

Language Contact in Formosan Languages

Elizabeth Zeitoun and Yoann Goudin

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35.1 Introduction

Language contact¹ is defined by Thomason (2001, p. 1) as “the use of more than one language in the same place at the same time. [...] language contact in this substantive sense does not require fluent bilingualism or multilingualism, but some communication between speakers of different languages is necessary.” In this respect, Taiwan presents a rich microcosm: despite being a relatively small island, many different ethnic groups have lived and interacted with one another for centuries, and various factors account for language contact and language change, as well as language attrition and obsolescence, including geographical proximity, trade relations, intermarriage, colonization, bilingualism, and even forced monolingualism (Price 2019).

The present chapter deals with language contact among Formosan dialects/languages and between Formosan and non-Formosan languages. There are two things to note. First, Matras (2009, p. 1) mentions that “manifestations of language contact are found in a great variety of domains, including language acquisition, language processing and production, conversation and discourse, social functions of language and language policy, typology and language change, and more.” As relatively little work has been done on language contact in Formosan languages—datasets are rather scarce, incomplete, and usually not fully analyzed—we focus mostly in this chapter on loanwords, which are “word[s] that at some point in the history of a language entered its lexicon as a result of borrowing (or *transfer*, or *copying*) (Haspelmath 2009, p. 36). Second, Matras (2009, pp. 146ff. and 240ff.) makes a distinction between “matter replication” (or MAT-borrowing) and “pattern replication” (or PAT-borrowing). On

1 The concept of “code-switching”, which, according to Haspelmath (2009, p. 40), “is not a kind of contact-induced language change, but rather a kind of contact-induced speech behavior”, is left out in this chapter.

the one hand, MAT-borrowing or “material borrowing” in Haspelmath’s (2009) terms, refers to “borrowing of sound-meaning pairs” (Haspelmath 2009, p. 38). PAT-borrowing (or “structural borrowing”), on the other hand, concerns “the copying of syntactic, morphological or semantic patterns” (*ibid.*, p. 39). Sakel (2007, p. 25) mentions that “in many cases of MAT-borrowing, the function of the borrowed element is taken over, that is MAT and PAT are combined. In other instances, MAT and/or PAT are borrowed, but deviate considerably in their form or function from their original source.” What we witness in the Formosan languages is by and large lexical borrowing, which is the most frequent type of transfer or copying in contact situations (Haspelmath 2009). Structural borrowing (or PAT borrowing) usually follows from intense oral bilingualism² in languages that exhibit different structures (Malcolm Ross, pers. comm.). Though it exists and has been reported in recent years, it is scarce among the Formosan languages because intense bilingualism among speakers of morphosyntactically distinct languages has been rare, even if it has occurred in some communities in the past hundred years or so.

The present chapter is organized as follows: we first provide in §35.2 an overview of population movements and interactions as an introductory background and illustrate the outcomes of these different situations of contact on language. We then try to exemplify the distinction between “matter replication” (or MAT-borrowing) (§35.3) and “pattern replication” (or PAT-borrowing) (§35.4) and finally deal with language change, specifically the effects on phonology (§35.5) and morphosyntax (§35.6).

35.2 Background on Population Migrations

Two different aspects need to be addressed when dealing with migratory movements in Taiwan, (i) the dispersal of the different ethnic groups, summarized in §35.2.1, and (ii) their encounter with foreign groups, briefly discussed in §35.2.2. The summary given below offers a window on Taiwan history, as a first step in our understanding of language contact. Different contact situations have emerged from this extremely complex and fluctuating 400-year period, and various examples of language contact are given in §35.2.3.

2 Sakel (2009, p. 25) mentions that though Vietnamese has experienced massive contact influence from Chinese, “this was mainly through written materials and rarely through oral transmission involving bilingualism, leading to a majority of MAT-loans.”

35.2.1 *Dispersal and Migrations of Different Ethnic Groups*

The dispersal and migrations of different aboriginal groups has been discussed and retraced by Utsurikawa et al. (1935, 2011), Mabuchi (1953–1954), Ferrell (1969), and Li (2001), and this section is mostly based on these references.

The Paiwan, who have been neighbors of the Rukai for centuries,³ started to expand southward in the early 17th century. They later migrated to the Taitung area, where they have had intensive contact with the Puyuma, who exerted power over the Paiwan villages⁴ on the eastern coast of Taiwan and Hengchun, as well as on the western side of the Central Mountain Range, including Kuljaljaw (Utsurikawa et al. 1935, 2011, pp. 450–451).

Tsou used to be a dominant language, occupying a major part of southwestern Taiwan, whereas until about 300 years ago, Bunun was still a relatively minor ethnolinguistic group restricted to a small mountainous area in (today's) Ren'ai County, Nantou, central Taiwan (Mabuchi 1953–1954). Around 1700, however, the Bunun started migrating from central Taiwan toward the east, the south, and the southeast.

That seems to correspond to the time when the Thao moved eastward from the Western Plains and made alliances with the Bunun, who were fighting with both the Atayal and the Seediq in an attempt to take control of the hunting territories in the Central Mountains. Blust (1996, pp. 284–288) suggests that the dominance of the Bunun over the Thao must have been a “possible pattern in prehistoric times”. As they were advancing in other regions, the Bunun encountered the Kanakanavu, the Saaroa,⁵ the Rukai, and the Paiwan in the south, and the Amis in the east, who were, somehow, forced to move southward and were later pushed back northward by the Puyuma.

