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泰雅語音韻系統、重建與分群  
Atayal Phonology, Reconstruction, and  
Subgrouping



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# Atayal Phonology, Reconstruction, and Subgrouping

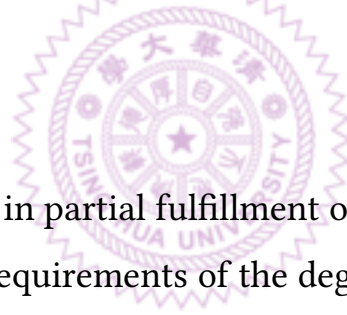
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# Abstract

This study presents a description of the synchronic phonology of seven Atayal dialects, a reconstruction of Proto-Atayal phonology and lexicon, a reconstruction of some 1100 lexical items in Proto-Atayal in the appendix, and a subgrouping of the seven Atayal dialects. The seven dialects are: Squliq, Skikun, Matu'uwal, Plngawan, Klesan, S'uli, and Matu'aw. The Squliq and Matu'uwal dialects have received considerable attention in linguistic literature. The rest have had little to no research done on them, especially with regard to phonology. Data used in the dissertation is primarily from my own fieldwork, which includes approximately 2000 words on average from each dialect.

The phonological descriptions include phoneme inventories, phonotactics, as well as synchronic alternation processes. The consonant systems are largely similar across dialects, containing from 16 to 18 consonant phonemes. The main differences are: (1) the lack of a /q/ phoneme in Plngawan, Klesan, S'uli, and Matu'aw; (2) the lack of a <c> /t͡s/ phoneme in Squliq, S'uli, and Matu'aw (although Squliq is developing a phonemic contrast between <c> /t͡s/ and /s/ in some environments); and (3) the presence of a second rhotic /ɹ/ in Plngawan. The vowel systems in Atayal dialects range from 3 vowels in Matu'aw to 6 vowels in Squliq, Skikun, S'uli, and Klesan (including the marginal phoneme /ə/). Three dialects—Matu'uwal, Plngawan, and Matu'aw—preserve phonemic vowel distinctions in the third-to-last syllable, while the remaining dialects neutralize them. Phonotactically, Matu'uwal is the only dialect to preserve word-final voiced fricatives. In terms of syllable structure, all dialects except Matu'uwal allow CGVC syllables, and some allow even more complexity, with CGVGC syllables attested in Matu'aw.

The phonology of Proto-Atayal is reconstructed based on regular and recurrent sound correspondences between the dialects, in accordance with the standard Comparative Method. Proto-Atayal had a slightly larger consonant inventory than extant dialects,

with a total of 19 consonant phonemes: it has the phonemes \*q, \*c, and \*ɿ, but no modern dialect has preserved all three. In contrast to more complexity in its consonants, Proto-Atayal has a simple four-vowel system, smaller than most modern Atayal dialects. Apart from the phoneme inventory, I reconstruct the phonotactics of Proto-Atayal: its syllable structure and phoneme distribution restrictions. Proto-Atayal had a relatively simple syllable structure, with the maximum syllable being CVC, and only semivowel codas allowed word-medially.

I divide the Atayal dialects into two main groups—Northern Atayal and Southern Atayal. The Northern subgroup comprises Matu’uwal, Squliq, and Skikun, and is evidenced by the common merger of Proto-Atayal word-final \*-lit and \*-liʔ sequences, as well as a number of lexical innovations. Within the Northern subgroup, Squliq and Skikun form the Nuclear Northern Atayal subgroup, as evidenced by no less than five common sound changes and a number of lexical innovations and shared aberrations. The Southern group consists of Pngawan, Klesan, S’uli, and Matu’aw, which share the merger of Proto-Atayal \*q and \*ʔ, and a number of lexical innovations. Within the Southern subgroup, Klesan, S’uli, and Matu’aw form the Nuclear Southern Atayal subgroup, sharing the merger of Proto-Atayal \*ɿ and \*y on the phonological side. S’uli and Matu’aw are even more closely related, forming the Southwestern Atayal subgroup, evidenced by lexical innovations and aberrations, and the merger of \*c and \*s. This new subgrouping is more accurate and more detailed than the previous proposal of a bidialectal divide into *Squliq* and *C’uli’* (Utsurikawa et al. 1935).

## 摘要

本論文描述及探討泰雅語七大方言 (賽考利克泰雅語、四季泰雅語、汶水泰雅語、萬大泰雅語、澤敖利泰雅語、宜蘭澤敖利泰雅語、大興泰雅語) 之共時音韻系統、重建原始泰雅語 (Proto-Atayal) 的詞彙與音韻系統並將該七大方言分群。

在音韻系統方面，筆者描述泰雅語各個方言的音位系統、語音組合限制以及共時音變。就輔音系統而言，各個方言主要的差異在於：(1) 萬大、澤敖利、宜蘭澤敖利、大興等四個方言中無輔音/q/、(2) 賽考利克、澤敖利、大興等三個方言中無輔音 <c> /ts/、(3) 萬大方言有輔音/ɾ/。泰雅語方言的元音數量少則 3 個 (/a i u/，如：大興方言)，多則 6 個 (/a i u e o ə/，如：賽考利克、四季、澤敖利等方言)。汶水、萬大、大興等三個方言依舊保留倒數第三個音節的元音差異，在其他方言中，該位置的元音則弱化為/ə/。所有方言中，唯有汶水方言尚保留詞尾的濁擦音。就音節結構而言，除了汶水方言以外，其餘方言皆允許 CGVC 的音節結構，大興方言甚至允許更複雜的 CGVGC 音節結構。

本文以主流歷史語言學家所使用之標準比較方法 (the standard Comparative Method)，即透過方言間之規律與音對應，重建原始泰雅語的音韻系統。原始泰雅語總共有 19 個輔音音位 (\*p, \*t, \*k, \*q, \*ʔ, \*b, \*g, \*c, \*s, \*x, \*h, \*m, \*n, \*ŋ, \*l, \*r, \*ɾ, \*w, \*y)。其中原始泰雅語有 \*q、\*c、\*ɾ 等三個音位，目前並無方言保留此三個輔音完全不變。原始泰雅語的元音系統只有

4 個元音 (\*a, \*i, \*u, \*ə)。除音韻系統以外，筆者亦重建原始泰雅語的語音組合限制，即音節結構與音位分布限制。原始泰雅語的音韻結構相對簡單，最複雜的音節結構為 CVC，且詞中音節尾僅允許近音。

筆者將泰雅語方言分為北泰雅 (Northern Atayal) 與南泰雅 (Southern Atayal) 兩大群，北泰雅語群涵蓋汶水、賽考利克、四季等三個方言，其證據為 \*-lit 與 \*-liʔ 之合流以及共同的詞彙創新。北泰雅語群中，賽考利克和四季方言組成核心北泰雅語群 (Nuclear Northern Atayal)，證據除了五項共同規律音變以外，亦有零星的音變與共同的詞彙創新。南泰雅語群包含萬大、澤敖利、宜蘭澤敖利、大興等四個方言，證據為原始泰雅語 \*q 與 \*ʔ 之合流和詞彙創新。南泰雅語群中，澤敖利、宜蘭澤敖利、大興等三個方言組成核心南泰雅語群 (Nuclear Southern Atayal)，以原始泰雅語 \*ɿ 與 \*y 之合流為證據。澤敖利和大興方言之間的關係最為相近，兩者組成西南泰雅語群 (Southwestern Atayal)，證據為 \*c 與 \*s 之合流、共同詞彙創新和零星的音變。

本文主要有三個貢獻：(1) 語言記載：本文所使用之語料主要為筆者田野調查之記錄，各方言蒐集約 2000 個詞條。(2) 原始泰雅語之重建：本文共重建約 1100 個詞條。(3) 泰雅語方言之分群：本文為第一個以語言學比較方法提出泰雅語方言分群的研究。

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# List of Abbreviations

AV	Actor Voice
PV	Patient Voice
LV	Locative Voice
IV/BV	Instrumental Voice / Benefactive Voice
SBJV	Subjunctive
PAn	Proto-Austronesian
PAic	Proto-Atayalic
PA	Proto-Atayal
PNA	Proto-Northern Atayal
PNNA	Proto-Nuclear Northern Atayal
PSA	Proto-Southern Atayal
PNSA	Proto-Nuclear Southern Atayal
PSWA	Proto-Southwestern Atayal
Sq	Squliq
Sk	Skikun
Ml	Matu'awal
Pl	Plngawan
Kl	Klesan
S'	S'uli
Mw	Matu'aw

# Chapter 1

## Introduction

Atayal is an Austronesian language spoken in northern and central Taiwan. Together with Seediq, it is part of the Atayalic subgroup of Austronesian. No further genetic relationship is widely accepted for Atayalic. It is considered either a primary branch of Austronesian (Blust 1999), or one of the first surviving offshoots of the Austronesian family (Ross 2009).

Atayal is not a monolithic language. Instead, it is a collection of closely related dialects with varying degrees of mutual intelligibility. The aim of this dissertation is to explore the nature of the genetic relationship between the different dialects of Atayal. The final goal is to propose a subgrouping of Atayal dialects.

Note that although I use the word ‘dialect’ throughout the dissertation, this is not meant as a statement on the status of the linguistic divisions in question. The word ‘dialect’ has no universally accepted definition, and the difference between ‘language’ and ‘dialect’ is not quantifiable in any meaningful way. We understand intuitively that ‘dialects’ are more closely related to each other than ‘languages’, but the cut-off point between the two categories cannot be specified. The different varieties of Atayal have historically been called ‘dialects’, although mutual intelligibility varies depending on the specific dialect pair. I adopt this usage here with the aforementioned caveats in mind.

Lastly, the dissertation is mainly concerned with **Proto-Atayal** (PA), the ancestor language of all Atayal dialects, but sometimes I talk about **Proto-Atayalic** (PAic), which is the ancestor of Atayal and Seediq (see Li 1981 for a reconstruction of Proto-Atayalic

phonology). Proto-Atayalic is one node above Proto-Atayal in phylogenetic terms. Readers should be careful to distinguish these two protolanguages.

## 1.1 Research questions

“Atayal consists of two major dialect groups: *Squliq* and *C’uli’*.” This phrase is often found in the introductory sections of linguistic publications on Atayal (L. Huang 1995a: 261; Liao 2005: 48; A. Liu 2005: 89; H. Huang 2006b: 490; M.Y. Yeh and Huang 2013: 135). Quite often, this claim is unsourced, though some authors do cite earlier publications such as Li (1980a: 349) or Tsuchida (1980a) (an unpublished manuscript). Li also provides no citation for this grouping, although it can be found in earlier linguistic-anthropological works, such as Ferrell (1969: 68) and Wei (Wei 1954: 42; He and Wei 1956: 9), neither of whom cite any sources. A simple representation of this subgrouping hypothesis is shown in Figure 1.1.

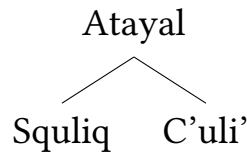


Figure 1.1: Traditional view of Atayal subgrouping

The earliest mention of the *Squliq* and *C’uli’* dichotomy I have been able to find is in the first volume of *The Formosan Native Tribes: A Genealogical and Classificatory Study* (臺灣高砂族系統所屬の研究), published by the Institute of Ethnology of the Taihoku Imperial University (Utsurikawa et al. 1935). The authors divide the Atayal nation into three branches based on how they say the words ‘person’, ‘sun’, ‘fire’, and ‘eye’ (Utsurikawa et al. 1935: sec. 1.1.3). The branches were named based on the word for ‘person’: (1) *Səqoleq*, (2) *Tsəʔoleʔ* (or *Səʔoleʔ*), (3) *Sədeq* (or *Səjeq*).<sup>1</sup> In reality, the authors recorded more than two dialects of Atayal, as seen in some of their examples: the word ‘person’ is recorded as *səqoleq*, *tsəʔoreʔ* (sic), *səʔoleʔ*, and *tsiule*, which correspond to the *Squliq*, *Klesan*, *S’uli*, and *Plngawan* dialects, respectively. They ignored all sound

---

<sup>1</sup>The third branch encompasses the modern Seediq and Truku nations. At that time they were considered a branch of Atayal.

correspondences except those of /q/, and used only a small handful of arbitrarily selected lexical correspondences. In short, this classification is not based on historical linguistics as it is understood now or was understood in 1935, and is superficial and impressionistic at best. Nevertheless, it has remained so thoroughly entrenched in both anthropology and later linguistics, that it is never even cited, let alone questioned.

Ogawa and Asai (1935), published in the same year, mention dialectal differences in Atayal, but do not provide a classification: the authors only mention the presence or absence of the /q/ phoneme as the most salient phonological distinction between dialects (Ogawa and Asai 1935: 21).

Alongside the division into *Squliq* and *C'uli'*, a second claim may follow in journal articles: that *Squliq* is more uniform, while *C'uli'* is very diverse (Li 1980a: 350; A. Liu 2005: 89; H. Huang 2006b: 491). This is not explained further, but the implication here is that there are further subdivisions in *C'uli'*, although this has not been explored in linguistic literature. This interpretation is shown in Figure 1.2.

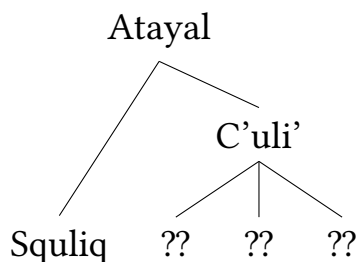


Figure 1.2: Interpretation of *C'uli'* as a subgroup

The claimed subgrouping has never been supported by linguistic evidence, and is at best a convenient shorthand: *Squliq* is by far the largest dialect of Atayal, so all non-*Squliq* dialects were grouped together under the umbrella term *C'uli'*, demonstrated in Figure 1.3. The names *Squliq* and *C'uli'* are cognates meaning ‘(other) people’, and they imply two sound correspondences: that <c> /ʃs/ in *C'uli'* corresponds to *Squliq* /s/, and that /q/ in *Squliq* corresponds to /ʔ/ (often written as an apostrophe) in *C'uli'*. Neither of these sound correspondences is true for all dialects grouped under *C'uli'* (sound correspondences can be found in Section 4.1).

Li (1985a: 712–716) does mention several criteria for distinguishing *Squliq* and *C'uli'* dialects, citing an unpublished manuscript by Tsuchida (1980a): (1) the correspondence

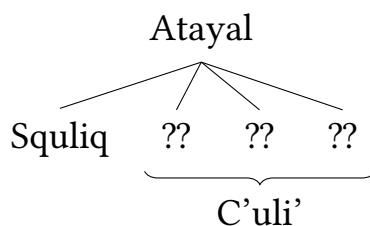


Figure 1.3: Interpretation of C'uli' as an umbrella term

of *Squliq* /r/ to *C'uli'* /s/, (2) first person clitic pronouns, (3) lexical differences. However, both Li and Tsuchida operated under the assumption that the *Squliq* and *C'uli'* subgrouping was correct, and did not provide any evidence for grouping various dialects under the *C'uli'* umbrella. Lexical similarities between *Squliq* and *Skikun* were attributed to borrowing, but no evidence was provided (Li 1985a: 716). As will become clear in this dissertation, the criteria identified by Tsuchida and Li largely turned out to be innovations in *Squliq* and its immediate ancestor, the Nuclear Northern Atayal subgroup.

After several years of fieldwork on various Atayal dialects, it became clear to me that *C'uli'* is **not a clade** in the phylogenetic sense: that is, it is not a valid subgroup. It has never been supported by linguistic evidence, but the claim has been repeated throughout many decades until it became entrenched, and has never been questioned. This underscores the need for a linguistically-based subgrouping.

The main question of this dissertation is, **how are Atayal dialects subgrouped?** My goal is to provide a subgrouping based on the rigorous application of tried and proven methods in historical linguistics. In order to achieve this goal, I need to answer other questions first: what did the phonology and lexicon of Proto-Atayal look like? How did it change in each dialect? Which of the changes are shared between dialects? These questions need to be answered before we can proceed to the subgrouping itself, as explained below in Section 1.2.

## 1.2 Methodology

This dissertation employs the **standard Comparative Method** for reconstruction and subgrouping. Each step builds on the finding gleaned during the preceding steps.



The Comparative Method originates in the Neogrammarian hypothesis, postulated by linguists of the Neogrammarian school in the second half of the 19th Century. The Neogrammarian hypothesis, to put it simply, proposes that **sound changes are regular and systematic** (Osthoff and Brugmann 1878). This regularity of sound change can be expressed with rules (or ‘laws’, as they used to be called) that are applied throughout the vocabulary of a language whenever their conditions are met.

The Comparative Method is the reverse of this process. We collect items with similar form and meaning in languages that are assumed to be genetically related, and group them into putative cognate sets. We then collect and catalog the **regular sound correspondences** between the cognates. In this step, we may also identify irregular sound correspondences, which can be explained by one of: chance resemblance, lexical borrowing, or sporadic sound change.

Once the regular sound correspondences are established, we can use them to reconstruct the phonology and lexicon of the protolanguage. We can then find shared innovations between the daughter languages, and using these, subgroup the languages into a phylogenetic tree. Rarer and more unusual shared innovations constitute more solid evidence for subgrouping. Several common sound changes occurring together are also more convincing for subgrouping than a single common sound change (Greenberg 1957 [2005]: 55).

I begin this process for Atayal by collecting the necessary lexical data and analyzing it to arrive at a phonological system for each dialect. My data mostly comes from my own fieldwork (see Section 1.4). The phonological descriptions in Chapter 3 constitute a necessary step in determining the phonology and phonotactics of Proto-Atayal. Synchronic alternations induced by verbal affixation also form a part of the overall phonological description, and may be motivated by phonotactic constraints. Some of these alternations can in turn be reconstructed to Proto-Atayal, helping determine its phonotactics.

Once the synchronic phonologies of all individual dialects are described, we proceed to the reconstruction. We begin by determining regular sound correspondences between the dialects, and assigning these correspondences to phonemes in Proto-Atayal. After this we can start to reconstruct the vocabulary of Proto-Atayal, using sound correspondences to determine the appropriate protophonemes in each protoform. This stage

also gives us the sound changes from Proto-Atayal to each individual dialect, which can later be used in subgrouping.

The reconstruction of lexical items should not be done in order to maximize the amount of protoforms. Some words were innovated during later stages, and these innovations also constitute subgrouping evidence. Here we need a very detailed database of cognates in all Atayal dialects in order to find lexical items that are uniquely shared between some dialects, but do not appear in others. We need to use external evidence to determine whether these uniquely shared etyma are lexical innovations or shared retentions. Such evidence may come from Seediq, a closely related language, or from Proto-Austronesian reconstructions: if an etymon is found in either and the sound correspondences are regular, then the corresponding etyma in Atayal are shared retentions. At the same time, we look for aberrant sound correspondences that are shared by two or more dialects. We then group the Atayal dialects according to lexical innovations and shared aberrations.

Care should be taken to separate shared lexical innovations from lexical borrowings. Vocabulary can be easily borrowed between related languages and dialects. The main diagnostic we use are irregular sound correspondences. If the sound correspondences are irregular, but phonetically similar to a dialect which is a likely source of lexical borrowing, then the word is likely a loan.

Finally, we combine the sound changes with shared lexical innovations and aberrations in order to determine a subgrouping. As long as the Comparative Method is applied cautiously, with borrowings whittled away, both the phonological and lexical evidence should be in agreement, giving us the correct subgrouping.

### **1.3 Atayal dialects**

This dissertation uses data from seven different Atayal dialects, listed below:

- Squliq
- S'uli
- Klesan (sometimes called C'uli')
- Matu'uwal (also called Mayrinax in earlier publications)

- Pngawan
- Skikun
- Matu'aw (called Matabalay in Li 1981 and his other publications)

Figure 1.4 shows these dialects in their current geographical locations on a map of Taiwan.

Some of these dialects have been called by alternative names in past publications. In this dissertation, I use the preferred name used by the speakers of the dialect. Matu'uwal has often been called “Mayrinax” in linguistic literature (Li 1980b; L. Huang 1995b; T. Liu 2011), however this is an exonym used by Sqliq speakers to refer to Matu'uwal. Li (1981) referred to a “Matabalay” dialect using the name of the tribal village where he collected his data, but I instead opt for the more neutral name “Matu'aw”, which is preferred by my language consultants. Klesan has been called “C'uli” on the rare times it was mentioned in linguistic works (Li 1998; C. Chen 2011), however that term is ambiguous and easily confused with the *C'uli* group from the subgrouping proposal by Utsurikawa et al. (1935). I use the name “Klesan”, which is widely accepted by speakers of the dialect, and refers to the area around Nan'ao Township (南澳鄉) where they currently reside.

Linguistically speaking, no comprehensive list of distinct dialects of Atayal has ever been made. The Council of Indigenous Peoples currently holds language proficiency exams, provides wordlists and educational materials, etc., for six dialects. Matu'aw is not included in that list, and is often considered an aberrant variety of S'uli. However, in this dissertation I treat it as a separate dialect because it lacks several crucial sound changes that occurred in S'uli. These sound changes are discussed in Section 4.5.

Some of the bigger dialects below show a degree of lexical and phonological variation between different communities, but remain mutually intelligible. I consider it unlikely that there are still ‘undiscovered’ Atayal dialects that have a low degree of mutual intelligibility with other Atayal communities.

The following sections introduce the seven dialects in this dissertation, their geographic position, and the village where my fieldwork was conducted. Phonologies of individual dialects are described in Section 3.

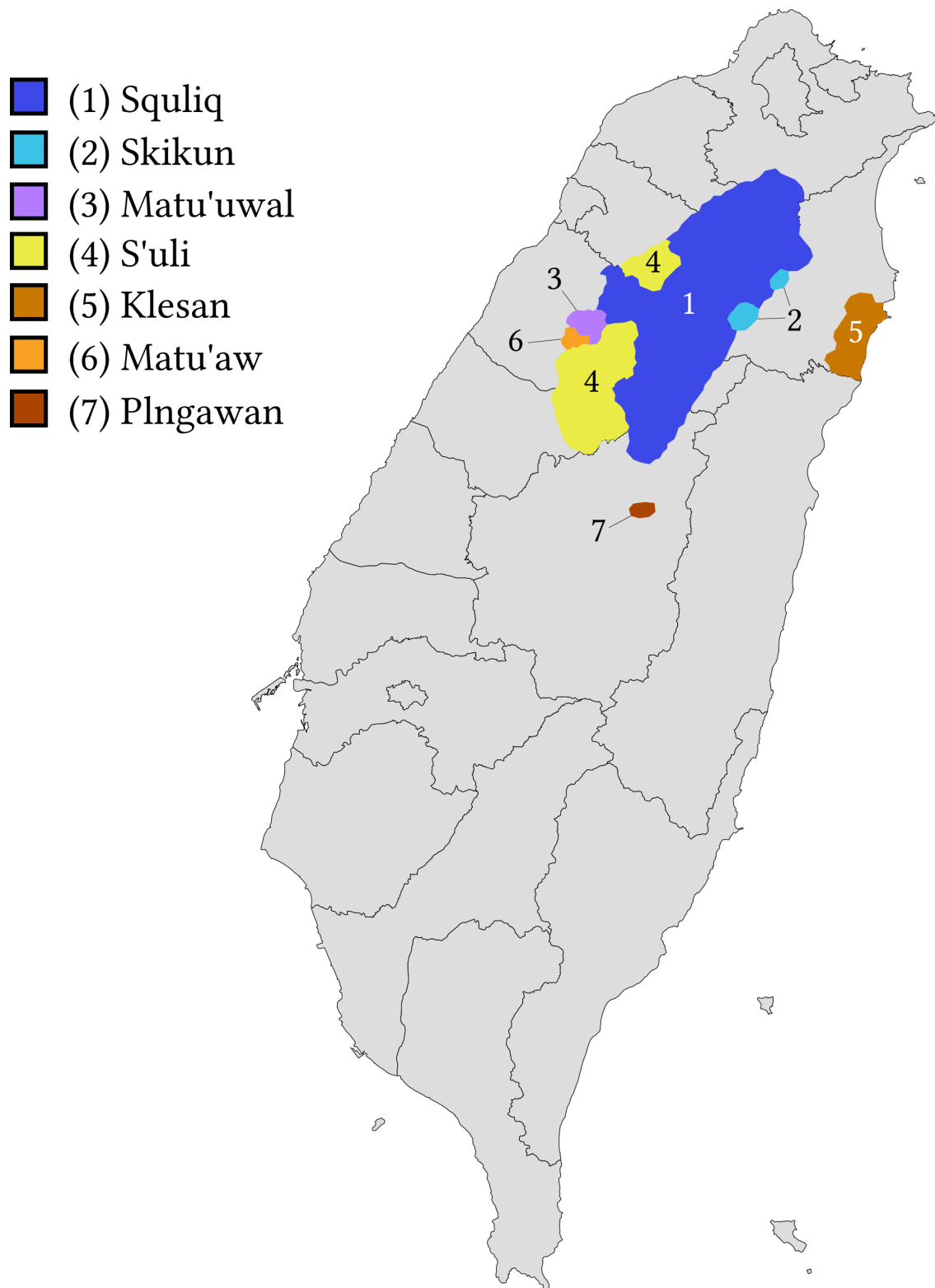


Figure 1.4: Map of Atayal dialects

### 1.3.1 **Squliq**

Squliq Atayal (賽考利克泰雅語) is by far the biggest dialect in terms of the number of speakers and the geographic area it spans. It is spoken from southern New Taipei City in the north to northern Nantou County in the south, from Taoyuan, Hsinchu, and Miaoli Counties in the west to I-lan County in the east, spanning the Central Mountain Range.

Squliq is the *de facto* prestige dialect of Atayal, and is quite commonly understood by speakers of other dialects, whose communities often border Squliq villages. Plngawan is the exception to this tendency, since it is not bordered by any other Atayal dialect.

Being so big, Squliq naturally has a certain amount of lexical and phonological variation between villages, and also between individual speakers. For this reason I used data from various sources in my dissertation, including my own field notes, other linguists' data, and dictionaries. The phonological variations are not significant for the purposes of my research.

My fieldwork on Squliq was conducted in the Rahaw tribal village (溪口台部落) in Fuhsing Township, Taoyuan County, and in Slaq tribal village (水田部落) in Jianshih Township, Hsinchu County. I have also consulted Squliq speakers from several villages in Wufeng Township, Hsinchu County. Nevertheless, this field data was largely supplementary, and my main sources of lexical items were various Atayal dictionaries listed in Section 1.4.

### 1.3.2 **S'uli**

S'uli (澤敖利泰雅語) is the second biggest Atayal dialect. It is spoken in two distinct clusters: (1) Hsinchu County, with communities in both Jianshih and Wufeng Townships, (2) along the Da'an River (大安溪) between Miaoli County and Taichung City, with villages on both banks and further inland. These two S'uli-speaking areas are not only aware of each other, but maintain connections, with frequent intermarriage being the norm.

S'uli in both areas borders Squliq communities, though the Squliq presence in Hsinchu is a lot stronger. S'uli is spoken close to Matu'aw in Miaoli, and the

communities interact with each other.

There are dialectal variations within S'uli, but these have not been actively studied. Matu'aw (introduced in Section 1.3.7) is still considered a variety of S'uli, and I separated the two on the grounds of several major sound changes that I first saw in Li's (1981, 1982a) data and later confirmed with my own fieldwork. Despite these variations, S'uli speakers from different communities have no trouble communicating. Mutual intelligibility with Matu'aw is also very high.

I have conducted linguistic fieldwork in both clusters of S'uli: in Uwis tribal village in Wufeng Township, Hsinchu County (五峰鄉竹林村中興部落), and in several villages in Tai'an Township, Miaoli County.

### 1.3.3 Klesan

Klesan (宜蘭澤教利) is currently spoken in five tribal villages in Nan'ao Township, I-lan County, on the Pacific coast of Taiwan. This location is new: historically, the speakers of this dialect lived in the area around Nanhu Mountain (南湖大山), some 40 kilometres to the west and south of the current location and on the border of I-lan County and Taichung City. They were forcibly relocated in the first half of the 20th Century, during the period of Japanese rule in Taiwan. Currently, the villages where Klesan is spoken are: Pyahaw (碧候), Ropoy (金岳), Ləlanjan/Buta (武塔), Iyu (東澳), Kənyan (金洋).<sup>2</sup>

Prior to their relocation, they would have been surrounded by Squliq and Truku Seediq speaking communities. Following the relocation, the dialect came under considerable influence from Japanese, which replaced native vocabulary that was preserved elsewhere.

I collected my data in Pyahaw tribal village (碧候部落). There are minor lexical and phonological differences among the five villages, but mutual intelligibility is not affected, and speakers are familiar with usage in other villages that differs from theirs.

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<sup>2</sup>These names come from my main language consultant in Pyahaw tribal village. Li (1998) gives different names for some of them: Pyahaw (碧候), Ryuhin (金岳), Mtlangan (武塔), Mkgugut (東澳), Knnyan (金洋).

### 1.3.4 Matu’uwal

Matu’uwal (汶水泰雅語) is spoken in three villages in Tai’an Township, Miaoli County, along the Rinax River (汶水溪). It has been called “Mayrinax” in linguistic literature (Li 1980b; L. Huang 1995b; T. Liu 2011), which is an exonym. The speakers themselves prefer the name Matu’uwal, which has started to appear in recent publications (H. Huang 2015b; H. Huang 2018).

Matu’uwal spoken in Qing’an Village (清安村) does not have the phoneme <c> /t͡s/, and merges it with /s/. The two phonemes are distinguished in Jinshui Village (錦水村), where I conducted my fieldwork.

Matu’uwal, more specifically the Qing’an Village variety, is bordered by Matu’aw to the south. There is a considerable amount of contact and intermarriage between the Matu’uwal community in Qing’an Village and their Matu’aw neighbours. Jinshui Village has a large Squliq presence due to the forced relocation of Squliq speakers during the period of Japanese rule. There is also a Hakka community to the west of Matu’uwal speaking villages, with whom they interact regularly. Many elderly Matu’uwal speakers are also proficient in Hakka.

Matu’uwal has received attention for preserving the gender register system that has been lost in other Atayal dialects (Li 1982b, 1983). The gender register system is discussed in Section 5.2.

### 1.3.5 PIngawan

PIngawan (萬大泰雅語) is spoken in a single village in Ren’ai Township, Nantou County. Historically there were three villages, which were relocated and merged into a single settlement by the Japanese in the first half of the 20th Century. The differences between the speech of the historical communities are minimal, and can only be observed in a handful of words (J. Chen 2012: 2–4).

PIngawan is an Atayal exclave: it is not bordered by any other Atayal dialect. Instead, it is surrounded by Seediq dialects, with whom they have historically maintained good relations, and Bunun, with whom the relationship has historically been one of animosity. Due to its close geographic proximity and prolonged contact with Seediq, PIngawan

has a number of Seediq loanwords (Section 5.5.2).

My Plngawan data comes from speakers in the Sasi tribal village (親愛部落).

### **1.3.6 Skikun**

Skikun (四季泰雅語) is spoken in at least two villages in Datong Township, I-lan County. The dialect takes its name from one of the villages that speak it: Skikun tribal village (四季部落). It is also spoken in Mnawyan tribal village (碼崙部落) to the north, as reported by Li (1980a).

The dialect is surrounded by Squliq to the north and south, and Squliq is also spoken across the mountains to the west, though I have not been able to identify any significant stratum of Squliq loanwords in Skikun.

My data was collected from speakers in Skikun tribal village.

### **1.3.7 Matu'aw**

Matu'aw has received very little attention in linguistic literature. It has appeared in a couple of Paul Li's papers under the name "Matabalay" (Li 1981, 1982a), though he presented very little data and never explored it further. The name "Matabalay" refers to the name of the tribal village where Li collected his data.

Matu'aw is spoken in Daxing Village, Tai'an Township, Miaoli County (苗栗縣泰安鄉大興村). There are only two tribal villages where the dialect is spoken: Maymaralas (南灣) and Matabalay (榮安). The language in the two communities appears to be largely identical.

Matu'aw is bordered by Matu'uwal to the north (Qing'an Village), and by S'uli to the south and east. My fieldwork was conducted in Maymaralas tribal village.

## **1.4 Sources of data**

The majority of the Atayal data in this dissertation comes from my own fieldwork. I have been collecting linguistic materials on various Atayal dialects over the past seven years, though most of my initial work was on Matu'uwal.



The full wordlist for this dissertation is approximately 2000-2500 items long for each dialect and was collected from 2018 to early 2020. Unfortunately, the fieldwork on the S’uli and Matu’aw dialects was affected by the COVID-19 pandemic and was not completed for fear of compromising the safety of the speakers and their communities. As such, there is less data on these two dialects in my dataset than planned. However, I do not expect the outcome of my research to change with more data, since even with a reduced dataset the tendencies in phonology and lexicon are already quite clear. A list of dialects and fieldwork locations is presented in Table 1.1. More detailed information can be found in the relevant subsections of Section 1.3.

Table 1.1: Locations of fieldwork by dialect

Dialect	Location of fieldwork
Squliq	various villages in Taoyuan City and Hsinchu County
Skikun	Skikun tribal village, I-lan County
Matu’uwal	Jinshui Village (Caburuk), Miaoli County
Plngawan	Sasi tribal village, Nantou County
Klesan	Pyahaw tribal village, I-lan County
S’uli	various villages in Hsinchu and Miaoli Counties
Matu’aw	Maymaralas tribal village, Miaoli County

Squliq data was mostly sourced from dictionaries. This was done in part due to the availability of dictionaries (they only exist for the Squliq dialect), but also to avoid regional bias: the Squliq dialect is big, and regional variation in its vocabulary is more pronounced as a result. I sourced the Squliq data from the Council of Indigenous Peoples online dictionary<sup>3</sup> and also checked it against print dictionaries (Ferrell 1967; Egerod 1980; Liao 2003) and my own field notes on Squliq. More information on Atayal dictionaries can be found in Section 2.3.

Seediq data appears sporadically throughout the dissertation. It comes from two sources: Paul Li’s publications, mostly Li (1981); and the Council of Indigenous Peoples online dictionaries. The latter has separate dictionaries for the Seediq and Truku

<sup>3</sup><https://e-dictionary.apc.gov.tw/Index.htm>

nations, which contain vocabulary in the Tgdaya and Truku dialects of the Seediq language, respectively.

Proto-Austronesian etyma are sourced from Blust and Trussel’s Austronesian Comparative Dictionary (Blust and Trussel, ongoing).<sup>4</sup> Due to the nature of the resource, some reconstructions therein are liable to change without notice. I sourced most of the etyma used in the dissertation during March of 2020. The only change I made to Blust’s reconstructions was changing the orthography of Proto-Austronesian \*e to \*ə, in order to make its phonetic value as a mid central vowel more apparent.

## 1.5 Orthographic conventions

In order to make comparisons across various Atayal dialects and protolanguages more understandable and straightforward, I employ an orthographic system that combines some of the spelling conventions of Proto-Austronesian and Atayal while deviating from the IPA as little as possible. The main guiding principle is one symbol per phoneme, so all digraphs are eschewed. The full list of Atayal orthographic symbols as used in this dissertation is presented in Table 1.2.

Table 1.2: Atayal orthography adopted here, and IPA equivalents

Grapheme	IPA	Grapheme	IPA
p	[p]	ŋ	[ŋ]
t	[t]	l	[l]
k	[k]	r	[r~r]
q	[q]	ɹ	[ɹ]
ʔ	[ʔ]	w	[w]
b	[b~β~v]	y	[j]
g	[g~ɣ]	a	[a]
c	[t͡s]	i	[i]
s	[s]	u	[u]
x	[x]	e	[e]
h	[h]	o	[o]
m	[m]	ə	[ə]
n	[n]		

Most of the orthographic symbols are pronounced as their IPA equivalents. The

<sup>4</sup>URL: <https://www.trussel2.com/acd/>, see also (Blust and Trussel 2013).

main exceptions are <y> [j] and <c> [t͡ɕ], which follow Proto-Austronesian and modern Atayal orthographic conventions. I decided to use <y> instead of <j> since the latter may be mistaken for the affricate [d͡ʒ] or confused with reflexes of Proto-Austronesian \*j (which is distinct from PAn \*y). Using <c> was motivated by the lack of a corresponding single symbol in the IPA as well as conventions in both Atayal and Proto-Austronesian, where the corresponding protophoneme is \*C.

Some orthographic symbols may have different allophonic pronunciations depending on the dialect, speaker, or phonological environment. The voiced obstruents <b> and <g> are more often fricatives, though they may surface as plosives in some dialects. The rhotic <r> is more commonly a tap, but can be realized as a trill and even occasionally as a fricative. The phonemes represented by <c> and <s> are palatalized before the high front vowel [i] and its corresponding glide [j], becoming [t͡ɕ] and [ɕ], respectively; this process is automatic and occurs in all Atayal dialects that have these phonemes.

I use **boldface** to mark affixation, for example Squliq *mu?* ‘to shoot (AV)’ and *bun* ‘to shoot (PV)’. This is done because phonological processes may sometimes make morpheme boundaries fuzzy. Segments under discussion are marked with a shaded background, e.g. Proto-Atayal \*kaniq ‘to eat’.

For more detailed descriptions of the phonologies of individual Atayal dialects, refer to Section 3.1.

## 1.6 Organization of the dissertation

The structure of the dissertation is as follows. Chapter 2 presents a review of linguistic publications on Atayal. Chapter 3 provides a description of the synchronic phonologies of all seven Atayal dialects under research, including their phoneme inventories and phonotactics, as well as an overview of common synchronic phonological alternations.

The phonology of Proto-Atayal is discussed in Chapter 4, starting with sound correspondences for each protophoneme, then presenting the full phoneme inventory and phonotactics of the language. It also includes additional external evidence from closely related Seediq as well as from Proto-Austronesian reconstructions. Later sections list the sound changes from Proto-Atayal to each individual dialect, as well as the phoneme cor-

respondences between Proto-Atayal and Proto-Atayalic, and also between Proto-Atayal and Proto-Austronesian.

Chapter 5 is concerned with the morphology and lexicon of Proto-Atayal, as well as the various lexical innovations and aberrations in its daughter dialects. It includes a reconstruction of the voice morphology in Proto-Atayal, and a description of the famous Atayal gender register system. The rest of the chapter is dedicated to lexical innovations and shared aberrations between Atayal dialects. A section on lexical borrowings between Atayalic varieties is included, and the final section presents external evidence, again from Seediq and Proto-Austronesian etyma.

Chapter 6 presents a linguistically motivated subgrouping of Atayal dialects. The subgrouping hypothesis is supported by phonological and lexical evidence at each node of the phylogenetic tree. Chapter 7 contains the summary, contribution of the dissertation, and directions for further research.

# Chapter 2

## Literature review

There are two main ways Atayal appears in linguistic literature. The first is literature on Atayal specifically, be it syntax, phonology, morphology, or other topics. This chapter is mainly concerned with publications of this first kind.

The second kind includes publications that are of a broader scope, usually typological or comparative works. Atayal data is sometimes included in these papers (Wolff 1973; Ross 1995; Blust 1999, etc.), but it is not the central point of the discussion.

There have been very few papers on the historical aspects of Atayal, mostly work done by Li on Proto-Atayalic (Li 1981, 1982a). The status of the Atayalic subgroup as comprising Atayal and Seediq is clear and undisputed (Blust 1999: 46), which may be one of the reasons why so little work has been published on the historical linguistics of Atayal.

The remainder of the chapter lists all publications that focus on Atayal as the subject of research. The chapter is divided into sections by type of publication: peer-reviewed journal articles (Section 2.1), master's theses and PhD dissertations (Section 2.2), dictionaries (Section 2.3), and reference grammars (Section 2.4).

### 2.1 Journal articles and proceedings papers

There has been a steady but relatively low amount of publications on the Atayal language over the years. All journal articles and conference papers on Atayal, or those that include Atayal among other languages under research, are listed in Table 2.1. The

vast majority of articles have been on Squliq, the biggest dialect, with Matu’uwal coming in second due to its purported conservatism in both grammar and phonology. The remaining Atayal dialects are still woefully underresearched.

Most papers on Atayal have concentrated on its grammar (especially earlier works), morphosyntax, and syntax. Publications on Atayal phonology are few in comparison, almost all of them either by Li or H. Huang.

Table 2.1: Previous studies of Atayal

Author (Year)	Dialect	Category
Ogawa (1911)	Squliq	Morphosyntax
Ogawa (1932)	Squliq	Vocabulary
Ogawa and Asai (1935)	Squliq, S’uli	Texts, grammar notes
Egerod (1965a)	Squliq	Syntax
Egerod (1965b)	Squliq	Vocabulary
Egerod (1966a)	Squliq	Phonology
Egerod (1966b)	Squliq	Syntax
Egerod (1969)	Squliq	Text, vocabulary
Ferrell (1969)	Squliq, Plngawan	General, vocabulary
Yamada and Liao (1974)	Squliq	Phonology
Li (1980a)	various	Phonology
Tsuchida (1980a)	Skikun	
Tsuchida (1980b)		
Li (1981)	various	Historical
Tsuchida (1981a)		
Tsuchida (1981b)		
Li (1982a)	Matu’uwal	Historical
Li (1982c)	various	Sociolinguistics
Li (1982b)	Matu’uwal	Sociolinguistics
Li (1983)	Matu’uwal	Phonology
K. Chen and Lin (1985)	Squliq	General
Li (1985a)	various	Dialectology

## 2.1 Journal articles and proceedings papers

Author (Year)	Dialect	Category
Li (1985b)	various	Historical
K. Chen (1992)	Squliq	General
L. Huang (1994)	Squliq	Syntax
Mei (1994)	Matu'uwal	Syntax
H. Chang (1995)	Matu'uwal	Syntax
L. Huang (1995a)	Squliq, Matu'uwal	Syntax
L. Huang (1995c)		Syntax
Li (1995)	Matu'uwal	Syntax
L. Huang (1996a)	Matu'uwal	Syntax
L. Huang (1996b)	Matu'uwal	Syntax
Li (1996)	various	Dialectology
Zeitoun et al. (1996)	Squliq, Matu'uwal	Syntax
L. Huang et al. (1998)	Matu'uwal	Morphosyntax
Li (1998)	various	Dialectology
Yeh et al. (1998)	Matu'uwal	Syntax
Starosta (1999)	Squliq	Syntax
L. Huang et al. (1999a)	Matu'uwal	Morphosyntax
L. Huang et al. (1999b)	Matu'uwal	Morphosyntax
Zeitoun et al. (1999)	Matu'uwal	Syntax
L. Huang (2000a)	Matu'uwal	Syntax
Rau (2000a)	Squliq	Sociolinguistics
Rau (2000b)	Squliq	Syntax
Zeitoun (2000)	Matu'uwal	Morphosyntax
L. Huang (2001)	Matu'uwal	Syntax
L. Huang (2002)	Matu'uwal	Syntax
H. Chang (2004)	Squliq, Matu'uwal	Syntax
Rau (2004)	Squliq, Plngawan	Sociolinguistics
Liao (2005)	Squliq	Morphosyntax
A. Liu (2005)	Squliq	Syntax

Author (Year)	Dialect	Category
H. Huang (2006a)	Squliq	Phonology
H. Huang (2006b)	Squliq	Phonology
L. Huang (2006)	Plngawan	Syntax
Tang (2006)	Squliq, Matu'wal	Syntax
Tsai (2007)	Squliq	Syntax
L. Huang (2008)	Squliq	Syntax
L. Huang and Tali' Hayung (2008)	Squliq	Syntax
Yu (2008)	Matu'uwal	Syntax
M.Y. Yeh and Huang (2009)	Squliq	Morphosyntax
H. Chang (2010)	Squliq, Matu'uwal	Syntax
L. Huang and Tali' Hayung (2011)	Squliq	Syntax
Y. Chang (2012)	Plngawan	Morphophonology
Tsai and Wu (2012)	Matu'uwal	Syntax
M.Y. Yeh and Huang (2013)	Squliq	Syntax
Gorbunova (2014)	Squliq	Syntax
H. Huang (2014)	Squliq	Phonology
de Carvalho (2015)	Squliq	Phonology
H. Huang (2015a)	Squliq	Phonology
H. Huang (2015b)	Squliq, Matu'uwal	Phonology
H. Lin (2015)	Squliq	Phonology
A. Liu (2015)	Squliq	Syntax
Tsai (2015)	Squliq	Syntax
M.Y. Yeh (2015)	Squliq	Syntax
S. Chen (2016)	Squliq	Syntax, semantics
Gorbunova (2016a)	Squliq	Syntax
Gorbunova (2016b)	Squliq	Syntax
Gorbunova (2016c)	Squliq	Syntax
Gorbunova (2016d)	Squliq	Syntax
S. Chen (2017a)	Squliq	Syntax, semantics



Author (Year)	Dialect	Category
S. Chen (2017b)	Squliq	Syntax, semantics
S. S. Huang (2017)	Squliq	Syntax
Tsai (2017a)	Squliq	Syntax
Tsai (2017b)	Squliq	Syntax
C. Wu (2017)	Matu'uwal	Syntax
H. Huang (2018)	Squliq	Phonology
Erlewine (to appear)	Squliq	Syntax
H. Huang (2020)	Squliq, Matu'uwal	Phonology

The first works on Atayal were written by Japanese linguist Naoyoshi Ogawa during the period of Japanese rule in Taiwan. Ogawa's first publication was on the structure of Atayal verbs (Ogawa 1911). He later also published an Atayal vocabulary (Ogawa 1932). Ogawa's *opus magnum* was his book on the myths and traditions of Formosan peoples, co-authored with Erin Asai (Ogawa and Asai 1935). This book presents a collection of myths in 12 different languages (Formosan and Yami), further subdivided by dialects, glossed in Japanese and including Japanese translations; with grammar sketches for each language. Ogawa included myths told in the Squliq and S'uli dialects in his book.

Ogawa's pioneering work was followed by Søren Egerod, who published papers on verb morphology (Egerod 1965a), the phoneme inventory (Egerod 1966a), word order and parts of speech (Egerod 1966b); as well as a wordlist (Egerod 1965b) and an Atayal text with a vocabulary (Egerod 1969). Egerod later published an Atayal-English dictionary (Egerod 1980). All of Egerod's publications were on Squliq Atayal spoken in what is now Taoyuan City and New Taipei City.

Yamada and Liao (1974) is a paper on the phonology of Squliq. One of its authors, Liao Ying-chu, also known as Tesing Silan is a native speaker of Squliq Atayal from Sqoyaw tribal village in the mountains of Taichung, who later published two Atayal dictionaries.

Shigeru Tsuchida was one of the researchers who introduced smaller Atayal dialects to the academic community. Tsuchida (1980a) is a paper discussing the position of

the closely related Skikun and Mnawyan dialects within the Atayal branch. Tsuchida (1980b), Tsuchida (1981a), Tsuchida (1981b) are publications on the male and female lexical registers, a unique feature of Matu'uwal Atayal.

Paul Jen-kuei Li wrote extensively on many different dialects of Atayal, in a diverse range of topics. Li (1980a) is a study of the phonological alternations of different dialects, centering first on Squliq, and later comparing it with S'uli, Skikun, and Matu'uwal. Li (1981) is a reconstruction of the phonology of Proto-Atayalic, with data from all major dialects of Atayal and Seediq, and some 300 lexical reconstructions; see also Section 4.6 for sound correspondences between Li's Proto-Atayalic and my reconstruction of Proto-Atayal, including a reassessment of several of Li's reconstructed phonemes. Li (1982a) is a related study of final voiced consonants of Proto-Atayalic and their reflexes in various dialects of Atayal and Seediq. Li (1982c) focuses on the variations speech between different age groups. Li (1982b) is a study of the male and female lexical registers in Matu'uwal. Li (1983) goes further by attempting to classify the various alternations used to derive male register forms, although the author concludes that the changes are not regular. Li (1985a) is a look at lexical, phonological, and morphological criteria for classifying Atayalic dialects, especially whether Plngawan should be classified as Atayal or Seediq. Li (1985b) is a broader look at the position of the Atayalic branch within the Austronesian family. Li (1995) is a paper on the case marking system in Matu'uwal. Mei (1994) and Starosta (1999) also published papers on case marking in Matu'uwal Atayal, and it was discussed in L. Huang's (1995b) grammar. Li (1996) is a description of all Austronesian languages in I-lan County, including several Atayal dialects. Li (1998) is a look specifically at the dialects of Atayal spoken in I-lan County, and the differences between them.

Chinese linguist Chen Kang has published a brief description of various aspects of Atayal (K. Chen and Lin 1985), and included a chapter on Atayal in his book on Formosan languages (K. Chen 1992).

H. Chang (1995) is a study on the focus system of Matu'uwal. He later published comparative studies of AV verbs (H. Chang 2004) and adverbial verb constructions (H. Chang 2010) in Formosan languages, both of which include Squliq and Matu'uwal data.

L. Huang has published a large number of articles and books on several varieties

of Atayal, mostly Squliq and Matu'uwal. L. Huang (1994) is a look at ergativity in Squliq Atayal. L. Huang (1995a) is a comparison of Squliq and Matu'uwal syntax. L. Huang co-authored several comparative papers with Elizabeth Zeitoun, Marie Meili Yeh, Anna Chang, and Joy Wu, where a variety of languages were examined, among them Matu'uwal and Squliq Atayal: on tense, aspect, and mood (Zeitoun et al. 1996), nominal case systems (L. Huang et al. 1998), negative constructions (Yeh et al. 1998), existential, possessive, and locative constructions (Zeitoun et al. 1999), pronominal systems (L. Huang et al. 1999a), and interrogative constructions (L. Huang et al. 1999b). Zeitoun (2000) is a comparative study of the verbal derivation marker *ka-*, which includes Matu'uwal Atayal among the languages under comparison. L. Huang continued to write on different aspects of Matu'uwal syntax: its optative mood (L. Huang 1996b), interrogative constructions (L. Huang 1996a), verb classification (L. Huang 2000a), focus system (L. Huang 2001), and nominalization (L. Huang 2002). She published an analysis on the case marking system in Plngawan (L. Huang 2006) before returning to Squliq Atayal with studies on grammaticalization (L. Huang 2008), the syntactic and semantic behaviour of the prefix *p-* (L. Huang and Tali' Hayung 2008), and coordination and comitativity (L. Huang and Tali' Hayung 2011) in that dialect. In addition, L. Huang also wrote several grammars of Squliq and Matu'uwal Atayal, discussed below.

Der-Hwa Victoria Rau published several papers on Atayal in addition to her dissertation on Atayal grammar. Rau (2000a) is a sociolinguistic study on several mergers of final consonants in a Squliq dialect in Nantou County, and how these mergers correlate with the speaker's age. Rau (2000b) is a paper on topicalization (subject fronting) and topic continuity in Squliq Atayal. Rau (2004) is a study on the mutual intelligibility of three Atayalic dialects spoken in Ren-Ai Township, Nantou County: Squliq Atayal, Plngawan Atayal, and Inago Seediq.

Liao (2005) is an analysis of the relative order of clitic pronouns in Squliq Atayal. Adlay Kun-Long Liu wrote two papers on relativisation in Squliq (A. Liu 2005, 2015). Tang (2006) is a study of the relationship between referentiality and DPs in formal syntax, using data from Paiwan and several varieties of Squliq Atayal as well as Matu'uwal Atayal. Yu (2008) examines adverbial constructions in Matu'uwal Atayal.

H. Huang has written numerous articles on the synchronic phonology of Atayal. H.

Huang (2006a) is a comparison of Isbukun Bunun and Squliq Atayal in their treatment of vowel clusters. de Carvalho (2015) presents a different analysis of Squliq hiatus resolution to that of H. Huang (2006a). H. Huang (2006b) examines syllable onsets in Squliq Atayal and concludes that they do not allow consonant clusters. H. Huang (2014) looks at CG sequences in Squliq Atayal spelling, and differentiates CG clusters from sequences with an intervening vowel. H. Huang (2015b) is a comparative study of syllable types in several Formosan languages, including Squliq and Matu'ual Atayal. H. Huang (2015a) is an article on the phonemic status of /z/ in several varieties of Squliq Atayal. H. Huang (2018) is a look at weak vowels in positions preceding the rightmost (head) foot in Squliq. H. Huang (2020) analyzes glide fortition and the distribution of glides and fricatives in several varieties of Squliq, with additional data from other Atayal dialects.

Wei-Tien Dylan Tsai has written on Atayal syntax, mostly the Squliq dialect. Tsai (2007) is a comparative study of conjunctive reduction in Tsou, Amis, and Squliq Atayal. Tsai and Wu (2012) is a follow-up study that presents evidence from Matu'ual Atayal as well as Paiwan. Tsai (2015) examines subjecthood and temporal adjuncts in Squliq Atayal, Seediq, and Tsou. Tsai (2017a) looks at the interaction between the reflexive adverbial *nanak* and verbal focus in Squliq Atayal. Tsai (2017b) is a comparative study of reflexives in Squliq Atayal and Mandarin.

Maya Yuting Yeh, who is Atayal herself, has published several papers on Squliq syntax: a comparative study of triple verb serialization in four Formosan languages including Squliq Atayal (Yeh and Huang 2009), the stance marking functions of *hya?*, which is normally a third person pronoun (Yeh and Huang 2013), and a study of constructions of the type '*blaq* + PV predicate + *qu?*' (Yeh 2015).

Y. Chang (2012) is an optimality theoretic analysis of Plngawan clitic ordering. H. Lin (2015) is an analysis of reduplication in Squliq Atayal, also using the OT framework.

Russian linguist Irene Gorbunova has written several papers on the syntax of Atayal varieties spoken in I-lan County, mostly Pyanan Squliq, spoken in Nanshan tribal village. She has written on phasal polarity (Gorbunova 2014), the perfect aspect and related categories (Gorbunova 2016a), spatial deixis in Squliq and Skikun Atayal (Gorbunova 2016b), the tenselessness of Atayal (Gorbunova 2016c), and on the difficulty of classifying the actionality of predicates in a language with factitives (Gorbunova 2016d).

All of Gorbunova's publications on Atayal are in Russian.

Chen Sihwei wrote several papers on the syntax and semantics of Squliq Atayal: on its lexical aspect and lack thereof (S. Chen 2016), the perfective and perfect aspects (S. Chen 2017a), and aspectual properties of unmarked predicates (S. Chen 2017b).

S. S. Huang (2017) looked at variability and stability of syntax in Squliq Atayal discourse. C. Wu (2017) is a study of linkers and linking constructions in Matu'uwal. Erlewine (to appear) studied subject marking on non-subjects in Squliq Atayal.

## 2.2 Master's theses and PhD dissertations

In recent years, especially after the turn of the century, there has been an increasing amount of master's degree theses and doctoral dissertations written on Atayal. All of them were written either at universities in Taiwan, or else by Taiwanese linguists pursuing their degrees abroad. Several linguists wrote both their master's thesis and PhD dissertation on Atayal. A number of these were written by native speakers of Atayal, and in such cases the topics tend to be of a more descriptive nature, or centered around the morphosyntax of the language.

Just like journal articles, theses and dissertations have been written almost exclusively on the Squliq and Matu'uwal dialects, with only a few exceptions. Students at National Tsinghua University account for most of the theses on Matu'uwal Atayal. The vast majority of thesis topics can be categorized as syntax or morphosyntax.

Table 2.2: Theses/dissertations written wholly or partially on Atayal

Author (Year)	Dialect	Category
Tseng (1988)	?	Morphosyntax
Rau (1992)	Squliq	Grammar
Lambert (1999)	S'uli	Phonology
Chien (2001)	Squliq	Phonology
M.Y. Yeh (2002)	Squliq	Semantics
W. Lin (2004)	various	Phonology
Hsiao (2004)	Squliq	Syntax

Author (Year)	Dialect	Category
Liao (2004)	Squliq	Syntax
A. Liu (2004)	Squliq	Syntax
Su (2004)	Squliq	Syntax
B. Lin (2005)	Squliq	Syntax
Lu (2005)	Matu'uwal	Phonology
S. Chen (2007)	various	Syntax
C.H. Lin (2008)	S'uli	Syntax
Shih (2008)	PIngawan	Phonology
Tali' Hayung (2008)	Squliq	Morphosyntax
Kao (2010)	S'uli	Semantics
C. Chen (2011)	various	Phonology
T. Liu (2011)	Matu'uwal	Syntax
J. Chen (2012)	PIngawan	Phonology
Y. Cheng (2012)	Matu'uwal	Semantics
C.-y. Lin (2012)	Matu'uwal	Morphosyntax
Z. Huang (2013)	Matu'uwal	Syntax
Y. Lin (2013)	Matu'uwal	Syntax
C. Wu (2013)	Matu'uwal	Syntax
M.Y. Yeh (2013)	Squliq	Syntax
W. Wu (2014)	Squliq	Phonology
Kagaw Pitay (2014)	Squliq	Syntax
Sugiy Tosi (2014)	Squliq	Semantics
H. Chen (2015)	Squliq	Morphosyntax
H. Cheng (2015)	Matu'uwal	Syntax
Yu (2015)	Matu'uwal	Syntax
T. Lin (2016)	Matu'uwal	Syntax
Peng (2016)	Matu'uwal	Morphosyntax
A. Liu (2017)	Squliq	Syntax
S. Chen (2018)	Squliq	Semantics

Tseng (1988) is an early thesis on the classification of verbs in Atayal. Der-Hwa Victoria Rau's (1992) dissertation was a grammar of Squliq. Lambert (1999) is an OT analysis of vowel epenthesis in a S'uli dialect in Hsinchu County. Chien (2001) looks at the correspondence of the writing system of Atayal with the phonology of Taoshan Squliq. Maya Yuting Yeh wrote her MA on the expression of emotions in Squliq (M.Y. Yeh 2002), and her PhD on event conceptualization and verb classification in the same dialect (M.Y. Yeh 2013). W. Lin (2004) is a study of reduplication in several Atayal dialects. Hsiao (2004) wrote on adverbials in Squliq Atayal. Liao (2004) is a look at transitivity and ergativity in two Philippine and two Formosan languages, among them Squliq Atayal. Adlay Kun-long Liu wrote both his MA thesis and PhD dissertation on Squliq Atayal syntax: the former on relativization (A. Liu 2004), and the latter on syntactic interactions with information structure (A. Liu 2017). Su (2004) studied the behaviour of negator particles in Taoshan Atayal, a Squliq variety. B. Lin (2005) is a look at Squliq interrogatives. Lu (2005) is a study of the phonology of Matu'uwal within the OT framework, centered on the AV infix *-um-*. Chen Sihwei wrote both her masters thesis and PhD dissertation on Atayal: S. Chen (2007) is a study of applicative functions of LV and IV/BV in two varieties of Squliq as well as Matu'uwal. S. Chen (2018) is an in-depth look at temporal and modal expression in Atayal. C.H. Lin (2008) is a work on ellipsis in L'olu, a S'uli variety. Shih (2008) is a study of the phonology of interrogative sentences in Plngawan, centered on prosody. Tali Hayung (2008) wrote on the functions of derivational prefixes in Squliq Atayal spoken in Jianshih Village, Hsinchu County. Kao (2010) looked at (mostly sentence-final) particles in S'uli. C. Chen (2011) is a comparative study of the phonology of three dialects of Atayal spoken in I-lan County: Skikun, Squliq, and Klesan. T. Liu (2011) compared complementation in three Formosan languages, including Matu'uwal Atayal. J. Chen (2012) is an optimality-theoretic analysis of Plngawan phonology, including phonological alternations. Y. Cheng (2012) is a study of modality in Matu'uwal Atayal. C.-y. Lin (2012) is a description of derivational morphology and reduplication in Matu'uwal Atayal. Z. Huang (2013) examined adposition of the auxiliary verbs *kiya'* and *haniyan* in Matu'uwal Atayal. Y. Lin (2013) is a study of causatives in Matu'uwal. C. Wu (2013) is a comparison of linking constructions in Matu'uwal Atayal and Sinvaudjan Paiwan. W. Wu (2014) is a study of the phonology of Japanese loanwords in

Squliq Atayal. Kagaw Pitay (2014) is an analysis of modal constructions in the R'uyan variety of Squliq within the cartographic framework. Sugiy Tosi (2014) wrote her MA thesis on the meanings of different metaphoric expressions in Squliq that utilize the word *inlungan* 'thought, mind'. H. Chen (2015) is a study of the various functions of the existential/auxiliary verb *maki* in Squliq Atayal. The theses by H. Cheng, Yu, and T. Lin use the Cartography framework for their syntactic analyses: H. Cheng (2015) is an analysis of non-finite clauses in Matu'uwal, Yu (2015) is a comparison of modals and mood particles in Matu'uwal and Mandarin, and T. Lin (2016) is a study of the syntax of topicality in Matu'uwal. Peng (2016) is an analysis of Matu'uwal verbal morphology and morphosyntax using the Role and Reference Grammar framework.

## 2.3 Dictionaries and wordlists

Several researchers have published wordlists or dictionaries, but only of Squliq Atayal. These are listed in Table 2.3.

Table 2.3: Atayal dictionaries

<u>Author (Year)</u>
Ogawa (1932)
Egerod (1965b)
Ferrell (1967)
Egerod (1980)
Liao (2003)
<u>Liao (2014)</u>

Ogawa (1932) was an early comprehensive Japanese-Atayal wordlist. It was later translated into English and republished by Raleigh Ferrell (1967). Søren Egerod published an Atayal wordlist (Egerod 1965b), but continued working on Atayal and collecting data, culminating in the first ever Atayal-English dictionary (Egerod 1980). This dictionary was later revised and posthumously re-released in 1999.

Liao (2003) is notable for being a monolingual Atayal-Atayal dictionary. Liao, also



known as Tesing Silan in Atayal, later published an Atayal-Chinese dictionary (Liao 2014).

Apart from the aforementioned publications, several wordlists and dictionaries exist online or in digital form. The Council of Indigenous Peoples maintains online dictionaries for all 16 officially recognized nations, but opts for only the biggest dialect for each of them, this being Squliq in the case of Atayal.<sup>1</sup> A different online dictionary includes S'uli as well as Squliq words.<sup>2</sup> The Council of Indigenous Peoples and the Indigenous Languages Research and Development Center also aid in the creation of 1000-word list for all dialects of every language, with six Atayal dialects represented: Squliq, Matu'uwal, S'uli, Skikun, Plngawan, and Klesan.

## 2.4 Grammars

Several grammars of Atayal have been published, but only on the Squliq and Matu'uwal dialects. All but one were authored or co-authored by L. Huang. Table 2.4 presents a list of these. Apart from dedicated grammars, Ogawa and Asai (1935) also includes a sketch grammar of Atayal.

Table 2.4: Atayal grammars

Author (Year)	Dialect
Rau (1992)	Squliq
L. Huang (1993)	Squliq
L. Huang (1995b)	Matu'uwal
L. Huang (2000b)	Matu'uwal
L. Huang and Tali' Hayung (2016)	Squliq

Rau wrote her doctoral dissertation on the grammar of Squliq Atayal (1992), and later published it as a book. L. Huang (1993) was another grammar of Squliq. L. Huang (1995b) was the first grammar of Matu'uwal, presenting the differences between this

<sup>1</sup><https://e-dictionary.apc.gov.tw/Index.htm>

<sup>2</sup><http://tayal.pqwasan.org.tw/kmal/desktop/index.php>

dialect and Seediq. L. Huang later published another grammar of Matu'uwal, this time in Chinese (L. Huang 2000b). L. Huang and Hayung (2016, second edition 2018) is the latest grammar of Squliq Atayal, published by the Council of Indigenous Peoples as part of a series of grammars of the languages of all 16 officially recognized Formosan nations.

## **2.5 Interim summary**

There have been many studies on Atayal but the vast majority was focused on its morphosyntax. Squliq and Matu'uwal have received by far the most attention from linguists, to the detriment of other Atayal dialects.

There has been very little historical work done on Atayal. Li (1981) reconstructed the phonology of Proto-Atayalic, which appears to have satisfied the linguistic community's interest. Blust (1999: 46) writes, "The Atayalic subgroup is regarded as self-evident, and has been adequately demonstrated". And yet, no linguistic work has been done on the internal subgrouping of Atayal.

In this dissertation, I address issues that have previously received little attention. I provide synchronic phonological descriptions for seven Atayal dialects. I also talk in greater detail about the historical phonology of Proto-Atayal, and specifically address the issue of Atayal subgrouping.

# Chapter 3

## Phonologies of Atayal dialects

This chapter presents a synchronic overview of the phonologies of the seven dialects discussed in the dissertation: Squliq, S'uli, Matu'uwal, PIngawan, Klesan, Skikun, and Matu'aw. Some of these, like Squliq and Matu'uwal, are comparatively well-researched. Others, like Klesan and Matu'aw, have received almost no attention in linguistic studies.

Section 3.1 discusses the consonant inventories, vowel inventories, and phonotactics (syllable types, phoneme restrictions) of each dialect separately. Section 3.2 discusses synchronic alternations in the different dialects together, in part because many of them are similar, and in part to provide a comparative overview.

### 3.1 Phoneme inventories and phonotactics

The consonant inventories of the various Atayal dialects are mostly very similar to each other. The major differences are in the presence or absence of /q/ and <c> /t͡s/ phonemes, which in some dialects merge with /ʔ/ and /s/, respectively.

In the following sections, I will describe the consonant inventories of seven Atayal dialects separately, providing specifics of articulation where appropriate.

**Stress in all Atayal dialects in this study is always word-final**, and is not discussed separately for each dialect. It is realized as a pitch drop, and stressed syllables also have a higher intensity. Penultimate syllables tend to have a rising pitch in anticipation of the final pitch drop. I believe it is this rising pitch in penultimate syllables that led some linguists to occasionally hear penultimate stress, especially when pronounced in

an utterance (Li 1981: 239; C. Chen 2011: 32).

### 3.1.1 Squliq phonology

#### 3.1.1.1 Squliq consonant inventory

Squliq is the biggest Atayal dialect in terms of the number of speakers and the geographical area over which it is spoken. There is inevitably a certain amount of phonetic variation in Squliq spoken in various geographically separate locations. Nevertheless, the differences between varieties of Squliq do not extend to the consonant inventory. Table 3.1 presents the consonant phonemes of Squliq.

Table 3.1: Squliq Atayal consonant inventory

p	t	k	q	ʔ
b [v]		g [ɣ]		
	c [t͡s]			
	s	x	h [h]	
	(z [z])			
m	n	ŋ		
	l, r			
w	y [j]			

Most varieties of Squliq preserves /q/ and /ʔ/ as separate phonemes. Li (1998) did record several Squliq-speaking villages that have lost the /q/ phoneme, namely the tribal villages Kulu and Haga-Paris in I-lan County. The voiced labial obstruent /b/ is most often realized as a voiced labiodental fricative [v], but can also be a voiced bilabial fricative [β] in the speech of older and more conservative speakers.

The phoneme <c> /t͡s/ is not found in the dialect as a distinct root-internal phoneme, but coronal affricates can still appear in the dialect in several situations: (1) as an allophone of /t/ before the high front vowel /i/ or the palatal approximant <y> /j/, (2) as an allophone of /t/ in word-final position, and (3) in the derivational prefix *cə-* (Egerod 1966a: 123; Li 1980a: 362–363).

In the first case, it is fully in complementary distribution with the plosive [t], and can be analyzed as an allophone of the phoneme /t/ directly preceding the vowel /i/ or the glide <y> /j/. Note that while orthographically it is still written as <c> /t͡s/, phonetically

it is an alveolo-palatal affricate [tʃ].

Word-final /t/ may also be affricated as [tʃ] in the speech of some Squliq speakers, and this is sometimes reflected in writing (L. Huang and Tali' Hayung 2016: 12). This is a purely phonetic feature and has no bearing on the phonological system of the dialect.

The derivational prefix *cə-* is what makes <c> /tʃ/ a phoneme. This prefix forms causative and reciprocal verbs, among other functions (Rau 1992: 102–104; Tali' Hayung 2008: sec. 2.8): e.g. *cə-* + *baq* 'to know' > *cəbaq* 'to teach', *cə-* + *beŋ* 'to grasp' > *cəbeŋ* 'to grasp each other'. Phonetically speaking, it is followed by a schwa vowel, so *cəbaq* 'to teach' is pronounced [tʃə.'vaq]. The prefix *cə-* contrasts with another derivational prefix *t-* (Tali' Hayung 2008), so they cannot be analyzed as allophones here.

The status of <z>, phonetically a voiced alveolo-palatal fricative [ʒ], was addressed by H. Huang (2015a), who examined its distribution relative to <y> /j/ in several varieties of Squliq. Huang's conclusion was that the two sounds are in complementary distribution in some varieties of Squliq, but minimally contrastive in others (H. Huang 2015a: 254). Even in varieties that show a distinction between <z> and <y> /j/, there are no minimal pairs, and the phonemic status of <z> remains marginal.

### 3.1.1.2 Squliq vowel inventory

The vowel system of Squliq Atayal has traditionally been analyzed as /a i u e o/ (Egerod 1966a; Li 1980a; H. Huang 2006b; L. Huang and Tali' Hayung 2016). The mid vowels /e/ and /o/ are much rarer than the vowels /i u a/, and they correspond to VG sequences <ay> /aj/ and /aw/ in some varieties of Squliq and other Atayal dialects (Li 1980a: 354–355). The high vowels /i/ and /u/ are centralized when adjacent to post-dorsal consonants /q/ and /h/, and may be perceived and written as mid vowels instead.

On the other hand, almost no studies treat [ə] as a phoneme, and it is instead considered a purely phonetic vowel that breaks up underlying consonant clusters (Li 1980a: 355). Yamada and Liao (1974) do analyze it as a phoneme, but also note that its distribution is constrained to unstressed (non-final) syllables. Chien (2001) presents data that constitutes near-minimal pairs of CG and CəG sequences, e.g. *hwa.hun* 'to destroy (PV)' vs *hə.wa.kun* 'to support by the arm (PV)'. H. Huang (2014) treats these distinctions as stemming from glides being in the nucleus or the onset, but here I shall instead treat

schwa as a marginal phoneme based on Chien's examples.

The vowel inventory of Squliq Atayal as analyzed here is presented in Table 3.2. The vowels /a/, /i/, and /u/ are fully phonemic, while the central vowel /ə/ has a more limited distribution, and is treated as a marginal phoneme.

Table 3.2: Squliq Atayal vowel inventory

i		u
e	(ə)	o
	a	

This analysis is different from the commonly used analyses of the Squliq vowel system. The main difference is in the inclusion of /ə/, albeit as a quasi-phoneme due to its limited distribution: it is not able to receive stress and is the 'default' vowel that other vowels are lenited to. The mid vowels /e/ and /o/ can be analyzed as phonemic in some varieties of Squliq, but are absent from others (Li 1980a: 354–355). The varieties that do not have /e/ and /o/ phonemes will instead have VG or GV sequences in corresponding positions.

### 3.1.1.3 Squliq phonotactics

Squliq disallows true consonant clusters (H. Huang 2006b). Any apparent tautosyllabic consonant clusters have an intervening schwa vowel that is unwritten in the orthography of the language. Tautosyllabic CG sequences can be found, but are not consonant clusters: the glide in these sequences phonologically behaves like a vowel, and is therefore analyzed as part of the nucleus (H. Huang 2006b: sec. 5).

The syllable types of Squliq Atayal are presented in Table 3.3. The table includes only those syllable types which are found across different varieties of Squliq. Some varieties allow more complex syllable structure, as discussed below.

When open syllables occur word-finally, the vowel is lengthened, for example *bisuw* [vi.'su:] 'worm'. These syllables can alternatively be analyzed as CVG with a homorganic glide coda (H. Huang 2006b: 61). The vowels in these syllables are limited to /i/ and /u/, and the syllables can only occur in word-final position. The vowel length in these syllables comes from an original consonantal coda, which lenited and is no longer found

Table 3.3: Syllable types in Squliq Atayal

Syllable type	Example	Gloss
CV	qu.tux	‘one’
CGV	qwa.lax	‘rain’
CVC	baq	‘to know’
CGVC	qwaw	‘alcoholic drink’

in Squliq (Li 1981: sec. 2.8). The same syllable type can be seen in all dialects of Atayal, with the same or similar origin (see Section 4.1.1 for the origins of final long vowels).

There are variations in the phonotactics of Squliq in different regions. Huang (2006b: 66) notes that Taoshan Squliq allows root-internal codas and word-final CVGC syllables, but Jianshi Squliq does not. Table 3.3 includes only syllable types found in all varieties of Squliq.

Some Squliq consonants have a limited distribution. The phoneme /x/ cannot occur word-initially (Li 1981: 239). The phonemes /b/ and /g/ cannot occur word-finally, and neither can the quasi-phoneme <z> [ʒ] (Li 1981: 240). Li (1981) also claims that /r/ was disallowed in word-final position in Squliq, but Huang (2006b: 64) lists several counterexamples with word-final /r/ in Taoshan Squliq. Even though /r/ can appear word-finally, it is extremely rare in this position, and is replaced with /l/ by some speakers.

The voiceless dental plosive /t/ is affricated before a high front vowel /i/ or the corresponding glide <y> /j/, as seen in Table 3.4.

Table 3.4: Affrication of /t/ in Squliq

Word	Transcription	Gloss
cimu?	[t͡ɕi.muʔ]	‘salt’
cyugal	[t͡ɕu.ɣal]	‘three’

This behaviour can be analyzed as an allophone of the phoneme /t/, or as the phoneme <c> /t͡ɕ/ occurring in complementary distribution with /t/ in this environment. Diachronically speaking, /t/ is in the middle of a split, so both interpretations are possible at this time.

