɔʔ** [t'ɔ:ʔ] /tɔ:ʔ/ *pa.* negative particle. From Malay *tak*?
- tieel** [t'e:l] /tie:l/ *v.* to plait.
- tpəət** [tə'pə:t] /tpə:t/ *v.* to blow.
- tpulaan** /tpula:ŋ/ *v.* to return. From Malay *terpulang*.
- tpuun** [tə'pu:ŋ] /tpu:ŋ/ *n.* flour. From Malay *tepung*.
- tpooʔ** /tpo:ʔ/ *v.* to slap. From Malay *tepak*.
- tbik** [tə'bik] /tbij/ *v.* to be full. From Malay *tebeng*?
- tbaleʔ** /tbaleʔ/ *v.* to turn. From Malay *balik*.
- tbaal** [tə'ba:l] /tba:l/ *v.* to be thick. From Malay *tebal*.
- tbəəh** [tə'bə:h] /tbə:h/ *v.* to hit. From Malay *tabuh*?
- ttap** /ttap/ *v.* to be permanent, to be fixed. From Malay *tetap*.
- tdaay** [tə'da:j] /tda:j/ *v.* to be near.
- tkat** [tə'kət] /tkat/ *v.* to freeze.
- tktūik** [tə'ktū:k] /tktū:k/ *v.* to hunt.
- tgeel** [tə'ge:l] /tge:l/ *v.* to move along a slope.
- tgəh** [tə'gəh] /tgəh/ *v.* to be tough. From Malay *teguh*.
- thək** [tə'hək] /thək/ *v.* to be spicy.
- thuun** [tə'hū:ŋ] /thu:ŋ/ *v.* to be red.
- thop** [tə'hɔp] /thoP/ *v.* to close, to shut.
- thuool** [tə'h'uo:l] /thuol/ *v.* to blow fire.
- tmaʔ** [tə'məʔ] /tmaʔ/ *n.* branch.
- tmaaw** [tə'mā:w] /tma:w/ *pn.* name of a river.
- tmpaan** [təm'pa:n] /tmpa:n/ *pn.* name of a river (Tampan).
- tmluun** [təm'lu:ŋ] /tmlu:ŋ/ *pn.* name of a river (Temelong).
- tmwaan** /tmwa:n/ *pn.* Ethnonym: Temuan.
- tmyaah** /tmja:h/ *n.* Ethnonym: Temiar. From Malay *Temiar*.
- tniʔyɔʔ** [təniʔ'jɔ:ʔ] /tniʔjɔ:ʔ/ *pn.* name of a river.
- tniit** [tə'nī:t] /tni:t/ *n.* lip.
- tntuuʔ** /tntu:ʔ/ *adv.* definitely, certainly. From Malay *tentu*.
- tngəel** [təŋ'ge:l] /tngə:l/ *n.* slope.
- tnʔeen** [tən'ʔe:n] /tnʔe:n/ *pn.* Ethnonym: Ten'en.
- tnooʔ** [tə'nō:ʔ] /tno:ʔ/ *n.* binturong (*Arctitis binturong*).
- tnoooh** [tə'nō:h] /tno:h/ *v.* to dance.
- tnip** [tə'ŋip] /tnim/ *n.* molar tooth.
- tnjah hayiiʔ** [tə'ŋəh ha'ji:ʔ] /tnjah haji:ʔ/ *n.* midday. From Malay *tengah hari*.
- tnjūn** [təŋ'tjūn] /tnjūn/ *n.* spider.
- tnjɔŋ** [təŋ'tɔ:ŋ] /tnjɔ:ŋ/ *n.* drongo (*Dicrurus* sp.).
- tnkɔk** [təŋ'kɔ:k] /tnkɔ:k/ *n.* nape of the neck. From Malay *tengkuk*.
- tləʔ** [tə'ləʔ] /tləʔ/ *v.* to point with one's finger.
- tləməʔ** [tələ'məʔ] /tləməʔ/ *n.* a type of tree.
- tlagaaʔ** [təla'ga:ʔ] /tlaga:ʔ/ *n.* pond. From Malay *telaga*.
- tluu** [tə'lu:j] /tlu:j/ *n.* banana.
- tlɔk** [tə'lɔk] /tlɔk/ *n.* pool. From Malay *teluk*.
- tlɔy** [tə'lɔj] /tloj/ *pn.* name of a river.
- trus** /trus/ *v.* to be straight. From Malay *terus*.
- trunan** /trunan/ *v.* to protract. From Malay *terundan*?
- trooʔ** /tro:ʔ/ *v.* to be severe. From Malay *teruk*.
- twaan** /twa:n/ *n.* master, mister, lord. From Malay *tuan*.
- twɔy** [t'wɔ:j] /twɔ:j/ *v.* to be dark.
- tyaneʔ** [tija'nəʔ] /tjaneʔ/ *n.* brown-capped woodpecker (*Picoides moluccensis*).

## d

- dinik** [di'nik] /diniŋ/ *n.* wall. From Malay *dinding*.
- dirih** /diri:h/ *n.* self. From Malay *diri*.
- diiʔ** [di:ʔ] /di:ʔ/ *interrogative.* who.
- diiʔ-diiʔ** /di:ʔ-di:ʔ/ ? whoever.
- deʔ** [dɛʔ] /deʔ/ *v.* to flee, to run away.
- deʔ kaʔ** [dɛʔ 'kəʔ] /deʔ kaʔ/ *pa.* prohibitive particle.
- deŋ** [dɛ:ŋ] /de:ŋ/ *n.* house.
- deŋ cnʔuoʔ** [dɛ:ŋ c'ɛn'ʔu:ʔ] /de:ŋ cnʔuo:ʔ/ *n.* hut.
- dɛ =** [dɛ] /dɛ/ (**d =**, **da =**) *prep\_procl\_np.* goal.  
**dɛ = deŋ** to (the) house
- dɛ =** [dɛ] /dɛ/ (**d =**) *procl.* relative clause marker.
- dəyaʔ pudeew** /dejaʔ pude:w/ *n.* spirit, ghost.
- dəh** [dɛ:h] /de:h/ *interrogative.* which.
- dəəh** [dɛ:h] /dɛ:h/ *v.* to wait.
- dadaaʔ** [da'da:ʔ] /dada:ʔ/ *n.* chest. From Malay *dada*.  
— *m.* frontside. From Malay *dada*.
- dak** [däq] /daŋ/ *v.* to see.
- daʔ loʔ** /daʔ loʔ/ ? what.
- daʔɔŋ** [da'ʔɔ:ŋ] /daʔɔ:ŋ/ *n.* long-tailed macaque (*Macaca fascicularis*).
- dah** /dah/ (**daʔ**) *pa.* then. From Malay *sudah*, *dah*.
- dahiik** [da'hi:k] /dahi:k/ *n.* chest.

**damiip** /damip/ (**Yamiip**) v. to bump into.  
**dayah** [da'jäh] /dajah/ n. blood. From Malay *darah*.  
**daan** /da:n/ v. to be doable in time. From Malay *dan*.  
**dunəh** /dunəh/ n. world. From Malay *dunia*.  
**duwəh** /duwəh/ num. two. From Malay *dua*.  
**duwəh blaas** [du'wəh bə'la:s] /duwəh bla:s/ num. twelve. From Malay *dua belas*.  
**duus** /du:s/ v. to bump into.  
**doo?** ['do:ʔ] /do:ʔ/ n. father.

**doot** ['dɔ:tʰ] /dɔ:t/ n. vagina.  
**dook** ['dɔ:kʰ] /dɔ:k/ n. 1) ipoh tree (*Antiaris toxicaria*). 2) poison made from the sap of the ipoh tree.  
**duoos** ['dʷo:s] /duo:s/ v. to move along a crest.  
**dpadə?** /dpadəʔ/ prep. from. From Malay *daripada*.  
**djan** /djan/ prep. with. From Malay *dengan*.  
**dlūū?** [də'lū:ʔ] /dlū:ʔ/ v. to push.  
**dlduul** [dəl'du:l] /dldu:l/ n. heel.  
**dwiit** /dwi:t/ n. money.

## C

**ciptəəh** /ciptə:h/ v. to found, to create. From Malay *cipta*.  
**citweet** [cʰitʰ'wetʰ] /citweet/ pn. name of a river.  
**cicep** [cʰi'cʰəpʰ] /cicep/ n. crested wood partridge (*Rollulus rouloul*).  
**ciceey** /cicej/ v. to tap, to cut.  
**cica?** [cʰi'cʰəʔ] /cicaʔ/ n. gecko. From Malay *cicak*.  
**cicooy** [cʰi'cʰo:j] /cicoj/ n. a type of tree-shrew.  
**cinaa?** [cʰi'na:ʔ] /cina:ʔ/ pn. Ethnonym: Chinese. From Malay *cina*.  
**cileəŋ** [cʰi'le:ŋ] /cileŋ/ v. to point with one's eyes.  
**ciip** [cʰi:pʰ] /ci:p/ v. to go.  
**ciip juk** [cʰi:pʰ'ʃʰuqʰ] /ci:p juŋ/ v. to walk.  
**ce?** [cʰəʔ] /ceʔ/ n. louse.  
**ceem** [cʰe:m] /ceem/ n. bird.  
**ceem paleek** [cʰe:m pa'le:kʰ] /ceem palek/ n. a type of small bat.  
**ceet** [cʰe:tʰ] /ce:t/ v. to catch.  
**cēēc** [cʰē:ʰcʰ] /cē:c/ n. excretion of the eye.  
**cap** [cʰəpʰ] /cap/ v. to catch.  
**cabaəŋ** [cʰə'ba:ŋ] /caba:ŋ/ n. tributary. From Malay *cabang*.  
**caduuk** /cadu:k/ v. to wear adornment in one's hair.  
**cadə?** [cʰə'dəʔ] /cadəʔ/ n. a type of lizard.  
**caceəŋ** [cʰə'cə:ŋ] /cace:ŋ/ n. worm. From Malay *cacing*.  
**ca?ē?** [cʰə'ʔēʔ] /caʔēʔ/ n. rat.  
**cahāw** [cʰə'hā:w] /cahā:w/ pn. name of a river.  
**camə?** [cʰə'məʔ] /caməʔ/ ? tomorrow.  
**campuuy** /campu:j/ n. mix, mixing, mingling. From Malay *campur*.  
**carəh** /carəh/ (**carəh**) n. custom, manner, tradition. From Malay *cara*.  
**cayuook tniit** [cʰə'jʷokʰ tə'nitʰ] /cajuo:k tniit/ n. philtrum. From Malay *caruk*.  
**cayuook ?ōŋ** [cʰə'jʷokʰ 'ʔōŋ] /cajuo:k ʔōŋ/ n. channel. From Malay *caruk*.  
**cukoop** /cuko:p/ v. to be enough. From Malay