In the mid-18th century, the Atayal, who were believed to live in central Taiwan in and around (present-day) Xinyi County, Nantou, started to settle in the northern half of the island and intermingled with the Saisiyat in the northwest⁶ while fighting the Bunun, the Kavalan, and the Amis in the east. At about the

3 The Rukai from the Pingtung County area (Budai and Labuan) are able to speak Paiwan, while the Paiwan barely understand Rukai. This suggests that for centuries, the Paiwan have enjoyed more prestige and greater power in the region (Utsurikawa et al. 1935, p. 283).

4 According to Cauquelin (2004, p. 34), there were two periods of hegemony over the Paiwan, who were dominated by the Katripul and the Nanwang Puyuma (see Taylor 1885–1886).

5 Liu et al. (2015, p. 731) mention that until the massive migration of the Bunun, the traditional territories of the Kanakanavu and the Saaroa in southern Taiwan were quite vast. Having been living with the much more populous Bunun for over 200 years, speakers of Kanakanavu and Saaroa have shifted to Bunun.

6 The Saisiyat living in Wufeng Township (Hsinchu County) have been acculturated to the Atayal and now mainly speak Atayal.

same time, the Toda and the Truku Seediq, who were mostly located in Nantou, in central Taiwan, migrated eastward into the Hualien area.

Among the Rukai, the Taromak (Tanan), closely related to the Labuan and the Mantauran, moved eastward and settled in Taitung County about 250 years ago. At the same time, the Mantauran, who were originally settled in the Shepu-nuk area (*neibenlu* in Mandarin, *laipunuk* in Bunun), fled from repeated attacks from the Bunun and moved westward until they relocated to their present-day settlements in the late 1950s, after various attempts by the Japanese and Taiwanese governments to make them move. The Mantauran, too, have had extensive contact with the Saaroa, and Ferrell (1969, p. 39) notes that “much intermarriage has occurred among the three Tsouc groups [Tsou, Kanakanavu, and Saaroa], and all have intermarried to some extent with Bunun, Rukai, Siraya and other Paiwanic groups.”⁷

35.2.2. *Encounters with Foreign Groups*

Jacobs (2016, p. 3) mentions that “beginning in 1624 until 1988, Taiwan underwent 364 years of rule by six separate colonial regimes: (i) the Dutch (1624–1662), (ii) the Spanish (1626–1642) [...], (iii) the Zheng family (1662–1683), (iv) the Manchus (1683–1895), (v) the Japanese (1895–1945), and the authoritarian Chinese Nationalist regime (1945–1988).”

In 1626, the Spanish established a colony at the northern tip of Taiwan, where they remained until they were driven out in 1642 by the Dutch, who established Fort Zeelandia as their main trading post and ruled southern Taiwan for nearly 40 years (1624–1662).

In addition to their trading activities, the Dutch also engaged in missionary work. Their missionaries learned Siraya and translated catechisms and the Gospels into Siraya, spoken in villages close to their base in (present-day) Tainan, and Favorlang, formerly spoken in the central-western plains (see Joby 2021, pp. 212–2014 for a short historical account). There was also an influx of Chinese immigrants from the Fujian and the Guangdong areas,⁸ which had considerable impact on indigenous communities through intermarriage and trade. Intensive contact also led to language shift in some communities. The indigenous populations, including the Taokas, Papora, Babuza, Hoanya, Pazeh/Kaxabu, Thao, and Siraya, residing in the western and southwestern

7 Ferrell (1969, p. 25) divides the Paiwanic group into two main subgroups, Paiwanic I, which includes Rukai, Pazeh, Saisiyat, and the languages of the Western Plains (Hoanya, Papora, Favorlang, Taokas, and Thao) as well as Puyuma and Paiwan, and Paiwanic II, which consists of Bunun, Siraya, Amis, Kavalan, and Yami.

8 Ferrell (1969, p. 14) reports that even in 1624, there must have been already around 25,000 Chinese immigrants settled in Taiwan.

plains of Taiwan, which were populated by Chinese migrants, have shifted to Southern Min and in contemporary times to Mandarin, while Hakka has become a means of communication at the expense of Saisiyat in certain settlements in Nanchuang (e.g., Baguali) and Shihtan (e.g., Baishou) Townships.

Taiwan was ruled by the Japanese politically for 50 years (1895–1945). During this period, the Japanese tried to enforce policies of partial (1895–1922) and, later, total assimilation (1922–1945), by making Japanese the language of both school and home. Aboriginal populations were displaced in response to rebellions, resulting in the commingling of speakers of different communities. Later, the nationalist government of the Republic of China, led by the Kuomintang (KMT), took control of the island and implemented a 40-year period (1949–1987) of Mandarin-only policy, which prohibited the speaking of Japanese, Southern Min, Hakka, or any of the Formosan languages. Language restrictions were gradually eased after the lifting of martial law in 1987. On December 25, 2018, the Development of National Languages Act was passed by the Legislature in an effort to preserve and promote Taiwan's linguistic diversity.

Since the 1990s, the Taiwanese government has allowed an increasing inflow of contract workers from Southeast Asia (Indonesian, Malaysia, the Philippines, and Vietnam, the first three countries being Austronesian-speaking areas), many of which have married indigenous men in Taiwan. It is too early at this stage to determine whether their languages will have any impact on the Formosan languages.

35.2.3 *Borrowing Resulting from Contact Situations*

Different contact situations, which are illustrated briefly below, have emerged from this extremely complex and fluctuating 400-year period.

One of the most common outcomes has been the borrowing of lexical words across dialects and languages (Formosan and non-Formosan languages alike).