The phoneme /k/ followed by /q/ or /h/ in the same word in other dialects, in Squliq

corresponds to /q/ instead. In other words, Squliq tends to avoid /k..q/ or /k..h/ sequences in the same word, though they are not disallowed entirely. See examples in Table 3.5, (from Li 1980a: 377).

Table 3.5: Dorsal harmony in Squliq

Squliq	S'uli	Matu'uwal	Gloss
qəhuniq	kahuniʔ	kahuniq	'tree'
qətəhuy	katahuy	kithuw	'fat, thick'

Both words in Squliq have an initial /q/ phoneme, but begin with a /k/ in both S'uli and Matu'uwal. The final phoneme in 'tree' is /q/ in Squliq and Matu'uwal, and /ʔ/ in S'uli, which is the regular correspondence. Squliq underwent a process called *dorsal consonant harmony*, whereby a historical \*k was backed into /q/ in some environments (see Section 4.5.1 for more information). This process also occurred in Skikun (Li 1980a: 377) and Seediq (Lee 2009).

Some Squliq speakers do not allow /l/ to occur in word-final position, and replace it with /n/ (Rau 2000a). This is a sound change in progress; it has not yet completed for all Squliq speakers. This merger can also be found in other Atayal dialects, see Section 3.2.1.4.

Squliq, like several other Atayal dialects, has a vowel weakening rule under which all vowel distinctions outside the rightmost foot are lost (Egerod 1965a: 255–257; Li 1980a: 369–370). This weakening rule is demonstrated in Section 3.2.2.1. Put another way, this rule means that no vowels other than schwa can occur anywhere except the final two syllables. One exception in native Atayal vocabulary is the perfective infix *-in-* in some varieties of Squliq, where it retains its vowel regardless of its position within a word. Another exception is the interjection *talagay* 'wow!', which has a cardinal vowel in the third-to-last syllable.



### 3.1.2 S'uli phonology

#### 3.1.2.1 S'uli consonant inventory

S'uli is the second biggest Atayal dialect, and is spoken in Jianshih Township and Wufeng Township in Hsinchu County (新竹縣尖石鄉、新竹縣五峰鄉), Tai'an township in Miaoli County (苗栗縣泰安鄉), and Heping district in Taichung City (台中市和平區). Its consonant inventory, shown in Table 3.6, is characterized by the lack of both /q/ and <c> /tʃ/ phonemes.

Table 3.6: S'uli Atayal consonant inventory

p	t	k	ʔ
b [v]		g [ɣ]	
	s	x	h [h]
m	n	ŋ	
	l, r		
w	y [j]		

S'uli has a voiced alveolo-palatal fricative [ʒ], which in my data is in complementary distribution with the glide [j]. These two sounds are likely allophones of <y> /j/, but no research has been done on a possible phonemic distinction between the two. Here they are treated as allophones, but still distinguished in transcription.

The lateral approximant /l/ does not appear word-finally in S'uli due to a merger with /n/ in this position (see Section 3.2.1.4).

There is some variation within S'uli, but due to frequent intermarriage between different S'uli communities, it is not always easy to identify language features on a geographic basis. They are instead treated as individual speaker variations. Indeed, often speakers will provide two forms upon elicitation, either with variant pronunciation or else different lexical items, both of which can be used by S'uli speakers.

One such variation is an affricate [tʃ] allophone of /t/ before the high front vowel /i/ or the corresponding semivowel <y> /j/. Thus, the word 'salt' may be pronounced variously as *cimu* or *timu*, sometimes by the same speaker. Some speakers are very consistent with a single variant, for others the consistency may vary by lexical item. However, due to the large amount of variation between speakers, we cannot yet analyze this phenomenon as a phonemic split, though it could become one in the future.

### 3.1.2.2 S'uli vowel inventory

The vowel inventory of Squliq Atayal is shown in Table 3.7. There is variation between speakers, which is explained in more detail below.

Table 3.7: S'uli Atayal vowel inventory

i		u
(e)	(ə)	(o)
a		

The mid vowels [e] and [o] appear in the speech of some speakers, but not others. For example, the word ‘eye’ can be pronounced *rawzi*, *rowzi*, or *rozi*, with a range of [aw~ow~o] for the relevant sounds. This means that, depending on the speaker or variety, there may or may not be mid vowels /e/ and /o/ in the vowel inventory.

The vowel schwa does appear in the surface representation in the dialects that I have studied, however here there is also some variation. There appears to be some crossover with the vowel /a/, and sometimes the difference between the two is not very audible. Very often the pronunciation was in the range of [ɐ], that is, somewhere between a low and a central position, with the mouth more open than for a central vowel, but less so than for a stressed /a/ for the same speaker.

### 3.1.2.3 S'uli phonotactics

The syllable types common to all S'uli varieties are shown in Table 3.8.

Table 3.8: Syllable types in S'uli Atayal

Syllable type	Example	Gloss
CV	ʔu.tux	‘one’
CGV	kya.hin	‘skin’
CVC	la.tan	‘clothing’
CGVC	sway	‘younger sibling’

Some speakers have CVGC syllables, e.g. *rawm* ‘needle’, while other speakers coalesce the VG sequence into a mid vowel, as in *rom*.

Closed syllables are allowed in non-final positions, e.g. *ləmɲaluŋ* ‘to think (AV)’, *kəb-həni* ‘bird’. Not all third-to-last vowels are deleted, cf. *məkərakis* ‘young woman’.

S’uli (at least for some speakers) has a contrast between *nya* (3S.Gen clitic pronoun) and *niya* (proximal progressive marker), where the presence or absence of a homorganic vowel before a glide is phonemic. I have not encountered such distinctions in other Atayal dialects.

Unlike most Atayal dialects, S’uli does not distinguish open final syllables from final syllables ending in a glottal stop, i.e. there are no phonemic glottal stops in word-final position. Words that end with a phonemic /ʔ/ or /q/ in other dialects do not reliably show an audible glottal stop in my consultants’ speech: *tari* ‘knee’, *kisi* ‘k.o. basket’, *rozi* ‘eye’. The only other Atayal dialect with the same phenomenon is Klesan (see Section 3.1.5.3).

### 3.1.3 Matu’uwal phonology

#### 3.1.3.1 Matu’uwal consonant inventory

Matu’uwal Atayal, spoken in three Villages in Tai’an Township, Miaoli County, has been described by researchers as ‘conservative’ (Li 1981: 236; L. Huang 2000a: 364). While this descriptor is overly broad, it is true for some aspects of its phonology, including its consonant inventory, shown in Table 3.9.

Table 3.9: Matu’uwal Atayal consonant inventory

p	t	k	q	ʔ
b [β]		g [ɣ]		
	c [t͡s]			
	s	x	h [h]	
m	n	ŋ		
	l, r			
w	y [j]			

Matu’uwal preserves historical /q/ and <c> /t͡s/ as separate phonemes, and is one of only two Atayal dialects to do so (the other being Skikun). Older speakers of Matu’uwal use the voiced bilabial fricative [β] pronunciation of the phoneme /b/. Matu’uwal is the only Atayal dialect that allows the phonemes /b/ and /g/ to occur word-finally, see Section 3.1.3.3 for more details.

Matu’uwal spoken in Qing’an Village (清安村) lacks the phoneme <c> /t͡s/, and it completely merged with /s/. My data comes from speakers in Jinshui Village (錦水村), whose dialect preserves the contrast between <c> /t͡s/ and /s/.

### 3.1.3.2 Matu’uwal vowel inventory

The vowel inventory of Matu’uwal is simpler than that of other dialects. Table 3.10 presents the vowels of Matu’uwal.

Table 3.10: Matu’uwal Atayal vowel inventory

i	u
(ə)	
a	

Unlike most other Atayal dialects, Matu’uwal does not have any occurrences of mid vowels [e] and [o] in native vocabulary (though they may occur in Japanese or Sinitic loanwords). Instead, Matu’uwal will have VG sequences <ay> /aj/ and /aw/ or hiatuses /ai/ and /au/ where other dialects have mid vowels. Section 3.1.3.3 goes into more detail on Matu’uwal hiatuses.

Like Squiliq, Matu’uwal allows the mid central vowel to occur in the surface representation, but it is quite rare. Matu’uwal does not reduce all prepenultimate vowels, and preserves vowel distinctions in the third-to-last syllable, although it does have vowel reductions of a different kind, see Section 3.2.2.5. Its appearance is restricted to the initial open syllables, e.g. *bəhut* ‘squirrel’.

### 3.1.3.3 Matu’uwal phonotactics

Matu’uwal syllables are maximally CVC (H. Huang 2015b: 58–59). The full range of syllable types is rather small, and presented in Table 3.11.

Just like in other Atayal dialects, the vowel in final open syllables is lengthened. Unlike other Atayal dialects, this vowel can be /a/, e.g. *taka* [ta.‘ka:] ‘frog, toad’. This makes it impossible to analyze final open syllables as having an underlying homorganic glide coda, since [a] does not have a corresponding glide (H. Huang 2015b: 61). Open syllables in Matu’uwal are mostly due to the deletion of word-final Proto-Atayal \*ɪ (see

Table 3.11: Syllable types in Matu'uwal Atayal

Syllable type	Example	Gloss
CV	qu.tux	'one'
VC	ra.an	'road'
CVC	baq	'to know'

Section 4.1.1 for more details).

Matu'uwal is the only Atayal dialect that allows onsetless syllables, but these can only occur in word-final position. Like final open syllables, Matu'uwal **hiatuses**, or vowel clusters, are the result of the loss of Proto-Atayal \*i. Hiatuses can be either two identical vowels (/a.a/, /i.i/, /u.u/), or a vowel sequence with decreasing sonority (/a.i/, /a.u/). Phonetically, these hiatuses are distinct from VG sequences: there are two audible syllable peaks; and stress, which is always word-final in all Atayal dialects, falls on the second vowel. The reason for this analysis is the difference in phonological behaviour between these two sets, see Section 3.2.2.4 for a detailed explanation.

Some studies describe CGVC or CVGC syllables in Matu'uwal (Lu 2005), but here I agree with Huang (2015b: 59) in analyzing them as disyllabic sequences CV.GVC or CV.VC, e.g. *quwaw* 'wine' is syllabified as /qu.waw/, and *rauq* 'earth, ground' as /ra.uq/.

Matu'uwal allows closed syllables to occur anywhere within the word instead of limiting them to word-final position: for example, *mickacka?* 'between' is syllabified as /miʔs.kafʔs.kaʔ/, consisting of three closed syllables.

Matu'uwal consonants are less restricted in their distribution than in other Atayal dialects. Matu'uwal allows both /b/ and /g/ to occur in word-final position: *humab* 'to stab (AV)', *bicug* 'worm'. The affricate <c> /ʔs/ cannot occur word-finally: it merges with /t/, as detailed in Section 3.2.1.3.

Unlike most Atayal dialects, Matu'uwal does allow /x/ to occur in word-initial position. Li (1981: 240) identifies only two lexical items with initial /x/, *xuwil* 'dog' and *xuxu?* 'breasts', and I have not encountered any other examples. Note that this limited distribution is also found in closely related Seediq: the only word with word-initial /x/ in all Seediq dialects in *xiluy* 'iron' (Li 1981: 240; Lee 2010: 137).

Matu'uwal does not lenite all prepenultimate vowels, unlike Squliq, S'uli, Klesan,

and Skikun. It preserves vowel distinctions in the third-to-last syllable, as shown in Table 3.12.

Table 3.12: Vowel distinctions in the third-to-last syllable in Matu’uwal

Matu’uwal	Gloss
tanjuqiy	‘horn’
pisaniq	‘taboo’
turakis	‘foxtail millet’

There are still vowel reduction processes of a different nature in Matu’uwal, which are discussed in Sections 3.2.2.4, 3.2.2.5.

Schwa in Matu’uwal appears almost exclusively in initial open syllables: *bəhut* ‘squirrel’, *kəgiy* ‘hemp’, *həmaʔ* ‘tongue’. There are very rare exceptions to this tendency: *mantəhawnak* ‘to sit (AV)’, *sumanmənahuqil* ‘to kill (AV)’; but in these cases the syllable carrying the schwa immediately follows a morpheme boundary. Usually a word-medial schwa is deleted, leading to a non-final closed syllable; this is addressed in Section 3.2.2.2.

### 3.1.4 Plngawan phonology

#### 3.1.4.1 Plngawan consonant inventory

Plngawan Atayal is spoken in a single tribal village in Ren’ai Township, Nantou County (南投縣仁愛鄉). There used to be three separate villages all speaking the same dialect, but they were relocated to their current location in the first half of the 20th Century, during Japanese rule. Differences between subdialects do exist, but are mostly lexical, and do not extend to the consonant inventory (J. Chen 2012: 2–4).

Plngawan lacks a /q/ phoneme, but preserves the distinction between /s/ and <c> /t͡s/. It is the only dialect to have an alveolar approximant phoneme /ɹ/ distinct from other approximants. This phoneme contrasts with /r/, phonetically an alveolar tap, or more rarely a trill. Both phonemes have no restrictions on where in a word they can appear.

Plngawan voiced obstruents /b/ and /g/ may be realized as either plosives [b] and [g] or fricatives [β] and [ɣ], respectively. The fricative pronunciation tends to occur in

Table 3.13: Plngawan Atayal consonant inventory

p	t	k	ʔ
b [b~β]		g [g~ɣ]	
	c [t͡s]		
	s	x	h
m	n	ŋ	
	l, r		
w	y [j], ɿ		

intervocalic position. Li (1985a: 700) writes that all Atayal dialects except Plngawan pronounce /b/ and /g/ as fricatives, however in my fieldwork I have also encountered plosive pronunciations from speakers of Klesan (Section 3.1.5.1) and Skikun (Section 3.1.6.1).

The phoneme /h/ is not as strongly pharyngeal as in other Atayal dialects, and appears to be merging with /x/. During my fieldwork, I noticed that the difference between /h/ and /x/ is not always very clear, and /h/ is sometimes pronounced as a velar fricative [x], especially before high or mid vowels. The speakers themselves do not always differentiate between them reliably. The two phonemes are more clearly distinguished in word-final position. The phoneme /h/ can also be realized as a pharyngeal [ħ] or glottal fricative [h].

The alveolar approximant /ɿ/ in word-final position may sometimes be realized as [l], merging with /l/. This does not happen consistently, even for the same speaker.

#### 3.1.4.2 Plngawan vowel inventory

Plngawan has a five-vowel inventory, shown in Table 3.14.

Table 3.14: Plngawan Atayal vowel inventory

i	u
e	o
a	

The mid vowels /e/ and /o/ occur in Plngawan quite frequently, in part due to widespread vowel coalescence (Section 3.2.2.3). Schwa does not appear in this dialect, and instances of historical schwa were merged into cardinal vowels (most frequently /a/, but also others), or were deleted. See Section 3.2.2.2 for more information on

alternations of historical schwa.

### 3.1.4.3 Plngawan phonotactics

Plngawan has a relatively simple syllable structure, as shown in examples in Table 3.15.

Table 3.15: Syllable types in Plngawan Atayal

Syllable type	Example	Gloss
CV	ʔu.tux	‘one’
CVC	baʔ	‘to know’
CGVC	ryuŋ	‘hornet’

J. Chen (2012: 24) lists examples with onsetless syllables, such as /ra.gi.il/ ‘narrow’, /hu.la.i/ ‘snow’, and /ba.i/ ‘thyroid gland’ (notation modified). In my fieldwork, I heard clear glottal stops in the elicitation of all these examples, so they should be transcribed instead as /ɾagiʔil/ [ɾa.yi.ʔil]<sup>1</sup> ‘narrow’, /hulaʔi/ [hu.la.ʔi:] ‘snow’, and /baʔi/ [ba.ʔi:] ‘thyroid gland’. Conversely, Chen writes /sa.ʔiŋ/ ‘two’, where the glottal stop appears to be optional in my data. However, unlike Matu’uwal (Section 3.1.3.3), Plngawan has no phonemic distinction between a hiatus and two vowels with an intervening glottal stop, so I analyze all these examples as having a phonemic glottal stop.

There are very few good examples of CGVC syllables, with the best one given in Table 3.15. I have not been able to find any examples at all with the approximants /w/ and /ɹ/ in my dataset, so the glide in this syllable type appears to be limited to <y> /j/. J. Chen’s (2012: 24) examples /ta.ra.hjaʔ/ ‘to lie down’ and /si.njuw/ ‘rope’ can alternatively be analyzed as /ta.rah.jaʔ/ and /sin.juw/, respectively, with the syllable boundary between the consonant and the glide. Examples with the phonemes <c> /t͡s/ or /s/ such as Chen’s /ʔu.cjux/ [ʔu.t͡ɕux] ‘fish’ are not pronounced as two separate segments, but instead coalesce into a single palatal segment [t͡ɕ] or [ɕ], respectively. Underlyingly, they should still be treated as separate phonemes based on alternations such as *sumyuw* [sumju:] ‘to make rope (AV)’ vs *syugun* [ɕuɣun] ‘to make rope (PV.SBJV)’. This pair

<sup>1</sup>Chen has an initial /r/ in her transcription, but this word should start with /ɾ/ instead.



shows that /s/ and <y> /j/ are separate phonemes based on the position of the infix -*um*-. if there were a distinct phoneme <sy> /ɕ/, we would expect the infixed form to be *\*\*syumu*w. In the suffixed form *syugun*, the phonemes /s/ and <y> /j/ are phonetically merged into a single segment [ɕ], and thus belong in the same syllable.

Pngawan preserves vowel distinctions in the third-to-last syllable, as shown in Table 3.16. These vowels are often the same as in Matu'uwal, though sometimes they are not; these differences are explored further in Section 4.1.3.

Table 3.16: Vowel distinctions in the third-to-last syllable in Pngawan

Pngawan	Gloss
nakarit	‘spider’
pisaniʔ	‘taboo’
turakis	‘foxtail millet’

Vowels outside the head foot do get reduced in Pngawan under certain circumstances, this is discussed in Section 3.2.2.5.

J. Chen (2012: 3) notes that one of the main differences between the Macagis and Samiru subdialects of Pngawan is their syllable structure: Samiru allows heterosyllabic consonant clusters, while Macagis has an intervening /a/ vowel in these words, e.g. Samiru *kilkah* vs Macagis *kilakah* ‘kick’. The vowel is always /a/, and Chen treats it as an epenthetic vowel in Macagis in order to avoid a heterosyllabic CC cluster, i.e. Macagis disallows non-final CVC syllables. My analysis is that this difference is caused by a difference in sound changes of \*ə in this environment, see Section 3.2.2.2.

Word-final <ay> /aj/ is very rare, because Pngawan underwent a change whereby Proto-Atayal \*ay became /i:/ word-finally (see Section 4.5.6). It can be found in a few words, such as *cubay* ‘very much, truly’ or *kakumay* ‘caterpillar’.

I have collected some examples of what appear to be syllabic nasals in Pngawan. The dialect has a derivational prefix *m-* which is used in agentive nominalizations, e.g. *mpulataʔ* ‘hunter’, *mpumauah* ‘farmer’, *mpakuriʔ* ‘thief’, *mpurahuʔ* ‘shaman’. This prefix is pronounced as a separate syllable, but the mouth remains fully closed for the entire duration. This phenomenon would benefit from further investigation.

### 3.1.5 Klesan phonology

#### 3.1.5.1 Klesan consonant inventory

The consonant inventory of Klesan is given in Table 3.17. This dialect does not have /q/ as a phoneme, but distinguishes <c> /t͡s/ and /s/.

Table 3.17: Klesan Atayal consonant inventory

p	t	k	ʔ
b [β]		g [ɣ]	
	c [t͡s]		
	s	x	h [ħ]
m	n	ŋ	
	l, r		
w	y [j]		

Klesan does not allow bilabial consonants /b/, /m/, or /p/ to appear in word-final position. This is discussed in Section 3.2.1.2.

Likewise, /l/ does not occur word-finally either in my dataset, see Section 3.2.1.4 for more details. It should be noted that my data comes from Pyahaw tribal village (碧候), one of five tribal villages where Klesan is spoken. Li (1998) includes data from all five villages, and in his data Ropoy (金岳) and Kəŋyan (金洋) do have final /l/, so this is not common to all Klesan speakers.<sup>2</sup>

The phoneme /k/ may be backed by some speakers. Its phonetic realization is sometimes uvular [q], but not consistently. There is only one dorsal plosive phoneme in Klesan, but its pronunciation may vary.

The voiced obstruents /b/ and /g/ are normally pronounced as voiced fricatives [β] (or [v]) and [ɣ], respectively. This was assumed to be true for all Atayal dialects with the exception of Plngawan (Li 1981, 1985a). However I did notice and record plosive variants [b] and [g] in Klesan as well as Skikun (see Section 3.1.6.1).

#### 3.1.5.2 Klesan vowel inventory

Klesan distinguishes five vowel phonemes plus a quasi-phonemic schwa, as shown in Table 3.18.

<sup>2</sup>In Li's paper, the villages are called Ryuhij (金岳) and Knŋyan (金洋), respectively.

Table 3.18: Klesan Atayal vowel inventory

i	u
e (ə) o	
a	

Schwa cannot appear in the final (stressed) syllable, but is allowed everywhere else. The cardinal vowel phonemes /a i u e o/ normally only appear in final syllables or in penultimate open syllables, though they are sometimes allowed in other positions, e.g. in reduplicated monosyllables or in loanwords. The distribution of schwa is not completely predictable. These issues are explored further in Section 3.1.5.3.

### 3.1.5.3 Klesan phonotactics

Klesan allows both closed and open syllables in final and non-final positions, although non-final closed syllables do have some restrictions, as discussed further below. Syllables are maximally CGVC, and all syllable types with examples can be seen in Table 3.19.

Table 3.19: Syllable types in Klesan Atayal

Syllable type	Example	Gloss
CV	ma.su	‘to finish’
CVC	bes	‘spouse’
CGV	mya.sa	‘good’
CGVC	lwax	‘pillar’

Non-final closed syllables are allowed in Klesan, though they are not common. Apart from reduplicated onomatopoetic words (*pyongpyon* ‘hare’, *bengben* ‘cricket’) and loanwords (*məzyungban* ‘to prepare’, from Japanese 準備 *junbi*), the vowel in these syllables will always be a schwa, as demonstrated in Table 3.20.

Table 3.20: Non-final closed syllables in Klesan

Klesan	Gloss
hək.ha.ni	‘to look for’
məs.tə.na	‘to meet, to encounter’
məs.lə.pyuŋ	‘to befriend’
sə.mə.ʔa.tuʔ	‘head cold’

In *məstəna* ‘to meet’ and *məsləpyuŋ* ‘to befriend’, *məs-* is a derivational prefix that indicates a change of state; but *həkхани* ‘to look for’ does not appear to have any affixation. The latter suggests that heterosyllabic consonant clusters are not limited to morpheme boundaries. In all of the aforementioned three words, the closed syllable is third-to-last, which may suggest a vowel syncope rule in the environment VC\_CV. This hypothesis is disproved by the example *səməʔatuʔ* ‘head cold’, which shows that a schwa can appear in such a position. This means that the distribution of schwa in Klesan may not be fully predictable. The problem of the distribution of schwa in Klesan will not be addressed further in this dissertation, but it does merit further research.

Klesan differentiates between monosyllabic CG sequences and those with an intervening schwa vowel, e.g. the near minimal pair [sə.nə.wa] ‘loud’ and [sə.nwan] ‘to face something’. This phenomenon appears similar to one found in Squliq, as described in Section 3.1.1.2.

There is also a partial merger of /n/ or /l/ with /ŋ/ in word-final position in my data. This has not been reported in previous publications, but my language consultant sometimes merged a final /n/ or /l/ into /ŋ/ when it was preceded by the vowel /i/: Klesan *kyabiŋ* ‘swallow (bird sp.)’, cf. Squliq and Skikun *kyabil*; Klesan *səbiŋ* ‘lunchbox’, cf. Matu’uwal and Squliq *səbil*. This is not consistent, and other words do show final /in/, e.g. *kənerin* ‘woman’, *yamin* ‘footwear’, *kyahin* ‘skin’. This does mean that in my dataset, Klesan will sometimes have a final /ŋ/ where an /n/ would be expected.

Klesan only has vowel distinctions in the final two syllables in its native vocabulary. This is a feature common to several Atayal dialects, and is discussed at length in Section 3.2.2.1.

As in S’uli (Section 3.1.2.3), the functional load of final glottal stops in Klesan appears

to be greatly reduced, if it exists at all. My language consultant failed to perceive any distinction between words that are expected to have final glottal stops and words that are expected to have final open syllables (based on cognates with other Atayal dialects). On one occasion, the speaker insisted on a long vowel in a word where a final glottal stop would be expected, e.g. [la.ʔi:] ‘child’, cf. Matu’uwal *ʔulaqiʔ*, Squliq *ʔəlaqiʔ*, Skikun *laqiʔ*, Matu’aw *ʔulaʔiʔ*, Plngawan *ʔuleʔ*. In the vast majority of cases, there is simply no audible glottal stop nor any noticeable vowel lengthening in such words. Therefore, I treat Klesan as having final open syllables and no word-final glottal stops.

### 3.1.6 Skikun phonology

#### 3.1.6.1 Skikun consonant inventory

The consonant inventory of Skikun is presented in Table 3.21. The phonemes /x/ and /g/, marked with asterisks in the table, may be undergoing a merger, see discussion further below.

Table 3.21: Skikun Atayal consonant inventory

p	t	k	q	ʔ
b [b~β]		g* [ɣ]		
	c [t͡s]			
	s	x*	h [h]	
m	n	ŋ		
	l, r			
w	y [j]			

Paul Li (1980a: 375) notes as early as 40 years ago that Skikun /g/ may be devoiced into [x] before consonants and is always voiceless in word-final position (identified as historical \*g using comparisons with other dialects). C. Chen (2011: 26) notes word-initial devoicing as well, although she analyzes it as instances of word-initial /x/. In my own fieldwork, I noticed this pronunciation and more: /g/ tends to be devoiced word-initially, and /x/ tends to be voiced intervocalically. As such, there may be no reason to posit /g/ and /x/ as separate phonemes if they are no longer meaningfully distinguished in the language. However, this dissertation will not address the issue further. The reader should be aware that any difference between /g/ and /x/ in Skikun is **unreliable** and

subject to variation.

The phonemes /n/ and /l/ are not always differentiated in word-final position. My language consultant was mostly consistent with expected reflexes, but occasionally either hypercorrected /n/ to /l/ (e.g. *rawil* ‘cousin’ instead of expected *\*\*rawin*) or hypocorrected /l/ to /n/ (e.g. *\*\*māxan* ‘to be sick, to be in pain’ instead of expected *māxal*, cf. suffixed form *kāxalun* ‘to hurt’). This is most likely part of a larger trend to merge word-final /l/ into /n/, which is common among younger Atayal speakers of various dialects.

I also noticed a variant pronunciation of the phoneme /b/ during my fieldwork. Normally it is pronounced as either a voiced bilabial fricative [β] or a labiodental one [v], as was assumed to be the case throughout Atayal with the exception of Plngawan (Li 1981, 1985a). I have recorded /b/ pronounced as a voiced bilabial plosive [b] word-initially in some words in Skikun and Klesan (see Section 3.1.5.1).

### 3.1.6.2 Skikun vowel inventory

Skikun Atayal has the same vowel inventory as Squliq and Klesan, including mid vowels and a quasi-phonemic schwa, shown in Table 3.22.

Table 3.22: Skikun Atayal vowel inventory

i		u
e	(ə)	o
a		

The mid vowels /e/ and /o/ are rarer than the vowels /a i u/. As in other Atayal dialects that have them, they mostly come from the monophthongization of historical diphthongs <ay> /aj/ and /aw/.

As in all Atayal dialects, schwa does not occur in the final (stressed) syllable, but can occur anywhere else. Its distribution is further discussed in the next section.

### 3.1.6.3 Skikun phonotactics

The syllable types allowed in Skikun are very similar to those that are common to Squliq. They are presented in Table 3.23.

Table 3.23: Syllable types in Skikun Atayal

Syllable type	Example	Gloss
CV	qu.tux	‘one’
CGV	qwa.lax	‘rain’
CVC	baq	‘to know’
CGVC	byaq	‘worm’

Schwa is pervasive in Skikun, and follows every consonant that does not have a following cardinal vowel. As such, non-final closed syllables in Skikun are only allowed on morpheme boundaries, for example using the perfective infix *-in-*: *kinholan* ‘place of origin, home village.’<sup>3</sup> Other affixes that can form a closed syllable include *cin-* (multiple meanings), *kin-* ‘extremely’, *min-* ‘N times’.

The only word-final open syllables in Skikun are those with the vowel /i/, where it undergoes compensatory lengthening: *bənaqiy* ‘sand’, *həlaqiy* ‘snow’. Words that have a final long /u/ in Squliq will instead end in /x/ in Skikun, e.g. Squliq *sənyuw* vs Skikun *sənyux* ‘rope’. This is due to different changes of historical \*g (see Section 4.1.1).

### 3.1.7 Matu’aw phonology

#### 3.1.7.1 Matu’aw consonant inventory

Matu’aw is spoken in two tribal villages in Ta-hsing Village, Tai’an Township, Miaoli County (苗栗縣泰安鄉大興村). The consonant inventory of Matu’aw is characterized by the lack of both <c> /t͡s/ and /q/ phonemes, just like its neighbouring S’uli dialect. It is shown in full in Table 3.24.

Unlike S’uli, Matu’aw <y> /j/ does not have a [z] allophone before the vowel /i/, and in this environment it is still pronounced as a palatal approximant [j] or more emphatically, a voiced palatal fricative [j̥].

Matu’aw /t/ does not affricate before /i/, and is pronounced as [t] in all environments, e.g. *timu?* ‘salt’.

<sup>3</sup>There is at least one content word in the native vocabulary that appears to violate this principle: *kinpahux* ‘pit viper’. Skikun does have a verbal root *pahux* ‘to snap, to break’, so *kinpahux* in the meaning of ‘pit viper’ can be argued to be a derived form, albeit with no traceable semantic link.

Table 3.24: Matu'aw Atayal consonant inventory

p	t	k	ʔ
b [β]		g [ɣ]	
	s	x	h [ħ]
m	n	ŋ	
	l, r		
w	y [j]		

The lateral /l/ can appear in word-final position in Matu'aw, for example in the words *kanayril* 'woman' and *ʔitayal* '(Atayal) person'.

Word-final glottal stops are highly audible in Matu'aw, even after diphthongs in words like *wawʔ* 'pigeon', *kayʔ* 'language, speech', and *balayʔ* 'good'. These syllable types are also discussed further in Section 3.1.7.3.

### 3.1.7.2 Matu'aw vowel inventory

The vowel inventory of Matu'aw is a simple three vowel system, shown in Table 3.25.

Table 3.25: Matu'aw Atayal vowel inventory

i	u
a	

Matu'aw does not have mid vowels, and preserves diphthongs instead. Schwa does not appear in the surface representation, and all instances of penultimate schwa in other dialects correspond to /a/ in Matu'aw, as shown in Table 3.26.

Table 3.26: Correspondences of penultimate schwa in Matu'aw

Matu'aw	S'uli	Squliq	Matu'uwal	Plngawan	Gloss
kahuʔ	kəhu	kəhuʔ	ʔakhul	kuhuʔ	'granary'
salaʔ	səla	səlaq	cəlaq	calak	'paddy'

These correspondences will be explored in depth in Chapter 4.



### 3.1.7.3 Matu'aw phonotactics

Matu'aw allows a relatively high number of syllable types, shown in Table 3.27. The maximum syllable is CGVC or CVGC.

Table 3.27: Syllable types in Matu'aw Atayal

Syllable type	Example	Gloss
CV	tu.la.ʔiy	'eel'
CVC	yi.luk	'strawberry'
CGV	kwa.ra	'all'
CGVC	ʔwaw	'alcoholic drink'
CVGC	wawʔ	'pigeon'
CGVGC	sa.swayʔ	'younger sibling'

Syllables of the type CVGC are auditorily different from hiatuses in Matu'uwal. In Matu'uwal, the word 'needle' is pronounced [ra.'um], with two distinct syllable peaks and stress on the vowel /u/. On the other hand, the Matu'aw cognate [rawm] is pronounced as a single syllable with stress falling on the vowel /a/. Since stress in Atayal is invariably word-final, this allows us to analyze the Matu'aw word as monosyllabic, with the syllable type CVGC.

Matu'aw preserves vowel distinctions outside the final foot, like Matu'uwal and Plngawan. Some examples are shown in Table 3.28.

Table 3.28: Vowel distinctions in the third-to-last syllable in Matu'aw

Matu'aw	Gloss
hapuniʔ	'fire'
ʔitayal	'person'
tulaʔiy	'eel'

The third-to-last vowels may be somewhat unstable: my main language consultant would occasionally offer two or even three variants before settling on a vowel. There may be many factors at play, and I cannot judge whether this indicates the state of the language, interference from other dialects, or lack of practice with competent speakers.

I have noticed a tendency among younger speakers to reduce prepenultimate vowels to /a/, although I have not conducted interviews to see how widespread this is. All of this being said, Matu'aw agrees with Matu'uwal on the third-to-last vowel in cognates, and by and large agrees with Plngawan as well. These correspondences are discussed in detail in Section 4.1.3.

There is a tendency in Matu'aw to avoid non-final closed syllables (i.e. heterosyllabic consonant clusters). Table 3.29 shows a few examples of closed syllables in Matu'uwal and Plngawan, and corresponding Matu'aw cognates. The vowel in these cases is always /a/.

Table 3.29: Tautomorphemic consonant cluster avoidance in Matu'aw

Matu'aw	Matu'uwal	Plngawan	Gloss
yakalit	akliʔ	ˌaklit	'leopard'
kabahaniʔ	kabahnɪq	kabahnɪʔ	'bird'
ʔalatiŋ	qaltiŋ	ʔaltiŋ	'wooden plank'

This tendency is less strict on morpheme boundaries, where closed syllables can and do occur: /tʊm.sa.sa.liʔ/ 'to build a house' (< *saliʔ* 'house'), /kʊm.ka.gi/ 'to strip bark from hemp, to decorticate' (< *kagi* 'hemp, ramie').

Li (1981, 1982a) recorded word-final /g/ in his fieldwork on the Matu'aw dialect in Matabalay tribal village. In my fieldwork, I found no instances of word-final /g/, and the words that were expected to have it instead ended with an open syllable, as shown in Table 3.30.

There is no reason to doubt the veracity of Li's data, as his expertise in linguistic fieldwork has been proved with decades of meticulous research on Formosan languages, Atayal chief among them. Moreover, comparative data from Seediq dialects (Li 1981, 1982a) does point to a historical \*g in these words. What happened here is that Li managed to record this sound when he was doing his fieldwork forty years ago, and it has since disappeared from Matu'aw. The most conservative speakers that I can interview in 2020 were young and innovative when Li was conducting his research.

In fact, Li (1982c: sec. 2.2.1) says as much when he mentions that younger speakers in Matabalay tribal village tended to replace the final /g/ with /w/ or <y> /j/ depending

Table 3.30: Comparison of Li's and my own Matu'aw data on final /g/

Li's data (circa 1980)	My data (2020)	Gloss
siniyug	sinyuw	'rope'
tulaʔig	tulaʔiy	'eel'
bunaʔig	bunaʔiy	'sand'
mabazig	mabayiy	'to buy'
kagig	kagiy	'hemp'
sumamag	sumamaw	'to make the bed'
ʔarag	ʔaraw	'ribs'

on the vowel. A native speaker from Matabalay tribal village who was 50 years old in 1980 had already completely lost final /g/, and only Li's 63 year old consultant (at the time of his fieldwork) still retained it.

Word-initial /x/ can be found in at least one word in Matu'aw: *xuyil* 'dog', compare Matu'uwal *xuwil*, but Squliq *huzil*, S'uli *huzin*, Plngawan *huil*. Since even Matu'uwal only has two words with initial /x/, the other being *xuxuʔ* 'breasts', for which no Matu'aw cognate exists, this may be the only occurrence of word-initial /x/ in the dialect.

## 3.2 Synchronic alternations

There are numerous synchronic phonological alternations in both consonants and vowels in Atayal dialects. Some of these are common to many dialects, while others are restricted to just one or two.

The sound alternations that are shared between various dialects can be either inherited from Proto-Atayal or be the result of linguistic drift, whereby a sound change occurs separately in different dialects. The two cases are relatively easy to distinguish with the comparative data at hand. Instances of both the inherited alternations and drift-induced alternations are given in this section. This is not meant to be a comprehensive list, but it includes the major alternations that can be found in various Atayal dialects.

### 3.2.1 Consonant alternations

#### 3.2.1.1 Devoicing and lenition of final voiced obstruents

Discounting the quasi-phonemic [z] in Squliq, which is almost entirely in complementary distribution with <y> /j/, there are two voiced obstruent phonemes in all varieties of Atayal: /b/ and /g/. Only Matu'uwal allows them to occur in word-final position, and we will compare data from other dialects with Matu'uwal cognates.

I have not been able to find a single cognate set that demonstrates this for all seven dialects in this study, so I will use multiple correspondence sets instead. The devoicing of /b/ in Squliq and Skikun is shown in Table 3.31.

Table 3.31: Alternations of final /b/ in Squliq and Skikun

Matu'uwal	Squliq	Skikun	Gloss
humgub	həmægup	həmægup	'to perform a rite (AV)'
hagban	həbəgan	həgupan	'to perform a rite (PV)'
humab	həmap	həmap	'to stab (AV)'
habun	habaw	habun	'to stab (PV)'

Several things of note are happening in this table. There are vowel alternations in both Matu'uwal and Squliq, which are discussed in detail in Section 3.2.2.2. The Squliq PV form *həbəgan* also undergoes sporadic metathesis of the consonants /b/ and /g/ (we would expect *\*\*həgəban* here instead). Squliq *habaw* is the irrealis PV form, with the suffix *-aw*. And lastly, Skikun does not exhibit consonant or vowel alternation in *həmægup~həgupan* 'to perform a rite', and instead regularizes the verb. This sort of paradigm leveling is common in Skikun, see Section 5.4 for more examples. Nevertheless, some verbs do still retain consonant alternations, as shown in the pair *həmap~habun* 'to stab'.

Li (1981: 251, 1982a: 174–175) finds only five cognates shared between various Atayal dialects including Matu'uwal, plus another two items which do not have a Matu'uwal cognate, but have an alternating /b/ appearing in suffixed forms. I have not found any data other than what Li has, although some of my data is slightly different, possibly due

to dialectal variation or language change. The five cognates with historical final \*b are shown in Table 3.32.

Table 3.32: Final /b/ devoicing in various Atayal dialects

Matu'ual	Squliq	Skikun	Plngawan	Klesan	Gloss
<b>pasihub</b>	<b>səhup</b>	<b>pəsəhup</b>	(hunyak)	(pəcəhut)	'to suck'
<b>humab</b>	<b>həmap</b>	<b>həmap</b>	(meta?)	(meta)	'to stab'
<b>gumaub</b>	<b>məgop</b>	<b>məgop</b>	<b>magagok</b>	<b>məgəgok</b>	'to share a cup'
<b>humgub</b>	<b>həməgup</b>	<b>həməgup</b>	<b>mpahuk</b>	<b>məhəguk</b>	'to perform rites'
<b>masuwag</b>	<b>məsuyap</b>	<b>məsuyak</b>	<b>masurak</b>	<b>pəsuyak</b>	'to yawn'

Li (1982a: 174) has Plngawan *humuk~huban* 'to perform rites' (his gloss is 'to do magic'), but I have only been able to elicit *mpahuk~sipahuk* 'to scry, to divine'.<sup>4</sup> The Plngawan verb form 'to perform rites/magic' is *murahu?~parahon*, according to my fieldwork. Nevertheless, *mpahuk* from my data is still a cognate, just with different affixation.

Matu'aw also has /b/ devoice to /p/ in word-final position, e.g. *gumawp* 'to share a cup (AV)' vs the suffixed form *gawbaw* 'to share a cup (PV.SBJV)'.

In Plngawan and Klesan, the phoneme alternating with /b/ is not /p/, but rather /k/. Note that the same happens for only a single item in Skikun (in my data). This is due to another sound change whereby labials merge into velars in final position, discussed further in Section 3.2.1.2.

Matu'ual *masuwag* 'to yawn' has final /g/ instead of the expected /b/. Li (1981: 252) notes that he did record the alternative pronunciation *masuwab* from some speakers, and also gives the locative voice form *syaban* in Squliq (Li 1980a: 358), so the change to /g/ in Matu'ual must have been a later innovation.

Unlike /b/, the phoneme /g/ is not devoiced in most dialects, with the exception of Skikun. Instead, it is lenited to the semivowel /w/, as seen in Table 3.33.

<sup>4</sup>Note the lack of a vowel after the first consonant in *mpahuk*. This is my transcription of what appears to be a syllabic nasal used as a derivational prefix, see Section 3.1.4.3 for more information.

Table 3.33: Final /g/ lenition in various Atayal dialects

Matu'uwal	Squliq	Skikun	Plngawan	Klesan	Gloss
sumamag	səmamaw	səmamax	sumamaw	səmamaw	'to make bed (AV)'
samagan	səmagan	səmaxan	samagan	səmagi	'to make bed (LV)'
lumpug	ləməpuw	ləməpux	lumpuw	ləməpu	'to count (AV)'
lapgun	ləpəgun	ləpəgun	lapgan	ləpəgun	'to count (PV/LV)'

Matu'uwal is the only Atayal dialect that still preserves /g/ in word-final position after the vowels /a/ and /u/ (it does not appear after /i/). Skikun preserves its fricative features, but devoices it word-finally. In all other dialects, it becomes /w/, which is most apparent after the low vowel /a/. When preceded by /u/, it is realized as vowel lengthening, but is typically written as <uw>.

When these verbs are suffixed, for example with the PV suffix *-un* or the LV suffix *-an*, the underlying /g/ phoneme surfaces. Note that I have *səmaxan* for Skikun 'to make the bed (LV)', this is likely due to an ongoing merger between the phonemes /x/ and /g/ in the dialect (see Section 3.1.6.1).

Li (1981, 1982a) reports final /g/ in Matu'aw wherever Matu'uwal had it, and also where it did not, namely after the vowel /i/. However, I did not find any examples of final /g/ during my fieldwork on Matu'aw, and it was instead reflected as /w/ after the vowel /a/ and as vowel length after high vowels, see also Section 3.1.7.3.

There are no examples of root-final /g/ alternations before the vowel /i/. This is most likely due to a sound change from Proto-Atayalic to Proto-Atayal in this environment. This correspondence led Li (1981) to reconstruct the protophoneme \*g' in Proto-Atayalic, which is discussed in Section 4.6.2.

### 3.2.1.2 Final labial to velar merger

Plngawan and Klesan disallow final labials completely. If a verbal root has an underlying labial in final position, it will become a velar instead, and the labial only emerges in suffixed forms. Table 3.34 demonstrates the correspondence of final labials in other Atayal dialects to final velars in Plngawan and Klesan.

Table 3.34: Word-final labial to velar change in Plngawan and Klesan

Plngawan	Klesan	Matu'awal	Squliq	Skikun	Gloss
malorak	məluyak	qumaluwap	qəmalup	qəmalup	'to hunt'
panek	pənek	panaip	pənep	pənyep	'to fish'
yumuk	yəruk	ʔumiyup	məyup	miyup	'to blow'
magagok	məgəgok	gumaub	məgop	məgop	'to share a cup'
(mpahuk)	məhəguk	humgub	həməgup	həməgup	'to perform rites'
ron	ron	raum	rom	rom	'needle'
ruhun	yuhun	ʔuhum	yuhum	yuhum	'gallbladder'
cumon	cəmon	cumaum	səmom	cəmom	'to wipe'

S'uli and Matu'aw also allow final labials to occur, e.g. S'uli *ʔəmlɪyap*, Matu'aw *malyap* 'to hunt'; S'uli *pənep*, Matu'aw *panayp* 'to fish'; S'uli *yəmup*, Matu'aw *ʔumyup* 'to blow'; S'uli *rom*, Matu'aw *rawm* 'needle'; S'uli and Matu'aw *yuhum* 'gallbladder'. My Skikun data has final labials in most words where other dialects have them, though in some words they become velars, for example *məsuyak* 'to yawn', cf. Squliq and S'uli *məsuyap*. This was noted by Li (1980a: 379–381) in his studies, when he recorded various degrees of neutralization of final labials in Skikun, depending on the speaker. Younger speakers tended to neutralize the labials in more words, and this is also true for other ongoing sound changes. In my data, this only happens in a very limited amount of lexical items.

Plngawan and Klesan thus have consonant alternations between labials and velars, as shown in Table 3.35.

Table 3.35: Labial to velar alternations in Plngawan and Klesan

Plngawan	Klesan	Gloss
yumuk	yəruk	'to blow (AV)'
yupan	yupan	'to blow (LV)'
cumon	cəmon	'to wipe (AV)'
coman	coman	'to wipe (LV)'

The labials /p/ and /m/ surface when the verb is suffixed, but not when the segment is word-final. There are exceptions as well, for example the Plngawan verbs *maluak* ‘to hunt (AV)’ and *panek* ‘to fish (AV)’ do not have this alternation in my data, and retain the velar when suffixed. This is discussed in Section 5.4.

Notably, both Plngawan and Klesan are spoken close to the Truku dialect of Seediq, which has the same merger of final labials and velars (Tsukida 2005: 293–294).<sup>5</sup> It is possible that this merger was spread due to language contact.

### 3.2.1.3 Alternation between -c- and -t

This merger concerns alternations in verbal roots, namely suffixed and unsuffixed forms. There exists a different phenomenon in Atayal, where the phoneme /t/ is affricated into [tʃ] in word-final position for some speakers. This occurs in various dialects (Li 1982c: sec. 2.4.1; C. Chen 2011: 25, J. Chen 2012: 14; L. Huang and Tali’ Hayung 2016: 12), but in this case there is no phonemic distinction, and the effect is purely phonetic.

Table 3.36 demonstrates the contrast between alternating and non-alternating verbs in five Atayal dialects, using cognate forms. The infixed forms have identical final consonants, but the suffixed forms have separate phonemes preceding the suffix in Matu’uwal and Plngawan, though there is no distinction in Klesan, Squliq, or Skikun.

Table 3.36: Contrast between alternating and non-alternating forms in several Atayal dialects

Matu’uwal	Plngawan	Klesan	Squliq	Skikun	Gloss
kumat	kumat	kəmat	kəmat	kəmat	‘to bite (AV)’
kacun	kacun	katun	katun	katun	‘to bite (PV)’
kumut	kumut	kəmut	kəmut	kəmut	‘to cut (AV)’
kutan	kutan	kutan	kutan	kutan	‘to cut (LV)’

Both S’uli and Matu’aw have this alternation as well, though in these two dialects, /t/ alternates with /s/ due to a merger between Proto-Atayal \*c and \*s. For example, Matu’aw *yumiŋat~yiŋasun* : Matu’uwal *ʔumiŋat~ʔiŋacun* : Skikun *miŋat~ŋatun* ‘to

<sup>5</sup>Klesan is currently not geographically adjacent to Seediq, but this is due to their relocation in the early 20th century, as mentioned in Section 1.3.3.



rob'. S'uli has *ʔəlisan* 'to peel (LV)', cf. Plngawan *ʔumalit~ʔalicun*, Klesan *milit~litun*.

The regularity of these alternations between Matu'uwal, Plngawan, S'uli, and Matu'aw, as well as a complete lack of any conditioning environment, mean that these alternations were inherited from a common ancestor rather than innovated separately. On the other hand, Klesan, Squliq, and Skikun must have regularized these alternating verbs into non-alternating forms, thus losing the contrast. For more information on the regularization processes in Atayal, see Section 5.4.

#### 3.2.1.4 Alternation between /l/ and /n/

The merger of final /l/ and /n/ is, on the one hand, characteristic of certain dialects, but on the other hand commonly found in the speech of younger speakers all across the Atayal community. It can be described as an ongoing sound change, with some dialect communities being further along in the merger than others.

This merger is characteristic of some varieties of S'uli and Klesan, as demonstrated in Table 3.37. Matu'uwal, Plngawan, and Matu'aw all preserve the phonemic distinction between /l/ and /n/ in word-final position, but it is neutralized in my S'uli and Klesan data.

Table 3.37: Final /l/ and /n/ merger in S'uli and Klesan

S'uli	Klesan	Matu'uwal	Plngawan	Matu'aw	Gloss
yamin	yamin	wamil	(sapit)	yayamil	'shoes'
huzin	hoyin	xuwil	huxil	xuyil	'dog'
tayan	tayan	ʔitaal	ʔitaɹal	ʔitayal	'Atayal'
yupun	yupun	ʔawpun	(ʔaraʔ)	yayupun	'pants'
ləhəbun	ləhəbun	lahibun	lahbun	lahabun	'stomach'

There appear to be Klesan dialects that still allow word-final /l/. Li (1998) provides a wordlist, where some lexical items from the Ropoy (金岳) and Kəŋyan (金洋) tribal villages have final /l/, although neither dataset is fully consistent, meaning that the change was already underway when Li was collecting his data.

Speakers of other dialects may exhibit this merger as well. It is pervasive in the speech

of younger Atayal in many different villages (Li 1982c: sec. 2.3). For any given speaker, the merger may be total, or manifest itself in only part of the vocabulary (Rau 2000a).

For those dialects or speakers with the final /l/ to /n/ merger, verbal roots will show alternations like those in Table 3.38.

Table 3.38: /l~n/ alternations in S'uli and Klesan

S'uli	Klesan	Gloss
kəmayan	kəmayan	'to speak (AV)'
kyalun	kyalan	'to speak (PV/LV)'
magan	magan	'to take (AV)'
galun	galan	'to take (PV)'
səməbin	səməbin	'to leave (AV)'
səbilan	səbilun	'to leave (PV/LV)'

The underlying representation of verbal roots can thus be determined by examining suffixed forms. I have not yet come across cases of regularization of this particular alternation, perhaps because it is still relatively new. Despite the short timeframe, it has managed to spread throughout the Atayal-speaking territory.

### 3.2.1.5 Other alternations

There are other, less common consonantal alternations that can be found in one or more dialects. Two of these are of particular interest in this dissertation, and are discussed below.

Some verbs that have a final /s/ in the root that appears only in suffixed forms. Li (1980a) identifies several such verbs, which are listed in Table 3.39 (entries marked with an asterisk are taken from Li's paper, the rest are from my own field notes).

In Plngawan and Squliq the alternating consonant is /r/ instead. This is due to a rhotacism rule in both these dialects, where /s/ changes to /r/ in some environments, see Sections 4.5.1, 4.5.6 for more details. Note that Skikun has final /s/ in AV forms of all four verbs. This is due to paradigm leveling in the dialect, which happens with many other alternations as well, see Section 5.4 for more information.

Table 3.39: Root-final /s/ alternations in several Atayal dialects

Matu'uwal	Plngawan	Squliq	Matu'aw	Skikun	Gloss
<b>mabaiy</b>	<b>miniy</b>	<b>məbazi</b>	<b>mabayiy</b>	<b>mes</b>	'to buy (AV)'
<b>binasun</b>	<b>binarun</b>	<b>bəzirun</b>	<b>binasun</b>	<b>besun</b>	'to buy (PV)'
<b>kumakgiy</b>	<b>kunkagiy</b>	<b>kəməgiy</b>	<b>kumkagiy</b>	<b>kəŋkəgis*</b>	'to strip hemp (AV)'
<b>kamkagisan</b>		<b>kingiran*</b>	<b>kamkagisiy*</b>	<b>kəgisən</b>	'to strip hemp (LV)'
<b>rumahiy</b>		<b>mahiy</b>	<b>rumahiy</b>	<b>rəmahis*</b>	'to dry in the air (AV)'
<b>rahisan</b>		<b>hiran</b>	<b>rarahisan</b>	<b>rəhisan*</b>	'to dry in the air (LV)'
<b>magiyay</b>	<b>magiy</b>	<b>məgyay</b>		<b>məgyas</b>	'to run away (AV)'
	<b>pageran</b>	<b>pəgyaran</b>		<b>pəgyasan</b>	'to run away (LV)'

The Matu'aw verbs originally had final /g/ in the AV forms of the three verbs in the table, as recorded by Li (1980a: 385). He gives **mabazig** 'to buy (AV)', **rumahig** 'to dry in the air (AV)', and **kumakagig** 'to strip hemp (AV)'.

However, not all verbs with a final long /i:/ have this alternation: cf. Matu'uwal **mahiy~bahiyun**, Plngawan **mahiy~bahyan**, Squliq **mihiy~bəhyun**, Klesan **mahiy~bəhyun** 'to hit, to beat'. It is thus root-specific, and limited to only a few words.

Another even more specific alternation is a final glottal stop /ʔ/ alternating with /l/ in suffixed forms. There are very few words with this alternation, shown in Table 3.40. The forms marked with asterisks are taken from Shih (2008: 16), J. Chen (2012: 137), and Egerod (1965a: 262), the rest come from my own field notes.

Table 3.40: Alternation of /ʔ/ and /l/ in Atayal dialects

Matu'uwal	Plngawan	Squliq	Skikun	Klesan	Gloss
<b>musaʔ</b>	<b>musaʔ</b>	<b>musaʔ</b>	<b>musaʔ</b>	<b>mosa</b>	'to go (AV)'
<b>ʔusalan</b>	<b>insalan</b>	<b>ʔəsan</b>	<b>salan</b>	<b>salan</b>	'to go (LV)'
<b>humicuwaʔ</b>	<b>huncoʔ</b>	<b>həməswaʔ</b>	<b>həməcwaʔ</b>	<b>məcwaʔ</b>	'how (AV)'
<b>həcuwalun</b>	<b>hacolun*</b>	<b>swaʔun*</b>			'how (PV)'
	<b>mahaʔ*</b>				'to go (AV)'
	<b>halan*</b>			<b>halan</b>	'to go (LV)'

I found the Plngawan verb **mahaʔ~halan** in Shih's and Chen's theses. It is unclear

how it differs from *musa?*, since both are glossed as ‘to go’. When conducting fieldwork on Klesan, I elicited the forms *salan* and *halan* for ‘to go (LV)’, with apparently the same meaning, but I did not come across the AV form of *halan*. Whether the two verbal roots are related (possibly through an irregular sound change with later borrowing) remains to be determined, but so far there is no evidence for this.

Note that unlike other dialects, the Squliq forms *ʔasan* ‘to go (LV)’ and *swaʔun* ‘how (PV)’ are regular, without an alternating /l/. This is a later innovation in Squliq, which regularized many of its irregular verbs. See Section 5.4 for more information on this regularization phenomenon.

The Matu’uwal word *humicuwa?* ‘how’ and its cognates in other dialects are special, because it is a wh-word but it is also marked for Austronesian voice morphology, which occurs only in verbs. It serves as the main predicate in sentences where it appears, but non-AV forms are rare. I have elicited a PV form in Matu’uwal (*həcuwalun*) and found a PV form for Plngawan (*hacolun*) in Shih (2008) and J. Chen (2012). Both the Matu’uwal and Plngawan suffixed forms have an alternating /l/ phoneme, and I expect other dialects to have the same behaviour in cognates.

### 3.2.2 Vowel alternations

#### 3.2.2.1 Prepenultimate vowel weakening

One of the most common phonological phenomena in Atayal dialects is vowel weakening outside the rightmost foot. In dialects with this type of vowel weakening, only the last two syllables of a word may have phonemic vowel distinctions, and all preceding syllables may only have a reduced vowel (usually a schwa but sometimes /a/, depending on the dialect and the speaker). This phenomenon can be readily observed through verbal roots that can attach suffixes (such as PV *-un* or LV *-an*), and is demonstrated in Table 3.41.

Table 3.41: Prepenultimate vowel weakening in various Atayal dialects

Dialect	Bare stem	Suffixed form	Gloss
Squliq	qalup	qəlup <b>un</b>	'to hunt'
Skikun	hakut	həkut <b>un</b>	'to move'
S'uli	ʔasuw	ʔəsug <b>un</b>	'to divide'
Klesan	piray	pəray <b>un</b>	'to turn'

Prepenultimate vowel weakening occurs in the four dialects in Table 3.41, namely Squliq, Skikun, S'uli, and Klesan. Egerod (1965a: 255–257) and Li (1980a: 369–371) describe this alternation for Squliq, but it works the same in the other three dialects. It affects nouns as well, but there are no suffixes that attach to nouns (unless the same root can also serve as a verb), so in nominal-only roots the vowel weakening process can only be observed indirectly, as a distribution restriction. This restriction is that vowel contrasts only appear in the final two syllables (with a few exceptions discussed below).

There are some exceptions to this rule. Some loanwords and a few native words still preserve cardinal vowels outside the final two syllables. Several examples are given in Table 3.42.

Table 3.42: Exceptions to the vowel weakening rule

Dialect	Word	Gloss
Squliq	betunux	'beautiful'
Skikun	qarapiʔ	'black drongo (bird sp.)'
S'uli	cicini	'stag beetle'
Klesan	icikoŋ	'click beetle'

All the words in the table appear to be native (I am reasonably certain they did not originate in Sinitic languages or Japanese), but all have a cardinal vowel in the third-to-last syllable. However, such words are quite rare.

Recent loanwords tend to preserve vowels outside the head foot as well, for example,

Klesan *petangko* ‘light-vented bulbul (bird sp.)’, likely from Southern Min 白頭鵲仔 *péh-thâu-khok-á*, and *sirasagi* ‘egret’, from Japanese 白鷺 *shirasagi*.

Lastly, some derivational affixes like the perfective infix *-in-* are not subject to vowel weakening in the dialects where they occur, for example S’uli *rinmuʔiy* ‘roof’ (cf. *sərəmuʔiy* ‘to construct a roof (IV)’), Squliq *pinqəzywan* ‘story’ (cf. *pəqəzyuʔ* ‘to tell’), Skikun *minəbes* ‘to have bought’ (cf. *mes* ‘to buy (AV)’).

Note that the AV infix *-əm-* and the AV prefix *mə-* in Squliq, Skikun, S’uli, and Klesan are **not** instances of the vowel reduction rule applying to an underlying form with a cardinal vowel. We can see this by looking at monosyllabic roots with this infix, where prepenultimate weakening does not apply. In such forms, the infix still has a schwa vowel: e.g. *kəmat* ‘to bite (AV)’ or *kəmut* ‘to cut (AV)’, identical in all four dialects.

### 3.2.2.2 Alternations of historical schwa

Another type of alternations, common to all dialects of Atayal, are the alternations of a historical schwa vowel in verbal roots. As mentioned in Section 3.1, no Atayal dialect allows the vowel schwa to appear in the final (stressed) syllable, if it is allowed to occur in the dialect at all. This alternation was first noted and described for Squliq by Egerod (1965a: 257–258), but it works very similarly in all Atayal dialects due to its origins in the protolanguage (see Section 4.3).

If this alternating vowel occurs in the final syllable of the root, it surfaces as /u/ when the root is not suffixed, such as in bare stem forms, or infixes forms. If it is followed by a suffix, the vowel is lenited. This process can be seen in Table 3.43.

In Squliq, Skikun, S’uli, and Klesan, the vowel /u/ alternates with /ə/ in suffixed forms. In Matu’aw, it alternates with /a/ instead (Matu’aw completely disallows the vowel [ə], see Section 3.1.7.2). In Matu’uwal and Plngawan, the vowel is more commonly deleted after suffixation.

These roots with an alternating vowel contrast with roots that have non-alternating /u/ phoneme in the final syllable. Examples of such roots are given in Table 3.44.

There is a clear difference between the verbs in Table 3.43 and the verbs in Table 3.44 with regard to the vowel /u/ in the final syllable of the root. In Table 3.43, this vowel comes from an original \*ə, which was later changed to /u/ only in the final syllable. We

Table 3.43: Alternations of historical schwa in root-final syllables

Dialect	AV form	Suffixed form	Gloss
Squliq	səməʔuŋ	səʔəŋun	‘to cut bamboo’
Skikun	qəmi pul	qəpəlun	‘to tread’
S’uli	məhut	pəhətan	‘to press’
Klesan	məpux	pəxan	‘to push down’
Matu’uwal	tumaluk	talkun	‘to cook’
Plngawan	kunluh	kilhun	‘to reap’
Matu’aw	kumikuʔ	kakaʔun	‘to pinch’

Table 3.44: Non-alternating stems with /u/ in the final syllable

Dialect	AV form	Suffixed form	Gloss
Squliq	maqut	pəqutan	‘to ask’
Skikun	təməbux	təbuxun	‘to sow’
S’uli	kəsyus	kəsyusan	‘to stir-fry’
Klesan	pəhapuy	puyun	‘to cook grain’
Matu’uwal	tumakuʔ	takuʔun	‘to scoop up’
Plngawan	tumabul	tabulun	‘to till’
Matu’aw	sumyuk	syukun	‘to answer’

can corroborate this with evidence from Proto-Austronesian reconstructions, cf. PAN \*taNək and Matu’uwal *taluk* ‘to cook’. The PV suffix *-un* in Atayal itself comes from PAN \*-ən.

### 3.2.2.3 Vowel coalescence

This alternation phenomenon occurs in almost all Atayal dialects, with the exception of Matu’uwal. Its effect is the change of two separate vowel segments into a single vowel, and it is induced by suffixation. Egerod (1965a) has some Squliq data with these changes, but it is rather haphazard; Li (1980a: 372–373) provides many examples for Squliq, divided by category; J. Chen (2012: 116–126) talks about vowel coalescence in Plngawan. Table 3.45 demonstrates this phenomenon with the PV suffix *-un* and the LV

suffix *-an*.

Table 3.45: Vowel coalescence in various Atayal dialects

Dialect	Base	Suffix	Suffixed form	Gloss
Squliq	kitaʔ	-an	kətan	‘to see’
Squliq	ʔusaʔ	-un	ʔəson	‘to go’
Skikun	cəxuʔ	-un	cəxun	‘to pound grain’
Skikun	bəkaʔ	-un	bəkən	‘to break’
S’uli	tuba	-an	təban	‘to poison (fish)’
S’uli	giba	-un	gəbon	‘to embrace’
Matu’aw	patuguʔ	-un	patugun	‘to invite’
Klesan	pənahu	-un	pənəhun	‘to start a fire’
Klesan	naga	-un	nəgon	‘to wait’
Plngawan	tuʔ	-un	tun	‘to send (on errand)’
Plngawan	raŋaʔ	-un	raŋən	‘to raise’
Plngawan	pamuhiʔ	-an	pamuhen	‘to plant’
Plngawan	cabuʔ	-an	cabən	‘to wrap’

The environment for vowel coalescence is a root ending in a glottal stop,<sup>6</sup> and a vowel-initial suffix, such as *-un* or *-an*. If the two vowels are identical, they merge into one vowel. If the final vowel of the root is /a/ and it is followed by the suffix *-un*, then the vowels coalesce into a mid vowel /o/. The glottal stop is lost in the suffixed form, thus Squliq /kitaʔ/ + /-an/ > /kətan/.

Note that in Squliq, Skikun, S’uli, and Klesan, the penultimate vowel in the suffixed forms in Table 3.45 is always weakened, even though the syllable is in the rightmost foot. In synchronic phonological terms, this is an instance of **overapplication opacity**. Alternatively, the suffixed forms can also be analyzed as having a bimoraic final syllable: e.g. Squliq /kitaʔ/ + /-an/ > /kə.(tan)/ ‘to see (LV)’; and all vowels outside the head foot are weakened. From the point of view of diachronic phonology, we would say that

<sup>6</sup>In the case of S’uli and Klesan, which here are analyzed as not having word-final phonemic glottal stops, the environment also includes vowel-final roots (see Sections 3.1.2.3, 3.1.5.3 for a discussion of S’uli and Klesan phonotactics).



prepenultimate vowel weakening in these forms applied before vowel coalescence.

I do not have any Matu’aw data for coalescence of a low and a high vowel into a mid vowel, i.e. /-aʔ/ + /-un/ > /-on/. This may be due to the paucity of data in my own field notes, or due to Matu’aw disallowing it. More data is needed to understand the limits of vowel coalescence in Matu’aw.

PIngawan has additional environments for vowel coalescence: a high vowel /i/ or /u/ in the final syllable of the root, followed by a glottal stop, and a suffix beginning with /a/, such as *-an*. These coalesce into the mid vowel /e/ or /o/, depending on the frontness of the high vowel in the root. We therefore have *cabuʔ* + *-an* > *cabon* ‘to wrap (LV)’. This word is distinguished from *cabun* ‘to wrap (PV)’ (< *cabuʔ* + *-un*). Other dialects do not have vowel coalescence in this environment, but instead change the high vowel into a homorganic glide after deleting the glottal stop, as shown in Table 3.46.

Table 3.46: Gliding of high vowels before *-an* in Atayal dialects

Dialect	Base	Suffixed form	Gloss
Matu’aw	ʔaluʔ	ʔalwan	‘to close’
S’uli	ʔəluʔ	ʔəlwan	‘to close’
Matu’aw	pawgiʔ	pugyan	‘to sun-dry’
S’uli	pawgi	pəgyan	‘to sun-dry’
Skikun	pugiʔ	pəgyan	‘to sun-dry’
Klesan	pogiʔ	pəgyan	‘to sun-dry’

Neither gliding nor vowel coalescence apply in Matu’uwal, which instead preserves the root-final glottal stops, e.g. /pawgiʔ/ + /-an/ > /pugiʔan/ ‘to sun-dry.’<sup>7</sup>

In some cases, vowel coalescence in PIngawan, S’uli, and Klesan is **underapplied**, and both vowels along with the glottal stop are preserved. The glottal stop in these words originates from a historical \*q, which can be seen in cognates in other dialects, such as Squliq. Table 3.47 shows several such examples.

<sup>7</sup>The vowel change in the root is a different phenomenon, discussed in Section 3.2.2.5.

Table 3.47: Underapplication of vowel coalescence in roots with historical \*q

PIngawan	S'uli	Klesan	Squliq	Gloss
<b>metaʔ</b>		<b>meta</b>	<b>metaq</b>	‘to stab (AV)’
<b>bitaʔan</b>	<b>bətaʔan</b>	<b>taʔan</b>	<b>betaqan</b>	‘to stab (LV)’
<b>baʔ</b>	<b>ba</b>	<b>ba</b>	<b>baq</b>	‘to know (AV)’
<b>baʔun</b>	<b>baʔun</b>	<b>baʔun</b>	<b>baqun</b>	‘to know (PV)’
<b>maseʔ</b>		<b>məsyə</b>	<b>məsyəq</b>	‘to laugh (AV)’
<b>paseʔan</b>		<b>pəsyəʔan</b>	<b>pəsyəqan</b>	‘to laugh (LV)’

From a diachronical perspective, this means that vowel coalescence preceded the loss of \*q in these dialects. This is further discussed in Section 4.5.

#### 3.2.2.4 Hiatus resolution in Matu'uwal

Matu'uwal is the only Atayal dialect that distinguishes hiatuses, or vowel clusters, from two vowels with an intervening glottal stop. However, there is a restriction on hiatuses: they may only occur in the final foot of a word. If a root with a hiatus is suffixed, the hiatus is no longer inside the final foot, and thus must be resolved.

There are two kinds of hiatuses in Matu'uwal: (1) two identical vowels, and (2) a low vowel /a/ followed by a high vowel, called *closing hiatuses* from here on. The reason I do not consider other combinations to be hiatuses is because they do not show this alternating behaviour: the phonetically audible glides between those vowels must therefore be phonemic, so that hiatus resolution does not apply in those cases.

The two kinds of hiatuses are resolved differently in Matu'uwal. If a root with an identical vowel hiatus is suffixed, the hiatus becomes a single vowel, as demonstrated in Table 3.48.

Table 3.48: Resolution of identical vowel hiatuses in Matu'uwal

AV	PV/LV	Gloss
kumaal	kalan	'to speak'
rumuu?	ru?un	'to cling to s.o.'
humii?	hi?an	'to pour'

The precise phonological nature of this change (deletion, coalescence) is up for debate. The end result in all three cases in Table 3.48 is CV.CVC structure, i.e. identical vowel hiatus resolution results in an open penultimate syllable.

Closing hiatuses are resolved differently. Instead of deletion or coalescence, the high vowel is simply glided, thus becoming a consonantal coda. This process can be seen in Table 3.49.

Table 3.49: Resolution of closing hiatuses in Matu'uwal

AV	PV/LV	Gloss
maiq	bayqan	'to give'
cumaum	cawman	'to wipe'
kumai?	kay?an	'to dig'

The end result of resolving a closing hiatus is CVG.CVC structure, where the penult is a closed syllable with a glide coda.

The commonality between these two kinds of hiatus resolution is the reduction in the number of syllables and resyllabification. Thus, by adding a monosyllabic suffix to a disyllabic base, we still get a disyllabic word after hiatus resolution applies. This can be seen in Table 3.50.

Table 3.50: Resyllabification after hiatus resolution in Matu'uwal

Root	Suffixed form	Gloss
/ka.al/	/ka.lan/	'to speak'
/ka.iʔ/	/kay.ʔan/	'to dig'

The hiatus resolution rule can also interact with rhythmic vowel reduction (discussed in Section 3.2.2.5), however, these interactions are quite complex and outside the scope of this study. They should be looked upon in more detail in future research.

### 3.2.2.5 Vowel reduction in Matu'uwal and Plngawan

Matu'uwal, Plngawan, and Matu'aw are the only dialects that do not exhibit prepenultimate vowel reduction (discussed in Section 3.2.2.1). However, Matu'uwal and Plngawan (and perhaps Matu'aw as well) still have vowel reduction processes operating on vowels outside the head foot, but they are not as total as in Squliq or Klesan.

These vowel reduction processes have not received very much attention from researchers. Nevertheless, J. Chen (2012: 87–115) has explored affixation-related vowel reduction in Plngawan using an Optimality theoretic approach, and H. Huang (2017) looks at the patterns in Matu'uwal. The patterns themselves are presented in Table 3.51, with cognates for ease of comparison.

Table 3.51: Vowel reduction comparison for Matu'uwal and Plngawan

Matu'uwal	Plngawan	Gloss
qin <sup>h</sup> umasan	ʔin <sup>h</sup> masan	'pickled vegetables'
gum <sup>h</sup> hahapuy	pahpuy	'to cook (AV)'
gəh <sup>h</sup> apuyun	pahpuyun	'to cook (PV)'
təs <sup>h</sup> igarin	tas <sup>h</sup> ʔarin	'to start a fire'
lah <sup>h</sup> ulahuw	lah <sup>h</sup> lahuɿ	'wilderness'
sum <sup>h</sup> iyahuq	sun <sup>h</sup> ɿahuʔ	'to be late (AV)'
pəh <sup>h</sup> añalan	pah <sup>h</sup> ñaleʔan	'to carry on shoulder (LV)'
sum <sup>h</sup> irmaʔ	sun <sup>h</sup> ramaʔ	'to prepare (AV)'

The vowel reduction patterns are obviously quite different. For one, Matu’uwal reduces some vowels to a schwa, which does not happen in Plngawan. Secondly, reduction does not occur evenly in both dialects: some forms are reduced only in one dialect, but not the other. There are also similarities: vowel reduction can affect roots and prefixes in both dialects, though infixes remain unaffected.

The rules of vowel reduction in Matu’uwal and Plngawan operate on completely different principles. Reduction in Matu’uwal is **rhythmic**, meaning that it is conditioned metrically, and operates on the fourth-to-last vowel (H. Huang 2017). The metrical quality of Matu’uwal vowel reduction can be seen in Table 3.52, with prefixed/infixed data in the AV column, and suffixed data in the PV/LV column.

Table 3.52: Rhythmic vowel weakening in Matu’uwal

AV	PV/LV	Gloss
humicuwaʔ	həcuwalun	‘how’
paʔnahuway	ʔanhuwayun	‘to be able’
sumanminuqil	sanamnuqilun	‘to kill’
məkagaun	pəkgawun	‘to go along river’
maskakaruʔ	pəsikakaruʔan	‘to talk, to chat’
mastatail	pəsitataylan	‘to jump’

Since reduction operates on the fourth-to-last vowel and does not affect infixes, it requires a long enough stem to demonstrate. The first three rows show reduction in 3-, 4-, and 5-syllable stems. In AV forms of 3-syllable stems (e.g. *humicuwaʔ*), the fourth-to-last vowel is in the infix, and so the reduction does not apply. By adding a monosyllabic suffix to the root (*həcuwalun*, note the alternating consonant), the fourth-to-last vowel is now in the root and is reduced. However, since it is in the leftmost syllable, there is no way to resyllabify this word, and the vowel is left as a surface schwa.

In longer stems (or with longer prefixes), the weakened vowel will no longer be in the leftmost syllable, and will be therefore completely deleted, with resyllabification taking place. Here I analyze the stem of ‘to be able’ as *ʔanahuway*, assuming that underlyingly all the vowels are present in the stem. This stem is long enough to undergo reduction in both prefixed and suffixed forms, but the vowel that is weakened is different in the

two cases. After weakening, the word is resyllabified, and the final result contains a non-final closed syllable.