*cukup*.  
**cuməəh** /cumə:h/ ? to be useless, to be gratis. From Malay *cuma*.  
**cundiin** /cundi:n/ v. to lean.  
**cundə?** /cundəʔ/ v. to lean.  
**cūū?** [cʰū:ʔ] /cū:ʔ/ v. to pierce.  
**coo?** /co:ʔ/ ? same.  
**coom** [cʰo:m] /coom/ v. to burn.  
**cək** /cək/ v. to cut off.  
**cəək** [cʰə:kʰ] /cə:k/ v. to stab.  
**cəoy** [cʰə:j] /cəj/ v. to sew.  
**cə?** [cʰəʔ] /cəʔ/ v. to poke.  
**cieek** [cʰie:kʰ] /cie:k/ v. to tear.  
**cuo?** [cʰu:ʔ] /cuo:ʔ/ n. dog.  
**cuo? cləəŋ** [cʰu:ʔ cʰə'le:ŋ] /cuo:ʔ clə:ŋ/ n. wild dog.  
**cpēēt** [cʰə'pē:tʰ] /cpē:t/ v. to squeeze. From Malay *cepit*?  
**cpah** [cʰə'päh] /cpah/ n. amniotic fluid.  
**cbaa? ?ōŋ** [cʰə'baʔ 'ʔōŋ] /cba:ʔ ʔōŋ/ n. confluence.  
**cboh buŋaa?** [cʰə'böh bu'ŋā:ʔ] /cboh buŋa:ʔ/ n. nectar.  
**cduum** /cdu:m/ v. to carry in one's arms.  
**cdə?** /cdə:l/ v. to support, to lean.  
**ckəəm** [cʰə'kə:m] /ckə:m/ n. a type of pheasant.  
**ckuuy** /cku:j/ v. to skewer an oblong object in hair.  
**ckək** [cʰə'kəkʰ] /ckək/ n. marten.  
**ckcaak** [cʰəkʰ'cə:kʰ] /ckca:k/ pn. name of a river.  
**ckcək** [cʰəkʰ'cə:kʰ] /ckcək/ n. a type of wild cat.  
**chəəs** [cʰə'hə:s] /chə:s/ v. to be clean.  
**cməək** [cʰə'mə:kʰ] /cmə:k/ n. Bertam palm (*Eugeissonia tristis*).  
**cniŋ** [cʰə'nitʰ] /cniŋ/ n. side.  
**cnaal** [cʰə'nā:l] /cna:l/ n. myth.  
**cnuup** [cʰə'nū:pʰ] /cnu:p/ n. solar plexus.  
**cnoleəs** /cnole:s/ pn. name of a place.  
**cnooy** [cʰə'nō:j] /cno:j/ n. brother-in-law, sister-in-law.

**cnəŋ** [cʰə'nəŋ] /cnəŋ/ *n.* casque of a hornbill.  
**cnəwɔj** /cnəwɔj/ *n.* spirit, ghost.  
**cnhaaʔ** [cʰən'ha:ʔ] /cnha:ʔ/ *v.* to joke.  
**cnɔwɔs** [cʰən'jɔ:s] /cnjɔ:s/ *n.* nail, claw.  
**cnɔk** [cʰə'nɔk] /cnɔk/ *n.* trail of an animal.  
**cnɔeŋ tiŋ** [cʰən'je:ŋ 'ti:ŋ] /cnje:ŋ ti:ŋ/ *n.* wrist.  
**cnɔiil** [cʰə'nɔi:l] /cnɔi:l/ *n.* a type of tuber.  
**cnɔaal** [cʰə'nɔā:l] /cnɔā:l/ *n.* a type of tree.  
**cnɔcēŋ** [cʰə'nɔcē:ŋ] /cnɔcē:ŋ/ *n.* eyebrow.  
**clatuŋ** [cʰə'lə'tu:ŋ] /clatu:ŋ/ *n.* wrinkled hornbill

(*Aceros corrugatus*).

**cluuh** /clu:h/ *v.* to push something into the ground.  
**clooʔ** /clo:ʔ/ *v.* to insert, to immerse.  
**critəh** /critəh/ (**cyitəh**) *n.* story. From Malay *cerita*.  
**cyineŋ** [cʰə'ji'nē:ŋ] /cjine:ŋ/ *v.* to roll.  
**cyəəs** [cʰə'jə:s] /cjə:s/ *n.* side.  
**cyakooh** [cʰə'ja'ko:h] /cjako:h/ *pn.* name of a river.  
**cyooʔ** [cʰə'jɔ:ʔ] /cjɔ:ʔ/ *v.* to be hungry.  
**cyliil** [cʰə'jɔl'mi:l] /cjliil:/ *v.* to be bright.

## j

**jɪt** /jɪt/ *v.* to collect.  
**jɪnaŋ** [jɪ'nāŋ] /jɪnaŋ/ *pn.* name of a river (Ayer Jernang).  
**jilaaʔ** [jɪ'lā:ʔ] /jilā:ʔ/ *n.* thorn.  
**jeek** [jɪ'e:k] /je:k/ *pn.* name of a river.  
**jeʔ** [jɪ'eʔ] /jeʔ/ *v.* to refuse.  
**jəp** [jɪ'əp] /jəp/ *v.* to wash (clothes).  
**jəs** [jɪ'əs] /jəs/ *v.* to be finished.  
**jəl** [jɪ'əl] /jəl/ *v.* to bark.  
**jəək** /jə:k/ *pn.* name of a river.  
**jabaat** /jabaat/ *v.* to grasp, to shake hands. From Malay *jabat*.  
**jadiiʔ** /jadi:ʔ/ *v.* 1) to become. 2) to come into existence. From Malay *jadi*.  
**jakaʔ** [jɪ'a'kǎʔ] /jakaʔ/ *n.* chin.  
**jakoon** /jako:n/ *pn.* Ethnonym: Jakun.  
**jagaaʔ** /jaga:ʔ/ *v.* to be awake. From Malay *jaga*.  
**jahaay** [jɪ'a'ha:j] /jaha:j/ *pn.* Ethnonym: Jahai.  
**jahut** /jahut/ *pn.* Ethnonym: Jah Hut.  
**jan̄k̄iŋ** [jɪ'āŋ'ki:ŋ] /jan̄ki:ŋ/ *pn.* name of a river.  
**jan̄kak** [jɪ'āŋ'kǎq] /jan̄kan/ *n.* a type of tree. From Malay *jangkang*.  
**jaleʔ** [jɪ'a'lɛʔ] /jaleʔ/ *pa.* a particle signalling uncertainty.  
**jawab** [jɪ'a'wǎp] /jawab/ *v.* to answer. From Malay *jawab*.  
**jayiiʔ** [jɪ'a'ji:ʔ] /jaji:ʔ/ *n.* finger. From Malay *jari*.  
**jayiiʔ juk** [jɪ'a'jiʔ 'jɪ'ŋq] /jaji:ʔ juŋ/ *n.* toe. From Malay *jari*.

**jayup** [jɪ'a'jüp] /jajum/ *n.* needle. From Malay *jarum*.  
**jaam** /jam/ *n.* clock, watch. From Malay *jam*.  
**jaal** [jɪ'a:l] /ja:l/ *n.* casting net. From Malay *jalaʔ*.  
**juk** [jɪ'ŋq] /juŋ/ *n.* foot.  
**jugəʔ** /jugəʔ/ *adv.* yet, still, all the same. From Malay *juga*.  
**jumpaaʔ** /jumpa:ʔ/ *v.* to meet. From Malay *jumpa*.  
**jook** [jɪ'o:k] /jo:k/ *v.* to move.  
**jōt** [jɪ'ɔ:t] /jɔ:t/ *v.* to suck.  
**juool** [jɪ'u:ɔ:l] /juo:l/ *v.* to sell. From Malay *jual*.  
**jkēŋ** [jɪ'kēŋ] /jkēŋ/ *n.* scorpion.  
**jʔaaŋ** [jɪ'a'ʔa:ŋ] /jʔa:ŋ/ *n.* bone.  
**jʔaaŋ taan** [jɪ'a'ʔāŋ 'ta:n] /jʔa:ŋ ta:n/ *n.* pelvis.  
**jʔaaŋ jakaʔ** [jɪ'a'ʔāŋ jɪ'a'kǎʔ] /jʔa:ŋ jakaʔ/ *n.* jaw.  
**jhēēt** [jɪ'ē:hēt] /jhēt/ *n.* muntjac (barking) deer (*Muntiacus muntjac*).  
**jhīt** [jɪ'ē:hīt] /jhīt/ *v.* to smoke.  
**jmaʔ** [jɪ'a'mǎʔ] /jmaʔ/ *v.* to attack.  
**jmʔaat** [jɪ'əmə'ʔa:t] /jmʔa:t/ *pn.* Friday. From Malay *Jumaat*.  
**jnuuh** [jɪ'nū:h] /jnu:h/ *quan.* other.  
**jn̄jēŋ** [jɪ'ñjēŋ] /jn̄jēŋ/ *pn.* Ethnonym: Jengjeng.  
**jlət** [jɪ'a'lət] /jlət/ *v.* to be dull.  
**jlotuk** [jɪ'əlo'tük] /jlotuŋ/ *n.* jelutong tree (*Dyera costulata*). From Malay *jelutong*.  
**jriʔ** [jɪ'a'riʔ] /jriʔ/ *pn.* name of a river (Jeri).  
**jyeeʔ** [jɪ'je:ʔ] /jje:ʔ/ *v.* to be long.  
**jyəp** [jɪ'jəp] /jyəp/ *n.* rapid. From Malay *jeram*.

## k

**kippaŋ** [ki'pa:ŋ] /kipa:ŋ/ *rn.* upper side.  
**kikuy** /kikuj/ ? in front.  
**kikuy tɔp** [ki'kūj 'tɔp] /kikuj tɔp/ ? before.  
**kisah** /kisah/ *n.* events, affairs. From Malay *kesah*.  
**kileəp** [ki'le:p] /kile:p/ *v.* to forget.  
**kilat** [ki'lāt] /kilat/ *n.* lightning. From Malay *kilat*.  
**kiween** [ki'we:ŋ] /kiwe:ŋ/ *n.* a type of tree.

**kiyaleh** [kija'lɛh] /kijaleh/ *n.* giant squirrel (*Ratufa* sp.).  
**kiyaaʔ** [ki'ja:ʔ] /kija:ʔ/ *v.* to count.  
**kiiʔ** /ki:ʔ/ *v.* to undress, to take off.  
**kec** ['kɛc] /keC/ *v.* to cut off.  
**kək** ['kɛk] /keŋ/ *v.* to pull.  
**kəet** ['kɛt] /kɛt/ *n.* bottom, buttocks.