35.2.3.1 Borrowing across Dialects

Vocabulary may be borrowed from one dialect to another, and the identification of loanwords is easier if irregular sound correspondences are detected between a specific lexical item and its corresponding forms in other dialects. For instance, the word *kavadhae* 'type of bamboo' in Mantaوران Rukai must have been borrowed from Tona Rukai *kavadhane* (note that *n* is regularly lost after *a* in the last syllable in Mantaوران) since *v* in all other Rukai dialects corresponds to zero in Mantaوران;⁹ cf. Maga *kvadhne*, Budai *kavadhane*, Tanan

9 Compare for instance Proto-Rukai *valo > Mantaوران *alo* /alo/ 'bee', Proto-Rukai *[ava > Mantaوران *lraa* /laa/ 'flying squirrel'.

kavadha 'type of bamboo' (note that *-ne* is regularly lost after *a* in the last syllable in Tanan).

Tona and Mantaaran share the same form *koli'i* for 'sun'. This form is not attested in any other Rukai dialect; cf. Proto-Rukai **vaʔi* 'sun', Budai and Tanan *vai* 'sun', Tona *pa-va'i* 'dry in the sun', or any other Formosan language (cf. PAN **waRi* 'day, sun, dry in the sun' (P. Li 1977, p. 6, pers. comm.)), and in this particular example, there is no irregular sound correspondence to decide which dialect is the donor and which is the receiver (P. Li, pers. comm.). This reminds us that though loanwords contrast with native words, which can be traced back to the earliest known stages of a language, Haspelmath (2009, p. 38) points out that "we can never exclude that a [native] word is a loanword, i.e., that it has been borrowed at some stage in the history of the language. Thus, the status of native words is always relative to what we know about the history of a language".

35.2.3.2 Borrowing across Formosan Languages

Loanwords may also be borrowed from neighboring languages, in which case they can also be identifiable by their irregular sound correspondences. Huang (2012) mentions that Puljetji Paiwan has borrowed a number of words from Puyuma, e.g., Proto-Puyuma **buwaŋ* 'hole' (regular reflex of PAN **buhəŋ* 'hole, pit') : Puljetji Paiwan *buang* (instead of the expected form ***vuang*); Puyuma *bulay* 'beautiful': Puljetji Paiwan *bulay* (instead of the expected form ***vulay*; cf. also native Paiwan word *nguanguaq* 'beautiful').

Loanwords can, however, be more difficult to detect when the sound correspondences are regular, i.e., it may not be clear whether a specific word should be treated as a loanword or as a reflex of a PAN reconstruction. For example, Bunun *l* /l/ and Thao *lh* /h/ are reflexes of PAN **R* (e.g., Bunun *qalum* and Thao *qalhum* < **qaRum* 'anteater'), and despite the fact that Thao has borrowed heavily from Bunun (Blust 1996, Li 2013), it is difficult to determine whether words like Bunun *maqaliv* and Thao *maqalhiw* 'dry' are inherited from PAN **ma-qaRiw* 'dry' in both languages or spread from one language to the other (Li 2013, p. 228).

Loanwords might be easily detected because some are completely different from other lexical forms found in other dialects (whether cognates or not). Goderich (2020, p. 186), for instance, notes that "Seediq loanwords in PIngawan are usually not determined using irregular sound correspondences [...], but simply by not having any cognates in Atayal at all." Speakers of PIngawan Atayal are geographically close to the Seediq and have borrowed heavily from the three Seediq dialects, Tkdaya, Toda, and Truku, e.g., PIngawan *sapit* 'shoes': Seediq *sapic* (vs. Matu'uwal Atayal, henceforth Matu'uwal, 'amil), PIngawan *ciyak* :

Seediq *ciyak* ‘cucumber’ (vs. Matu’uwal *tabuwil*), PIngawan *papak* : Seediq *papak* ‘foot, leg’ (vs. Matu’uwal *kukuy*), PIngawan *cumilak* ‘to cut, snap’: Seediq *cemilaq* (vs. Matu’uwal *muwik*) (Goderich 2020, p. 185).

The six Rukai dialects have had contact with various contiguous languages, which have influenced them linguistically. Mantaوران has borrowed many lexical items from Saaroa (1A),¹⁰ Budai from Paiwan (1B), and Tanan from Puyuma (1C).

(1) A. Mantaوران loanwords from Saaroa

Mantaوران	Saaroa	Tona	Gloss
<i>mairange</i>	<i>mairang</i>	<i>boathi</i>	‘sweet potato’
<i>lica’a</i>	<i>lhica’a</i>	<i>drokace</i>	‘mud’

B. Budai loanwords from Paiwan

Budai	Paiwan	Tona	Gloss
<i>ma-laici</i>	<i>ma-laic</i>	<i>ma-pacai</i>	‘wither’
<i>ma-colo</i>	<i>ma-culju</i>	<i>ma-apa’a</i>	‘very hot’
<i>ricingi</i>	<i>ricing</i>	<i>piingi</i>	‘branch’
<i>bibi’i</i>	<i>bibi’</i>	<i>gogogo</i>	‘duck’

C. Tanan loanwords from Puyuma

Tanan	Puyuma	Tona	Gloss
<i>maymay</i>	<i>maymay</i>	<i>gogogo</i>	‘duck’
<i>o-a-kangkang</i>	<i>kangkang</i>	<i>w-a-dangedange</i>	‘cultivate land’
<i>lavay</i>	<i>lavay</i>	-	‘egret’ (< Katripul Puyuma)

Borrowing may be found in languages that are geographically distant, thus raising questions about their history. Tsuchida (2006, p. 592), for instance, shows that Saisiyat and Kavalan share a number of lexical items, e.g., Kavalan *qaw-piR*, Saisiyat *’aewpir* ‘sweet potato’, Kavalan *Rabis*, Saisiyat (*h*)*abish* ‘small knife’, suggesting that “the two ethnic groups had some kind of contact somewhere in Taiwan.”