The rhythmic reduction rule even applies to prefixes, as can be seen in the final three rows in Table 3.52. The derivational prefixes *paka-* (AV *maka-*) and *pasi-* (AV *masi-*) are reduced differently depending on how many syllables they are preceded by. Thus, in the form *məkagaun* /mə.ka.ga.un/ ‘to go along river (AV)’ the first vowel of the prefix is reduced, as it is the fourth-to-last vowel of the word. If the stem is suffixed, it becomes *pakgawngun* /pak.gaw.ŋun/ ‘to go along river (PV)’, with the second vowel in the prefix reduced, because it was fourth-to-last in the underlying representation. Note that this root also has a hiatus, which is resolved by gliding in the suffixed form (see Section 3.2.2.4). The gliding must occur before vowel reduction in order to be applied properly. This is an instance of **counterbleeding opacity**, meaning that the proper environment for vowel reduction cannot be deduced from only the surface form, due to hiatus resolution applying first.<sup>8</sup>

The final two examples, *maskakaru?~pəsikakaru?an* ‘to talk, to chat’ and *mastataylan~pəsitataylan* ‘to jump’ have 3-syllable stems, but the initial syllable is Ca-reduplication on the root. Rhythmic vowel reduction does not normally apply in reduplicated forms, which is why the fourth-to-last vowel is still present in *pəsikakaru?an* and *pəsitataylan* (another reason may be anti-gemination). Nevertheless, we see reduction of the sixth-to-last vowel in both forms, which confirms that the weakening rule indeed applies metrically in an iambic pattern, just like predicted by H. Huang (2017).

Unlike Matu’uwal, the vowel reduction pattern in Plngawan does not appear to be rhythmic. J. Chen (2012: 87–115) only looks at a small subset of forms with vowel reduction in Plngawan, namely those with *-in-* infixation. Her analysis was thus very specific to this particular infix, in that the vowel after it gets deleted. In actuality, Plngawan allows vowel reduction to occur in other environments as well, some of which are shown in Table 3.53.

<sup>8</sup>Here I use a rule-based phonological explanation, since opacity is notoriously difficult to deal with in constraint-based approaches, such as Optimality theory.

Table 3.53: Vowel syncope in Plngawan

Plngawan	Gloss
<b>?inmasan</b>	‘pickled vegetables’
<b>sunɿahu?</b>	‘to be late (AV)’
<b>pahpuy</b>	‘to cook (AV)’
<b>pahpuyun</b>	‘to cook (PV)’
<b>pahŋale?an</b>	‘to carry on shoulder (LV)’
<b>lahlahuɿ</b>	‘wilderness’
<b>muhla?iy</b>	‘winter’
<b>mashula?iy</b>	‘to snow’
<b>mastail</b>	‘to jump (AV)’
<b>pastailan</b>	‘to jump (PV)’

The major difference between Plngawan vowel syncope and Matu’uwal vowel weakening is that the former does not depend on metricality, or at least not right-to-left metricality. The metrical structure of a stem does not change after adding a suffix: compare Plngawan **mastail~pastailan** and Matu’uwal **mastatail~pəsitataylan** ‘to jump’.

Instead, it is always the leftmost syllable in Plngawan that becomes closed after vowel syncope is applied, no matter how many syllables are to its right. This contrast is demonstrated with the pair **muhla?iy** /muh.la.ʔi:/ ‘winter’ and **mashula?iy** /mas.hu.la.ʔi:/ ‘to snow’, both of which are derived from **hula?iy** ‘snow’. It is thus always the second vowel from the left edge that gets deleted where this rule applies. However, since unlike Matu’uwal vowel weakening, Plngawan vowel syncope does not lead to alternations with disyllabic prefixes, it could be argued that, synchronically speaking, the rule does not apply in cases like **mashula?iy** at all, and that *mas-/pas-* is simply the underlying form of the prefix. Nevertheless, there is still a common pattern with roots that do alternate, like **muhla?iy** ‘winter’ (< **hula?iy** ‘snow’) or **pahŋale?an** ‘to carry on shoulder (LV)’ (< **haŋali?** ‘shoulder’).

There are also disyllabic prefixes in Plngawan where syncope does not apply, for example, **makuramas** ‘to get better, to make up (after an argument)’ (< **ramas** ‘good’),

*makuakeh* ‘to become enemies’ (< *akeh* ‘bad’), *maku?ara?* ‘to wear trousers’ (< *?ara?* ‘trousers’). But cf. *maksapit* ‘to wear shoes’ (< *sapit* ‘shoes’) and *maktamuku?* ‘to wear a hat’ (< *tamuku?* ‘hat’), where the prefix is *mak-* instead of *maku-*.

Plngawan vowel syncope is still poorly understood, and requires further research. A closer look at vowel weakening in Matu’uwal would also be helpful, especially its interactions with other vowel reduction processes, such as hiatus resolution. So far we only have the picture in very broad strokes, and many of the finer details remain to be uncovered.

### 3.3 Interim summary

In this chapter I looked at the phonological systems of seven different Atayal dialects, and explored their consonant and vowel inventories, syllable structure, phonotactics, as well as synchronic alternations.

In the past, such studies have mostly been limited to just one dialect. Even Li (1980a) wrote mostly about alternations in Squliq, though he did include some limited information on other dialects as well.

This chapter is a state-of-the-art look at the comparative phonology of Atayal. I have tried to devote equal space to all dialects, though some unfortunately remain understudied. I have also included the results of studies done on Atayal since Li (1980a), especially those that deal with its synchronic phonology.

I hope this chapter adequately shows the diversity of Atayal dialects in various areas of phonology. Vowel systems can range from as few as three vowels to as many as six, there may or may not be restrictions on closed syllables, vowels outside the head foot, and certain consonants in word-final position.

Consonant inventories are quite similar between Atayal dialects. The main differences reside in the presence or absence of <c> /ʃs/ and /q/ as separate phonemes. Plngawan is the only Atayal dialect to have /ɿ/ as a distinct phoneme.

The phonotactics of consonants vary more than the inventories themselves. The only dialect that allows voiced obstruents /b/ and /g/ to occur word-finally is Matu’uwal (although Matu’aw speakers still preserved final /g/ when Li was doing his fieldwork there



around 1980). Matu'uwal and Matu'aw are the only two dialects where /x/ can occur word-initially, and only in one or two words (unless we count word-initial devoiced /g/ in Skikun as /x/). Pngawan and Klesan disallow labials in word-final position, merging them with velars. The glottal stop appears to have largely lost its functional load in word-final position in both S'uli and Klesan, thus it is not marked in this dissertation; other dialects still distinguish final glottal stops from final open syllables quite clearly.

Most Atayal dialects have mid vowels /e/ and /o/: Matu'uwal and Matu'aw are the exceptions. In other dialects, mid vowels are commonly the result of coalescence of two vowels or a diphthong, or sometimes vowel assimilation or lowering effects of nearby consonants. Schwa appears in most dialects, with only Pngawan and Matu'aw lacking it, though it can never be stressed.

Syllable structure shows some minor differences. Matu'uwal is the only dialect that allows onsetless syllables (but only in final position, thus forming a hiatus in the final foot). Closed syllables are allowed word-finally in all dialects, but are much more limited in non-final position: Matu'uwal and Pngawan allow them everywhere, whereas in other dialects they are mostly restricted to morpheme boundaries (there is significant variation in Squliq, see H. Huang 2015b).

There are some commonalities in synchronic alternations, and they include both inherited irregularities as well as those developed separately due to drift (and perhaps language contact). There are also tendencies to regularize some of these irregularities, and these can be more prominent in some dialects than in others. There is still enough irregularity spread across different dialects to be able to trace it back to their origin, Proto-Atayal.

The most commonly found alternation is probably <c> /t͡s/ to /t/, with <c> /t͡s/ surfacing before suffixes, as in Matu'uwal *k<um>at~kac-un* 'to bite'. Other alternations, such as Ø to /s/, or /ʔ/ to /l/, are found in only a very small number of words. These have mostly been well-preserved across the Atayal dialects, the former only being regularized in Skikun, and the latter in Squliq.

Regularization processes in verbal paradigms should not be overlooked when conducting historical linguistic research. They may give the appearance of inherited regularity, or else a special environment, where there is none. The impact of regularization

on historical reconstructions is discussed in Section 5.4.

# Chapter 4

## Proto-Atayal phonology

In this chapter, I use the Comparative Method to reconstruct the phonological system of Proto-Atayal. Section 4.1 presents the sound correspondences between Atayal dialects in order to reconstruct the individual phonemes of Proto-Atayal. The full phoneme inventory of Proto-Atayal is presented in Section 4.2. The syllable structure and phonotactic restrictions of Proto-Atayal are listed in Section 4.3. I also examine external evidence for reconstructions in Section 4.4, both from closely related Seediq and from reconstructed Proto-Austronesian words. The sound changes from Proto-Atayal to each individual dialect are presented in Section 4.5, the sound changes from Proto-Atayalic to Proto-Atayal can be found in Section 4.6, and Section 4.7 examines the sound correspondences between Proto-Austronesian and Proto-Atayal. The sound changes from Proto-Atayal to Atayal dialects are presented in table form in Section 4.8.

### 4.1 Sound correspondences

This section presents the sound correspondences of individual phonemes, used to reconstruct phonemes and lexical items in Proto-Atayal. It is further subdivided into sections on consonant correspondences (Section 4.1.1), vowel correspondences in the final two syllables (Section 4.1.2), vowel correspondences in the third-to-last syllable and beyond (Section 4.1.3).

### 4.1.1 Consonant correspondences

Each consonant protophoneme is reconstructed based on correspondences in several environments: word-initial, word-medial, and word-final (where applicable). For those protophonemes which have additional reflexes in more specific environments, those environments are included as well.

The correspondence of Proto-Atayal \*p is generally regular, as seen in Table 4.1. Word-initial and word-medial reflexes are /p/ in all dialects. Word-finally, \*p is reflected as /p/ in all dialects except Plngawan and Klesan, where it is /k/ in this position instead.

Table 4.1: Correspondences of Proto-Atayal \*p

	‘muntjac’	‘flying squirrel’	‘to blow’
Proto-Atayal	*paraʔ	*ɿapit	*ʔumiyup
Matu’uwal	paraʔ	ʔapit / wapit	ʔumiyup
Skikun	paraʔ	yapit	m̥iyup
Plngawan	paraʔ	ɿapit	yumuk
Klesan	para	yapit	yə̃muk
Matu’aw		yapit	ʔumyup
S’uli	para	yapit	yə̃mup
Squliq	paraʔ	yapit	m̥əyup

The reason for the velar reflex in Plngawan and Klesan is a process by which final labials merge with velars in these two dialects. This process is detailed in Section 3.2.1.2. Note that in both Plngawan and Klesan the historical \*p surfaces when the verb is suffixed: *yupan* ‘to blow (LV)’.

Proto-Atayal \*t is mostly reflected as /t/, though in certain positions it may become an affricate, as shown in Table 4.2.

In Squliq, Proto-Atayal \*t is always reflected as an affricate before /i/ or its corresponding glide <y> /j/. Skikun does occasionally allow the sequence /ti/, although it is very rare (see Section 3.1.6.3). In Klesan and S’uli, words with and without affrication can be found. Sometimes even the same word may exhibit two variants, e.g.: *timu* or *cimu* ‘salt’, *tikay* or *cikay* ‘a little, a bit’, *hyuti* or *hyuci* ‘slippery’. There is variation from village to village and speaker to speaker, and sometimes even within a single speaker’s

Table 4.2: Correspondences of Proto-Atayal \*t

	‘head’	‘to chat’	‘stupid’	‘one’	‘goat’
Proto-Atayal	*tunux	*matisal	*maŋutiq	*qutux	*mit
Matu’uwal	tunux		maŋutiq	qutux	mit
Skikun	tunux	məcisal	məŋuciq	qutux	mit
Plngawan	tunux	matisal		ʔutux	mit
Klesan	tunux	cisan/tisan	məŋuti	ʔutux	mit
Matu’aw	tunux	matisal	maŋuti?	ʔutux	mit
S’uli	tunux		məŋuti	ʔutux	mit
Squliq	tunux	məcisal	məŋuciq	qutux	mit

speech. The most likely source of this dichotomy is Squliq, see Section 5.5 for further discussion.

In word-final position, /t/ may also be pronounced as a dental affricate [tʃ] by some speakers, as mentioned in Section 3.2.1.3. This is dependent on individual speakers: I personally have witnessed both the presence and absence of this pronunciation from different speakers of Squliq, Skikun, Plngawan, and S’uli. This is simply a variant pronunciation of /t/ word-finally, and not a different phoneme, so it is not taken into consideration here.

The correspondences of Proto-Atayal \*k, shown in Table 4.3, are mostly /k/ in all dialects. In some environments, it was backed into /q/ in Squliq, Skikun, and Matu’uwal.

This assimilation process was noted in Li (1980a: 377) for Squliq and Skikun. The environment for this change is a following /h/ or /q/ in the root (Li 1981: 248). A similar assimilation also took place in the closely related Seediq language (Lee 2009). Occasionally, Squliq or Skikun also back Proto-Atayal \*k into /q/ sporadically, see Section 5.3.2.2 for more information.

In Matu’uwal, *k*-backing can only be found in three roots in my dataset: /quriq/ ‘to steal’, /qaniq/ ‘to eat’, and /qəbaq/ ‘to know’. All three are disyllabic and end with /q/ (the initial /q/ comes from historical \*k). However, the initial /q/ does not surface in the roots /qaniq/ ‘to eat’ and /qəbaq/ ‘to know’ in the indicative mood: *maniq* ‘to eat (AV)’, *niquŋ* ‘to eat (PV)’, *baq* ‘to know (AV)’, *baqun* ‘to know (PV)’, cf. subjunctive mood forms

Table 4.3: Correspondences of Proto-Atayal \*k

	‘woman’	‘tree’	‘to steal’	‘sash’
Proto-Atayal	*kanayril	*kahuniq	*kumuriq	*hahabuk
Matu’uwal	kanayril	kahuniq	qumuriq	hahabuk
Skikun	kəneril	qəhuniq	məquriq	habuk
PIngawan	kanel	kahuni?	?uŋkuri?	hahabuk
Klesan	kənerin	kəhoni	məkuri	habuk
Matu’aw	kanayril	kahuni?	kumuri?	hahabuk
S’uli	kənerin	kəhoni	məkuri	habuk
Squliq	kəneril	qəhuniq	məquriq	habuk

*qaniq* ‘to eat (AV.SBJV)’, *qəbaq* ‘to know (AV.SBJV)’. Note that even though /qumuriq/ has three syllables, the root is /quriq/, which is disyllabic, with *-um-* being the Actor Voice infix. In contrast /kahuniq/ has three syllables in the root and retains initial /k/. The environment for \*k > q in Matu’uwal is thus /kVCVq/, but it is morphologically sensitive and applies to the root as a whole, including infixed forms.

Proto-Atayal \*q is reflected as /q/ in Matu’uwal, Squliq, and Skikun, and as /ʔ/ in other dialects. The correspondences can be seen in Table 4.4.

Table 4.4: Correspondences of Proto-Atayal \*q

	‘to close’	‘sambar deer’	‘to sew’	‘to know’
Proto-Atayal	*quməlu?	*waqanux	*cumaqis	*baq
Matu’uwal	qumlu?	waqanux	cumaqis	baq
Skikun	qəməlu?	bəqanux	cənaqis	baq
PIngawan	?unlu?	wanux	cumaʔis	baʔ
Klesan	(ʔəlung)	wanux	cəmaʔes	ba
Matu’aw	?umalu?	waʔanux	sumaʔis	
S’uli	?əməlu	waʔanux		
Squliq	qəməlu?	bəqanux	səmaqis	baq

As stated in Section 3.1.2.3 and Section 3.1.5.3, I analyze S’uli and Klesan as having no phonemic glottal stops in word-final position. This applies to words with historical

word-final \*q as well.

Note that vowel coalescence in the final foot does not apply in roots with historical \*q, as mentioned in Section 3.2.2.3. Unlike roots with historical \*ʔ, here the glottal stop is preserved, as seen in Plngawan *cumaʔis*, Klesan *cəmaʔes*, Matu’aw *sumaʔis* ‘to sew’. If an intervocalic \*q precedes the final syllable, its reflex is /ʔ/ in S’uli and Matu’aw, but Ø in Plngawan and Klesan: S’uli and Matu’aw *waʔanux*, Plngawan and Klesan *wanux* ‘sambar deer’.

The glottal stop is preserved in initial position in all dialects, as shown in Table 4.5. Word-finally, Klesan and S’uli appear to have lost the distinction between final /ʔ/ and final open syllables, and therefore I do not consider them to have final glottal stops.

Table 4.5: Correspondences of Proto-Atayal \*ʔ

	‘leaves’	‘day’	‘to hold’	‘to feed’	‘hornet’
Proto-Atayal	*ʔabag	*riʔax	*miʔiŋ	*suməʔan	*baŋaʔ
Matu’uwal	ʔabag	riʔax	miʔiŋ	sumʔan	baŋaʔ
Skikun	ʔabax	ryax	miŋ	səməʔan	baŋaʔ
Plngawan	ʔabaw	rex	miŋ	sunʔan	baŋaʔ
Klesan	ʔabaw	ryax	miŋ	səməʔan	baŋa
Matu’aw	ʔabaw	ryax		sumaʔan	
S’uli	ʔabaw	ryax	miŋ	səmaʔan	baŋa
Squliq	ʔabaw	ryax	meŋ	səməʔan	baŋaʔ

Word-medial glottal stops in Proto-Atayal appear to have been rare outside suffixed forms, and here Matu’uwal is the only dialect that reliably preserves them. The exception here are word-medial glottal stops preceded by a schwa, as in ‘to feed’ in Table 4.5. In other cases, word-medial glottal stops surrounded by full vowels were deleted in all dialects except Matu’uwal. The vowels on either side of Proto-Atayal \*ʔ were coalesced into a GV sequence or a single vowel: Proto-Atayal \*riʔax ‘day’ > Matu’uwal *riʔax*, Skikun *ryax*, Plngawan *rex*. This process is identical to suffixation-induced vowel coalescence in the synchronic grammars of these dialects, described in Section 3.2.2.3.

Proto-Atayal \*b is reflected as /b/ in word-initial and word-medial positions in all dialects, as seen in Table 4.6. Note that the phoneme /b/ may phonetically be a bilabial

plosive [b], a bilabial fricative [β], or a labiodental fricative [v]. These different phonetic realizations are treated as identical on the phonemic level.

Word-final \*b is only preserved as /b/ in Matu’uwal. In all other dialects it is devoiced, and in Plngawan and Klesan its place of articulation becomes velar instead of labial in addition to devoicing.

Table 4.6: Correspondences of Proto-Atayal \*b

	‘hornet’	‘leaves’	‘shaman’	‘to cut w/ scissors’
Proto-Atayal	*baŋaʔ	*ʔabag	*pahəgub	*qumatab
Matu’uwal	baŋaʔ	ʔabag	pahgub	
Skikun	baŋaʔ	ʔabax	pəhəgup	qəmatap
Plngawan	baŋaʔ	ʔabaw		ʔumatak
Klesan	baŋa	ʔabaw	pəhəguk	
Matu’aw		ʔabaw	pahagup	
S’uli	baŋa	ʔabaw	pəhəgup	
Squliq	baŋaʔ	ʔabaw	pəhəgup	qəmatap

Word-final \*b may be reconstructed based on Matu’uwal evidence, or based on consonant alternations in verbal roots. For example, the verb *qəmatap* ‘to cut with scissors’ in Squliq becomes *qataban* when suffixed, revealing the underlying /b/ phoneme. However, this process is not infallible: the Plngawan cognate *ʔumatak* becomes *ʔatapan* after suffixation, still preserving the labial feature of the final root consonant, but losing the voicing.

Proto-Atayal \*g is regularly reflected as /g/ in all dialects in word-initial and word-medial positions, with the exception of Skikun, where initial /g/ tends to be devoiced into /x/ in an ongoing merger of these two phonemes (see Section 3.1.6.1). Word-finally it is lenited in most dialects except Matu’uwal and Skikun, as shown in Table 4.7.

Word-final \*g is preserved as /g/ in Matu’uwal and as /x/ in Skikun when preceded by /a/ or /u/. According to Li’s (1980a, 1981) data, Matu’aw<sup>1</sup> still preserved final /g/ even following an /i/ when he was conducting his fieldwork on the dialect around 1980. Even during that time, only speakers above the age of 60 still preserved it, whereas

<sup>1</sup>Called “Matabalay” in Li’s publications.



Table 4.7: Correspondences of Proto-Atayal \*g

	‘guts’	‘sister-in-law’	‘leaves’	‘sand’
Proto-Atayal	*giyus	*suwagiʔ	*ʔabag	*bunaqig
Matu’uwal	giyus	suwagiʔ	ʔabag	bunaqiy
Skikun	gyus	swagiʔ	ʔabax	bənaqiy
PIngawan	gis	sogiʔ	ʔabaw	bunaʔiy
Klesan	gyus	swagi	ʔabaw	
Matu’aw	gyus	swagiʔ	ʔabaw	bunaʔiy
S’uli		swagi	ʔabaw	naʔiy
Squliq	gyus	swagiʔ	ʔabaw	naqiy

“younger” speakers (around 50 years old at the time) no longer had it in word-final position (Li 1980a: 385). Naturally, it had been completely lost by the time I conducted my fieldwork on Matu’aw in early 2020. Li’s data can be used to reconstruct final \*g in several lexical items. Likewise, Seediq cognates can also be used to identify words with historical final \*-ig, see Section 4.4.1 for more details.

In other dialects, word-final \*g is reflected as a glide after the low vowel /a/, as seen in reflexes of \*ʔabag ‘leaves’ in the table. After high vowels (including Matu’uwal and Skikun for reflexes of \*-ig), it manifests itself as vowel length, e.g. Proto-Atayal \*ɲuhug ‘nose’ > Squliq *ɲuhuw* [ɲu.ɦu:], Proto-Atayal \*wahig ‘vine’ > Squliq *wahiy* [wa.ɦi:]. Long vowels in the final syllable are traditionally written with a homorganic glide following the long vowel, both by linguists and Atayal speakers (only Matu’uwal has long low vowel /a/, which is normally left unmarked).

Verbs with Proto-Atayal final \*-ig have an alternating /s/ that appears in suffixed forms, for example Matu’uwal *rumahiy~rahisan* ‘to dry in the air’. There are only a few of such verbs; see also discussion in Section 3.2.1.5.

However, not all lexical items with final -iy in modern dialects had a \*g coda in Proto-Atayal. Several examples are discussed in Section 4.3.

Proto-Atayal \*c is reflected as <c> /t͡s/ in all dialects except Squliq, S’uli, and Matu’aw, where it merges with \*s, as seen in Table 4.8.

The phoneme <c> /t͡s/ does not appear in word-final position in any Atayal dialect, but

Table 4.8: Correspondences of Proto-Atayal \*c

	‘to sew’	‘to answer’	‘pond, lake’
Proto-Atayal	*cumaqis	*cumiyuk	*wacilun
Matu’uwal	cumaqis	cumiyuk	wacilun
Skikun	cənaqis	cəmyuk	bəcilun
Plngawan	cumaʔis	cumik	wacilun
Klesan	cəmaʔes	(cəməcyuk)	cilun
Matu’aw	sumaʔis	sumyuk	wasilun
S’uli		səmyuk	
Squliq	səmaqis	səmyuk	bəsilun

it does alternate with /t/ in verbal roots, as explained in Section 3.2.1.3. This alternation can be reconstructed to Proto-Atayal, and there is no evidence that Proto-Atayal \*c appeared word-finally. See Section 4.3 for more details.

Proto-Atayal \*s is reflected as /s/ everywhere except one very specific environment in Plngawan and Squliq, where it undergoes rhotacism. The correspondences are shown in Table 4.9.

Table 4.9: Correspondences of Proto-Atayal \*s

	‘rope’	‘taboo’	‘to go’	‘sister-in-law’
Proto-Atayal	*siniyug	*pisaniq	*musaʔ	*ʔisah
Matu’uwal	siniyug	pisaniq	musaʔ	ʔisah
Skikun	sənyux	pəsaniq	musaʔ	ʔisah
Plngawan	sinyuw	pisaniʔ	musaʔ	ʔirah
Klesan	sənyu	pəsani	mosa	ʔisah
Matu’aw	sinyuw	pisaniʔ	musaʔ	ʔisah
S’uli	sənyu	pəsani	musa	ʔisah
Squliq	sənyuw	pəsaniq	musaʔ	ʔirah

The environment for rhotacism in Plngawan and Squliq is identical: \*s became /r/ when preceded by the vowel /i/ and followed by a stressed vowel (i.e. final vowel).

Thus, Proto-Atayal words like \*ʔisah ‘sister-in-law’<sup>2</sup>, \*pisaʔ ‘how many’, \*kisaʔ ‘today, soon’ become *ʔirah*, *piraʔ*, and *kiraʔ*, respectively, in both Plngawan and Squliq. If the vowel preceding \*s is anything other than \*i, rhotacism does not occur, e.g. Proto-Atayal \*musaʔ ‘to go (AV)’ > Plngawan, Squliq *musaʔ*, Proto-Atayal \*taʔasi ‘straw hat’ > Plngawan *taʔasiʔ*, Squliq *cyasiʔ*. Neither does it happen if the vowel following \*s is not the stressed (final) vowel: Proto-Atayal \*pisaniq ‘taboo’ > Plngawan *pisaniʔ*, Squliq *pəsaniq*.

The rhotacism rule is also subject to paradigm leveling (see Section 5.4). Verbs with roots ending in /-is/ do not undergo rhotacism, e.g. Plngawan *maʔilis~caʔisan* and Squliq *maʔilis~ləʔisan* ‘to cry’ (note the metathesis between the AV and LV forms). On the other hand, verbs with the Ø~s alternation have an alternating /r/ in Plngawan and Squliq instead: Squliq *məbazi~bəzirun* ‘to buy’, Plngawan *magiy~pageran* ‘to run away’. See Section 3.2.1.5 for more examples of these alternations.

Proto-Atayal \*x is regularly reflected as /x/ in all dialects, except in reflexes of the word \*xuʔil ‘dog’, as seen in Table 4.10.

Table 4.10: Correspondences of Proto-Atayal \*x

	‘dog’	‘one (person)’	‘bear’
Proto-Atayal	*xuʔil	*caxaʔ	*ŋarux
Matu’uwal	xuwil	caxaʔ	ŋarux
Skikun	hoyil	caxaʔ	ŋarux
Plngawan	huʔil	caxaʔ	ŋarux
Klesan	hoyin	caxa	ŋarux
Matu’aw	xuyil		ŋarux
S’uli	huzin	saxa	ŋarux
Squliq	huzil	saxaʔ	ŋarux

There is only a single protoform where I reconstruct initial \*x in Proto-Atayal, and that is \*xuʔil ‘dog’. Most dialects do not allow /x/ to appear word-initially at all, and those that do only have one or two words with initial /x/. Skikun is an exception due to

<sup>2</sup>English does not have a specific enough translation for this word. It refers to the wife of one’s older brother, but I translate it as ‘sister-in-law’ in the text and the table for brevity.

its merger of Proto-Atayal \*x and \*g. Also because of this merger, intervocalic \*x may sometimes be reflected as a voiced fricative /g/ instead. See Section 3.1.6.1 for details.

Proto-Atayal \*h is regularly reflected as /h/ in all positions across all dialects, as shown in Table 4.11.

Table 4.11: Correspondences of Proto-Atayal *h			
	‘sash’	‘head louse’	‘to harvest’
Proto-Atayal	*hahabuk	*kuhiŋ	*kuməluh
Matu’uwal	hahabuk	kuhiŋ	kumluh
Skikun	habuk	kuhiŋ	kəməluh
PIngawan	hahabuk	kuhiŋ	kunloh
Klesan	habuk	kuhiŋ	kəməloh
Matu’aw	hahabuk	kuhiŋ	kumaluh
S’uli	habuk	kuhiŋ	kəməluh
Squliq	habuk	kuhiŋ	kəməluh

In PIngawan, historical /h/ may sometimes be realized as [x] before high or mid vowels, merging with /x/. This appears to be an ongoing merger in the dialect, as mentioned in Section 3.1.4.1.

The correspondences of Proto-Atayal \*m are regular, with reflexes being /m/ except word-finally in PIngawan and Klesan, as demonstrated in Table 4.12.

Table 4.12: Correspondences of Proto-Atayal *m			
	‘goat’	‘salt’	‘needle’
Proto-Atayal	*mit	*timuʔ	*raʔum
Matu’uwal	mit	timuʔ	raum
Skikun	mit	cimuʔ	rom
PIngawan	mit	timuʔ	roŋ
Klesan	mit	cimu	roŋ
Matu’aw		timuʔ	rawm
S’uli	mit	(təməyux)	rom
Squliq	mit	cimuʔ	rom

The word-final reflex of Proto-Atayal \*m in Plngawan and Klesan is /ŋ/. This is exactly the same process that affects word-final \*b and \*p, and is further discussed in Section 3.2.1.2.

Proto-Atayal \*n is generally reflected as /n/ in all positions, as seen in Table 4.13.

Table 4.13: Correspondences of Proto-Atayal \*n

	‘hemp fiber’	‘sambar deer’	‘net bag’	‘door’
Proto-Atayal	*nanuka?	*waqanux	*tawkan	*balihun
Matu’uwal	nanuka?	waqanux	tawkan	balihun
Skikun		bəqanux	tokan	bəlihun
Plngawan	nuka?	wanux	tokan	balihun
Klesan	nuka	wanux	tokan	bəlihun̚
Matu’aw	nanuka?	waʔanux	tawkan	balihun
S’uli	nuka	waʔanux		lihun
Squliq	nuka?	bəqanux	tokan	bəlihun

Some speakers may pronounce this phoneme as a velar nasal [ŋ] word-finally, and my transcription of Klesan ‘door’ as *bəlihun̚* reflects this. However, this velar pronunciation is not always consistent, and varies from speaker to speaker. This may indicate the beginnings of a merger between /n/ and /ŋ/ in word-final position.

The regular reflex of Proto-Atayal \*ŋ is /ŋ/ in all positions across all dialects, as shown in Table 4.14.

The reflexes of Proto-Atayal \*l are /l/ in word-initial and word-medial position in all dialects, as seen in Table 4.15. There is some slight variation in word-final reflexes.

Word-final \*l may be reflected as /n/ in the speech of some speakers. This is common in the speech of younger speakers across the spectrum of Atayal dialects, however in my fieldwork on S’uli and Klesan, this sound change was present even with older speakers, and appears to be complete there. There is much individual variation with how final \*l is reflected, with /n/ being a more ‘innovative’ pronunciation that transcends dialect boundaries. See Section 3.2.1.4 for more information on this sound change.

The reflexes of Proto-Atayal \*r are generally /r/ in word-initial and word-medial positions, except in cases of liquid assimilation. Word-final reflexes of \*r are less systematic.

Table 4.14: Correspondences of Proto-Atayal \*ŋ

	‘bear’	‘hornet’	‘head louse’
Proto-Atayal	*ŋarux	*baŋaʔ	*kuhiŋ
Matu’uwal	ŋarux	baŋaʔ	kuhiŋ
Skikun	ŋarux	baŋaʔ	kuhiŋ
Pŋgawan	ŋarux	baŋaʔ	kuhiŋ
Klesan	ŋarux	baŋa	kuhiŋ
Matu’aw	ŋarux		kuhiŋ
S’uli	ŋarux	baŋa	kuhiŋ
Squliq	ŋarux	baŋaʔ	kuhiŋ

Table 4.15: Correspondences of Proto-Atayal \*l

	‘chicken coop’	‘flat basket’	‘dog’
Proto-Atayal	*libuʔ	*balukuʔ	*xuɿil
Matu’uwal	libuʔ	balukuʔ	xuɿil
Skikun	libuʔ	bəlukuʔ	hoyil
Pŋgawan		balukuʔ	huɿil
Klesan	libu	luku	hoyin
Matu’aw	libuʔ	balukuʔ	xuyil
S’uli	libu		huzin
Squliq	libuʔ	bəlukuʔ	huzil

Some examples are given in Table 4.16.

Liquid assimilation happens in Squliq, Skikun, S’uli, and Klesan. If an onset \*r was followed by an \*l in the onset of another syllable, the \*r changed to /l/. Thus, Proto-Atayal \*raluʔ ‘name’ > Squliq, Skikun *laluʔ*.

This liquid assimilation was not triggered if \*l was in a syllable coda, whether in the same syllable as \*r or a different one: e.g. (PAn \*dapaN >) Proto-Atayal \*rapal ‘sole (of foot)’ > Squliq, Skikun *rapal*, or Proto-Atayal \*kanayril ‘woman’ > Squliq, Skikun *kəneril*.

Reflexes of Proto-Atayal word-final \*r are not very systematic across dialects. It may be reflected as /r/ or as /l/ (and in S’uli and Klesan as /n/ due to the \*l > /n/ sound change

Table 4.16: Correspondences of Proto-Atayal \*r

	‘name’	‘day’	‘muntjac’	‘to flood’	‘yeast’
Proto-Atayal	*raluʔ	*riʔax	*paraʔ	*humaʔur	*tamur
Matu’uwal	raluʔ	riʔax	paraʔ	humaʔur	tamur
Skikun	laluʔ	ryax	paraʔ	həmor	
Plngawan	raluʔ	rex	paraʔ		tamul
Klesan	lalu	ryax	para	həmor	tamun
Matu’aw	raluʔ	ryax		humawl	
S’uli	lalu	ryax	para		
Squliq	laluʔ	ryax	paraʔ	həmor	tamul

word-finally). For example, in Table 4.16, the reflexes of \*r in Proto-Atayal \*humaʔur ‘to flood’ are /r/ in Matu’uwal, Skikun, Klesan, and Squliq; but neither Klesan nor Squliq preserve the final \*r in Proto-Atayal \*tamur ‘yeast’ (reconstructed based on the Matu’uwal reflex *tamur*). Apparently Matu’uwal did not preserve final \*r in all cases either: for example in Proto-Atayal \*kaʔur ‘Taiwan beauty snake’ (錦蛇) > Matu’uwal *kaul*, but Squliq, Skikun, Klesan *kor*.

All in all, the inconsistency of the reflexes of final \*r makes it difficult to reconstruct with certainty. For verbal roots, suffixed forms may be used, e.g. the Patient Voice form of ‘to flood’: Proto-Atayal \*hawrun ‘to flood (PV)’ > Matu’uwal, Matu’aw *hawrun*, Skikun, Klesan *horun*. Here all dialects reflect Proto-Atayal \*r, including Matu’aw, which has a final /l/ in the AV form *humawl*. However, this strategy may not always work due to paradigm leveling: see the example with reflexes of Proto-Atayal \*qumur ‘to seize’, shown in Table 4.17.

Table 4.17: Paradigm leveling in Proto-Atayal \*qumur ‘to seize, to occupy’

Proto-Atayal	Matu’uwal	Plngawan	Squliq	Skikun
*qumur	qumur	ʔumul	qəmul	qəmor
qurun/quran		ʔulan	pəqulan	qorun

In both Squliq and Plngawan, even suffixed reflexes have an /l/ in the root, even though \*r should not generally be neutralized in this environment: Proto-Atayal \*quran

‘to seize (LV)’ > Plngawan *ʔulan*, Squliq *pəqulan* ‘to take from each other (LV)’. Here the neutralization must have originally happened in reflexes of the Actor Voice form, where \*r was final, and then spread to suffixed forms due to paradigm leveling. We can reconstruct Proto-Atayal \*r here based on reflexes in Matu’uwal and Skikun. For more on paradigm leveling in Atayal, see Section 5.4.

Proto-Atayal had a second rhotic, \*ɿ, which has only been preserved in Plngawan. All other dialects have merged it with other segments or deleted it. The reason for reconstructing this cross-linguistically rare sound is addressed in Section 4.2. Plngawan preserves \*ɿ as a retroflex approximant /ɿ/ with no changes, while all other dialects except Matu’uwal merge it with <y> /j/, as shown in Table 4.18. The Matu’uwal correspondences are a little more complicated.

Table 4.18: Correspondences of Proto-Atayal \*ɿ

	‘monkey’	‘flying squirrel’	‘sky’	‘dog’	‘forehead’
Proto-Atayal	*ɿuŋay	*ɿapit	*kaɿal	*xuɿil	*lihuɿ
Matu’uwal	ʔuŋay	ʔapit/wapit	kaal	xuwil	lihuw
Skikun	yuŋay	yapit	kayal	hoyil	
Plngawan	ɿuŋiy	ɿapit	kaɿal	huɿil	lihuɿ
Klesan	yuŋay	yapit	kayan	hoyin	lihuy
Matu’aw	yuŋay	yapit	kayal	xuyil	lihuy
S’uli	yuŋay	yapit	kayan	huzin	lihuy
Squliq	yuŋay	yapit	kayal	huzil	lihuy

The regular reflex of Proto-Atayal \*ɿ in Matu’uwal is Ø. Word-finally, its deletion triggered compensatory lengthening in the preceding vowel, thus Proto-Atayal \*lihuɿ ‘forehead’ > Matu’uwal *lihuw* [li.ɦu:]. The /w/ here is just a spelling convention to indicate a final long [u:] vowel, and not a phonemic glide. This lengthening effect can be seen in the low vowel /a/ as well: Proto-Atayal \*takar ‘frog’ > Matu’uwal *taka* [ta.ka:]. No words with final \*-ɿ are found in my dataset, but it is hard to tell whether this is due to insufficient data, an accidental gap, or a phonotactic restriction.

Between vowels, \*ɿ was always deleted in Matu’uwal. This is the source of all identical vowel hiatuses in the language (/a.a/, /i.i/, and /u.u/), for example Proto-Atayal



\*kaɿal ‘sky’ > Matu’uwal *kaal* [ka.'al], Proto-Atayal \*ʔuɿuk ‘pup (animal offspring)’ > Matu’uwal *ʔuuk* [ʔu.'uk]. A glide can be found in some words with historical \*ɿ, e.g. Proto-Atayal \*xuɿil ‘dog’ > Matu’uwal *xuwil*, or Proto-Atayal \*mahuɿiq ‘wet’ > Matu’uwal *mahuwiq*, however **this is not a case of \*r > w in Matu’uwal**. A different glide surfaces when \*ɿ was preceded by \*i, as in Proto-Atayal \*sumiɿahuq ‘to be late’ > Matu’uwal *sumiyahuq* (cf. Plngawan *sunuahuʔ*). The glides were inserted later, after the deletion of Proto-Atayal \*ɿ, and were conditioned by the preceding vowel.

Words that began with \*ɿ in Proto-Atayal tend to have an initial glottal stop in Matu’uwal: Proto-Atayal \*ɿuɿay ‘monkey’ > Matu’uwal *ʔuɿay*, Proto-Atayal \*ɿimagal ‘five’ > Matu’uwal *ʔimagal* (cf. PAn \*lima). The initial glottal stop was likely added to these words after the deletion of \*ɿ in order to prevent vowel-initial words, rather than a direct change of Proto-Atayal \*ɿ > ʔ. Words with a low vowel following an initial \*ɿ have two variant forms, based on two subdialects of Matu’uwal: Tabilas and Sahiyang (Li 1981: 264). Thus, Proto-Atayal \*ɿapit ‘flying squirrel’ > Matu’uwal *ʔapit* or *wapit*. Almost all (though not completely all) reflexes of words with initial \*ɿa- in Proto-Atayal still have these variant pronunciations.

In short, Proto-Atayal \*ɿ was deleted in Matu’uwal, except in word-initial position before \*a in one subdialect. Additional repair strategies were triggered by its deletion in some environments. Its deletion in word-final position triggered compensatory lengthening of the preceding vowel.

There is another very specific environment where Proto-Atayal \*ɿ was not simply deleted, and that is \*-wr- clusters. Such clusters could only be allowed where there was an \*aw sequence in one syllable, followed by an \*ɿ onset in the following syllable. Only a few cases can be found in my data, shown in Table 4.19.

Here all other dialects have their regular correspondences, with the usual caveats: in both S’uli and Squliq, /aw/ may be coalesced into /o/ or not, depending on the speaker. Matu’uwal has a geminate /w/ in all three words (although final /k/ in *mawwik* ‘to drill’ is irregular). Unlike words with initial \*ɿa- in Proto-Atayal, there is no subdialect distinction here. It should thus be treated as a separate change of \*ɿ > w/w\_. It is unclear if a similar gemination process would happen after the glide \*y, as I have not been able to find cognates with such a sequence. Matu’uwal *ʔayyuy* ‘soup’ may be a possible

Table 4.19: Proto-Atayal \*wɿ clusters

	‘eyes’	‘to wade’	‘to drill’
Proto-Atayal	*raw.ɿq	*gumawɿag	*mawɿit
Matu’uwal	rawwiq	gumawwag	(mawwik)
Skikun	royiq	gəməoyax	
PIngawan	ro.ɿ?	guməɹow	məɹit
Klesan	royi	(məhoyaw)	moyit
Matu’aw	rawyi?	gumawyaw	papawyit
S’uli	rozi	mawyaw	
Squliq	roziq		muzit

candidate (and the only word in Matu’uwal with geminate <y> /j/ that I have found), but there is insufficient evidence from other dialects to make an accurate reconstruction.

Proto-Atayal \*w is reflected as /w/ in most positions. In trisyllabic words, \*w was fortitioned into a fricative in several dialects, as shown in Table 4.20. The data is scarce, and it is difficult to accurately identify the specific environment where it occurred for each dialect.

Table 4.20: Correspondences of Proto-Atayal \*w

	‘neck’	‘strap’	‘sambar deer’	‘pigeon’
Proto-Atayal	*wariyuj	*wakil	*waqanux	*waʔuʔ
Matu’uwal	wariyuj	wakil	waqanux	wauʔ
Skikun	gəryuj	wakil	bəqanux	wawuʔ
PIngawan	warij	(wakili?)	wanux	
Klesan	gəryuj	wakin	wanux	
Matu’aw	waryuj	wakil	waʔanux	wawʔ
S’uli	rəgyuj	wakil	waʔanux	waw
Squliq	gəryuj	wakil	bəqanux	goʔ

In Squliq and Skikun, fortition occurs reliably in trisyllabic words, i.e. when the vowel following \*w is lenited into a schwa: Proto-Atayal \*waqanux ‘sambar deer’ > Squliq, Skikun *bəqanux*, Proto-Atayal \*waciluj ‘pond, lake’ > Squliq *bəsiluj*, Skikun *bəciluj*.

However while in the preceding two examples \*w fortitioned into /b/, in other words it became /g/, for example Proto-Atayal \*wariyũ ‘neck’ > Squliq, Skikun *gəryũ*. More recently, some Squliq subdialects have also begun to fortition /w/ in other positions, for example Proto-Atayal \*wau? ‘pigeon’ > Squliq *go?*, or Proto-Atayal \*wagi? ‘Sun’ > Squliq *gwagi?* (variant of *wagi?*).

Other dialects have fortition happen more sporadically: Proto-Atayal \*wariyũ ‘neck’ > Klesan *gəryũ*, S’uli *rəgyũ* (with metathesis), but neither dialect has fortition in reflexes of \*waqanux ‘sambar deer’. Plngawan has *gilũ* ‘chicken’ < Proto-Atayal \*waylũ, but no other instances of \*w-fortition.

Other occurrences of \*w, such as in the ‘diphthong’ \*aw or in the sequence \*-uwa-, are discussed separately in Section 4.1.2, as they tend to change as a single unit.

Proto-Atayal \*y is reflected as <y> /j/ in all dialects, as seen in Table 4.21. Squliq and S’uli fortition this phoneme in some environments, but it is phonologically conditioned, and thus not a true split.

Table 4.21: Correspondences of Proto-Atayal *y			
	‘mother’	‘green beans’	‘grandfather’
Proto-Atayal	*yaya?	*layan	*yutas
Matu’uwal	yaya?	layan	yutas
Skikun	yaya?	layan	yutas
Plngawan	yaya?	layan	yutas
Klesan	yaya	layan	yutas
Matu’aw	yaya?		yutas
S’uli	yaya		yutas
Squliq	yaya?	layan	yutas

Other occurrences of \*y, such as in the ‘diphthong’ \*ay, or in the sequences \*-iya- and \*-iyu-, are discussed separately in Section 4.1.2, as they tend to change as a single unit.

### 4.1.2 Vowel correspondences

This section addresses vowel correspondences in the final two syllables only. Vowel distinctions beyond the final two syllables were only preserved in Matu’uwal, Plngawan,

and Matu'aw, and are discussed in Section 4.1.3.

The reflex of Proto-Atayal \*a in the final two syllables is /a/ in all dialects, as shown in Table 4.22.

Table 4.22: Correspondences of Proto-Atayal \*a

	'name'	'muntjac'	'hornet'
Proto-Atayal	*ralu?	*para?	*baŋa?
Matu'awal	ralu?	para?	baŋa?
Skikun	lalu?	para?	baŋa?
Pŋgawan	ralu?	para?	baŋa?
Klesan	lalu	para	baŋa
Matu'aw	ralu?		
S'uli	lalu	para	baŋa
Squliq	lalu?	para?	baŋa?

The reflex of Proto-Atayal \*i in the final two syllables is /i/ in all dialects, as shown in Table 4.23.

Table 4.23: Correspondences of Proto-Atayal \*i

	'door'	'head louse'	'dog'
Proto-Atayal	*balihun	*kuhiŋ	*xuɾil
Matu'awal	balihun	kuhiŋ	xuwil
Skikun	bəlihun	kuhiŋ	hoyil
Pŋgawan	balihun	kuhiŋ	huɾil
Klesan	bəlihuŋ	kuhiŋ	hoyin
Matu'aw	balihun	kuhiŋ	xuyil
S'uli	lihun	kuhiŋ	huzin
Squliq	bəlihun	kuhiŋ	huzil

The reflex of Proto-Atayal \*u in the final two syllables is /u/ in all dialects, as shown in Table 4.24.

Proto-Atayal \*ə did not occur in the final (stressed) syllable. The following is a discussion of reflexes of penultimate \*ə. In Squliq, Skikun, S'uli, and Klesan it remained

Table 4.24: Correspondences of Proto-Atayal \*u

	‘head’	‘bear’	‘one’
Proto-Atayal	*tunux	*ɲarux	*qutux
Matu’uwal	tunux	ɲarux	qutux
Skikun	tunux	ɲarux	qutux
Plngawan	tunux	ɲarux	?utux
Klesan	tunux	ɲarux	?utux
Matu’aw	tunux	ɲarux	?utux
S’uli	tunux	ɲarux	?utux
Squliq	tunux	ɲarux	qutux

/ə/. In Matu’aw, it merged into /a/ in all cases. In Matu’uwal and Plngawan, there were various changes, conditioned by the environment. The reflexes are shown in Table 4.25.

Table 4.25: Correspondences of Proto-Atayal \*ə

	‘plank’	‘squirrel’	‘crack’	‘honey’	‘six’
Proto-Atayal	*qalətiŋ	*bəhut	*bəliŋ	*həliŋ	*matəxu?
Matu’uwal	qaltiŋ	bəhut	bəliŋ	hiŋ	mamatu?
Skikun	qələciŋ	bəhut	bəliŋ		təyu?
Plngawan	?altiŋ	buhut	balŋ	hiŋ	matru?
Klesan	lətiŋ	bəhut	bəliŋ	həyiŋ	təyu
Matu’aw	?alatiŋ			hayŋ	tayu?
S’uli		bəhut	bəliŋ	həziŋ	mətəyu
Squliq	qələciŋ	bəhut	bəliŋ	həziŋ	mətəzyu?

In both Matu’uwal and Plngawan, penultimate \*ə was deleted in trisyllabic words: Proto-Atayal \*qalətiŋ ‘(wooden) plank’ > Matu’uwal *qaltiŋ*, Plngawan *?altiŋ*, or Proto-Atayal \*cuməxu? ‘to pound grains (AV)’ > Matu’uwal *cumxu?*, Plngawan *cunxu?* (with nasal assimilation). In disyllabic words, Matu’uwal preserved the vowel as /ə/, but Plngawan changed it into a full vowel: either a copy of the final vowel, or /a/. For example, Proto-Atayal \*bəhut ‘squirrel’ > Matu’uwal *bəhut*, Plngawan *buhut* (vowel copying), but Proto-Atayal \*bəliŋ ‘crack, gap’ > Matu’uwal *bəliŋ*, Plngawan *balŋ*. The choice of

repair strategy is opaque when the final vowel is /a/, and can only be determined when the final vowel is high. Regrettably, there are very few items in Proto-Atayal that satisfy all the necessary conditions (disyllabic, penultimate \*ə, final high vowel) and also have a reflex in Pngawan. Apart from the items in Table 4.25, there are only two such words in my dataset: Proto-Atayal \*kəhu? ‘granary’ > Pngawan *kuhu?*, and Proto-Atayal \*ɬəɬik ‘deep’ > Pngawan *ɬaiik*. More data is required to determine the regular correspondence correctly.

Additionally, if penultimate \*ə was followed by \*ɬ, a different sound change took place in Matu’uwal. Since the regular correspondence of \*ɬ in this dialect is Ø, the application of this sound change put \*ə directly before the final vowel, where it fully assimilated, producing a hiatus with two identical vowels: Proto-Atayal \*həɬiŋ ‘honey’ > Matu’uwal *hiin*, Proto-Atayal \*matəɬu? ‘six’ > Matu’uwal *mamatuu?*.

The sequence \*ay in Proto-Atayal monophthongized into /e/ in many dialects when occurring in the penultimate syllable. In Table 4.26, all dialects except for Matu’uwal and Matu’aw have this change, although some conservative speakers of other dialects, such as Squliq or S’uli, may still preserve <ay> /aj/ in penultimate syllables. In the final syllable, Proto-Atayal \*ay is regularly reflected as <ay> /aj/ except in Pngawan, where the reflex is <iy> [i:].

Table 4.26: Correspondences of Proto-Atayal \*ay

	‘woman’	‘wind’	‘monkey’	‘yarn’
Proto-Atayal	*kanayril	*bayhuɾ	*ɾuŋay	*waɾay
Matu’uwal	kanayril	bayhuw	ʔuŋay	waiy
Skikun	kəneril	behuy	yunay	wayay
Pngawan	kanel	behuɾ	ɾuŋiy	waiiy
Klesan	kənerin	behuy	yunay	wayay
Matu’aw	kanayril	bayhuy	yunay	wayay
S’uli	kənerin	behuy	yunay	wayay
Squliq	kəneril	behuy	yunay	wayay

In Matu’uwal, Proto-Atayal final \*ay became <iy> [i:] when it was directly preceded by /a/ without an intervening consonant: \*-aay > -aiy. The only way this environ-

ment could arise was through the deletion of \*ɪ. Thus Proto-Atayal \*ɪŋay ‘monkey’ > Matu’uwal *ʔŋay*, but Proto-Atayal \*waɪay ‘yarn’ > Matu’uwal *waiy*. This also applied in words where a penultimate \*ə assimilated to /a/ after the deletion of \*ɪ: Proto-Atayal \*makəɪay ‘dry’ > Matu’uwal *makaiy*, cf. Plngawan *makɪy*, Squliq *məkəzyay*.

In parallel with \*ay, Proto-Atayal \*aw was monophthongized into /o/ in penultimate position in most dialects, except Matu’uwal and Matu’aw, though more conservative speakers of other dialects may also preserve the diphthong pronunciation. In final position, its regular reflex is /aw/ in all dialects, with the possible exception of Plngawan, as shown in Table 4.27.

Table 4.27: Correspondences of Proto-Atayal \*aw

	‘net bag’	‘eyes’	‘lightweight’	‘to cover’
Proto-Atayal	*tawkan	*raw.ɪq	*ləhəbaw	*humilaw
Matu’uwal	tawkan	rawwiq	lihəbaw	humilaw
Skikun	tokan	royiq	ləhəbaw	həmelaw
Plngawan	tokan	ro.ɪ?	lahbuw	humilaw
Klesan	tokan	royi	ləhəbaw	həmelaw
Matu’aw	tawkan	rawyi?		
S’uli		rozi	ləhəbaw	
Squliq	tokan	roziq	həbaw	helaw

Plngawan has /u:/ for Proto-Atayal \*-aw in two words in my dataset: Proto-Atayal \*ləhəbaw ‘light (weight)’ > Plngawan *lahbuw*, and Proto-Atayal \*mVhəŋaw ‘to rest’ > Plngawan *mahŋuw*. Proto-Atayal \*huxaw ‘to walk downhill’ > Plngawan *puhuaw*, and Proto-Atayal \*humilaw ‘to cover (with blanket)’ > Plngawan *humilaw*. The regular correspondence is difficult to determine from such a small set. Additionally, the Plngawan word *ʔaguw* ‘wine, alcohol’ may be a regular reflex of Proto-Atayal \*quwaw, with fortition of the medial glide (see below for reflexes of Proto-Atayal \*-uwa-), which would make it the third Plngawan word to reflect \*-aw as -uw in my dataset.

The following three correspondences are of the Proto-Atayal sequences \*-uwa-, \*-iya-, and \*-iyu-. These sequences were disyllabic in Proto-Atayal, but changed as a single unit in some dialects. The evidence that they were indeed disyllabic comes from Matu’uwal,

which retains them as disyllabic, and from sound changes. One example of such sound changes is vowel weakening in dialects like Squliq and S'uli: these sequences all behaved as two syllables with regard to the application of vowel weakening. Since there is no evidence for a light/heavy syllable distinction in Atayal, and since vowel weakening operated based on the syllable count, they must have been disyllabic. Moreover, changes of \*-uwa- and \*-iya- before \*q in Plngawan also preserve disyllabicity. The glides between two vowels may have been phonemic or strictly phonetic, but they must have been present, based on the reflexes in modern dialects. Here, I choose to write them out.

The sequence \*-uwa- in Proto-Atayal became monosyllabic in most dialects, with the exception of Matu'uwal and possibly S'uli. Other than that, it only underwent additional changes in Plngawan. The correspondences are given in Table 4.28.<sup>3</sup>

Table 4.28: Correspondences of Proto-Atayal \*-uwa-

	‘unhusked rice’	‘sister-in-law’	‘mouth’	‘rain’
Proto-Atayal	*buwax	*suwagi?	*ŋaquwaq	*quwalax
Matu'uwal	buwax	suwagi?	ŋaquwaq	quwalax
Skikun	bwax	swagi?	nəqwaq	qwalax
Plngawan	box	sogi?	ŋawa?	?awalax
Klesan	bwax	swagi	nəwa	walax
Matu'aw	bwax	swagi?	ŋa?wa?	walax
S'uli	bwax	swagi	ŋə?uwa	walax
Squliq	bwax	swagi?	nəqwaq	qwalax

In Plngawan, \*-uwa- regularly coalesced into /o/ in most cases, both when word-final and when followed by another syllable: Proto-Atayal \*buwax ‘unhusked rice’ > Plngawan *box*, Proto-Atayal \*suwagi? ‘sister-in-law’ > Plngawan *sogi?*. However, when it was immediately preceded by \*q, it changed into /awa/ instead, for example Proto-Atayal \*quwalax ‘rain’ > Plngawan *?awalax*, but compare \*qumuwalax ‘to rain’ (with

<sup>3</sup>Note that the word-initial \*ŋ in Proto-Atayal \*ŋaquwaq ‘mouth’ is sporadically changed to /n/ in Squliq, Skikun, and Klesan. This change is irregular and does not affect any other words. It may have originated in Nuclear Northern Atayal (ancestor of Squliq and Skikun) and spread to Klesan due to Squliq influence. See Section 5.5.1 for Squliq influence on Klesan and Section 6.2.1 for evidence for a Nuclear Northern Atayal subgroup.



the Actor Voice infix <um>) > Plngawan *ʔumolax*, with vowel coalescence instead. The addition of an infix split \*q away from the sequence \*-uwa-, and the regular coalescence to /o/ took place instead. The same alternation can also be seen in Proto-Atayal \**qumu*wax ‘to wash dishes (AV)’ > Plngawan *ʔumox*, but Proto-Atayal \**qu*waxan ‘to wash dishes (LV)’ > Plngawan *ʔawaxan*.

Proto-Atayal \*-iya- developed in a parallel way with \*-uwa-: it coalesced into a single syllable in most dialects, with Matu’uwal being the exception, and it regularly monophthongized into /e/ in Plngawan, as shown in Table 4.29.

Table 4.29: Correspondences of Proto-Atayal \*-iya-

	‘water’	‘pork’	‘day’	‘rim’
Proto-Atayal	*qusiyaʔ	*siyam	*qaliyan	*siyag
Matu’uwal	qusiyaʔ	siyam	qaliyan	siyag
Skikun	qəsyəʔ	syam	qəlyan	syax
Plngawan	ʔuseʔ	seŋ	ʔalen	syaw
Klesan	ʔəsyə	ʔəsyəŋ	ʔəlyan	syaw
Matu’aw	ʔusyaʔ			
S’uli	sya		ʔəlyan	syaw
Squliq	qəsyəʔ	syam	qəlyan	syaw

Plngawan changed \*-iya- to /e/ both on the right edge, and when followed by other syllables: Proto-Atayal \*qusiyaʔ ‘water’ > Plngawan *ʔuseʔ*, Proto-Atayal \**pagi*ya<sup>san</sup> ‘to run away (LV)’ > Plngawan *pa*geran. It may have had a different change following \*q, just like the case with \*-uwa-, seen in Proto-Atayal \**ma*qiyanux ‘alive’ > Plngawan *ma*yanux. There is only one item in my dataset where \*q immediately precedes \*-iya-, and there is additional vowel coalescence in Plngawan *ma*yanux. Based on the change of \*-uwa- to /awa/ before \*q, we would expect \*-iya- to change to <aya> /aja/, which is indeed the case here.

Coalescence of Proto-Atayal \*-iya- to /e/ is blocked in several Plngawan forms. One of these is *syaw* ‘rim, edge, shore’ (< Proto-Atayal \*siyag), instead of the expected \*\**sew*. Most likely, the sound change was underapplied to avoid the infelicitous sequence /ew/,

which does not appear in Pngawan. It was also not applied in the 3SG pronoun *hiya?*.

Proto-Atayal \*-iyu- developed similarly to the sequences \*-uwa- and \*-iya-, becoming monosyllabic in all dialects except Matu'uwal. In Pngawan, it regularly coalesced into a monophthong /i/, as shown in Table 4.30.

Table 4.30: Correspondences of Proto-Atayal \*-iyu-

	'to respond'	'guts'	'river'	'rope'
Proto-Atayal	*cumiyuk	*giyus	*luliyuŋ	*siniyug
Matu'uwal	cumiyuk	giyus	luliyuŋ	siniyug
Skikun	cəmyuk	gyus		sənyux
Pngawan	cumik	gis	luliŋ	sinyuw
Klesan	(cəməcyuk)	gyus	ləlyun	sənyu
Matu'aw	sumyuk	gyus	lulyuŋ	sinyuw
S'uli	səmyuk		ləlyuŋ	sənyu
Squliq	səmyuk	gyus	ləlyuŋ	sənyuw

Some words in Pngawan do not exhibit the change of \*-iyu- to /i/, for example, Proto-Atayal \*siniyug 'rope' > Pngawan *sinyuw*. It should be noted that the sequences [ju] and [iw] can sound very similar, however I recorded the form *sinyuw* as [çi.'nju:], with the syllable peak on /u/ and the vowel itself lengthened. Here, I believe the rule was underapplied to avoid the infelicitous sequence /iw/, much like with *syaw* 'rim, edge'.

There is one Pngawan word in my dataset where coalescence did not occur when expected: *lahyuŋ* 'mortar'. It is an outlier, but unlike *sinyuw* 'rope', it does not have an environment that would explain the sound change not being applied here (/hiŋ/ is a valid syllable in Pngawan, e.g. *lumuhiŋ* 'to continue', so it cannot have been to avoid an infelicitous syllable).

### 4.1.3 Prepenultimate vowel correspondences

Of the seven dialects under discussion here, only Matu'uwal, Pngawan, and Matu'aw still preserve phonemic distinctions in the third-to-last vowel (see Sections 3.1.3.3,

3.1.4.3, 3.1.7.3). It is thus possible to reconstruct vowels in the third-to-last syllable and even beyond, by using the evidence from these three dialects. In this section, I will specifically concentrate on third-to-last vowels, partly because very few roots are longer than three syllables, and partly because fourth-to-last vowels present different challenges due to vowel lenition processes.

In many cases, all three dialects agree on the third-to-last vowel, in which case the reconstruction is straightforward. The Proto-Atayal vowels \*a, \*i, and \*u can all be reconstructed this way, as shown in Table 4.31.

Table 4.31: Prepenultimate vowel correspondences with identical vowels

Proto-Atayal	Matu'uwal	Plngawan	Matu'aw	Gloss
*lamiquɿ	lamiquw	lamiʔuɿ	lamiʔuy	'Miscanthus'
*hapuniq	hapuniq	hapuniʔ	hapuniʔ	'fire'
*kahuniq	kahuniq	kahuniʔ	kahuniʔ	'tree'
*kagisiʔ	kagisiʔ	kagiriʔ	kagisiʔ	'basket'
*turakis	turakis	turakis	turakis	'foxtail millet'
*kuɾahil	kuwahil	kuɾahil	kuyahil	'skin'
*buratiŋ	buwatiŋ	buɾatiŋ	buyatiŋ	'moon'
*bunaqig	bunaqiy	bunaʔiy	bunaʔiy	'sand'
*pisaniq	pisaniq	pisaniʔ	pisaniʔ	'taboo'
*ʔitaɾal	ʔitaal	ʔitaɾal	ʔitayal	'person'

Many of the protoforms in Table 4.31 have the segments \*q or \*ɿ, which have different reflexes in these dialects. All correspondences are regular, so we can be fairly certain these words were directly inherited.

Alternations of Proto-Atayal \*ə in the final syllable of verbal roots were discussed in Section 3.2.2.2. There were also verbs with \*ə in the initial syllable of disyllabic roots, which did not surface in Matu'uwal and Plngawan when the verb was prefixed or infixed, but did appear in suffixed forms. It is reflected as /a/ in most cases, as seen in Table 4.32.<sup>4</sup>

<sup>4</sup>I do not have sufficient Matu'aw data to include it in the table, but I expect all instances of \*ə to regu-

Table 4.32: Verbs with \*CəCVC roots in Matu'uwal and Plngawan

Proto-Atayal	Matu'uwal	Plngawan	Gloss
*luməpug	lumpug	lumpuw	'to count (AV)'
*ləpəgan	lapgan	lapgan	'to count (LV)'
*ʔuməbul	(gumbul)	ʔumbul	'to bury (AV)'
*ʔəbəlun	(gablung)	ʔablun	'to bury (PV)'
*cuməpuŋ	cumpuŋ	cumpuŋ	'to measure (AV)'
*cəpəŋun	capŋun	capŋan	'to measure (PV/LV)'
*məhul	məhul	mahul	'to tie (AV)'
*bəhəlan	bahlan	bahlan	'to tie (LV)'
*qumətam	qumtam	ʔuntaŋ	'to swallow (AV)'
*qətamun	qatamun	ʔatamun	'to swallow (PV)'
*humə.ɿ?	humii?	hun.ɿ?	'to pour (AV)'
*hə.ɿ?an	hi?an	hae?an	'to pour (LV)'
*luməqiŋ	lumqiŋ	lun?iŋ	'to hide s.t. (AV)'
*ləqiŋun	laqiŋun	liŋun	'to hide s.t. (PV)'
*guməlug	gumlug	gunluw	'to accompany (AV)'
*gələgan	galgan	gilgan	'to accompany (LV)'
*kuməluh	kumluh	kunloh	'to reap (AV)'
*kələhun	kalhun	kilhun	'to reap (PV)'

When \*ə in the initial syllable of the root was followed by \*ɿ, its reflex in Matu'uwal is ∅ due to the regular deletion of \*ɿ: Proto-Atayal \*hə.ɿ?an 'to pour (LV)' > Matu'uwal *hi?an*, cf. Plngawan *hae?an*. Likewise, \*ə followed by \*q did not surface in suffixed forms in Plngawan: Proto-Atayal \*ləqiŋun 'to hide s.t. (PV)' > Plngawan *liŋun*, cf. Matu'uwal *laqiŋun*.

The verbs 'to accompany' and 'to reap' appear to be exceptions here in that Plngawan reflects /i/ instead of the regular /a/ in suffixed forms. This is most likely environmentally conditioned, although with only two items, it is difficult to properly generalize the

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larly become /a/ regardless of position, for example, Proto-Atayal \*kələhun 'to reap (PV)' > Matu'aw *kalahun*.

environment.

There are also instances of two dialects agreeing with each other, but disagreeing with the third, for example when Matu’uwal and Matu’aw have the same third-to-last vowel, but Plngawan has a different one. When comparing such evidence, it should be noted that Matu’uwal and Matu’aw are spoken in close geographical proximity, and there is interaction and intermarriage between the two communities. Therefore, a simple majority rule cannot be used here (its use is best eschewed in general), and additional evidence is required.

In Table 4.33, Matu’uwal and Matu’aw have the vowel /u/ or /i/, but Plngawan has /a/ in its cognates. Here, we have evidence to reconstruct the vowel in Matu’uwal and Matu’aw to Proto-Atayal.

Table 4.33: Plngawan /a/ vs Matu’uwal and Matu’aw /u/ and /i/

Proto-Atayal	Plngawan	Matu’uwal	Matu’aw	Gloss
*luhiyuŋ	lahyuŋ	luhiyuŋ	luhyuŋ	‘mortar’
*guqiluh	gaʔiluh	guqiluh	guʔiluh	‘banana’
*guhiluq	hagiluʔ	guhiluq	guhiluʔ	‘smoke’
*ɿimagal	ɿamagal	ʔimagal	yimagal	‘five’

There are several ways to help us determine the third-to-last vowel in these words. We can use both internal and external evidence: internal evidence comes from female register words in Matu’uwal or other dialects (the gender register system is explained in Section 5.2), and external evidence may come from Seediq or from PAn reconstructions (see also Section 4.4).

Here we have internal evidence in the form of female register forms in Matu’uwal: *luhuŋ* ‘mortar’ and *guquh* ‘banana’ (both forms are also found in Squliq and Skikun). Both these forms point to a /u/ phoneme in the initial syllable, and based on how the gender register morphology operates (most of the time using right-anchored infixes), we can generally assume the vowel in the initial syllable to remain unchanged. For the numeral ‘five’, we can look to the related word ‘fifty’ for evidence: Proto-Atayal \*maximal > Plngawan *maimal*, Matu’uwal and Matu’aw *maymal*. The numeral ‘fifty’

shows the vowel /i/ following /ɿ/ in Plngawan, so we can expect the numeral ‘five’ to share the same vowel, since the two forms share the same root and differ only in affixation.

External evidence corroborates internal evidence here. The female register form *luhun* ‘mortar’ is descended directly from PAn \*Nusun. The numeral ‘five’ has a cognate in Seediq *rima*, which comes from PAn \*lima.<sup>5</sup> The vowel in \*guhiluq cannot be supported by internal or external evidence, but is reconstructed here because it follows the same pattern.

In the correspondence set in Table 4.34, Matu’uwal has the vowel /i/ where Plngawan and Matu’aw have /a/. These words are disyllabic in Matu’uwal and Plngawan, but were originally trisyllabic in Proto-Atayal (and Matu’aw retained the three-syllable structure). The penultimate vowel in all these words was \*ə, which was regularly deleted in Matu’uwal and Plngawan in this position.

Table 4.34: Matu’uwal /i/ vs Plngawan and Matu’aw /a/

Proto-Atayal	Matu’uwal	Plngawan	Matu’aw	Gloss
*kiʔəman	kiʔman	kaman	kaʔaman	‘grass’
*giʔənux	giʔnux	(ʔapnux)	gaʔanux	‘tooth’
*kihəmaɿ	kihma	kahmaɿ	kahamay	‘thick’
*lihəmiq	(lihpiq)	lahmiʔ	lahamiʔ	‘thin’
*lalihəbun	lahibun	lahbun	lalahabun	‘stomach’
*lihəbaw	lihbaw	lahbuw		‘light (weight)’
*gihəɾaq	gihaaq	gahɾaʔ		‘cold’

In all Proto-Atayal forms in Table 4.34, the vowel in question was followed by \*h or \*ʔ, with a following \*ə. The vowel was either changed in Matu’uwal, or in both Plngawan and Matu’aw.

We know that verbs with Proto-Atayal \*ə in the initial syllable of the root have /a/ in that position in both Matu’uwal and Plngawan when suffixed (i.e. when \*ə was in the

<sup>5</sup>The numerals 2-5 in Atayal were formed using a process very similar to that of male register derivation, and so have additional segments on the right edge or near it.

third-to-last syllable). This is also true of verbs with *\*-əhə-* in the root: Proto-Atayal *\*bəhəlan* ‘to tie (LV)’ > Matu’uwal and Plngawan *bahlan*. In other words, Proto-Atayal *\*ə* in third-to-last position regularly becomes /a/ in both Matu’uwal and Plngawan. We thus know that the vowel in Table 4.34 is not *\*ə*.

Here we can use distribution to help us figure out which dialects changed the vowel. Matu’uwal allows any cardinal vowel to occur in a non-final closed syllable with coda /ʔ/ or /h/: *baʔnux* ‘flat’, *muhŋiq* ‘to rest’, *mahnuk* ‘soft’. On the other hand, in the 2000+ items that I have collected, there is not a single instance of /u/ or /i/ followed by coda /h/ in a penultimate syllable (coda /ʔ/ does not appear word-medially in Plngawan), although there are many examples of such syllables with the vowel /a/, such as those in Table 4.34. In Matu’aw, such syllables would not be closed, but would instead be followed by /a/ (< Proto-Atayal *\*ə*), but it also appears to lack high vowels in this environment. The conclusion here is that Plngawan and Matu’aw neutralized vowel distinctions in the environment  $\_ [hʔ] ə CVC$ , with all vowels in this position becoming /a/.

A similar correspondence can be found in a few other words, shown in Table 4.35. Here, the same correspondence of Matu’uwal /i/ with Plngawan and Matu’aw /a/ can be seen, but the environment is different from the one seen in Table 4.34.

Table 4.35: More correspondences of Matu’uwal /i/ with Plngawan and Matu’aw /a/

Proto-Atayal	Matu’uwal	Plngawan	Matu’aw	Gloss
<i>*kVtəhuɿ</i>	kithuw	katuhɿ		‘fat, stout’
<i>*ɿVkəhiʔ</i>	ʔikhiʔ		yakahiʔ	‘thin’
<i>*ɿVlahəŋ</i>	ʔilahəŋ	ɿahalaŋ	galahəŋ	‘broad’
<i>*mVŋilis</i>	miŋilis	maŋilis	maŋilis	‘to cry’

In the first two items, the penultimate vowel in Proto-Atayal was *\*ə* (the penultimate vowel in Plngawan *katuhuu* is irregular, cf. Squliq and Skikun *qətəhuy*, Klesan *təhuy*). This is similar to the data in Table 4.34, but the paucity of data prevents me from grouping these two words with the set with the environment  $\_ [hʔ] ə CVC$ . The environment may be broader, but more cognates are needed to say with certainty.

In the final two items, the penultima is a cardinal vowel, so this may be a different

pattern (note also the consonant metathesis in Plngawan *ʌhalaŋ*). The verb ‘to cry’ is highly irregular: the base (negative/imperative AV) is *ʔiŋilis* in Matu’uwal, but *caŋilis* in Plngawan. Additionally, it metathesizes when suffixed: Matu’uwal *liŋisan*, Plngawan *caŋisan*. In view of an irregular paradigm and irregular correspondences between dialects, this form’s reconstruction is uncertain.

There are also several words where /i/ in the third-to-last syllable in Plngawan corresponds to either /u/ or /a/ in Matu’uwal and Matu’aw. These are shown in Table 4.36. Most of these lack any supporting evidence to reconstruct the third-to-last vowel.

Table 4.36: Plngawan /i/ vs Matu’uwal and Matu’aw /u/ or /a/

Proto-Atayal	Plngawan	Matu’uwal	Matu’aw	Gloss
*ruliyug	rilyuw	ruliyug	lulyuw	‘point, top’
*tʷquɿaq	tiʔuɿaʔ	tuquwaq	tuʔuyaʔ	‘bird snare’
*cVquliq	ciʔuliʔ	cuquliq	suʔuliʔ	‘person, other’
*səpiyal	sipel	sapiyal	sumapyal	‘dream’
*hVnəɿaŋ	hinɿaŋ	hanaaŋ	hanayaŋ	‘sound’
*bVciyak	mabicek	sumbaciyaŋ		‘to strangle’

To reconstruct \*u in Proto-Atayal \*ruliyug ‘point, top’, we can use the female register form *rulug* in Matu’uwal. The derivational process here uses the right-anchored infix *-i-*, just like in the pair *luhug~luhiyug* (Li 1983: 9). Likewise for \*səpiyal ‘dream’, a female register form *səpiʔ* is found in Squliq and Skikun. There is also a PAn reconstruction, but it is ambiguous with regard to the vowel in the initial syllable: \*Sipi/\*Səpi. Apart from that, the Plngawan verb ‘to dream’ has two pronunciations: *masipel* and *maspel*. Since the vowel /i/ is not normally deleted in penultimate position, the form *maspel* provides additional evidence to reconstruct the vowel \*ə here (whereas *masipel* is likely due to paradigm leveling). Using both the female register form in Squliq and Skikun, as well as the vowel reflexes in Matu’uwal *sapiyal* and Matu’aw *sumapyal* ‘to dream’ as evidence, the form \*səpiyal ‘dream’ should be reconstructed for Proto-Atayal.