**kəet ʔōŋ** [kət̚ ʔōŋ] /kət̚ ʔōŋ/ *rn.* downstream.  
**kəet mat yiis** [kət̚ mat̚ ʔi:is] /kət̚ mat̚ ʔi:is/ *rn.* east.  
**kəp** [kəp̚] /kəp̚/ *v.* to plant.  
**kət** [kət̚] /kət̚/ *n.* belly.  
**kəl** [kəl] /kəl/ *v.* to fall.  
**kəəl** [kə:l] /kə:l/ *n.* a classifier for humans.  
**kəp** [kəp̚] /kəp̚/ *v.* to eat fruit.  
**kap** [kəp̚] /kap̚/ *v.* to bite.  
**kapaʔ** [kəp̚aʔ] /kəp̚aʔ/ *n.* axe. From Malay *kapak*.  
**kapəʔ** [kəp̚əʔ] /kəp̚əʔ/ *n.* cheek.  
**kabaan** /kaba:n/ *n.* family.  
**katiiʔ** [kəti:ʔ] /kəti:ʔ/ *pn.* name of a river (Kati).  
**katēk** [kət̚e:k̚] /kət̚e:k̚/ *n.* skin.  
**kadaaŋkadaaŋ** /kəda:ŋkəda:ŋ/ *adv.* sometimes, at times, occasionally. From Malay *kadang-kadang*.  
**kacaŋ** /kaca:ŋ/ *n.* bean. From Malay *kacang*.  
**kajak** [kəjək̚] /kəjək̚/ *pn.* name of a cave (Gua Kajang).  
**kajoc** [kəjək̚] /kəjək̚/ *n.* Achilles tendon.  
**kakiiʔ** /kəki:ʔ/ *v.* to take off footwear. From Malay *kaki*: foot/leg.  
**kakəp** /kəkəp/ *v.* to remember.  
**kaʔ jeʔ** [kəʔ ʔeʔ] /kəʔ ʔeʔ/ *adv.* also, still, all the same.  
**kasot** /kasot/ *n.* shoe. From Malay *kasut*.  
**kah** /kah/ *pa.* 1) interrogative particle.  
 2) conjunction, used when listing items. From Malay *kah*.  
**kahkeh** [kəh:kəh] /kəh:kəh/ *n.* great hornbill (*Buceros bicornis*).  
**kahkuuh** [kəh:kʉ:h] /kəh:kʉ:h/ *n.* white-crowned hornbill (*Berenicornis comatus*).  
**kamik keh** [kəmi:k:kəh] /kəmi:k:kəh/ *n.* wild goat, mainland serow (*Capricornis sumatraensis*). From Malay *kambing*.  
**kamaah** [kəmə:h] /kəmə:h/ *v.* to be dirty.  
**kampit** /kəmpit/ *n.* bag, pouch. From Malay *kampit*.  
**kampuk** /kəmpuŋ/ (**kampuŋ**) *n.* village. From Malay *kampung*.  
**kanic** /kəniC/ *n.* pot, bucket.  
**kaŋeʔ** [kəŋeʔ] /kəŋeʔ/ *n.* little finger.  
**kaŋəŋ** [kəŋəŋ] /kəŋəŋ/ *n.* elbow.  
**kaŋcəʔ** [kəŋcəʔ] /kəŋcəʔ/ *n.* grandchild.  
**kaliʔ** /kəli:ʔ/ *n.* time, occasion, instance. From Malay *kali*.  
**kalew** /kəle:w/ *pn.* name of a river.  
**kalip** [kəli:p̚] /kəli:p̚/ *pn.* name of a river.  
**kalow** [kəlɔw] /kəlɔw/ *conj.* if. From Malay *kalau*.  
**kaləʔ** [kələʔ] /kələʔ/ *n.* a type of tree.  
**kaweep** [kəwe:p̚] /kəwe:p̚/ *n.* sun bear (*Helarctos*

*malayanus*).

**kawāp** [kəwāp̚] /kəwāp̚/ *pn.* name of a river.  
**kawieel** [kəwʲe:l] /kəwʲe:l/ *n.* a type of wild palm.  
**kayiil** [kəji:l] /kəji:l/ *v.* to fish. From Malay *kail*.  
**kayēem** [kəjē:m] /kəjē:m/ *n.* a type of tuber.  
**kayoh** [kəjoh] /kəjoh/ *v.* to swim. From Malay *kajuh*.  
**kayoot** [kəjo:t̚] /kəjo:t̚/ *v.* to be pregnant.  
**kayool** [kəjo:l] /kəjo:l/ *n.* knee.  
**kaaʔ** [kə:ʔ] /kə:ʔ/ *n.* fish.  
**kutuh** /kutuh/ *v.* to be dirty. From Malay *kotor*.  
**kucek** [kucək̚] /kucək̚/ *n.* cat. From Malay *kucing*.  
**kucōk** [kucō:k̚] /kucō:k̚/ *n.* Raffles' malkoha (*Phaenicophaeus chlorophaeus*).  
**kum** /kum/ *persp.* you (singular), second person singular personal pronoun; also first person plural inclusive? From Malay *kamuʔ*.  
**kuniŋ** [kuniŋ] /kuniŋ/ *v.* to be yellow. From Malay *kuning*.  
**kuleem** [kule:m̚] /kule:m̚/ *pn.* name of a river (Kulim).  
**kulak** /kulak/ *n.* bowl. From Malay *kulak*.  
**kulaak** [kula:k̚] /kula:k̚/ *pn.* name of a river.  
**kuy** [kūj] /kuj/ *n.* 1) head. 2) language.  
**kuy pəʔ** [kūj pəʔ] /kuj pəʔ/ *n.* mountain top.  
**kuy ʔōŋ** [kūj ʔōŋ] /kuj ʔōŋ/ *rn.* upstream.  
**kuuh** /ku:h/ ? so, in that way.  
**kobees** /kobe:s/ *n.* cabbage. From Malay *kobis*.  
**kobak** [kəbək̚] /kəbək̚/ *n.* mud pool. From Malay *kubang*.  
 — *pn.* Ethnonym: Kubang. From Malay *kubang*.  
**koʔ** [kəʔ] /kəʔ/ *v.* to vomit.  
**komuy** [kəmuj] /kəmuj/ *v.* to growl (of stomach).  
**koleʔ** [kələʔ] /kələʔ/ *n.* hairy-backed bulbul (*Tricholestes criniger*).  
**koleh** /kələh/ *n.* cup.  
**koy** [kəj] /kəj/ *n.* cake. From Malay *kuih*.  
**koom** [kəʔm] /kəʔm/ *n.* frog.  
**kotaʔ** /kətaʔ/ *n.* packet, box. From Malay *kotak*.  
**koc** [kək̚] /kək̚/ *v.* to sit.  
**kənaah** [kənā:h] /kənā:h/ *n.* bend. From English *corner* via Malay *kunah*.  
**kuoc** [kʉ:c̚] /kʉ:c̚/ *v.* to grasp.  
**kuoom** [kʉ:ʔm] /kʉ:ʔm/ *v.* to hug.  
**kuoon** [kʉ:ʔn] /kʉ:ʔn/ *n.* child, offspring.  
**kuoon ʔōŋ** [kʉ:ʔn ʔōŋ] /kʉ:ʔn ʔōŋ/ *n.* stream.  
**kuoon ʔōŋ ʔahuʔ** [kʉ:ʔn ʔōŋ ʔahuʔ] /kʉ:ʔn ʔōŋ ʔahuʔ/ *n.* trickle.  
**kuooy** [kʉ:ʔj] /kʉ:ʔj/ *n.* a type of tuber.  
**kpēʔ** [kəp̚eʔ] /kəp̚eʔ/ *v.* to crush.  
**kpəc** /kəp̚əc/ *v.* to pick up, to grasp.  
**kpieh** /kəpieh/ *n.* headgear. From Malay *topi*.



- kbeet** [kə'be:tʰ] /kbe:t/ *v.* to be thin.
- kbæc** [kə'be:'cʰ] /kbæ:c/ *v.* to spit.
- kbəs** [kə'bəs] /kbəs/ *v.* to die.
- kbək** [kə'bəqʰ] /kbək/ *n.* otter.
- ktek** [kə'təkʰ] /ktek/ *n.* lower leg.
- ktək** [kə'təkʰ] /ktək/ *v.* to drip.
- ктаар** /kta:p/ *v.* to pinch, to clutch (with instrument). From Malay *ketap*.
- ktəp** [kə'təpʰ] /ktəm/ *v.* to spit.
- ktōk** [kə'tōkʰ] /ktōk/ *pn.* name of a river.
- ktōōk** [kə'tō:kʰ] /ktō:k/ *n.* a type of malkoha (*Phaenicophaeus* sp.).
- kdih** /kdih/ *n.* 1) what. 2) whatever.
- kdeek** [kə'de:kʰ] /kde:k/ *n.* generic term for squirrel.
- kdeek bapaan** [kə'dəkʰ ba'pa:əŋ] /kde:k bapa:ŋ/ *n.* a type of squirrel.
- kdeek thuuŋ** [kə'dəkʰ tə'hu:ʰŋ] /kde:k thu:ŋ/ *n.* a type of squirrel.
- kdeek cade?** [kə'dəkʰ c'a'de?] /kde:k cade?/ *n.* a type of squirrel.
- kdeek ?abuu?** [kə'dəkʰ ?a'bu:ʰ?] /kde:k ?abu:ʰ?/ *n.* a type of squirrel.
- kdeek mnlōōk** [kə'dəkʰ mən'lō:kʰ] /kde:k mnlō:kʰ/ *n.* giant flying squirrel (*Petaurista* spp.).
- kdeek lŋiis** [kə'dəkʰ lə'ŋi:s] /kde:k lŋi:s/ *n.* black giant squirrel (*Petaurista* sp.).
- kdek** [kə'dəkʰ] /kdek/ *v.* to be bitter.
- kdēy** /kde:j/ *n.* shop, restaurant. From Malay *kedai*.
- kdii?** [kə'di:ʰ?] /kdi:ʰ?/ *v.* to hide.
- kdōy** [kə'dō:j] /kdō:j/ *n.* wife.
- kcas** [kə'c'ās] /kcas/ *v.* to sneeze.
- kjap** /kjap/ *v.* to be instant. From Malay *kejap*.
- kjaa?** /kja:ʰ?/ *v.* to work. From Malay *kerja*.
- kjo?** [kə'ʒ'o:ʰ?] /kjo:ʰ?/ *pn.* name of a river.
- kkkūūk** [kəkʰ'kū:kʰ] /kkkū:kʰ/ *v.* to snore.
- k?eep** [kə'ʔe:pʰ] /k?e:pʰ/ *n.* centipede.
- ksah** /ksah/ *n.* manner, custom. From Malay *kesah*.
- kætōōh** [kə'æ'tō:ʰ] /kætō:ʰ/ *n.* car. From Malay *kereta*.
- khidupaan** /khidupa:n/ *n.* life. From Malay *kehidupan*.
- khəl** [kə'həl] /khəl/ *v.* to cough.
- kmat** [kə'mātʰ] /kmat/ *n.* gall bladder.
- kmak** [kə'mäqʰ] /kmaŋ/ *v.* to swell. From Malay *kembang*.
- kmaay** [kə'mä:j] /kma:j/ *n.* twin. From Malay *kemar*.
- kmuuc** [kə'mü:'cʰ] /kmu:c/ *n.* large feline, e.g. tiger, leopard etc.
- kmuuc gcēh** [kə'mü:'cʰ gə'c'ēh] /kmu:c gcēh/ *n.* black panther.
- kmōō?** [kə'mō:ʰ?] /kmō:ʰ?/ *n.* 1) fruit. 2) seed. 3) classifier.
- kmōō? mat** [kə'mō:ʰ ?mātʰ] /kmō:ʰ mat/ *n.* eye lens.
- knəək** [kə'nə:kʰ] /knə:k/ *n.* uvula.
- knal** [kə'nāl] /knal/ *v.* to know (person). From Malay *kenal*.
- knayil** [kəna'ji:l] /knaji:l/ *n.* fishing rod. From Malay *kail*.
- knayem** [kəna'je:'m] /knaje:m/ *pn.* name of a river.
- knaya?** [kəna'jäʰ?] /knaja?/ *pn.* name of a river (Kenayat).
- knōom** [kə'nō:m] /knō:m/ *v.* to urinate.
- kntaa?** [kən'ta:ʰ?] /knta:ʰ?/ *pn.* Ethnonym: Kintaq.
- kntək** [kən'təqʰ] /kntək/ *n.* ear.
- knmōōh** [kən'mō:ʰ] /knmō:h/ *n.* name.
- knlō? mat yiis** [kən'lōʰ ?mātʰ 'ji:s] /knlōʰ mat ji:s/ *rn.* west.
- kŋeet** [kə'ŋe:tʰ] /kŋe:tʰ/ *v.* to refuse to give.
- kŋsiw** [kəŋ'si:w] /kŋsi:w/ *pn.* Ethnonym: Kensiw.
- kŋsek** [kəŋ'səkʰ] /kŋseŋ/ *n.* civet.
- kŋyək** [kəŋ'jəkʰ] /kŋjəŋ/ *pn.* name of a river (Kenering).
- kŋkuuŋ ?aay** [kəŋ'ku:əŋ ?a:j] /kŋku:əŋ ?a:j/ *n.* flatheaded cat.
- kŋkooŋ** [kəŋ'ko:əŋ] /kŋko:əŋ/ *v.* to feel like having fever, to feel like getting fever.
- kleep** [kə'le:pʰ] /kle:pʰ/ *n.* a type of tuber.
- klō?** /klōʰ?/ *v.* to fall down (vertically).
- klapuoooh** [kəla'p'o:ʰ] /klapuoh/ *n.* shoulder.
- klāt** [kə'lātʰ] /klāt/ *pn.* name of a river.
- klamin** /klamin/ *n.* married couple. From Malay *kelamin*.
- klaap** [kə'la:pʰ] /kla:pʰ/ *n.* spleen.
- klaaŋ** [kə'la:əŋ] /kla:əŋ/ *n.* bird-of-prey.
- klaaw** [kə'la:w] /kla:w/ *n.* penis.
- kloo?** [kə'lō:ʰ?] /klo:ʰ?/ *n.* older sibling.
- kliēn** [kə'l'e:əŋ] /klie:n/ *pn.* name of a river (Kelian).
- kluooŋ** [kə'l'o:əŋ] /kluo:əŋ/ *rn.* inside.
- klkēel** [kə'l'ke:l] /klke:l/ *n.* lower arm.
- klŋkēeŋ** [kələŋ'ke:əŋ] /klŋke:əŋ/ *n.* bushy crested hornbill (*Anorrhinus galeritus*).
- klwaan** [kə'l'wa:əŋ] /klwa:əŋ/ *n.* flying fox, a type of rousette.
- klyōōl** [kə'l'jō:l] /kljō:l/ *pn.* name of a river.
- kruhuuy** [kəru'hu:j] /kruhu:j/ *n.* a type of owl.
- krək** [kə'rəkʰ] /krək/ *n.* red-eyed brown bulbul (*Pycnonotus brunneus*).
- krsih** /krsih/ *n.* chair. From Malay *kerusi*.
- kwagəh** /kwagəh/ *n.* family. From Malay *keluarga*.
- kwasaan** /kwasa:n/ *n.* area. From Malay *kawasan*.