35.2.3.3 Borrowing from Foreign Languages

Due to the long colonial history of Taiwan, lexicon has also been borrowed from foreign languages. Spanish and Dutch loanwords are also found in Formosan languages, but may have been introduced through intermediary languages,¹¹

10 The possibility that Mantaوران is the donor cannot be completely excluded.

11 Tsuchida (2006, p. 592) mention that “[p]robably the Spaniards hired many people from

e.g., Kavalan *kbayu* < Spanish *caballo* ‘horse’ (Tsuchida 2006, p. 592, Blust 2013, p. 50), *tamaku* in most Formosan languages < Spanish *tabaco*, Dutch *tabak* ‘tobacco’. In more recent times, the Formosan languages have borrowed words related to material culture from Japanese, e.g., Amis *singsi* < Japanese *sensei* ‘teacher’, and also have loans and calques from Mandarin Chinese (henceforth Mandarin), the dominant language today, e.g., Amis: *tingnaw* < Mandarin Chinese *diannao* ‘computer’.¹²

In Saisiyat, we witness loan blends that refer to lexical items containing in part or in whole a loanword, as in *'ali-nikotay* ‘wear a necktie’ (< Saisiyat *'ali* ‘wear’ + Japanese *nikutai* ‘necktie’), *pa:-budo:* ‘eat grape’ (< Saisiyat *pa:-* ‘eat’ + Japanese *budō* ‘grape’).

Long-term and intense language contact has also led to structural borrowings. During the Qing dynasty, the Hakka settled in Nanchuang, Miaoli County, an area inhabited by the Saisiyat. They moved into the Penglai and Tungho villages in the 1940s, when the coal mines started to be exploited. Nowadays, many Saisiyat people in Miaoli County speak Hakka as fluently as their own heritage language and have borrowed not only basic and nonbasic vocabulary but also derivational affixes, clitics, and function words (see § 35.4.3). As is shown in § 35.5.2, structural borrowings can also be found across dialects or (Formosan) languages but are more difficult to account for, as they may—just like lexical items—be reflexes of PAN morphemes.

An extreme case of borrowing from a foreign language led to the emergence of a creole language in Yilan in a few villages where the Japanese grouped together Atayal and Seediq communities, who, in order to communicate, must have adopted a variety of Japanese that they mixed with their own heritage languages. This Atayal variety is known as “Yilan Creole” (Chien & Sanada 2010, Chien, this handbook, Chapter 44).

35.3 Matter Replication

This section examines loanwords labeled MAT borrowing by Matras (2009, p. 140), which are simple lexemes borrowed from a source language, through adoption or adaptation. Loanwords are first identified with respect to source

the Philippines or even from Indonesia for oarsmen, and most likely they settled down among the Kavalan people and influenced Kavalan to some extent.”

12 It is too early to understand the majorly influence of Mandarin Chinese on the Formosan languages (in particular in the younger population). It is mentioned in passing, but without going into detail in this chapter.

languages (§ 35.3.1). The coexistence of loanwords and native words is examined in § 35.3.2. In § 35.3.3, we deal briefly with the grammatical processes that loanwords may undergo.

35.3.1 *Loanwords and Source Languages*

As shown in § 35.2.3, there are two major factors that determine which languages have been borrowed from: (i) the location of the recipient language and (ii) the processes by which the loanwords were introduced.

35.3.1.1 Loanwords from Spanish and Philippine Languages

Tsuchida (2006, p. 592), Blust (2013, p. 50), and Li (1995) mention that languages spoken in the north of Taiwan, most notably Basay and Kavalan, borrowed loanwords from Spanish, sometimes through an intermediary Philippine language, including Spanish *vaca* : Kavalan *baka* 'cow'; Spanish *guayaba-s* : Kavalan *byabas* 'guava'; Spanish *frasco* 'flask, bottle': Kavalan *prasku* 'bottle'; Spanish *jabón* : Kavalan *sabun* 'soap'; PMP **punti* : Basay *puti* 'banana'; PMP **bilang* : Basay *bilang*, Kavalan *vilang* 'count'; Tagalog *álak* 'wine': Kavalan *Raaq*; Tagalog *layag* 'sail': Kavalan *RayaR* (Li 1995, p. 676)

35.3.1.2 Loanwords from Dutch and Latin

In the 17th century, Dutch missionaries translated sermons, prayers, and gospels into two languages, Favorlang, spoken in present-day Yunlin County, and Siraya,¹³ spoken in southwest Taiwan. Latin words appeared in the Favorlang translations, including *Deos* 'God' from Latin *Deus* and *Spirito Santo* 'Holy Spirit' from Italian *Spirito Santo* (see Joby, this handbook, Chapter 36).

In Siraya, various loanwords were borrowed without change from Dutch, including *kemel* 'camel', *munt* 'mint', *stater* 'a coin, piece of money' (Adelaar 2011, p. 374), *Joden* 'Jews', and *Hebreen* 'Hewbrews' (Joby, this handbook, Chapter 36).

35.3.1.3 Loanwords from Malay and Javanese

Adelaar (1994) shows that Siraya has also borrowed words from Malay and Javanese (which were introduced into these languages from Sanskrit or Persian): *tabe* 'greeting' (< Malay *tabik* 'with your permission', Javanese *tabik* 'hello', borrowed from Sanskrit), *pingang* 'place, saucer' (Malay *pinggan*), *likough* 'back' (< Old Javanese *likur* 'behind'), *dalila* 'tongue' (< Malay *dilah* 'tongue', Old

13 Siraya is said to consist of at least three main dialects (Siraya proper, Taivuan, and Makatau) (Adelaar 2011), but no distinction is made here.

and Modern Javanese *dilah* 'flame'), *mattoule* 'deaf' (< Malay, Old and Modern Javanese *tuli* 'deaf'), *vousouk* 'dirty, filthy' (< Malay *busuk* 'stinking, putrid'), *rena* 'mother' (< Old Javanese *rena* 'mother'), *rama* 'father' (< Old Javanese *rāma*, modern Javanese *rama* 'father'), *ma-voulas* 'sad' (< Javanese *welas* 'compassion').