The other words in Table 4.36 do not have similar supporting evidence. In this situation, it is best to be overly cautious and not reconstruct specific vowels. However, based



on the other examples in this section, Matu'uwal preserved vowels in this position most of the time, and Plngawan changed them more often, so I would expect the vowel in Proto-Atayal to be the same as in Matu'uwal and Matu'aw in these words.

## 4.2 Proto-Atayal phoneme inventory

With the individual sound correspondences in Section 4.1 completed, they can now be unified into a table showing the full phoneme inventory of Proto-Atayal. Table 4.37 displays all the consonant phonemes that can be reconstructed for Proto-Atayal.

Table 4.37: Proto-Atayal consonant inventory

p	t	k	q	ʔ
b		g		
	c			
	s	x	h	
m	n	ŋ		
	l, r			
w	y, ɿ			

Proto-Atayal had more phonemic distinctions than any of the extant Atayal dialects, which underwent various mergers but almost no splits in their consonants (with the possible exception of Squliq [ʒ], which has quasi-phonemic status in some varieties of Squliq, see Section 3.1.1). There was a gap in voiced plosives, since Proto-Atayal, like all Atayal dialects, lacked a /d/ phoneme: Proto-Atayalic \*d had changed to Proto-Atayal \*r, but not before Proto-Atayalic \*r had changed to Proto-Atayal \*ɿ, thereby avoiding a merger.

There were thus two rhotics in Proto-Atayal: \*r and \*ɿ. We can determine the fact that \*ɿ was an approximant from its reflexes. Most importantly, Plngawan still reflects it as a separate phoneme /ɿ/. Other dialects merge it with /w/ or <y> /j/ where it is not deleted, the common feature being that /w/ and <y> /j/ are both approximants. On the other hand, Proto-Atayal \*r is still regularly reflected as /r/ in all dialects (except for instances of assimilation or neutralization in specific environments).

Proto-Atayal \*b was most likely a plosive, though it may have had fricative allophones in certain positions, especially intervocalically. Not only can it still be realized as a

plosive [b] in Plngawan, Klesan, and Skikun (Sections 3.1.4.1, 3.1.5.1, 3.1.6.1), but when it was devoiced word-finally in all dialects except Matu’uwal, it became /p/ and not /f/.

By analogy with \*b, we might assume that Proto-Atayal \*g was also plosive, and that was likely the case word-initially, to judge from Plngawan reflexes. In word-final position, \*g was probably already a fricative by Proto-Atayal, and likely even in Proto-Atayalic, judging from its reflexes in both Atayal and Seediq dialects. Unlike \*b, Proto-Atayal \*g did not become a voiceless plosive /k/ in any dialect, but instead merged variously with /x/, /w/, or Ø, depending on the dialect and the preceding vowel. The same pattern is also found in Truku Seediq, where the consonant /g/ becomes either [w] (after /a/ and /u/) or [j] (after /i/) (Lee 2010: 152).

The vowel system of Proto-Atayal was quite simple, as seen in Table 4.38. The main difference between Proto-Atayal and modern dialects is the complete lack of mid vowels.

Table 4.38: Proto-Atayal vowel inventory

i	u
ə	
a	

Proto-Atayal \*ə was limited to non-final syllables, whereas the remaining three vowels could occur in any syllable. There were also three “diphthongs” (VG sequences): \*aw, \*ay, and \*uy.

### 4.3 Proto-Atayal phonotactics

Most phonemes in Proto-Atayal could occur in any position within the word, including word-finally. The voiceless velar fricative \*x was found in word-initial position in only a single word, \*xuɿl ‘dog’. The vowel \*ə could not appear in the final syllable, but was allowed elsewhere: \*bəhut ‘squirrel’, \*kələhun ‘to reap, to harvest (PV)’.

The affricate \*c could not appear word-finally.<sup>6</sup> We can tell that word-final \*c was completely absent from Proto-Atayal by examining reflexes in S’uli and Matu’aw, which

<sup>6</sup>Note that in modern Atayal dialects, some speakers may pronounce word-final /t/ as an affricate [tʃ], however this is not a reflex of word-final \*c. This affricate pronunciation is purely phonetic, and affects all word-final /t/ segments for speakers that have it.

merge \*c and \*s into /s/. There are no instances of word-final /s/ in S’uli and Matu’aw corresponding to word-final /t/ or <c> [t͡s] in other dialects, and thus no evidence to reconstruct Proto-Atayal word-final \*c.

The syllable structure of Proto-Atayal was quite simple, with only CV and CVC syllables allowed. CVC syllables could only be word-final, except if the coda was a glide (CVG), in which case they could appear word-medially. Examples for each syllable type are given in Table 4.39.

Table 4.39: Syllable types in Proto-Atayal

Syllable type	Example	Gloss
CV	*ba.gah	‘charcoal’
CVG	*raw.niq	‘eyes’
CVC	*ha.pu.niq	‘fire’

It generally seems that in content words, the final syllable was obligatorily closed. This was not necessarily the case for function words: Proto-Atayal \*cimu ‘you (2PL.Nom)’, \*ʔuxi ‘too, also’, \*haca ‘that’. However the Proto-Atayal verb \*mahi ‘to hit’ is an apparent counterexample to this tendency, and the lack of any root-final consonant can be seen in the PV form \*bahiyun. The imperative/negative PV/LV suffix \*-i likewise did not have a final consonant (see Section 5.1 for a detailed description of the Proto-Atayal voice morphology).

Unlike its daughter language Matu’uwal, Proto-Atayal did not have a distinction between hiatuses (VV) and vowels with an intervening glottal stop (VʔV). This distinction arose in Matu’uwal after the deletion of Proto-Atayal \*ɿ. The glottal stop is preserved in Matu’uwal when (1) the two vowels were identical, as in *matbabaʔaŋ* ‘crooked’ or *mənakuʔum* ‘dark’; (2) when the first vowel was high and the second was low, as in *riʔax* ‘day’ or *ciʔax* ‘light’; or (3) when the first vowel was a \*ə in Proto-Atayal, as in *masʔaŋ* ‘to scold’ (< \*masəʔaŋ). Other dialects only preserved glottal stops in the third environment, and sporadically elsewhere. Matu’uwal does not preserve root-internal glottal stops in the fourth environment—a low vowel followed by a high vowel—except in a single word *raʔuŋ* ‘hook’ and its derivatives, though verbs ending with /-aʔ/ al-

ways retain the glottal stop when suffixed, e.g. *gibaʔun* ‘to hug, to embrace (PV)’. The Matu’uwal words *cumaʔiŋ* ‘to sew’ and *sumaʔiŋ* ‘to reap’ (and derivatives) appear to be exceptions, too, however these are male register form of the verbs *cumaqis* and *sumaqit*, respectively. No other dialect has these male register forms, so they must have been innovated in Matu’uwal after the loss of Proto-Atayal *\*ʔ* in the environment *a\_i*, thus creating a new contrast where it previously did not exist (see Section 5.2 for an explanation of the gender register system in Atayal).

If we take Matu’uwal reflexes to be the same as the original Proto-Atayal<sup>7</sup>, then we would have a phonotactically imbalanced system, where hiatuses were allowed to occur only between a low vowel and a high vowel, and only inside a root. This would make them have a complementary distribution with *VʔV* sequences. It makes more sense to reconstruct a phonemic glottal stop between all adjacent vowels, since there is no evidence for reconstructing phonemically distinct *VV* and *VʔV* sequences. That being said, the actual pronunciation of glottal stops in this position likely varied, and may have been optional (due to the lack of a phonemic contrast with true vowel clusters), like it is in Plngawan or Klesan. Reconstructing glottal stops between adjacent vowels helps distinguish such sequences from vowels with an intervening glide. See Table 4.40 for a comparison between Matu’uwal, which preserves the distinction between intervocalic glottal stops from glides, and Squliq and Skikun, which no longer contrast the two.

Table 4.40: Contrast between /iʔa/ and <iya> /ija/ in Atayal

Proto-Atayal	Matu’uwal	Squliq	Skikun	Gloss
*ciʔax	ciʔax	syax	cyax	‘light’
*siyag	siyag	syaw	syax	‘edge, rim’

Proto-Atayal did not allow CG sequences. Instead, whenever we see such a sequence in a modern Atayal dialect, Proto-Atayal had a vowel between the two, homorganic with the glide. The evidence for this comes from Matu’uwal, which still preserves these vowels, from Plngawan reflexes of such vowels after *\*q* (where two vowels surface), and

<sup>7</sup>Here we use Matu’uwal because all the other dialects deleted glottal stops in many environments where Matu’uwal did not.

from Seediq, where not only are these vowels present, but they receive stress (stress in Seediq is penultimate): Proto-Atayal \**quwalax* ‘rain’ > Matu’uwal *quwalax*, Plngawan *ʔawalax*, and Proto-Atayal \**ŋaquwaq* ‘mouth’ > Matu’uwal *ŋaquwaq*, Plngawan *ŋawaʔ*, cf. Seediq *quwaq* [‘qu.waq].

The “diphthongs” (VG sequences) \**aw* and \**ay* could occur in non-final syllables: \**raw.ɿq* ‘eyes’, \**waylun* ‘chicken’. There are no instances of non-final \**uy* in my data, though it is unclear if this was a phonotactic restriction, an accidental gap, or if my data is insufficient.

Stress in Proto-Atayal was fixed and word-final, like in all seven dialects under consideration.

## 4.4 External evidence

Apart from internal evidence, i.e. Atayal reflexes, we can also utilize external evidence to corroborate our findings and make reconstructions more precise. Here I divide external evidence into two sources: Seediq and Proto-Austronesian.

Seediq is the most closely related language to Atayal, and the two share phonological and lexical innovations that cannot be found elsewhere. This makes Seediq an excellent source of additional evidence.

Proto-Austronesian is reconstructed based on evidence in many Austronesian languages, both in Taiwan and outside it (through the Malayo-Polynesian branch). It gives us a chronologically deep look into the workings of the family, but can help with some phonemes in Proto-Atayal specifically.

### 4.4.1 Evidence from Seediq

Seediq provides supporting evidence for the syllabic structure described in Section 4.3, namely disyllabic CVGVC sequences in such words as Proto-Atayal \**ŋaquwaq* ‘mouth’, \**kuwiʔ* ‘insect’, \**cumi-yuk* ‘to answer, to respond’, as opposed to reconstructing CGVC monosyllables. Stress in Seediq is penultimate (Tsukida 2005: 293), thus the cognates of the aforementioned words are pronounced [‘qu.waq] ‘mouth’, [‘ku.wi] ‘insect’, and [cə.mi.yuk] ‘to answer’, respectively. The vowel preceding its homorganic glide receives

stress in Seediq, which adds weight to evidence from Matu'uwal that a phonemic vowel was indeed present there in Proto-Atayal.

Seediq also supports reconstructing a \*ə vowel in Proto-Atayal, again thanks to its penultimate stress. The distribution of vowels in Seediq is the same as in Atayal, i.e. schwa does not appear in the final syllable, however penultimate schwa can receive stress (Tsukida 2005: 292–293). This stressed schwa is generally regarded as phonemic. The presence of \*ə in Proto-Atayal is doubtless, due to the various reflexes in its daughter languages, though its phonemic status may be disputed.

Seediq can be used to support the reconstruction of certain phonemes, especially in etyma with insufficient internal evidence. In words without Plngawan reflexes, Seediq cognates can help identify the presence of Proto-Atayal \*ɾ (which corresponds to Seediq /r/), for example, in Proto-Atayal \*paɾih 'hoe' and \*kumaɾi? 'to dig', cf. Seediq *parih* and *kəməri*, respectively (Truku dialect).

Another correspondence where Seediq is helpful is Proto-Atayal word-final \*-ig. No Atayal dialect preserves final \*g in this environment, however we do know that it existed in Proto-Atayal, based on Paul Li's notes on Matu'aw circa 1980, when it was still preserved by older speakers (Li 1980a, 1981, 1982a). At the same time, not all instances of word-final long /i:/ can automatically be reconstructed as \*-ig (see discussion on \*mahi~bahiyun in Section 4.3). Several dialects of Seediq preserve a final /g/ or /r/ in these words, compare Proto-Atayal \*wahig 'vine' and Truku *wahir*, Proto-Atayal \*mabaɾig 'to buy' and Seediq *marig*, Proto-Atayal \*kəgig 'hemp, ramie' and Truku *kərig*.<sup>8</sup>

I also used Seediq evidence to reconstruct Proto-Atayal word-final \*-lit in words with final /t/ in some dialects corresponding to /ʔ/ in others. Differences in the distribution of phonemes between Atayal dialects led me to reconstruct \*-t in Proto-Atayal, and Seediq cognates support that conclusion. See Section 4.6.1 for an in-depth explanation.

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<sup>8</sup>In Truku Seediq, phonemic /g/ undergoes lenition in word-final position, becoming [w] when preceded by /u/ or /a/, and [j] when preceded by /i/ (Lee 2010: 152).

### 4.4.2 Evidence from PAn reconstructions

There are relatively few Proto-Austronesian etyma with reflexes in Atayal, and they rarely provide crucial evidence for reconstructing phonemes (they are more useful in determining lexical retentions, see Section 5.6.2). However, they can still serve as additional evidence for Proto-Atayal reconstructions. At the same time, care should be taken not to give too much weight to Proto-Austronesian reconstructions at the expense of internal evidence from Atayal.

In Section 4.6.1 I used PAn \*qaNiC ‘skin, hide’ as evidence against Li’s argument for reconstructing \*d in Proto-Atayalic for words that variously have a reflex of /t/ or /ʔ/ in word-final position in different Atayal dialects. Li originally used the PAn etymon \*paNid ‘wing’ to argue that the origin of these reflexes was a voiced plosive that was lost in all dialects of Atayal and Seediq. PAn \*qaNiC ‘skin, hide’ supports an alternative hypothesis that the reflexes do not come from a unique phoneme, and are instead environmentally conditioned. See Section 4.6.1 for full discussion.

Proto-Austronesian \*l is reflected in Proto-Atayal as \*ɿ, for example PAn \*walay ‘yarn’ > Proto-Atayal \*waɿay. PAn protoforms can be used to reconstruct \*ɿ in Proto-Atayal in cases where internal evidence is insufficient, as in PAn \*Cali ‘taro’ > Proto-Atayal \*caiɿʔ, of which the only remaining reflex is Matu’uwal *caiʔ* (the other dialects all use a different form).

PAn etyma may provide additional evidence for reconstructing vowels, especially Proto-Atayal \*ə: PAn \*təlu ‘three’ > Proto-Atayal \*təɾugal, with an additional suffix -gal, cf. also Proto-Atayal \*matəɿʔ ‘six’ and \*matəɿul ‘thirty’. They may also be used when reconstructing vowels in the third-to-last syllable, as in PAn \*qaSəlu ‘pestle’ > Proto-Atayal \*qasəɿʔ, or PAn \*qaRidaŋ ‘beans, peas’ > Proto-Atayal \*qagiraŋ ‘cowpeas’. See Sections 4.1.2, 4.1.3 for more information on reconstructing vowels.

Proto-Austronesian reconstructions can also help identify irregular correspondences in Atayal dialects. For example, PAn \*N is regularly reflected as Proto-Atayal \*l, so the correspondence of PAn \*wanaN ‘right hand side’ is regular in Plngawan and Matu’aw *ʔanaliʔ* (with an additional suffix -iʔ), but irregular in Matu’uwal *ʔanan*. Likewise, PAn \*C > Proto-Atayal \*c, so PAn \*baCaR ‘proso millet’ is regularly reflected in Skikun *ba-*

*cyax*<sup>9</sup> and S’uli *basaw*, while Matu’uwal *basag* is irregular. Regular correspondences of PAn protophonemes to Proto-Atayal are listed in Section 4.7.

## 4.5 Sound changes from Proto-Atayal to Atayal dialects

This section lists all regular sound changes from Proto-Atayal to each of the seven dialects under study. Chronological relationships between sound changes in the same dialect are given where applicable. Changes that only affect some speakers of a dialect, and sporadically recurring changes (i.e. non-systematic changes that occur in more than a single word), are mentioned separately.

The same sound change may occur in different dialects, but that does not necessarily mean that it is a shared innovation. Instead, we can prove that at least some of these identical sound changes happened independently. See Chapter 6 for more details.

### 4.5.1 Sound changes from Proto-Atayal to Squliq

The following regular sound changes from Proto-Atayal to Squliq can be identified:

1. *\*c, \*s > s*. The affricate *\*c* fully and unconditionally merged into *\*s*: Proto-Atayal *\*cumaqis* ‘to sew’ > Squliq *səmaqis*, Proto-Atayal *\*bicug* ‘worm’ > Squliq *bisuw*.
2. *\*ɻ, \*y > y*. The retroflex approximant *\*ɻ* fully and unconditionally merged into *\*y*: Proto-Atayal *\*ɻuŋay* ‘monkey’ > Squliq *yunay*, Proto-Atayal *\*waɻay* ‘yarn’ > Squliq *wayay*, Proto-Atayal *\*malikuɻ* ‘man, husband’ > Squliq *məlikuy*.
3. *\*t > c / \_i, y*. The coronal plosive *\*t* was affricated before the high front vowel or its corresponding glide: Proto-Atayal *\*timuʔ* ‘salt’ > Squliq *cimuʔ*, Proto-Atayal *\*taɻasiʔ* ‘straw hat’ > Squliq *cyasiʔ*. Strictly speaking, this <c> /t͡s/ is an allophone of /t/ in this position, but this change is useful in determining the relative chronology of other sound changes, see below.

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<sup>9</sup>Some words in Skikun, S’uli, and Klesan have sporadic palatalization that most commonly affects the phonemes /s/ and <c> /t͡s/.



4. **Vowel lenition.** Vowels outside the rightmost foot, i.e. third-to-last syllable and beyond, were lenited into /ə/: Proto-Atayal \*kanayril ‘woman’ > Squliq *kəneril*, Proto-Atayal *turakis* ‘foxtail millet’ > Squliq *tərakis*, Proto-Atayal *pisaniq* ‘taboo’ > Squliq *pəsaniq*. This did not affect some words with \*ay in the third-to-last syllable, namely Proto-Atayal \*baytaqan ‘to stab (PV)’ > Squliq *betaqan*, Proto-Atayal \*baytunux ‘beautiful’ > Squliq *betunux*, and maybe Proto-Atayal \*bVʔənux > Squliq *beʔənux* (though the vowel in the last etymon is uncertain). However, in other cases Squliq did not preserve \*ay in the same environment: Proto-Atayal \*tayhəkan ‘to arrive (LV)’ > Squliq *təhəkan*, Proto-Atayal \*qayqayaʔ ‘thing’ > Squliq *qəqayaʔ* (cf. Plngawan *ʔayʔayaʔ*, Skikun *qeqayaʔ*).

Note that in the AV infix *-əm-* and AV prefix *mə-* the vowel is lenited even if it falls on the penultimate syllable. The voice morphology is discussed in Section 5.1.

5. **Vowel coalescence.** In Proto-Atayal words of the shape ...CVʔVC, i.e. with a glottal stop between the penultimate and ultimate vowel, and where the penultima was a cardinal vowel (not a schwa), the glottal stop was deleted and the vowel cluster resolved. When the vowels were identical, they merged into a single vowel with the same properties: Proto-Atayal \*mVnakuʔum ‘dark’ > Squliq *mənəkum*. When the penultima was a low vowel \*a, and the ultima a high vowel, they merged into a mid vowel: Proto-Atayal \*raʔuŋ ‘hook (for hanging things)’ > Squliq *kəron*, Proto-Atayal \*baʔis ‘partner, spouse’ > Squliq *bes*. When the penultima was a high vowel and the ultima a low vowel, the high vowel became a glide and the two syllables merged into a single CGVC syllable: Proto-Atayal \*riʔax ‘day’ > Squliq *ryax*. See also Section 3.2.2.3 for an overview of vowel coalescence in the synchronic grammars of various Atayal dialects.

This process was combined with the **monophthongization of offglides** in the penultima. The offglides \*aw and \*ay were monophthongized into mid vowels, but only in the penultimate syllable: Proto-Atayal \*tawkan ‘net bag carried on back’ > Squliq *tokan*, Proto-Atayal \*haylag ‘fast’ > Squliq *helaw*.

6. \*g > w /a\_#; > Ø /V\_#. Proto-Atayal word-final \*-g was changed in one of two ways in Squliq, depending on the preceding vowel. When preceded by \*a, it

merged with \*w: Proto-Atayal \*ʔurag ‘dirt’ > Squliq *ʔuraw*. When preceded by a high vowel, it was deleted, and the vowel was lengthened: Proto-Atayal \*kægig ‘hemp, ramie’ > Squliq *kəgiy*, Proto-Atayal \*bicug ‘worm’ > Squliq *bisuw*.

7. **\*b > p / \_#**. Proto-Atayal \*b was devoiced into /p/ in word-final position in Squliq: Proto-Atayal \*humab ‘to stab, to spear’ > Squliq *həmap*. In verbal roots, it can be seen after suffixation, see Section 3.2.1.1 for more details.
8. **Rhotacism: \*s > r /i\_Ÿ**. Proto-Atayal \*s becomes /r/ in Squliq under very specific conditions: only when it is preceded by \*i and followed by a stressed vowel (i.e. final vowel). For example, Proto-Atayal \*pisaʔ ‘how many’ > Squliq *piraʔ*, Proto-Atayal \*ʔisah ‘older brother’s wife’ > Squliq *ʔirah*.

If the vowel preceding \*s is anything other than \*i, rhotacism does not occur, e.g. Proto-Atayal \*musaʔ ‘to go (AV)’ > Squliq *musaʔ*. Rhotacism is also blocked if \*s does not immediately precede stress: Proto-Atayal \*pisaniq ‘taboo’ > Squliq *pəsaniq*.

Due to intraparadigmatic pressure, verbs with root-final /-is/ were not affected: Proto-Atayal \*cumaqis ‘to sew (AV)’ and \*caqisun ‘to sew (PV)’ > Squliq *səmaqis* and *səqisun*. However, the rule did affect verbs that had \*g to \*s alternation in Proto-Atayal (∅ to /s/ in most modern dialects, see Section 3.2.1.5): Proto-Atayal \*mabaig ‘to buy (AV)’ and \*baisun ‘to buy (PV)’ > Squliq *məbazi*y and *bəzirun*.

9. **Liquid assimilation**. When a Proto-Atayal word had an onset \*r followed by an onset \*l, the first \*r became /l/ in Squliq: Proto-Atayal \*raluʔ ‘name’ > Squliq *laluʔ*. This rule was not applied when the second liquid was in coda position, either in the same syllable or in a different one: Proto-Atayal \*kanayril ‘woman’ > Squliq *kəneril*, Proto-Atayal \*rapal ‘sole (of foot)’ > Squliq *rapal*.
10. **Dorsal harmony**. Proto-Atayal \*k became /q/ in Squliq if it was followed by \*q anywhere in the word, and sometimes when followed by \*h. The harmony with \*q was exceptionless, according to my data: Proto-Atayal \*kuriq ‘to steal’ > Squliq *məquriq* (cf. Klesan *məkuri*), Proto-Atayal \*kisəliq ‘to love, to like’ > Squliq *qəsəliq* (cf. Matu’uwal *kisliq*). When followed by \*h, \*k was backed in

some words, but not others: Proto-Atayal \*kVtəhuɪ ‘fat, stout’ > Squliq *qətəhuy*, Proto-Atayal \*kahuy ‘tree’ > Squliq *qahuy* ‘firewood’, Proto-Atayal \*kumayhuɪ ‘to dig’ > Squliq *qəmiɬuy*, but Proto-Atayal \*kuhiŋ ‘head louse’ > Squliq *kuhiŋ*, Proto-Atayal \*kəhuʔ ‘granary’ > Squliq *kəhuʔ*. Proto-Atayal \*k may also be sporadically backed into /q/ without any conditioning environment, see below for some examples.

11. \*-lit > -liʔ. In this very specific sound change, the Proto-Atayal final syllables \*-lit and \*-liʔ were merged into -liʔ in Squliq: Proto-Atayal \*qabulit ‘ash’ > Squliq *qəbuliʔ*, cf. Plngawan *ʔabulit*. See Section 4.6.1 for a detailed explanation.
12. **Fortition of \*w before schwa.** In trisyllabic words where the first syllable began with \*w, it was fortitioned into a fricative: Proto-Atayal \*waqanux ‘sambar deer’ > Squliq *bəqanux*, Proto-Atayal \*waciluŋ ‘pond, lake’ > Squliq *bəsiluŋ*, Proto-Atayal \*wariyuŋ ‘neck’ > Squliq *gəryuŋ*. This was likely a repair strategy to avoid an illegal /wə/ sequence. The choice between /b/ and /g/ is unclear, as the aforementioned three lexical items are the only examples of this change.

The following ordering requirements can be defined for the above sound changes:

- 1 > 3 (merger of \*c and \*s preceded affrication of \*t): Proto-Atayal \*timuʔ ‘salt’ > Squliq *cimuʔ* instead of \*\*simuʔ.
- 2 > 3 (merger of \*ɪ and \*y preceded affrication of \*t): Proto-Atayal \*təɽugal ‘three’ > Squliq *cyugal* instead of \*\*tyugal (cf. Skikun *tyugal*).
- 4 > 5 (vowel lenition preceded vowel coalescence): Proto-Atayal \*mVnakuʔum ‘dark’ > Squliq *mənəkum* instead of \*\*mənakum.
- 8 > 1 (rhotacism preceded merger of \*c and \*s): Proto-Atayal \*bicug > Squliq *bisuw* instead of \*\*biruw.
- 4 > 12 (vowel lenition preceded \*w fortition): Proto-Atayal \*waqanux > Squliq *bəqanux* instead of \*\*wəqanux.

An alternative analysis of 4 > 5 (vowel lenition preceding vowel coalescence) is to assume that both coalescence and lenition are synchronic processes. This was mentioned in Section 3.2.2.3 as a possible analysis of synchronic vowel alternations induced by

suffixation, e.g. Squliq /kitaʔ/ + /-an/ > /kətan/ ‘to see (LV)’. If the coalesced vowel is analyzed as bimoraic, then the final syllable may constitute its own foot, and vowel lenition can apply everywhere outside the head foot: /kə.(tan)/. However, in unsuffixed forms such as *mənəkum* ‘dark’ this requires extra steps: we would have to assume that the UR contains either two vowels which are coalesced in the surface representation (/mV.nV.ku.ʔum/), or that the final vowel is bimoraic in the UR (/mV.nV.(kum)/). Using rule ordering shifts the burden from synchronic to diachronic phonology, and arguably makes the analysis simpler in the process. Ultimately, both are possible interpretations, but the rule ordering analysis is assumed here for Squliq and other dialects where it applies.

Apart from the regular sound changes described above, other changes in Squliq may be identified, but may be limited to certain speakers, or else sporadic:

- Word-final \*l may be merged into /n/, especially by younger speakers.
- Proto-Atayal \*k may be backed into /q/ sporadically and without any conditioning factors: Proto-Atayal \*kuwalit ‘eagle’ > Squliq *qwaliʔ*. More prominently, this happened in the nominal case markers and qeictics of Squliq: compare Squliq *qu* and Matu’uwal *ku*, both nominative case markers; or Squliq *qani* ‘this’ and *qasa* ‘that’ with Plngawan *kani* ‘this’ and *kaca* ‘that’.
- The glide <y> /j/ has a fricative allophone [z] that may be analyzed as a marginal phoneme in some varieties of Squliq, but not in others (H. Huang 2015a).
- In parallel with <y> /j/, /w/ may also be optionally fortitioned into /g/ even when followed by cardinal vowels. This gives rise to variant forms such as *wagiʔ* and *gwagiʔ* ‘Sun’ (< Proto-Atayal \*wagiʔ), or *wagiq* and *gwagiq* ‘tall’ (< Proto-Atayal \*bawiq). Due to the optional nature and limited distribution of this change, it is likely more recent than <y> /j/ allophony.
- Some apparently irregular correspondences may also be explained through the regularization of irregular verbal paradigms. This is discussed in detail in Section 5.4.

### 4.5.2 Sound changes from Proto-Atayal to S'uli

The following regular sound changes from Proto-Atayal to S'uli can be indentified:

1. \*c, \*s > s. The affricate \*c fully and unconditionally merged into \*s: Proto-Atayal \*cumiyuk 'to reply, to answer' > S'uli səmɣuk, Proto-Atayal \*bicug 'worm' > S'uli bisuw.
  2. \*q, \*ʔ > ʔ. Proto-Atayal \*q merged into the glottal stop /ʔ/ in S'uli: Proto-Atayal \*qawlit 'mouse' > S'uli ʔolit, Proto-Atayal \*taqur 'crow' > S'uli taʔuy.
  3. \*ɻ, \*y > y. The retroflex approximant \*ɻ fully and unconditionally merged into \*y: Proto-Atayal \*ɻunɣay 'monkey' > S'uli yunɣay, Proto-Atayal \*waxay 'yarn' > S'uli wayay, Proto-Atayal \*qihur 'horn' > S'uli ʔihuy.
  4. \*l, \*n > n / \_#. Proto-Atayal \*l merges with \*n word-finally: Proto-Atayal \*xutil 'dog' > S'uli huzin. Unlike other dialects, where this merger is mostly limited to younger, more innovative speakers, this sound change in S'uli appears complete.
  5. **Vowel lenition.** Vowels outside the rightmost foot, i.e. third-to-last syllable and beyond, were lenited into /ə/: Proto-Atayal \*kanayril 'woman' > S'uli kənerin, Proto-Atayal turakis 'foxtail millet' > S'uli tərakis, Proto-Atayal pisaniq 'taboo' > S'uli pəsani. The apparent exception betunux 'pretty, beautiful' (< Proto-Atayal \*baytunux) may be due to influence from Squliq.
- Note that in the AV infix -əm- and AV prefix mə- the vowel is lenited even if it falls on the penultimate syllable. The voice morphology is discussed in Section 5.1.
6. **Vowel coalescence.** In Proto-Atayal words of the shape ...CVʔVC, i.e. with a glottal stop between the penultimate and ultimate vowel, and where the penultima was a cardinal vowel (not a schwa), the glottal stop was deleted and the vowel cluster resolved. When the vowels were identical, they merged into a single vowel with the same properties: Proto-Atayal \*biʔinɣ 'to hold in hand' > S'uli biŋ.<sup>10</sup> When the penultima was a high vowel and the ultima a low vowel, the high vowel became a glide and the two syllables merged into a single CGVC syllable: Proto-Atayal

<sup>10</sup>S'uli məkuʔum 'dark' (< Proto-Atayal \*mVnakuʔum) is an exception to this rule.

\*riʔax ‘day’ > S’uli *ryax*. See also Section 3.2.2.3 for an overview of vowel coalescence in the synchronic grammars of various Atayal dialects.

When the penultima was a low vowel \*a, and the ultima a high vowel, the two syllables first merged into a single syllable with an offglide. This offglide was later monophthongized into mid vowels (rule 11), but not before the deletion of final glottal stops (rule 10). Thus we see Proto-Atayal \*raʔum ‘needle’ > S’uli *rom*, Proto-Atayal \*baʔis ‘partner, spouse’ > S’uli *bes*, but Proto-Atayal \*suwaʔiʔ ‘younger sibling’ > S’uli *sway*.

7. \*g > w /a\_#; > Ø /V\_#. Proto-Atayal word-final \*-g was changed in one of two ways in S’uli, depending on the preceding vowel. When preceded by \*a, it merged with \*w: Proto-Atayal \*siyag ‘edge, rim’ > S’uli *syaw*. When preceded by a high vowel, it was deleted: Proto-Atayal \*kəgig ‘hemp, ramie’ > S’uli *kəgi*, Proto-Atayal \*bicug ‘worm’ > S’uli *bisu*.
8. \*b > p /\_#. Proto-Atayal \*b was devoiced into /p/ in word-final position in S’uli: Proto-Atayal \*masuab ‘to yawn’ > S’uli *məsuyap*. In verbal roots, it can be seen after suffixation, see Section 3.2.1.1 for more details.
9. **Liquid assimilation.** When a Proto-Atayal word had an onset \*r followed by an onset \*l, the first \*r became /l/ in S’uli: Proto-Atayal \*raluʔ ‘name’ > S’uli *lalu*. This rule was not applied when the second liquid was in coda position, either in the same syllable or in a different one (although in S’uli \*l > n word-finally, see rule 4): Proto-Atayal \*kanayril ‘woman’ > S’uli *kənerin*, Proto-Atayal \*masiraŋil > S’uli *məsəraŋin*.
10. \*ʔ > Ø /\_#. Glottal stops were lost in word-final position in S’uli: Proto-Atayal \*kəhuʔ ‘granary’ > S’uli *kəhu* (see also Section 3.1.2.3). This influenced vowel coalescence, so that vowel sequences preceding a final glottal stop did not coalesce, but instead remained as offglides: Proto-Atayal \*suwaʔiʔ ‘younger sibling’ > S’uli *sway* (cf. Squliq *səsweʔ*, Klesan *səswe*). This also affected words with final \*q in Proto-Atayal: Proto-Atayal \*raraʔuq ‘low, short’ > S’uli *rəraw* (cf. Squliq *rəroq*, Klesan *rərow*).

11. **Monophthongization of offglides.** The offglides \*aw and \*ay were monophthongized into mid vowels, unless they were word-final: Proto-Atayal \*raw.iq ‘eyes’ > S’uli *rozi*, Proto-Atayal \*haylag ‘fast’ > S’uli *helaw*.

The following ordering requirements can be defined for the sound changes in S’uli:

- 5 > 6 (vowel lenition preceded vowel coalescence): Proto-Atayal \*galaʔiŋ ‘front’ > S’uli *gəleŋ* instead of \*\*galeng.
- 6 > 2 (vowel coalescence preceded \*q > ʔ): Proto-Atayal \*baqun ‘to know (PV)’ > S’uli *baʔun* instead of \*\*bon.
- 2 > 10 (\*q > ʔ preceded loss of final glottal stops): Proto-Atayal \*raraʔuq ‘low, short’ > S’uli *rəraw* instead of \*\*rəroʔ.
- 10 > 11 (loss of final glottal stops preceded the monophthongization of offglides): Proto-Atayal \*suwaʔiʔ ‘younger sibling’ > S’uli *sway* instead of \*\*swe.

Some phonological phenomena that do not qualify as systematic sound changes include:

- The central vowel /ə/ may be lowered to /a/ and merge with it completely in the speech of some speakers.
- The palatal glide <y> /j/ has a fricative allophone [ʒ] before the vowel /i/. Its distribution is more limited than the similar allophone in Squliq.
- The sound change t > c /\_i seemingly appears in some words, but not others, and sometimes two variants of a single word may be accepted, e.g. *tugan* or *cyugan* ‘three’, *byatiŋ* or *byaciŋ* ‘moon’. Since the data does not show a systematic change (and moreover there are even competing variants), the affrication is most likely due to influence from Squliq.

### 4.5.3 Sound changes from Proto-Atayal to Skikun

The following regular sound changes from Proto-Atayal to Skikun can be identified:

1. \*ɿ, \*y > y. The retroflex approximant \*ɿ fully and unconditionally merged into \*y: Proto-Atayal \*ɿuŋay ‘monkey’ > Skikun *yunay*, Proto-Atayal \*waray ‘yarn’ > Skikun *wayay*, Proto-Atayal \*malikuɿ ‘man, husband’ > Skikun *məlikuy*.

2. **\*t > c / \_i.** The coronal plosive \*t was affricated before the high front vowel or its corresponding glide: Proto-Atayal \*timu? ‘salt’ > Skikun *cimu?*, Proto-Atayal \*qalətiŋ ‘wooden plank’ > Skikun *qələciŋ*. Unlike Squliq, \*ɪ > y did not cause a preceding \*t to affricate: Proto-Atayal \*taɾasi? ‘straw hat’ > Skikun *tyasi?*, Proto-Atayal \*təɾugal ‘three’ > Skikun *tyugal*.
3. **Vowel lenition.** Vowels outside the rightmost foot, i.e. third-to-last syllable and beyond, were lenited into /ə/: Proto-Atayal \*kanayril ‘woman’ > Skikun *kəneril*, Proto-Atayal *turakis* ‘foxtail millet’ > Skikun *tərakis*, Proto-Atayal *pisaniq* ‘taboo’ > Skikun *pəsaniq*. There are at least two exceptions with \*ay in the third-to-last syllable: Proto-Atayal \*baytunux ‘beautiful’ > Skikun *betunux*, Proto-Atayal \*qayqaya? ‘thing’ > Skikun *qeqaya?*.

Note that in the AV infix *-əm-* and AV prefix *mə-* the vowel is lenited even if it falls on the penultimate syllable. The voice morphology is discussed in Section 5.1.

4. **Vowel coalescence.** In Proto-Atayal words of the shape ...CV?VC, i.e. with a glottal stop between the penultimate and ultimate vowel, and where the penultima was a cardinal vowel (not a schwa), the glottal stop was deleted and the vowel cluster resolved. When the vowels were identical, they merged into a single vowel with the same properties: Proto-Atayal \*mVnaku?um ‘dark’ > Skikun *mənəkum*. When the penultima was a low vowel \*a, and the ultima a high vowel, they merged into a mid vowel: Proto-Atayal \*ra?uŋ ‘hook (for hanging things)’ > Skikun *rəroŋ*, Proto-Atayal \*ba?is ‘partner, spouse’ > Skikun *bes*. When the penultima was a high vowel and the ultima a low vowel, the high vowel became a glide and the two syllables merged into a single CGVC syllable: Proto-Atayal \*ri?ax ‘day’ > Skikun *ryax*. See also Section 3.2.2.3 for an overview of vowel coalescence in the synchronic grammars of various Atayal dialects.

This process was combined with the **monophthongization of offglides** in the penultima. The offglides \*aw and \*ay were monophthongized into mid vowels, but only in the penultimate syllable: Proto-Atayal \*tawkan ‘net bag carried on back’ > Skikun *tokan*, Proto-Atayal \*haylag ‘fast’ > Skikun *helax*.



5. **\*g devoicing.** Proto-Atayal \*g was regularly devoiced in word-final position, merging with \*x: Proto-Atayal \*murag ‘house’ > Skikun *muyax*, Proto-Atayal \*siniyug ‘rope’ > Skikun *sənyux*. Word-finally after \*i, \*g was deleted instead, with compensatory lengthening on the vowel: Proto-Atayal \*tulaqig ‘eel’ > Skikun *təlaqiy*. This deletion may have taken place prior to devoicing.

Skikun /g/ is also quite frequently devoiced word-initially, and /x/ voiced intervocalically, to the point where it may no longer be necessary to separate them into two phonemes. However, this problem requires additional study before drawing a conclusion one way or the other. See also discussion in Section 3.1.6.1.

6. **\*b > p / \_#.** Proto-Atayal \*b was devoiced into /p/ in word-final position in Skikun: Proto-Atayal \*humab ‘to stab, to spear’ > Skikun *həmap*. In verbal roots, \*b will generally surface as /b/ after suffixation, see Section 3.2.1.1 for more details.
7. **Liquid assimilation.** When a Proto-Atayal word had an onset \*r followed by an onset \*l, the first \*r became /l/ in Skikun: Proto-Atayal \*ralu? ‘name’ > Skikun *lalu?*. This rule was not applied when the second liquid was in coda position, either in the same syllable or in a different one: Proto-Atayal \*kanayril ‘woman’ > Skikun *kəneril*, Proto-Atayal \*rapal ‘sole (of foot)’ > Skikun *rapal*.
8. **Dorsal harmony.** Proto-Atayal \*k became /q/ in Skikun if it was followed by \*q anywhere in the word. The harmony with \*q was exceptionless, according to my data: Proto-Atayal \*kuriq ‘to steal’ > Skikun *məquriq* (cf. Klesan *məkuri*), Proto-Atayal \*kisəliq ‘to love, to like’ > Skikun *qəsəliq* (cf. Matu’uwal *kisliq*). It was also backed in Proto-Atayal \*kVtəhuɪ ‘fat, stout’ > Skikun *qətəhuy*, and Proto-Atayal \*kapah ‘to stick’ > Skikun *qəmapah*, but unlike Squliq, there is no systematic backing of \*k before \*q, so these two words may be borrowed from Squliq.
9. **\*-lit > -liʔ.** In this very specific sound change, the Proto-Atayal final syllables \*-lit and \*-liʔ were merged into -liʔ in Skikun: Proto-Atayal \*qabulit ‘ash’ > Skikun *qəbuliʔ*, cf. Plngawan *ʔabulit*. See Section 4.6.1 for a detailed explanation.
10. **Fortition of \*w before schwa.** In trisyllabic words where the first syllable began with \*w, it was fortitioned into a fricative: Proto-Atayal \*waqanux ‘sambar deer’

> Skikun *bəqanux*, Proto-Atayal \*wacilun̄ ‘pond, lake’ > Skikun *bəcilun̄*, Proto-Atayal \*wariyun̄ ‘neck’ > Skikun *gəryun̄*. This was likely a repair strategy to avoid an illegal /wə/ sequence. The choice between /b/ and /g/ is unclear, as the aforementioned three lexical items are the only examples of this change. The words are also identical to those in Squliq, but with a regular correspondence of <c> /t͡s/ and /s/ between Skikun *bəcilun̄* and Squliq *bəsilun̄* ‘pond, lake’.

The following ordering requirements can be defined for the sound changes in Skikun:

- 3 > 4 (vowel lenition preceded vowel coalescence): Proto-Atayal \*mVnakuʔum ‘dark’ > Skikun *mənəkum* instead of \*\*mənakum.
- 3 > 10 (vowel lenition preceded \*w fortition): Proto-Atayal \*waqanux > Skikun *bəqanux* instead of \*\*wəqanux.

The following are ongoing and spontaneous changes in Skikun:

- Word-final \*l may be merged into /n/ in Skikun, especially by younger speakers, though more conservative speakers still retain the distinction.
- The phoneme <c> /t͡s/ or /s/ was spontaneously palatalized in some words: Proto-Atayal \*maculiŋ ‘to burn (intr.)’ > Skikun *məcyuliŋ*; Skikun *cyuŋaʔ*, cf. Matu’uwal *cuŋaʔ*; Skikun *syupan* ‘bottle’, cf. Klesan *supan*.

#### 4.5.4 Sound changes from Proto-Atayal to Klesan

The following regular sound changes from Proto-Atayal to Klesan can be identified:

1. \*q, \*ʔ > ʔ. Proto-Atayal \*q merged into the glottal stop /ʔ/ in Klesan: Proto-Atayal \*qawlit ‘mouse’ > Klesan *ʔolit*, Proto-Atayal \*taquɿ ‘crow’ > Klesan *taʔuy*.
2. \*ɿ, \*y > y. The retroflex approximant \*ɿ fully and unconditionally merged into \*y: Proto-Atayal \*ɿun̄jay ‘monkey’ > Klesan *yun̄jay*, Proto-Atayal \*waray ‘yarn’ > Klesan *wayay*, Proto-Atayal \*malikuɿ ‘man, husband’ > Klesan *məlikuy*.
3. **Vowel lenition.** Vowels outside the rightmost foot, i.e. third-to-last syllable and beyond, were lenited into /ə/: Proto-Atayal \*kanayril ‘woman’ > Klesan *kənerin*,

Proto-Atayal *turakis* ‘foxtail millet’ > Klesan *tərakis*, Proto-Atayal *pisaniq* ‘taboo’ > Klesan *pəsani*.

Note that in the AV infix *-əm-* and AV prefix *mə-* the vowel is lenited even if it falls on the penultimate syllable. The voice morphology is discussed in Section 5.1.

4. **Vowel coalescence.** In Proto-Atayal words of the shape ...CV?VC, i.e. with a glottal stop between the penultimate and ultimate vowel, and where the penultima was a cardinal vowel (not a schwa), the glottal stop was deleted and the vowel cluster resolved. When the vowels were identical, they merged into a single vowel with the same properties: Proto-Atayal *\*miʔiŋ* ‘to hold in hand’ > Klesan *miŋ*. When the penultima was a low vowel *\*a*, and the ultima a high vowel, they merged into a mid vowel: Proto-Atayal *\*kaʔur* ‘Taiwan beauty snake (錦蛇)’ > Klesan *kor*, Proto-Atayal *\*baʔis* ‘partner, spouse’ > Klesan *bes*. When the penultima was a high vowel and the ultima a low vowel, the high vowel became a glide and the two syllables merged into a single CGVC syllable: Proto-Atayal *\*riʔax* ‘day’ > Klesan *ryax*. See also Section 3.2.2.3 for an overview of vowel coalescence in the synchronic grammars of various Atayal dialects.

This process was combined with the **monophthongization of offglides** in the penultima. The offglides *\*aw* and *\*ay* were monophthongized into mid vowels, but only in the penultimate syllable: Proto-Atayal *\*tawkan* ‘net bag carried on back’ > Klesan *tokan*, Proto-Atayal *\*haylag* ‘fast’ > Klesan *helaw*.

5. *\*m* > *ng* /\_#; *\*p* > *k* /\_#. Proto-Atayal word-final labials merged into velars: Proto-Atayal *\*raʔum* ‘needle’ > Klesan *ronŋ*, Proto-Atayal *\*kuməɽap* ‘to grab’ > Klesan *kəməɽak*. See also Section 3.2.1.2 for examples of synchronic alternations caused by this sound change.
6. *\*g* > *w* /a\_#; >  $\emptyset$  /V\_#. Proto-Atayal word-final *\*-g* was changed in one of two ways in Klesan, depending on the preceding vowel. When preceded by *\*a*, it merged with *\*w*: Proto-Atayal *\*ʔurag* ‘dirt’ > Klesan *ʔuraw* ‘earth’. When preceded by a high vowel, it was deleted: Proto-Atayal *\*kəgig* ‘hemp, ramie’ > Klesan *kəgi*, Proto-Atayal *\*bicug* ‘worm’ > Klesan *bicyu* (with spontaneous palatalization

of <c> /t͡s/, see below).

7. \*b > p /\_#. Proto-Atayal \*b was devoiced into /p/ in word-final position in Klesan. Later, it shifted to a velar place of articulation (rule 5): Proto-Atayal \*pahəgub > Klesan *pəhəguk*.
8. **Liquid assimilation.** When a Proto-Atayal word had an onset \*r followed by an onset \*l, the first \*r became /l/ in Klesan: Proto-Atayal \*ralu? ‘name’ > Klesan *lalu*. This rule was not applied when the second liquid was in coda position, either in the same syllable or in a different one (although in Klesan generally changed \*l > n word-finally): Proto-Atayal \*kanayril ‘woman’ > Klesan *kənerin*, Proto-Atayal \*rapal ‘sole (of foot)’ > Klesan *rapan*.
9. \*ʔ > Ø /\_#. Glottal stops were lost in word-final position in Klesan: Proto-Atayal \*kəhu? ‘granary’ > Klesan *kəhu* (see also Section 3.1.5.3). Unlike S’uli, vowel coalescence was not affected by this change: Proto-Atayal \*kaʔi? ‘speech, language’ > Klesan *ke* (cf. S’uli *kay*).

The following ordering requirements can be defined for the sound changes in Klesan:

- 7 > 5 (final \*b devoicing preceded final labial to velar merger): Proto-Atayal \*pahəgub > Klesan *pəhəguk* instead of \*\*pəhəgu.
- 4 > 9 (vowel coalescence preceded final glottal stop deletion): Proto-Atayal \*kaʔi? > Klesan *ke* instead of \*\*kay.

There are also some irregular or ongoing sound changes in Klesan:

- Word-final \*l may be merged into /n/. According to data in Li (1998), \*l may be preserved word-finally in some Klesan-speaking villages, although the reflexes he gives are not systematic. For more information, see Section 3.1.5.1.
- The sound change t > c /\_i appears in some words, but not others, and sometimes two variants of a single word may be accepted, e.g. *tisan* and *cisan* ‘to visit’. Since the data does not show a systematic change (and since there are even competing variants), the affrication is most likely due to influence from Squiliq.

- The phoneme <c> /ʃs/ or /s/ was spontaneously palatalized in some words: Proto-Atayal \*bicug ‘worm’ > Klesan *bicyu*, Proto-Atayal \*cacaping ‘broom’ > Klesan *cyapiŋ* ‘a plant used to make brooms’, Proto-Atayal \*maculing ‘to burn’ > Klesan *cyuliŋ*, Proto-Atayal \*sasiq ‘shade’ > Klesan *syasi*.

#### 4.5.5 Sound changes from Proto-Atayal to Matu’aw

The following regular sound changes from Proto-Atayal to Matu’aw can be indentified:

1. \*c, \*s > s. The affricate \*c fully and unconditionally merged into \*s: Proto-Atayal \*cumaqis ‘to sew’ > Matu’aw *sumaʔis*, Proto-Atayal \*bicug ‘worm’ > Matu’aw *bisuw*.
2. \*q, \*ʔ > ʔ. Proto-Atayal \*q merged into the glottal stop /ʔ/ in Matu’aw: Proto-Atayal \*qaʔum ‘pangolin’ > Matu’aw *ʔawm*, Proto-Atayal \*taquɿ ‘crow’ > Matu’aw *taʔuy*.
3. **Vowel/syllable coalescence.** In Proto-Atayal words of the shape ...CVʔVC, i.e. with a glottal stop between the penultimate and ultimate vowel, and where the penultima was a cardinal vowel (not a schwa), the glottal stop was deleted and the vowel cluster resolved. When the vowels were identical, they merged into a single vowel with the same properties: Proto-Atayal \*hiʔiʔ ‘meat, flesh’ > Matu’aw *hiʔ*.<sup>11</sup>

When one of the vowels was high and the other low, the high vowel became a glide and the two syllables merged into a single syllable, either CGVC or CVGC: Proto-Atayal \*riʔax ‘day’ > Matu’aw *ryax*, Proto-Atayal \*qaʔum ‘pangolin’ > Matu’aw *ʔawm*. See also Section 3.2.2.3 for an overview of vowel coalescence in the synchronic grammars of various Atayal dialects.

4. \*ɿ, \*y > y. The retroflex approximant \*ɿ fully and unconditionally merged into \*y: Proto-Atayal \*ɿunɿay ‘monkey’ > Matu’aw *yunay*, Proto-Atayal \*waɿay ‘yarn’ > Matu’aw *wayay*, Proto-Atayal \*malikuɿ ‘man, husband’ > Matu’aw *mamalikuy* ‘young man’.

<sup>11</sup>Matu’aw *manakuʔum* ‘foggy’ (< Proto-Atayal \*mVnakuʔum) is an exception to this rule.

5. \*ə, \*a > a. Proto-Atayal schwa was fully merged with \*a: Proto-Atayal \*qasəɯ? ‘pestle’ > Matu’aw *ʔasayuʔ*.
6. \*b > p /\_#. Proto-Atayal \*b was devoiced into /p/ in word-final position in Matu’aw: Proto-Atayal \*humagub ‘to scry, to practice shamanism’ > Matu’aw *humagup*. In verbal roots, /b/ resurfaces after suffixation, see Section 3.2.1.1 for more details.
7. **Lenition of word-final \*g.** As recently as 1980, conservative Matu’aw speakers still preserved word-final /g/ after all vowels, including /i/, according to data collected by Li (1980a, 1981, 1982a). This sound has since disappeared from the language in exactly the same way as other dialects, by merging with /w/ after /a/, and by merging with Ø and lengthening a preceding vowel after /u/ and /i/: Proto-Atayal \*tulaqig ‘eel’ > Matu’aw *tulaʔiy*, Proto-Atayal \*bicug ‘worm’ > Matu’aw *bisuw*, Proto-Atayal \*sumamag ‘to make the bed’ > Matu’aw *sumamaw*.

Only one chronological ordering is needed for Matu’aw sound changes:

- 3 > 2 (vowel/syllable coalescence preceded \*q > ʔ): Proto-Atayal \*maqut ‘to ask’ > Matu’aw *maʔut* instead of \*\*mawt.

#### 4.5.6 Sound changes from Proto-Atayal to Plngawan

The following regular sound changes from Proto-Atayal to Plngawan can be indentified:

1. \*q, \*ʔ > ʔ. Proto-Atayal \*q merged into the glottal stop /ʔ/ in Plngawan: Proto-Atayal \*qawlit ‘mouse’ > Plngawan *ʔolit*, Proto-Atayal \*guqiluh ‘banana’ > Plngawan *gaʔiloh*.
2. **Changes of \*ə.** Proto-Atayal \*ə changed into a cardinal vowel or was deleted, depending on the environment. In trisyllabic words, penultimate \*ə was normally deleted and the word resyllabified: Proto-Atayal \*matəɯ? ‘six’ > Plngawan *matuuʔ*. In disyllabic words, penultimate \*ə either became /a/ or copied the vowel in the final syllable: Proto-Atayal \*ɬəɯik ‘deep’ > Plngawan *ɬaik*, Proto-Atayal \*bəliŋ ‘hole’ > Plngawan *baliŋ*, Proto-Atayal \*bəhut ‘squirrel’ > Plngawan *buhut*,

Proto-Atayal \*həiŋ ‘honey, honeybees’ > Plngawan *hiuŋ*. Sadly, there is not enough data to determine how the vowel was selected. See also correspondences of \*ə in Section 4.1.2.

3. **Vowel coalescence.** In Proto-Atayal words of the shape ...CV?VC, i.e. with a glottal stop between the penultimate and ultimate vowel, and where the penultima was a cardinal vowel (not a schwa), the glottal stop was deleted and the vowel cluster resolved. When the vowels were identical, they merged into a single vowel with the same properties: Proto-Atayal \*mVnaku?um ‘dark’ > Plngawan *minakuŋ*. When one of the vowels was the low vowel \*a and another was a high vowel \*i or \*u, they merged into a mid vowel: Proto-Atayal \*ra?uŋ ‘hook (for hanging things)’ > Plngawan *paparoŋ*, Proto-Atayal \*ba?is ‘partner, spouse’ > Plngawan *bes*, Proto-Atayal \*ri?ax ‘day’ > Plngawan *rex*. See also Section 3.2.2.3 for an overview of vowel coalescence in the synchronic grammars of various Atayal dialects.

This process was combined with the **monophthongization of offglides** in the penultima. The offglides \*aw and \*ay were monophthongized into mid vowels, but only in the penultimate syllable: Proto-Atayal \*tawkan ‘net bag carried on back’ > Plngawan *tokan*, Proto-Atayal \*panayluq ‘arrow’ > Plngawan *panelu?*

Additionally, the sequences \*-uwa-, \*-iya-, and \*-iyu- were also monophthongized: Proto-Atayal \*-uwa- > Plngawan /o/, Proto-Atayal \*-iya- > Plngawan /e/, Proto-Atayal \*-iyu- > Plngawan /i/. Regular correspondences include Proto-Atayal \*giyus ‘intestines’ > Plngawan *gis*, Proto-Atayal \*qusiya? ‘water’ > Plngawan *?use?*, Proto-Atayal \*qaliyan ‘daytime’ > Plngawan *?alen*, Proto-Atayal \*buwax ‘unhusked rice’ > Plngawan *box*. The monophthongization of \*-iya- and \*-iyu was blocked before \*-g: Proto-Atayal \*siniyug ‘rope’ > Plngawan *sinyuw*, Proto-Atayal \*siyag ‘edge, rim’ > Plngawan *syaw*. When \*-uwa- was immediately preceded by \*q, it changed into /awa/ instead: Proto-Atayal \*quwalax ‘rain’ > Plngawan *?awalax*, but Proto-Atayal \*qumuwalax ‘to rain (AV)’ > Plngawan *?umolax*. See also Section 4.1.2 for more examples and explanation of these correspondences.

4. \*m > ng /\_#; \*p > k /\_#. Proto-Atayal word-final labials merged into velars: Proto-Atayal \*raʔum ‘needle’ > Plngawan *ron*, Proto-Atayal \*kuməɽap ‘to grab’ > Plngawan *kunuak*. See also Section 3.2.1.2 for examples of synchronic alternations caused by this sound change.
5. **Rhotacism:** \*s > r /i\_Ṽ. Proto-Atayal \*s becomes /r/ in Plngawan under very specific conditions: only when it is preceded by \*i and followed by a stressed vowel (i.e. final vowel). For example, Proto-Atayal \*pisaʔ ‘how many’ > Plngawan *piraʔ*, Proto-Atayal \*ʔisah ‘older brother’s wife’ > Plngawan *ʔirah*.

If the vowel preceding \*s is anything other than \*i, rhotacism does not occur, e.g. Proto-Atayal \*musaʔ ‘to go (AV)’ > Plngawan *musaʔ*. Rhotacism is also blocked if \*s does not immediately precede stress: Proto-Atayal \*pisaniq ‘taboo’ > Plngawan *pisaniʔ*.

Due to intraparadigmatic pressure, verbs with root-final /-is/ were not affected: Proto-Atayal \*cumaqis ‘to sew (AV)’ and \*caqisun ‘to sew (PV)’ > Plngawan *cumaʔis* and *caʔisun*. However, the rule did affect verbs that had \*g to \*s alternation in Proto-Atayal (Ø to /s/ in most modern dialects, see Section 3.2.1.5): Proto-Atayal \*baynay ‘to buy (AV)’ and \*binasun ‘to buy (PV)’ > Plngawan *mini* and *binarun*.

6. \*g > w /a\_#; > Ø /V\_#. Proto-Atayal word-final \*-g was changed in one of two ways in Plngawan, depending on the preceding vowel. When preceded by \*a, it merged with \*w: Proto-Atayal \*ʔurag ‘dirt’ > Plngawan *ʔuraw*. When preceded by a high vowel, it was deleted, and the vowel was lengthened: Proto-Atayal \*bunaqig ‘sand’ > Plngawan *bunaʔiy*, Proto-Atayal \*bicug ‘worm’ > Plngawan *bicuw*.
7. \*b > p /\_#. Proto-Atayal \*b was devoiced in word-final position in Plngawan, and its place of articulation then changed to velar (rule 4): Proto-Atayal \*tVɽab ‘tongs’ > Plngawan *patauak*. In verbal roots, the labial will surface after suffixation, though in Plngawan it is usually /p/ and not /b/, likely due to paradigm leveling between the application of the two sound changes, see Section 5.4 for



more details on paradigm leveling.

8. \*ay > iy /\_#. The Proto-Atayal offglide \*ay changed to /i:/ (written <iy>) in word-final position: Proto-Atayal \*ɽunay ‘monkey’ > Plngawan ɽun<sup>h</sup>iy, Proto-Atayal \*waxay ‘yarn’ > Plngawan wai<sup>h</sup>iy. See also Section 4.1.2.

The following ordering requirements can be defined for the sound changes in Plngawan:

- 3 > 1 (vowel coalescence preceded \*q > ʔ): Proto-Atayal \*cumaqis ‘to sew (AV)’ > Plngawan *cumaʔis* instead of \*\*cumes.
- 7 > 4 (final \*b devoicing preceded final labial to velar merger): Proto-Atayal \*tVɽab ‘tongs’ > Plngawan *pataɽak* instead of \*\*pataɽaw.

#### 4.5.7 Sound changes from Proto-Atayal to Matu’uwal

Matu’uwal has had relatively few sound changes, compared to the other dialects. The following regular sound changes from Proto-Atayal to Matu’uwal can be indentified:

1. **Changes of \*ɽ.** Proto-Atayal \*ɽ changed in several ways in Matu’uwal, depending on the environment and, in one case, on the subdialect.

The regular correspondence of Proto-Atayal \*ɽ in most cases in Matu’uwal is Ø. Word-finally, it was deleted and the preceding vowel lengthened: Proto-Atayal \*raɽaɽ ‘deadfall trap’ > Matu’uwal *raɽa* [ra.ɽa:], Proto-Atayal \*lihuɽ ‘forehead’ > Matu’uwal *lihuw* [li.ɽu:].<sup>12</sup> Between vowels, it was deleted, leading either to a hiatus (with identical vowels or a low-high sequence), or an epenthetic glide (in a high-low sequence or between two different high vowels): Proto-Atayal \*buɽul ‘loincloth’ > Matu’uwal *buul*, Proto-Atayal \*kaɽal ‘sky’ > Matu’uwal *kaal*, Proto-Atayal \*caɽiʔ ‘taro’ > Matu’uwal *caiʔ*, Proto-Atayal \*masibaɽux ‘to share field work’ > Matu’uwal *məsibaux*, Proto-Atayal \*xuɽil ‘dog’ > Matu’uwal *xuwil*, Proto-Atayal \*muɽag ‘house, home’ > Matu’uwal *ʔimuwag*.

<sup>12</sup>Note that long high vowels are typically marked with a corresponding glide, however long low vowels are left unmarked. These contrast with words ending in a final glottal stop.

Word-initially, it was deleted before high vowels, with an epenthetic glottal stop being inserted to repair a vowel-initial word: Proto-Atayal \**ɿnɿjaj* ‘monkey’ > Matu’uwal *ʔunɿjaj*, Proto-Atayal \**ɿnɿjat* ‘to rob, to take away’ > Matu’uwal *ʔinɿjat*.<sup>13</sup> Word-initially before a low vowel, it was either deleted like high vowels, or became /w/, depending on the subdialect. This led to two forms being acceptable to most speakers: Proto-Atayal \**ɿanɿaw* ‘housefly’ > Matu’uwal *ʔangaw* or *wangaw*, Proto-Atayal \**ɿapit* ‘flying squirrel’ > Matu’uwal *ʔapit* or *wapit*.

Word-medially and immediately following the offglide \*aw, Proto-Atayal \**ɿ* became /w/: Proto-Atayal \**raw.ɿiq* ‘eyes’ > Matu’uwal *rawwiq*, Proto-Atayal \**gumawɿag* ‘to wade’ > Matu’uwal *gumawwag*. Unlike word-initial reflexes, there is no variation here.

2. **Changes of \*ə.** Penultimate \*ə changed in several different ways in Matu’uwal. In disyllabic words, it was retained as /ə/: Proto-Atayal \**bəliŋ* ‘hole’ > Matu’uwal *bəliŋ*, Proto-Atayal \**bəhut* ‘squirrel’ > Matu’uwal *bəhut*.

In trisyllabic words, penultimate \*ə was deleted, and the word resyllabified into CVC.CVC: Proto-Atayal \**ɿVkəlit* ‘leopard’ > Matu’uwal *ʔakliʔ* or *wakliʔ*, Proto-Atayal \**qalətiŋ* ‘wooden plank’ > Matu’uwal *qaltiŋ*.

Immediately preceding \*ɿ, schwa assimilated to the following vowel after \*ɿ was deleted: Proto-Atayal \**həliŋ* ‘honey, honeybee’ > Matu’uwal *hiŋ*, Proto-Atayal \**matəɿuʔ* ‘six’ > Matu’uwal *mamatuuʔ*.

3. **\*-aay > -aiy.** The word-final sequence \*-aay created by the deletion of \*ɿ was changed into -aiy /a.i:/ instead: Proto-Atayal \**wəɿay* > Matu’uwal *waiy*. This also affected words with historical penultimate schwa: Proto-Atayal \**kuməɿay* ‘to dry (e.g. grass)’ > Matu’uwal *kumaiy*.
4. **Dorsal harmony.** Proto-Atayal \**k* became /q/ in Matu’uwal in disyllabic roots beginning with \**k* and ending with \**q* (kVCVq). This *k*-backing can only be found in three roots in my dataset: Proto-Atayal \**kaniq* ‘to eat (AV.SBJV)’ > Matu’uwal

<sup>13</sup>This epenthetic glottal stop is phonemic and appears when the word is prefixed: *pataga-ʔunɿjaj* ‘to become a monkey’, *pa-ʔinɿac-an* ‘to interrupt’.

*qaniq*, Proto-Atayal \**kuriq* ‘to steal (AV.SBJV)’ > Matu’uwal *quriq*, Proto-Atayal \**kəbaq* ‘to know (AV.SBJV)’ > Matu’uwal *qəbaq*. Unlike Squliq and Skikun, \**k* was not backed in longer words or in other environments: Proto-Atayal \**kisəliq* ‘to like, to love’ > Matu’uwal *kisliq* ‘mood’, Proto-Atayal \**kahuniq* ‘tree’ > Matu’uwal *kahuniq*. See also Section 4.1.1 for more reflexes of \**k*.

5. \*-lit > -li?. In this very specific sound change, the Proto-Atayal final syllables \*-lit and \*-li? were merged into -li? in Matu’uwal: Proto-Atayal \**qabulit* ‘ash’ > Matu’uwal *qabuli?*, cf. Plngawan *?abulit*. See Section 4.6.1 for a detailed explanation.

The following ordering requirements can be defined for the sound changes in Matu’uwal:

- 1 > 2 (\*ɿ deletion preceded changes of \*ə): Proto-Atayal \**qasəɿu?* > Matu’uwal *qasuu?* instead of \*\**qasu?*.
- 2 > 3 (changes of \*ə preceded \*-aay > -aiy): Proto-Atayal \**kuməɿay* > Matu’uwal *kumaiy* instead of \*\**kumiiy*.

## 4.6 Sound correspondences between Proto-Atayal and Proto-Atayalic

Proto-Atayalic is the ancestor language of Proto-Atayal and Proto-Seediq (and by extension, the closest common ancestor of all Atayal and Seediq dialects). A reconstruction of the phonology of Proto-Atayalic was first proposed by Li (1981). This section describes the sound correspondences between Proto-Atayalic and its daughter language Proto-Atayal, and also addresses Li’s reconstruction of two segments in Proto-Atayalic: word-final \*-d (Section 4.6.1) and \*g’ (Section 4.6.2). My reconstruction of Proto-Atayal is mostly compatible with Li’s Proto-Atayalic, and where it is not, I address the differences in the text. Readers should be careful to distinguish Proto-Atayal and Proto-Atayalic in the remainder of this section.

Proto-Atayalic (PAic) to Proto-Atayal (PA) sound correspondences are seen in Table 4.41. The differences in regular sound correspondences are minimal, the only two sounds that are different are PAic \*d and \*r, corresponding to PA \*r and \*ɿ, respectively.

Table 4.41: Proto-Atayalic phoneme reflexes in Proto-Atayal

PAic	PA	Example
p	p	PAic *padaʔ ‘Reeves’s muntjac’ > PA *paraʔ
t	t	PAic *tunux ‘head’ > PA *tunux
k	k	PAic *kahuniq ‘tree’ > PA *kahuniq
q	q	PAic *qusiyaʔ ‘water’ > PA *qusiyaʔ
ʔ	ʔ	PAic *ʔiyup ‘to blow’ > PA *ʔumiyup
b	b	PAic *babaw ‘on top of; above’ > PA *babaw
<b>d</b>	<b>r</b>	PAic *damat ‘garnish’ > PA *ramat
g	g	PAic *gəhap ‘seed’ > PA *gəhap
c	c	PAic *cəlaq ‘mud’ > PA *cəlaq
s	s	PAic *siyag ‘rim, edge’ > PA *siyag
x	x	PAic *makaxaʔ ‘day after tomorrow’ > PA *makaxaʔ
h	h	PAic *mahənuʔ ‘soft’ > PA *mahənuʔ
m	m	PAic *gamil ‘root’ > PA *gamil
n	n	PAic *tunux ‘head’ > PA *tunux
ŋ	ŋ	PAic *ŋaquwaq ‘mouth’ > PA *ŋaquwaq
l	l	PAic *lubug ‘mouth harp’ > PA *lubug
<b>r</b>	<b>ɿ</b>	PAic *rapit ‘flying squirrel’ > PA *ɿapit
w	w	PAic *waqit ‘fang’ > PA *waqit
y	y	PAic *dayaʔ ‘inland, upslope’ > PA *rayaʔ
a	a	PAic *daŋar ‘trap’ > PA *raŋar
i	i	PAic *daŋiʔ ‘friend’ > PA *raŋiʔ
u	u	PAic *ŋudus ‘beard’ > PA *ŋurus
ə	ə	PAic *masəpat ‘eight’ > PA *masəpat

There are thus only two regular sound changes from Proto-Atayalic to Proto-Atayal.

These are:

1. PAic \*r > PA \*ɾ
2. PAic \*d > PA \*r

The sound change (1) necessarily occurred before (2) in order to avoid a merger of the reflexes of Proto-Atayalic \*d and \*r in Proto-Atayal. Both sound changes occurred unconditionally, i.e. in all environments.

Li (1981) also discusses two correspondences that I have not yet mentioned. These are (1) Li's reconstruction of word-final \*-d, discussed in Section 4.6.1, and (2) Li's reconstruction of \*g', both in word-final position and word-medially, discussed in Section 4.6.2. In the following sections I will provide arguments for why there is no evidence for either of these two protophonemes in Atayal, and that they should not be reconstructed to Proto-Atayal, or even Proto-Atayalic.

#### 4.6.1 Li's Proto-Atayalic \*-d

Li (1981: 254) made note of a correspondence where /ʔ/ in some Atayal dialects (Matu'uwal, Squliq, Skikun) corresponds to /t/ in others (Plngawan, S'uli, Klesan, Matu'aw), and to <c> [ʈʂ] in Seediq. This occurs only word-finally. Table 4.42 shows some examples of this correspondence, of which Li discusses the first four ('feather', 'leopard', 'ash', and 'mouse').

The Seediq cognates of the words in Li's list all have final <c> [ʈʂ], for example in the Toda dialect: *palic* 'wing', *qolic* 'mouse', *rəkəlic* 'leopard', and *qəbulic* 'ash'. However, there is no phonemic distinction between word-final <c> /ʈʂ/ and /t/ in Seediq (Tsukida 2005: 292; Sung 2018: 20), and /t/ is affricated word-finally, just like with some Atayal speakers.

Li (1981: 255) further suggests that the correspondence should be reconstructed as \*-d in Proto-Atayalic, and supports this claim with the PAn form \*paNid 'wing'. This is problematic, because the Seediq dialects all have the same reflex, whereas Atayal dialects can have either /t/ or /ʔ/ in this correspondence, which would logically require \*-d to also occur in Proto-Atayal. However, there is no evidence for a \*-d phoneme

Table 4.42: /ʔ/ to /t/ correspondence in word-final position

Matu'uwal	Plngawan	Squliq	Skikun	Klesan	Gloss
paliʔ		paliʔ	paliʔ		'feather'
ʔakliʔ	ɿaklit	kəliʔ	kəliʔ	kəlit	'leopard'
qabuliʔ	ʔabulit	qəbuliʔ	qəbuliʔ	bulit	'ash'
qawlit	ʔolit	qoliʔ	qoliʔ/qolit	ʔolit	'rat, mouse'
kuwaliʔ		qwaliʔ	kwaniʔ	kwalit	'eagle'
ʔaŋriʔ	ɿaŋlit	zəŋəliʔ	ŋəliʔ		'housefly'
	hamalit	həməliʔ	həməliʔ		'tongue'
	ʔabalit			bəlit	'chin'
qumaliʔ	ʔumalit				'to peel (AV)'
məqaluwit	mulit	məqəlwiʔ		məlyut	'to flow (AV)'

in Proto-Atayal, since Proto-Atayalic \*d changed to Proto-Atayal \*r: Proto-Atayalic \*dawriq > Proto-Atayal \*rawriq 'eyes'.

Careful readers may have noticed that the correspondences in Table 4.42 occur in a very specific environment, and not just word-finally. With a few exceptions, they are only found in the final syllable *-lit/-liʔ*.<sup>14</sup> We can hardly expect a phoneme to occur only in such a specific environment. A more likely scenario is a sound change that occurred with existing phonemes in a specific environment.

Another counter-argument to Li's reconstruction of PAic \*d is the behaviour of verbs with this correspondence when suffixed. At least two verbs 'to flow' and 'to peel' can be found with this correspondence, and they both have <c> /ʈs/ in Plngawan when suffixed, as seen in Table 4.43.

Moreover, the verb 'to peel' has a corresponding PAn form \*qaNiC, which has a final \*C, normally reflected as \*c in Proto-Atayal, and as \*t word-finally (see Section 4.7 for sound correspondences between PAn and Proto-Atayal). Other verbs with root-final \*C in PAn do not have the change to /ʔ/ in Squliq, Skikun, or Matu'uwal: PAn \*kaRaC 'to bite' > (Proto-Atayal \*kumat~kacun) > Matu'uwal *kumat~kacun*, Squliq and Skikun *kəmat~katun*. This demonstrates that the correspondence of /t/ to /ʔ/ is not due to

<sup>14</sup>Skikun *kwaniʔ* 'eagle' is likely a sporadic change. Matu'uwal *ʔaŋriʔ* 'housefly', as well as the unexpected correspondences in 'mouse' and 'to flow' are addressed further in the text.

Table 4.43: /ʔ/ to /t/ correspondence in verbs

Matu'uwal	Plngawan	Squliq	Klesan	Gloss
<b>məqaluwit</b>	<b>mulit</b>	<b>məqəlwiʔ</b>	<b>məlyut</b>	'to flow (AV)'
<b>qalwicun</b>	<b>ʔulicun</b>	<b>qəlyuʔun</b>	<b>lyutun</b>	'to flow (PV)'
<b>qumaliʔ</b>	<b>ʔumalit</b>			'to peel (AV)'
<b>qaliʔun</b>	<b>ʔalicun</b>			'to peel (PV)'

regular reflexes of a specific protophoneme that only occurs in this position, but is rather environmentally conditioned.