**kwaal** [kə'wa:l] /kwa:l/ *n.* a type of bird.  
**kwəwəŋ** [kə'wə:ŋ] /kwə:ŋ/ *n.* peacock pheasant (*Polyplectron malacense*).  
**kyibəs** [kəji'bəs] /kjibəs/ *v.* to kill.  
**kyiləʔ** /kjiləʔ/ *v.* to drop.  
**kyeen** [kə'je:ɰn] /kje:n/ *pn.* Ethnonym: Kaien.  
**kyeenj** [kə'je:ɰŋ] /kje:ŋ/ *v.* to be dry. From Malay *kering*.  
**kyəəm dəʔ** [kə'jəm 'dəʔ] /kjə:m dəʔ/ *n.* armpit.

**kyənaən** [kəja'nə:n] /kja:nə:n/ *n.* wrinkles.  
**kyənuuŋ** [kəja'nū:ŋ] /kja:nu:ŋ/ *n.* goosebumps.  
**kyoʔ** [kə'jəʔ] /kjoʔ/ *n.* back.  
**kyoʔ tiŋ** [kə'jəʔ 'ti:ŋ] /kjoʔ ti:ŋ/ *n.* back of the hand.  
**kyoʔ juk** [kə'jəʔ 'jʔ'ʊq] /kjoʔ juŋ/ *n.* back of the foot.  
**kyoom** [kə'jo:bəm] /kjo:m/ *rn.* 1) lower side. 2) beneath.

## g

**gijəp** [gi'jə:p] /gijə:p/ *v.* to point with one's face.  
**gi:h** [gi:h] /gi:h/ *v.* to scratch.  
**gəy** [gə:j] /gə:j/ *v.* to eat.  
**gəət** [gə:t] /gə:t/ *v.* to cut.  
**gəy ʔoos** [gəj 'ʔo:s] /gəj ʔo:s/ *n.* smoke.  
**gadoh** /gadoh/ *v.* to quarrel. From Malay *gaduh*.  
**gajah** [ga'jəh] /gəjəh/ *n.* elephant (*Elephas maximus*). From Malay *gajah*.  
**gahayuuʔ** [gaha'ju:ʔ] /gahaju:ʔ/ (**gaharuʔ**) *n.* aloes tree (*Aquillaria* sp.). From Malay *gaharu*.  
**gamah** /gamah/ *n.* photo, picture. From Malay *gambar*.  
**gantəŋ** [gan'təŋ] /gantəŋ/ *n.* a type of ground squirrel.  
**gantak** /gantak/ *n.* measure of capacity. From Malay *gantang*.  
**gantuk** /gantuk/ *v.* to hang. From Malay *gantung*.  
**gandəəh** /gandə:h/ *pn.* name of a river (Ganda).  
**galeək** [ga'lək] /gale:k/ *v.* to tickle.  
**garuc** /garuc/ *n.* aloes tree (*Aquillaria* sp.).  
**gaal** [ga:l] /ga:l/ *n.* hip.  
**guʔ** [gūʔ] /guʔ/ *prep.* equation. **guʔ deŋ** like (the) house  
**gupəəl** [gu'pə:l] /gupə:l/ *pn.* name of a river.

**gulap** [gu'ləp] /gulaP/ *v.* to carry something on one's shoulder.  
**gəp** [gəp] /gəp/ *pn.* Ethnonym: Malay.  
**gəəs** [gə:s] /gə:s/ *v.* to live.  
**guooh** [gʊ'o:h] /guo:h/ *n.* cave. From Malay *gua*.  
**guoon** [gʊ'o:n] /guo:n/ *v.* to fetch water.  
**guooy** [gʊ'o:j] /guo:j/ *n.* crest, ridge.  
**gtaah** /gta:h/ *n.* sap, gum, rubber tree (*Hevea brasiliensis*). From Malay *getah*.  
**gcəh** [gə'cəh] /gcəh/ *v.* to be black.  
**gsəy** [gə'sə:j] /gsə:j/ *n.* wreathed hornbill (*Rhyticeros undulatus*).  
**ghel** [gə'həl] /ghel/ *v.* to be tired.  
**gŋgəwəŋ** [gəŋ'gə:wəŋ] /gŋgə:wəŋ/ *n.* Adam's apple.  
**gliʔ** [gə'liʔ] /gliʔ/ *v.* to tickle.  
**gliseeh** [gəli'se:h] /glise:h/ *v.* to whisper.  
**glisah** /glisah/ *v.* to be worried. From Malay *gelisah*.  
**glapoooh** [gəla'po:h] /glapo:h/ *n.* a type of tree.  
**glaas** [gə'la:s] /glas/ *n.* glass. From English via Malay *gelas*.  
**gloʔ** /gloʔ/ *pn.* name of a river (Gelok).  
**griʔ** /griʔ/ *pn.* Grik.  
**gyeenj** [gə'je:ŋ] /gje:ŋ/ *n.* water monitor (*Varanus salvator*).

## ʔ

**ʔibaan** /ʔiba:n/ *pn.* Ethnonym: Iban, a people of Borneo.  
**ʔibuuʔ** [ʔi'bu:ʔ] /ʔibu:ʔ/ *v.* to be big. From Malay *ibu*.  
**ʔiteʔ** [ʔi'teʔ] /ʔiteʔ/ *n.* duck. From Malay *itik*.  
**ʔituh** /ʔituh/ *dem.* that, there. From Malay *itu*.  
**ʔijoʔ** /ʔijoʔ/ *pn.* name of a river (Ijok).  
**ʔisət** [ʔi'sət] /ʔisət/ *v.* to be small.  
**ʔisaan** [ʔi'sa:ŋ] /ʔisa:ŋ/ *pn.* name of a river.  
**ʔinat** /ʔinat/ *v.* to remember, to recollect. From Malay *ingat*.  
**ʔingris** /ʔingris/ *pn.* English. From English, via

Malay *Inggeris*.

**ʔilooŋ** [ʔi'lo:ŋ] /ʔilo:ŋ/ *n.* fly.  
**ʔilwəəl** [ʔil'wə:l] /ʔilwə:l/ *v.* to turn.  
**ʔiʔ** [ʔi:ʔ] /ʔi:ʔ/ *pa.* exclamatory particle used to express sudden fear or surprise.  
**ʔiŋ** [ʔi:ŋ] /ʔi:ŋ/ (**ʔiŋ**) *persp.* I, first person singular personal pronoun.  
**ʔec** [ʔe:c] /ʔec/ *n.* 1) guts. 2) shit. — *v.* to defecate.  
**ʔec cəŋ** [ʔe:c'cə:ŋ] /ʔec cə:ŋ/ *n.* ventriculus gaster.  
**ʔec wəəc** [ʔe:c'wə:c] /ʔec wə:c/ *n.* intestines.