Adelaar discusses the time depth of borrowing and raises the following possibilities: (i) Malay loanwords were probably borrowed during the Dutch colonization of West Formosa (1624–1662); (ii) a few Malay or Javanese loanwords (e.g., *sulat* 'write, book') must have been borrowed via Philippine languages;¹⁴ (iii) Javanese loans must have been borrowed at a date prior to the European colonization of Taiwan. On the basis of these findings, the author concludes that Javanese and possibly Malay had already established contact with the Austronesian populations of Taiwan in precolonial times.

The notion of time depth leads to another question: the introduction of a loanword in a certain language, and its diffusion in geographically proximate languages. This can be illustrated with Spanish loanwords in languages spoken in southern Taiwan. Examples of the latter include *peso* 'money, currency' (perhaps also via some Philippine language); cf. Tsou *peiso*, Rukai, Paiwan, Amis *paiso*, Puyuma *paisu* 'money'. Loanwords from Siraya (probably borrowed from Malay or Javanese) include Proto-Siraya *baLi[tT]uk 'silver' (Tsuchida 1991, p. 135) : Hoanya *manituk*, Kakananavu *vantuku*, Saaroa *valhituku*, Paiwan *valitjuq* 'money' and Siraya *soulat* 'book', *s<m>oulat* 'write (AV)': Kakananavu *mari-sunatu* 'to write (AV)', Saaroa *s<um>a-sulhatu* 'write (AV)', Maga Rukai *u-slati* 'write', Tona Rukai *w-a-solate* 'write', Mantauran Rukai *o-solate* 'write', Paiwan *sunat* 'paper', Basay *s<um>ulat* 'to write (AV)' (Adelaar 1994, p. 60, Li 1995, p. 672, Huang 2012).

35.3.1.4 Loanwords from Japanese

All Formosan languages contain a large number of Japanese loanwords, most of which are nouns¹⁵ referring to (modern) cultural material or cultural borrowings, which "designate new concept[s] coming from outside" (Haspelmath 2009, p. 46), as shown in (2). Only one example for each category is given below, for lack of space, with IPA symbols given in addition to romanized orthography.

14 Adelaar (1994, p. 61) mentions that "there are at least two Philippine areas which were subject to substantial and direct influence from Malay, namely the Tagalog-speaking area in Luzon and the Sulu-Mindanao region in the South. In Tagalog, [...] these borrowed words being originally derived from Sanskrit and Arabic."

15 Fewer verbs have been borrowed from Japanese.

(2) a. **Transportation vehicles**

Japanese ¹⁶	/o:tobai/	<i>ōtobai</i>	'motorcycle'
Sq Atayal, Puyuma	/otobaj/	<i>otobay</i>	
Mt Rukai	/ʔotobai/	<i>'otobai</i>	
Tg Saisiyat	/ʔotobaj/	<i>'otobay</i>	
Isb Bunun	/utubai/	<i>utubai</i>	
Thao, Tr Seediq, Kavalan	/utubaj/	<i>utubay</i>	

b. **Appliances**

Japanese	/denki/	<i>denki</i>	'electricity'
Saisiyat	/denkiʔ/	<i>dénki'</i>	
Amis, Isb Bunun, Kavalan	/diŋki/	<i>dingki</i>	
Tk Seediq	/deŋki/	<i>dengki</i>	
Tr Seediq	/deŋki/	<i>deyngki</i>	
Kanakanavu	/tenki/	<i>tenki</i>	

c. **Clothing**

Japanese	/pantu/ [pantsu]	<i>pantsu</i>	'underpants'
Amis	/pantso/	<i>panco</i>	
Saisiyat	/pantsuʔ/	<i>pance'</i>	

d. **Flora**

Japanese	/sakura/	<i>sakura</i>	'cherry (tree)'
Saisiyat, Sq Atayal	/sakuraʔ/	<i>sakura'</i>	
Kanakanavu, Tr Seediq	/sakura/	<i>sakura</i>	
Kavalan	/sakula/	<i>sakula</i>	

e. **Food and drink**

Japanese	/nasi/ [naci]	<i>nashi</i>	'pear'
Amis, Tr Seediq	/nasi/	<i>nasi</i>	
Sq Atayal	/nasiʔ/	<i>nasi'</i>	
Saisiyat	/nafiʔ/	<i>nashi'</i>	

f. **Religion and school**

Japanese	/kyo:kaɪ/	<i>kyōkai</i>	'church'
Squliq Atayal, Tk/Tr Seediq,	/kjokaj/	<i>kyokay</i>	
Amis, Puyuma, Tg Saisiyat			

16 Many Japanese loanwords were originally borrowed from English.

Puyuma, Kavalan	/kjukaj/	<i>kyukay</i>
Mt Rukai	/kiokai/	<i>kiokai</i>

35.3.1.5 Loanwords from Sinitic Languages

Loanwords from Southern Min, Hakka, and, most recently, Mandarin are found across the Formosan languages, but it is interesting to note that in some areas, such as Miaoli County, Southern Min was not spoken by Formosan aborigines until recent times.