Matu'uwal *qumaliʔ~qaliʔun* 'to peel' was regularized in its suffixed forms, as this correspondence is otherwise limited to word-final position. Likewise, Squliq *məqəlwiʔ~qəlyuʔun* 'to flow' underwent regularization, and apparently late enough that its PV form does not exhibit vowel coalescence: the form is *qəlyuʔun* instead of the expected *\*qəlyun*. Note that Matu'uwal has a final /t~c/ in this root. In Matu'uwal, final /ʔ/ to Plngawan /t/ only appears in the syllable *-liʔ*, or in one case, *-riʔ* (discussed below). Squliq extends the environment to include the syllable *-lwiʔ*, as in *məqəlwiʔ* 'to flow' or *təlwiʔ* 'mulberry'.<sup>15</sup>

Table 4.42 includes the Matu'uwal form *ʔaŋriʔ* 'housefly'.<sup>16</sup> This form appears distinct from the other correspondences in the table for having a final /riʔ/ syllable in Matu'uwal, instead of the expected /liʔ/. Seediq agrees with Matu'uwal here, having *rəŋədi* or *rəŋəji*, depending on the dialect. Crucially, Seediq does not have final <c> [t͡s] in this word, but it does have it in all other words in this correspondence set, e.g. Toda Seediq *rəkəlic*, Matu'uwal *ʔakliʔ*, Plngawan *ɿaklit* 'leopard'. This word most likely did not originally belong in this correspondence set, but was later added to it by analogy, and received the derivational suffix *-lit* in Plngawan, Squliq, and Skikun. I explain the derivational aspect of this correspondence at the end of this section.

Another word, 'mouse', has unexpected reflexes in Matu'uwal and Skikun: Matu'uwal *qawlit* and Skikun *qolit* (alongside variant pronunciation *qoliʔ*). Either this word somehow resisted the sound change that occurred everywhere else in the set, or

<sup>15</sup>The Squliq and Skikun *təlwiʔ* 'mulberry' has cognates in Seediq *tədiyuc*. Klesan *təluɣ* appears to be a loan from Squliq based on the sound correspondences.

<sup>16</sup>Alternatively, 'housefly' can also be *waŋriʔ*, see correspondences of Proto-Atayal \*ɿ in Section 4.1.1.

it was reborrowed from another dialect. It is difficult to judge what exactly happened here, although a borrowing scenario appears unlikely, since no other dialects preserved both initial /q/ and final /t/ in this word.

If this is a sound change, what was the phoneme initially? Was it preserved in any of the dialects? Which dialects changed the words in this set, and which ones did not? Here we may once again look to phonotactics and phoneme distribution for answers. Matu’uwal, Squliq, and Skikun do not allow the syllable *-lit* to occur word-finally (with the exception of the aforementioned word ‘mouse’). On the other hand, the remaining dialects allow both *-lit* and *-li?* to occur in word-final position. Table 4.44 shows a few instances of word-final *-li?* occurring in cognates across the Atayal dialects.

Table 4.44: Final *-li?* correspondence across Atayal dialects

Matu’uwal	Squliq	Plngawan	Klesan	Gloss
sumli?	səmali?	sunli?	səmali	‘to collect’
buli?	buli?	buli?		‘small knife’
	ʔali?	ʔali?	ʔali?	‘bamboo shoots’

Since Plngawan, Klesan, S’uli, and Matu’aw distinguish word-final *-li?* from *-lit*, while Matu’uwal, Squliq, and Skikun do not, then the former must have preserved the distinction, while the latter merged the two syllables together.

Why this specific syllable? One possibility is that this syllable was a derivational suffix for male register forms (Section 5.2 presents an overview of the gender register system). We can see the affix in words like Matu’uwal *qabuli?* ‘ash’ and Squliq *hə-mali?* ‘tongue’ when we compare them with PAN forms \*qabu ‘ash’ and \*Səma ‘tongue’ (Matu’uwal has *həma?* ‘tongue’). The original Proto-Atayal suffix \*-lit must have been replaced with *-li?* in Squliq, Skikun, and Matu’uwal, and this replacement then triggered an analogical change even in words where /lit/ was part of the root, as in Matu’uwal *qumali?* ‘to peel’, cf. Plngawan *ʔumalit*, PAN \*qaNiC.

Thus these words would have originally ended in \*-lit in Proto-Atayal, and were only changed in Squliq, Skikun, and Matu’uwal. This also agrees with the evidence in Seediq, where cognates all have a final <c> [fʃ] (<\*-t).



### 4.6.2 Li's Proto-Atayalic \*g'

Li reconstructs a phoneme \*g' in Proto-Atayalic to account for three sets of correspondences. These are reproduced in Table 4.45 with minor corrections.

Table 4.45: Li's \*g' correspondences (from Li 1981: 258–259)

Skikun	Matu'uwal	Inago Seediq	Gloss
pisaʔ	(piyaʔ)	piyaʔ	'how many'
kisaʔ	kisaʔ	kiyaʔ	'soon, later'
bəgisaʔ	bagisaʔ	bəgiyaʔ	'reed of loom'
cəhisaʔ	cu hisaʔ	sigaʔ	'yesterday'
kəgis	kəgiy	kərig	'hemp, ramie'
kəgis-i	kumkagis-i		'to strip hemp (PV.imp)'
mes	mabaiy	marig	'to buy (AV)'
besun	baysun	bərigi	'to buy (PV)'

The first set Li identified are word-medial correspondences between /s/ in Atayal and <y> /j/ in Seediq, specifically between the vowels i\_a (except in the word 'yesterday'). The second are word-medial correspondences of /s/ in Atayal and /g/ in Seediq between other vowels. The third set are word-final correspondences of <y> /j/ in Atayal except Skikun, /s/ in Skikun, and /g/ or <y> /j/ in Seediq, depending on the dialect.

If we start with word-final correspondences, we see the following pattern: they always occur following the vowel /i/, and all of Li's examples are in verbs with consonantal alternations in Atayal. Here, Li uses Skikun as crucial evidence to reconstruct this protophoneme. However, as explained in Section 5.4, **Skikun has a very strong tendency to level out consonant alternations in verbal paradigms**. Li's correspondences of Proto-Atayalic \*g in final position after \*i are identical to those of \*g', except for the Skikun reflex, but all the correspondences of \*g are found in nominal roots, i.e. roots that do not take suffixes, for example \*bunaqig 'sand'.

In other words, what Li saw as a reflex of a unique protophoneme is in fact an artefact of paradigm leveling in alternating roots in Skikun. When this paradigm leveling in

verbal roots is taken into account, Li's \*g and \*g' are in complementary distribution with each other, since \*g' is only ever found after \*i. Reconstructing two phonemes here is superfluous.

For Proto-Atayal, this means that no additional protophonemes need to be proposed in this case, as the correspondences are adequately explained as regular reflexes of \*-s- and \*-g, with later paradigm leveling in Skikun. The alternating consonants in these verbal roots have to be reconstructed to Proto-Atayal.

## **4.7 Sound correspondences between Proto-Atayal and Proto-Austronesian**

Out of over 1100 reconstructed Proto-Atayal forms, I have found Proto-Austronesian etyma for only around a tenth of that number. In general, cognacy rates between PAN reconstructions and Atayalic vocabulary are low. Nevertheless, out of more than 100 cognate pairs, regular sound correspondences may be established. They are presented in Table 4.46, with Proto-Atayalic given for reference. The correspondences between PAN and Proto-Atayalic are largely compatible with Li's (1981) reconstruction, and the differences between Li's reconstruction and my own are addressed in Section 4.6.

Note that there are still gaps in the data. For example, I have not been able to identify any cognates with PAN \*g or word-initial \*h, and there is only one instance each of PAN \*r and \*ñ.

As seen in Table 4.46, some phonemes have different reflexes depending on their position in the word. PAN \*C was reflected as Proto-Atayal \*c except word-finally, where it was reflected as \*t: PAN \*kaRaC 'to bite' > Proto-Atayal \*kumat, but \*kacun when suffixed. This is due to a restriction in Proto-Atayal phonotactics, where \*c was not allowed word-finally, and it was merged with \*t in that position, see also Section 4.3.

Proto-Austronesian \*ə is reflected in Proto-Atayal as \*u in the final syllable and as \*ə elsewhere: PAN \*buhət 'squirrel' > Proto-Atayal \*bəhut (with vowel metathesis), PAN \*dakəS 'camphor tree' > Proto-Atayal \*rakus, PAN \*qaSəlu 'pestle' > Proto-Atayal \*qasəluʔ, as well as in the Patient Voice suffix PAN \*-ən > Proto-Atayal \*-un. In ver-

#### 4.7 Sound correspondences between Proto-Atayal and Proto-Austronesian

Table 4.46: Proto-Austronesian phoneme reflexes in Proto-Atayal

PAn	Proto-Atayalic	Proto-Atayal	Example
p	p	p	PAn *pitu ‘seven’ > PA *mapitu?
t	t	t	PAn *taNək ‘to cook’ > PA *tumaluk
C	c-/c-/t	c-/c-/t	PAn *Capuh ‘sweep’ > PA *cumapuh
k	k	k	PAn *kaSiw ‘tree’ > PA *kahuy
q	q	q	PAn *qaRəm ‘pangolin’ > PA *qagum
b	b	b	PAn *buhət ‘squirrel’ > PA *bəhut
d	d	r	PAn *dakəS ‘camphor tree’ > PA *rakus
z	d	r	PAn *zaRəm ‘needle’ > PA *ragum
j	Ø/g?	Ø/g?	PAn *puja ‘navel’ > PA *puga?
g	-	-	
m	m	m	PAn *mula ‘to plant’ > PA *mumuɿa?
n	n	n	PAn *naRa ‘to wait’ > PA *naga?
ñ	l?	l?	PAn *qañud ‘to flow’ > PA *maqVluwit
N	l	l	PAn *Nibu ‘nest’ > PA *libu?
ŋ	ŋ	ŋ	PAn *Naŋuy ‘to swim’ > PA *lumaŋuy
s	h-/h-/x	h-/h-/x	PAn *basəq ‘to wash’ > PA *mabahuq
S	h- or s-/s-/s	h- or s-/s-/s	PAn *Sipəs ‘cockroach’ > PA *hipux
h	-h-/h	-h-/h	PAn *qumah ‘field’ > PA *qumah
l	r	ɿ	PAn *laŋaw ‘housefly’ > PA *ɿaŋaw
r	Ø?	Ø?	PAn *kərət ‘to cut’ > PA *kumut
R	g	g	PAn *Rabi-an ‘evening’ > PA *gabiyan
w	w	w	PAn *walay ‘yarn’ > PA *waɿay
y	-y-/y	-y-/y	PAn *daya ‘inland’ > PA *raya?
a	a	a	PAn *baCaR ‘proso millet’ > PA *bacag
i	i	i	PAn *kali ‘to dig’ > PA *kumari?
u	u	u	PAn *Nusuŋ ‘mortar’ > PA *luhuŋ
ə	-ə-/u	-ə-/u	PAn *NuqəS ‘marrow’ > PA *luqus

bal roots, the vowel alternates after suffixation: PAn \*taNək ‘to cook’ > Proto-Atayal \*tumaluk (AV), but \*taləkun (PV).

Proto-Austronesian \*s is regularly reflected as Proto-Atayal \*x word-finally and as \*h elsewhere, with many examples. The following etyma are clearly related, but are exceptions: PAn \*Ciŋas ‘food debris’ > Proto-Atayal \*ciŋas, and the Formosan etymon \*lapis ‘flying squirrel’ > Proto-Atayal \*ɭapit. The irregular correspondences might be explained by borrowing early in the language’s history.

Proto-Austronesian \*S has the regular reflex \*s in Proto-Atayal, but may also be reflected as \*h in word-initial position. Table 4.47 lists all occurrences of PAn word-initial \*S in my cognate sets. The affixes in ‘four’, ‘Grey-cheeked fulvetta’, ‘waist’, and ‘snow’ are derivational affixes used in the gender register system, see Section 5.2 for details.

Table 4.47: Reflexes of Proto-Austronesian word-initial \*S in Proto-Atayal

PAn	Proto-Atayal	Gloss
*Sajək	*sumaʔuk	‘to smell, to sniff’
*Sauni	*sawniʔ	‘just now, today’
*Səpat	*səpa<ɭa>t	‘four’
*SiSiN	*sisil-iq	‘Grey-cheeked fulvetta’
*Suaji	*suwaʔiʔ	‘younger sibling’
Suaw/Suab	*masuɭab	‘to yawn’
Sipi/Səpi	*səpiʔ	‘dream’
*Sapuy	*hapuy	‘fire’
*Sawak	*haw<inu>k	‘waist’
*Səma	*həmaʔ	‘tongue’
*Sipəs	*hipux	‘cockroach’
*SuRəNa	*hula-qig	‘snow, ice’

Here the amount of words reflecting \*s and \*h in Proto-Atayal is roughly the same. They do not appear to have any conditioning environment, and words in both groups belong in the basic vocabulary. This is a mystery that should be addressed in future research.

There is a small number of PAn etyma with \*j that have reflexes in Proto-Atayal. However, the reflexes are not systematic, as can be seen in Table 4.48.

In most cases, \*j is simply deleted (the glottal stop in \*sumaʔuk ‘to smell’ and \*suwaʔiʔ

Table 4.48: Reflexes of Proto-Austronesian \*j in Proto-Atayal

PAn	Proto-Atayal	Gloss
*bajaq	*baq	‘to know’
*bujəq	*buq	‘juice’
*Sajək	*sumaʔuk	‘to smell’
*Suaji	*suwaʔiʔ	‘younger sibling’
*pajay	*pagay	‘rice plant’
*puja	*pugaʔ	‘navel’
*pijax	*pisaʔ	‘how many’

‘younger sibling’ was likely epenthetic), but in \*pagay ‘rice plant’ and \*pugaʔ ‘navel’ it is reflected as \*g instead. The Atayal traditionally planted millet and not rice, so \*pagay ‘rice plant’ can be argued to be a borrowing.

The \*s in \*pisaʔ ‘how many’ is most likely related to the environment: following \*i and preceding a stressed vowel.<sup>17</sup> The irregular correspondence in PAn \*siRa ‘yesterday’ > Proto-Atayal \*hisaʔ is likely related, although with only two etyma it is difficult to make conclusions. None of the 1100+ Proto-Atayal etyma in my database have the sequence \*-iga-, which suggests a sound change preceding Proto-Atayal (perhaps from Proto-Atayalic to Proto-Atayal). See also Section 4.6.2 for other correspondences in the same environment.

Proto-Austronesian \*R was regularly reflected as Proto-Atayal \*g. There are some exceptions, listed in Table 4.49.

The reflex in Proto-Atayal \*hisaʔ ‘yesterday’ was discussed above. Proto-Atayal \*buruk ‘rotten’ is the only case of PAn \*R > Proto-Atayal \*r, and is likely a loan. The rest of the etyma have \*R being deleted in Proto-Atayal. At least some of these correspondences may be attributable to the Atayalic gender register system, described in Section 5.2. One of the changes in the male register was deleting word-initial or word-medial \*g in Proto-Atayal, which is the regular reflex of PAn \*R. It is possible that for some of these words only the male register form survived.

<sup>17</sup>Rhotacism in Squliq and Plngawan occurred in an identical environment.

Table 4.49: Reflexes of Proto-Austronesian \*R in Proto-Atayal

PAn	Proto-Atayal	Gloss
*buRuk	*buruk	‘rotten’
*siRa	*hisaʔ	‘yesterday’
*kaRaC	*kumat	‘to bite’
*daRəq	*raʔuq	‘ground’
*kaRi	*kaʔiʔ	‘language’
*Rubu	*ʔubuʔ	‘den’

## 4.8 Interim summary

This chapter presented the reconstruction of the phonological system of Proto-Atayal based on internal evidence from Atayal dialects, as well as external evidence from Seediq and Proto-Austronesian. Proto-Atayal had a slightly larger consonant inventory than any extant dialect, but a four-vowel system instead of the more complex vowel systems that developed in various dialects later. Its syllable structure was also simpler than most Atayal dialects, with only CV and CVG syllables allowed in non-final position.

This reconstruction allowed me to compare the phonology of Proto-Atayal with those of Proto-Atayalic and Proto-Austronesian, and find regular correspondences between them. I also re-examined the evidence for Li’s (1981) reconstruction of the segments \*g’ and word-final \*-d in Proto-Atayalic, and found it insufficient in both cases.

Below is a summary of common phonological innovations in Atayal dialects. Sound changes that are shared by at least two dialects are as follows:

1. **Merger of \*-lit and \*-liʔ.** A very specific sound change that occurred in Matu’uwal, Squliq, and Skikun. This sound change left all three with no words ending with the syllable *-lit*, except Matu’uwal *qawlit* and Skikun *qolit* ‘mouse, rat’, which was irregularly preserved in both dialects.
2. **Merger of \*ɿ and \*y > y.** This sound change happened in all Atayal dialects except Pngawan and Matu’uwal. The merger was complete and unconditional, happening in all environments.
3. **Merger of \*q and \*ʔ > ʔ.** This merger occurred in Matu’aw, S’uli, Klesan, and

- Plngawan. Glottal stops that come from historical \*q block vowel coalescence, which means that vowel coalescence preceded this merger.
4. **Merger of \*c and \*s > s.** These two protophonemes merged in Squliq, S'uli, and Matu'aw. In Squliq, the merger occurred after affrication of \*t, since these new affricate allophones were not affected.
  5. **Liquid assimilation.** Proto-Atayal \*r in the onset was assimilated to /l/ if followed by \*l in the onset of another syllable. Codas did not trigger this change, which can be seen in Skikun, Squliq, S'uli, and Klesan.
  6. **Affrication of \*t.** Regular affrication of \*t occurred in Squliq and Skikun. There are lexical items in Klesan and S'uli that appear to be affected by the same rule, but it is not universal in the lexicon of either dialect, and is hence influence from Squliq due to language contact, not an internal sound change. Affrication of \*t in Squliq occurred before <y> /j/ as well as before /i/, while in Skikun only the vowel /i/ triggered this change.
  7. **Rhotacism.** This sound change can be found in Squliq and Plngawan. Its environment is quite specific: Proto-Atayal \*s became /r/ when preceded by /i/ and followed by a stressed vowel, or \*s > r /i\_́. The environment is identical in both dialects.
  8. **Loss of final \*-g.** Proto-Atayal final \*g was lost in a very similar fashion in most Atayal dialects. No dialect preserves final \*g before \*i, although Matu'aw did have it until recently, as recorded by Paul Li (1980a, 1981). Following /a/ and /u/, it is still preserved in Matu'uwal, and in Skikun it merges with /x/. In other dialects, Proto-Atayal word-final \*g became /w/ after /a/, and was lost after /u/ and /i/, lengthening the preceding vowel. Since final /g/ could still be found in Matu'aw circa 1980, we can be sure it does not share this sound change with other dialects.
  9. **Final labial to velar merger.** Plngawan and Klesan disallow labial consonants in word-final position. All labials become velars instead, and resurface as labials if the root is suffixed.
  10. **Final \*-b devoicing.** Proto-Atayal final \*b was preserved only in Matu'uwal. All other dialects devoiced it to /p/ (which in Plngawan and Klesan becomes /k/ due to rule 9). It can surface as /b/ when the root is suffixed, though in some cases it

is regularized to /p/ due to paradigm leveling (see Section 5.4).

11. **Prepenultimate vowel lenition.** This sound change occurred in Skikun, Squliq, S'uli, and Klesan. All vowels preceding the penultimate syllable were weakened, usually to schwa, leading to the loss of vowel distinctions beyond the rightmost foot.

These sound changes are presented in Table 4.50. If a sound change occurred in a given dialect, it is checkmarked.<sup>18</sup>

Table 4.50: Common sound changes in Atayal dialects

Sound change	MI	Sk	Sq	S'	Mw	Kl	Pl
Merger of -lit and -li?	✓	✓	✓				
Merger of ɪ and y		✓	✓	✓	✓	✓	
Merger of q and ?				✓	✓	✓	✓
Merger of c and s			✓	✓	✓		
Liquid assimilation		✓	✓	✓		✓	
Affrication of *t		✓	✓				
Rhotacism			✓				✓
Loss of final *-g			✓	✓	(✓)	✓	✓
Final labial to velar merger						✓	✓
Final *-b devoicing		✓	✓	✓	✓	✓	✓
Prepenultimate vowel lenition		✓	✓	✓		✓	

It is clear from the table that **there is no subgrouping in which at least one sound change does not occur independently several times**. No matter how we try to subgroup them, some sound changes will happen separately in different dialects. This is the first hurdle in using phonological evidence to subgroup Atayal dialects.

Many of these sound changes are also common (and thus it isn't surprising that they would occur several times). A number can be found in some Seediq dialects, as well as other Austronesian languages in Taiwan as well as outside it.

The only two sound changes that are specific are the merger of \*-lit and \*-li?, and

<sup>18</sup>Abbreviations are as follows: MI = Matu'uwal, Sk = Skikun, Sq = Squliq, S' = S'uli, Mw = Matu'aw, Kl = Klesan, Pl = Plngawan.



rhotacism. Rhotacism in itself is not uncommon (Romero and Martín 2003), but the environment where it occurs is highly specific, and this environment is identical in Squliq and Pngawan. The merger of \*-lit and \*-li? can also be described as a merger of word-final \*t and \*ʔ in an **extremely** specific environment. Unfortunately, these two sound changes occur in two different groups of dialects, and only Squliq has both. This means that one of these changes must have occurred twice, and was not a shared innovation.

The evidence from sound changes alone is insufficient for subgrouping. Additional evidence is needed to let us decide which of the sound changes mentioned above are shared innovations, especially the two specific sound changes. We get this evidence from shared innovations and aberrations in the lexicon, described in Chapter 6.



## Chapter 5

# Proto-Atayal morphology and lexicon

This chapter discusses the reconstruction of Proto-Atayal morphology and vocabulary, using both internal and external evidence. The reconstruction of the Austronesian voice system in Proto-Atayal verbs is presented in Section 5.1. Section 5.2 talks about the gender register system in Proto-Atayal, its derivational strategies, its history, and how it can be helpful in subgrouping. Section 5.3 presents the shared lexical innovations in Atayal dialects, divided into two major groups, with further subdivisions in each one. Section 5.4 introduces verbal paradigm leveling in various Atayal dialects. Lexical borrowings between Atayal dialects and from Seediq are discussed in Section 5.5, with Klesan and Plngawan as the most prominent examples of lexical borrowing. And finally, Section 5.6 explains the use of external evidence for reconstructing the Proto-Atayal vocabulary, using both Seediq cognates and Proto-Austronesian reconstructions.

I do not discuss the pronoun system or nominal case markers in this dissertation, due to both insufficient data at hand and time constraints. From my current data it is clear that they do not provide additional evidence for subgrouping in Atayal, and omitting them will not change the final result. Both of these phenomena are worth looking into in future research.

### 5.1 Voice system morphology in Proto-Atayal

Atayal, like most Formosan languages, has what's been variously called the 'Philippine-type alignment', 'Austronesian-type alignment', or 'focus system'. In an Austronesian

context, the terms ‘focus’ and ‘voice’ mean the same thing and are used interchangeably (Blust 2013: 437). In this dissertation, I only use the term ‘voice’.

For morphosyntactic phenomena related to the voice system in Austronesian languages in general, the reader is referred to Blust (2013: sec. 7.1). The voice system in Matu’uwal Atayal is described from a syntactic and semantic perspective in L. Huang (2001).

The voice system in Atayal belongs to the ‘Philippine-type’ of voice morphology in Austronesian languages (Pawley and Reid 1979). It has four distinct voices: the Actor/Agent Voice (AV), the Patient/Undergoer Voice (PV), the Locative Voice (LV), and the Instrumental/Benefactive Voice (IV/BV). Each of these four voices has its own verbal morphology and semantics. PV, LV, and IV share certain morphosyntactic properties and are often grouped together under the term non-Actor Voice, or NAV (Tsuchida 1975: 43).<sup>1</sup> In NAV clauses, the agent is marked with the genitive case, while in AV clauses it receives nominative case marking instead.

Below I provide examples of affixation in the indicative and the subjunctive moods. The ‘subjunctive’ in Atayal is not limited to subordinate clauses, and is used as a cover term for the affixation that appears in negative and imperative constructions. L. Huang (2000a; 2001) puts both negative and imperative constructions under ‘irrealis’, but that also includes another mood with its own morphology: the optative (or ‘projective’ in Huang’s terminology).<sup>2</sup>

The Actor Voice places emphasis on the performer of the action, or the bearer of a trait in more adjective-like predicates. Actor Voice sentences were found to be intransitive in Squliq by Liao (2004: 358), and intransitive in both Squliq and Matu’uwal Atayal by H. Chang (2004). In the absence of evidence to the contrary, AV in other Atayal dialects is assumed to be intransitive as well. AV in the indicative mood can be marked with the prefix *ma-* (or *mə-* in dialects with prepenult vowel weakening), the infix *-um-* (or *-əm-*), or be completely unmarked, for example in Proto-Atayal *\*baq* ‘to know’ and its reflexes. Examples of AV affixation on a single root and their reconstructions are shown

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<sup>1</sup>Tsuchida actually uses the term ‘non-actor focus’ (NAF), but the important part here is the grouping of AV vs NAV, rather than nomenclature.

<sup>2</sup>I do not include optative affixation due to lack of data for some dialects. I expect the optative affixes in Proto-Atayal to be *\*-aw* for PV, *\*-ay* for LV, and *\*-anay* for IV based on the data at hand and PAN morphology (Ross 2009: 296).

in Table 5.1.

Table 5.1: AV affixation in Proto-Atayal

Proto-Atayal	Matu'uwal	Plngawan	Skikun	Matu'aw	Gloss
*kumaɾal	kumaal	kumaɾal	kəmayal	kumayal	'to say, to speak (AV)'
*makaɾal	makaal	makakaɾal	məkayal	makayal	'to discuss (AV)'
*kaɾal	kaal	kaɾal	kayal	kayal	'to say (AV.SBJV)'

The two AV indicative affixes \*ma- and \*-um- are distinct. L. Huang (2001: 58–59) analyzes their reflexes in Matu'uwal as 'dynamic' (for *-um-*) versus 'static' (for *ma-*). They can appear on the same root, where the difference is usually in valency: Proto-Atayal \*maculiŋ 'to be burning' vs \*cumuliŋ 'to burn s.t.', or \*makəɾay 'dry' vs \*kuməɾay 'to dry s.t.'. The former is monovalent or monadic, meaning it does not have a specific agent, while the latter is bivalent or dyadic, meaning the agent is specified, and is the subject of the verb. Alternatively, \*ma- could also signify reciprocity: Proto-Atayal \*kumaɾal 'to say, to speak' vs \*makaɾal 'to discuss, to talk with each other'.

The infix \*-um- would sometimes surface as \*m-, replacing the first consonant of the root. This happened most often in roots starting with labial consonants: Proto-Atayal \*mumuɾa? 'to plant (AV)' vs \*pumuɾa?un 'to plant (PV)', or \*məhul 'to tie (AV)' vs \*bəhəlan 'to tie (LV)'. In the AV form of these verbs, the initial \*p or \*b is replaced with \*m in lieu of affixation, a process that Blust (2004: 76–80, 2013: 244) calls 'pseudo nasal substitution'. We know this initial \*m- corresponds to \*-um- and not \*ma- because the former cannot appear together with labials, but the latter can: Proto-Atayal \*mabahuq 'to wash clothes (AV)', or \*mapaŋa? 'to carry on back (AV)'. This process of 'pseudo nasal substitution' also appears on some specific verbs that do not start with a labial, e.g. Proto-Atayal \*maniq 'to eat (AV)', but \*kaniq 'to eat (AV.SBJV)'.

The Patient Voice places emphasis on the undergoer of the action. Semantically speaking, it carries the notion of telicity, or a fully completed action. In Sqliq Atayal, it denotes future events, but not in Matu'uwal (L. Huang 1995b: 45). PV in the indicative mood is marked with the suffix *-un* in all Atayal dialects, and with *-i* in the subjunctive, as shown in Table 5.2. Note that this subjunctive *-i* suffix does not have a coda, and the

vowel receives compensatory lengthening.

Table 5.2: PV affixation in Proto-Atayal

Proto-Atayal	Matu'uwal	Plngawan	Skikun	Klesan	Gloss
*niqun	niqun	niʔun	niqun	niʔun	'to eat (PV)'
*niqi	niqi	niʔi	niqi	niʔi	'to eat (PV.SBJV)'

The Locative Voice places emphasis on the actant that is partially affected (contrasted with PV, where the undergoer is fully affected). This voice can be used with locations of actions, hence the name. It is also used with verbs of perception, such as seeing or hearing. In Squliq, LV is often used for past events, however this is not the case with Matu'uwal (L. Huang 1995b: 45). It is marked in the indicative mood with the suffix *-an* in all Atayal dialects, and in the subjunctive mood with the suffix *-i* (identical to PV subjunctive), as seen in Table 5.3.

Table 5.3: LV affixation in Proto-Atayal

Proto-Atayal	Matu'uwal	Plngawan	Skikun	Klesan	Gloss
*pujan	pujan	pujan	pujan	pujan	'to hear (LV)'
*puji	puji	puji	puji	puji	'to hear (LV.SBJV)'

The Instrumental/Benefactive Voice<sup>3</sup> in its broadest sense encodes a transported theme, i.e. an object that is transported from one place to another, whether physically or metaphorically (Huang 2005: 792; H. Chang 2011: 806). It is often used for an instrument of an action, or a benefactor, which is where the names IV and BV come from. It is marked in the indicative mood with the prefix *si-* (or *sə-* in dialects with prepenult vowel weakening), and in the subjunctive with the suffix *-ani* (open final syllable), as demonstrated in Table 5.4.

<sup>3</sup>IV/BV is also called Referential Focus (RF) or Circumstantial Focus (CF) in some publications.

Table 5.4: IV affixation in Proto-Atayal

Proto-Atayal	Matu'uwal	PIngawan	Skikun	Klesan	Gloss
*siʔagal	siʔagal	siʔagal	səʔagal	səʔagan	'to take (IV)'
*[gʔ]alani	ʔalani	galani	ʔəlani	gəlani	'to take (IV.SBJV)'

The full system in the indicative as well as the subjunctive is presented in Table 5.5. Note that the terms 'subjunctive' or 'irrealis' are commonly used with the focus system of Atayal and Austronesian languages in general.

Table 5.5: Voice affixes in Proto-Atayal

	Indicative	Subjunctive
AV	*ma-/*-um-	∅
PV	*-un	*-i
LV	*-an	*-i
IV/BV	*si-	*-ani

The voice system morphology is largely identical across Atayal dialects, and there are no issues with its reconstruction to Proto-Atayal. The only difference is vowel reduction in the prefixes \*ma- and \*si- as well as the infix \*-um- in four Atayal dialects. Squliq, Skikun, S'uli, and Klesan (dialects which have prepenultimate vowel reduction) have *mə-*, *sə-*, and *-əm-* instead, respectively. In these four dialects, the aforementioned affixes always have a reduced vowel /ə/, even when it falls on the penultimate syllable and would not be reduced under normal vowel lenition rules: Proto-Atayal \*kumat 'to bite (AV)' > Squliq, Skikun, S'uli, Klesan *kəmat*.

The subjunctive suffixes *-i* and *-ani* are vowel-final, and the final vowel /i/ is phonetically lengthened. The same lengthening can be reconstructed to Proto-Atayal. The AV infix \*-um- is left-anchored, inserted between the first consonant and the first vowel of a root.

## 5.2 Gender register system in Proto-Atayal and its descendants

Atayal has gained attention in linguistic literature due to the gender register system in its lexicon. Matu'uwal preserves the system to the fullest extent, and it has collapsed in other dialects except for some occasional remnants (Li 1980b, 1982b, 1983), although even in Matu'uwal, only a handful of elderly speakers are even aware of this distinction, let alone able to use it correctly. In accordance with this system, men and women would use different roots for the same word, for example the verb 'to weave' in Matu'uwal is *tuminun* in the female register and *tuminuq* in the male register. This system should not be confused with grammatical gender as found in, for example, many European languages; grammatical gender is a type of noun class system, but there are no noun classes in Atayal. Unlike grammatical gender on nouns, the Atayal gender register distinction can be found in all types of content words, both nominal and verbal roots, but not every root necessarily has this distinction.

The female register corresponds to Proto-Austronesian cognates in Atayal: PAN \*taNək 'to cook' > Matu'uwal *tumaluk* (f), cf. *tumahuk* (m); or PAN \*kuCu 'head louse' > Matu'uwal *kucu?* (f), cf. *kuhiŋ* (m).<sup>4</sup> The female register is thus the set of inherited roots from which male register roots were later derived.

The gender register system used various processes to derive male register words from female register ones. As seen in Table 5.6, these include suffixes (that can replace the final segment of the final syllable), right-anchored infixes, segment deletion, segment substitution, and in a few rare cases, suppletion. Li (1983) provides a comprehensive overview of all derivation strategies with many examples. Li also notes that the choice of derivation strategy is **not predictable**, but instead lexically determined.

Other dialects have lost this distinction, and normally use just one word out of a register pair. Occasionally, both forms are preserved, sometimes with a semantic distinction, and sometimes with the same meaning: Plngawan *pahpuy* or *pahpuni?* 'to cook grains', cf. Matu'uwal *hapuy* 'fire (f)' (< PAN \*Sapuy) and *hapuniq* 'fire (m)'; Sguliq *qahuniq* 'tree' and *qahuy* 'firewood', cf. Matu'uwal *kahuniq* 'tree (m)' and *kahuy* 'tree

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<sup>4</sup>Here and following, '(m)' stands for 'male register' and '(f)' for 'female register'.



Table 5.6: Examples of male register derivation strategies in Matu'uwal

Female register	Male register	Gloss
hapuy	hapuniq	'fire'
kucu?	kuhing	'head louse'
guquh	guqiluh	'banana'
qumasug	qumasuwag	'to divide, to share'
ragum	raum	'needle'
mancaqrug	manca?rux	'to stand'
?ibubuh	bawwak	'pig'

(f)' (< PAn \*kaSiw).

The gender register system can be reconstructed to Proto-Atayalic, since traces of male register suffixes can be found in Seediq, e.g. Seediq *qəbulic* 'ash', cf. Proto-Atayal \*qabulit, PAn \*qabu. Both Seediq and Atayal have a suffix in this word, so Proto-Atayalic \*qabulit 'ash' can be reconstructed. Likewise for Proto-Atayal \*kuhiŋ and Seediq *quhiŋ* 'head louse', which are derived male register forms of Proto-Atayal \*kucu?, cf. Matu'uwal *kucu?* 'head louse (f)' < PAn \*kuCu.

The traces of the register system in Seediq are relatively few in number, though undoubtedly already present, as demonstrated above. The system was developed further after the split of Atayal and Seediq, as evidenced by the much larger number of derived lexemes in Atayal.

One very important detail to note is that **the Atayal gender register system was not static**. Instead, it continued to be productive after the split of Proto-Atayal. We can tell this is the case for two reasons: first, there may be more than one male register form across dialects for a single etymon; and second, loanwords were also affected.

A number of etyma have two male register reflexes in different dialects, some of which are shown in Table 5.7.<sup>5</sup> The first column shows reconstructed items from the female register (including two that do not have direct reflexes, more on that below), while the second and third columns display derived male register forms and the dialect in which they occur.

<sup>5</sup>Abbreviations in this and the following table are: Ml = Matu'uwal, S' = S'uli, Sk = Skikun, Pl = Plngawan, Mw = Matu'aw, Kl = Klesan.

Table 5.7: Different male register forms in different dialects

Proto-Atayal Fem.	Male reg. 1	Male reg. 2	Gloss
*həmaʔ	həmaʔuy (S')	həmaliʔ (Sk)	'tongue'
*ɭaŋaw	ɭaŋlit (Pl)	ŋəryux (Kl)	'housefly'
*hagaʔ	haʔ (Pl)	həgayuŋ (S')	'stone wall'
*mitaʔ	mitaal (Ml)	mitayux (Mw)	'to look (AV)'
*sumVwal <sup>6</sup>	sumwayal (Mw)	səməwaʔiŋ (Kl)	'to promise'
*gipun	giʔnux (Ml)	pəniq (Sk)	'tooth'
(*raqis)	raqinas (Ml)	raʔyas (Mw)	'face'
(*bural)	buraʔiŋ (Pl)	byaliŋ (Sk)	'moon'

The items in the first column are identified as female register using at least one of the following two criteria: (1) they are reflexes of PAn etyma, (2) they are found in Matu'uwal as female register forms with a corresponding male register form. All except \*\*raqis 'face' and \*\*bural 'moon' have reflexes in at least one dialect.<sup>7</sup>

The same root may use different derivation strategies in different dialects. For example, Proto-Atayal female register \*hagaʔ 'stone wall' corresponds to Plngawan *haʔ*, with deletion of /g/ followed by vowel coalescence, and to S'uli *həgayuŋ*, which uses suffixation instead. This confirms Li's (1983) conclusion that the choice of derivation cannot be predicted phonologically.

In parallel with different derivation strategies for the same root, the gender register distinction may give rise to suppletive forms in verbal paradigms. For example the Klesan verb *səməwaʔiŋ* 'to promise (AV)' has the male register suffix *-ʔiŋ*, as can be seen in Table 5.7, but its LV form is *swalan* 'to promise (LV)', which is a reflex of the female register stem, reconstructed in Proto-Atayal as \*sVwal.

The forms \*raqis 'face' and \*bural 'moon' do not have direct reflexes in any dialect, however both have corresponding PAn etyma: PAn \*daqis 'face' and \*bulaN 'moon'. Additionally, there is the Matu'uwal verb *turaqis* 'to wash one's face', which appears to

<sup>6</sup>A capital V in reconstructed words stands for a vowel segment whose phonetic value is uncertain.

<sup>7</sup>Double asterisks stand for expected, but unattested forms.

have been derived from the unattested \*raqis plus the prefix *tu-*. See also Table 5.9 and surrounding discussion for more on derived verbs and the gender register system.

A few etyma have as many as three different male register forms across dialects, an attestation of the productive nature of the gender register system even after the breakup of Proto-Atayal. The words in Table 5.8 are presented in five columns, with Proto-Atayal etyma in the leftmost column. The Proto-Atayal forms were reconstructed based on female register forms in Matu'uwal, checked against the most common denominator in derived male register forms. The following three columns present various derived forms, including the male register in Matu'uwal and related forms in Plngawan.

Table 5.8: Etyma with three different male register forms across dialects

Proto-Atayal	Matu'uwal (f)	Matu'uwal (m)	Plngawan	Other	Gloss
*guməbul	gumbul	gumuuq	ʔumbul	gəməʔul (Sk)	'to bury'
*giqas	giqas	ʔiqas	gaʔarus	gaʔanus (Mw)	'new'
*gVlahəŋ	gilahaŋ	ʔilahaŋ	ɿahalaŋ	gəlabəŋ (Sk)	'wide'

Here we see segment replacement and infixation being used in various ways. In 'to bury', Plngawan replaced the initial segment \*g, whereas Skikun replaced the medial consonant \*b. In 'new', Matu'uwal uses initial consonant deletion/substitution, while Plngawan and Matu'aw use infixes, though different ones. In 'wide', both Plngawan replaced the initial consonant \*g with /ɿ/ while Matu'uwal deleted it. Initial /ʔ/ in Matu'uwal may come from historical \*ɿ, but we would expect reflexes to appear in other dialects, which they do not. Skikun and Squliq *gəlabəŋ*, Matu'aw *galahaŋ*, and even Seediq *galahaŋ* all point to initial \*g in Proto-Atayal, so the Plngawan and Matu'uwal male register forms are more likely independent developments (note also consonant metathesis in Plngawan *ɿahalaŋ*).

There are instances of male register forms being derived for loanwords and lexical innovations. The Proto-Atayal etymon for 'clothes' was \*lukus, reflected in all dialects except Matu'uwal.<sup>8</sup> Matu'uwal instead borrowed the word *siyatuʔ* from Pazih *siatu*

<sup>8</sup>Matu'aw and S'uli innovated a different word for clothes: Matu'aw *balatan*, S'uli *latan*. However, the derived verb *malukus* 'to wear clothes' can still be found in these dialects, unlike Matu'uwal.

‘clothes’, and innovated the male register form *situwiŋ* ‘clothes (m)’. Unique lexical innovations in Matu’uwal may have male register forms, for example *maqaylup* ‘to sleep (f)’ and *maqilaap* ‘to sleep (m)’, or *ʔibluŋ* ‘rice husk, chaff (f)’ and *ʔibhuŋ* ‘rice husk, chaff (m)’.

In some cases, the female register form of a noun disappeared from some or all dialects, but the root was retained in derived verbs. Table 5.9 presents some examples of this phenomenon. The reconstructed or expected Proto-Atayal female register forms are in the first column. The second column shows the derived verbal forms without corresponding nouns in the dialect. The third column contains the male register forms of the same etyma in that dialect.

Table 5.9: Female register forms being preserved in derived verbs

Female register	Derived verb	Male register	Gloss
*buŋaʔ	təbuŋaʔ (Kl)	ŋahiʔ	‘sweet potato’
*hapuy	pəhapuy (Sq)	puniq	‘fire’
(*haŋal)	mahaŋal (Ml)	haŋaliq	‘shoulder’
(*raqis)	turaqis (Ml)	raqinas	‘face’

The Proto-Atayal nouns \*buŋaʔ ‘sweet potato’ and \*hapuy ‘fire’ can be reconstructed based on female register reflexes in Matu’uwal, which are *buŋaʔ* and *hapuy*, respectively. Neither of these can be found in any other dialect, but the roots do appear in related verbs, such as Klesan *təbuŋaʔ* ‘to plant sweet potatoes’ and Squliq *pəhapuy* ‘to cook grains’.

Reflexes of the female register forms \*haŋal ‘shoulder’ and \*raqis ‘face’ are not attested in any dialect, but related verbs can be found. Matu’uwal (among other dialects) has *mahaŋal* ‘to carry on shoulder’ and *turaqis* ‘to wash one’s face’, which must have been derived from the aforementioned female register nouns. There is additional external evidence from PAn \*daqis ‘face’ which lends more weight to \*raqis as the original form.

When reconstructing Proto-Atayal etyma, the gender register system needs to be accounted for. Because it continued being productive after the split of Proto-Atayal,

not all male register forms can be reconstructed to that level. Instead, innovations in the gender register system, be it lexical items or even new derivation strategies, can be used for subgrouping. Additional external evidence can also help with reconstructions. Seediq may show that some etyma were affixed even in Proto-Atayalic, as is the case with \*qabulit ‘ash’. Proto-Austronesian etyma can be helpful in determining female register forms where there are no direct reflexes, for example PAn \*daqis ‘face’ > Proto-Atayal \*raqis.

## 5.3 Lexical innovations and shared aberrations

This section lists lexical items exclusively shared between several dialects. These uniquely shared words fall largely across two groups, one being S’uli, Plngawan, Klesan, and Matu’aw (Section 5.3.1), and the other being Matu’uwal, Squliq, and Skikun (Section 5.3.2). Three additional sets, each one within a larger group, were also identified: (1) S’uli, Matu’aw, and Klesan (Section 5.3.1.1); (2) S’uli and Matu’aw (Section 5.3.1.2); and (3) Squliq and Skikun (Section 5.3.2.2). Other apparently shared lexical items can be explained as borrowings, mostly from the majority Squliq dialect into neighbouring dialects. Lexical borrowings are discussed in Section 5.5.

The data in this section is presented with a caveat. Some lexical items presented as uniquely shared between a group of dialects may turn out to occur outside that group as well. During my fieldwork, I would generally try to elicit an expected reflex of a protoform if one was not given to me by the speakers, so these are not simple omissions in my data. However there may be other reasons for lacking a lexical item that turns out to exist, such as a speaker forgetting an uncommon word. Nevertheless, even with this caveat there is still a clear enough tendency in the data to group the dialects into two sets, as is done below.

If the aforementioned two groups have different etyma for the same meaning, it is not always apparent which word was innovated and which was inherited (if any). In these cases it may be useful to turn to external evidence (Section 5.6), although it does not always provide an answer. In cases where a Proto-Atayal form cannot be determined through either internal or external evidence, uniquely shared words from both groups

are listed.

### 5.3.1 Shared innovations between Plngawan, S'uli, Matu'aw, and Klesan

These four dialects share a number of lexical items that are not found outside the group. S'uli and Matu'aw in particular use largely the same etyma. This tendency is quite strong even with the limited amount of data for these two dialects in my wordlist. In this section, I mostly use S'uli as a stand-in for both itself and Matu'aw, unless a particular S'uli word is missing in my dataset (or replaced) but a Matu'aw cognate is present.

Excepting the S'uli-Matu'aw pair, these dialects are geographically distant from each other, and there is no evidence of contact between them. They are spread out with S'uli and Matu'aw in the western part of the Atayal-speaking region, Plngawan in the south, and Klesan in the east. Sound correspondences between lexical items in this section are regular unless noted otherwise.

Table 5.10 presents examples of Plngawan lexical items that are shared with S'uli-Matu'aw, Klesan, or both. Matu'aw forms are used instead of S'uli in several cases, either because I do not have a S'uli form in my wordlist, or because S'uli has a loan instead of the expected reflex. In two cases neither a S'uli nor a Matu'aw form was found in my database, these were left blank. Squliq forms are given for comparison, but the forms in the table do not have cognates in Matu'uwal or Skikun unless otherwise noted.

The Klesan words *ləlaw* 'right hand side', *pəhəpah* 'flower', and *tunux* 'stone' are the same etyma as in Squliq, and may have been borrowed. We have no diagnostic for these words, but Klesan has many verifiable borrowings from Squliq, see Section 5.5.1 for more information. S'uli has *ləlaw* 'right hand side' and *gahap* 'seed' that are also shared with Squliq (however Matu'aw has *anali?* 'right hand side', which is cognate with the Plngawan form).

The word for 'chin' across Atayal dialects is complicated. S'uli actually has two forms, *ʔaŋi* and *ʔabay*, the latter cognate with Squliq and Skikun *qabay*, and the former with Matu'uwal *qəŋi?* and Matu'aw *ʔaŋi?*. Plngawan *ʔabalit* and Klesan *bəlit* appear to be

Table 5.10: Shared lexical innovations between Pngawan and the rest of the group

Pngawan	S'uli	Klesan	Squliq	Gloss
ramuʔuy	rinmuʔi	rəmuʔi	rənamuw	‘roof’
putut	putut	putut	kuy	‘mosquito’
luʔiŋ	luʔiŋ (Mw)	luʔiŋ	luqiʔ	‘marrow’
ʔamugal	məŋan	(məŋin)	qəmicicʔ	‘flea’
mahŋaliʔ	pəhəŋali	həŋəlyuŋ	məhaŋal	‘to carry on shoulder’
myebu	gibu	gebu	sasan	‘morning’
ʔuŋkuɿ	(həməkuy)	məkuy	qəməzyup	‘to fold’
kumis	kumis (Mw)	kumis	bukil	‘fur, feathers’
ciluʔ		cilu		‘lizard’
sinkarugan		sərugan	təməmyan	‘fermented meat’
ʔalihɿ	ʔalih	ʔalih	(kaleh)	‘wing’
ʔabalit	ʔaŋi	bəlit	qabay	‘chin’
gagɿaʔ	gahap	gəya	gəhap	‘seed’
ʔanaliʔ	ləlaw (S'), ʔanaliʔ (Mw)	ləlaw	ʔələləw	‘right hand side’
ɿapak	yapayap (Mw)	pəhəpah	pəhəpah	‘flower’
ʔaraw	ʔaraw	ʔara	qaraʔ	‘branch’
raɿiʔ	rəzi	ʔuŋ	quŋ	‘corner’
ʔuɿami	yamay	tunux	bətunux	‘stone’
sunbaleʔ	kəbalay	kəbəle	kəbalay	‘to build, to make’

male register forms derived from a form like \*qabay using the suffix *-lit*, which appears in other male register forms. The etymon *qaniʔ/ʔaŋiʔ* in Matu'uwal, Matu'aw, and S'uli may be a regional isogloss, since all three of these dialects are geographically contiguous. This would make \*qabay ‘chin’ the Proto-Atayal form, and Pngawan *ʔabalit* and Klesan *bəlit* may or may not have been innovated at a later stage. It is difficult to make a judgement call at this stage, so this form is not reconstructed to Proto-Atayal, but Pngawan and Klesan are assumed to have innovated the male register form instead of the other dialects losing it independently.

The word *putut* is not unique to Pngawan, S'uli, and Klesan, but it is unique in the meaning ‘mosquito’. Squliq has *putut* ‘midge’ (小黑蚊), which is a very small blood-

sucking insect *Forcipomyia Lasiohelea taiwana*. Squliq *putut* is not used to refer to mosquitoes, which are called only by the generic word for insects, *kuy*, and do not have a specialized term.

Plngawan and S'uli *ʔaraw* mean both 'branch' and 'rib', whereas this etymon means only 'rib' in other dialects (< Proto-Atayal \*qarag 'rib'). The Proto-Atayal etyma \*qaraʔ 'branch' and \*qarag 'rib' are probably not related: even though /g/ becoming /ʔ/ is a possible derivation strategy for male register forms, it is not used word-finally. At the very least, the two etyma can be reconstructed to Proto-Atayal, but may have been conflated later due to being phonetically similar. This is likely the case in Skikun as well, which has *qaraʔ* for both 'branch' and 'rib'.

A semantic shift also occurred in Plngawan, Klesan, and Matu'aw *kumis* 'fur, feathers, body hair'.<sup>9</sup> This word exists in other dialects, e.g. Squliq, but only with the meaning 'pubic hair', which is a direct reflex of PAN \*kumiS 'pubic hair'. Plngawan, Klesan, and Matu'aw extended the semantics of this etymon, whereas other dialects use distinct terms for 'fur' and 'feathers'. The word for 'fur' is distinct between Skikun, Squliq, and Matu'uwal, and cannot be reconstructed to Proto-Atayal; or alternatively, Proto-Atayal \*kumis had the additional meaning of 'fur'. However, there is the Proto-Atayal etymon \*palit meaning 'feather, wing' (< PAN \*paNid 'wing'). Thus, extending the semantics of Proto-Atayal \*kumis to also mean 'feathers' is an innovation in Plngawan, Klesan, and Matu'aw.

The word for 'wing' is *ʔalih* in S'uli and Klesan, and *ʔalihuu* in Plngawan, which is the same etymon with a male register suffix. Squliq uses *paliʔ* 'wing', but the form *kaleh* can also be found. It appears similar, but does not correspond regularly with the other three dialects. We would expect Squliq \*\*qalih or similar if the term was inherited from Proto-Atayal by all dialects.

There are some additional forms that appear to be uniquely shared between Plngawan and Klesan, but there are few of these. Plngawan *paruʔ* and Klesan *pəru* mean 'axe', whereas other dialects have reflexes of Proto-Atayal \*yasam (Matu'aw has *ʔayasam* 'axe', but other dialects do not reflect the additional syllable). This may be an innovation that was later replaced in S'uli and Matu'aw, or the two etyma may in fact refer

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<sup>9</sup>I do not have S'uli data for this etymon, but I expect it to have the same semantics.



to different types of axes.

Plngawan *sunbale?* and Klesan *kəbəle*, both meaning ‘to build, make’, point to a final glottal stop in the protoform, since the vowel in the final syllable is /e/ in both dialects, and Plngawan preserves the final glottal stop. Klesan does not have final glottal stops, but one had to be present in order for vowel coalescence to occur, as it did not happen to word-final \*-ay (see Section 4.5.4 for sound changes in Klesan). Matu’uwal *kabalay*, Squliq and Skikun *kəbalay* ‘to build, make’ do not reflect a final glottal stop. S’uli does not show this distinction in its reflexes, but S’uli *kəbalay* does not exhibit vowel lenition in the penultimate syllable (like Squliq and Skikun), which would be expected if the Proto-Atayal etymon ended in \*-aʔi? instead: cf. Proto-Atayal \*balaʔiq ‘good’ > S’uli *bəlay*, Klesan *bəle*. Unfortunately, I have not yet collected a Matu’uwal reflex, which will differentiate between the presence and absence of a word-final glottal stop in this etymon.

Another aberrant form is Plngawan *tinun* ‘to weave (PV)’ and Klesan *tənwan* ‘to weave (LV).’<sup>10</sup> These are cognate with the Matu’uwal male register form *tinuqun* ‘to weave (PV)’, but both Plngawan and Klesan have unexpected vowel coalescence in suffixed forms. We can use Matu’uwal evidence to reconstruct Proto-Atayal \*tinuqun ‘to weave (PV)’ or \*tinuqan ‘to weave (LV)’ for the male register form. In both Plngawan and Klesan, vowel coalescence does not normally occur across a historical \*q: cf. Proto-Atayal \*suqun ‘to finish, to end (PV)’ > Plngawan and Klesan *suʔun* (not \*\*sun). We would expect Plngawan \*\**tinuʔun* ‘to weave (PV)’ and Klesan \*\**tənuʔan* ‘to weave (LV)’ if they followed the regular sound change processes (\*q > ʔ occurring after vowel coalescence). The reflexes in both Plngawan and Klesan thus mean that they share an irregularity, because vowel coalescence occurs unexpectedly in the same etymon. S’uli and Matu’aw only have reflexes of the Proto-Atayal female register form \*tinunun, and cannot be used for additional evidence here.

The Plngawan, S’uli, and Matu’aw reflexes of suffixed forms of the verb \*qələʔan ‘to close’ point to a non-alternating \*u in the final syllable of the root: Matu’aw *ʔalwan*, S’uli *ʔəlwan*, and Plngawan *ʔulon*, cf. Matu’uwal *qalʔan*, Squliq and Skikun *qələʔi* (sub-

<sup>10</sup>Klesan also has *tənunan* ‘to weave (LV)’, which is a reflex of the Proto-Atayal female register form \*tinunan. It preserved the male register form with no difference in meaning, but only in the Locative Voice.

junctive -i), Klesan *ləʔan* (see Section 3.2.2.2 for more on this alternation). The form in Matu'aw, S'uli, and Plngawan contrasts with cognates in other dialects, where the root-final vowel becomes /ə/ after suffixation. (I reconstruct Proto-Atayal \*qələʔan 'to close (LV)' based on these and the Actor Voice reflexes). Matu'aw, S'uli, and Plngawan point to an underlying /u/ vowel, which gets glided in the former two and coalesced in the latter (vowel coalescence is discussed in Section 3.2.2.3). On the other hand, Squliq, Skikun, and Klesan do not undergo vowel coalescence because underlying /ə/ does not trigger it, and thus the root-final glottal stop is preserved in these dialects. Matu'uwal does not have vowel coalescence as a phenomenon, but the form *qalʔan* 'to close (LV)' reflects an alternating vowel in the root, which is regularly deleted in this environment (see Section 3.2.2.2 for an explanation of this vowel alternation in Matu'uwal).

### 5.3.1.1 Shared innovations between S'uli, Matu'aw and Klesan

Klesan shares additional innovations with S'uli and Matu'aw that Plngawan does not. These include male register forms not attested in other dialects, lexical innovations, semantic shifts, and aberrations in inherited etyma, all presented together in Table 5.11. As before, S'uli stands in for Matu'aw as well, and Matu'aw cognates are given where no S'uli data is available.

A number of male register forms were clipped from the left edge to a shorter form, especially in Klesan. Matu'aw preserves the full-length forms, where the affixation is much more apparent, for example: Matu'aw *mamyux* 'cooked rice', S'uli and Klesan *myux*, cf. Squliq and Matu'uwal *mamiʔ*.

S'uli, Matu'aw, and Klesan have in some cases innovated new male register forms, distinct from male forms in other dialects, e.g. S'uli *həgayuŋ* and Klesan *gayuŋ* 'stone wall', cf. Squliq *hagaʔ*, Plngawan *haʔ*. The original female register form was most likely \*hagaʔ (this is deduced based on gender register affixation and comparisons of extant forms). The Plngawan *haʔ* is a male register form derived using \*g deletion with subsequent vowel coalescence, whereas the form in Klesan and S'uli was derived with suffixation.

In one case, I have S'uli *pəlyuŋ* 'cloth', which may be a male register form of Squliq *palaʔ* 'cloth'. Matu'aw *lalabah* and Klesan *balah* 'cloth' must be cognates, with metathesis in one or the other. I expect S'uli to have a reflex of the Matu'aw/Klesan etymon,

Table 5.11: Shared lexical innovations and aberrations between S'uli and Klesan

S'uli	Klesan	Plngawan	Matu'uwal	Squliq	Gloss
myux	myux	mami?	mami?	mami?	'husked rice'
həmaʔuy	maʔuy	hamalit	hma?	həmali?	'tongue'
bulitux (Mw)	litux	buli?	buli?	buli?	'small knife'
pa	pa	ʔapawi?	paga?	(paga?)	'bed'
gəʔanus	ganus	gaʔarus	giqas	giqas	'new'
həgayuŋ	gayuŋ	ha?	hinaga?	haga?	'stone wall'
pəʔəlan	pəlan	kilkahan	pihlan	pəhəlan	'tread (LV)'
rami	rami	raramat	raramat	ramat	'dish (of food)'
sigit	sigit	sarik	saik	səzik	'liver'
səmakuy	cəmakuy	cumabu?	cumabu?	səmacu?	'to wrap'
yurul (Mw)	yuruŋ	ɽuhul	yamunay	tumaw	'kidneys'
həra	həra	tahar	təha	təhay	'leftover'
byux	bəyux	tapaʔan	qaqutiʔan	qəcyan	'buttocks'
lalabah (Mw)	balah	gali?	baʔbu?	pala?	'cloth'
sali	sali	moɽow	ʔimuwig	ŋasal	'house'
pəsəhut	pəcəhut	hunyak	pəsihub	cəhop	'to suck (AV)'
səsiban	sibi	hayapan	pəsihuban		'to suck (LV)'

perhaps in a different meaning, as it is unlikely that a new term was innovated to replace the old term, which was then replaced by a loan, which was modified with gender register morphology, all without leaving any traces in the language. S'uli is spoken in a considerable number of villages, and there is lexical variation that my data does not accurately capture.

S'uli and Klesan *sali* (Matu'aw *sali?*) means 'house', although this is not a lexical innovation: cf. Skikun *saliq* 'house in field'. However, Skikun *saliq* refers to a shelter in one's fields where people dwell only temporarily, during seasonal planting and harvesting, whereas in S'uli, Matu'aw, and Klesan this etymon refers to a permanent residence. This semantic shift and replacement of Proto-Atayal \*muɽag 'house' is unique to the latter three dialects.

S'uli and Klesan also share a very irregular form in the verb 'to suck'. In most other

dialects a reflex of Proto-Atayal \***pasihub** is found: Matu’uwal **pəsihub**, Skikun **pəsəhup**, Squliq **cəhop** (with an innovative prefix *cə-*). On the other hand, both S’uli and Klesan have an irregular /t/ in word-final position in the Actor Voice form: S’uli **pəsəhut**, Klesan **pəcəhut**.<sup>11</sup> The Locative Voice forms are suppletive: S’uli **səsiban** and Klesan **sibi** (with subjunctive LV suffix *-i*); but Matu’uwal **pəsihuban** is regular. This very specific and highly irregular verb is shared between S’uli and Klesan; Matu’aw forms are currently absent from my dataset.

### 5.3.1.2 Shared innovations between S’uli and Matu’aw

In addition to all other innovations shared with Plngawan and Klesan, S’uli and Matu’aw also share some lexical innovations between themselves. Matu’aw is geographically very close to S’uli in Miaoli County, however there is no evidence of any significant influence of the larger S’uli dialect on Matu’aw. Sound correspondences in Matu’aw are regular and do not show any interference from S’uli, for example its vowel distinctions in the third-to-last syllable, discussed in Section 4.1.3.

Table 5.12 presents some lexical innovations as well as words with spontaneous sound changes that are shared between S’uli and Matu’aw. Klesan is given for comparison to demonstrate that these changes are unique to only the aforementioned two dialects. The forms in Klesan and Squliq are retentions from Proto-Atayal (except Squliq *pələqwi?*).

Table 5.12: Shared aberrations and lexical innovations in S’uli and Matu’aw

S’uli	Matu’aw	Klesan	Squliq	Gloss
latan	balatan	lukus	lukus	‘clothes’
pələʔu	palaʔuw	məlabu	pələqwi?	‘white’
lipuŋ <sup>12</sup>	talipuŋ	ŋuŋu	ŋuŋu?	‘tail’
təmaluŋ	tamaluŋ	məlikuy	məlikuy	‘man’
kəmwih	kumwih	kəməyah	kəmyuh	‘to dig’
məsiwat	masiwat	məsawat	məsawat	‘to stop raining’

<sup>11</sup>Note that the prefix is reconstructed as \**pasi-*, found here and elsewhere. The Klesan *pəcə-* here is another aberration, and not a productive affix.

<sup>12</sup>H. Huang (p.c.) told me she has elicited the form *lipuŋ* ‘tail’ from some Squliq speakers as well. If it is

The words for ‘clothes’, ‘white’, ‘tail’, and ‘man’ are unique to S’uli and Matu’aw and not found elsewhere. Matu’aw *palaʔuw* and S’uli *pələʔu* does share some resemblance with Squliq *pələqwiʔ*, however apart the final vowel and the final consonant are both distinct. Squliq has a final glottal stop, while a final long vowel in Matu’aw suggests a historical final \*g.

S’uli *kəmwih* and Matu’aw *kumwih* ‘to dig’ may be related to Klesan *kəmyah* and Squliq *kəmyuh*, but the vowels are all distinct, and the medial glide is /w/ in S’uli and Matu’aw, but <y> /j/ in Klesan and Squliq. Assuming these forms are indeed related and they underwent different sporadic changes, the change was shared between S’uli and Matu’aw. Skikun, Plngawan, and Matu’aw all use reflexes of Proto-Atayal \**kumayhur* ‘to dig’.

Another shared aberration is the penultimate vowel in S’uli *məsiwat* and Matu’aw *masiwat* ‘to stop raining’, compare Matu’uwal *masuwat*, Plngawan *masot*, Squliq, Skikun, and Klesan *məswat*. Here I reconstruct Proto-Atayal \**masuwat* ‘to stop raining’, as penultimate /i/ is unique to S’uli and Matu’aw, being a shared sporadic change.

There are also lexical items which appear in S’uli and Matu’aw and no other Atayal dialects, but can be found in Seediq. For example, S’uli *tələʔuŋ*, Matu’aw *matalaʔuŋ* ‘to sit’, and Seediq *təluʔuŋ*, cf. Plngawan *matatamaʔ*, Squliq *mətamaʔ*, Skikun *tamaʔ*, Klesan *tama*, and Matu’uwal *mantahuuk*. Another case is S’uli *kəmarip*, Matu’aw *kumarip*, and Truku Seediq *qəmarik* (AV), *qəribun* (PV) ‘to cut with scissors’, cf. Squliq *qəmatap*, Plngawan *ʔumatak*, Klesan *kəmarak*. The regular correspondence of Seediq /q/ in Atayal is /q/, or /ʔ/ in dialects where /q/ was lost. The correspondence of /q/ in Seediq to /k/ in S’uli and Matu’aw is indicative of a borrowing relationship rather than a shared retention, with Seediq being the source. We have no such diagnostic for the etymon ‘to sit’, but there is no evidence of it appearing in Proto-Atayal, so it is likely a loan from Seediq as well, and again one that is shared exclusively between Matu’aw and S’uli.

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only found in areas adjacent to S’uli speakers, it may be a loan from S’uli into Squliq. If it found in geographically distant areas as well, it is not an innovation in S’uli and Matu’aw.

### 5.3.2 Shared innovations between Matu’uwal, Squliq, and Skikun

There is a number of lexical items that appear in Matu’uwal, Squliq, and Skikun, but aren’t found outside this group, neither in other Atayal dialects nor in Seediq. There are also words that are shared only between Matu’uwal and Skikun, presented in Section 5.3.2.1, and words unique to Skikun and Squliq, described in Section 5.3.2.2. There is no significant set of uniquely shared vocabulary between Matu’uwal and Squliq.

Table 5.13 lists some lexical items common to all three dialects but not found outside the group. I am missing the word for ‘to harvest’ in my Skikun dataset, but the etymon is still included in the table, and I expect a cognate to be found in Skikun as well.

Table 5.13: Uniquely shared vocabulary in Matu’uwal, Squliq, and Skikun

Matu’uwal	Squliq	Skikun	Gloss
qulih	qulih	qulih	‘fish’
humab	həmap ‘to poke’	həmap	‘to poke, to stab’
qumuwi?	qəmuzi?	(qəmulɪ?)	‘to hang’
qumuup	qəməzyup	qəmuyp	‘to fold’
rumaʔra?	rəʔəra? ‘watchtower’	rəməra?	‘to keep watch’
ɲawsun	ɲosun	(səɲos)	‘sharp’
qumibug	qəmiɸuw	qəmiɸux	‘to dig with shovel’
humibag	həmiɸaw ‘to reap’		‘to harvest’
ʔuwiq	ʔuwiq	ʔugiq	‘vein, sinew’

The sound correspondences are regular and not indicative of a borrowing relationship, for example Matu’uwal *qumibug*, Squliq *qəmiɸuw*, Skikun *qəmiɸux* ‘to dig with a shovel’, with regular reflexes of final \*g.

The amount of vocabulary uniquely shared by all three dialects is rather limited. The pairs Skikun-Matu’uwal and Skikun-Squliq have more uniquely shared cognates than Squliq-Matu’uwal. If Skikun-Matu’uwal and Skikun-Squliq share a closer genetic affinity with each other than with other Atayal dialects, then Squliq and Matu’uwal must also have a close genetic relationship by transitivity. However there is little direct lexical evidence for this. This suggests that Matu’uwal or Squliq replaced a portion of their

shared lexical innovations, making their relationship more opaque.

### 5.3.2.1 Shared innovations between Matu'uwal and Skikun

Matu'uwal and Skikun are located far away from each other, with Matu'uwal in the foothills of Miaoli County, Tai'an Township, on the shores of the Rinax River (汶水溪), and Skikun in the mountains of Yilan County, Datong Township. There is no plausible way for a borrowing relationship between these two dialects, so any shared lexical items must be inherited.

Much of the shared vocabulary between Matu'uwal and Skikun consists of shared retentions, for example Matu'uwal *raniq* and Skikun *ryaniq* 'road', male register forms corresponding to Matu'uwal *raan* 'road' in the female register, ultimately from Proto-Austronesian \**zalan* 'road'. Other Atayal dialects have replaced this etymon with reflexes of Proto-Atayal \**tuqig* 'animal trail'. What might superficially seem like a shared innovation is in fact a uniquely shared retention that was lost in all other dialects. The only way to distinguish shared retentions from shared innovations is by looking at external evidence (Section 5.6).

The lexical items in Table 5.14 do not have such external evidence, and are assumed to be shared innovations until evidence to the contrary is found. These include completely novel lexical items, but also distinct male register forms, with Squliq, Plngawan, and Klesan given for comparison.

There is no external evidence that suggests that the forms in Table 5.14 are shared retentions in Matu'uwal and Skikun. In fact, there is evidence to the contrary for several forms, where the words in Squliq, Plngawan, and Klesan have cognates in Seediq: Tgdaya Seediq *?ure* 'hungry', *bəheniq* 'twitch-up snare', *dəqeras* 'face'. The penultimate vowel in Tgdaya Seediq *bəheniq* 'twitch-up snare' does not correspond regularly with Squliq *bəhuniq*, Plngawan *bahuni?*, and Klesan *bəhoni*, which reflect \**u*, but all other correspondences are regular.<sup>13</sup> Matu'uwal *buhinug* and Skikun *bəhenux* 'bow', as well as the etymon in other Atayal dialects and Seediq, ultimately descend from PAN \**busuR*

<sup>13</sup>The semantics do not pose a major problem. A twitch-up snare involves a branch or a small tree which is bent and attached to a trigger on the ground. When the animal activates the trap and dislodges the trigger, the tree or branch snaps up. This action is similar to bending a bow to release the force stored in the wood, although in the case of a bow the force is released as a projectile. Cf. also Truku Seediq *bəhəniq* 'bow'.

Table 5.14: Shared innovations in Matu'uwal and Skikun

Matu'uwal	Skikun	Squliq	Plngawan	Klesan	Gloss
cuŋaʔ	cyuŋaʔ	raral	raliʔ	lela	'past, long ago'
quwaŋ	quyaŋ	kinpaʔyus	papayus	cilu	'lizard'
maktaliyum	kətəlyum	qəzinah	tumalaŋ	tenah	'to run'
kahabaag	qabax	kwaraʔ	koraʔ	kwaraʔ	'all'
mauŋ	moŋ	muyut	muɽut	muyut	'to extinguish'
masqayun	səqiyun	məʔuzyay	maʔuɽiy	muyay	'hungry'
buhinug	bəhenux	bəhuniq	bahuniʔ	bəhoni	'bow'
raqinas	rəqenas	rəqyas	raɽes	rəʔeyas	'face'
ʔalun	ʔalun	galun	galun	galun	'take (PV)'
lalbiŋ	ləbiŋ	səbiŋ	cacibiŋ	cəbiŋ	'sweet'

'bow', but with different patterns of male register derivation. The female register form has not been attested in any dialect.

A very similar development can be observed in the etymon 'face', which can be traced to PAn \*daqis. Squliq *rəqyas*, Plngawan *raɽes*, Klesan *rəʔeyas*, and even Seediq *dəqeras* all reflect the etymon with the Proto-Atayalic infix \*-ra-.<sup>14</sup> Matu'uwal *raqinas* and Skikun *rəqenas* have the infix -na- instead. The female register root was preserved in Matu'uwal *turaqis* 'to wash one's face'. The novel male register form appears to be an innovation in Matu'uwal and Skikun.

Matu'uwal *kahabaag* and Skikun *qabax* 'all' do not correspond regularly, but are similar enough for a possible connection. Final /g/ in Matu'uwal regularly corresponds to Skikun /x/, and the initial /q/ in Skikun would be a regular application of dorsal harmony before a pharyngeal fricative (see Section 4.5.3 for more information on dorsal harmony in Skikun). The irregularities are the additional vowel /a/ in Matu'uwal and the lack of a segment corresponding to /h/ from *kahabaag* in Skikun *qabax*.

The verb *magal* 'to take (AV)' is the same in all Atayal dialects in its Actor Voice form (barring -l > -n mergers), but suffixed forms are slightly different: *ʔalun* in Matu'uwal and Skikun, and *galun* elsewhere. Here it is not certain that the Matu'uwal and Skikun

<sup>14</sup>Plngawan *raɽes* appears to have undergone metathesis from earlier \*\*raʔiɽas to \*\*raʔiɽi(y)as, after which the vowels were coalesced into /e/. The loss of \*ʔ is regular.



form is an innovation, but it is a likely scenario. Substituting a glottal stop for initial /g/ is a male register derivation strategy, and it may have been used in PV/LV forms of this verb.

Matu'uwal *lalbiŋ* and Skikun *lābiŋ* 'sweet' reflect a historical \*l, but Squliq *sābiŋ*, Pngawan *cacibiŋ*, and Klesan *cābiŋ* reflect historical \*c as the initial consonant of the root. This is not a unique occurrence of this correspondence, and it is found in other words in the Atayalic family, always in word-initial position: Matu'uwal and Skikun *lumiq*, Pngawan *lumi?*, Klesan *lumi* 'body louse', cf. Squliq *sumiq*, Seediq *cumiq*; Pngawan *ciŋas*, Truku Seediq *siŋas* 'food debris (stuck between teeth)', cf. Toda Seediq *liŋas*; Proto-Atayal \**cumabu?* 'to wrap', cf. Seediq *lāmabu*. The change is sporadic, and it affects a different group of dialects in each case. The original sound was likely \*l in all cases, based on Proto-Austronesian correspondences, e.g. \**Ciŋas* 'food debris' (although the correspondence of PAN \*s is irregular here, see Section 4.7). The PAN etyma \**CəbuS* 'sugarcane' and \**CuməS* 'body louse' are likely related to tentative Proto-Atayalic \**cābiŋ* and \**cumiq*,<sup>15</sup> but with the rime of the final syllable replaced using male register derivational morphology. The change of \*c to \*l would come later, though it is not necessarily related to gender register morphology.

### 5.3.2.2 Shared innovations between Squliq and Skikun

Care must be taken when discussing shared lexical innovations of any dialect with Squliq, due to the latter's immense influence on smaller dialects. It is possible that some of the lexical items presented in this section are in fact loaned by Skikun from Squliq, and not shared innovations. That being said, there are no items in my wordlist that were unambiguously borrowed from Squliq into Skikun: there are no instances of rhotacism or an /s/ where a <c> /tʃ/ would be expected. The only possible exception is Skikun *kəsyux* 'to borrow', cf. Squliq *kəsyuw*, but even here Skikun has final /x/, a reflex of historical \*g, which was lost in Squliq.

Lexical innovations shared between Squliq and Skikun are presented in Table 5.15, with three other Atayal dialects given for comparison.

<sup>15</sup>These are my own reconstructions.

Table 5.15: Shared lexical innovations in Squliq and Skikun

Squliq	Skikun	Matu'uwal	Plngawan	Klesan	Gloss
ŋətaʔ	ŋətaʔ	wayluŋ	wayluŋ	weluŋ	‘chicken’
qəmicíʔ	qəmicíʔ	qamhit	ʔamugal	məŋjin	‘flea’
qəhyaŋ	qəhyaŋ	haŋaliq	haŋaliʔ	həŋaliʔ	‘shoulder’
tatuʔ	tatuʔ	ququlun	ʔaʔulun	kərahuŋ	‘incisors’
səmojaʔ	səmojaʔ	balaiq	sunkisli	kəsəli	‘like’
kəbahuʔ	kəbahuʔ	xuwil na utux	kabakul	kahuy	‘mantis’
paguŋ	paguŋ	hutarkuy	yunyuŋ	kuy milaw	‘firefly’
məsətopaw	məsətopaw	mastatail	mastaril	səboluk	‘to jump’
pinqzyuʔ	pinqyuʔ	kalun	pinaɾit	pinkyu	‘to tell’

Klesan *pinkyu* ‘to tell’ was borrowed from Squliq, as corroborated by the irregular correspondence of Squliq /q/ to Klesan /k/, which normally should correspond to Klesan /ʔ/ instead.