- ʔepəl** /ʔepəl/ *n.* apple. From English via Malay *epal*.
- ʔeɛʔ** [ʔɛ:ʔ] /ʔɛ:ʔ/ (**ʔɛʔ**) *persp.* we (more than two), including the addressee, first person plural inclusive personal pronoun.
- ʔiʔ** [ʔiʔ] /ʔiʔ/ *pa.* exclamatory particle used when offering something to someone.
- ʔət** [ʔət] /ʔən/ *v.* to meet.
- ʔəh** /ʔəh/ *pa.* interrogative particle.
- ʔəəm** /ʔə:m/ *v.* to rest one's head on something.
- ʔa =** /ʔa/ *agr\_procl\_v.* he, she, it, third person singular personal pronoun.
- ʔapah** [ʔa'päh] /ʔapah/ *rn.* side.
- ʔapuʔ** /ʔapuʔ/ *pa.* immediate past.
- ʔapōŋ** [ʔa'pōŋ] /ʔapōŋ/ *n.* pig-tailed macaque (*Macaca nemestrina*).
- ʔapōŋ raay** /ʔapōŋ ra:j/ *n.* stump-tailed macaque (*Macaca arctoides*).
- ʔabaan** /ʔaba:n/ *n.* older brother. From Malay *abang*.
- ʔabuuʔ teʔ** [ʔa'bũʔ 'tɛʔ] /ʔabu:ʔ teʔ/ *n.* dust.
- ʔabuuʔ ʔoos** [ʔa'bũʔ 'ʔo:s] /ʔabu:ʔ ʔo:s/ *n.* ashes.
- ʔadat** /ʔadat/ *n.* custom. From Malay *adat*.
- ʔadaʔ** /ʔadaʔ/ *v.* to exist. From Malay *ada*.
- ʔacɛʔ** [ʔa'cɛʔ] /ʔacɛʔ/ *n.* dog.
- ʔajɔʔ** /ʔajɔʔ/ *v.* to be small. From Temiar.
- ʔakaan** /ʔakaan/ *v.* to approach. From Malay *akan*.
- ʔaʔiʔ** [ʔa'ʔiʔ] /ʔaʔiʔ/ *v.* to collide.
- ʔasaal** /ʔasa:l/ *n.* origin. From Malay *asal*.
- ʔah** /ʔah/ *v.* to come into existence.
- ʔahaʔ** [ʔa'hähʔ] /ʔahaʔ/ *pn.* Sunday. From Malay *Ahad*.
- ʔahuʔ** [ʔa'hũʔ] /ʔahuʔ/ *v.* to be small.
- ʔaman** [ʔä'män] /ʔaman/ *n.* siamang (*Symphalangus syndactylus*). From Malay *siamang*.
- ʔampon** [ʔam'po:ŋ] /ʔampo:ŋ/ *v.* to float.
- ʔanakit** [ʔan'kit] /ʔanakit/ *v.* to take. From Malay *angkit*.
- ʔankut** [ʔan'küt] /ʔankut/ *n.* a type of wasp. From Malay *angkut*.
- ʔawɛ̃ɛ̃n** [ʔä'wɛ̃ɛ̃m] /ʔawɛ̃ɛ̃m/ *n.* bamboo.
- ʔayih** /ʔaj:i:h/ *n.* water. From Malay *air*.
- ʔayoh** [ʔa'jöh] /ʔajoh/ *v.* to shed leaves.
- ʔaat** [ʔa:t] /ʔat/ *n.* digging stick.
- ʔaan** [ʔa:ʔ] /ʔa:n/ *v.* 1) to bring. 2) to carry.
- ʔaay** [ʔa:j] /ʔa:j/ *persp.* we two, including the addressee, second person dual inclusive personal pronoun.
- ʔäʔ** [ʔäʔ] /ʔäʔ/ *pa.* exclamatory particle used when offering something to someone.
- ʔääh** /ʔä:h/ *pn.* nickname for someone.
- ʔugaməəh** /ʔugamə:h/ *n.* religion. From Malay *ugama*.
- ʔusik** [ʔu'sik] /ʔusik/ *v.* to play games. From Malay *usik*.
- ʔunaʔ** /ʔunaʔ/ *v.* to stall. From Malay *undak*.
- ʔuyat dayah** [ʔu'jät 'da'jäh] /ʔujat dajah/ *n.* blood vessel. From Malay *urat darah*.
- ʔuup** /ʔu:p/ *v.* to rest one's forehead on something.
- ʔuuc** [ʔu:c] /ʔu:c/ *v.* to climb up.
- ʔok** [ʔök] /ʔok/ *v.* to give.
- ʔoy** [ʔøj] /ʔoj/ *pa.* exclamatory particle.
- ʔoos** [ʔo:s] /ʔo:s/ *n.* fire.
- ʔooy** [ʔo:j] /ʔoj/ *v.* to order, to command.
- ʔooh** [ʔo:h] /ʔo:h/ (**ʔoh**) *persp.* he, she, it, third person singular personal pronoun.
- ʔooj** [ʔo:j] /ʔoj/ *v.* to wait for an animal that was hit by a blowpipe dart to fall down.
- ʔōŋ** [ʔōŋ] /ʔōŋ/ *n.* 1) river. 2) water.  
— *v.* to drink.
- ʔōŋ knoom** [ʔōŋ kə'nō:m] /ʔōŋ knō:m/ *n.* urine.
- ʔōŋ** [ʔōŋ] /ʔōŋ/ *v.* to smell.
- ʔkʔaak** [ʔək'ʔa:k] /ʔkʔa:k/ *n.* crow (*Corvus* sp.).
- ʔsiiʔ** [ʔə'si:ʔ] /ʔsi:ʔ/ *n.* body. From Malay *isi*.
- ʔmpat** [ʔəm'pät] /ʔmpat/ *num.* four. From Malay *empat*.
- ʔmpooc** [ʔm'po:c] /ʔmpo:c/ *n.* salt.
- ʔn =** [ʔn] /ʔn/ *prep\_procl\_np.* locative. **ʔn = deen** at (the) house
- ʔnteʔ** [ʔən'tɛʔ] /ʔnteʔ/ *n.* animal.
- ʔntap** [ʔən'täp] /ʔntap/ *n.* scrotum.
- ʔnsoom lwey** [ʔən'so:m lə'wɛj] /ʔnso:m lwej/ *n.* honeycomb.
- ʔniʔ** [ʔə'nĩʔ] /ʔniʔ/ *v.* 1) to be sick. 2) to have pain.
- ʔneh** [ʔə'nɛh] /ʔneh/ *v.* to be heavy.
- ʔnjɔos** /ʔnjɔ:s/ *n.* exhaust pipe. From English *exhaust* via Malay.
- ʔŋkooŋ** [ʔŋ'ko:ŋ] /ʔŋko:ŋ/ *n.* man, male.
- ʔykuy** [ʔi'küj] /ʔjukuj/ *v.* to roll (of thunder).

## S

**sipat** /sipat/ *n.* borderline. From Malay *sipat*.

**sikap** /sikaP/ *v.* to pick up with one's teeth.

**siseeh** [si'se:h] /sise:h/ *n.* comb. From Malay *sisir*.

**silgiil** /silgi:l/ *v.* to raise one's hand.

**sireey** [si're:j] /sire:j/ *n.* a type of tree.

**siwaal** /siwa:l/ *n.* trousers. From Malay *seluar*.

**sec** [sɛ:c] /sec/ *n.* flesh, meat.

**selaməlaməh** /selaməlaməh/ *adv.* forever. From

- Malay *selama-lama*.
- seet** /se:t/ v. to pour.
- sɛy** [sɛj] /sej/ *rn.* long side.
- sɛɛc** [se:c] /se:c/ v. to steal.
- sapii?** [sa'pi:ʔ] /sapi:ʔ/ *n.* wild ox, gaur (*Bos gaurus*). From Malay *sapi*.
- saptuuh** [sap'tu:h] /saptu:h/ *pn.* Saturday. From Malay *Sabtu*.
- sabiim** [sa'bi:b̥m] /sabi:m/ *pn.* Ethnonym: Sabüim.
- sat** /saT/ *n.* sign, mark.
- satuuh** /satu:h/ *num.* one. From Malay *satu*.
- sakat<sub>1</sub>** /sakat/ *prep.* up to, as far as. From Malay *sakat*.
- sakat<sub>2</sub>** /sakat/ v. to vex. From Malay *sakat*.
- sagup** [sa'güp] /saguP/ *n.* cloud.
- sagup dete?** [sa'güp de'teʔ] /saguP deteʔ/ *n.* fog.
- sagook** [sa'go:k] /sago:k/ *n.* neck.
- sa?** [sãʔ] /saʔ/ ? time, moment.
- sa? nõh** [sãʔ nõh] /saʔ nõh/ *np.* soon.
- saməəh** /samə:h/ v. to be the same. From Malay *sama*.  
— *prep.* sociative. From Malay *sama*.
- samaa?** [sa'mã:ʔ] /sama:ʔ/ v. to be the same.  
— *prep.* sociative. From Malay *sama*.
- sampeey** /sampe:j/ *prep.* as far as, until. From Malay *sampai*.
- sanu?** [sa'nũʔ] /sanuʔ/ v. to be rotten.
- sanum** [sa'nũm] /sanum/ *n.* a type of tree.
- sanʔiit** [sanʔiit] /sanʔiit/ *n.* red-whiskered bulbul (*Pycnonotus jocosus*).
- sawo?** [sa'wöʔ] /sawoʔ/ (**sao?**) *pn.* name of a river (Sauk).
- sayoət** [sa'jöt] /sajo:t/ *n.* a type of tuber.
- sãaw** [sã:w] /sã:w/ *n.* a type of small bat.
- susah** [su'säh] /susah/ v. to be difficult. From Malay *susah*.
- susah hup** [su'säh 'hüp] /susah hum/ v. to be sad. From Malay *susah*.
- susuu?** [su'su:ʔ] /susu:ʔ/ *n.* milk. From Malay *susu*.
- suyat** [su'jät] /sujat/ *n.* letter. From Malay *surat*.
- soh** [söh] /soh/ v. to eat meat.
- soo?** [so:ʔ] /so:ʔ/ v. to suck.
- söp** [söp] /söp/ *n.* lung.
- söc** [söc] /söc/ v. to wash one's hands.
- söcl** /sö:l/ v. to stuff, to block.
- sieep** [s'e:p] /sie:p/ v. to be ready. From Malay *siap*.
- sieem** [s'e:b̥m] /sie:m/ *pn.* Ethnonym: Thai, Siamese; Thailand.
- suoop** [s'u:p] /su:p/ v. to eat from an open hand.
- suook** [s'u:k] /su:k/ *n.* umbilical cord.
- spatut** /spatut/ v. to be suitable. From Malay *patut*.
- spadaan** /spada:n/ *n.* border, boundary. From Malay *sempadan*.
- spulooh** [spu'lo:h] /spulo:h/ (**pulooh**) *num.* ten. From Malay *sepuluh*.
- sbec** [sə'bɛc] /sbeC/ *n.* mosquito.
- sbap** [sə'bäp] /sbap/ *conj.* because. From Malay *sebab*.
- sbagaay** /sbaga:j/ (**sbageey**) *prep.* like. From Malay *sebagai*.
- sblaas** [səbə'la:s] /sbla:s/ *num.* eleven. From Malay *sebelas*.
- sblum** /sblum/ *conj.* before. From Malay *sebelum*.
- steey** /ste:j/ v. to be dried-up (of e.g. watercourse).
- stuuy** /stui:j/ v. to be overgrown, to be untidy.
- stokiin** /stoki:n/ *n.* sock. From English *stocking* via Malay *setokin*.
- stooj** /støj/ v. to be medium-sized.
- stsat** [sət'sät] /stsat/ *n.* a type of sunbird.
- sdiyaa?** /sdija:ʔ/ v. to be prepared. From Malay *sedia*.
- sdaap** [sə'da:p] /sda:p/ v. to be tasty. From Malay *sedap*.
- sjati?** /sjatiʔ/ v. to be real, to be true, to be genuine. From Malay *sejati*.
- sjarah** /sjarah/ *n.* history. From Malay *sejarah*.
- sjuu?** [sə'ʃu:ʔ] /sju:ʔ/ v. to be cold (of weather). From Malay *sejuk*.
- skalii?** /skali:ʔ/ *adv.* together. From Malay *sekali*.
- sʔok** [sə'ʔök] /sʔök/ *n.* a type of tree.
- sribuuh** [səɾi'bu:h] /sribu:h/ (**yibuuh**) *num.* thousand. From Malay *seribu*.
- sʔatuus** [səɾa'tu:s] /sʔatu:s/ *num.* hundred. From Malay *seratus*.
- smilaan** [smi'la:n] /smila:n/ *num.* nine. From Malay *sembilan*.
- smaj** [sə'mäj] /smaj/ v. to ask for something.
- smaa?** [sə'mã:ʔ] /sma:ʔ/ *n.* human, person.
- smaa? dagak** [sə'mã:ʔ da'gäq] /sma:ʔ dagaŋ/ *n.* stranger. From Malay *dagang*.
- smaa? hchəoc** [sə'mã:ʔ həc'hə:c] /sma:ʔ hchə:c/ *n.* stranger.
- smaa? laliuh** [sə'mã:ʔ la'li:h] /sma:ʔ lali:h/ *n.* adult.
- smaay** /sma:j/ *pn.* Ethnonym: Semai.
- smuu?** [sə'mü:ʔ] /smu:ʔ/ *quan.* all. From Malay *semua*.
- smuu? smuu?** [sə'mü:ʔ sə'mü:ʔ] /smu:ʔ smu:ʔ/ *quan.* every. From Malay *semua*.
- smpitaan** /smpita:n/ *pn.* name of a place (Sumpitan).
- smpooj mat** [səm'pøj 'mäʔ] /smpøj mat/ *n.* eyelid.
- smpiee?** [səm'p'e:ʔ] /smpie:ʔ/ v. to be inedible (of animal killed by predator).
- smnaam** [səm'nã:m] /smna:m/ *pn.* Ethnonym:

Semnam.  
**smlaay** /smla:j/ *pn.* Ethnonym: Semelai.  
**sniic** [sə'nī:c̣] /sni:c/ *n.* a type of wasp.  
**sniih** /sni:h/ *v.* to be delicate, to be fine. From Malay *seni*.  
**sneeh** [sə'nē:ḥ] /sne:h/ *pn.* Monday. **hayii?** **sneeh** day Monday From Malay *Isnin*.  
**snaŋ** [sə'nāŋ] /snaŋ/ *v.* to be easy. From Malay *senang*.  
**snaŋ hup** [sə'nāŋ 'hüp̚] /snaŋ hum/ *v.* to be happy. From Malay *senang*.  
**snool** /snɔ:l/ *n.* stuffing, plug.  
**sntaa?** [sən'ta:ʔ] /snta:ʔ/ *n.* tail.  
**sntool** [sən'tɔ:l] /sntɔ:l/ *n.* hair.  
**sntool ceem** [sən'tɔ:l 'c̣e:m] /sntɔ:l ce:m/ *n.* feather.  
**snmaan** [sən'mā:m] /snma:n/ *n.* a classifier for humans.  
**snlɔc** [sən'lɔ:c̣] /snlɔ:c/ *n.* blowpipe dart.  
**spjɔŋ** /spjɔ:ŋ/ *n.* hole.  
**spjɔŋ keet** [səŋ'jɔŋ 'kɛ:t] /spjɔ:ŋ kɛ:t/ *n.* anus.  
**spjɔŋ muh** [səŋ'jɔŋ 'mūh] /spjɔ:ŋ muh/ *n.* nostril.  
**spjɔŋ labuoŋ** [səŋ'jɔŋ la'bʊ:ŋ] /spjɔ:ŋ

labuo:ŋ/ *n.* fontanel.

**sŋkaat** [səŋ'ka:t̚] /sŋka:t/ *pn.* name of a river.  
**sŋkɔʔ p̚hū?** [səŋ'kɔʔ p̚hū?] /sŋkɔ:ʔ p̚hū?/ *n.* bark of tree.  
**sliseh** /sliseh/ *v.* to bump into.  
**slec** [sə'lɛ:c̣] /slec/ *v.* to be slippery, to be smooth.  
**slasəəh** [səla'sə:ḥ] /slasə:h/ *pn.* Tuesday. **hayii?** **slasəəh** day Tuesday From Malay *Selasa*.  
**slan̄kaa?** [səlaŋ'ka:ʔ] /slan̄ka:ʔ/ *n.* collar-bone. From Malay *selangka*.  
**slaa?** [sə'la:ʔ] /sla:ʔ/ *n.* leaf.  
**sluuh** [sə'lu:ḥ] /slu:h/ *v.* to shoot with a blowpipe.  
**slpas** /slpas/ *conj.* after. From Malay *selepas*.  
**slyool** [səl'jo:l] /sljo:l/ *n.* a type of tree.  
**srawaa?** /srawa:ʔ/ *pn.* Sarawak.  
**srayaa?** [səra'ja:ʔ] /sraja:ʔ/ *pn.* name of a river.  
**syeh** /sjeh/ *v.* to dump, to pour.  
**syet** [sə'je:t̚] /sjet/ *v.* to be dry.  
**syaak** [si'ja:k̚] /sjak/ *n.* wind.  
**syupaa?** /sjupa:ʔ/ *v.* to be the same. From Malay *serupa*.  
**syōōh** [sī'jō:ḥ] /sjō:h/ *pn.* name of a river.  
**syyaay** [si'ja:j] /sjja:j/ *pn.* name of a river.

## K

**ƙabuuh** [ka'bu:ḥ] /kabu:h/ *pn.* Wednesday. **hayii?**

**ƙabuuh** day Wednesday. From Malay *Rabu*.

## h

**hibool** [hi'bo:l] /hibo:l/ *pn.* name of a river (Ibul).  
**higa?** /higaʔ/ *n.* price. From Malay *harga*.  
**hihtəh** /hihtəh/ *v.* to nod.  
**hinɔm** [hi'nɔ:m] /hinɔ:m/ *n.* urinary bladder.  
**hiŋkaa?** [hiŋ'ka:ʔ] /hiŋka:ʔ/ *v.* to play games.  
**hiliit** [hi'lit̚] /hilit̚/ *v.* to swallow.  
**hilīit** /hilīit̚/ *v.* to eat fruit.  
**hirat** /hiraT/ *v.* to turn (possibly from Malay *akhir*, *akhiran*).  
**he?** ['hɛʔ] /heʔ/ *adv.* only.  
**heŋ** [hɛ:ŋ] /heŋ/ *v.* to fly.  
**hēēp** ['hē:p̚] /hē:m/ *v.* to whistle.  
**ha =** ['ha] /ha/ *procl.* interrogative particle.  
**haba?** [ha'bāʔ] /habaʔ/ *rn.* side.  
**haba? tuuy** [ha'bāʔ 'tu:j] /habaʔ tu:j/ *rn.* opposite side.  
**habaay** /haba:j/ *n.* news. From Malay *habar*.  
**hat** /haT/ *n.* trouble.  
 — *adv.* just.  
**hake?** /hakeʔ/ *v.* to pick up.  
**hagaap** [ha'ga:p̚] /haga:p/ *n.* Sumatran rhinoceros

(*Dicerorhinus sumatrensis*).

**hagɔp** [ha'gɔp̚] /hagɔP/ *quan.* all.  
**haʔəʔ** [haʔə:ʔ] /haʔə:ʔ/ *pa.* affirmative particle.  
**hamis** [ha'mis] /hamis/ *pn.* Thursday. From Malay *Khamis*.  
**halɔw** [ha'lɔ:w] /halɔ:w/ *v.* to chase. From Malay *halau*.  
**hawɔc** [ha'wɔ:c̣] /hawɔ:c/ *v.* to be deep.  
**hayii?** [ha'ji:ʔ] /haji:ʔ/ *n.* day. From Malay *hari*.  
**hayas ʔōŋ** [ha'jäs 'ʔōŋ] /hajas ʔōŋ/ *n.* water surface.  
**hayaam** [ha'ja:ḅm] /haja:m/ *pn.* name of a river.  
**hayoom** [ha'jo:ḅm] /hajo:m/ *n.* bamboo rat (*Rhizomys sumatrensis*).  
**hayōō?** [hā'jō:ʔ] /hajō:ʔ/ *v.* to be light.  
**hāāp** ['hā:p̚] /hā:p/ *n.* diarrhoea.  
**hup** ['hüp̚] /hum/ *n.* heart.  
 — *v.* to want.  
**hubii?** [hu'bi:ʔ] /hubi:ʔ/ *n.* tuber. From Malay *ubi*.  
**huk** ['hük̚] /huk/ *n.* wasp's nest.  
**humaa?** [hū'mā:ʔ] /hu'ma:ʔ/ *n.* swidden. From

Malay *huma*.

- huus** [ˈhu:s] /hu:s/ v. 1) to exit. 2) to float.  
**huuh** [ˈhu:h] /hu:h/ v. to yell.  
**huuŋ** [ˈhu:ŋ] /hu:ŋ/ n. ravine. From Malay *gaung*.  
**hooh** [ˈho:h] /ho:h/ v. to summon, to yell.  
**hɔc** [ˈhɔ:c] /hɔ:c/ v. to come.  
 — *pa*. perfective particle.  
**hɔʔ kayɔɔl** [ˈhɔʔ kaˈjɔ:l] /hɔ:ʔ kajɔ:l/ n. knee-cap.  
**hɔɔh** [ˈhɔ:h] /hɔ:h/ v. to follow.  
**huooʔ** [ˈhʊo:ʔ] /huo:ʔ/ v. to love.  
**hchuooc** [hɪcˈhʊo:c] /hchuo:c/ v. to whistle.  
**hkhɛɛk** [hɔkˈhɛ:k] /hkhɛ:k/ v. to breathe.  
**hʔɔɔh** [həˈʔɔ:h] /hʔɔ:h/ *pa*. affirmative particle.  
**hməɔŋ** [həˈmɔ:ŋ] /hmə:ŋ/ n. taboo.

- hmalaaw** [hmãˈla:w] /hmala:w/ *pn*. name of a river (Malau).  
**hmbhɔɔm** [hmˈhɔ:bɔ:m] /hmbhɔ:m/ v. to like.  
**hntiik** /hnti:k/ v. to pull out, to extract.  
**hnleɛn** [hənˈle:ɛn] /hnle:n/ n. groin.  
**hnloop** [hənˈlo:p] /hnlo:p/ n. morning.  
**hnwāŋ** [hənˈwāŋ] /hnwāŋ/ n. oriental pied hornbill (*Anthracoceros albirostris*).  
**hŋɔɔt** [həŋɔ:t] /hŋɔ:t/ n. night.  
**hlitɔk** /hlitɔk/ v. 1) to pull out, to extract. 2) to take off headgear.  
**hyɔc** [həˈjɔ:c] /hjɔC/ n. sweat.  
**hyalooc** [həjaˈlo:c] /hjalo:c/ *pn*. name of a river.  
**hyhuooy** [hiˈhʊo:j] /hjhuo:j/ v. to yawn.