(3) A. Taiwanese loanwords

a. Southern Min	/taj pak/	<i>tay-pak</i>	'Taipei'
Kavalan, Thao, } Tg Saisiyat }	/tajpak/	<i>taypak</i>	
Isb Bunun	/taipak/	<i>taipak</i>	
b. Southern Min	/wã koŋ/	<i>uann-kong</i>	'(big) bowl'
Sq Atayal, Puyuma	/wakoŋ/	<i>wakong</i>	
Kavalan	/wakuŋ/	<i>wakung</i>	
Thao	/bakoŋ/	<i>bakóng</i>	
Saisiyat	/wa:koŋ/	<i>wa:kong</i>	
c. Southern Min	/tsaj thau/	<i>tsai-tau</i>	'white carrot'
Kavalan, Amis	/sajtaw/	<i>saytaw</i>	
d. Southern Min	/kam tsja/	<i>kam-tsia</i>	'sugarcane'
Thao	/kamsia/	<i>kamsia</i>	'candy'
Mt Rukai	/kamosia/	<i>kamosia</i>	
e. Southern Min	/i siŋ/	<i>i-sing</i>	'doctor'
Amis, Kavalan,	/isiŋ/	<i>ising</i>	
Tk Seediq			
Thao	/isiŋŋ/	<i>isiŋŋ</i>	
f. Southern Min	/ioʔ/	<i>ioh</i>	'medicine'
Isb Bunun	/iu/	<i>iu</i>	
Saisiyat	/ʔioʔ/	<i>'io'</i>	

B. Hakka loanwords

a. Hakka	/sin saŋ/	<i>sin sang</i>	'doctor'
Sq Atayal	/sinsaŋ/	<i>sinsang</i>	
Tg Saisiyat	/θinθaŋ/		

b. Hakka	/ ^h eu yu/	teu iu	'soy sauce'
Sq Atayal	/toyu/	toyu	
Tg Saisiyat	/ ^h ewyu:/	t ^h éwyu:	

C. Mandarin loanwords

a. Mandarin	/tsɔŋt ^h ɔŋ/	zongtong	'President'
Amis	/tsɔŋtɔŋ/	congtonɡ	
b. Mandarin	/kaotɕɔŋ/	gaozhong	'senior high school'
Amis	/kawtsɔŋ/	kawcong	
c. Mandarin	/piŋsjaŋ/	binxiang	'fridge'
Amis	/pinsjaŋ/	pinsiyang	
Sq Atayal, Tk Seediq	/pinsjaŋ/	pinsyang	
Tsou	/piŋsjaŋ/	pingsiang	
d. Mandarin	/tiannaɔ/	diannaɔ	'computer'
Thao	/tiannaɔ/	tiannaɔ	
Amis, Tk Seediq	/tennaw/	tennaw	
Saaroa	/tinnaw/	tinnaw	
e. Mandarin	/liŋmɔŋ/	lingmong	'lemon'
Sq Atayal	/ninmuŋ/	ninmung	

What is interesting is that Saisiyat has also borrowed different types of function words, most notably negators, as shown in (4), which are also originally found in the language (Zeitoun & Kaybaybaw 2018).

(4)	Hakka	Hakka negative loan verbs	Saisiyat equivalents
a.	<i>mo han</i>	<i>mohan</i> 'have no time'	—
b.	<i>mo oi</i>	<i>mo'oy</i> 'do not want to'	<i>kayn'</i> 'do not want to'
c.	<i>voi di</i>	<i>boyti:</i> 'do not know'	<i>hasa'</i> 'do not know'
d.	<i>m voi</i>	<i>'omboy</i> 'will not'	<i>'amkay/'amkik</i> 'will not'
e.	<i>m he</i>	<i>'omhe:</i> 'is/was not'	<i>'okik</i> 'is/was not'
f.	<i>m sii</i>	<i>'omse:</i> 'does not need'	—

These negators must be treated as negative verbs in Saisiyat for at least two reasons. They function syntactically like the native negative verbs *kayni* 'refuse' and (*h*)*asha* 'do not know', in (i) not taking the ligature =*i* and (ii) having the verb marked as AV as in serial verb constructions (5a–b). This is in comparison to the genuine negator *'oka* 'do/did not' (5a–c), for instance, which must be followed by the ligature =*i*(-*k*) and a verb in a bare form (6a–b).

(5) Saisiyat (Zeitoun & Kaybaybaw 2018)

a. *korkoring kayni* (*=*i*) *kishkaat*.

child refuse =LNK study[AV]

'The child refuses/does not want to study.'

b. *korkoring 'omboy* (*=*i*) *kishkaat*.

child will.not =LNK study[AV]

'The child will not study.'

c. *korkoring 'am='oka* *(=*i*) *kishkaat*.

child IRR=NEG =LNK study[AV]

'The child will not study.'

(6) Saisiyat (Zeitoun & Kaybaybaw 2018)

a. *korkoring kit-kita'-en*, *'amkay lamlam/*l<om>amlam!*

child RED-see-UV P IRR:NEG:LNK wander/<AV>wander

'Watch the child so that he does not wander around!'

b. *korkoring kit-kita'-en*, *'omboy l<om>amlam/*lamlam!*

child RED-see-UV P will.not <AV>wander/*wander

'Watch the child so that he does not wander around!'

35.3.1.6 Loanwords from Two Different Donor Languages

One interesting issue is that the same loanword may have been borrowed from two (or more) donor languages in a single recipient language. This can result in at least two different outcomes.

First, different pronunciations may coexist, as in the Saisiyat loanword pairs *dorayba*' and *lolayba*', borrowed from Japanese and Hakka, respectively. This actually reflects intergenerational differences in linguistic behavior: older Saisiyat speakers, more accustomed to Japanese, normally use the Japanese forms, while younger speakers, or speakers more fluent in Hakka, tend to use Hakka loanwords. Examples of loanwords borrowed from Japanese and Hakka in Saisiyat are given in (7).