The lexical items in Table 5.15 are unique to Skikun and Squliq (except the aforementioned loanword), although they do not have any of the diagnostics that may have ascertained their status as inherited vocabulary and not loans. These diagnostics could have included rhotacism in Squliq, historical final \*g, or historical \*c, which have different reflexes in the two dialects (the <c> [tɕ] in *qəmicíʔ* comes from historical \*t, as evidenced by its Squliq reflex).

Apart from lexical innovations, Squliq and Skikun also share a number of sporadic changes, listed in Table 5.16. The table includes cognates from three other dialects for comparison.

The voicing of the medial consonant in Squliq and Skikun *təmapus* ‘to winnow’ is irregular, and not reflected in Matu'uwal *tumapus*, Klesan *təmapus*, or Plngawan *tumapis* (note the sporadic change of the vowel in Plngawan). We can confirm that the change in Squliq and Skikun (and Plngawan) is in fact an innovation using the PAn reconstructed form \*tapəS ‘to winnow’.

The Squliq and Skikun verb *muʔ* ‘to shoot (AV)’ is monosyllabic, but it is disyllabic

Table 5.16: Shared aberrations in Squliq and Skikun

Squliq	Skikun	Matu'uwal	Plngawan	Klesan	Gloss
təməbus	təməbus	tumapus	tumapis	təmapus	'to winnow'
mu?	mu?	cumbu?	cumbu?	cəmu	'to shoot'
səzik	sik	saik	saɪk	(sigit)	'liver'
həməbyaw	həbiyax	bahaag	(pari?)	bəhyaw	'to chase'
bəlaq	bəlaq	balaiq	bale?	bəle	'good'
qani	qani	(hani)	kani	kwani	'this'
qasa	qaca	(haca)	kaca	kyaca	'that'

in other dialects: Matu'uwal and Plngawan *cumbu?*, Klesan *cəmu*. The initial syllable is lost during suffixation in all dialects: Matu'uwal *bu?un*, Squliq, Skikun, Plngawan, and Klesan *bun* 'to shoot (PV)'. This loss of the initial syllable can be reconstructed to Proto-Atayal \*bu?un 'to shoot (PV)'. The change in the Actor Voice form in Squliq and Skikun is consistent with paradigm regularization (Section 5.4), but limited to these two dialects, and is likely a common innovation.

Matu'uwal *saik* and Plngawan *saiik* 'liver' reflect a historical \*a in penultimate position, but Squliq *səzik* and Skikun *sik* point to \*ə in this position instead.

Squliq *həməbyaw* and Skikun *həbiyax* 'to chase' both show metathesis of the first two consonants. Compare Matu'uwal *bahaag*, Klesan *bəhyaw*, and also Truku Seediq *bəhəraw*. Note that S'uli *həmyaw* shows this metathesis as well, although Klesan *məhyaw* (base *bəhyaw*) does not. The metathesis in S'uli is most likely due to Squliq influence.

Squliq and Skikun *bəlaq* 'good' have an irregular vowel correspondence with Matu'uwal *balaiq*, Plngawan *bale?*, and Klesan *bəle*. The reconstructed Proto-Atayal form is \*bala?iq, which should be regularly reflected in Squliq and Skikun as \*\*bəleq, showing vowel coalescence like Plngawan and Klesan. Notice that Squliq and Skikun lenite the penultimate vowel in *bəlaq*, suggesting that vowel lenition occurred before coalescence and ultimate vowel replacement.

Deictics in Squliq and Skikun both show sporadic backing of initial \*k into /q/: Squliq and Skikun *qani* 'this', cf. Plngawan *kani* and Klesan *kwani* (labialization in Klesan is

also sporadic). Notice also that Skikun *qaca* regularly reflects <c> /ʃs/, unlike Squliq *qasa*, which merges it into /s/, cf. Plngawan *kaca*, Klesan *kyaca*. This backing also occurs in the nominal case marker: Squliq *qu*, Skikun *qa*, cf. Matu’uwal *ku*, Plngawan *ka*. Note that the case markers are different in Squliq and Skikun, but are equally affected by this backing process. This suggests a shared innovation rather than a borrowing relationship.

### 5.3.3 Other shared aberrations

In addition to lexical innovations, the two dialect groups (Plngawan, S’uli, Klesan, and Matu’aw being one group, and Squliq, Matu’uwal, and Skikun the other) share aberrations in existing etyma, such as an irregular reflex of a segment, or metathesis. Due to the lack of external evidence for these etyma, it is not possible to tell which forms are inherited unchanged, and which are aberrant, thus they are listed here separately. Aberrant forms are listed in Table 5.17 with examples from five dialects.

Table 5.17: Shared aberrations in Atayal dialects

Plngawan	S’uli	Klesan	Matu’uwal	Squliq	Gloss
bahiluk	bəhiluk	bəhiluk	bahluk	bəhəluk	‘lungs’
maʔapuŋ	məʔapuŋ	mapuŋ	maʔapiŋ		‘dry’
mulit		məlyut	məqaluwit	məqəlwiʔ	‘to flow’
paspun	səpun	səpun	məkasiʔun	məsʊʔun	‘full’
maʔabuʔ	mənəbu	nəbu	mənubuwag	mənəbuw	‘to drink’
takak	takak	tatak	tatak	tatak	‘house in field’
kuncik	kəsyuk	kəsyu	(kabaux)	kəsyuw	‘to borrow’

Just like in Section 5.3.1 and Section 5.3.2, the dividing line here is between Plngawan, S’uli, Klesan, and Matu’aw on one side, and Matu’uwal, Squliq, and Skikun on the other (Matu’aw and Skikun were omitted for space reasons).

Klesan shows borrowing influence from Squliq in two of its forms: *tatak* ‘house in field’ and *kəsyu* ‘to borrow’. The latter case is quite telling, since Plngawan and S’uli have a final /k/ and Plngawan also has a <c> /ʃs/, both of which would be expected in a regular reflex in Klesan: \*\*kəcyuk. Squliq *kəsyuw* and Skikun *kəsyux* ‘to borrow’

indicate a historical final \*g and a medial \*s: PIngawan *kuncik* reflects \*c while Skikun *kasyux* points to an \*s instead. Klesan *kasyu* agrees with Squliq and Skikun on both accounts.

PIngawan *maʔapuŋ*, S'uli *məʔapuŋ*, and Klesan *mapuŋ* 'dry' all have /u/ in the final syllable, while Matu'uwal *maʔapiŋ* and Skikun *qapiŋ* have /i/ (there appears to be no reflex in Squliq). The vowels correspond along the same lines as other examples, but there is additional discrepancy between Matu'uwal and Skikun, where /q/ in Skikun appears to correspond to /ʔ/ in Matu'uwal. Since PIngawan, S'uli, and Klesan all lack a /q/ phoneme, it is not apparent whether Matu'uwal or Skikun underwent a sporadic change in this word.

PIngawan *mulit* and Klesan *məlyut* both have reflexes of \*-iyu-, but Matu'uwal *məqaluwit* and Squliq *məqəlwiʔ* suggest \*-uwi- instead. Metathesis occurred in one of these groups, but it is hard to tell which. The irregular final glottal stop in Squliq is explained in Section 4.6.1.

The etymon 'to drink' merits further discussion due to being highly irregular. Its Actor Voice and Patient Voice forms in six dialects are given in Table 5.18 (I do not have the S'uli PV form in my dataset). Almost all dialects exhibit suppletion between AV and PV, but the suppletive etyma differ among dialects.

Table 5.18: AV and PV forms of the verb 'to drink' in Atayal dialects

Dialect	'to drink (AV)'	'to drink (PV)'
Matu'uwal	<b>mənubuwag</b>	<b>nubuun</b>
Squliq	<b>mənəbuw</b>	<b>nəbun</b>
Skikun	<b>mənəbux</b>	<b>nəbuxun</b>
PIngawan	<b>maʔabuʔ</b>	<b>ʔabun</b>
Matu'aw	<b>manabuʔ</b>	<b>nabugun</b>
Klesan	<b>nəbu</b>	<b>nəbun</b>

In the Actor Voice forms, Matu'uwal *mənubuwag*, Squliq *mənəbuw*, and Skikun *mənəbux* all reflect a final \*g, however PIngawan *maʔabuʔ* and Matu'aw *manabuʔ* reflect a final \*ʔ instead (Klesan reflexes are ambiguous between the two). Matu'uwal additionally has a male register infix -a- (Li 1983: 9–10), but the expected female register

form does not exist in the language. Plngawan sporadically changed root-initial \*n into /ɲ/.

In the Patient Voice, Squliq *nəbun*, Plngawan *ʔabun*, and Klesan *nəbun* have vowel coalescence, which happens only in roots with a final glottal stop (Section 3.2.2.3). Skikun *nəbuxun* and Matu'aw *nabugun* both reflect a root-final \*g. Matu'uwal *nubuun* has a hiatus of identical vowels, which only happens in situations where a historical \*ɪ was deleted, so this form is puzzling (it also loses its male register infix).

The Actor Voice forms can be grouped in Matu'uwal, Squliq, and Skikun on one side, reflecting final \*g, and Plngawan and Matu'aw on the other side, reflecting final \*ʔ. Klesan and S'uli have identical reflexes of Proto-Atayal \*g and \*ʔ in this environment, but presumably they would be in the latter group. The Patient Voice forms are more difficult to account for, and may have been regularized in those dialects that do not show suppletion (for more on regularization in verbal paradigms, see Section 5.4).

## 5.4 Paradigm leveling

Different Atayal dialects have various consonant and vowel alternation processes that are especially visible in verbs, thanks to the complex verb morphology of the language. These alternation processes, described in Section 3.2, manifest in irregular verbs, which have to be learned specifically with the correct alternations. Paradigm leveling is the reversal of this process, or put in other words, it is the regularization of irregular verbs.

This regularization or paradigm leveling process evolved at different speeds in different dialects. Some dialects, like Matu'uwal or Matu'aw, have very little if any paradigm leveling, while others, like Skikun or Klesan, regularize a large portion of irregular verbs. It may be possible that this regularization process has sped up in recent decades due to language attrition among younger speakers, however it started long before today: Ogawa and Asai record the regularized Squliq form *k<in>at-an* 'to bite (LV.PFV)' in the beginning of the 20th Century (Ogawa and Asai 1935: 47).

Some of the paradigm leveling processes are systematic, and affect whole classes of alternations. Other alternation processes may only be partly affected by regularization, as it can happen on a case-by-case basis. Both types are presented in this section.

Squliq, Skikun, and Klesan completely regularize all verbs with the root-final /t/ to <c> /t͡s/ alternation from Section 3.2.1.3. Table 5.19 shows a comparison of alternating roots in Matu’uwal and Plngawan with their cognates in Squliq, Skikun, and Klesan, which do not have this alternation.

Table 5.19: Regularization of root-final /t/ to <c> /t͡s/ in Squliq, Skikun, and Klesan

Matu’uwal	Plngawan	Squliq	Skikun	Klesan	Gloss
kumat	kumat	kəmat	kəmat	kəmat	‘to bite (AV)’
kacun	kacun	katun	katun	katun	‘to bite (PV)’
maqut	(panarit)	maqut	maqut	makut	‘to ask (AV)’
paqucan	(panarican)	pəqutan	pəqutan	pəkutan	‘to ask (LV)’
ʔiŋat	(ʔumul)	(qəmul)	miŋat	miŋat	‘to rob (AV)’
ʔiŋacun	(ʔulan)	(qulan)	ŋatun	ŋata	‘to rob (PV)’
maqaynut	(rumaŋaʔ)	qəmayat	qəmayat	mayat	‘to raise (AV)’
qinucan	(raŋon)	qyatan	qyatun	nyatan	‘to raise (LV)’
humakut	humakut	həmakut	həmakut	makut	‘to move (AV)’
hakucun	hakucun	həkutun	həkutun	kutun	‘to move (PV)’

The verbs in Matu’uwal and Plngawan both have a phoneme that surfaces as /t/ if it coincides with the right edge of the word, but which becomes <c> /t͡s/ when followed by a suffix. This alternation is completely missing in Squliq, Skikun, and Klesan, fully replaced by a non-alternating /t/. (Note that the Klesan verb *makut~pəkutan* ‘to ask’ shows an irregular sound correspondence, and is likely loaned from Squliq, more on that in Section 5.5.1.)

The remaining two dialects, Matu’aw and S’uli, do preserve the alternation, although due to the merger of \*c into \*s, the alternating phoneme surfaces as /s/ before suffixes: Matu’aw *yumiŋat~yiŋasun* ‘to rob’, *maʔut~paʔusan* ‘to ask’, S’uli *kəmat~kasun* ‘to bite’.

Another regularization that works in a systematic manner is the leveling of the Ø to /s/ alternation in Skikun. In most dialects, this alternating phoneme is absent from unsuffixed forms, and instead lengthens the preceding vowel /i/ (this alternation occurs only after the vowel /i/). When suffixed, it surfaces as an /s/ in most dialects, or as /r/ in Squliq and Plngawan due to rhotacism (see Section 3.2.1.5). Skikun regularized all

verbs with this alternation, and added a final /s/ onto unsuffixed forms, as shown in Table 5.20.

Table 5.20: Skikun regularization of Ø to /s/ alternation

Skikun	Matu'uwal	Squliq	Gloss
<b>mes</b>	<b>mabaiy</b>	<b>məbaziy</b>	'to buy (AV)'
<b>besun</b>	<b>baysun</b>	<b>bəzirun</b>	'to buy (PV)'
<b>kəgis</b>	<b>kəgiy</b>	<b>kəgiy</b>	'hemp'
<b>kəgisi</b>	<b>kamkagisan</b>	<b>kəgiri</b>	'to strip hemp (PV/LV)'

Skikun is the only Atayal dialect that has a final /s/ in these verbs, and where the roots are regular. All other dialects have irregular verbs with this alternation. There is no environment to explain this irregularity in other dialects: final /-is/ is perfectly acceptable in all dialects, e.g. Matu'uwal *cumaqis~caqisun*, Plngawan *cumaʔis~caʔisun*, Squliq *səmaqis~saqisun* 'to sew'. The irregularity in words in Table 5.20 must therefore be inherited, and was leveled out in Skikun only at a later stage. Li (1981) used the occurrence of this final /s/ in Skikun to reconstruct the Proto-Atayal phoneme \*g', while in fact it is an artifact of a regularization process peculiar to Skikun alone (see Section 4.6.2).

Another alternation mentioned in Section 3.2.1.5 is the alternation between /ʔ/ and /l/ in a few roots, reproduced in Table 5.21. The forms marked by asterisks are taken from Shih (2008: 16), J. Chen (2012: 137), and Egerod (1965a: 262), the rest come from my own field notes.

Table 5.21: Squliq regularization of alternating /ʔ/ and /l/

Matu'uwal	Plngawan	Squliq	Gloss
<b>musaʔ</b>	<b>musaʔ</b>	<b>musaʔ</b>	'to go (AV)'
<b>ʔusalan</b>	<b>insalan</b>	<b>ʔəsan</b>	'to go (LV)'
<b>humicuwaʔ</b>	<b>huncoʔ</b>	<b>həməswaʔ</b>	'how (AV)'
<b>həcuwalun</b>	<b>hacolun*</b>	<b>swaʔun*</b>	'how (PV)'

The table shows two verbs in Matu'uwal and Plngawan having an alternation between /ʔ/ in unsuffixed forms and /l/ in suffixed forms. Other dialects, like Skikun and Klesan,



also have the alternation in the verb ‘to go’: Skikun *musaʔ~salan*, Klesan *mosa~salan*. Unfortunately, I have not been able to find or elicit the PV form of ‘how’ in other dialects.

On the other hand, Squliq has no consonant alternation in either of these two verbs. Note that the form *swaʔun* ‘how (PV)’ (taken from Egerod 1965a: 262) does not show vowel coalescence, even though it applies in the forms *ʔasən* ‘to go (LV)’ and *ʔason* ‘to go (PV)’. A possible explanation for this is that the regularization of these two verbs occurred at different times, with ‘to go’ regularizing first and therefore undergoing vowel coalescence. Other verbs in Egerod’s data do show vowel coalescence in the same environment, so it is unlikely to be dialectal variation.

There are also regularizations of individual roots, that are not part of a larger pattern of regularization. For example, the verb ‘to close’, shown in Table 5.22, has an alternating schwa vowel in the final syllable in Matu’uwal, Squliq, Skikun, and Klesan (see Section 3.2.2.2). However, it is regular in Plngawan, Matu’aw, and S’uli.

Table 5.22: Regularization of the verb ‘to close’ in Plngawan, Matu’aw, and S’uli

Matu’uwal	Squliq	Plngawan	Matu’aw	S’uli	Gloss
qumluʔ	qəməluʔ	ʔunluʔ	ʔumaluʔ	ʔəməlu	‘to close (AV)’
qalʔan	qələʔan	ʔulon	ʔalwan	ʔəlwan	‘to close (PV)’

The PV forms in Matu’aw and S’uli have the vowel /u/ changing into a glide /w/ before the LV suffix *-an*, which happens with non-alternating vowels. Plngawan coalesces the two vowels into a mid vowel /o/, as it usually does (see Section 3.2.2.3). Compare this to the Squliq PV form *qələʔan* or the Klesan *ləʔan*, where there is no gliding or vowel coalescence and the glottal stop is preserved. However, this regularization is not part of a larger pattern of regularizing historical schwa vowels in Plngawan, Matu’aw, and S’uli, and is instead a one-off case.

Plngawan also regularizes some verbs with the /k/ to /p/ alternation in the root. Plngawan, along with Klesan, merges labials into velars word-finally (see Section 3.2.1.2). However, in a few verbs in my data, this neutralized velar was then extended to suffixed forms as well, as shown in Table 5.23.

There are still many verbs in Plngawan that preserve the /p/ to /k/ alternation, e.g. *maɪuk~kaɪupan* ‘to enter’, *yumuk~yupun* ‘to blow’, *hunyak~hayapan* ‘to suck’.

Table 5.23: Regularization of some /p/ to /k/ alternating verbs in Plngawan

Plngawan	Matu'ual	Gloss
<b>malorak</b>	qumaluwap	'to hunt (AV)'
<b>paloɾakan</b>	qaqluwapan	'hunting grounds'
<b>panek</b>	panaip	'to fish (AV)'
<b>panekan</b>	panaypan	'to fish (LV)'

The verbs in Table 5.23 may have been regularized because their suffixed forms are not used very often in everyday speech, and have since been attrited.

## 5.5 Interdialectal lexical borrowings

When comparing lexical items, special care should be taken to account for potential borrowings. In the case of interdialectal borrowings, by far the most likely source is Squliq, which is the prestige dialect spoken by the overwhelming majority of Atayal speakers. Squliq occupies the largest territory of all Atayal dialects, and all Atayal dialects except Plngawan are bordered by Squliq. Many lexical borrowings in Klesan (Section 5.5.1), presented below, originate in Squliq, and this is corroborated by irregular sound correspondences, which reflect sound changes in Squliq.

The case of Plngawan is different, as it is an Atayal enclave, surrounded by Seediq and Bunun, but far from other Atayal dialects. The majority of identifiable loanwords in Plngawan (excepting Japanese and Sinitic loans) come from various Seediq dialects. As Seediq is most closely related to Atayal, it is important to separate these loans from inherited vocabulary, which is not always simple. My findings are given in Section 5.5.2.

### 5.5.1 Borrowings in Klesan

There is a noticeable stratum of borrowed Atayalic vocabulary in Klesan.<sup>16</sup> Some lexical items have irregular sound correspondences, and are instead phonetically simisal to Squliq words. Regular sound correspondences are a relic of systematic sound changes.

<sup>16</sup>Klesan also borrows from Japanese a lot more heavily than other dialects, but these loans are much easier to identify.

In contrast, when correspondences are not regular or systematic, they indicate a contact relationship instead. This is also true of situations where a sound change is ‘optional’, leading to several variant pronunciations: in these cases a native form is competing with a cognate loaned from a related dialect. The following irregular correspondences can be found in these loans:

- Klesan /k/ corresponding to Squliq and Matu’uwal /q/. The regular correspondence in Klesan should be /ʔ/.
- Klesan /t/ being palatalized into [tɕ] before a high front vowel. There is no regular palatalization in Klesan, so this cases of affricated /t/ are a result of language contact, not regular sound changes.
- Rhotacism in Klesan. This sound change did not occur in the dialect, but it did happen in Squliq.

Examples of Atayal etyma with irregular correspondences in Klesan are given in Table 5.24. All three of the above irregular correspondences are present. Matu’uwal and S’uli are given for comparison where cognates can be found.

Table 5.24: Words with irregular sound correspondences in Klesan

Klesan	Squliq	Matu’uwal	S’uli	Gloss
kəbubu	qəbubuʔ	qabubuʔ	(bubiŋ)	‘hat’
kabaŋ	qabaŋ		ʔabaŋ	‘squash, pumpkin’
kenu	təqinu	təqaqinug	təʔinu	‘mushrooms’
kəmasu	qəmasuw	qumasug	ʔəmasu	‘to divide’
kasu	qasuʔ	qacuʔ	ʔasu	‘boat’
cira	ciraʔ	matisaʔ		‘spindle’
cisan	məcisal			‘to play’
cimu	cimuʔ	timuʔ	(təmuyux)	‘salt’
byaciŋ	bəzyaciŋ	buwatiŋ	byatiŋ	‘moon’
ciŋan	qəciŋan	kəbatiŋan		‘male (of birds)’
cipok	cipoq			‘a little’

Squashes are a New World plant, so it is not surprising that the term for them is a borrowing in at least one language. However, S'uli *ʔabaŋ* has a regular sound correspondence with Squliq, reflecting /ʔ/ for initial /q/ in Squliq, whereas the form in Klesan has an irregular /k/ instead.

Klesan *cira* 'spindle' is an instance of both affrication of /t/ and rhotacism. The Matu'uwal form *matisaʔ* reflects Proto-Atayal \**matisaʔ* with no changes, but Squliq *ciraʔ* exhibits affrication of /t/ before /i/, and rhotacism of \*s following a high front vowel and before a stressed vowel (see Section 4.5.1 for sound changes in Squliq). Neither of these changes regularly apply in Klesan, see for example *bəgisa* 'shuttle (of loom)' or *bətisa* 'part of loom.'<sup>17</sup>

There are no cognates of Squliq *məcisal* 'to play' in Matu'uwal and S'uli in my database, however cf. Plngawan and Matu'aw *matisal* 'to play, to visit'. Klesan speakers actually allow both *cisan* and *tisan* with no difference in meaning. This is another clue that words with affrication are not the result of regular sound changes.

Some words, like Squliq *cipoq* 'a little' do not appear to have cognates in other dialects at all. The corresponding Klesan *cipok* not only has an irregular sound correspondence, but it is also a uniquely Squliq lexical item that was then borrowed into Klesan.

Some words may have doublets in Klesan, such as *tisan* or *cisan* 'to play', *yeyik* or *zəzik* 'deep', and *hyuti* or *hyuci* 'slippery'. These doublets have no semantic difference, and can be freely substituted for one another. One of these doublets shows the expected Klesan reflexes of Proto-Atayal etyma, while the other has changes that happened in Squliq, but that Klesan did not undergo.

Apart from the considerable number of words with irregular sound correspondences, Klesan also has words with no apparent irregularities, but that are more similar in form to Squliq than other dialects, or else only found in Squliq, e.g. *tatak* 'house in field' and *kasyu* 'to borrow' from Section 5.3.3. The influence of Squliq in Klesan is quite strong, and there are likely other loanwords that are more difficult, if not impossible, to identify.

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<sup>17</sup>Klesan *bətisa* 'part of loom' might actually be cognate with Proto-Atayal \**matisaʔ* 'spindle'.

### 5.5.2 Borrowings in Pngawan

Pngawan speakers have had historically close relations with Seediq speakers, including frequent intermarriage. The Seediq people in the vicinity of Pngawan speak three major dialects of Seediq: Tgdaya, Toda, and Truku. Pngawan does not show a closer contact relationship with any of the three, and instead have loans that may correspond to any single Seediq dialect.

Li (1985a) noted the presence of Seediq words in Pngawan and concluded that they were loans. He gives a detailed comparison of the Pngawan vocabulary to those of other Atayal dialects and to Seediq, and concludes that Pngawan is indeed an Atayal dialect (which was not common knowledge at the time).

Some Seediq loanwords into Pngawan are shown in Table 5.25. If a word is present in the Tgdaya dialect, it is not marked. If it is only found in the Truku dialect, it is marked with '(Tr)'. Matu'uwal and Klesan are given for comparison, but the words in the table are not Atayal cognates.

Table 5.25: Loanwords from Seediq in Pngawan

Pngawan	Seediq	Matu'uwal	Klesan	Gloss
sapit	sapic	ʔamil	yamin	'shoes'
karetan	kəretan	habaŋan		'coin'
liwas	liwas (Tr)	ʔaybaw	təbali	'cooking pot'
ciyak	ciyak	tabuwil	kəmi	'cucumber'
ŋiraw	ŋiraw	təqaqinug	kenu	'mushrooms'
ʔumpix	ʔəpix (Tr)	ʔumpux	məpux	'to press'
ʔapatuɾ	qəpatur (Tr)	taka	takay	'frog'
piluw	piilo	piit	pəyit "bird"	'sparrow'
supux	pəcupux	hahipux	hepux	'cockroach'
papak	papak	kukuy	kakay	'foot, leg'
suŋkanux	səməkənux	sumauk	səmok	'to smell'
cumilak	cəmilaq	muwik		'to cut, to snap'
rumigaw	rumigaw		ləmosay	'to walk around'

Unlike Klesan, Seediq loanwords in Pngawan are usually not determined using irregular sound correspondences (though that is sometimes useful), but simply by not having any cognates in Atayal at all.

Pngawan *sapit* ‘shoes’ is distinct from the Proto-Atayal \**ɣamil* ‘shoes’, cf. Truku Seediq *ramil* ‘slippers’. It may be related to Hoanya *sapit* ‘shoes’, though the nature of Pngawan or Seediq contact with Hoanya, a Western Plains group whose language has long since gone extinct, is uncertain.

In a few lexical items, Pngawan has an Atayal cognate, but with an irregular sound change that is also found in Seediq. For example, Pngawan *ʔumpix* and Truku Seediq *ʔəpix* ‘to press’, cf. Proto-Atayal \**ʔuməpux*. The last vowel is irregularly changed to /i/ in both Pngawan and Truku Seediq, but not other Seediq dialects, cf. Tgdaya Seediq *mepux* ‘to press’. Pngawan still preserves a historical alternating vowel in some forms: AV subjunctive *ʔapix* or *ʔapux*, LV *ʔapixan* or *apxan*. The presence of both forms in Pngawan suggests that it is the recipient, and not the source of the loan. Truku Seediq can thus be identified as the source of the Pngawan aberration.

The language contact between Pngawan and Seediq was protracted, and persisted before and after sound changes in the former. This can be seen in sound correspondences, where Seediq /q/ may correspond to either /ʔ/ or /k/ in Pngawan, and Seediq /r/ may correspond to Pngawan /ɿ/ or /r/: Truku Seediq *qəpatur* and Pngawan *ʔap-atu* ‘frog’, but Seediq *cəmilaq* ‘to snap’ and Pngawan *cumilak* ‘to cut open’, Seediq *rumigaw* and Pngawan *rumigaw* ‘to walk around, to stroll’. Words where Seediq /q/ and /r/ correspond to Pngawan /ʔ/ and /ɿ/, respectively, must be very early loans that underwent sound changes together with native vocabulary. Words where Seediq /q/ and /r/ correspond to Pngawan /k/ and /r/ are newer borrowings.

## 5.6 External evidence for lexical reconstructions

External evidence from both Seediq and Proto-Austronesian can help with lexical reconstructions. Some etyma preserve only the male register form in all dialects except one or two, and it is not always clear which forms can be reconstructed to Proto-Atayal.

Shared innovations and shared retentions in the lexicon can be tricky to distinguish

without external evidence. If the same etymon is found in either Proto-Austronesian or Seediq, then it can be treated as a shared retention.

External evidence from Seediq is presented in Section 5.6.1, and Proto-Austronesian etyma used for lexical reconstructions are discussed in Section 5.6.2.

### 5.6.1 Evidence from Seediq

Seediq cognates can be helpful in situations where there is uncertainty about retention versus innovation, and there are no Proto-Austronesian cognates. Seediq, being the most closely related language to Atayal, has the highest percentage of shared vocabulary with it. It is the first place to look when faced with a lack of internal evidence.

Some examples of Seediq evidence (Truku dialect) are presented in Table 5.26, together with conflicting evidence in Matu’uwal, Squliq, and Klesan.

Table 5.26: Seediq evidence for Proto-Atayal reconstructions

Proto-Atayal	Matu’uwal	Squliq	Klesan	Truku Seediq	Gloss
* <b>maʔuɾay</b>	<b>masqayun</b>	<b>məʔuzyay</b>	<b>muyay</b>	<b>muʔuray</b>	‘hungry’
* <b>lumaʔum</b>	<b>cumuliŋ</b>	<b>ləmom</b>	<b>ləmoŋ</b>	<b>ləmauŋ</b>	‘to burn’
* <b>bVhuniq</b>	<b>buhinug</b>	<b>bəhuniq</b>	<b>bəhoni</b>	<b>bəhəniq</b>	‘bow’
* <b>tuhiyaq</b>	<b>tatuhiʔ</b>	<b>twahiq</b>	<b>təhəya</b>	<b>təhiyaq</b>	‘far’
* <b>bVhərag</b>	<b>bahaag</b>	<b>həbəyaw</b>	<b>bəhyaw</b>	<b>bəhəraw</b>	‘to chase’

In some cases, the lack of cognates makes it difficult to decide whether a certain etymon should be reconstructed to Proto-Atayal, or whether it is a later innovation. If it can be found in Seediq, it can be safely reconstructed to Proto-Atayal, and from there also to Proto-Atayalic. Such is the case with Proto-Atayal \***maʔuɾay** ‘hungry’ and \***lumaʔum** ‘to burn’. These etyma are not found in all dialects, and other dialects may have competing etyma, such as Matu’uwal **masqayun** and Skikun **səqiyun** ‘hungry’. It is not clear whether the Matu’uwal and Skikun forms are retentions or innovations. Truku Seediq **muʔure** suggests that Proto-Atayal \***maʔuɾay** ‘hungry’ should be reconstructed, and that the Matu’uwal and Skikun forms are likely later innovations.

Other times the lexical item is not replaced, but rather modified through a spontaneous sound change or using gender register morphology. Here Seediq can again be helpful in identifying older, less innovative forms: Matu’uwal *buhinug* and Skikun *bəhenux* ‘bow’ have a different affix from Squliq *bəhuniq* and Klesan *bəhoni* ‘bow’, even though all are ultimately descended from PAn \*busuR ‘bow’. Truku Seediq *bəhəniq* ‘bow’ suggests that the Squliq and Klesan forms are not innovations, and can be reconstructed to Proto-Atayal.

### 5.6.2 Evidence from PAn reconstructions

Proto-Austronesian etyma can be very useful in reconstructing Proto-Atayal forms. Some retentions can only be found in one or two dialects, and they cannot be reconstructed to Proto-Atayal without external evidence, which PAn provides.

Table 5.27 presents some examples where PAn etyma can assist in choosing the correct form to reconstruct to Proto-Atayal.

Table 5.27: External evidence from PAn for Proto-Atayal reconstructions

PAn	Proto-Atayal	Matu’uwal	Squliq	Plngawan	Gloss
*paNid	*palit	pali?	pali?	?alihur	‘feather’
*qaNiC	*qumalit	qumali?	qəmilis	?umalit	‘to peel’
*mula	*mumuɹa?	mumuwa?	muhi?	sipamuhi?	‘to plant’
*Caliɟa	*caɟiya?	caɟiya?	papak	caɟe?	‘ear’
*zalan	*raɹan	raan	tuqiy	tu?uy	‘road’
*Səpi	*səpi?	sapiyal	səpi?	sipel	‘dream’
*damuq	*ramu?	ramuux	ramu?	ramuɹux	‘blood’

Matu’uwal, Squliq, and Skikun share the form *pali?* ‘feather’, which is not found in other Atayal dialects. Since these three dialects have a number of shared innovations, this word might also be assumed an innovation. However, it has cognates in Seediq *palic* ‘wing’ and PAn \*paNid ‘wing’. Using external evidence from both sources, it can be reconstructed to Proto-Atayal. The change of the final obstruent to a glottal stop in



Atayal is discussed in Section 4.6.1.

Matu'uwal *mumuwa?* and Skikun *muya?* 'to plant' are uniquely shared cognates. With just two dialects that also share a number of innovations, it is easy to overlook this word and assume it must be an innovation as well. However the PAn etymon *\*mula* 'to plant' is reflected regularly in both, allowing us to reconstruct Proto-Atayal *\*mumuɾa?*.

In other cases, Matu'uwal has a male register form, but no corresponding female register form, but the female register form can be found in another dialect: Matu'uwal *ramuux* and Plngawan *ramuux* 'blood' have male register affixation, but Squliq *ramu?* does not. The Squliq form corresponds with PAn *\*damuq* 'blood,'<sup>18</sup> allowing us to reconstruct both the male and the female register forms, and connect Atayal reflexes with the PAn etymon.

In a distinct class of correspondences, a female register in Matu'uwal corresponds regularly with PAn, but all (or most) other Atayal dialects only preserve the reflex of the male register form. Without an understanding of gender register system and the PAn etyma, only the male register form could be reconstructed. Instead, we can utilize our knowledge of male register forms as derived, and directly compare the female register forms with PAn reconstructions. Some of these comparisons are presented in Table 5.28, with both the female and male register form in Matu'uwal as well as Squliq cognates.

In some cases, Seediq evidence can be misleading: compare Matu'uwal *kuhiŋ*, Squliq *kuhiŋ*, and Seediq *quhiŋ* 'head louse'. Of all the dialects in Atayal and Seediq, only Matu'uwal preserves the female register form *kucu?*, corresponding to PAn *\*kuCu* 'head louse'. Here familiarity with the gender register system is helpful: we know from other evidence that the female register preserves inherited forms unchanged, while the male register modifies them. Seediq reflexes underscore the fact that the gender register was productive before the split of Proto-Atayalic into Atayal and Seediq.

We can also use PAn forms to reconstruct ambiguous segments. Matu'uwal *cai?* 'taro' has a hiatus, which may have come from the deletion of Proto-Atayal *\*ɿ* or *\*ʔ* between the two vowels. Since no other dialect has a reflex of the female register form, we have to rely on external evidence. Luckily, PAn *\*Cali* provides it, allowing us to reconstruct Proto-Atayal *\*cai?* 'taro' in the female register.

<sup>18</sup>Here PAn final *\*q* is irregularly reflected in Atayal as */ʔ/*.

Table 5.28: PAn etyma in the female speech register in Matu'uwal

PAn	Matu'uwal (f)	Matu'uwal (m)	Squliq	Gloss
*kuCu	kucuʔ	kuhiŋ	kuhiŋ	'head louse'
*qaRəm	qagum	qaum	qom	'pangolin'
*zaRum	ragum	raum	rom	'needle'
*Sapuy	hapuy	hapuniq	puniq	'fire'
*CuNuh	cumuluh	cumuliŋ	səmuliŋ	'to roast'
*NataD	lataʔ	latanux	tanux	'outside'
*ŋipən	gipun	giʔnux	gəʔənux	'teeth'
*Cali	caiʔ		sehuy	'taro'
*taNək	tumaluk	tumahuk	təmahuk	'to cook'
*taRaQ	tumagaq	tumaq	təmaq	'to carve'

When reconstructing the Proto-Atayal lexicon, I paid special attention to Proto-Austronesian reconstructions that matched a form found only in one or two dialects, especially female register forms in Matu'uwal. Even though I have found PAn cognates for only about 10% of the reconstructed Proto-Atayal vocabulary, these additional forms reconstructed with external evidence give us a better picture of the Proto-Atayal language.

## 5.7 Interim summary

This chapter began with the reconstruction of the voice morphology in Proto-Atayal, and followed it with lexical reconstructions. I devoted much attention to the unique Atayal phenomenon of gendered speech registers, whereby men's speech is derived in unpredictable ways, using any of a large number of derivational strategies.

The bulk of the chapter was dedicated to lexical innovations. Here I already grouped together the dialects which share the most innovations and aberrations with each other. The gender register system also plays a role here, since novel male register forms were being innovated in Atayal dialects long after the split of Proto-Atayal.

Along with lexical innovations, I also discussed lexical borrowings between Atayal

dialects, or between Atayal and closely related Seediq. I looked at ways of identifying such borrowings, and examined two dialects in particular due to the large amount of interdialectal loanwords they have: Klesan and Plngawan.

I also discussed the phenomenon of paradigm leveling in verbs, whereby consonant alternations that are normally induced by suffixation are regularized in some dialects. A better understanding of these regularization processes allows us to make more accurate reconstructions.

Alongside sound changes, lexical innovations and aberrations form the second cornerstone of subgrouping evidence, which is summarized in the next chapter.



# Chapter 6

## Atayal subgrouping

This chapter brings together the evidence from Chapters 4 and 5 to propose a subgrouping hypothesis of Atayal dialects. First, I present the new subgrouping in Section 6.1. I then go over the phonological and lexical evidence for each individual node of the tree in Sections 6.2, 6.3. Finally, I make some generalizations from the subgrouping and compare it with the old subgrouping proposal in Section 6.4.

### 6.1 Subgrouping proposal

The subgrouping of Atayal dialects, based on both phonological and lexical innovations, is presented in Figure 6.1.

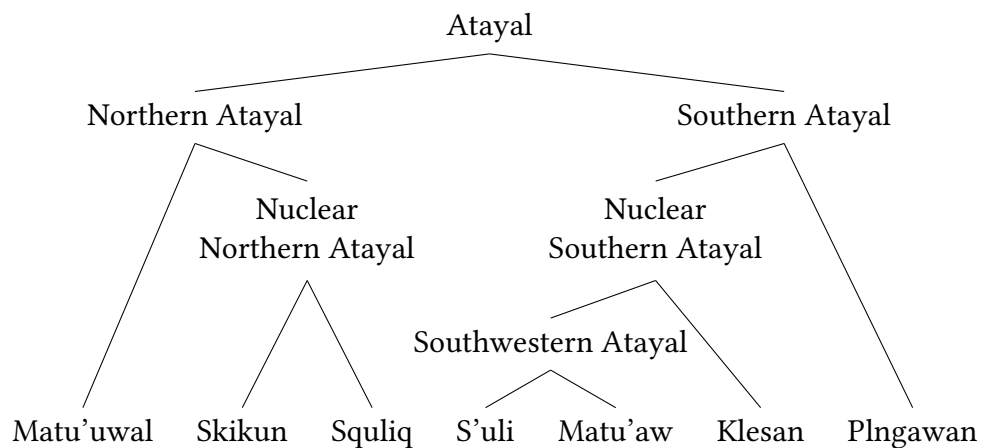


Figure 6.1: Atayal dialect subgrouping

I divide Atayal dialects into two main subgroups based on lexical and phonological ev-

idence: (1) Northern Atayal, consisting of Squliq, Skikun, and Matu'uwal, and (2) Southern Atayal, comprising S'uli, Matu'aw, Klesan, and Plngawan. The two main subgroups are named for their approximate geographical positions relative to each other. Each subgroup is defined by shared sound changes, lexical innovations (including completely novel lexical items as well as innovative male register forms) and sporadic changes shared by two or more dialects (shared aberrations). Both groups can be further subdivided based on the same principles.

Within the Northern subgroup, there is a division into Nuclear Northern Atayal (Squliq and Skikun) and Matu'uwal. In the Southern subgroup, the first split was into Nuclear Southern Atayal and Plngawan. The former then split into Southwestern Atayal (S'uli and Matu'aw) and Klesan.

Matu'uwal and Plngawan are the primary offshoots of the Northern Atayal and Southern Atayal subgroups, respectively. This is based on negative evidence: there is no direct evidence of their branching off earlier, but there is evidence that the remaining dialects in their respective subgroups are more closely related to each other.

This subgrouping is based on phonological and lexical evidence, both of which are discussed in the following sections. Neither one takes precedence overall, though lexical evidence is perhaps somewhat more useful in determining the subdivisions within Southern Atayal. On the whole, there is no disagreement between the two, which speaks to the veracity of the proposal.

## 6.2 Evidence for a Northern Atayal subgroup

The grouping of Matu'uwal, Skikun, and Squliq into the Northern Atayal subgroup is supported by both lexical evidence and by a single, but very specific sound change.

The phonological evidence is the merger of Proto-Atayal word-final \*-lit and \*-liʔ, which is common to all three dialects. Two of the dialects also share an exception to the merger in the same etymon: Matu'uwal *qawlit* and Skikun *qolit* 'mouse, rat'. The reflexes of Proto-Atayal consonant phonemes in Proto-Northern Atayal (PNA) and Matu'uwal are presented in Table 6.1.

The changes from Proto-Atayal to Proto-Northern Atayal were minimal. Only the

Table 6.1: Reflexes of Proto-Atayal consonants in Proto-Northern Atayal

PA	PNA	Matu'uwal	Gloss
*paraʔ	*paraʔ	paraʔ	‘muntjac’
*tunux	*tunux	tunux	‘head’
*matisal	*matisal		‘to chat (AV)’
*kanayril	*kanayril	kanayril	‘woman’
*kumuriq	*qumuriq	qumuriq	‘to steal (AV)’
*cumaqis	*cumaqis	cumaqis	‘to sew (AV)’
*ʔabag	*ʔabag	ʔabag	‘leaf’
*riʔax	*riʔax	riʔax	‘day’
*baŋaʔ	*baŋaʔ	baŋaʔ	‘hornet’
*giyus	*giyus	giyus	‘guts’
*cumiyuk	*cumiyuk	cumiyuk	‘to answer’
*siniyug	*siniyug	siniyug	‘rope’
*ʔisah	*ʔisah	ʔisah	‘sister-in-law’
*xuɾil	*xuɾil	xuɾil	‘dog’
*ŋarux	*ŋarux	ŋarux	‘bear’
*hahabuk	*hahabuk	hahabuk	‘sash’
*mit	*mit	mit	‘goat’
*raʔum	*raʔum	raum	‘needle’
*nanukaʔ	*nanukaʔ	nanukaʔ	‘hemp fiber’
*libuʔ	*libuʔ	libuʔ	‘chicken coop’
*raluʔ	*raluʔ	raluʔ	‘name’
*ɿunjay	*ɿunjay	ʔunjay	‘monkey’
*ɿapit	*ɿapit	ʔapit/wapit	‘flying squirrel’
*rawɿiq	*rawɿiq	rawwɿiq	‘eye’
*wariyuj	*wariyuj	wariyuj	‘neck’
*wakil	*wakil	wakil	‘strap’
*waqanux	*waqanux	waqanux	‘sambar deer’
*yutas	*yutas	yutas	‘grandfather’

Table 6.2: Merger of Proto-Atayal word-final \*-lit and \*-liʔ in Proto-Northern Atayal

PA	PNA	Matu'uwal	Gloss
*palit	*paliʔ	paliʔ	'feather'
*qabulit	*qabuliʔ	qabuliʔ	'ash'
*ʔaliʔ	*ʔaliʔ	ʔaliʔ	'bamboo shoots'

merger of Proto-Atayal final \*-lit and \*-liʔ as well as dorsal consonant harmony in the Proto-Atayal roots \*kuriq 'to steal', \*kaniq 'to eat', and \*kəbaq 'to know' occurred in consonants. Matu'uwal later underwent its complex changes of Proto-Atayal \*ɿ, and deleted Proto-Atayal \*ʔ in the environments *a\_i* and *a\_u*. The merger of Proto-Atayal word-final \*-lit and \*-liʔ is demonstrated in Table 6.2.

Note that this merger was entirely phonologically conditioned. It occurred in roots as well as derivational morphemes: cf. PAn \*paNid 'wing' > Proto-Atayal \*palit 'feather', where the syllable is part of the root, with PAn \*qabu 'ash' > Proto-Atayal \*qabulit, where it forms a derivational suffix. For further discussion of the merger of Proto-Atayal \*-lit and \*-liʔ, see Section 4.6.1.

There were no changes in vowels from Proto-Atayal to Proto-Northern Atayal, as can be seen in Table 6.3. Further changes of Proto-Atayal penultimate \*ə occurred in Matu'uwal, where it was deleted in the environment VC\_CV, and assimilated to a following vowel if there was an intervening \*ɿ in Proto-Atayal (which was deleted in Matu'uwal).

The Northern group has lexical innovations common to all three dialects, such as Matu'uwal, Squliq, Skikun *qulih* 'fish' (< Proto-Northern Atayal \*qulih); or Matu'uwal *humab*, Squliq and Skikun *həmap* 'to poke, to stab' (< Proto-Northern Atayal \*humab). The full list of lexical innovations in Proto-Northern Atayal is presented in Table 6.4, along with Proto-Atayal forms that they replaced.

Further subgrouping is difficult with lexical evidence alone, though shared aberrations as well as sound changes help establish the closer relationship of Squliq and Skikun, discussed below in Section 6.2.1. Nevertheless, Matu'uwal does uniquely share a not-insignificant number of words with Skikun (Section 5.3.2.1). Some of these are retentions, as evidenced by cognacy with Seediq or Proto-Austronesian etyma, but



Table 6.3: Reflexes of Proto-Atayal vowels in Proto-Northern Atayal

PA	PNA	Matu'uwal	Gloss
*paraʔ	*paraʔ	paraʔ	‘hornet’
*balihun	*balihun	balihun	‘door’
*kuhiŋ	*kuhiŋ	kuhiŋ	‘louse’
*tunux	*tunux	tunux	‘head’
*bəhut	*bəhut	bəhut	‘squirrel’
*həiŋ	*həiŋ	hiŋ	‘honey’
*qalətiŋ	*qalətiŋ	qaltiŋ	‘plank’
*bayhuɹ	*bayhuɹ	bayhuw	‘wind’
*ɹuŋay	*ɹuŋay	ʔuŋay	‘monkey’
*rawɹiq	*rawɹiq	rawwiq	‘eye’
*ləhəbaw	*ləhəbaw	lihbaw	‘lightweight’
*buwax	*buwax	buwax	‘unhusked rice’
*qusiyaʔ	*qusiyaʔ	qusiyaʔ	‘water’

some are lexical innovations, for example Matu'uwal *cunəʔ* and Skikun *cyunəʔ* ‘in the past, long ago’; or the aberrant root-initial consonant in Matu'uwal *lalbiŋ* and Skikun *ləbiŋ* ‘sweet’, cf. Squliq *səbiŋ*, Klesan *cəbiŋ*. Ultimately, shared lexical and phonological innovations between Squliq and Skikun overshadow the few unique cognates between Matu'uwal and Skikun. A possible explanation is that these Matu'uwal/Skikun cognates were innovations in Northern Atayal, but were later replaced in Squliq, erasing the evidence.

### 6.2.1 Evidence for a Nuclear Northern Atayal subgroup

Within the Northern Atayal subgroup, Skikun could be closer either to Squliq or to Matu'uwal, according to lexical evidence. However, shared innovations between Skikun and Matu'uwal are limited to a modest number of lexical items, while Squliq shares both lexical innovations and aberrations with Skikun. Moreover, Squliq and Skikun share five sound changes with each other that Matu'uwal did not undergo, which are:

Table 6.4: Lexical innovations in Northern Atayal

PA	PNA	Matu'uwal	Squliq		Skikun	Gloss
*[ʔq]uciyux	*qulih	qulih	qulih		qulih	‘fish’
*maytaq	*humab	humab	həmap	‘to poke’	həmap	‘to poke, to stab’
*paqayaʔ	*qumuwiʔ	qumuwiʔ	qəmuziʔ		(qəmulɪʔ)	‘to hang’
	*qumurup	qumuup	qəməzyup		qəmuyp	‘to fold’
	*rumaʔraʔ	rumaʔraʔ	rəʔəraʔ	‘watchtower’	rəməraʔ	‘to keep watch’
	*ɲawsun	ɲawsun	ɲosun		(səɲos)	‘sharp’
	*qumibug	qumibug	qəmibuw		qəmibux	‘to dig with shovel’
*kuməluh	*humibag	humibag	həmibaw	‘to reap’		‘to harvest’
	*ʔuwiq	ʔuwiq	ʔuwiq		ʔugiq	‘vein, sinew’

- merger of Proto-Atayal \*ɿ and \*y,
- liquid assimilation,
- affrication of Proto-Atayal \*t,
- Proto-Atayal final \*-b devoicing,
- prepenultimate vowel lenition.

Each one of these sound changes does not constitute compelling evidence on its own, but five changes together, supported by shared innovations and aberrations in the lexicon, are a lot more convincing. Fortition of Proto-Atayal \*w in the third-to-last syllable must also have occurred at this stage, see reflexes of Proto-Atayal \*wariyʊŋ ‘neck’ and \*waqanux ‘sambar deer’. The specific definitions of all sound changes are given in Section 4.5. Table 6.5 demonstrates how these changes affected Proto-Atayal consonants in Proto-Nuclear Northern Atayal (PNNA).

Table 6.5: Reflexes of Proto-Atayal consonants in Proto-Nuclear Northern Atayal

PA	PNA	PNNA	Squliq	Skikun	Gloss
*paraʔ	*paraʔ	*paraʔ	paraʔ	paraʔ	‘muntjac’
*tunux	*tunux	*tunux	tunux	tunux	‘head’
*matisal	*maɿisal	*məɿisal	məcisal	məcisal	‘to chat (AV)’
*kanayril	*kanayril	*kəneril	kəneril	kəneril	‘woman’

PA	PNA	PNNA	Squliq	Skikun	Gloss
*kumuriq	*qumuriq	*məquriq	məquriq	məquriq	‘to steal (AV)’
*cumaqis	*cumaqis	*cəmaqis	səmaqis	cənaqis	‘to sew (AV)’
*ʔabag	*ʔabag	*ʔabag	ʔabaw	ʔabaɣ	‘leaf’
*riʔax	*riʔax	*ryax	ryax	ryax	‘day’
*baŋaʔ	*baŋaʔ	*baŋaʔ	baŋaʔ	baŋaʔ	‘hornet’
*giyus	*giyus	*gyus	gyus	gyus	‘guts’
*cumiyuk	*cumiyuk	*cəmyuk	səmyuk	cəmyuk	‘to answer’
*siniyug	*siniyug	*sənyug	sənyuw	sənyux	‘rope’
*ʔisah	*ʔisah	*ʔisah	ʔirah	ʔisah	‘sister-in-law’
*xuɾil	*xuɾil	*huyil	huzil	hoyil	‘dog’
*ŋarux	*ŋarux	*ŋarux	ŋarux	ŋarux	‘bear’
*hahabuk	*hahabuk	*habuk	habuk	habuk	‘sash’
*mit	*mit	*mit	mit	mit	‘goat’
*raʔum	*raʔum	*rom	rom	rom	‘needle’
*nanukaʔ	*nanukaʔ	*nukaʔ	nukaʔ		‘hemp fiber’
*libuʔ	*libuʔ	*libuʔ	libuʔ	libuʔ	‘chicken coop’
*raluʔ	*raluʔ	*laluʔ	laluʔ	laluʔ	‘name’
*ruŋay	*ruŋay	*yuŋay	yuŋay	yuŋay	‘monkey’
*ɾapit	*ɾapit	*yapit	yapit	yapit	‘flying squirrel’
*rawɾiq	*rawɾiq	*royiq	rozɾiq	royiq	‘eye’
*wariyuŋ	*wariyuŋ	*gəryuŋ	gəryuŋ	gəryuŋ	‘neck’
*wakil	*wakil	*wakil	wakil	wakil	‘strap’
*waqanux	*waqanux	*bəqanux	bəqanux	bəqanux	‘sambar deer’
*yutas	*yutas	*yutas	yutas	yutas	‘grandfather’
*ɾVəkəlit	*ɾVəkəliʔ	*kəliʔ	kəliʔ	kəliʔ	‘leopard’
*ʔaliʔ	*ʔaliʔ	*ʔaliʔ	ʔaliʔ	ʔaliʔ	‘bamboo shoots’

Proto-Atayal word-final \*g was still present in Proto-Nuclear Northern Atayal, as evidenced by different reflexes in Skikun and Squliq. It underwent different changes in

these two dialects, devoicing in Skikun to merge with Proto-Atayal \*x, and leniting in Squliq, becoming /w/ after \*a and Ø after high vowels (with compensatory lengthening).

Vowels in Proto-Nuclear Northern Atayal underwent prepenultimate weakening and monophthongization, as seen in Table 6.6. Previous disyllabic sequences CV.GVC were changed into monosyllabic CGVC if the penultimate vowel and the glide were homorganic, e.g. Proto-Atayal \*buwax ‘unhusked rice’ > Proto-Northern Atayal \*bwax. They did not change further in Squliq or Skikun.

Table 6.6: Reflexes of Proto-Atayal vowels in Proto-Nuclear Northern Atayal

PA	PNA	PNNA	Squliq	Skikun	Gloss
*paraʔ	*paraʔ	*paraʔ	paraʔ	paraʔ	‘hornet’
*balihun	*b <sub>ə</sub> lihun	*b <sub>ə</sub> lihun	bəlihun	bəlihun	‘door’
*kuhiŋ	*kuhiŋ	*kuhiŋ	kuhiŋ	kuhiŋ	‘louse’
*tunux	*tunux	*tunux	tunux	tunux	‘head’
*bəhut	*bəhut	*bəhut	bəhut	bəhut	‘squirrel’
*həiŋ	*həiŋ	*həyiŋ	həziŋ		‘honey’
*qalətiŋ	*q <sub>ə</sub> lətiŋ	*q <sub>ə</sub> ləciŋ	qələciŋ	qələciŋ	‘plank’
*bayhuɹ	*b <sub>ə</sub> yhuɹ	*b <sub>ə</sub> huy	behuy	behuy	‘wind’
*ɹuŋay	*ɹuŋay	*y <sub>u</sub> ŋay	y <sub>u</sub> ŋay	y <sub>u</sub> ŋay	‘monkey’
*rawɹiq	*r <sub>ə</sub> wɹiq	*r <sub>ə</sub> y <sub>i</sub> q	roziq	royiq	‘eye’
*ləhəbaw	*ləhəbaw	*ləhəbaw	həbaw	ləhəbaw	‘lightweight’
*buwax	*b <sub>u</sub> wax	*bwax	bwax	bwax	‘unhusked rice’
*qusiyaʔ	*q <sub>ə</sub> usiyaʔ	*q <sub>ə</sub> syaʔ	qəsyəʔ	qəsyəʔ	‘water’

Squliq also shares lexical innovations and aberrations in a number of words uniquely with Skikun (Section 5.3.2.2). Examples include Squliq and Skikun *ŋətaʔ* ‘chicken’, Squliq and Skikun *tatuʔ* ‘incisors (front teeth)’, Squliq and Skikun *səmojaʔ* ‘to like’.

We may suspect that Squliq, as by far the largest Atayal dialect, could have influenced Skikun through language contact, however I have found no evidence of such a relationship, unlike with Klesan and S’uli: Skikun does not have a layer of vocabulary with irregular correspondences that can be linked to borrowings from Squliq, but Klesan and

S'uli do (the loan layer in Klesan is discussed in Section 5.5.1).

Shared aberrations in particular are a crucial piece of evidence in ascertaining a close genetic relationship between Squliq and Skikun: sporadic voicing of Proto-Atayal \*p into /b/ in Squliq and Skikun *təməbus* ‘to winnow’, cf. Proto-Atayal \**tumapus*; sporadic vowel change of Proto-Atayal \*-aʔi- to /-a-/ in Squliq and Skikun *bəlaq* ‘good’, cf. Plngawan *baleʔ*, Klesan *bəle*, from Proto-Atayal \**balaʔiq*; irregular penultimate vowel weakening in Squliq *səzik* and Skikun *sik* ‘liver’, cf. Matu’uwal *saiik* and Plngawan *saiik*, from Proto-Atayal \**saiik*. The full list of lexical innovations and aberrations in Nuclear Northern Atayal is presented in Table 6.7.

Table 6.7: Lexical innovations and aberrations in Nuclear Northern Atayal

PA	PNNA	Squliq	Skikun	Gloss
*waylun	*ŋətaʔ	ŋətaʔ	ŋətaʔ	‘chicken’
	*qəmicicʔ	qəmicicʔ	qəmicicʔ	‘flea’
*haŋaliq	*qəhyaŋ	qəhyaŋ	qəhyaŋ	‘shoulder’
*qulun	*tatuʔ	tatuʔ	tatuʔ	‘incisors’
	*səməoyaʔ	səməoyaʔ	səməoyaʔ	‘like’
	*kəbahuʔ	kəbahuʔ	kəbahuʔ	‘mantis’
	*paguŋ	paguŋ	paguŋ	‘firefly’
*masitaɿil	*məsətopaw	məsətopaw	məsətopaw	‘to jump’
*kumaɿal	*pinqyuʔ	pinqzyuʔ	pinqyuʔ	‘to tell’
*tumapʊs	*təməbʊs	təməabus	təməabus	‘to winnow’
*cʊməbuʔ	*muʔ	muʔ	muʔ	‘to shoot’
*saɿik	*səyik	səzik	sik	‘liver’
*bVhəɿag	*həbiyag	həməbyaw	həbiyax	‘to chase’
*balaʔiɿq	*bəlaɿq	bəlaq	bəlaq	‘good’
*kani	*qani	qani	qani	‘this’
*kaca	*qaca	qasa	qaca	‘that’

The backing of Proto-Atayal \*k in deictics and case markers is an important innovation: Squliq *qasa* and Skikun *qaca* ‘that’ (< Proto-Nuclear Northern Atayal \**qaca*),

cf. Plngawan *kaca* and Klesan *kyaca*; or Squliq *qu* and Skikun *qa*, a nominative case marker, cf. Matu’uwal *ku* and Plngawan *ka*. Crucially, the sound correspondence between Squliq *qasa* and Skikun *qaca* is regular, and the case markers have different forms altogether, which precludes borrowing, but they still share this backing phenomenon.

### 6.3 Evidence for a Southern Atayal subgroup

The four dialects Plngawan, Klesan, S’uli, and Matu’aw can be subgrouped together into the Southern Atayal subgroup based primarily on lexical evidence. All four also share the merger of Proto-Atayal \*q and \*ʔ and the devoicing of final \*b. We cannot say with certainty that these two sound changes occurred before the subgroup split further, but assume that is the case due to the absence of any evidence to the contrary. All four dialects also have undergone the loss of final \*g, however in this case we know that some Matu’aw speakers still preserved it at least into the 1980s (Li 1981), and this is not a shared innovation, but instead a sound change that occurred multiple times independently.

Sound changes in consonants from Proto-Atayal to Proto-Southern Atayal (PSA) are demonstrated in Table 6.8. The loss of Proto-Atayal \*q is the most salient change, although the loss of Proto-Atayal \*ʔ in the environment a\_í and a\_ú must have also occurred at this stage.

Table 6.8: Reflexes of Proto-Atayal consonants in Proto-Southern Atayal

PA	PSA	Plngawan	Gloss
*paraʔ	*paraʔ	paraʔ	‘muntjac’
*tunux	*tunux	tunux	‘head’
*matisal	*matisal	matisal	‘to chat (AV)’
*kanayril	*kanayril	(kanel)	‘woman’
*kumuriq	*kumuriʔ	ʔuŋkuriʔ	‘to steal (AV)’
*cumaqis	*cumaʔis	cumaʔis	‘to sew (AV)’
*ʔabag	*ʔabag	ʔabaw	‘leaf’
*riʔax	*ryax	rex	‘day’

PA	PSA	Plngawan	Gloss
*baŋaʔ	*baŋaʔ	baŋaʔ	‘hornet’
*giyus	*gyus	gis	‘guts’
*cumiʔuk	*cumyuk	cumik	‘to answer’
*siniyug	*sinyug	sinyuw	‘rope’
*ʔisah	*ʔisah	ʔirah	‘sister-in-law’
*xuɪl	*xuɪl	huɪl	‘dog’
*ŋarux	*ŋarux	ŋarux	‘bear’
*hahabuk	*hahabuk	hahabuk	‘sash’
*mit	*mit	mit	‘goat’
*raʔum	*rawm	roŋ	‘needle’
*nanukaʔ	*nanukaʔ	nukaʔ	‘hemp fiber’
*libuʔ	*libuʔ	libuʔ	‘chicken coop’
*raluʔ	*raluʔ	raluʔ	‘name’
*ɹuŋʔay	*ɹuŋʔay	ɹuŋʔiy	‘monkey’
*ɹapit	*ɹapit	ɹapit	‘flying squirrel’
*rawɪq	*rawɪʔ	roɪʔ	‘eye’
*wariyuj	*waryuj	wariŋ	‘neck’
*wakil	*wakil	(wakiliʔ)	‘strap’
*waqanux	*waʔanux	wanux	‘sambar deer’
*yutas	*yutas	yutas	‘grandfather’
*ɹVkəlit	*ɹVkəlit	ɹaklit	‘leopard’
*ʔaliʔ	*ʔaliʔ	ʔaliʔ	‘bamboo shoots’

Plngawan underwent further changes in its consonants, most prominently rhotacism, which occurred in an identical environment to that of Squliq. Proto-Atayal word-final labials became velars in Plngawan, Proto-Atayal word-final \*g was lenited, and Proto-Atayal \*x in \*xuɪl ‘dog’ was changed into /h/ in Plngawan *huɪl*.

Proto-Southern Atayal made some changes to Proto-Atayal syllabification, as seen in Table 6.9. Previous disyllabic sequences CV.GVC were changed into monosyllabic

CGVC if the penultimate vowel and the glide were homorganic, e.g. Proto-Atayal \*buwax ‘unhusked rice’ > Proto-Southern Atayal \*bwax. Monophthongization of offglides in penultimate syllables had not yet occurred. We know this because of Plngawan and Matu’aw reflexes, which preserve prepenultimate vowel distinctions; Matu’aw additionally lacks monophthongization.

Table 6.9: Reflexes of Proto-Atayal vowels in Proto-Southern Atayal

PA	PSA	Plngawan	Gloss
*paraʔ	*paraʔ	paraʔ	‘hornet’
*balihun	*balihun	balihun	‘door’
*kuhiŋ	*kuhiŋ	kuhiŋ	‘louse’
*tunux	*tunux	tunux	‘head’
*bəhut	*bəhut	buhut	‘squirrel’
*həiŋ	*həiŋ	hiŋ	‘honey’
*qalətiŋ	*ʔalətiŋ	ʔaltiŋ	‘plank’
*bayhuɹ	*bayhuɹ	bəhuɹ	‘wind’
*ɹuŋay	*ɹuŋay	ɹuŋiɹ	‘monkey’
*raw.iq	*raw.iʔ	ro.iʔ	‘eye’
*ləhəbaw	*ləhəbaw	lahbuw	‘lightweight’
*buwax	*bwax	bɔx	‘unhusked rice’
*qusiyaʔ	*ʔusyaʔ	ʔuseʔ	‘water’

Plngawan later monophthongized vowel sequences aggressively, resulting in a larger number of coalesced vowels than any Atayal dialect. Not only did Plngawan change non-final offglides into mid vowels like many other dialects, but it monophthongized onglides as well: Proto-Atayal \*buwax ‘unhusked rice’ > PSA \*bwax > Plngawan *box*; Proto-Atayal \*qusiyaʔ ‘water’ > PSA \*ʔusyaʔ > Plngawan *ʔuseʔ*.

Plngawan shares lexical innovations with both Southwestern Atayal and Klesan, though few are shared among all three. This is likely due to later innovations and lexical replacement due to language contact in each of these three branches. The relevant data is listed in Table 6.10.



Table 6.10: Lexical innovations in Southern Atayal

PA	PSA	Plngawan	S'uli	Matu'aw	Klesan	Gloss
*rinamug	*rinVmuʔi[g]	ramuʔuy	rinmuʔi	rinmuʔiy	rəmuʔi	‘roof’
*luqus	*luʔiŋ	luʔiŋ		luʔiŋ	luʔiŋ	‘marrow’
	*ʔamu[gŋ]al	ʔamugal	məŋan		(məŋin)	‘flea’
*mahaŋal	*mahaŋaliʔ	mahŋaliʔ	pəhəŋali		həŋəlyuŋ	‘to carry on shoulder’
*sasan	*magayəbuʔ	myebu	gibu	magayabuʔ	gebu	‘morning’
	*[ʔh]uməkux	ʔuŋkux	həməkuy		məkuy	‘to fold’
*payus	*ciluʔ	ciluʔ			cilu	‘lizard’
*palit	*ʔalih	(ʔalihux)	ʔalih	ʔaʔalih	ʔalih	‘wing’
	*ʔabalit	ʔabalit	(ʔaŋi)	(ʔaŋiʔ)	bəlit	‘chin’
*gəhap	*gagəɬaʔ	gagɬaʔ	(gahap)		gəya	‘seed’
*pəhəpah	*ɬapəɬap	ɬapak		yapayap	(pəhəpah)	‘flower’
*batunux	*ʔuɬamay	ʔuɬami	yamay	ʔuyamay	(tunux)	‘stone’

Lexical innovations shared between Plngawan, Klesan, and Southwestern Atayal include Plngawan *ramuʔuy*, S'uli *rinmuʔi*, Klesan *rəmuʔi* ‘roof’, a derived male register form (< Proto-Southern Atayal \*rinVmuʔi[g]),<sup>1</sup> cf. Squliq *rənamuw*; and Plngawan, Matu'aw, and Klesan *luʔiŋ* ‘marrow’, also a novel male register form (< Proto-Southern Atayal \*luʔiŋ), cf. Squliq *luqiʔ*, Matu'awal *luqus*. Plngawan shares some innovations only with Klesan or Southwestern Atayal, but not both: Plngawan *ɬapak*, Matu'aw *yapayap* ‘flower’ (< Proto-Southern Atayal \*ɬapəɬap); Plngawan *ʔuɬamiy*, S'uli *yamay*, Matu'aw *ʔuyamay* ‘stone’ (< Proto-Southern Atayal \*ʔuɬamay); Plngawan *gagɬaʔ*, Klesan *gəya* ‘seed’ (< Proto-Southern Atayal \*gagəɬaʔ). This patchwork of lexical innovations can be explained by Klesan and Southwestern Atayal replacing some shared innovations with loans or newer coinages (although my data for S'uli and Matu'aw is incomplete, and more cognates may be found in the future).

Klesan and Plngawan share very few lexical items, and one sound change: the merger of final labials into velars. The sound change is rather common, and due to the low amount of uniquely shared vocabulary, these lexical items are likely common reten-

<sup>1</sup>Final \*g in this Proto-Southern Atayal form is uncertain, as indicated by square brackets, but possible based on reflexes of Proto-Atayal final \*g in other words.

tions rather than innovations. The evidence for subgrouping Klesan together with S’uli and Matu’aw is stronger, which means the word-final labial-velar merger occurred independently in Klesan and Pngawan.

### 6.3.1 Evidence for a Nuclear Southern Atayal subgroup

The evidence for classifying Klesan, S’uli, and Matu’aw together into the Nuclear Southern Atayal subgroup includes additional shared lexical innovations and the merger of Proto-Atayal \*ɿ and \*y (this sound change also occurred independently in Nuclear Northern Atayal). Consonant correspondences between Proto-Atayal, Proto-Southern Atayal, and Proto-Nuclear Southern Atayal (PNSA) are demonstrated in Table 6.11. The aforementioned merger between Proto-Atayal \*ɿ and \*y was the only consonantal change from PSA to PNSA.

Table 6.11: Reflexes of Proto-Atayal consonants in Proto-Nuclear Southern Atayal

PA	PSA	PNSA	Klesan	Gloss
*paraʔ	*paraʔ	*paraʔ	para	‘muntjac’
*tunux	*tunux	*tunux	tunux	‘head’
*matisal	*matisal	*matisal	tisan	‘to chat (AV)’
*kanayril	*kanayril	*kanayril	kənerin	‘woman’
*kumuriq	*kumuriʔ	*kumuriʔ	məkuri	‘to steal (AV)’
*cumaqis	*cumaʔis	*cumaʔis	cəmaʔes	‘to sew (AV)’
*ʔabag	*ʔabag	*ʔabag	ʔabaw	‘leaf’
*riʔax	*ryax	*ryax	ryax	‘day’
*baŋaʔ	*baŋaʔ	*baŋaʔ	baŋa	‘hornet’
*giyus	*gyus	*gyus	gyus	‘guts’
*cumiyuk	*cumyuk	*cumyuk	(cəmcyuk)	‘to answer’
*siniyug	*sinyug	*sinyug	sənyu	‘rope’
*ʔisah	*ʔisah	*ʔisah	ʔisah	‘sister-in-law’
*xuɿil	*xuɿil	*xuyil	hoyin	‘dog’
*ŋarux	*ŋarux	*ŋarux	ŋarux	‘bear’

PA	PSA	PNSA	Klesan	Gloss
*hahabuk	*hahabuk	*hahabuk	habuk	‘sash’
*mit	*mit	*mit	mit	‘goat’
*raʔum	*rawm	*rawm	roŋ	‘needle’
*nanukaʔ	*nanukaʔ	*nanukaʔ	nuka	‘hemp fiber’
*libuʔ	*libuʔ	*libuʔ	libu	‘chicken coop’
*raluʔ	*raluʔ	*raluʔ	lalu	‘name’
*ɽuŋay	*ɽuŋay	*yʊŋay	yʊŋay	‘monkey’
*ɽapit	*ɽapit	*yapit	yapit	‘flying squirrel’
*raw.ɽiq	*raw.ɽiʔ	*rawyiʔ	royi	‘eye’
*wariyʊŋ	*waryʊŋ	*waryʊŋ	(gəryʊŋ)	‘neck’
*wakil	*wakil	*wakil	wakin	‘strap’
*waqanux	*waʔanux	*waʔanux	wanux	‘sambar deer’
*yutas	*yutas	*yutas	yutas	‘grandfather’
*ɽVkəlit	*ɽVkəlit	*yVkəlit	kəlit	‘leopard’
*ʔaliʔ	*ʔaliʔ	*ʔaliʔ	ʔali	‘bamboo shoots’

Klesan later lost final glottal stops, merged final labials with velars, and underwent liquid assimilation.

Vowels remained completely unchanged between PSA and PNSA, as seen in Table 6.12. We know this thanks to Matu’aw evidence, since Klesan and S’uli both underwent prepenultimate vowel weakening and monophthongization.

Table 6.12: Reflexes of Proto-Atayal vowels in Proto-Nuclear Southern Atayal

PA	PSA	PNSA	Klesan	Gloss
*paraʔ	*paraʔ	*paraʔ	paraʔ	‘hornet’
*balihun	*balihun	*balihun	bəlihʊŋ	‘door’
*kuhiŋ	*kuhiŋ	*kuhiŋ	kuhiŋ	‘louse’
*tunux	*tunux	*tunux	tunux	‘head’
*bəhut	*bəhut	*bəhut	bəhut	‘squirrel’

PA	PSA	PNSA	Klesan	Gloss
*həɿiŋ	*həɿiŋ	*həyiŋ	həyiŋ	‘honey’
*qalətiŋ	*ʔalətiŋ	*ʔalətiŋ	lətiŋ	‘plank’
*bayhuɿ	*bayhuɿ	*bayhuy	behuy	‘wind’
*ɿuŋay	*ɿuŋay	*yuŋay	yuŋay	‘monkey’
*rawɿiq	*rawɿiʔ	*rawyiʔ	royi	‘eye’
*ləhəbaw	*ləhəbaw	*ləhəbaw	ləhəbaw	‘lightweight’
*buwax	*bwax	*bwax	bwax	‘unhusked rice’
*qusiyaʔ	*ʔusyaʔ	*ʔusyaʔ	ʔəsyə	‘water’

Klesan later weakened prepenultimate vowels and monophthongized offglides in penultimate position, e.g. PNSA \*ʔusyaʔ ‘water’ > Klesan ʔəsyə, PNSA \*bayhuy ‘wind’ > Klesan behuy. Its monophthongization affected offglides preceding final glottal stops, unlike in S’uli: Proto-Atayal \*suwaʔiʔ ‘younger sibling’ > PNSA \*suwayʔ > Klesan səswə, cf. S’uli sway.

S’uli and Matu’aw share more lexical innovations with Klesan than they do with Pngawan (Section 5.3.1.1). These may be either completely new lexical items or novel male register forms. The full list of lexical innovations can be seen in Table 6.13.