## m

- mic** [ˈmɪc] /mic/ *pa*. 1) desiderative particle. 2) emphatic particle.  
**miʔluuʔ** [miʔˈlu:ʔ] /miʔlu:ʔ/ v. to be shy. From Malay *malu*.  
**misɛɛy** [miˈsɛ:j] /misɛ:j/ n. mustache. From Malay *misai*.  
**miiʔ** [ˈmi:ʔ] /mi:ʔ/ n. rain.  
 — v. to rain.  
**miih** [ˈmi:h] /mi:h/ *persp*. you (singular), second person singular personal pronoun.  
**memeh** [mɛˈmɛh] /memeh/ n. a type of tree.  
**meməŋ** /meməŋ/ *adv*. of course, indeed. From Malay *memang*.  
**mɛɛm** [ˈmɛ:m] /mɛ:m/ n. breast.  
**mɛɛm naaʔ** [ˈmɛm ˈnã:ʔ] /mɛ:m na:ʔ/ n. mother's milk.  
**mɛɛy** [ˈmɛ:j] /mɛ:j/ v. to delouse.  
**miiŋ ʔoos** [ˈmiiŋ ʔo:s] /miiŋ ʔo:s/ n. firewood.  
**mat** [ˈmãt] /mat/ n. eye.  
**mat kmɔʔ** [mãtˈ kəˈmɔ:ʔ] /mat kmɔ:ʔ/ n. stone of a fruit.  
**mat ʔɔŋ** [ˈmãtˈ ʔɔŋ] /mat ʔɔŋ/ n. source, spring.  
**mat saleh** /mat saleh/ *pn*. Ethnonym: European. From Malay *Mat Sallih*.  
**mat mɛɛm** [ˈmãtˈ mɛ:m] /mat mɛ:m/ n. nipple.  
**mat yiis** [ˈmãtˈ ji:s] /mat ji:s/ n. sun.  
**macaam** /maca:m/ n. kind, a type. From Malay *macam*.  
**masiŋ** /masi:ŋ/ *adv*. separate, singly.  
**masiŋ masiŋ** [maˈsi:ŋ maˈsi:ŋ] /masi:ŋ masi:ŋ/ *quan*. each. From Malay *masing-masing*.  
**masəh** /masəh/ n. period, epoch, era. From Malay *masa*.  
**masaʔalah** /masaʔalah/ n. enigma, puzzling question. From Malay *masalah*.  
**mamuuh** [mãˈmũ:h] /mamu:h/ v. to bathe.  
**manaan** [mãˈnã:n] /mana:n/ *pn*. name of a river.  
**manuk** [mãˈnũk] /manuk/ n. chicken.  
**mantuooy** [mãnˈtʊo:j] /mantuo:j/ n. Sunda pangolin (*Manis javanica*).  
**maŋkeel** [mãŋˈke:l] /maŋke:l/ n. a type of tuber.  
**maŋkoʔ** /maŋkoʔ/ n. bowl. From Malay *mangkuk*.  
**mayeʔ** [maˈjɛʔ] /majeʔ/ *interrogative*. how.  
**mayah** [maˈjãh] /majah/ v. to be angry. From Malay *marah*.  
**mayãʔ** /majãʔ/ n. time, period.  
**mayãʔ nɔh** [mãˈjãʔ ˈnɔh] /majãʔ nɔh/ *np*. now.  
**museem** [muˈse:m] /muse:m/ n. season. From Malay *musim*.  
**muh** [ˈmũh] /muh/ n. nose.  
**muh mat** [ˈmũh ˈmãt] /muh mat/ n. face (lit. nose eye).  
**muŋkiin** /muŋki:n/ *adv*. maybe, likely, possibly. From Malay *mungkin*.  
**mulaaʔ** /mula:ʔ/ n. beginning. From Malay *mula*.  
**muyah** /mujah/ (**murah**) v. to be cheap. From Malay *murah*.  
**mɔɔt** /mɔ:t/ v. to hold in one's mouth.  
**mɔʔ** [mɔ:ʔ] /mɔ:ʔ/ n. aunt, sister of parent.  
**mɔɔy** [ˈmɔ:j] /mɔ:j/ v. to be different  
 — *quan*. other.  
**mʔããc** [mãˈʔã:c] /mʔã:c/ v. to be wet.  
**mhããŋ** [mãˈhã:ŋ] /mhã:ŋ/ n. a type of tree.  
**mnibaas** [mɔnɪˈba:s] /mniba:s/ *pn*. name of a river.  
**mnaaʔ** [mɔˈnã:ʔ] /mna:ʔ/ n. smell.  
**mnaaʔ tɛʔ** [mɔˈnãʔ ˈtɛʔ] /mna:ʔ tɛʔ/ n. dust.  
**mnriiʔ** /mnri:ʔ/ *pn*. Ethnonym: Menriq.  
**mnrəoy** [mɔnɪˈrɔ:j] /mnrɔ:j/ *pn*. Ethnonym: Yir.  
**mŋpsaaw** [mɔŋˈsa:w] /mŋpsa:w/ n. son-in-law, daughter-in-law.  
**mŋjikut** /mŋjikut/ *prep*. according to. From Malay *mengikut*.

**mlisaan lwey** [məli'sǎn lə'wěj] /mlisa:n lwej/ *n.*  
honey.  
**mrrii?** /mri:ʔ/ *pn.* Ethnonym: Mah Meri.  
**mrbo?** [mər'bōʔ] /mrboʔ/ *n.* a type of dove. From  
Malay *merbok?*

**mrboow** /mrbo:w/ *pn.* name of a place (Lubok  
Merbau).  
**myrooy** [mi'ro:j] /mjro:j/ *pn.* name of a river (Lata  
Puteh).

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## n

**-n-** /n/ (**n-**) *deriv\_aff\_v.* nominalization.  
**niŋ kəl** /niŋ kəl/ *interrogative.* where.  
**nilaŋ** [ni'la:ŋ] /nila:ŋ/ *rn.* beside.  
**niŋ kool** [niŋ 'kool] /ni:ŋ kool/ *interrogative.*  
where.  
**niiy** [ni:ŋ] /ni:j/ *num.* one, self.  
**niiy yibuuh** [niŋ ji'bu:h] /ni:j jibu:h/ *num.*  
thousand. From Malay *ribu*.  
**nero?** [ne'rōʔ] /neroʔ/ *pn.* name of a river (Nerok).  
**neen** [nē:n] /nɛ:n/ (**nen**) *dem.* demonstrative.  
**napak byii?** [na'pǎkʰ bə'ji:ʔ] /napaK bji:ʔ/ *n.* wild  
pig (*Sus scrofa*).  
**nasii?** [na'si:ʔ] /nasi:ʔ/ *n.* rice (cooked). From  
Malay *nasi*.  
**nasah** [na'sǎh] /nasah/ *pn.* name of a river (Nak  
Sah).  
**nam** [nǎm] /nam/ *num.* six. From Malay *enam*.  
**nampa?** /nampaʔ/ *v.* to be visible. From Malay

*nampak*.  
**naniim** [nǎ'nɛ:m] /nani:m/ *n.* placenta.  
**naa?** [nǎ:ʔ] /na:ʔ/ *n.* mother.  
**naay** [nǎ:ŋ] /na:j/ *num.* two.  
**num =** [num] /num/ (**nm =**, **nuŋ =**)  
*prep\_procl\_np.* source. **num = deen** from  
(the) house  
**numooh** /numo:h/ *n.* number. From Malay  
*nombor*.  
**nuuŋ** [nū:ŋ] /nu:ŋ/ *n.* road.  
**noh** [nōh] /nəh/ *dem.* demonstrative.  
**nkhēk** /nkhē:k/ *n.* breath, breathing.  
**nhcah** [nəh'cʰǎh] /nhcah/ *n.* trail.  
**nggyii?** /ngji:ʔ/ *n.* territory, settlement, state.  
From Malay *negeri*.  
**nyduuy** [ni'du:j] /njdu:j/ *n.* evening.  
**nygeey** [nij'gɛ:j] /njgɛ:j/ *n.* food.

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## ŋ

**ŋeep** [ŋɛ:pʰ] /ŋɛ:p/ *pn.* name of a river.  
**ŋawaa?** [ŋǎ'wǎ:ʔ] /ŋawa:ʔ/ *n.* body. From Malay  
*nyawa*.  
**ŋaak** [ŋǎ:kʰ] /ŋa:k/ *n.* mouth.  
**ŋaaw** [ŋǎ:wʰ] /ŋa:w/ *n.* cat.  
**ŋuu?** [ŋū:ʔ] /ŋu:ʔ/ *v.* to make, to do.

**ŋok** /ŋok/ *n.* endpoint.  
**ŋok mat yiis** [ŋōkʰ 'mǎtʰ 'ji:s] /ŋok mat ji:s/ *rn.*  
west.  
**ŋooŋ** [ŋō:ŋ] /ŋo:ŋ/ *v.* to eat fruit.  
**ŋhū?** [ŋǎ'hūʔ] /ŋhūʔ/ *n.* 1) tree. 2) wood.  
**ŋmpeey** [ŋəm'pɛ:j] /ŋmpe:j/ *pn.* name of a river.

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## ŋ

**ŋeen** [ŋɛ:n] /ŋɛ:n/ (**ŋen**) *persp.* they (more than  
two), third person plural personal pronoun.

**ŋic** [ŋɛ:cʰ] /ŋɛ:c/ *v.* to gnaw fruit.  
**ŋooh** [ŋō:hʰ] /ŋo:h/ *pn.* name of a river (Ngor).

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## l

**lipaan** [li'pǎ:dʰn] /lipa:n/ *pn.* name of a river.  
**litoo** [li'to:w] /litoo:w/ *v.* to be young.  
**liceh** [li'cʰɛh] /liceh/ *pn.* name of a river.  
**limaa?** [li'mǎ:ʔ] /lima:ʔ/ *num.* five. From Malay  
*lima*.  
**lileen** /lile:n/ *n.* candle. From Malay *lilin*.

**liyee?** [li'je:ʔ] /lije:ʔ/ *pn.* name of a river.  
**liip** [li:pʰ] /li:p/ *v.* to know.  
**liiw** /li:w/ *v.* to be long, to be lengthy.  
**liip** [li:pʰ] /li:m/ *v.* to be elastic.  
**lep** /leP/ *v.* to turn upside down.  
**lec** [lɛ:cʰ] /lec/ *v.* 1) to miss a target. 2) to be

- wrong.
- lɛɛp** [lɛ:pʰ] /lɛ:p/ v. to sneak.
- liic** [li:cʰ] /li:C/ v. to be of different size.
- lək** [lɔkʰ] /ləK/ n. quiver.
- ləɔp** [lɔ:pʰ] /lɔ:p/ v. 1) to enter. 2) to dress.
- ləɔy nɔh** [lɔj nɔh] /lɔ:j nɔh/ np. at once.
- lapaak** /lapa:k/ v. to slap. From Malay *lepak*.
- lapaan** [la'pa:ɳ] /lapa:n/ num. eight. From Malay *delapan*.
- labii?** [la'bi:ʔ] /labi:ʔ/ n. turtle. From Malay *labi*.
- labuuh** [la'bu:hʰ] /labu:h/ pn. name of a river.
- labuoonj** [la'bʰu:ɔŋ] /labuo:ŋ/ n. skull.
- lataa?** [la'ta:ʔ] /lata:ʔ/ n. waterfall.
- latāk** [la'tāqʰ] /latāk/ n. swamp.
- lakuoom** [la'kʰu:ɔm] /lakuo:m/ n. brain.
- lagii?** [la'gi:ʔ] /lagi:ʔ/ adv. still. From Malay *lagi*.
- las** [lās] /las/ n. ant.
- lasuoom** [la'sʰu:ɔm] /lasuo:m/ n. marrow.
- lah** /lah/ pa. emphatic particle. From Malay *lah*.
- lahoonj** [la'ho:ɔŋ] /laho:ŋ/ n. pharynx.
- lanak** [la'nākʰ] /lanak/ n. Malayan porcupine (*Hystrix brachyura*). From Malay *landak*.
- lanoh** [la'nɔh] /lanɔh/ pn. Ethnonym: Lanoh.
- lanteey** [lan'te:j] /lante:j/ n. floor. From Malay *lantai*.
- lanjah** /lanjah/ v. to bump into. From Malay *langgar*.
- lanjɔt** [la'ŋɔ:tʰ] /lanjɔ:t/ n. hollow of the knee.
- lanjeen** [la'ŋje:ɳ] /lanje:n/ n. a type of tree.
- lanjkoo?** /lanjko:ʔ/ n. menstruation.
- lanjkuoc** [lan'kʰu:ɔcʰ] /lanjkuoC/ n. a type of owl.
- laluu?** /lalu:ʔ/ v. to pass. From Malay *lalu*.
- lalooh** [la'lo:hʰ] /lalo:h/ pn. name of a river.
- lawaan** /lawa:n/ v. to fight. From Malay *lawaan*.
- lawuut** [la'wu:tʰ] /lawu:t/ n. ocean. From Malay *laut*.
- layiin** /lajin/ v. to be different. From Malay *lain*.
- layaanj** [la'ja:ɔŋ] /laja:ŋ/ n. a type of swallow. From Malay *layang*.
- laaj** [la:ɔŋ] /la:ŋ/ n. a type of tuber.
- lubo?** /lubo:ʔ/ n. deep pool in a river. From Malay *lobok*.
- lukaa?** [lu'ka:ʔ] /luka:ʔ/ v. to hit a target. From Malay *luka*.
- lumpat** [lum'pātʰ] /lumpat/ v. to jump. From Malay *lompat*.
- luus** [lu:s] /lu:s/ n. a type of tuber.
- lo?** [lɔʔ] /loʔ/ interrogative. what.
- lɔɔp** /lɔ:p/ v. to insert one's hand into something.
- luooy<sub>1</sub>** [lʰu:ɔj] /luo:j/ v. to settle.
- luooy<sub>2</sub>** /luo:j/ v. to crawl, to slither.
- lpas** [lə'pās] /lpas/ v. to leave. From Malay *lepas*. — adv. after that. From Malay *lepas*.
- lbeh** [lə'bɛh] /lbeh/ quan. many. From Malay *lebih*.
- lta?** /lta:ʔ/ v. to put down. From Malay *letak*.
- lkluk** [lək'lükʰ] /lkluk/ v. to laugh.
- lgəp** [lə'gəpʰ] /lgəP/ n. riverside land.
- lgət pɔɔ?** [lə'gətʰ 'pɔ:ʔ] /lgəT pɔ:ʔ/ n. mountain pass.
- lʔɛk** [lə'ʔɛ:kʰ] /lʔɛ:k/ pn. name of a river (Ayer Puti).
- lʔɔs** [lə'ʔɔ:s] /lʔɔ:s/ n. fat.
- lheɛŋ** [lə'hɛ:ɔŋ] /lhe:ŋ/ n. saliva.
- lmɔŋ** [lə'mɔŋ] /lmɔŋ/ n. tooth.
- lmpayuuj** [ləmpa'ju:ɔŋ] /lmpaju:ŋ/ pn. name of a river.
- lntaak** [lən'ta:kʰ] /lnta:k/ n. tongue.
- lnɔ?** [lə'nɔʔ] /lnɔʔ/ v. to be tender.
- lnjoonj** [lə'njɔ:ɔŋ] /lnjo:ŋ/ pn. name of a river (Lenggong).
- lnjwɛŋ** [lə'njwɛŋ] /lnjwɛŋ/ pn. name of a river (Lawin).
- llwɛl** [ləl'wɛl] /llwɛl/ pn. name of a river.
- lwey** [lə'wɛj] /lwe:j/ n. bee.
- lweejn** [lə'we:ɳ] /lwe:j/ v. to be dizzy.
- lweey** [lə'wɛ:j] /lwe:j/ pn. name of a river.
- lwaak** [lə'wakʰ] /lwa:k/ n. mountain pass. From Temiar.
- lwaay** /lwa:j/ m. outside. From Malay *luar*.
- lyəə?** [lə'jə:ʔ] /ljə:ʔ/ v. to be.