(7) Japanese and Hakka loanwords in Saisiyat (Kaybaybaw et al. 2020, p. 202)

Japanese	Japanese loan	Hakka	Hakka loan	Gloss
a. <i>takushi</i> /takufi/	<i>takushi'</i> /takufiʔ/	<i>ta ku si</i> /t ^h a k ^h u si/	<i>t^hakushi'</i> /t ^h akufiʔ/	'taxi'
b. <i>tatami</i> /tatami/	<i>tatami'</i> /tatamiʔ/	<i>ta ta mi</i> /t ^h a t ^h a mi/	<i>t^hat^hami'</i> /t ^h at ^h umiʔ/	'tatami'
c. <i>kanggō</i> /kango:/	<i>kanggo:</i> /kango:/	<i>k^han fu</i> /k ^h an fu/	<i>k^hanfu:</i> /k ^h anfu:/	'nurse'
d. <i>manga</i> /manga/	<i>manga'</i> /maŋaʔ/	<i>man fa</i> /man fa/	<i>manfa:</i> /manfa:/	'cartoon'
e. <i>denwa</i> /denwa/	<i>dénwa'</i> /denwaʔ/	<i>tien fa</i> /tjen fa/	<i>tyénfa: ~ ténfa:</i> /tjenfa:/~ /tenfa:/	'telephone'

Second, loanwords with identical meanings borrowed from two different source languages may have different distributions. Saisiyat has borrowed *yoké*: 'medicine' from Hakka *iok e* and 'io' 'medicine' from Southern Min *ioh*, these two forms occurring in different derived nominals, which are instances of blend loans, as shown in (8).

(8) Derived nominals and compounds comprising Hakka and Southern Min loanwords

Hakka loans	Southern Min loans	Gloss
a. <i>yoktyam</i> ¹⁷	<i>*'io'tyam</i>	'pharmacy'
b. <i>honyok</i>	<i>*hon'io'</i>	'Chinese medicine'
c. <i>*mil-yok</i>	<i>mil-'il-'io'</i> < mil- 'drink (AV)'	'take medicine (AV)'
d. <i>*ka-'il-yok siak</i>	<i>ka-'il-'io' siak</i> ¹⁸	'health insurance card'

17 When occurring alone, 'store' is pronounced as a disyllabic word in Saisiyat; cf. *tiam* /tiam/, as any other (native) content word. When it occurs in a complex word, such as *yoktyam* /joktjam/, it is treated as monosyllabic, as it appears in Hakka.

18 In this example, the prefix *ka-* is a nominalizer 'INST.NMLZ'; *'il-* means 'to drink', and *siak*

35.3.2 *Coexistence of Native Words and Loanwords*

Borrowing has an effect on the lexicon of the recipient language, i.e., “it may replace an earlier word of roughly the same meaning, or simply be added to the lexicon where no earlier word with that meaning existed, or it may coexist with an earlier word of roughly the same meaning” (Haspelmath 2009, p. 16).

In Mantauran Rukai, many loanwords have native counterparts, some of which are derived (and perhaps now incomprehensible to younger speakers), as in the following pairs, in which the first is a loanword and the second is its native counterpart: *hana* vs. *'aengelre* ‘flower’, *gako* vs. *tasolasolatae* ‘school’ (*ta...-ae* ‘LOC.NMLZ’, *solate* ‘write’), *kopo* vs. *'aongo'ongolo* ‘glass’ (*a-* ‘INST.NMLZ’, *'ongolo* ‘drink’), *paiso* ‘money’ vs. *toa'ipae* ‘money’, lit. ‘which is used to count’ (< *to'a-* ‘use’, *o'ipi* ‘count’, *-ae* ‘PAT.NMLZ’).

In Saisiyat, speakers prefer to use native lexemes as much as possible, though these same speakers may inadvertently incorporate loanwords into certain phrases. Younger speakers may also be ignorant of the existence of loanwords but know the native equivalents (because they have been widely accepted in the community). On the one hand, *kishkaat* ‘study’ (< *kish-* ‘read, sing’, *kaat* ‘book’) is understood by all Saisiyat speakers, while the Japanese loan *bénkyo:* ‘study’ (< Japanese *benkyō*) is only heard in the speech of elderly speakers. On the other hand, certain forms, even if they represent loanwords, are preferred over their native equivalents because they are easier to remember; cf. Japanese loanword *base'* (9a) (< Japanese *basu* ‘bus’) vs. Saisiyat *kapapama'an tataew'an* ‘bus’, lit. ‘the small house that carries (s.o.)’ (9b). However, they may also be disregarded because they refer to concepts that are “too general”, e.g., *kapapama'an*, which can mean ‘car’, ‘bus’, ‘taxi’, or even ‘camper’.

(9) Saisiyat (Zeitoun 2013)

a. *yako pa-pama' ka base' rima' lamsong.*
 1SG.NOM CAUS-carry.on.back ACC bus go Nanchuang
 ‘I took the bus to go to Nanchuang.’

b. *yako pa-pama' ka*
 1SG.NOM CAUS-carry.on.back ACC
ka-pa-pama'-an ta-taew'an rima' lamsong.
 REAL-CAUS-carry.on.back-LOC.NMLZ RED-house go Nanchuang
 ‘I took the bus/taxi to go to Nanchuang.’

is a Japanese loan meaning ‘tin’, but by extension it refers to ‘any kind of card, e.g., credit card, telephone card, or bus pass’.