Table 6.13: Lexical innovations and aberrations in Nuclear Southern Atayal

PA	PNSA	S’uli	Klesan	Matu’aw	Gloss
*mamiʔ	*mamɿux	myux	myux	mamɿux	‘husked rice’
*həmaʔ	*həmaʔuy	həmaʔuy	maʔuy	hamaʔuy	‘tongue’
*buliʔ	*bulitux		litux	bulitux	‘small knife’
*pagaʔ	*paʔ	pa	pa	paʔ	‘bed’
*giqas	*gVʔanus	gəʔanus	ganus	gaʔanus	‘new’
*hagaʔ	*hVgayuŋ	həgayuŋ	gayuŋ	hingayuŋ	‘stone wall’
*payhəlan	*pVʔəlan	pəʔəlan	pəlan		‘tread (LV)’
*ramat	*rami[ʔ]	rami	rami		‘dish (of food)’
*saɿik	*saygit	sigit	sigit	saygit	‘liver’

PA	PNSA	S'uli	Klesan	Matu'aw	Gloss
*cumabu?	*cumakuy	səmakuy	cəmakuy		'to wrap'
	*yurul		yururŋ	yurul	'kidneys'
	*həra[ʔ]	həra	həra		'leftover'
*tatukah	*bəyux	byux	bəyux		'buttocks'
*pala?	*lalabah		balah	lalabah	'cloth'
*murag	*sali?	sali	sali	sali?	'house'
*pasihub	*pacVhut	pəsəhut	pəcəhut		'to suck (AV)'
	*sVsiban	səsiban	sibi		'to suck (LV)'

New lexical items include S'uli *byux* and Klesan *bəyux* 'buttocks' (< Proto-Nuclear Southern Atayal \*bəyux), or S'uli and Klesan *həra* 'leftovers' (< Proto-Nuclear Southern Atayal \*həra[ʔ]). Some examples of novel male register forms are S'uli, Klesan *myux* and Matu'aw *mamyux* 'husked rice' (< Proto-Nuclear Southern Atayal \*mamyux, cf. Proto-Atayal \*mamiʔ); S'uli *həmaʔuy*, Klesan *maʔuy*, Matu'aw *hamaʔuy* 'tongue' (< Proto-Nuclear Southern Atayal \*həmaʔuy, cf. Proto-Atayal \*həmaʔ < PAn \*Səma). They also share semantic changes like S'uli, Klesan *sali*, Matu'aw *sali?* 'house', from Proto-Atayal \*saliq which referred to a structure in a field used primarily during sowing and harvest work (cf. Skikun *saliq* 'house in field'). There are shared aberrations between the dialects as well, such as the irregular final /t/ in S'uli *pəsəhut* and Klesan *pəcəhut* 'to suck (AV)', cf. Matu'awal *pasihub*, Squliq *cəhop*.

Lexical innovations in Nuclear Southern Atayal are readily detectable despite evidence of heavy Squliq influence on Klesan (Section 5.5.1). Klesan has loanwords of Squliq origin in many parts of its vocabulary, including basic words: Klesan *cipok* and Squliq *cipoq* (this word appears to be a Squliq innovation, but cf. Skikun *cipiq/cipaq*), Klesan *byaciŋ* and Squliq *bəzyaciŋ* 'moon' (cf. Proto-Atayal \*buɾatiŋ), Klesan *cira* and Squliq *cira?* 'spindle' (cf. Proto-Atayal \*matisaʔ), Klesan *kenu* and Squliq *təqinu* 'mushrooms' (cf. Proto-Atayal \*tVqaqinug), Klesan *kəmasu* and Squliq *qəmasuw* 'to divide, to share' (cf. Proto-Atayal \*qumasug). These loans can be identified through irregular correspondences like Squliq /q/ to Klesan /k/ instead of regular /ʔ/, or Squliq /ci/ to Kle-

san /ci/ instead of regular /ti/. With the presence of Squliq loanwords in Klesan with identifiable irregularities, it is equally likely that there are also borrowings from Squliq without such diagnostic sounds, however we do not have any direct means of proving that they are loans.

S'uli and Klesan both have liquid assimilation, prepenultimate vowel lenition, and the loss of final \*g. However Matu'aw, which together with S'uli forms the Southwestern Atayal subgroup, does not share these sound changes with S'uli (Matu'aw did lose its word-final \*g, but it is a very recent change). These three sound changes must therefore have occurred independently in S'uli and Klesan. S'uli and Klesan also share the tendency to merge final /l/ into /n/, however this change is common to young speakers across all Atayal dialects, and is simply more pronounced in these two varieties. Note that the aforementioned sound changes also occurred independently in Squliq (and Skikun, with the exception of the loss of \*-g), and thus indicate either linguistic drift or commonalities due to language contact.

### 6.3.1.1 Evidence for a Southwestern Atayal subgroup

In addition to all the innovations of Southern Atayal and Nuclear Southern Atayal, S'uli and Matu'aw share even more lexical innovations and aberrations with each other, and also the merger of Proto-Atayal \*c and \*s. Table 6.14 provides an outlook of changes from Proto-Atayal to Proto-Southwestern Atayal (PSWA) and later to S'uli and Matu'aw for all consonants.

Table 6.14: Reflexes of Proto-Atayal consonants in Proto-Southwestern Atayal

PA	PSA	PNSA	PSWA	S'uli	Matu'aw	Gloss
*paraʔ	*paraʔ	*paraʔ	*paraʔ	para	paraʔ	'muntjac'
*tunux	*tunux	*tunux	*tunux	tunux	tunux	'head'
*matisal	*matisal	*matisal	*matisal		matisal	'to chat (AV)'
*kanayril	*kanayril	*kanayril	*kanayril	kənerin	kanayril	'woman'
*kumuriq	*kumuriʔ	*kumuriʔ	*kumuriʔ	məkuri	kumuriʔ	'to steal (AV)'
*cumaqis	*cumaʔis	*cumaʔis	*sumaʔis		sumaʔis	'to sew (AV)'
*ʔabag	*ʔabag	*ʔabag	*ʔabag	ʔabaw	ʔabaw	'leaf'

PA	PSA	PNSA	PSWA	S'uli	Matu'aw	Gloss
*riʔax	*ryax	*ryax	*ryax	ryax	ryax	'day'
*baŋaʔ	*baŋaʔ	*baŋaʔ	*baŋaʔ	baŋa		'hornet'
*giyus	*gyus	*gyus	*gyus		gyus	'guts'
*cumiyuk	*cumyuk	*cūmyuk	*sūmyuk	səmyuk	sumyuk	'to answer'
*siniyug	*sinyug	*sinyug	*sinyug	sənyu	sinyuw	'rope'
*ʔisah	*ʔisah	*ʔisah	*ʔisah	ʔisah	ʔisah	'sister-in-law'
*xuxil	*xuxil	*xuyil	*xuyil	huzin	xuyil	'dog'
*ŋarux	*ŋarux	*ŋarux	*ŋarux	ŋarux	ŋarux	'bear'
*hahabuk	*hahabuk	*hahabuk	*hahabuk	habuk	hahabuk	'sash'
*mit	*mit	*mit	*mit	mit	mit	'goat'
*raʔum	*rawm	*rawm	*rawm	rom	rawm	'needle'
*nanukaʔ	*nanukaʔ	*nanukaʔ	*nanukaʔ	nuka	nanukaʔ	'hemp fiber'
*libuʔ	*libuʔ	*libuʔ	*libuʔ	libu	libuʔ	'chicken coop'
*raluʔ	*raluʔ	*raluʔ	*raluʔ	lalu	raluʔ	'name'
*ɽuŋay	*ɽuŋay	*yuŋay	*yuŋay	yuŋay	yuŋay	'monkey'
*ɽapit	*ɽapit	*yapit	*yapit	yapit	yapit	'flying squirrel'
*rawɽiq	*rawɽiʔ	*rawyiʔ	*rawyiʔ	rozi	rawyiʔ	'eye'
*wariyuŋ	*waryuŋ	*waryuŋ	*waryuŋ	(rəgyuŋ)	waryuŋ	'neck'
*wakil	*wakil	*wakil	*wakil	wakil	wakil	'strap'
*waqanux	*waʔanux	*waʔanux	*waʔanux	waʔanux	waʔanux	'sambar deer'
*yutas	*yutas	*yutas	*yutas	yutas	yutas	'grandfather'
*ɽVkəlit	*ɽVkəlit	*yVkəlit	*yVkəlit	kəlit	yakalit	'leopard'
*ʔaliʔ	*ʔaliʔ	*ʔaliʔ	*ʔaliʔ	ʔali	ʔaliʔ	'bamboo shoots'

The merger of Proto-Atayal \*c and \*s is the only consonantal change from PNSA to PSWA. Even though both S'uli and Matu'aw have lost Proto-Atayal \*g in word-final position, it was attested by Li in 1980 (Li 1980a, 1981, 1982a), and was thus an independent change. S'uli additionally lost word-final glottal stops, and merged Proto-Atayal word-final \*l into /n/.

No vowel changes occurred from PNSA to PSWA, as seen in Table 6.15. After the split of PSWA, S'uli underwent prepenultimate weakening and monophthongization of offglides in the penultimate syllable, and Matu'aw merged Proto-Atayal \*ə into /a/.

Table 6.15: Reflexes of Proto-Atayal vowels in Proto-Southwestern Atayal

PA	PSA	PNSA	PSWA	S'uli	Matu'aw	Gloss
*paraʔ	*paraʔ	*paraʔ	*paraʔ	paraʔ	paraʔ	'hornet'
*balihun	*balihun	*balihun	*balihun	lihun	balihun	'door'
*kuhiŋ	*kuhiŋ	*kuhiŋ	*kuhiŋ	kuhiŋ	kuhiŋ	'louse'
*tunux	*tunux	*tunux	*tunux	tunux	tunux	'head'
*bəhut	*bəhut	*bəhut	*bəhut	bəhut		'squirrel'
*həɻiŋ	*həɻiŋ	*həyiŋ	*həyiŋ	həziŋ	həyiŋ	'honey'
*qalətiŋ	*ʔalətiŋ	*ʔalətiŋ	*ʔalətiŋ		ʔalətiŋ	'plank'
*bayhuɻ	*bayhuɻ	*bayhuy	*bəyhuɻ	bəhuy	bayhuy	'wind'
*ɻuŋay	*ɻuŋay	*yɻuŋay	*yɻuŋay	yɻuŋay	yɻuŋay	'monkey'
*rawɻiɻ	*rawɻiʔ	*rawyiʔ	*rawyiʔ	rozi	rawyiʔ	'eye'
*ləhəbaw	*ləhəbaw	*ləhəbaw	*ləhəbaw	ləhəbaw		'lightweight'
*buwax	*bwax	*bwax	*bwax	bwax	bwax	'unhusked rice'
*qusiyaʔ	*ʔusyaʔ	*ʔusyaʔ	*ʔusyaʔ	sya	ʔusyaʔ	'water'

S'uli and Matu'aw share the largest amount of innovations with each other (Section 5.3.1.2). Apart from all the innovations of the PSA and PNSA stages, more lexical items were innovated by the PSWA stage. These innovations and aberrations can be seen in Table 6.16.

Lexical items uniquely shared between these two dialects include S'uli *latan* and Matu'aw *balatan* 'clothes' (compare Proto-Atayal \*lukus), or S'uli *təmaluŋ* and Matu'aw *təmaluŋ* 'man, husband' (compare Proto-Atayal \*malikuɻ). They also share several sporadic changes, for instance the penultimate vowel in S'uli *məsiwat* and Matu'aw *masiwat* 'to stop raining', compare Proto-Atayal \*masuwat.



Table 6.16: Lexical innovations in Southwestern Atayal

PA	PSWA	S'uli	Matu'aw	Gloss
*lukus	*balatan	latan	balatan	'clothes'
*malabu?	*paləʔu[wg]	pələʔu	palaʔuw	'white'
*ŋuŋu?	*talipuŋ	lipuŋ	talipuŋ	'tail'
*malikuɿ	*tamaluŋ	təmaluŋ	tamaluŋ	'man'
*kumayhuɿ	*kumwih	kəmwih	kumwih	'to dig'
*masuwat	*masi wat	məsiwat	masiwat	'to stop raining'

## 6.4 Interim summary

The evidence in this chapter supports the following generalizations about the historical development of Atayal:

1. There is a clear division into two groups, here named Northern and Southern Atayal, supported by both lexical and phonological evidence.
2. There is a significant amount of drift in Atayal dialects, with identical sound changes occurring multiple times in different dialects. This makes subgrouping impossible based on phonological evidence alone.
3. Language contact between Atayal communities persisted after the break-up of Proto-Atayal into individual dialects, as evidenced by numerous loanwords in various dialects. Klesan and S'uli both have a stratum of Squliq loans. Plngawan and Matu'uwal largely escaped this interdialectal language contact due to their position on the periphery of the Atayal-speaking territory.

My subgrouping proposal is supported by both phonological and lexical evidence at each node of the subgrouping tree. This is in stark contrast to the original *Squliq-C'uli'* division (Utsurikawa et al. 1935), which included only two groups, placing Squliq apart from all the other dialects, and not clarifying the subgrouping inside *C'uli'*. Without any subgrouping of lower nodes, it did not make clear which dialects were included in the *C'uli'* group, or even how many dialects were being subgrouped. My subgrouping proposal uses binary branching on all nodes of the tree, making it much more detailed.

## *Chapter 6 Atayal subgrouping*

In terms of the subgrouping itself, the main difference is the placement of Skikun and Matu'ual together with Squliq in the same subgroup (Northern Atayal).

# Chapter 7

## Conclusion

### 7.1 Summary

This dissertation presents the first and so far the only Atayal subgrouping proposal based on linguistic criteria. A possible reason for the lack of previous subgrouping proposals is the complexity of sound changes in Atayal, some of which occurred independently several times throughout the group. In this dissertation, I complemented the deficiency in phonological evidence with lexical evidence. Since data for most Atayal dialects is not readily available, this required me to do my own fieldwork and collect enough lexical material to support a subgrouping proposal.

The main goal of this dissertation was to disprove the *Squliq* and *C'uli'* dichotomy of Atayal dialects and present an alternative subgrouping. There is ample evidence from both sound changes and lexical innovations for subgrouping Squliq together with Skikun and Matu'uwal in what I have termed *Northern Atayal*. The three dialects of Northern Atayal all share a crucial and extremely specific merger of Proto-Atayal word-final \*-lit and \*-liʔ. The remaining dialects can also be subgrouped together as *Southern Atayal*, though primarily using lexical evidence, since the sound changes in the Southern group are all quite common, and in fact many happened independently several times. Matu'aw evidence was important in determining the relative order of sound changes as well as the fact that changes like liquid assimilation and prepenultimate vowel lenition occurred independently in S'uli and Klesan.

The lexical evidence was not a straightforward path to a coherent subgrouping, and

the main hurdle was the massive influence Squliq has had on some Atayal dialects, most notably Klesan and S'uli. To utilize lexical evidence properly, I first had to find cases of lexical borrowing between the Atayal dialects, which in turn required me to correctly identify the regular sound correspondences between Atayal dialects, as well as the sound changes from Proto-Atayal to each individual dialect. On the other hand, the overwhelming presence of Squliq lent more weight to evidence of genetic links between other dialects, both phonological and lexical. Since small Atayal dialects are spoken mostly far away from each other, the possibility of language contact is almost nonexistent, and any shared features are much more likely to be inherited from a common ancestor rather than borrowed.

In this dissertation, I discussed several distinct but related topics: the synchronic phonology of Atayal dialects, the phonological system of Proto-Atayal, and the subgrouping and diachronic development of Atayal dialects.

Chapter 3 is a detailed description of the phonological systems of seven Atayal dialects. It presented their consonantal and vocalic inventories, syllable structures, and phonotactics. The chapter also included an overview of the most common affixation-induced consonantal and vocalic alternations across Atayal dialects. These synchronic descriptions laid the groundwork for the reconstruction of the phonology of Proto-Atayal, the ancestor of all the Atayal dialects.

Chapter 4 is a step-by-step reconstruction of the phonology of Proto-Atayal. I began with establishing regular correspondences for each individual segment in Proto-Atayal, as well as combinations of segments where necessary (this is needed with vowels, which undergo coalescence in many Atayal dialects). I also examined the phonotactics of the protolanguage in a separate section. Apart from direct internal evidence from Atayal dialects, I also made use of external evidence from Seediq and Proto-Austronesian, which was explained individually for both of these sources. I then presented a list of sound changes from Proto-Atayal to each individual dialect. Sound changes between Li's (1981) Proto-Atayalic and my Proto-Atayal were listed as well: there were only two systematic sound changes, but I tackled the bigger issue of two incompatible proto-phonemes reconstructed by Li, and concluded that in both cases they should not be reconstructed to Proto-Atayalic. The chapter also included a list of sound correspon-

dences between Proto-Austronesian and Proto-Atayal.

Chapter 5 took an in-depth look at the lexical evidence for Atayal subgrouping. After a brief introduction to the voice morphology of Atayal and its reconstruction to Proto-Atayal, I delved into the gender register system in Atayal. The gender register system is a mechanism of lexical derivation and obfuscation that can be found in a large amount of words in Atayal. Derivations related to the gender register system began before the split of Proto-Atayalic, as evidenced by the presence of semantically vacuous derivational affixes (e.g. Proto-Atayalic \*qabulit ‘ash’ < PAn \*qabu). After the split of Proto-Atayalic, the system was developed further in Atayal, and was still productive after the split of Proto-Atayal. Even though the gender register system often obscures cognacy with other Austronesian languages, I showed that we can use it to our advantage when subgrouping Atayal dialects. Next I discussed lexical innovations and shared aberrations between Atayal dialects, where a clear divide into two groups—North and South—could already be established. This was despite heavy influence of the prestige Squliq dialect on its many neighbours. Luckily, borrowings from Squliq could in many cases be identified, and I addressed the problem of interdialectal loans later in the chapter. Lastly, I presented additional external evidence from Seediq and Proto-Austronesian, to help us distinguish shared retentions from shared innovations.

Chapter 6 contains the final subgrouping proposal along with a discussion of supporting evidence. I provided both phonological and lexical evidence for subgrouping at the level of each separate node of the phylogenetic tree. Sound changes alone could not be used to subgroup Atayal dialects, due to an erratic distribution of identical changes induced by drift. No matter how we tried to group Atayal dialects together, some sound changes would still have to occur independently multiple times. This in itself is not surprising, since most of the sound changes in Atayal dialects are quite common cross-linguistically. The most bizarre sound change (the merger of Proto-Atayal word-final \*-liʔ and \*-lit) coincided with the Northern group determined by lexical innovations. The Southern group did not have the same strong phonological evidence, but the evidence grew incrementally once we went deeper into the group, with Nuclear Southern Atayal sharing an important merger of Proto-Atayal \*ɾ and \*y. The affinity of Plngawan with Southern Atayal was determined through lexical innovations, since the only sound

changes it shared with the rest of the group were vowel coalescence and the change of Proto-Atayal \*q > ʔ, which in theory could have been independent developments. The addition of lexical innovations specific to the Southern group cemented the place of Pngawan in its ranks.

Ironically, my new subgrouping harkens back to Ogawa's original claim of the presence or absence of the /q/ phoneme as being the most salient indicator of dialectal affinity in Atayal (Ogawa and Asai 1935: 21). The Southern group has in fact lost Proto-Atayal \*q, while the Northern group has preserved it,<sup>1</sup> although this sound change was **not** the deciding piece of evidence in my subgrouping, and is just a coincidence.

## **7.2 Contribution**

This dissertation contributes to our understanding of Atayal in various ways. From the point of view of language documentation, the appendix alone is probably the largest cross-dialectal comparative vocabulary of Atayal ever published. The appendix is an abridged version, containing only those etyma that could be reconstructed to Proto-Atayal. The wordlist I compiled is about 2500 items long (though not all items have been collected for every dialect), and will be archived in a transparent way in the future. In the spirit of openness and cooperation, I plan to share this data with the Atayal-speaking community as well as with the linguistic community.

I provided a detailed description of the synchronic phonologies of seven different Atayal dialects, put together in one place. The descriptions of vowel alternations in Pngawan, as well as the interactions of vowel-alternating processes in Matu'uwal, have not previously been discussed in linguistic literature. This dissertation also sheds light on Matu'aw, an Atayal dialect first 'discovered' by Li (1980a, 1981, 1982a), but afterwards largely forgotten. Matu'aw has never received a phonological description before this time. The issue of rhythmic vowel weakening in various Atayal dialects has received very little attention from scholars, only being discussed by H. Huang (2017) for Matu'uwal.

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<sup>1</sup>Some varieties of Sqliq lost Proto-Atayal \*q independently, for example the speech in the tribal villages Kulu and Haga-Paris in I-lan County, as recorded by Li (1998).

From the perspective of diachronic linguistics, my contributions include the reconstruction of the phonology of Proto-Atayal in detail, in such a way that makes it easy to compare with its ancestors Proto-Atayalic and Proto-Austronesian. I also reconstructed a large amount of Proto-Atayal vocabulary (circa 1100 items) based on the data I collected; these reconstructions are included in the appendix.

The final contribution of this dissertation is the first linguistically sound subgrouping of Atayal dialects. This subgrouping is extremely detailed, and backed up by linguistic evidence from both phonological and lexical changes at each node of the phylogenetic tree. It greatly improves our understanding of the nature of the genetic relationship between the various Atayal dialects.

## 7.3 Directions for future research

Although the question of Atayal subgrouping has been answered, I have uncovered new unsolved problems along the way that provide excellent avenues of further research.

Even though I contributed a description of the phonologies of seven Atayal dialects, many of them still remain underresearched. S'uli, Matu'aw, Skikun, Klesan, and Plngawan have all had a very low amount of descriptive work done on them in every aspect of linguistics, and one could start almost anywhere with most of these.

On the synchronic phonological side, the interactions between different vowel alternation processes in Matu'uwal, namely hiatus resolution and rhythmic vowel reduction (see Section 3.2.2.4), are quite complex. An in-depth look is needed to unravel that mystery.

During the writing of this dissertation, I noticed several synchronic phonological processes that I could not yet describe or analyze to my satisfaction, and thus I had to omit them until a later time. Some Plngawan roots have alternations of the consonant /ɾ/ with Ø, but I have not yet found a pattern. Matu'aw seems to have vowel weakening processes, whereby high vowels get lenited into /a/, but I do not have sufficient data to provide an analysis.

Some correspondences of third-to-last vowels between Matu'uwal, Matu'aw, and Plngawan are yet to be resolved. In certain cases I lacked data, but in others it

was a problem of contradictory evidence, which led to uncertainty in some of my Proto-Atayal reconstructions.

The findings of this dissertation can be further used to make adjustments to Li's (1981) Proto-Atayalic reconstruction, as I have already done for the phonemes \*g' and word-final \*-d (see Section 4.6). Since the Atayalic branch is considered one of the earlier offshoots of the Austronesian family tree (Blust 1999: 46), its reconstruction has a disproportionately large influence on the reconstruction of Proto-Austronesian. There is also the conundrum of several Proto-Austronesian phonemes having multiple reflexes in Proto-Atayal (and Proto-Atayalic) without any apparent conditioning factors. For example, Proto-Austronesian word-initial \*S is reflected as Proto-Atayal \*s in some cases, but as \*h in others, in identical environments. Several other Proto-Austronesian phonemes also have multiple reflexes, most notably PAn \*j, which has a null reflex in some words but surfaces as Proto-Atayal \*g in others (sound correspondences between PAn and Proto-Atayal are presented in Section 4.7). Future research in Austronesian historical linguistics will have to account for these irregularities.

Even though this dissertation presents a reconstruction of the phonology of Proto-Atayal and a sizeable vocabulary, some aspects of the protolanguage are yet to be reconstructed. These include its pronominal system, nominal case markers, and derivational morphology. Future work on Proto-Atayal could concentrate on these aspects.



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# Appendix

This appendix includes 1100 lexical items reconstructed to Proto-Atayal with their descendant forms presented where available. Non-cognate forms are omitted. Forms in parentheses are dubious cognates; these include possible interdialectal borrowings and lexemes with sporadic changes.

In some cases, both a male and female register form can be reconstructed. These are marked with (m) and (f), respectively. Occasionally, competing male register forms are reconstructible, and all are provided. Sometimes the register distinction is uncertain, but the evidence still points to two forms in Proto-Atayal. In these situations, the register is unmarked.

Verb forms are reconstructed with focus morphology, and it is marked in the gloss as (AV), (PV), etc. Suffixed (PV/LV) forms are given for roots where they are not predictable, for example in cases of vowel or consonant alternations.

Proto-Atayal	Gloss	Matu'uwal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*tikay	a bit; a little	tikay	tikiy	cikay	cikay			tikay
*ruma?	a few; some	ruma?	ruma?	kəruma?	kəkəruma?			
*bVsiyaq	a long time		buse?	bəsyay	bəsyay	bəsyay	basya?	bəsyay
*tawkan	a net bag carried on one's back (by men)	tawkan	tokan	tokan	tokan	tokan	tawkan	
*rarsa?	a pair	magrarsa?	mararsa?	rərsa?				rərsa
*babawiq	above; tall	babawiq	babawiq 'tall'	wagiq 'tall'	bawiq	bawiq 'tall'	wawiq?	bawiq 'tall'
*maqiyanux	alive	məqiyanux	mayanux	məqyanux	məqyanux	myanux	mayanux	məʔyanux
*kuwara?	all		kora?	kwara?		kwara	kwara?	kwara
*bagati?	Alocasia	bagati?				gaci		gaci
*bagayag	Alocasia		bagayaw	bgayaw	bgayax			
*nanak	alone; only; self	nanak	nanak	nanak	nanak	nanak		nanak
*qasinug	animal; wild game	qasinug	ʔasinuw	qəsinuw	qəsinux	sinu	ʔasinuw	ʔəsinuw
*tuqig	animal trail		tuʔuy 'road'	tuqiy 'road'	tuqiy	tuʔi 'road'		tuʔiy 'road'
*qutiʔan	anus	qaqutiʔan	balinʔ uten	qəcyan	qəcyan			
*kariman	arm		(karuminʔ)	qəziman		kiman	kayman	



Proto-Atayal	Gloss	Matu'uwal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*panayluq	arrow	(tipanaq 'pole spear')	paneluʔ	pəneloq	pəneloq/ bəneloq	bənelu	panayluʔ	pənelu
*qabulit	ashes	qabuliʔ	ʔabulit	qəbuliʔ	qəbuliʔ	bulit	ʔabulit	bulit
*qumupaŋ	astringent	qumupaŋ	saʔupaŋ	qəmupaŋ	qəmupaŋ	mopan		
*yataʔ	aunt	yataʔ	yataʔ	yataʔ	yataʔ	yata	yataʔ	yata
*yasam	axe	yasam		yasam			ʔayasam	yasam
*kaʔit	back of the knee	kait	ket	ket	kit		kayt	
*.raqih	bad; to dislike (AV)	ʔaqih	.akeh	yaqih		yaʔeh	(yaʔil)	yaʔih
*qagəcap	bamboo tool for removing bark for ramie	qagcap	ʔacak	gəsap	qəsap		ʔagasap	gəsap
*patus	bamboo gun	patus		patus	patus	patus		patus
*bVtakan	bamboo tube	batakan	batakan 'k.o. bamboo'	bətakan	bətakan			(təkanan)
*ʔaliʔ	bamboo shoots		ʔaliʔ	ʔaliʔ	ʔaliʔ	ʔali	ʔaliʔ	ʔali
*qaquway	bamboo tongs	qaquway		qəqway	qəqway	ʔuway		
*guqiluh	banana (m)	guqiluh	gaʔiloh			gəʔeloh	guʔiluh	ʔiluh

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*guquh	banana (f)	guquh		guqoh	guquh			
*ɿulaq	bark; rind		ɿulaʔ	yulaq	yulaq	yula		
*ɿawaʔ	basket	wawaʔ	ɿaɿawaʔ	wayaʔ	yawaʔ	waya	yayawaʔ	yawa
*kuyabil	bat			kyabil	kyabil		takuyabil malahaŋan	kyabin
*sukay	beans; peas		sukiy 'legumes'	sukay	sukay 'cowpeas'			sukay
*ŋarux	bear	ŋarux	ŋarux	ŋarux	ŋarux	ŋarux	ŋarux	ŋarux
*ŋurus	beard; facial hair	ŋaŋurus	ŋurus	ŋurus		ŋurus / ŋurux	ŋurus	
*pagaʔ	bed; room	pagaʔ		pagaʔ 'rack'	(ʔəpaʔ)	(pa)	(paʔ)	(pa)
*nabuwas	belly	nabuwas	(labos)		nəbwas 'innards'	nəbwas	nabwas	buwas
*kətuʔ	belly		ɿaktuʔ	kətuʔ	kətuʔ	səkətu 'to eat too much'		
*cəkəcəkaʔ	between	mickackaʔ	cackaʔ	səkaʔ	cəkaʔ 'inside'	cəka	sakasakaʔ	səka
*rahuɿal	big	rahuwal					rahuyal	(kərahu)
*sawkiʔ	billhook	sawkiʔ		sokiʔ	sokiʔ	soki	sawkiʔ	soki
*kVbVhəniq	bird	kabahnig	kabahniʔ	qəbəhəniq	qəbəhəniq		kabahaniʔ	kəbəhəni

Proto-Atayal	Gloss	Matu'uwal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*tVquɿaq	bird snare (catches neck)	tuquwaq	tiʔuɿaʔ		(təquyiŋ)		tuʔuyaʔ	
*makalux	black		makalux	məqalux		məkalux		məkalux
*bubul	bladder	bubul		bubul	bubul		bubul	
*hahilaw	blanket; cover	hahilaw			helaw	helaw	hahilaw	
*mabuluq	blind	mabuluq		məbuluq	məbuluq			məbulu
*maɾitux	blind		maɾitux		mitux	mitux		
*ramuʔ	blood (f)			ramuʔ	ramuʔ			
*ramurux	blood (m)	ramuux	ramurux			muyux	ramuyux	rəmyuyux
*kVtəhuk	boar (male pig)	maknathuk	maktahuk	kintəhuk	kətəhuk	təhok		kintahuk
*qalətiŋ	board; plank	qaltiŋ	ʔaltiŋ	qələciŋ	qələciŋ	lətiŋ	ʔalatiŋ	
*lumiq	body louse	lumiq	lumiʔ	(sumiq)	lumiq	lumiʔ 'animal louse'		
*bVqəniʔ	bone	baqniʔ	baniʔ	bəqəniʔ	bəqəniʔ	bəni	baʔaniʔ	bəʔəni
*qaqaʔis	border; line	qaqais	ʔes	qes	qes			
*buhinug	bow (m)	buhinug			bəhenux			
*bVhuniq	bow (m)		bahuniʔ	bəhuniq		bəhoni	bahuniʔ	bəhawni
*kuluʔ	box; trunk	kuluʔ	kuluʔ	kuluʔ	kuluʔ	kulu	kuluʔ	
*bubuʔ	breasts		bubuʔ	bubuʔ	bubuʔ	bubu	bubuʔ	bubu

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*hawŋuʔ	bridge		huŋuʔ		hoŋu	hoŋu	hawŋuʔ	hoŋu
*gVlahaŋ	broad; wide (m)	gilahaŋ	(ɿahalaŋ)				galahaŋ	
*gVlabaŋ	broad; wide (f)			gəlabəŋ	gəlabəŋ	həlabəŋ		labəŋ
*masitəmah	broken; spoiled			sətəmah	məsətəmah	sətəmah		
*masitəmak	broken; spoiled		mastamak	sətəmaq	məsətəmaq			məsətəmak
*kagaw	broom			kagaw		kagaw		
*cacapuh	broom (f)	cacapuh		sapuh	capuh 'k.o. tall grass'			
*cacapiŋ	broom (m); palm tree	cacapiŋ	cacapiŋ	sapiŋ	capiŋ	cyapiŋ 'k.o. plant'	sasapiŋ	
*yanay	brother-in- law	yanay	yaniy	yanay	yanay	yanay	yanay	yanay
*lasug	bruise		tulasuw	lasuw	lasux			
*balas	buck; bull (male goats, deer, bovine)	balas		(bələsuy)			balas	

Proto-Atayal	Gloss	Matu'uwal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*maqaqaʔuh	busy; hurried	məqaqauh		mətəquh	məqəqoh			
*qaqawhun	busy; hurried	qaqawhun		təquhiy	qəqohun			
*piray	butterfly		ɿpiriy	kəperay	kəpiray	piray		piray
*rakus	camphor tree (f)	rakus						
*rakinus	camphor tree (m)		rakinus	rəkənus	rəkinus	kinus		
*hawkuʔ	cane	hawkuʔ	hukuʔ		hokuʔ	hoku		
*waqit	canine; fang	waqit	(ʔawaʔit)	waqit	waqit	waʔit		
*naypun	centipede		panepun	(mepul)	kənepun			kənepun
*bagah	charcoal	(batah)		bagah	bagah	bagah		bagah
*tawɿah	chest cover (clothing)	(tawiyah)		(toyax)	toyah	toyah	tawyah	tawyah
*sVkutag	chest			səkutaw	səkutax	səkutaw	paskutaw	səkutaw
*wayluŋ	chicken	wayluŋ	giluŋ			weluŋ	wayluŋ	wiluŋ
*libuʔ	chicken coop; sty; pen	libuʔ		libuʔ	libuʔ	libu	libuʔ	libu
*ʔulaqiʔ	child	ʔulaqiʔ	ʔuleʔ	ʔəlaqiʔ	laqiʔ	laʔi	ʔulaʔiʔ	laʔi
*hituŋ	Chinese Moccasin		mahituŋ	məhituŋ	bəhetuŋ	rəhetuŋ		məhituŋ

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*kaway	Chinese plum	pəlikaway		kaway	kaway	kaway		kaway
*sakug	Chinese yam	sakug		sakuw	(qusaw)			sakuw
*luhi	cliff	luhiy	luxuy	luhiy				
*sawbih	close; near; nearby	sawbih	sebih	sobih	sobih	sobeh		sobih
*.rubin	cloth bag	?ubin	.rubin	yubin	yubin 'pocket'	yubin	yubin	yubin
*lukus	clothes		lukus	lukus	lukus	lukus	malukus 'to wear clothes'	latan / lukus
*pala?	cloth	pala? 'blanket'		pala?	pala?			(pəlyun)
*.rulun	clouds; fog		.rarulun	yulun	yulun	yulun	yulun	yulun
*ibin	cobra	qibin			bibin	kəbibin		
*hipux	cockroach	hahipux	supux	hipux	khepux	hepux		
*hVbaŋan	coin; to roll	habaŋan	habaŋan	həbaŋan	həbaŋan		habaŋan	həbaŋan
*tVIVʔətuʔ	cold (to touch)	təlaʔtuʔ			tələʔətuʔ	lətu	talaʔatuʔ	tələʔətu
*gihəraq	cold (of weather)	gihaaq	gahraq	həzyaq	gəhyaq			
*bawluʔ	common beans	bawluʔ	sukiy boluʔ	boluʔ	boluʔ	bolu		

Proto-Atayal	Gloss	Matu'uwal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*gəlug	companion	gəlug		gəluw	gəlux 'relative; clan'		galu? 'relative'	gəluw
*mahuqil	cooked; not raw		mahuʔil	məhuqil	(nuqil)	məhoʔiŋ		məhuʔin
*mamiʔ	cooked rice	mamiʔ	mamiʔ	mamiʔ	mamiʔ	(myux)	(mamyux)	(myux)
*limuk	cooking pot (for soup or rice)	limuk				limuk		
*qatiyay	corn; maize	qatiyay	ʔatiy		qəcyay			tyay
*quŋ	corner (of room)	quŋ		quŋ	quŋ	ʔuŋ		ʔuŋ
*katin	cow; cattle	katin		kaciŋ	kaciŋ	kaciŋ	katiŋ	katiŋ
*qagiraŋ	cowpeas	qagiraŋ						giraŋ
*kakagaŋ	crab	kakagaŋ	kakagaŋ	kəmagaraŋ	(kakaŋ)	(kəmalaraŋ)	kakagaŋ	kagaŋ
*bəliŋ	crack; gap; hole; cave	bəliŋ	baŋ	bəliŋ	bəliŋ	bəliŋ		bəliŋ
*həmut	crime; sin	həmut		həmut	həmut	həmut	hamut	
*babaʔaŋ	crooked; diagonal	matbabaʔaŋ	masbabaŋ	mətəbəbaŋ				
*taquɿ	crow	taquw				taʔuy	taʔuy	taʔuy

Proto-Atayal	Gloss	Matu'uwal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*tiyaquŋ	crow		teʔuŋ	cyaquŋ	cyaquŋ			
*gagaʔ	culture; tradition; law; religion	gagaʔ	(gagaɾux)	gagaʔ	gagaʔ	gaga		gaga
*mVnakuʔum	dark	mənakuʔum	minakuŋ	mənəkum	mənəkum	məkuʔuŋ	manakuʔum 'foggy'	məkuʔum
*ʔinaʔ	daughter-in- law	ʔinaʔ	ʔinaʔ	ʔinaʔ	ʔinaʔ	ʔina	ʔinaʔ	ʔina
*qaliyan	day	qaliyan	ʔalen	qəlyan	qəlyan	ʔəlyan		ʔəlyan
*riʔax	day; time	riʔax	rex	ryax	ryax	ryax	ryax	ryax
*raŋaɾ	deadfall trap	raŋa		raŋay	raŋay	raŋay	raŋay	raŋay
*ɾənik	deep	ʔiik 'inside, underneath'	ɾarik		ʔiyik 'inside'	yeyik / ʔəyik	yayik	
*kinabahan	descendants	kinabahan	ʔinbahan	kinbahan	kinbahan	kinbahan		kinbahan
*qaŋəɾat	diligent		ʔaŋɾat	qənəzyat	qəniyat	məŋəyat	ʔaŋayət	ʔəŋəyat
*ʔurag	dirt	ʔurag	ʔuraw	ʔuraw 'earth'		ʔuraw 'earth'		
*mapunuʔ	disease; epidemic		mapunuʔ	məpunuʔ		punu		
*xuɾil	dog	xuɾil	huɾil	huzil	hoyil	hoyin	xuyil	huzin
*balihun	doorway	balihun	balihun	bəlihun	bəlihun	bəlihun	balihun	lihun



Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*hugal	downslope	hugal	hugal			hogan	hugal	hugan
*yahu?	downslope; slightly lower		yahu?	kyahu?	kyahu?	kyahu		kyahu
*səpi?	dream (f)			səpi?	səpi?	səpi		
*sVpiyal	dream (m)	sapiyal	sipel			səpyalun 'to dream of'	sumapyal 'to dream'	səpyan
*turiŋ	droplet (of liquid)	turiŋ	turiŋ	turiŋ	turiŋ	turiŋ		
*mabusuk	drunk (f)	mabusuk		məbusuk		busuk		
*mabusinuk	drunk (m)	businuk	(masnukan)		məsinuk			(məsinux)
*makəɽay	dry (of grass, wood)	makaiy	makɽiy	məkəzyay	məkɽiyay	məkəyay		məkəyay
*marəŋu?	dry (clothes; floor; people)	marŋu?	marŋu?				marəŋu?	
*kuwalit	eagle	kuwali?		qwali?	kwani?	kwalit	kwalit	kwalit
*caŋiya?	ear	caŋiya?	caŋe?					
*kVsasanan	early morning (before sunrise)	kəsasanan	kasasanan					
*qapuri?	earwax	qapuri?	?apuri?	qəpuri?	qəpuri?	pori	?apuri?	

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*tulaqig	eel	tulaqiy		təlaqiy	təlaqiy	təlaʔiy	tulaʔiy	
*baɿiŋ	egg (m)		baɿiŋ	baziŋ		bayiŋ	bayiŋ	baziŋ
*batuʔ	egg (f)	batuʔ			batuʔ			batu
*masəpat	eight	mamaspat	maspat	məsəpat	səpat	səpat	masapat	məsəpat
*hikuʔ	elbow	hikuʔ	hikuʔ	hekuʔ	hekuʔ	heku	hikuʔ	heku
*nVbəkis	elderly person; ancestor; old	(nabakis)	nabkis	bənəkis		bəkis	nabakis	nəbəkis
*paris	enemy		paris	paris	paris	paris		paris
*tənaq	enough		tanaʔ	tənaq	tənaq	təna		təna
*gabiyan	evening	gabiyan	gaben	gəbyan	gəbyan	gəbyan		gəbyan
*səməsəman	evening (after dusk)	samsum			məsəman	məsəman	samasaman	səməsəman
*ɿuwaw	event	waw		zywaw	yaw	yaw		
*rawɿiq	eye	rawwiq	roɿiʔ	roziq	royiq	royi	rawyiʔ	rozi
*raqis	face (f)	turaqis 'wash face'						
*raqɿas	face (m)		raɿes	rəqyas		rəʔeyas	raʔyas	rəʔiyas
*qutiʔ	faeces (feces); excrement	qutiʔ	ʔutiʔ	quciʔ	quciʔ	ʔuci	ʔutiʔ	

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*tuhiyaq	far	(tatuhi?)	tuhya?	(twahiq)	təhiyaq	təhəya	(twahi?)	(twahi)
*qumarah	farmland (m)	mamayah	mumarah	qəmayah	qəmayah	mayah		mayah
*haylag	fast; quickly	haylag	(halilaw)	helaw	helax	helaw		helaw
*kVtəhuɿ	fat; stout	kithuw	katuhuɿ	qətəhuy	qətəhuy	təhuy		kətəhuy
*yaba?	father	yaba?	yaba?	yaba?	yaba?	yaba	yaba?	yaba
*palit	feathers, wing	pali?		pali?	pali?			
*gipu?	female animal (mammals)	(?ipu?)	gipu? 'female dog, bitch'	gipu?			(?ipu?)	
*haga?	fence (stone)	hinaga?	(ha?)	haga?	haga?	(gayuŋ)	(hiŋayuŋ)	(hgayuŋ)
*qinalaŋ	fence (bamboo)	qinalaŋ	?inalaŋ	qənaləŋ	qənaləŋ	naləŋ	?inalaŋ	
*timami?an	fermented meat	tinmami?an			təməmyan	təməmyan		
*qumah	field (agriculture) (f)	qumah 'vagina (euph.)'		qəmumah 'to weed'	pəqumah 'farmer'	pəʔomah 'farmer'		
*maɾimal	fifty	maymal	maɾimal	məzimal	mimal	miman	maymal	məziman
*tiruliŋ	finger	tatiruliŋ		təluliŋ	təluliŋ	təloliŋ	tiruliŋ	təluliŋ
*kakamil	fingernail	kakamil	kakamil		kamil		kakamil	
*hapuy	fire (f)	hapuy						

Proto-Atayal	Gloss	Matu'uwal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*hapuniq	fire (m)	hapuniq	hapuni? 'torch'	puniq	puniq	puni	hapuni?	puni
*[ʔq]uciyux	fish		ʔucix			ʔəcyux	ʔusyux	syux
*kawbuʔ	fish trap	kawbuʔ	kobuʔ	kobuʔ				kawbu
*naʔip	fishing hook	naip	papanek	nyep		tənek	nayp	nep
*ɿimagal	five	ʔimagal	ɿamagal	zəmagal	magal	magan	yimagal	magan
*ɿanaʔ	flames; sparks	wanaʔ	ɿanaʔ 'fire'	yanaʔ	yanaʔ	tyana 'to burn brightly'		
*balukuʔ	flat basket; winnowing basket	balukuʔ	balukuʔ	bəlukuʔ	bəlukuʔ	luku	balukuʔ	
*bVʔənux	flat; smooth	baʔnux	banux	beʔənux	benux	bənux		bənux 'flatland'
*hahiluk	flea comb	hahiluk	hahiluk	hiluk		heluk 'comb'	hahiluk	
*pəhəpəh	flower	pəhpəh		pəhəpəh	pəhəpəh	pəhəpəh		
*ɿapit	flying squirrel	ʔapit / wapit	ɿapit	yapit	yapit	yapit	yapit	yapit
*ciŋas	food debris (food stuck between teeth)	(ciŋaq)	ciŋas					siŋas

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*kakay	foot	(kukuy)	pinkakayan 'footprint'	kakay	kakay	kakay	(kukuy)	kakay
*lihuɿ	forehead	lihuw	lihuɿ	lihuy		lihuy	lihuy	lihuy
*lahulahuɿ	forest; mountainous area	lahulahuw	lahlahuɿ	həlahuy	həlahuy	həlahuy		
*masəpatul	forty	maspatul	maspatul	məpatul	səpatul	səpatun		məsəpatun
*səpaɾat	four	sapaat	paɾat	payat	payat	payat	payat	payat
*turakis	Foxtail millet	turakis	turakis	tərakis	tərakis	tərakis	turakis	tərakis
*maʔipuh	fragile	maʔipuh	mepoh		mepuh	mepoh		mepuh
*rawin	friend (m)	rawin	rawin 'brother'	rawin 'cousin'	rawil 'cousin'	mərawin 'cousin'	rawin	rawin
*raŋiʔ	friend (f)	raŋiʔ	raŋiʔ	raŋiʔ	raŋiʔ			
*takaɿ	frog	taka		takay 'long-legged brown frog'		takay	takay	takay
*kahul	from	minukahul		kahul	kahul	kahun		kahun
*buway	fruit	buway	buy	bway	bway	bway	bway	buway

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*matəŋiʔ	full (after eating); satiated	matŋiʔ	matŋiʔ	mətəŋiʔ	mətəŋiʔ	mətəŋi	matəŋiʔ	mətəŋi
*kumis	fur; body hair		kumis	kumis 'pubic hair'		kumis		kumis
*.ruhum	gallbladder	?uhum	.ruhuŋ	yuhum	yuhum	yuhuŋ	yuhum	yuhum
*ramat	garnish; side dish	raramat	raramat	ramat	ramat	rami		rami
*qurip	ginger (plant)		?urik	qurip	qurip			
*mit	goat; sheep	mit	mit	mit	mit	mit		mit
*?utux	god; deity; spirit	?utux	(?amutux)	?utux	?utux	(lutux)	(?alyutux)	(lyutux)
*balaʔiq	good	balaiq	baleʔ 'recover from illness'	bəlaq	bəlaq	bəle	balayʔ	bəlay
*kəhuʔ	granary	(?akhul/ wakhul)	kuhuʔ	kəhuʔ	kəhoʔ	kəhu		kəhu
*yutas	grandfather	yutas	yutas	yutas	yutas	yutas 'male elder'	yutas	yutas
*yakiʔ	grandmother	yakiʔ	yakiʔ	yakiʔ	yakiʔ	yaki 'female elder'	yakiʔ	yaki

Proto-Atayal	Gloss	Matu'uwal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*kiʔəman	grass	kiʔman	kaman	kəʔəman	kəʔəman	kəman	kaʔaman	kəʔəman
*quriʔ	gray hair	quriʔ	ʔuriʔ	quriʔ		mətəryan 'to have gray hair'		
*mawasiq	green	mawasiq		(mətasiq)	(mətasiq)	mwasi		
*layan	green beans	layan	layan	layan	layan	layan		
*kə[cl]aŋ	Green Tree Viper	kəcaŋ		kəlaŋ		kəlaŋ		
*sisiliq	Grey-cheeked fulvetta	sisiliq	siliʔ	siliq	siliq	sili		
*rahal	ground; earth (f)		rahal					
*rahəɹal	ground; earth (m)			rəhəzyal	rəhiyal 'land'			rəhyan
*raʔuq	ground; earth	rauq			roq			
*kakaluʔ	hair comb	kakaluʔ			kaluʔ		kakaluʔ	kalu
*saynunuz	hair (on head)		sinunuz	sənonux	sənonux	sənonux	saynunuz	sənonux
*qalipuguʔ	hair whorl	qalipuguʔ	(ʔapuhur)		(puxux)	pugu	(ʔalipuhuy)	
*cəkaʔ	half; to halve (AV)	cakaʔan	cunʔkaʔ	səməkaʔ	cəməkaʔ	cəka		səməka

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*paɾih	hand hoe	paih	(pinah)		payeh 'hand spade'	payeh	payeh	
*qəbaʔ	hand	qabaʔ	ʔabaʔ	qəbaʔ	qəbaʔ	ʔəba	ʔabaʔ	ʔəba
*maqas	happy	maqas	maʔas	məqas	məqas	məʔes		məʔas
*paqasun	happy	paqasun	paʔasun	pəqasun	pəqasun	pəʔasun 'to celebrate'		pəqasun
*ɾaɾihun	hard; difficult	ʔayhun	ɾaɾihun	zihun	ʔihun	yihun	yayihun	
*qabubin	hat (m)	qabubin					ʔabubin	bubin
*qabubuʔ	hat (f)	qabubuʔ		qəbubuʔ	qəbubuʔ	kəbubu		
*hiyaʔ	he; she	hiyaʔ	hiyaʔ	hiyaʔ	hiyaʔ	həya		
*kucuʔ	head louse (f)	kucuʔ						
*kuhin	head louse (m)	kuhin	kuhin	kuhin	kuhin	kuhin	kuhin	kuhin
*tunux	head	tunux	tunux	tunux	tunux	tunux	tunux	tunux
*qVɾəsug	heavy		ʔaɾusuw	rəʔusuw	qesux	rəsuw	ʔayasuw	yesuw
*nukaʔ	hemp fibre	nanukaʔ	nukaʔ 'ramie'	nukaʔ		nuka	nanukaʔ	nuka
*tatukah	hips; buttocks	tatukah		tukah	tukah		tatukah	tukah
*pakaruh	hoe	pakaruh		bəkaroh	pəkaroh	karoh		karuh
*həɾin	1. honey; 2. honeybee	hiin	hiɾin	həzin		həyin	hayin	həzin



Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*raʔuŋ	hook (for hanging things)	raʔuŋ	paparəŋ	kəroŋ	rəroŋ		rawŋ	
*qihuɿ	horn		ʔihuɿ	qihuy	həquy	ʔihuy	ʔihuy	ʔihuy
*ramaʔiʔ	horse	ramaiʔ	ramiy	rəmeʔ	rəmeʔ	rəmeʔ 'donkey'	ramayʔ	
*makilux	hot	makilux	makilux	kilux	məkilux	məkilux	makilux	məkəkilux
*ʔulay	hot spring	ʔulay		ʔulay	ʔulay	ʔulay		ʔulay
*ɿaŋaw	house fly; robber fly (f)	ʔaŋaw/ waŋaw		yaŋaw			yaŋaw	yaŋaw
*ɿaŋəriʔ	house fly (m)	ʔaŋriʔ/ waŋriʔ	ɿaŋlit	zəŋəliʔ	ŋəliʔ	(ŋəryux)	(yaŋarux)	
*muɿag	house; home	ʔimuɿag	moɿow	muyaw 'inside'	muyax			
*saliq	house in field		nasaliʔ		saliq	sali 'house'	saliʔ 'house'	sali 'house'
*maha nanuʔ	how	məhananuʔ			maha nanuʔ	maha nanu	maha su nanu	maha nanu
*pisaʔ	how much; how many (countable)		piraʔ	piraʔ	pisaʔ	pisa		pisa

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*kituwaʔ	how much (uncountable)	kituwaʔ	kitoʔ	kətwəʔ	kətwəʔ	(kətwah)		kətwə
*humicuwaʔ	how; in what way	humicuwaʔ	huncoʔ	həməswaʔ	həməcwaʔ	məhəcwa		huwa
*hícuwalun	how; in what way	həcuwalun	hacolun	(swaʔun)				
*kVbəhul	hundred	kabhul	kabhul	kəbəhul	kəbəhul	kəbəhun	kabahul	kəbəhun
*maʔuɿay	hungry		maʔuɿiy	məʔuzyay		muyay		məʔuyay
*tatak	hunting lodge; house in field	tatak	(takak)	tatak		tatak	(takak 'house in field')	(takak 'house in field')
*lalaw	hunting knife			lalaw	lalaw	lalaw	lalaw	
*yaŋuʔ	husband's brother's wife		yaŋuʔ	yaŋuʔ		yaŋu	yaŋuʔ	
*nanaʔ	husband's older brother	nanaʔ	nanaʔ	nanaʔ	nanaʔ	nana	nanaʔ	
*kuɿiŋ	I; me	kuwiŋ	kuɿiŋ	kuziŋ	(kiŋan)	(kinan)		
*galaʔiŋ	in front of; ahead	galaiŋ	galenŋ	gəlenŋ		gəlanŋ	galayŋ	gəlenŋ

Proto-Atayal	Gloss	Matu'uwal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*qulun	incisors, front teeth	ququlun	ʔaʔulun					
*kuwiʔ	insect	kuwiʔ			kuy	kuy	kuyʔ	kuy
*qVcahuɿ	inside	qacahuw 'organs'		qəsahuy		cahuy	ʔasahuy	sahuy
*giyus	intestines; guts	giyus	gis	gyus	gyus	gyus	gyus	
*təraŋ	jewelry; decoration	mutraŋ 'to decorate'		pətəraŋ		təraŋ	tumaraŋ 'to decorate'	pətəraŋ
*qaxaʔ	jewelry; trinkets	qaxaʔ		qaxaʔ 'ornamental skirt'	qaxaʔ			(xinu)
*buq	juice	buq	buʔ 'bodily fluids'		boq	bu		
*cu sawniʔ	just now; today	cu sawniʔ	soniʔ	soniʔ	coniʔ	soni		soni
*baŋaʔ	k.o. hornet	baŋaʔ	baŋaʔ	baŋaʔ	baŋaʔ	baŋa		baŋa
*tVriyuŋ	k.o. hornet		ryuŋ	təryuŋ	təryuŋ	təryuŋ		təryuŋ
*hahiyuʔ	k.o. ant	hahiyuʔ				həyu		həhyu
*kVtahiʔ	k.o. ant	katahiʔ		qətahiʔ		tahi		tahi

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*mawtuŋ	k.o. grasshopper		motuŋ	kəmotuŋ	kəmotuŋ	təmotuŋ		
*kVraraw	k.o. grasshopper	kararaw			kəraraw 'locust'	kəraraw		(kyaraw)
*qawran	k.o. bamboo	qawran		qoran				
*tariʔ	knees; joints	tariʔ	tariʔ	tariʔ	tariʔ	tari	tariʔ	
*waciluŋ	lake; sea	waciluŋ 'pond'	waciluŋ	bəsiluŋ	bəciluŋ 'pond'	ciluŋ	wasiluŋ	
*masiluhi	landslide	məsiluhiy	masluxuy	məsəluhiy		səluhi		səluhi
*ʔVqəbun	large bamboo basket	ʔaqbun		qəbun				ʔəbun
*malVhəŋan	late evening; early night		malahŋan	mələhəŋan	məhəŋan	ləhəŋan	malahaŋan	ləhəŋan
*maqilaŋ	lazy		maʔilaŋ	məqilaŋ		məʔelaŋ		məʔilaŋ
*ʔabag	leaves	ʔabag	ʔabaw	ʔabaw	ʔabax	ʔabaw	ʔabaw	ʔabaw
*wihɿŋ	leech		wihɿŋ	wihɿŋ		wihɿŋ		
*ʔil	left	ʔil	ʔil	ʔəzil	ʔiyil		ʔil	
*təhaɿ	left over	təha	tahaɿ	təhay	təhay			
*muɿiʔ	leg	muwiʔ	muɿiʔ	muziʔ	muyiʔ	(məryu)	muyiʔ	
*ɿVkəlit	leopard	ʔakliʔ / wakliʔ	ɿaklit	kəliʔ	kəliʔ	kəlit	yakalit	kəlit

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*lihəbaw	light (not heavy)	lihbaw	lahbuw	həbaw	ləhəbaw	ləhəbaw		ləhəbaw
*ciʔax	light (m?)	ciʔax	ceɬ	syax	cyax	cyax		pəsyax
*parahum	lips	parahum	parhuŋ 'philtrum; upper lip'	tərahum	pərahum	pərahun	parahum/ parahuman	pərəhuman
*saɾik	liver	saik	saɾik	səzik	sik			
*payus	lizard; gecko		papayus 'Taiwan japalure'	kinpayus				
*baluŋ	log	baluŋ 'wood'	baluŋ 'hollow log'		baluŋ 'fallen tree'			
*buɾul	loincloth	buul		buzɥul			buyul	buyun
*qVnəruɾux	long (thing)	qanaruux	ʔunruɾux	qəruzyux	qəroyux	ruyux	ʔanruyux/ anaruɥux	ʔinruyux/ ruyux
*raraʔuq	low; short (height)	ʔirarauq		rəroq	rəroq	rərow 'low'	rarawʔ	rəraw
*səbil	lunchbox; provisions	səbil		səbil	sibil	səbiŋ		
*bahVluk	lungs	bahluk	bahiluk	bəhəluk	bəhəluk	bəheluk	bahiluk	bəhiluk

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*rumaʔ	Makino bamboo			rumaʔ	rumaʔ	ruma		ruma
*batiŋan	male bird; rooster	kəbatiŋan	batiŋan 'male (of mammals)'	(qəciŋan)	(qəciŋan 'bull')	ciŋan	batiŋan	
*balVŋan	male bird; rooster		baluŋan	bələŋan	(bəŋan 'rooster')			
*malikuɿ	man; husband	mamalikuw	malikuɿ	məlikuy	məlikuy	məlikuy	mamalikuy 'young man'	
*pVyux	many	payux	payux	pəzyux	piyux	pəyux	payux	pyux
*habaɾag	many (people)	habaag	habaɾaw					həbayaw
*ragaʔ	maple tree (f)			ragaʔ	ragaʔ			
*raʔ	maple tree (m)	raʔ	raʔ					
*luqus	marrow	luqus	(luʔiŋ)	luqus	(luqiʔ)	(luʔiŋ)	(luʔiŋ)	
*hiʔiʔ	meat; flesh	hiiʔ	hiʔ	hiʔ	hiʔ	he	hiʔ	hi
*lamiqur	Miscanthus	lamiquw	lamiʔur	miquy			lamiʔuy	
*tapuŋ	mold; moss	tapuŋ		tapuŋ			tapuŋ	
*pilaʔ	money	pilaʔ	pilaʔ	pilaʔ	pilaʔ	pila	pilaʔ	pila
*ɾuŋay	monkey	ʔuŋay	ɾuŋiy	yunay	yunay	yunay	yunay	yunay
*buɾatiŋ	moon	buwatiŋ	buɾatiŋ	bəzyaciŋ	(byaliŋ)	byaciŋ	buyatiŋ	byatiŋ

Proto-Atayal	Gloss	Matu'uwal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*saluwan	morning (after sunrise)	saluwan		səlwan				səlwan
*sasan	morning (after sunrise)		sasan	sasan		gibu sasan		
*luhuŋ	mortar (for grinding) (f)	luhuŋ		luhuŋ	luhum			
*luhiyuŋ	mortar (for grinding) (m)	luhiyuŋ	lahyuŋ			ləhəyuŋ	luhyuŋ	ləhyuŋ
*putut	mosquito; midge; gnat		putut	putut 'midge (For- cipomyia)'		putut	putut	putut
*capəɾaŋ	most; best	capaaŋ		səpyaŋ				
*yayaʔ	mother	yayaʔ	yayaʔ	yayaʔ	yayaʔ	yaya	yayaʔ	yaya
*ragiyax	mountain	ragiyax 'mountain ridge'	ragex 'summit'	rəgyax	rəgyax	rəgyax	ragyax 'summit'	
*qawlit	mouse; rat	qawlit	?olit	qoliʔ	qoliʔ / qolit	?olit		?olit
*ŋaquwaq	mouth	ŋaquwaq	ŋawaʔ	nəqwaq	nəqwaq	nəwa	ŋaʔwaʔ	ŋəʔuwa

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*lubug	mouth harp; musical instruments	lubug	lubuw	lubuw		lubu	lubuw	
*ɲihiʔ	mucus; snot	ɲihiʔ	ɲihiʔ	ɲihiʔ	ɲihiʔ	ɲihi	ɲihiʔ	ɲihi
*paraʔ	muntjac	paraʔ	paraʔ	paraʔ	paraʔ	para		para
*qVpəxiŋ	muscles	(qapuwiŋ)		qəpəziŋ 'power'	qəpyiŋ	pəyiŋ	ʔapayin 'calves'	pəziŋ 'calves'
*tVqaqinug	mushrooms (esp. shiitake)	təqaqinug		təqinuʷ	təqenux	(kenu)	taʔaʔinuʷ	təʔinuʷ
*mVɲaŋah	mute; dumb; stupid		muɲaŋah		məɲaŋah	məɲaŋah		
*maŋutiɕ	mute; dumb; stupid	maŋutiɕ		məɲuciɕ	məɲuciɕ	məɲuti 'honest, naïve'	maŋutiʔ	məɲuti
*maŋuray	mute; dumb; stupid	maŋuray		məɲuray			maŋuray	məɲuray
*raluʔ	name	raluʔ	raluʔ	laluʔ	laluʔ	lalu	raluʔ	lalu
*ɹagəyil	narrow		ɹagiʔil	gəzil		gəyiŋ	(yagaril)	
*pugaʔ	navel; belly button	pugaʔ		pugaʔ	pugaʔ	puga		
*wariyʊŋ	neck; nape	wariyʊŋ	wariŋ	gəryʊŋ	gəryʊŋ	gəryʊŋ	waryʊŋ	rəgyʊŋ



Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*ragum	needle (f)	ragum						
*raʔum	needle (m)	raum	roŋ	rom	rom	roŋ	rawm	rom
*raɾuhiŋ	nest fern	rawhiŋ	ɾaɾuhiŋ	ryuhiŋ		cəruhiŋ		ryuhiŋ
*ʔubuʔ	nest; burrow		ʔubuʔ	ʔubuʔ		ʔubu		ʔubu
						‘grass nest’		
*giqas	new (f)	giqas		giqas		giʔas ‘hen laying eggs for the first time’		
*giqarus	new (m)		gaʔarus		gəqayus			
*bih	next to	bih		bih	bih	beh	bih	bih
*maqisuʔ	nine	mamaqisuʔ	maʔiruʔ	məqeruʔ	quesuʔ	mesu	maʔisuʔ	məʔisu
*gagiqus	nit (louse egg)	gagiqus		(giquʔ)		giʔus	gagiʔus	
*ʔəɾat	no; not	(ʔiqaat)	ʔaɾat	ʔiyat	ʔiyat	ʔəyat		ʔəyat
*ŋuhug	nose	ŋuhug		ŋuhuw	ŋuhux	ŋuhu	ŋuhuw	ŋuhuw
*ʔukas	not exist	ʔukas			ʔuka			
*ʔuŋat	not exist		ʔuŋat	ʔuŋat		ʔuŋat	ʔuŋat	ʔuŋat
*malax	not want; to abandon (AV)	malax	malax	malax	malax	malax		

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*laxan	not want; to abandon (LV)	laxan	laxan	laxan	laxan	laxan		ləlaxan
*micu[g]	now		ci micuw	misuw		micu		misu
*niqun	of to eat	niqun	niʔun	niqun	niqun	niʔun		
*kariʔariʔax	often; all day; every day	kariʔariʔax	karirex	kərəryax	kərəryax	kəryax	kararyax	kərəryax
*capaŋ	old (thing)	capaŋ						
*ʔisah	older brother's wife	ʔisah	ʔirah	ʔirah	ʔisah	ʔisah	ʔisah	ʔisah
*qV[bm]isuɾan	older sibling	qumisuwan	ʔasuɾan	qəbəsuyan	qəbəsuyan	suyan	ʔamisuyan	bəsuyan
*capəɾaŋ	on purpose	mancapaŋ			cəpiyaŋ			səpyaŋ
*babaw	on top of	babaw		babaw	babaw		babaw	babaw
*xal	once, one time			təxal				
*xaliq	once, one time	mənaxaliq					manaxaliʔ	
*qutux	one	qutux	ʔutux	qutux	qutux	ʔutux	ʔutux	ʔutux
*caxaʔ	one person (out of two or more); alone	caxaʔ	caxaʔ	saxaʔ	caxaʔ	caxa		saxa

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*buɯinah	one side; other half	buynah	binah	bəzinah	binah	binah		
*puqin	1. origin; 2. root; counting term for trees	puqin	puʔin 'root'	puqin 'root'	puqin	puʔin		
*cVquliq	other people	cuquliq	ciʔuliʔ	səquliq	cəquliq	cəʔoli	suʔuliʔ	səʔuli
*lataʔ	outside	lataʔ		mələtaʔ 'go outside'	mələtaʔ 'go outside'	mələta 'go outside'		
*latanux	outside	latanux	tanux	tanux	tanux	tanux	tanux	tanux
*cəlaq	paddy; mud	cəlaq	calak	səlaq	cəlaq 'mud'	cəlaʔan 'paddy'	salaʔ	səla
*qagum	pangolin (f)	qagum						ʔagum
*qaʔum	pangolin (m)	qaum	ʔon	qom	qom	ʔon	ʔawm	
*ɭarupun	pants; trousers	ʔawpun		yopun	yopan	yupun	yayupun	yupun
*kusul	part of loom	kusul	kusul			kusun		
*qaləsayan	part of loom (heddle?)	qaqlasayan	ʔalsayan			ləsayan	ʔalasayan	
*qaguŋuʔ	part of loom	qaguŋuʔ	ʔaguŋuʔ	qoŋuʔ		ʔoŋu	ʔaguŋuʔ	

Proto-Atayal	Gloss	Matu'uwal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*baʔis	partner; spouse	bais	bes	bes	bes	bes	bays	bes
*qaxim	peach (f)	qaim						
*qaximux	peach (m)		ʔaximux 'cherry'	qəzimux		yimux		zimux
*bawnaw	peanuts	bawnaw		bonaw	bonaw			bonaw
*ʔitaral	person; people; humans	ʔitaal	ʔitaral	ʔətayal	tayal	tayan	ʔitayal	tayan
*qasəruʔ	pestle (for grinding)	qasuuʔ	ʔasuʔ	qəsəzyuʔ	qəsuyuʔ	səyu	ʔasayuʔ	səyu
*tərunaq	phlegm	tunaq	taɾunaʔ		yunaq 'saliva'	tuna 'spittle'	tyunaʔ 'saliva'	tyuna 'saliva'
*baɾuwak	pig	bawwak	baɾok	bəzyok/ bəzywak	biyok	bəyak	baywak	bewak
*waʔuʔ	pigeon	wauʔ		goʔ	wawuʔ		wawʔ	waw
*siŋut	pigeon peas	siŋut	siŋut	siŋut		siŋut		siŋut
*biyuk	piglet	biyuk	bik				byuk	
*sayqan	pitiful	sayqan			siqan	siʔan		seʔan
*lVʔəŋu[ʔt]	pointy; sharp		laŋuʔ	(ləʔəŋux)	ləŋuʔ / ləŋut	ləŋu	laʔaŋuʔ	

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*qaxinut	poor		?axinut	məqəzinut	qenut	məyinut		
*siyam	pork; fatty meat	siyam	seŋ	syam	syam	?əsyəŋ		
*baytunux	pretty; beautiful	magbatunux	mabatunux	betunux	betunux			betunux
*tana?	prickly ash	tana?	tana?	tana?		tana		
*bacag	proso millet (f)	(basag)			bacyax			basaw
*bacinug	proso millet (m)		bacinuw	bəsinuw				
*?uxuk	pup (animal offspring)	?uuk	?uxuk	?uyuk	?uyuk	?uyuk	?uyuk	?uyuk
*yatat	puppy (young dog)	yatat					yatat	yatat
*ŋahuq	pus	ŋahuq	ŋahu?	ŋahuq			ŋahu?	ŋahu
*nahaxi?	quickly		nahaxi?	nəhay	nahay	nəhay		
*quwalax	rain	quwalax	?awalax	qwalax	qwalax	walax	walax	walax
*kəgig	ramie	kəgiy		kəgiy	kəgis	kəgi	kagiy	kəgi
*quwani?	rattan	quwani?			qwani?	wani		
*quwarux	rattan (m)		warux	qwayux				

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*buwax	raw rice; rice seeds	buwax	box	bwax	bwax	bwax	bwax	buwax
*matiluq	raw; unripe	matiluq	matelu?	məteluq	məteluq	telu		mətelu
*matanah	red	matanah	matanah	(mətaləh)	(mətaləh)	(mətaləh)		mətanah
*lupiyuŋ	relative; family member			ləpyuŋ	ləpyuŋ	ləpyuŋ 'friend'	lupyuŋ 'guest'	ləpyuŋ
*qarag	rib	(qag)	?araw	qaraw		?araw	?araw	?araw
*qaqibug	rice paddle	qaqibug	?agibu?	qibuw	qibux	?ibu		
*pagay	rice plant		pagiy	pagay	pagay	pagay	pagay	pagay
*paqi?	rice husk; chaff			paqi	paqi?	payi		pa?i
*?anali?	right		?anali?				?anali?	
*siyag	rim; edge	siyag	syaw	syaw	syax	syaw		syaw
*luliyuŋ	river	luliyuŋ	luliŋ	ləlyuŋ		ləlyun	lulyuŋ	ləlyuŋ
*raʀan	road (f)	raan						
*raʀaniq	road (m)	raniq			ryaniq			
*rinamug	roof	rinamug		rənamuw				
*gamil	root	gamil	gamil	gamil	gamil	gamin		gamin
*siniyug	rope	siniyug	sinyuw	sənyuw	sənyux	sənyu	sinyuw	sənyu

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*buruk	rotten	maburuk	masburuk			buruk		
*gɪaŋ	rust		gɪaŋ 'dirt'	(ʔiyaŋ)		(ɾyaŋ)	gyaŋ	
*aŋay	saliva	ŋaŋay	laŋiy					
*timuʔ	salt	timuʔ	timuʔ	cimuʔ	cimuʔ	cimu	timuʔ	(təmuɣux)
*waqanux	sambar deer	waqanux	wanux	bəqanux	bəqanux	wanux	waʔanux	waʔanux
			nanahiʔ					
*matənaq	same		mintanaʔ	mətənaq	mətənaq	təna		
*bunaqig	sand	bunaqiy	bunaʔiy	naqiy	bənaqiy		bunaʔiy	naʔiy
*hahabuk	sash; waistband	hahabuk	hahabuk	habuk	habuk	habuk	hahabuk	habuk
*hirəhir	saw	hahirhir		hərəhil	rəhen	rəhiŋ	harahil	hərəhin
*qinug	scallion; green onion	qinug	ʔinuɰ	qinuɰ	qenuɰ	ʔinu		ʔinuɰ
*kapil	scar			kapil	kapil	kapin	kapil	
*gəhap	seeds (used in agriculture)	gaghap		gəhap	gəhap			gahap
*qapuriʔ	seeds (of wild plants); pit	qapuriʔ		qəpuriʔ	qəpuriʔ	pori		
*mapituʔ	seven	mapituʔ	mapituʔ	məpituʔ	pituʔ	pitu	mapituʔ	məpitu
*sasaw	shade			sasaw	sasaw			

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*sasiq	shade	sasiq	sasiʔ			syasi		sasi
*pahəgub	shaman; witch doctor	pahgub		pəhəgup	pəhəgup	pəhəguk	pahagup	pəhəgup
*mahawhiʔ	shamanistic ritual			məhoniʔ	məhoniʔ	məhoni		məhoni
*gaʔub	share a cup (AV)	gumaub		məgop	məgop	məgəgok	gumawp	
*gawbun	share a cup (PV)			gopaw			gawbaw	
*sibaɽux	share field work (AV)	məsibaux	sunbaɽux	məsəbayux	səbayux	səbayux		
*rup	shepherd's needles	gərup	ruk	qərəgup		həguk		
*ragiyax	shins	ragiyax	ragex			rəgyax	ragyax	
*ɽamil	shoes	wamil / ʔamil		yamil	yamil	yamin	yayamil	yamin
*rVʔətun	short (length)				rəʔətun	rətun	raʔatun	rəʔətun
*wakil	shoulder or forehead strap; baby sling	wakil	(wakiliʔ)	wakil	wakil	wakin	wakil	wakil



Proto-Atayal	Gloss	Matu'uwal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*haŋaliq	shoulder (m)	haŋaliq	haŋali?			həŋali	haŋali?	həŋali
*bawluŋ	shrimp		(baluluŋ)	kəboluŋ	(moluŋ)	kəboluŋ	bawluŋ	boluŋ
*bagisa?	shuttle (of a loom)	bagisa?	bagira?	bəgira?		bəgisa	bagisa?	
*masicarux	shy; bashful; embarrassed	(məsicaal)	masarux	məsayux	məsəcayux	cayux	sasayux	
*ʔugil	sinew; tendon (m)		ʔugil			ʔugin	ʔugil	
*suwagi?	sister-in-law	suwagi?	sogi?	swagi?	swagi?	swagi	swagi?	swagi
*matəru?	six	mamatuu?	matru?	mətəzyu?	tiyu?	təyu	tayu?	mətəyu
*kuraɦil	skin	kuwahil	kuraɦil	kyahil	kyahil	kyahin	kuyahil	kyahin
*tuhawak	skirt	tatuhawak		təhawak	təhawak	təhawak		
*karal	sky; weather	kaal	karal	kayal	kayal	kayan	kayal	kayan
*quɹit	sleeves		ʔuɹit	quzit	quyit	ʔuwit	ʔuyit	ʔuzit
*haɹuti?	slippery	hawti?	tahɹuti?	həzyuci?	hyuci?	hyuti	hayuti?	təhyuti
*buli?	small knife	buli?	buli?	buli?	buli?	(litux)	(bulitux)	
*gVhiluq	smoke	guhiluq	hagilu?	heloq	hiluq	helu	guhilu?	hilu
*timagaŋ	snail	timagaŋ		(təmaŋ)		(təmyan)	tamagaŋ	(təmaŋ)
*məqu?	snake			məqu?	maqu?	məʔu	ʔu?	məʔu