## r

- rabaan** [ra'ba:ɳ] /raba:n/ pn. name of a river (Raban).
- rupanəh** /rupanəh/ adv. apparently. From Malay *rupanya*.

## w

- wiit** [wi:tʰ] /wi:t/ v. to flow.
- wiik** [wi:kʰ] /wi:k/ v. to divorce.
- wiij** [wi:j] /wi:j/ (**wiy**) persp. they two, third person dual personal pronoun.
- weel** [wɛ:l] /wɛ:l/ adv. again.
- wɛɛc** /wɛ:c/ n. cloth.
- wɛɛl** [wɛ:l] /wɛ:l/ m. left.
- wəən** [wə:ɳ] /wə:n/ v. to crawl.



**waan** /wa:ŋ/ *n.* money. From Malay *wang*.  
**waal** ['wa:l] /wa:l/ *v.* to return.  
**wāāy** ['wā:ŋ] /wā:j/ *n.* loincloth.  
**wook** /wɔ:k/ *v.* to rise, to wake up.  
**woo?** ['wɔ:ʔ] /wɔ:ʔ/ *v.* 1) to exist. 2) to have.  
**wooh** ['wɔ:h] /wɔ:h/ *pn.* name of a river.

**wōōc** ['wō:ʔc] /wō:c/ *n.* caudal vertebra.  
**wieŋ** ['w'e:ŋ] /wie:ŋ/ *v.* to extinguish fire.  
**wtwēt** [wət'wēt] /wtwēt/ *v.* to hurt (of stomach).  
**wywooy** [wi'wo:j] /wjwo:j/ *pn.* name of a river.

## y

**-yi-** /ji/ *infix.* causative infix.  
**yik** ['jik] /jiŋ/ *v.* 1) to leave. 2) to descend.  
**yiŋiit** /jiŋi:t/ *n.* Ringgit. From Malay *Ringgit*.  
**yiŋōōŋ ʔoos** [ji'ŋōŋ 'ʔo:s] /jiŋō:ŋ ʔo:s/ *n.* charcoal.  
**yiis** ['ji:s] /ji:s/ *n.* liver.  
**yiis** ['ji:s] /ji:s/ *n.* daylight.  
**yiij** ['ji:j] /ji:j/ *persp.* you two, second person dual personal pronoun.  
**yeef** ['je:ʔ] /je:ʔ/ (**ye?**) *persp.* we (more than two), excluding the addressee, first person plural exclusive personal pronoun.  
**yeeh** ['je:h] /je:h/ (**ye?**) *dem.* demonstrative.  
**ye?** ['jəʔ] /jəʔ/ *rn.* backside.  
 — *n.* footprint.  
 — *adv.* recently.  
**yeəs** ['jə:s] /jə:s/ *v.* to cross water.  
**-ya-** /ja/ (**-y-**, **la-**) *affix.* collective plural.  
**yajaa?** ʔudaan [jaʔ'a? ʔu'da:ŋ] /jaja:ʔ ʔuda:ŋ/ *n.* a type of kingfisher. From Malay *raja udang*.  
**yagaan** [ja'ga:ŋ] /jaga:ŋ/ *n.* rhinoceros hornbill (*Buceros rhinoceros*).  
**yasaa?** [ja'sa:ʔ] /jasa:ʔ/ *v.* to feel. From Malay *rasa*.  
**yayuoon** [ja'ju'o:ŋ] /jajuo:ŋ/ *v.* to flee.  
**yaa?** ['ja:ʔ] /ja:ʔ/ *n.* grandmother.  
**yaam** ['ja:m] /jam/ *v.* to cry.

**yaan** /jaan/ *pa.* relative marker. From Malay *yang*.  
**yaay** [ja:j] /jai:j/ *persp.* we two, not including the addressee, second person dual exclusive personal pronoun.  
**yudō?** [ju'dōʔ] /judōʔ/ *v.* to poke.  
**yusaa?** [ju'sa:ʔ] /jusa:ʔ/ *n.* sambar deer (*Cervus unicolor*). From Malay *rusa*.  
**yuhōk** [ju'hōk] /juhōk/ *v.* to poke.  
**yumpot** [jum'pōt] /jumpot/ *n.* grass. From Malay *rumpot*.  
**yuuk** [ju:k] /ju:k/ *v.* to move along a water.  
**yuuh** [ju:h] /ju:h/ (**yuh**) *persp.* you (plural), second person plural personal pronoun.  
**yop** [jōp] /jōp/ *quan.* a few, some.  
 — *interrogative.* how many.  
**yok** [jōq] /jōŋ/ *v.* to hear.  
**yōp** [jō:p] /jō:p/ *conj.* and.  
**yōc** [jō:c] /jō:c/ *n.* a type of wild cat.  
**yōw** [jō:w] /jō:w/ *n.* 1) rattan. 2) rope.  
**yuoop** [ju'o:p] /juo:p/ *n.* friend.  
**yguul** [jə'gu:l] /jgu:l/ *n.* tualang (*Koompassia excelsa*).  
**yʔeəs** [jə'ʔe:s] /jʔe:s/ *n.* root.  
**ymlaay** [jəm'la:j] /jmla:j/ *n.* a type of tree.  
 — *pn.* name of a river (Laneh).  
**ylaay** [jə'la:j] /jla:j/ *pn.* name of a river (Kenderong).

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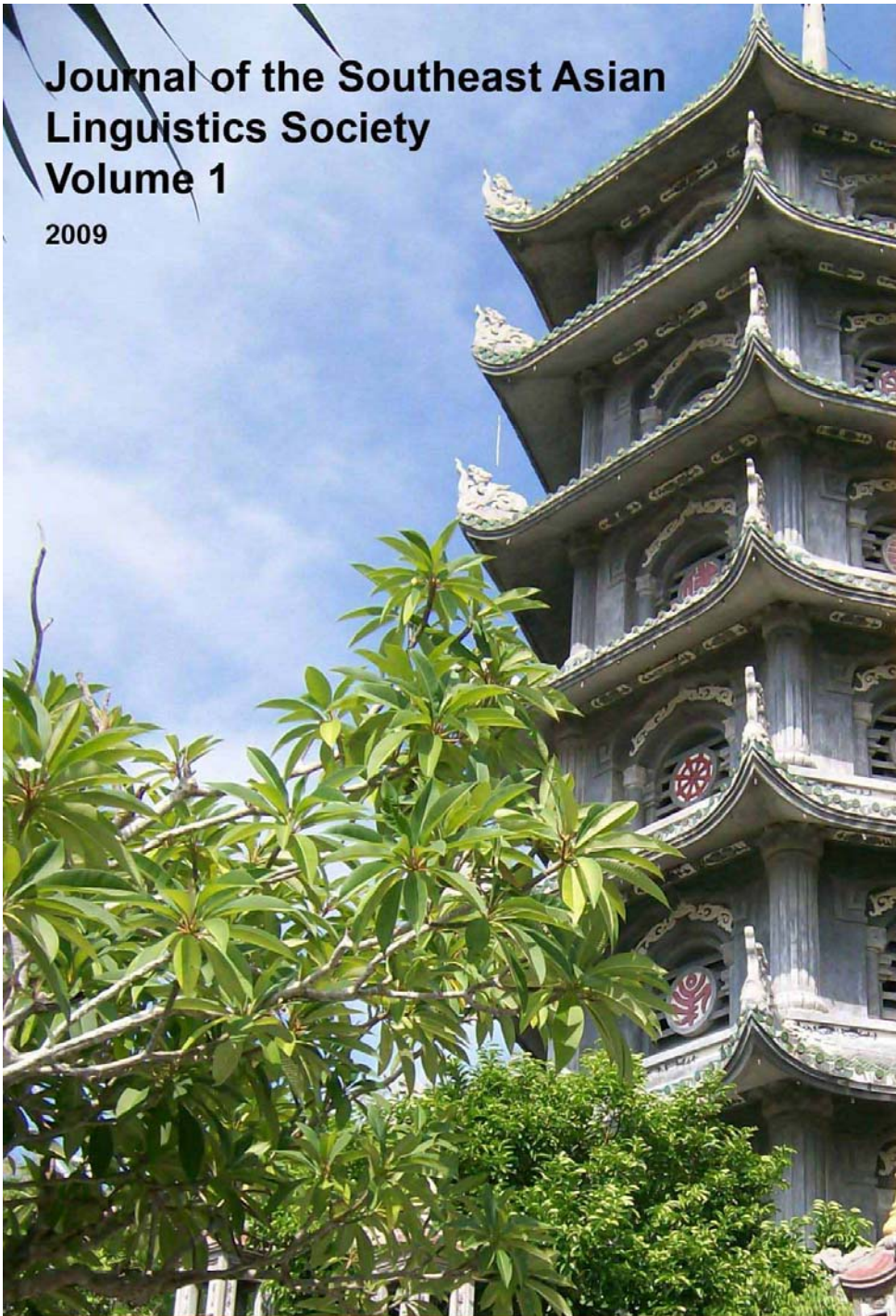
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