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*taləŋaʔ	snare for small animals	talŋaʔ		tələŋaʔ	tələŋaʔ	tələŋa 'to make snares'	talaŋaʔ	
*quluwaŋ	snare for large animals	quluwaŋ	ʔinluwaŋ 'snare (general term)'		qəluyaŋ			luyaŋ
*hulaqig	snow; ice	hulaqiy	hulaʔiy	həlaqiy	həlaqiy	həlaʔi	hulaʔiy	həlaʔi
*mahənuk	soft	mahnuk	mahnuk	məhənuk	məhənuk	məhənuk		məhənuk
*rapal	sole	rapal		rapal	rapal	rapan		
		'foot snare'						
*yamaʔ	son-in-law	yamaʔ	yamaʔ	yamaʔ	yamaʔ	yama	yamaʔ	yama
*quwas	song	quwas	ʔawas	qwas	qwas	ʔwas	ʔwas	ʔuwas
*ʔiluh	soot	ʔiluh		ʔiluh	ʔiluh			
*hVnəraŋ	sound	hanaaŋ	hinraŋ	həŋəzyaŋ	həŋiyaŋ	həŋəyaŋ 'loud noise'	hanayaŋ	pinhənyaŋ
*ʔaraŋ	soup (f)	ʔaaŋ		ʔayaŋ	ʔayaŋ			
*ʔaɿiyuŋ	soup (m)	ʔayyuŋ	(ʔaɿiŋuʔ)			ʔəyuŋ	ʔayuŋ	ʔəyuŋ
*maŋihui	sour	maŋihuw	maŋihui		məŋihuy	ŋihuy		məŋihuy
*tinaɾux	sow (female pig)		tinaɾux	(kintənayuk)		tənayux		tənayux

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*sumiʔatuʔ	sowing festival	sumiʔatuʔ	sumetuʔ	səməʔatuʔ	səməʔatuʔ	səməʔatu		
*pə.ɿt	sparrow	piit		pəzit	pəyit	pəyit 'bird'	payit	pəzit
*sVbVɿaŋan	spear	sinbaŋan	sinbuɿaŋan			səbyaŋan 'spear shaft'		
*kaʔiʔ	speech; language; story	kaiʔ	keʔ	keʔ	keʔ	ke	kayʔ	kay
*tisaʔ	spindle (in weaving)	matisaʔ	matiraʔ	ciraʔ		cira	matisaʔ 'to turn spindle'	
*taŋug	sprouts		taŋuw	taŋuw	taŋux	taŋaw		
*bəhut	squirrel	bəhut	buhut	bəhut	bəhot	bəhut		bəhut
*quruʔ	stem; stalk	quruʔ 'snake'	ʔuruw	quruʔ 'taro stem'	quruʔ 'taro stem'			ʔuru
*masiraŋil	sticky; gooey (AV)		masraŋil	səraŋil	məraŋil	məraŋin		məraŋin
*lihəbun	stomach	lalihbun	lahbun	həbun		ləhəbun	lalahabun 'solar plexus'	ləhəbun
*batunux	stone	batunux	batunux 'stone tile'	bətunux	bətunux	tunux		

Proto-Atayal	Gloss	Matu'uwal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*taɿasiʔ	straw hat	tasiʔ	taɿasiʔ	cyasiʔ	tyasiʔ	tyasi	tayasiʔ	cyasi
*gaʔuŋ	stream; creek	gauŋ	goŋ	goŋ	goŋ	goŋ	gawŋ	goŋ
*lawkah	strong	lawkah		lokah	lokah	lokah	lawkah	lokah
*cVbilus	sugarcane		cabilus	bilus	libus	(cyubus)		bilus
*ʔabagan	summer	(gabagan)	ʔabagan	ʔəbagan	ʔəbagan	bagan		ʔəbagan
*wagiʔ	sun	wagiʔ	wagiʔ	wagiʔ	wagiʔ	wagi	(wagitux)	(witux)
*liŋay	surroundings	liŋay		liŋay	liŋay 'nearby'	liŋay		pətəliŋay
		'encircle'						'encircle'
*rinaŋ	sweat	(rinuwaŋ)	rinaŋ		rinaŋ	rənan	(rinwaŋ)	rənaŋ
*buŋaʔ	sweet potato (f)	buŋaʔ				təbuŋa		
						'to plant sweet potatoes'		
*buŋahiʔ	sweet potato (m)		ŋahiʔ	ŋahiʔ	ŋahiʔ	ŋahi	buŋahiʔ	ŋahi
*laləbiŋ	sweet (m?)	lalbiŋ			ləbiŋ			
*cacəbiŋ	sweet (f?)		cacibiŋ	səbiŋ		cəbiŋ		səsəbiŋ
*gilaquŋ	Swinhoe's pheasant	gilaquŋ	gilaʔuŋ		həlaquŋ			
*putiŋ	sword		putiŋ	puciŋ			putiŋ	putiŋ

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*pisaníq	taboo	pisaníq	pisaní?	pəsaniq	pəsaniq	pəsani	pisaní?	pəsani
*ŋuŋu?	tail	(ŋa?ŋu?)	ŋuŋu?	ŋuŋu?	ŋuŋu?	ŋuŋu		
*baɾahuq	Taiwan barbet	(bahuŋ)	baɾahu?	bəzyahuq	(pəlahoq)	byahu	bayahu?	
*kaʔur	Taiwan beauty snake	kaul		kor	kor	kor		
*bawxi?	Taiwanese lily	bawxi?		boxi?	(boxil)	boxi		boxi
*cVŋusan	target; goal		cunʒusan	sinŋusan	cəŋusan	cəŋusun		
*caɾi?	taro (f)	cai?						
*cayhuɾ	taro (m)		cehuɾ	sehuy	cehuy	cehuy	sayhuy	sehuy
*sVhiya?	tasty; delicious	səhahiya?	(sanahyagal)		səhya?	səhəya		
*gipun	teeth (f)	gipun						
*giʔənuɣ	teeth (m)	giʔnuɣ	(ʔapnuɣ)	gəʔənuɣ		gəʔənuɣ	gaʔanuɣ	gəʔənuɣ
*maləpug	ten	magalpug	malapɾow	mopuw	məpux	məpuw	malapuw	məpuw
*bəgax	testicles		bagax	bəgax	bəgax	bəgax	(barax)	bəgax
*haca	that	haca	haca					tehasa
*kaca	that thing		kaca	qasa	qaca	kyaca		
*(ma)kaxaʔ	the day after tomorrow	makaxaʔ	makahaʔ	kaxaʔ	kaxaʔ	ryax kaxa		kaxa

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*cu (ma)kaxa?	the day before yesterday	cu makaxa?	makaha?	kaxa?	cəkaxa?			səkaxa
*nəha?	they	nəha?	(laha?)/ =naha? (Gen clitic)	nəha?	naha?	naha		
*rahag	thick branch	rahag		rahaw 'trap on tree'	rahax			
*kihəmaɿ	thick	kihma	kahmaɿ	kəhəmay	kəhəmay	kəhəmay	kahamay	kəhəmay
*tuba?	Thickfruit Millettia	tatuba?		tuba?	tuba?	tuba		tuba
*gaya?	thigh			gaya?	gaya?	gaya 'buttocks'	gaya?	gaya
*lihəmiq	thin	(lihpiq)	lahmi?	ləhəmiq	(gələmiq)	ləhəmi	lahami?	
*ɿVkəhi?	thin	ʔikhi?		kəhi?		kəhi	yakahi?	kəhi
*mahikaŋ	thin; skinny	mahikaŋ	mahikaŋ	məhikaŋ	hikaŋ	məhekan		məhikaŋ
*qayqaya?	thing; instrument		ʔayʔaya?	qəqaya?	qeqaya?	yaʔaya		yaʔaya
*mVkVhiya?	thirsty (AV)		muhya?	məqəhya?		məhəya		məkəhiya
*matəul	thirty	matuul	matul	mətəzyul	mətiyul	təyun		mətəyun
*hani	this	hani	hani					hani

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*kani	this thing		kani	qani	qani	kwani		
*təɾugal	three	tugal	tugal	cyugal	tyugal	tugan	tyugal	tugan / cyugan
*qawlu?	throat		?olu?	qolu?	qolu?	?olu	?awlu?	?olu
*bicug	thunder	bicug		bisuw		bicyu		bisuw
*qəlilih	tick	(qaqlih)	?alileh	qəlilih	kəlilih			
*kVturu?	tick		makturu?	kinturu?	kəturu?			
*ruliyug	tip; end	ruliyug	rilyuw	ləlyuw		ləlyu	lulyuw	
*maʔuɾay	tired	maʔuway		moyay	moyay		maʔuyay	
*guməlug	to accompany (AV)	gumlug	gunluw	gəməluw 'to go after s.o.'	gəməlux 'to walk together'	gəməlu		
*gələgan	to accompany (LV)	galgan	gilgan	gələgan				
*tumuwaŋ	to add (AV)	tumuwaŋ	tumoŋ		təmwaŋ	təmwan	tumwaŋ	twanjan (LV)
*cumiɣuk	to answer; to respond (AV)	cumiɣuk	cumik	səmyuk	cəmyuk	cəmacyuk	sumyuk	səmyuk
*ciɣukun	to answer; to respond (PV)	ciɣukun	cikan		cyukun	cyukun	syukun	
						'to talk back'		

Proto-Atayal	Gloss	Matu'uwal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*mahətuɡ	to appear (AV)	makahtug		məhətuw	məhətux	məhətu		
*hətəɡan	to appear (LV)			hətəɡan	hətəɡan	hətəɡan		
*tayhuk	to arrive (AV)	tayhuk	tehuk	tehuk	tehuk	tehok		tehuk
*tayhəkan	to arrive (LV)	tihkan	tehkan	təhəkan	təhəkan			
*maqut	to ask (AV)	maqut		maqut	maqut	makut	maʔut	maʔut
*paqucan	to ask (LV)	paqucan		pəqutan	pəqutan	pəkutan	paʔusan	
*masəliʔ	to assemble (AV)		masasliʔ	məsəliʔ		məsəli		
*rakiyas	to ascend; to walk uphill (AV)	makrakiyas		məpərəkyas	pərəkyas	pərəkyas	makrakyas	kərəkyasun
*atux	to bark (AV)	pəlawatux		ləmətux	ləmatux	matux	panwatux	(məruwatuk)
*atəxun	to bark (PV)			lətəxun	lətəxan	tuxan	panwataxun	
*qumətuɾ	to ball hands into fists (AV)		ʔuntɯɾ				ʔumatuy	
*qətəɾun	to ball hands into fists (PV)	qatuun	ʔatɾun					
*sənəhiʔ	to believe (AV)			(təhiʔ)	sənəhiʔ	sənəhi 'religion'		sənəhi



Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*magaraŋ	to be lost (AV)	magaarŋ	magaraŋ 'scattered'					
*tumutiŋ	to beat (AV)	tumutiŋ	tumutiŋ	tuciŋ	təmuciŋ	təmutiŋ 'hammer'		
*tutiŋun	to beat (PV)	tutiŋun	tutiŋun	təciŋun	ciŋun	tiŋun		
*sumiliyat	to beat grass (AV)	sumiliyat		səmilat	səmilat	səməlyat		
*siliyatan	to beat grass (LV)				sinlyatan	səlyatan		səlyatan
*kuraʔ	to be facing s.t. (AV)		mukuraʔ	məsəkuraʔ	məsəkuraʔ		masikuraʔ	
*mVxaral	to be in pain; to fall ill (AV, m)	muxaal					muxayal	məxayan
*muxal	to be in pain; to fall ill (AV, f)		muxal	məxal	məxan			
*makaŋuquʔ	to be sleepy (AV)	məkaŋuquʔ		məŋuquʔ	qəŋuquʔ			məkəŋuʔu

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*caʔəruʃ	to be standing (AV)	mancaʔruʃ		məsəʔurux		cəruʃ		səʔəruʃ
*caʔəruʃan	to be standing (LV)	caʔarʃan		səʔəʃan				
*caqəruʃ	to be standing (AV)	mancaqruʃ	macaruw		məcəqəruʃ			
*caqəʔəʃan	to be standing (LV)	caqarʃan	cargan		cinqəʔəʃan	cəʔəʃan		
*mVnəkux	to be startled (AV)	mənəkux	minkux	mənəkux	mənəkux	məŋəkox	kumux	minkux
*sumɪɾahuq	to be late (AV)	sumiyahuq	sunɪɾahuʔ					
*makVcuqiʔ	to be late (AV)			məqəsuqiʔ	məqəcuqiʔ	kəcuʔi		kəsuʔi
*ʔariŋ	to begin (AV)	mənaʔariŋ	ʔumariŋ	məʔariŋ	(məgariŋ)	təʔariŋ		təʔariŋ
*ʔariŋun	to begin (PV)	ʔanʔariŋun	kariŋan	ʔəriŋun	(gəriŋun)	riŋan		
*magəluʃ	to be together; to be married (AV)	magluʃ	magluw	məgəgəluw	məgəluʃ 'to accompany'	məgəlu		

Proto-Atayal	Gloss	Matu'uwal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*ʔubuʔ	to be in disarray; to be knotted (of string) (AV)	ʔumubuʔ	(maxubuʔ)	məpəʔubuʔ	məʔubuʔ	mubu	maʔubuʔ	
*huɾay	to be able (AV)	paʔnahuway	(humuɾiʔ)	təhuyay	təhoyay	təhoyay	tahuyay	təhuyay
*suməʔut	to be blocked (e.g. a hose) (AV)	sumʔut	sunʔut	səmuʔut	səməʔut	smuʔut		
*səʔutan	to be blocked (e.g. a hose) (LV)	suʔutan	sutan	səʔutan	səʔutan	sotan	saʔutan	
*kumat	to bite (AV)	kumat	kumat	kəmat	kəmat	kəmat	kumat	kəmat
*kacun	to bite (PV)	kacun	kacun	katun	katun	katun	kasun	kasun
*ʔumiyup	to blow (AV)	ʔumiyup	yumuk	məyup	miyup	yəmuk	ʔumyup	yəmup
*ʔiyupan	to blow (LV)	ʔiyupan	yupan	yupan	yupan	yupan		yupan
*quməhut	to block (AV)	qumhut		qəmihut			siʔahut	məhut
*qəhətan	to block (LV)	qahtan		qəhətan				
*kaciyuk	to borrow (AV)		kuncik	(kəsyuw)	(kəsiyux)	(kəsəyu)	kasyuk	kəsyuk

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*kaciyukun	to borrow (PV)		kacikun	(kəsyugan)	(kəsyuxan)	(syugan)	kinsyukan	
*tumubun	to bow; to nod (AV)	tumubun		(tmugun 'nod off')	tmubul 'to pray'		tumubun 'to celebrate'	tmubun
*mVrawmul	to bow; to lower one's head (AV)	mirarawmul	minromun	məromul	romun	romun		
*guməsəgus	to brush; to scrub (AV)	gumasgus	(gunʔasgas)	səməgus		gəməsəgus	gumsagus	
*gəsəgəsun	to brush; to scrub (PV)	gusugusun	(gasgasun)	səgusan		səgəsan	gagagusun	
*məkaʔ	to break s.t. (AV, tr.)	məkaʔ	makaʔ	məkaʔ	məkaʔ	məka		
*mabəkaʔ	to break, be broken (AV, intr.)	mabkaʔ	mabkaʔ	məbəkaʔ	məbəkaʔ	bəka		məbəka
*bəkaʔun	to break (PV)	bakaʔun	bakon		bəkaw	bəkoŋ		
*mVhug	to break; to snap (tr., e.g. a twig) (AV)	muhug		mahuw	mahux	məhu		məhu

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*mapVhug	to break; to snap (intr., e.g. a twig) (AV)	mapuhug			məpəhux			
*pVhəgun	to break; to snap (e.g. a twig) (PV)	(puhugun)		pəhəgun	pinhəxan	pəhəgun	pahagun	pəhəgun
*mabaɿig	to buy (AV, f)	mabaiy		məbaziɿ	mes	bayi	mabayiy	məbaziɿ
*baɿisun	to buy (PV, f)	baysun		bəziɿrun	besun	bisun		
*baynay	to buy (AV, m)	mabaynay	miniɿ					
*binasun	to buy (PV, m)	binasun	binarun				binasun	bənasun
*cumuliŋ	to burn (tr., e.g. grass; paper) (AV, m)	cumuliŋ	cumuliŋ	səmuliŋ	cəmuliŋ 'to roast'	cəmuliŋ		səmuliŋ
*maculiŋ	to burn (intr., e.g. grass; paper) (AV, m)	maculiŋ	maculiŋ		məcyuliŋ	cyuliŋ		
*culiŋun	to burn (tr., e.g. grass; paper) (PV, m)	culiŋun	culiŋun	səliŋun	cəliŋun	cəliŋun		səliŋun

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*lumaʔum	to burn (e.g. grass, litter) (AV)			ləmom	ləmoŋ	ləmoŋ		ləmon
*guməbul	to bury (AV)	gumbul	(ʔunbul)	(ʔəməbul)	(gəməʔun)			
*gəbəlun	to bury (PV)	gabun	(ʔablun)	(ʔəbəlun)	(gəʔəlan)			
*tumagaq	to carve; to shape wood (AV, f)	tumagaq						
*tagaqan	to carve; to shape wood (LV, f)	tagaqan						
*tumaq	to carve; to shape wood (AV, m)	tumaq			təmaq			
*taqan	to carve; to shape wood (LV, m)	taqan			taqan		taʔan	
*humuwaw	to call (AV)	humuwaw			həmwaw 'to shout'	həməw	humwaw	həmuwaw
*huwawan	to call (LV)	huwawan						

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*mahaŋal	to carry on shoulder (AV)	mahaŋal		məhaŋal	məhaŋal	həŋalan (LV)		
*sumVləŋaʔ	to catch up (AV)	sumilŋaʔ	(suŋŋalaʔ)	(səməhəŋəlaʔ)	səmələŋaʔ	səməŋa		
*sVləŋaʔan	to catch up (LV)	səlaŋaʔan	(saŋlan)	(səhəŋəlan)	sələŋan	səŋan		
*gumuʔaluʔ	to care about; to have pity for (AV)	gumuʔaluʔ	(saminaluʔ)	gəmaluʔ	gəmaluʔ	gəmalu 'caring'	gumuʔaluʔ	gəmalu
*mapaŋaʔ	to carry on one's back (AV)	mapaŋaʔ	mapaŋaʔ	məpaŋaʔ	məpaŋaʔ	paŋa		paŋa
*humawbiŋ	to chop (AV)	humawbiŋ	humobiŋ	həmobīŋ	həmobīŋ	məhobiŋ 'to divide pork'		həmobīŋ
*hawbiŋun	to chop (PV)	hawbiŋun	habīŋiy	həbiŋun	həbiŋun	bəheŋan 'to divide pork'		
*tuməʔətuʔ	to chop (AV)	tumaʔtuʔ	tuntuʔ	təmutuʔ	təmətuʔ	təmətu 'to cleave'		təmutu
*təʔətəʔun	to chop (PV)	tuʔutʔun	tatʔun	tətun		tətəʔun		
*pasikaʔun	to chew (AV)	pəsikaun		pəsəkon	(pəsəkal)			

Proto-Atayal	Gloss	Matu'uwal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*mVhərag	to chase (AV)	mahaag		həməbəyaw	həbiyax	məhyaw		həmyaw
*bVhəragun	to chase (PV)	bəhagun		həbəyagun	həbyaxun	byagun		həbyagun
*gumuwarag	to choose (AV)	(muwag)	gumorow	gəmwayaw	gəmwayax	mwayaw	muwayaw	mwayaw
*guwaragan	to choose (LV)	wagan	guragan		gyaxun	gyagan	wayagan	byagan
*sumVyug	to change; to replace (AV, f)	sumayug			səmiyux			
*yunag	to change; to replace (AV, m)	sumayunag	yumunaw					
*quməluʔ	to close (AV)	qumluʔ	ʔunluʔ	qəməluʔ	qəməluʔ	ʔəluŋ	ʔumaluʔ	ʔəməlu
*qələʔan	to close (LV)	qalʔan	ʔulon	qələʔan	qələʔiy	ləʔan	ʔalwan	ʔəlwan
*cumapuh	to clean; to sweep (AV)	cumapuh	cumopah	səmapuh	cəmapuh	capoh		
*capuhan	to clean; to sweep (LV)	capuhan	capohan		cəpuhan			
*minaraŋ	to clear a field (for planting) (AV, m)	minaraŋ	minaraŋ	gəmayan		nayan		



Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*minañ	to clear a field (for planting) (AV, f)	minañ			minañ			
*rumakiyas	to climb (a tree, a cliff) (AV)	rumakiyas	ruŋkes					
*rakiyasən	to climb (a tree, a cliff) (LV)	rəkiyasən	rakesun					
*karag	to climb (a tree, a cliff) (AV)		ʔuŋkaraw 'to crawl'	məkaraw		karaw		məkaraw
*karagan	to climb (a tree, a cliff) (LV)			kəragan				pəkəragan
*mVəkəmiʔ	to close one's eyes (AV)	mikmiʔ/ mukmiʔ	makamiʔ	məkəmiʔ	məkəmiʔ	məkəmi		məkəmi
*tumapaq	to clap; to slap (AV)	tumapaq	tumapaʔ	təmapaq	təmapaq	(təmapak)		

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*humilaw	to cover with blanket (AV)	humilaw	humilaw	helaw	həmelaw	həmelaw		(pəhəlawiy)
*kumalu?	to comb hair (AV)	kumalu?			kəmalu?		kumalu?	
*kaluʔan	to comb hair (LV)	kaluʔan			kəlway		kalwan	
*tumaluk	to cook; to boil (AV, f)	tumaluk						
*taləkun	to cook; to boil (PV, f)	talkun						
*tumahuk	to cook; to boil (AV, m)	tumahuk	tumahuk	təmahuk	təmahuk	təmahuk	tumahuk	təmahuk
*tahəkun	to cook; to boil (PV, m)	tahkun	tahkun	təhəkun	təhəkun	təhəkun	tahakun	
*hapuy	to cook (rice) (AV)	gumhahapuy	pahpuy	pəhapuy	pəhapuy	pəhapuy	pahapuy	pəhapuy
*hapuyun	to cook (rice) (PV)	gəhapuyun	pahpuyun		pəhəpuyun	puyun		
*muwah	to come (AV)	muwah	moh	mwah	mwah	mwah		ʔuwah (imp)

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*luməpug	to count (AV)	lumpug	lumpuw	ləməpuw 'to read'	ləməpux	ləməpu		ləməpu
*ləpəgun	to count (PV)	lapgun	lapgan	ləpəgun	ləpəgun	ləpəgun		ləpəgun
*ʔumuk	to cover (AV)	taʔumuk	ʔumumuk	ʔumuk	ʔumuk	ʔumuk		ʔumuk
*ʔumukan	to cover (LV)	ʔumukan	ʔamukan		məmukun	mukan		
*lumuhij	to continue; to follow (AV)	lumuhij	lumuhij			səluhij 'continuously'		luhij
*luhijun	to continue; to follow (PV)	luhijun	luhijun 'to scatter'					
*ʔumubur	to connect (AV)	ʔumubuw	ʔumubur		mubuy	mubuy		
*ʔuburan	to connect (LV)	ʔubuwan	ʔaburan		buyan	buyun		
*suməliʔ	to collect (AV)	sumliʔ	sunliʔ	səməliʔ	səməliʔ	səməli		
*səliʔun	to collect (PV)	siliʔun	silen	səlyun	səlyun	səlyun		
*mVɲilis	to cry; to weep (AV)	miɲilis	maɲilis	məɲilis	məɲilis	məɲilis	maɲilis	məɲilis
*lVɲisan	to cry; to weep (LV)	liɲisan	caɲisan	ləɲisan	ləɲisun	ɲisan		

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*muwak	to cut open (e.g. watermelon) (AV)	(muwik)	mok	mwak	mwak			
*buwakun	to cut open (e.g. watermelon) (PV)	(buwikun)	bokun	bwakun	bwakun	bwakun		bwakun
*kumut	to cut; to chop (AV)	kumut	kumut	kəmut	kəmut	kəmut	kumut	kəmut
*kutan	to cut; to chop (LV)	kutan	kutan	kutan	kutan	kutan	kutan	
*qumatab	to cut with scissors (AV)		ʔumatak	qəmatap	qəmatap			
*qataban	to cut with scissors (LV)		ʔatapan	qətaban				
*humiluk	to de-louse (AV)	humiluk	humiluk	həmiluk		məheluk	humiluk	
*hilukan	to de-louse (LV)	hilukan	hilukan	hinlukan		həlukan	halukan	

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*mVkahul	to depart (AV)	mukahul			məkahul	məkahun		
*mVbəɾaq	to descend; to go down (AV)	mubaaq		məbəzyaq	məbiyaq	məbəya		
*humiriq	to destroy; to waste (AV)		humiriʔ	həmiriq	həmiriq	həmiri		
*hiriqun	to destroy; to waste (PV)		(huriʔun)	həriqun	həriqun	riʔun		
*makaral	to discuss (AV)	makaal	makakaral		məkayal	kəkayan	makayal	
*kumahat	to dig up rice seedlings (AV)	kumahat	kumahat					
*kahatan	to dig up rice seedlings (LV)	kahatan	kahatan					
*minuqil	to die (AV, m)	minuqil			mənuqil			
*mahuqil	to die (AV, f)	(mənahuqil)	mahuʔil	məhuqil		məhoʔin		məhuʔin
*qumasug	to divide (things) (AV)	qumasug		qəmasuw	qəmasux	(kəmasu)		ʔəmasuw
*qasugun	to divide (things) (PV)	qasugun		qəsugun	qəsuxun	(kəsyugun)		ʔəsugun
*kumariʔ	to dig (AV, f)	kumaiʔ						

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*kariʔan	to dig (LV, f)	kayʔan						
*kumayhuɿ	to dig (AV, m)	kumayhuw	kumehuɿ	qəmiɰuy	kəmiɰuy			
*kayhuɿan	to dig (LV, m)	kiɰuwan	kiɰuɿan	qəɰuyan	kinɰoyan			
*rahig	to dry in the air (AV)	rahiy		mahiy			rumahiy	
*rahisən	to dry in the air (LV)	rahisən		hirən			rarahisən	
*kuməɰay	to dry (grass, wood) (AV)	kumaiy			kəmiyay	kəməyay		
*kəɰayan	to dry (grass, wood) (LV)	kayan		kəzyayan	kyayan	kyayan		
*manəbu[ʔg]	to drink (AV)	mənubuwag	maʔabuʔ	mənəbuw	mənəbux	nəbu	manabuʔ	mənəbu
*nəbu[ʔg]un	to drink (PV)	nubuun	ʔabun	nəbun	nəbuxun	nəbun	nabugun	
*kaɰag	to draw bowstring (AV)	humakaag			pəkayax			
*matas	to draw; to tattoo (AV)	matas	matas	matas	matas	matas		matas
*patasan	to draw; to tattoo (LV)	patasan	patasan			pətasən		

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*masituriŋ	to drip (AV)	məsituriŋ	masturiŋ	məsəturiŋ		səturiŋ	masturiŋ	
*rumuwaŋ	to dry by fire (AV)	rumuwaŋ		rəmwaŋ	pərwaŋ			
*qumaʔis	to draw a line; to delineate a border (AV)	qumais	sunʔes 'to end a relationship'	qəmes	qəmes			
*qaysun	to draw a line; to delineate a border (PV)	qaysun	ʔesun		qesun			
*mawɿit	to drill (AV)	(mawwik)	moɿit	muzit		moyit	(papawɿit)	
*maniq	to eat (AV)	maniq	maniʔ	maniq	maniq	mani		mani
*kaniq	to eat (AV.imp)	qaniq	kaniʔ	qaniq	qaniq	kani		kani
*kunamaʔ	to eat breakfast (AV)	kumunamaʔ		(kəlamaʔ)	kənamaʔ			kənama
*kuriʔax	to eat lunch (AV)	kumuriʔax		kəryax	kəryax			kinryax 'lunch'
*kugabiʔ	to eat dinner (AV)	(kumgabiyan)		kəgabiʔ	kəgabiʔ			kiŋabi 'dinner'

Proto-Atayal	Gloss	Matu'uwal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*lakarɨm	to engage in headhunting (AV)	maglakaam	lunkarɨŋ					
*marup	to enter (AV)	maup	maruk	məzyup	miyup	məyuk	mayup	məyup
*karupan	to enter (LV)	kawpan	karupan	kyupan	kyupan	kyupun		
*humakas	to envy; stingy; to forbid (AV)	humakas		həmakas	həmakas	həmakas		
*sumatuʔ	to escort (AV)	sumatuʔ	matuʔ	səmatuʔ	səmatuʔ	səmatu		
*satVʔun	to escort (PV)	satʔun		sətun	(tətun)			
*manukaʔ	to extract fibre from plants (AV)	manukaʔ		mənukaʔ			kumnukaʔ	mənuka
*maʔuŋ	to extinguish (AV)	mauŋ (pauŋ)			moŋ			
*pawŋan	to extinguish (LV)				poŋan			
*mahuq	to fall; to drop (e.g. fruit, leaves) (AV)	mahuq		məhuq	məhuq			



Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*timami?	to ferment in cooked rice (AV)	tumimami?			təmami?	təmami		
*suməʔan	to feed; to rear; to raise (animals) (AV)	sumʔan	sunʔan	səməʔan	səməʔan	səməʔan	sumaʔan	səmaʔan
*səʔanan	to feed; to rear; to raise (animals) (LV)	saʔanan	sanān	səʔanan	səʔanay	sənanan	saʔanan	səʔani
*rumaŋa?	to feed; to raise (AV)		rumaŋa?	rəmaŋa?				
*maŋuŋu?	to fear; to be afraid (AV)		maŋuŋu?	mŋuŋu?	mŋuŋu?	mŋuŋu		mŋuŋu
*panaʔip	to fish (AV)	panaip	panek		mənep	pənek	panayp	pənep
*tumukura?	to fill (with water) (AV)	tumukura?		təkura?	təkura?	təkura		
*masuq	to finish (AV)		masu?	masuq	təmasoq	masu		masu
*suqun	to finish (PV)		suʔun	suqun		suʔun		
*mulu	to find (AV)	(lumuwig)	mulu?	muluw	mulu	mulu		
*luwan	to find (LV)	luwan	lon	ʔəlwan	lwan	lwan		lwan

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*mulakaʔ	to fly (AV)		mulakaʔ	məlaʔaʔ	məlaʔaʔ	məlaʔa		məlaʔa
*maqVluwit	to flow; to float (AV)	məqaluwit	mulit	məqəlwiʔ	(qənuyl)	məlyut		
*qəluwicun	to flow; to float (PV)	qalwicun	ʔulicun	qəlyuʔun		lyutun		
*humaʔur	to flood; to be flooded (AV)	humaur		həmor	həmor	həmor	humawl	
*hawrun	to flood; to be flooded (PV)	hawrun			horun	horun	hawrun	
*tuməpik	to flatten (AV)	(tumapiq)	(matapik)	təməpik	təməpik	təpikun (PV)	tumapik	təpikun (PV)
*.rumuŋiʔ	to forget (AV)	ʔumuŋiʔ	.rumuŋiʔ	muŋiʔ	muŋiʔ	muŋi	ŋyan (LV)	yeŋi
*sələsul	to follow; to repeat after s.o. (AV)	sumalsul			pələsun	pələsun		
*sulun	to follow; to repeat after s.o. (PV)	sulusulun			pəsulun	sulun		
*lumamuʔ	to gather (AV)	lumamuʔ	lumamuʔ		ləmamuʔ	mamu		ləmamu
*lamuʔun	to gather (PV)	lamuʔun	lamun		ləmun	ləmun		

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*sitapuŋan	to get moldy (LV)	sətapuŋan	satapuŋan				sitapuŋan	
*maʔiq	to give (AV)	maiq	miʔ	miq	miq	me		bay
*bayqan	to give (LV)	bayqan	beʔan	biqan	biqan	biʔan		
*huməriq	to give way (AV)	humriq	hunriʔ	həməriq	həməriq	həri		həmiri
*kumətuʔ	to gnaw (AV)	kumtuʔ		kəmətuʔ	kəmətuʔ			kəmətu
*kətəʔun	to gnaw (PV)	katʔun		kətəʔun	kətəʔun			kətəʔun
*murut	to go out (fire) (AV)		murut 'extinguish'	muyut 'extinguish'	muyut	muyut 'extinguish'		
*purutan	to go out (fire); to put out a fire (LV)		purutan	yutan		yutan		
*musaʔ	to go (AV)	musaʔ	musaʔ	musaʔ	musaʔ	mosa		musa
*ʔusalan	to go (LV)	ʔusalan	ʔinsalan	ʔəsan	salan	salan		
*halay	to go; let's... (optative marker) (AV)	halay	hala / haliy	hala	hala / halay	hala		
*kumərap	to grab (AV)	rumakaap	kunɾak	kəməzyap	kəmiyap	kəməyak		kəmyap
*kərapun	to grab (PV)	rəkapun	karapun	kyapun	kyapun	kyapun		kyapun

Proto-Atayal	Gloss	Matu'ual	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*guməragur	to grind; to rub (AV)	gumargur		gəmərəgul	gərəgul			
*gəragərun	to grind; to rub (PV)	gurugurun		gərəgan	rəgurun			
*marakiyas	to grow (of children, plants) (AV)	marakiyas			mərəkyaś	mərəkyaś	marakyas	mərəkyaś
*kərap	to grab; to grasp (AV)	rumakaap	kunrak	kəməzyap	kəmiyap	kəməyak		
*kərapun	to grab; to grasp (PV)	rakapun	karapun	kyapun	kyapun	kyapun		
*tərabun	to grab with tongs (PV)		patarapun	qəcyaban				
*matal	to have fun; to play; to chat (AV)		matal	məcisl	məcisl	cisan / tisan	matal	
*paqayaʔ	to hang (clothes, etc.) (AV)		paʔayaʔ	pəqayaʔ			paʔayaʔ	

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*rumaʔuŋ	to hang on hook (AV)	rumaʔuŋ		kəmərɔŋ	rəmoŋ			
*raʔuŋan	to hang on hook (LV)	raʔuŋun	parɔŋan	kəroŋan	roŋan			
*rumag	to help (AV)	rumag	rumow		rəmax	mərəmax		rəmax
*ragan	to help (LV)	ragan	roŋan		raxun	roŋan		
*ʔumutuʔ	to heap; to pile (AV)	ʔumutuʔ		ʔəmutuʔ	mutuʔ	mutu		
*ʔutuʔan	to heap; to pile (LV)			ʔətwan	təwaniy	nətwan		
*mahi	to hit (AV)	mahiy	mahiy	mihiy		mahi	mahiy	mahi
*bahiyun	to hit (PV)	bahiyun	bahyan	bəhyun		bəhyun		
*luməqinʔ	to hide s.t. (AV)	lumqinʔ	lunʔinʔ	ləməqinʔ	ləməqinʔ	məʔinʔ	lumaʔinʔ	
*ləqinʔun	to hide s.t. (PV)	laqinʔun	liŋun		ləqinʔun	leŋun	laʔinʔun	ləʔinʔun
*tuləqinʔ	to hide (intr.) (AV)	tulqinʔ	tulʔinʔ		tələqinʔ	mələʔinʔ		
*tumabul	to hoe; to till (AV)	tumabul	tumabul		təmubul			

Proto-Atayal	Gloss	Matu'uwal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*tabulun	to hoe; to till (PV)	tabulun	tabulun		təbulun			
*miʔiŋ	to hold in hand (AV)	miʔiŋ	miŋ	meŋ	miŋ	miŋ		biŋ
*biʔiŋan	to hold in hand (LV)	biʔiŋun	biŋun	beŋan	biŋan	həbiŋan		biŋan
*qumalup	to hunt (AV, f)	qumalup		qəmalup	qəmalup			
*qumaluwap	to hunt (AV, m)	qumaluwap	malorak 'hunt with dogs'			məluwak	malyap	
*pakVxalun	to hurt someone (PV, f)	pəkawxalun	pakuxalun		kəxalun			
*mabukut	to hunch one's back (AV)	mabukut	(mabukuŋ)		bukut	bukut	mabukut	
*gumibaʔ	to hug; to embrace (AV)	gumibaʔ	gumibaʔ	gəmibaʔ	gəmibaʔ	məgiba		gəbon (PV)
*gibaʔun	to hug; to embrace (PV)	gibaʔun	gibon	gəbon	gəbon	gəbon		

Proto-Atayal	Gloss	Matu'uwal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*pasulun	to imitate (AV)		pasulun	məsulun		məsulun		
*pasulunan	to imitate (LV)		pasulunan	pəsəluŋiy	pəsəluŋan	səluŋan		
*malawa?	to invite (AV)		malawa? 'to call'	məlawə?	məlawə?	məlawə		
*palawanan	to invite (LV)		palawanun 'to call'	(pələgwan)	pəlwanan			
*masitaril	to jump (AV)	mastatail	mastaril					məsətazin
*ləkah	to kick (AV)		kunlakah	məkələkah		tələkah		
*baq	to know (AV)	baq	ba?	baq	baq	ba		
*kəbaq	to know (AV.SBJV)	qəbaq	kaba?	qəbaq		kəba		
*baqun	to know (PV)	baqun	ba?un	baqun	baqun	ba?un		ba?un
*sumamag	to lay bedding (AV)	sumamag	sumamaw	səmamaw	səmamax	səmamaw	sumamaw	səmamaw
*samagan	to lay bedding (LV)	samagan	samagan	səmagan	səmaxan	səmagi	samagan	
*masiyaq	to laugh (AV)	masiyaq	mase?	məsyəq	məsyəq	məsyə		məsyə
*pasiyaqan	to laugh (LV)	pasiyaqan	pase?an	pəsyəqan	pəsyəqan	pəsyə?an		

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*pasiʔahag	to lean against (AV)	pəsiʔahag	(pasaw)		pəsyahax			(təcyahaw)
*suməbil	to leave s.t. (AV)	sumbil	(sunbiliʔ)	səməbil	səmibil	səməbin		səməbin
*səbilun	to leave s.t. (PV)	(subilun)	(sabliʔun)	səbilan	səbilan	səbilun		səbilan
*huməbiŋ	to leak (AV)	humbiŋ		həməbiŋ	məhəbiŋ	məhəbiŋ	humabiŋ	həbiŋ 'droplet'
*mutuŋ	to light; to set on fire (AV)		mutuŋ		mutuŋ	putuŋ 'matches'		mutuŋ
*putuŋun	to light; to set on fire (PV)		putuŋan		pətuŋun			
*qiyanəxan	to live (LV)		kinuxan	qənəxan	qənəxan	kənəxan		
*matVgarag	to lie down (AV)	matgagaag		mətəgayaw				
*masirapaʔ	to lie down on one's back; supine (AV)	masrarapaʔ		məsərapaʔ		məsərapa		məsərapa
*muŋ	to listen (AV)	muŋ	muŋ	muŋ	muŋ	muŋ		muŋ
*puŋan	to listen (LV)	puŋan	puŋan	puŋan	puŋan	puŋan		puŋan



Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*humihip	to lick (AV)	humihip		həmihip				
*hihipan	to lick (LV)	hihipan		hipan				
*humimuq	to lick (AV)		humimu?	həmimuq 'to drink nectar'	həmimoq			həmimu
*himuqan	to lick (LV)		himoʔan		həmoqun			
*rumiliq	to lift; to raise (AV)	rumiliq	rumili?	ləmeliq	ləmeliq	ləmeli		meli
*gumaraŋ	to lose (AV)	gumaan	gumaraŋ					
*mitaʔ	to look; to see (AV, f)			mitaʔ (kitaʔ)		mita (kita)		
*mitayux	to look; to see (AV, m)		matox		kətayux	texan (LV)	mitayux	mətayux
*mitVɿal	to look; to see (AV, m)	mitaal			kətalan (LV)			
*kisəliq	to love (AV)	kisliq	kisli?	qəsəliq	qəsəliq	kəsəli		
*hVkaŋiʔ	to look for something (AV)			həkəŋiʔ	həkəŋiʔ	həkəhani		həkəŋyun (PV)
*sumiyug	to make rope (AV)	sumiyug	sumiyuw					səmənyuw

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*siyugun	to make rope (PV)	siyugun	syugiy					sənyugiy
*masəqun	to marry; to get married (AV)	(masiqun)		(səqəliqun)	məsəqun	məsəʔun	masuʔun	
*kabalay	to make; to build (AV)	kabalay	(sunbaleʔ)	kəbalay	kəbalay	(kəbəle)		kəbalay
*lamaʔ	to make a cut; to mark (AV)	lumamaʔ			pəlamaʔ			
*qumihul	to make s.o. do s.t.; to force (AV)	qumihul	ʔumihul	qəmihul	qəmihul	mihun		
*qihəlun	to make s.o. do s.t.; to force (PV)	qihlan	patahlun	qəhəlun	qəhəlun	həlun		
*cuməpuŋ	to measure (AV)	cumpuŋ	cunpuŋ	səməpuŋ	cəməpuŋ	cəməpuŋ	sumapuŋ	səməpuŋ
*cəpəŋan	to measure (LV)		capŋan	səpəŋan			sapaŋan	

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*ʔumimag	to mix; to stir (AV)	ʔumimag	ʔumimaw	mimaw	mimax	mimaw		mimaw
*ʔimagun	to mix; to stir (PV)		ʔimagan	magun		magun		pəmagun
*ramat	to miss s.o. (AV)		sunraramat		məramat	məramat		
*humakut	to move s.t. (AV)	humakut	humakut	həmakut	həmakut	makut		həmakut
*hakucun	to move s.t. (PV)	hakucun	hakucun	həkutun	həkutun	kutun		
*gumawah	to open (AV)	gumawah	gumawah	(gəmyah)	gəməwah	(gəmyah)	(gumyah)	(gəmyah)
*gawahan	to open (LV)	gawahan	gawahan	(gyahan)	gwahiy	(gyahan)	(gyahan)	(gyahan)
*tumuʔ	to order; to dispatch (AV)		tumuʔ	təmuʔ	təmuʔ	tənu		tənu
*tuʔun	to order; to dispatch (PV)		tun	tun	tənun	tuy		
*pasiciyuk	to overturn; to turn over (AV)		pascik	səsyuk	pəsəcyuk	səcyuk		pəsyyukun (PV)

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*qumaləsay	to pass thread (through a heddle?) (AV)	qumalsay				ləməsay		
*cumapaŋ	to patch (clothes) (AV)	cumapaŋ	cumapaŋ					
*humaxinas	to pass; to overtake (AV)	humaynas	hunɿinas	həminas	həminas	həminas	humaynas	həminas
*haxinasun	to pass; to overtake (PV)	haynasun	hanasun	hənasun	hənasun	hənasun		hənasun
*huməgub	to perform rites (AV)	humgub		həməgup	həməgup	məhəguk	humagup	
*həgəban	to perform rites (LV)	hagban		həbəgan	həgupan	(pəhogun)	hagaban	
*cumiyus	to perform ritual; to curse (AV)	cumiyus	(cumiŋas)		cəmyus	cəmyus	sumyus 'to divine; to scry'	
*ciyusan	to perform ritual; to curse (LV)				cyusun	cyusan	syusan	

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*qumalit	to peel (with an instrument) (AV)	qumaliʔ	ʔumalit			(milit)		
*qalicun	to peel (with an instrument) (PV)	qaliʔan	ʔalicun			(litun)		
*ʔumatuk	to peck (AV)	ʔumatuk	(ʔumatun)	matuk	matuk	matuk		
*ʔatukun	to peck (PV)	ʔatukun	(ʔatunjun)		tukun	tukun		tukun
*humagaʔ	to pile stones (AV)	humagaʔ	(pahaʔ)	pəhagaʔ	həмагаʔ	(pəgayun)		
*hagaʔan	to pile stones (LV)	hagaʔan	(pahan)		həgan			
*qumumas	to pickle vegetables (AV)	qumumas	ʔumamas	qəmmas 'rub'	ʔinbəgan ramat			
*qumasan	to pickle vegetables (LV)	qumasan	ʔamasun	qəmasan 'rub'		kəmasan 'to rub salt'		

Proto-Atayal	Gloss	Matu'uwal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*magVnaʔuʔ	to play (AV)	məganauʔ				məno (gəno)		məgənaʔ
*pagVnawʔan	to play (LV)	pagnawʔan				nogan		
*mumuɾaʔ	to plant (AV)	mumuwaʔ			muyaʔ			
*pumumuɾaʔun	to plant (PV)	pumuwaʔun			pəmiyon			
*mamuhiʔ	to plant (AV)		mamuhiʔ	muhiʔ		muhi		pəmuhi
*pamuhiʔun	to plant (PV)		pamuhyun	pəməhyun		məhyun		
*kumiyut	to pluck (AV)		kumit	kəmyut				kəmyut
*kiyutan	to pluck (LV)		kitan	kyutan	(kitan)			
*tumubaʔ	to poison fish (AV)	tumubaʔ		tmubaʔ	tmubaʔ	tmuba		tmuba
*tubaʔan	to poison fish (LV)	tubaʔan		təban	təban	təbwan		təban
*cuməxuʔ	to pound rice (AV)	cumxuʔ	cunʔxuʔ	səməxuʔ	cəməxuʔ	cəməxu	sumaxuʔ	səməxu
*cəxuʔun	to pound rice (PV)	cuxuʔun	cuxun	səxun	cəxun	cəxi		
*huməɾiʔ	to pour (AV)	humiiʔ	hunɿiʔ	həməziʔ	həmiyiʔ	məyi		həzi
*həɾiʔan	to pour (LV)	hiʔan	həɾeʔan	həziʔan	hyanay			həzyan

Proto-Atayal	Gloss	Matu'ual	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*macuwiq	to pour out (liquid); to throw away (AV)	macuwiq	sicuy					məsuy
*sumuwaɾal	to promise (AV, m)	(sumiwaal)	sumoɾal				sumwayal	səmwayan
*suwaɾalan	to promise (LV, m)	(siwalan)	suraɾalan					
*sumuwal	to promise (AV, f)			səmwal	səmwal	(səmwaʔin)		
*suwalan	to promise (LV, f)			swalan	swalan	swalan	swalan	swalan
*ʔuməpux	to press; to push down (AV)	ʔumpux	(ʔumpix)	məpux		məpux	ʔumapux	
*ʔəpəxan	to press; to push down (LV)	ʔapxan	(ʔapixan)	ʔəpəxan		pəxan	ʔapaxan	

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*məʔəmuʔ	to press down with force (AV)	simaʔmuʔ		məʔəmuʔ	məʔəmuʔ	məmu		məʔəmun
*sumirəmaʔ	to prepare (AV)	sumirmaʔ	sunramaʔ					
*tirahuʔ	to praise (AV)		tirahuʔ	tərahuʔ	sətərahuʔ	tərahu		
*suməkuʔ	to put (AV)	sumkuʔ		səməkuʔ			sumakuʔ	
*səkuʔun	to put (PV)	sukuʔun		səkun		səkun	sukwan	
*sumiʔ	to put (AV)				səmiʔ			səmi
*humuluy	to pull; to drag (AV)	humuluy	humuluy	həmuluy	həmuluy	məholuy	humuluy	həmuluy
*tumakuɿ	to push down; cause to trip (AV)	tumakuw 'to roll'	tumakuɿ	təmakuy	təmakuy	təmakuy		
*takuɿun	to push down; cause to trip (PV)	takuun 'to roll'	takuɿan	təkuyun	təkuyun	təkuyun		
*rumurug	to push (AV)	rumurug		rəmuruw	rəmurux	məguru		rəmuru
*mVhut	to push, press down (AV)			məhut	məhut	məhut		məhut



Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*pVhəcun	to push, press down (PV)			pəhətan	pəhətan	pəhətan		pəhəsun
*ɹumuhak	to pull out (AV)	ʔumuhak	humoɾak				yumuhak	
*humVbiyat	to pull out (AV)			həməbyat	həməbyat	həməbyat		
*hVbiyacun	to pull out (PV)				həbyatan	həbyatan		hbyasun
*qumayat	to raise (animals, children) (AV)	(maqaynut)		qəmayat	qəmayat	mayat		
*qayacun	to raise (animals, children) (PV)	(qaqinucan)		qyatan	qyatun	nyatan		
*qumuwalax	to rain (AV)	qumuwalax	ʔumolax	məqwalax	qəmwalax	mwalax	maʔwalax	mwalax
*kuməkəgig	to remove the bark from ramie; to decorticate (AV)	kumakgiy	kunkagiy	kəməgiy		məkəgiy	kumkagiy	

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*kəgisən	to remove the bark from ramie; to decorticate (LV)	kamkagisan		kinjiran	kəgisən		kamkagisiy	
*masinaʔ	to request (AV)	masinaʔ	masinaʔ	məsinaʔ	məsinaʔ	sina		
*pasinaʔun	to request (PV)		pasinon	pəsənon				
*kuməluh	to reap; to harvest (rice) (AV)	kumluh	kunloh	kəməluh	kəməluh	kəməloh	kumaluh	kəməluh
*kələhun	to reap; to harvest (rice) (PV)	kalhun	kilhun	kələhun	kələhun	kələhun	kalahun	
*mVhəŋiq	to rest (AV, m)	muhŋiq				məhəŋi	mahanjɪʔ	məhəŋi
*həŋiqan	to rest (LV, m)	hanjigan				həŋiʔan		
*mVhəŋaw	to rest (AV, f)	muhŋaw	mahŋuw	məhəŋaw	məhəŋaw	məhəŋaw		
*həŋawan	to rest (LV, f)	hanjawan	pahŋagan		həŋawan	həŋawan		

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*sumaqit	to reap; to cut (AV)	sumaqit		səmaqit	(səmiqut)	səmaʔit 'to cut hair'		smaʔit 'to cut hair'
*saqitun	to reap; to cut (PV)	saqitun		səqitan				
*matutuliq	to rise; to stand up (AV)	mətutuliq	matatuliʔ	mətuliq	mətuliq	mətuli		tuli
*.ɾumiŋat	to rob; to take away (AV)	ʔiŋat			miŋat	miŋat	yumiŋat	
*.ɾiŋacun	to rob; to take away (PV)	ʔiŋacun			ŋatun	ŋata	yinjasun	
*cumuluh	to roast; to burn fur (AV, f)	cumuluh						
*culuhun	to roast; to burn fur (PV, f)	culuhun						
*.ɾuy	to rock; to seesaw; to swing (AV)		.ɾumuy		miyuy			məyuy

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*cumaʔum	to rub; to wipe (AV)	cumaum	cumoŋ 'to smear'	səmom	cəmom	cəmoŋ	sumawm	
*cawman	to rub; to wipe (LV)	cawman	coman 'to smear'	somi	comay	coman	sawman	
*magiyay	to run away; to leave (AV)	magiyay	magiy	məgyay	məgyas	məgəyay	magyay	məgyay
*pagiyasan	to run away; to leave (LV)		pageran	pəgyaran	pəgyasan	pyariy		pəgyaran
*sigiraŋan	to rust; get rusty (LV)		sagiraŋan	(səʔiyaŋan)			sagyaŋan	
*humirəhir	to saw (AV)	humirhir		həmərəhil	mərəhen	məhiŋ	humarahil	
*hirəhirun	to saw (PV)	hiruhirun		hərəhiran	rəheray	rəheŋan	harahirun	
*kumaɾal	to say (AV)	kumaal	kumaɾal	kəmayal	kəmayal	kəmayan	kumayal	kəmayan
*kaɾalun	to say (PV)	kalun	kaɾalun	kyalun	kyalun	kyalan		kyalun
*masugagay	to say goodbye; to separate (AV)	masasugagay	masugagiy	məsəgagay	məsəgagay	səgagay		səgagay
*masəʔaŋ	to scold (AV)	masʔaŋ	masʔaŋ		səməʔaŋ	səmaʔan	masaʔaŋ	məsəʔaŋ
*kasəʔaŋun	to scold (PV)	kəsəʔaŋun	kasaŋun		səʔaŋun	saŋun	kasaʔaŋun	

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*matukalux	to scorch; to char (AV)	(mətuʔalux)	matukalux	mətəkəlux		məkəlux		təkəkəlux
*patukaləxun	to scorch; to char (PV)	(patʔalxun)		təkələxun		kəluxan		təkələxun
*takuʔ	to scoop up (AV)	tatakuʔ 'fishing net'	takuʔ 'ladle'	takuʔ 'ladle'	takuʔ 'ladle'	taku 'spoon'		taku 'spoon'
*kumamil	to scratch an itch (AV)	kumamil		kəmamil	kəmamil	kəmamiŋ	kumamil	kəmamin
*humaʔug	to scoop up; to ladle (a liquid) (AV)	humauw	humow			haw		
*hawgun	to scoop up; to ladle (a liquid) (PV)	hawgun	hogun			hogan		hogiy
*cumaqis	to sew (AV)	cumaqis	cumaʔis	səmaqis	cənaqis	cəmaʔes	sumaʔis	
*caqisun	to sew (PV)	caqisun	caʔisun	səqisun		cesun	saʔisun	
*qumur	to seize; to occupy (AV)	qumur	ʔumul	qəmul	qəmor			

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*quran	to seize; to occupy (LV)		?ulan	pəqulan 'to take from each other'	qorun			
*məluŋ	to set traps (AV)	(məhuŋ)	maluŋ	məluŋ (bəluŋ)				
*bəlvɾan	to set traps (LV)	(bahɾun)	(?aluŋan)					
*ruməhag	to sharpen (AV)		luŋhaw	rəməhaw	(rəməpax)	məhaw	rumahaw	rəmahaw
*rəhagun	to sharpen (PV)		lahawan	rəhagan	(rəpaxun)	rəhagun	rahagani	rəhagun
*lvʔəŋuy	to sharpen with a knife (e.g. a stick)		laŋuyan		(lɿtan)	sələŋwan	talaʔaŋuy	
*cuməbuʔ	to shoot (AV)	cumbuʔ	cunbuʔ	muʔ	muʔ	cəmu 'to throw stones'		səməbu
*buʔun	to shoot (PV)	buʔun	bun	bun	bun	bun		bun
*mabiləbil	to shiver; to tremble (AV)		mabilbil			mələbiŋ	mabilabil	
*kumugus	to shave (AV)	kumugus	kumugus	kəmugus	kəmugus	kəmugus		kəmugus

Proto-Atayal	Gloss	Matu'uwal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*kugusan	to shave (LV)	kugusan	kugusan	kəgusan	kəgusan	gusan		
*sumaɾuk	to singe off fur (AV)	(sumuwik)	sumaɾuk	səmayuk	səmayuk	səmayuk		səmayuk
*saɾukun	to singe off fur (PV)	(suwikun)	saɾukun		syukan	syukan		
*matamaʔ	to sit (AV)		matatamaʔ	mətamaʔ	tamaʔ	tama		
*maquwas	to sing (AV)	maquwas	mawas	məqwas	məqwas	məʔwas	maʔwas	məʔuwas
*gumirəgir	to sieve (AV)	gumirgir	guŋilgil	gəmərəgir	gəmərəgil	(məgira)		rəgiran 'sieve'
*ɾumulaq	to skin; to peel (rind, bark) (AV)		ɾumulaʔ	(gəmulaq)	(gəmulaq)	(gəmula)		(gəmula)
*ɾulaqun	to skin (PV)		ɾulaʔun	(gəlaqun)	(gəlaqun)	laʔun		
*maʔabiʔ	to sleep (AV)		(mabel)	məʔabiʔ	məʔabiʔ	məʔabi	maʔabiʔ	məʔabi
*sumaʔuk	to smell; to sniff (AV)	sumauk		səmok	səmok	səmok		səmok
*sawkan	to smell; to sniff (LV)	sawkan		sokan	sokun	sokan		sokan
*tVʔasi	to sneeze (AV)	pətiʔasiy		təʔasiʔ	təʔasiʔ	tasi	taʔasiy	
*guməhap	to sow (AV)	gumhap		gəməhap	gəməhap			gəmahap
*tumubux	to sow (AV)	tumubux	(tunburax)	təmabux	təmubux	təmubux		təmubux

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*tubuxan	to sow (LV)	tubuxan	(tabuɔaxan)		təbuxun	təbuxun		
*ʔuməbug	to soak; to immerse in water (AV)	(ʔumubug)	ʔumbuɯ		məbux	məbuɯ		
*ʔəbəgan	to soak; to immerse in water (LV)	(ʔubugan)	ʔabgan		bəxan	bəgan		ʔəbəgan
*muq	to squeeze; to twist (AV)	muq	muʔ	(pəsəbuq)	məboq	məbu		
*buqan	to squeeze; to twist (LV)	buqan	boʔan		boqan	buʔan		buʔi
*kuriq	to steal (AV)	qumuriq	ʔuŋkuriʔ	məquriq	məquriq	məkuri	kumuriʔ	məkuri
*kuriqun	to steal (PV)	quriqun	kuriʔun	qəriqun	qəriqun	kəriʔan	kuriʔun	
*manahuʔ	to start a fire (AV)	manahuʔ	manahuʔ	mənahuʔ	mənahuʔ	mənahu		pənahu
*panahuʔun	to start a fire (PV)	pənahuʔun	panahun	pənəhun	pənəhway	pənəhun		
*maytaq	to stab; to prick (AV)		metaʔ	metaq	mətaq	meta		meta
					‘to throw’	‘to prick’		



Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*baytaqan	to stab; to prick (LV)		bitaʔan	betaqan		təʔan	bataʔan	bətaʔan
*humuq	to strip (e.g. leaves) (AV)	humuq			həmoq			həmu
*qumaraʔ	to step over (AV)		ʔumaraʔ	qəmaraʔ	qəmaraʔ	mara		
*qaraʔan	to step over (LV)		ʔaran		qəran			
*masuwat	to stop (of rain) (AV)	masuwat	masot	məswat	məswat	məswat	masiwat	məsiwat
*kapah	to stick (AV)	kumapah	patukapah	qəmapah	qəmapah	təkaph	takapah	
*bVciyak	to strangle; to choke (AV)	sumbacyak	mabicek	səbəsyak 'to choke on food'	səbəcyak	səbəcyak		pəsəsyak
*bVciyakan	to strangle; to choke (LV)	sabciyakan	bicekan			səcyakan		səsyakan
*cuməʔəcuʔ	to stick in the ground (AV)	cumaʔcuʔ	cuncuʔ	səməʔəsuʔ				səməʔəsu
*cəʔəcəʔan	to stick in the ground (LV)		cacʔan					

Proto-Atayal	Gloss	Matu'uwal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*mawgiʔ	to sun-dry; to dry in the sun (AV)	mawgiʔ	(mugel)	mugiʔ	mugiʔ	mogi	mawgiʔ	mawgi
*pugiʔan	to sun-dry; to dry in the sun (LV)	pugiʔan	(papugelan)		pəgyan	pəgyan	pugyan	pəgyan
*pasihub	to suck (AV)	pəsihub		cəhop	pəsəhup	(pəcəhut)		(pəsəhut)
*qumalaŋ	to surround with a fence (AV)	qumalaŋ	ʔumalaŋ	qəməlaŋ		laŋan		
*kumagaw	to sweep (AV)			kəmagaw	kəmagaw 'to cut grass'	kəmagaw	kumagaw	kəmagaw
*qumətam	to swallow (saliva) (AV)	qumtam	ʔuntaŋ	qətam	qəmətam	mətan	ʔumatam	
*qətamun	to swallow (PV)	qatamun	ʔatamun		qətamun	tamun	ʔatamun	tamun
*mabaʔəbaʔ	to swell (AV)	mabaʔbaʔ	tubabaʔ	məʔəbaʔ	məbəbaʔ		mabaʔabaʔ	məʔəba
*lumaŋuy	to swim (AV)	lumaŋuy	lumaŋuy					
*laŋuyan	to swim (LV)	laŋuyan	lalaŋuyan					

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*ʔuməyug	to swap; to change (AV)	ʔumiyug	yumuʋ	ʔəyʋw	miyux	məyʋ		ʔəmyʋw
*ʔəyugun	to swap; to change (PV)	ʔiyugun	yugun	yugun	yuxun	yugun		təyugun
*magal	to take (AV)	magal	magal	magal	magal	magan		magan
*galun	to take (PV)	(ʔalun)	galun	galun	(ʔalun)	galun		galun
*maras	to take; to bring (AV)	maras	maras	maras	(maray)	maras		maras
*ʔaras	to take; to bring (AV.imp)	ʔaras		ʔaras		ʔaras		
*rasun	to take; to bring (PV)	rasun	rasun	rasun	(rayun)	rasun		rasun
*malahaŋ	to take care of s.o. (AV)	malahaŋ	malahaŋ 'to look for'	kəlahanŋ	məlahanŋ	mələhanŋ	malahaŋ	mələhanŋ
*kalahaŋan	to take care of s.o. (LV)	kəlahanŋan		kələhanŋan	kələhanŋan	ləhanŋan	kalahaŋi	kinhanŋan
*galiq	to tear (of cloth, paper) (AV)	magaliq	masgaliʔ	səgaliq	məgaliq	məgali	magaliʔ	məgali

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*pasibaq	to teach (AV)	pəsibaq	pasbaʔ		pəsəbaq	pəsəba		pəsəba
*lumVhug	to thread a needle (AV)	lumhug	lunhuw	ləmuhuw	ləmuhux	ləmuhu	lumuhuw	
*ləhugun	to thread a needle (PV)	luhugun	lahugan		ləhuxun	(rəhogun)	luhugun	
*mahuway	to thank (AV)	mahuway		məhway	məhway	məhuway	mahuway	məhuway
*luməŋəlun	to think (AV)	lumaŋlun	luŋlun	ləməŋəlun	ləməŋəlun	məŋəlun	lumunjalun	ləŋəlun
*ləŋəlunjun	to think (PV)	luŋulunjun	luŋlunjun		ləlunjun	ləlunjun		ləlunjun
*buliŋ	to throw (AV)		pabuliŋ	muliŋ		muliŋ		
*məhul	to tie (AV)	məhul	mahul	məhul	məhul	məhun		
*bəhəlan	to tie (LV)	bahlan	bahlan		bəhəlan	bəhəlan		bəhəlan
*mahəmut	to transgress (AV)	mahmut	mahmut	məhəmut	məhəmut	məhəmut	mahamut	
*kahəmətun	to transgress (PV)	kəhamtun		həmətun	kəhəmətun		kahamatun	
*tumiruriq	to trap; to ensnare; to catch (AV, m)	tumiruriq	tunruriʔ					

Proto-Atayal	Gloss	Matu'uwal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*tiruɿiqun	to trap; to ensnare; to catch (PV, m)	təruwiqun						
*tumiriq	to trap; to ensnare; to catch (AV, f)			təmiriq	ciriq			
*tiriqun	to trap; to ensnare; to catch (PV, f)		turiʔun	təriqun	cəriqun			təriʔun
*matakur	to trip, roll down (AV)	matakuw	matakur	mətakuy	mətakuy	mətakuy		mətakuy
*mayhul	to tread; to walk on (AV)	mayhul			mehul		(mayʔul)	(meʔun)
*payhəlan	to tread; to walk on (LV)	pihlan			pəhəlan	(pəlan)		(pəʔəlan)
*talam	to try (AV)	mantalam	tumalaŋ	talam	təmalam	təmalan		
*talaman	to try (LV)	ʔantalamun	talaman	təlaman		təlaman		
*miray	to turn (AV)	miray		miray	miray	piray		miray
*pirayun	to turn (PV)	pirayun		pərayun	pərayun	pərayun		pərayun
*mutaq	to vomit (AV)	mutaq	mutaʔ	mutaq	mutaq	muta		məputa

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*humiriq	to waste; wasteful (AV)		humiriʔ		həmiriq	məheri		
*hiriqun	to waste; wasteful (PV)		hiriʔun		həriqun	həriʔun 'pity'		
*malah	to warm oneself by fire (AV)	malah	malah	malah	malah	malah		
*palahan	to warm oneself by fire (LV)		palahan	pəlahan				
*tumapih	to wave hand; to beckon (AV)	tumapih	tumapih	təmapih	təmapih	təmapeh		təmapih
*maymaʔ	to wash (the body) (AV)	maymaʔ	memaʔ	mimaʔ	memaʔ	mema		mema
*paymaʔan	to wash (the body) (LV)	pimaʔan	papiman	pəman	pəman	pəman		
*mabahuq	to wash (clothes) (AV)	mabahuq	mabahuʔ	mahuq	mahuq	mahu	mabahuʔ	məbahu

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*bahəqan	to wash (clothes) (LV)	bahqan	bahaʔan	bəhəqun	bəhəqun	bəʔan		bəhəʔan
*qumuwx	to wash (dishes) (AV)	qumuwx	ʔumox	qəmwax	qəmwax	mwax		
*humakay	to walk (AV)	humakay						həmakay
*huɹaw	to walk downhill; to descend (AV)	masihuwwaw 'to fall'	puhuɹaw				makahuyaw	
*tutuliqun	to wake someone up (PV)	tutuliqun	tatuliʔun	pətəliqaw	təliqun	təliʔun		
*gumawɹag	to wade (AV)	gumawwag	gumowɹow		gə moyax	(məhoyaw)	gumawyaw	mawyaw
*nagaʔ	to wait (AV)	numagaʔ	(manaʔ)	mənagaʔ	mənaʔ	mənaga		mənaga
*nagaʔun	to wait (PV)	nagaʔun	(non)	nəgon	nənon	nəgon		
*humawkuʔ	to walk with a cane (AV)	humawkuʔ	humukuʔ		hmokuʔ			
*tuminun	to weave cloth (AV, f)	tuminun		təminun	təminun	təminun	tuminun	təminun
*tinunun	to weave cloth (PV, f)	tinunun		tənunan	tənunay	tənunan	tinunun	

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*tuminuq	to weave cloth (AV, m)	tuminuq	tuminu?					
*tinuqun	to weave cloth (PV, m)	tinuqun	tinun					
*lumacu?	to weed; to hoe (AV)	lumacu?						ləmasu
*sumilay	to whip; to slap (AV)	sumilay	sumiliy		səmilay	səmilay		səmilay
*silayun	to whip; to slap (PV)	silayun	silayun		səlayun	səlayun		səlayun
*tumapus	to winnow (AV)	tumapus	tumapis	təməbus	təməbus	təməpus		
*tapəsan	to winnow (LV)	tapsan	tapisan	təbəsan	təbusay	təpəsan		təpəsan
*mataɾuwaw	to work (AV)	matawwaw		mətəzywaw	mətiyaw	mətəyaw	mataywaw	
*pataɾuwawun	to work (PV)	pətuwawun		(pəcyagun)	pətiyawun	(tyagun)		(pətəyagun)
*cumabu?	to wrap (AV)	cumabu?	cumabu?	səməbu?	cəməbu?			
*cabu?un	to wrap (PV)	cabu?un	cabun		cəbun			
*masuɾab	to yawn (AV)	(masuwag)	masuɾak	məsuyap	(məsuyak)	pəsuyak		məsuyap



Proto-Atayal	Gloss	Matu'uwal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*kisaʔ	today; soon	kisaʔ	kiraʔ	kiraʔ	kisaʔ 'today'	kisaʔ 'just now'		
*casan	tomorrow	casan						sasan
*cuxan	tomorrow		cuxan	suxan	cugan	cuxan		suxan
*təɾab	tongs		pataɾak	qəcyap				təcyap
*həmaʔ	tongue (f)	həmaʔ						
*həmalit	tongue (m)		hamalit	həmalit	həmalit			
*katəŋiʔan	too full; engorged	kətaŋiʔan			kətaŋyan	təŋyan		
*ʔuxi	too; also	ʔuwiʔ	ʔuxi	ʔuzi	ʔuyi	ʔuyi		ʔuzi
*kahuy	tree; wood (f)	kahuy		qahuy 'firewood'				
*kahuniq	tree; wood (m)	kahuniq	kahuniʔ	qəhuniq	qəhuniq	kəhoni	kahuniʔ	kəhoni
*cubalay	true; correct	cubalay	cubay	balay	cəbalay; calay	calay		
*qamuruʔ	trunk	qamuuʔ	ʔamuruʔ					
*mapusal	twenty	mapusal	mapusal	məpusal	məpusal	pusan	mapusal	məpusan
*wahig	twitch-up snare	wahiy		wahiy 'k.o. vine'	wahuy 'k.o. vine'		wahiy	wahiy
*ʔusaʔiŋ	two	ʔusaiŋ	saʔiŋ	saziŋ	sayiŋ	saʔiŋ	sayiŋ	saziŋ

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*lamu?	type; kind; sort	linamu?an	lanlamu?	ləlamu?	ləmamu?	ləlamu		
*mama?	uncle	mama?	mama?	mama?	mama?	mama	mama?	mama
*ɹik	underneath; inside		ɹik	zik		yik	yik	zik
*raya?	upslope		raya?	kəraya?		kəraya 'opposite shore'		kəraya
*həmuq	urine	həmuq		həmuq	həmuq	həmu	hamu?	həmu
*pipi?	vagina (child)	pipi?	pipi?	pipi?	pipi?	pipi		pipi
*mala?	vegetable fern	mala?	ɹumala?		mala? 'ferns'	mala		mala
*qalaŋ	village	qalaŋ	?alaŋ	qalaŋ	qalaŋ	?alaŋ		?alaŋ
*kagisi?	vine basket carried on one's back	kagisi?	kagiri?	kiri?		kesi	kagisi?	kisi
*wahig	vines	wahiy	wahiy	wahiy	wahuy	wahi		wahi
*hawinuk	waist	hawinuk	hawinuk	hwinuk	henuk	hwinuk	hawinuk	hwinuk
*qiniriyaŋ	wall	qiniriyaŋ		qənəryaŋ	qənəryaŋ	nəryan	?inryaŋ	?inryaŋ
*hələhul	warm	halhul	hulhul	hələhul	hələhul	ləhun		
*ŋahut	wart	ŋahut		ŋahut	ŋahut		ŋahut 'mole'	

Proto-Atayal	Gloss	Matu'awal	Plngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*tVgəliq	waterfall	tagliq	tagli?	təgəliq	təgəliq	təgəli		təgəli
*qusiya?	water	qusiya?	ʔuse?	qəsyə?	qəsyə?	ʔəsyə	ʔusya?	sya
*cami	we; us (excl.)	cami	cami	sami	cami	cami		
*ʔita?	we; us (incl.); you and me	ʔita?	ʔita?	ʔita?	ʔita?	ʔita		
*mahuɿiq	wet (of clothes etc.)	mahuwiq	mahuɿi?	məhuziq	məhoyiq	məhoyi		məhuzi
*nanu?	what	(nanuwan)		nanu?	nanu?	(lalu)		nanu
*kanuwan	when	kanuwan	kanon	kənwan	kənwan	kənwan	kanwan	kənuwan
*ʔinu?	where	ʔinu?	ʔinu?	ʔinu?	ʔinu?	ʔinu		ʔinu
*malabu?	white; clean		malabu?		məlabu?	məlabu		
*ʔima?	who	ʔima?	ʔima?	ʔima?	ʔima?	ʔima		ʔima
*mawan	wife's sister's husband	mawan	mawan	mawan	mawan	mawan	mawan	
*tukara?	wild pigeon		tukara?	təkara?		təkara	tukara?	
*ɿarihuk	wild strawberry (m)	ʔayhuk/ wayhuk			(ʔihoq)			
*ɿariluk	wild strawberry (f)	ʔayluk/ wayluk	ɿiluk	biluk		liluk		ziluk

Proto-Atayal	Gloss	Matu'uwal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*wasaw	wild herbs (f)	wasaw						
*wasiq	wild herbs (m)	wasiq	waseʔ	wasiq 'black nightshade'		wasi 'black nightshade'		
*bayhuɿ	wind	bayhuw	behuɿ	behuy	behuy	behuy	bayhuy	behuy
*tuhun	window	tuhun					tuhun	
*tubun	window			tubun	tubun	tobun		
*quwaw	wine; alcoholic drink	quwaw	ʔaguw	qwaw	qwaw	ʔuwaw	ʔwaw	ʔuwaw
*qamisan	winter	qamisan	muhlaʔiy	qəmisən	qəmisən	misaŋ	mahulaʔiy	ʔəmisən
*kanayril	woman; wife	kanayril	kanel	kəneril	kəneril	kənerin	kanayril	kənerin
*qaqəlun	wood-ear mushroom	qaqlun	kakalun	qəlun	qəhəlun			
*bicug	worm	bicug	bicuw	bisuw		bicyu	bisuw	bisu
*paŋih	wound; cut	paŋih		paŋih 'scar'			paŋih	paŋih
*qilis	wound; cut		ʔilis	qilis	qilis	ʔilis	ʔilis	ʔilis
*waɿay	yarn	waiy	waiy	wayay	wayay	wayay	wayay	wayay
*tamur	yeast (for brewing)	tamur	tamul	tamul		tamun		
*cu hisaʔ	yesterday	cu hisaʔ	hiraʔ	səheraʔ	cəhesaʔ	hesa		hesa

Proto-Atayal	Gloss	Matu'awal	PIngawan	Squliq	Skikun	Klesan	Matu'aw	S'uli
*ʔisuʔ	you (sg); thou	ʔisuʔ	ʔisuʔ	ʔisu	ʔisu	ʔisu		
*cimu	you (pl)	cimu	cimu	simu	cimu	cimu		
*mVkurakis	young girl	məkurakis		məkərakis	kərakis	rakis	makurakis	
*suwaʔiʔ	younger sibling	suwaiʔ	suseʔ	səsweʔ	(swahi)	səswe	saswayʔ	sway
*wayal	(perfective marker)		wal	wal / wayal	wal / wayal	wan / wayan		