35.3.3 Grammatical Processes That Loanwords May Undergo

Loanwords can undergo the same morphological processes (affixation, reduplication, and compounding) as other lexical items, though in a perhaps more-restricted manner. In Kanakanavu, for instance, *vantuku* 'money' (< Proto-Siraya *baLi[tT]uk 'silver'; Tsuchida 1991, p. 135), and *sunatʉ* 'book, paper' (< Siraya *soulat* 'book') can be verbalized, see *ka-van~vantuku* 'earn money' (< *ka-* 'make, produce'), *mari-sunatʉ* 'to write (AV)'. In Mantauran Rukai, *paiso* 'money' (most likely borrowed from Spanish; see § 35.3.1.3) can be verbalized (e.g., *'i-paiso* 'make money' < *i-* 'get, obtain'), nominalized (e.g., *ta-paiso-iso-e* 'purse' < *ta-...-(a)e* 'LOC.NMLZ', *'a-paiso-iso-e* 'rich' < *'a-...-(a)e* 'a lot'), and found in compounds (e.g., *ta-poa-poa todhi'i paiso* 'bank' < *ta-* 'SUBJ.NMLZ', *poa* 'make', *todhi'i* 'put away') (Zeitoun 2007, p. 10). In Saisiyat, *'otobay* 'motorcycle' (< Japanese *ōtobai*) can be further nominalized as *ka-pay-'otobay-an* 'motorcycle lane' (< *ka-* 'REAL', *pay-* 'cross', *-an* 'LOC.NMLZ'). The loanword *'io* 'medicine' (< Southern Min *ioh* 'medicine') can be found in different compounds (*pil'io* 'cook (traditional) medicine' < *pil-* 'cook'; *kamapil'io* 'doctor practicing traditional medicine' < *kama=* 'AGTNMLZ'; cf. also examples in (8)).

More interestingly, though some borrowed verbs may take voice affixes, their occurrence is nonobligatory, in contrast with native verbs. Compare, for instance, the occurrence of the verb *tinsho:/t<om>insho:* 'help (AV)' (< Hakka *ten shiu*) (10a) to *s<om>i'ael/*s'ael* 'eat (AV)' (10b) in serial verb constructions:

(10) Saisiyat (Zeitoun 2013)

a. 'okay 'a-mata:waw hoepay=ila, yami rima'
 Okay PROG-AV:work tired=COS 1PLEXCL.NOM go
tinsho:/t<om>insho:
 help/<AV>help
 'Okay is tired of working and we are going to help her.'

b. 'okay 'a-mata:waw hoepay=ila, sia rima' s<om>i'ael/*s'ael.
 Okay PROG-AV:work tired=COS 3SG.NOM go <AV>eat/*eat
 'Okay is tired of working (so) she is going to eat.'

35.4 Pattern Replication

In this section, we examine semantic fields (§ 35.3.1) and calques (§ 35.3.2), which are usually complex words involving a variety of morphological processes. While we showed in the preceding section that loanwords come from

a variety of languages, calques have been mainly reported from Mandarin, though calques from Southern Min can also be found in situation of extreme contact.

35.4.1 *Semantic Fields*

There are two documented languages, Thao (Blust 1996, 2003) and Saisiyat (Kaybaybaw 2018, Zeitoun 2013), in which structural borrowing in certain semantic fields reflects a long history of commingling with adjacent communities, namely Bunun and Hakka, respectively.

Blust (2013, p. 161) mentions that “while Bunun loanwords in Thao represent a wide semantic range, a surprisingly large number concentrate in the semantic domain of women, women’s traditional activities and items of material culture associated with these activities”, including vegetable gardening and cooking. The following Thao and Bunun examples are extracted from Blust (1996, p. 283), and Blust (2003). (Refer to § 35.6.1.3 for a discussion on loan phonemes on Thao.)

(11)	Bunun loanword in Thao	Bunun	Gloss
a.	<i>binanaw'az</i>	<i>binanau'az</i>	'woman'
b.	<i>bailu</i>	<i>bainu</i>	'beans'
c.	<i>bulwa</i>	<i>bulwa</i>	'cooking pan/wok'
d.	<i>hibur</i>	<i>ma-hibul</i>	'to mix (principally food in preparing things for cooking)'
e.	<i>hubuq</i>	<i>hubuq</i>	'baby under one year of age'
f.	<i>lishlish</i>	<i>lislis</i>	'to grate (primarily vegetables, in preparation for cooking)'
g.	<i>pit'ia</i>	<i>pit'ia</i>	'to cook'
h.	<i>ma-qasbit</i>	<i>ma-qasbit</i>	'salty'
i.	<i>qumbu</i>	<i>qumbu</i>	'smoke of a fire'
j.	<i>pishqati</i>	<i>pisqati</i>	'to boil water'

Among the numerous loanwords from Hakka (Hailu dialect), Saisiyat has borrowed a whole set of kinship terms—Kaybaybaw (2018, pp. 262–266) records up to 68 lexical items—which coexist with native words. A sample is given in (12), with the loan forms and the Hakka forms given in romanized orthography along with Saisiyat equivalents, if any.

(12)	Hakka loanword in Saisiyat	Gloss	Hakka	Saisiyat
a.	<i>ch^hinka:</i> /ts ^h inka:/	'relative by marriage'	<i>cin ga</i> /ts ^h in ka/	<i>baki'</i>
b.	<i>ch^hyamé:</i> /ts ^h jame:/	'mother-in-law'	<i>cia me</i> /ts ^h ja me/	<i>koko'</i>
c.	<i>'a.pa:</i> /ʔa:pa:/	'father'	<i>a ba</i> /a pa/	<i>yaba'</i>
d.	<i>'a.mé:</i> /ʔa:me:/	'mother'	<i>a me</i> /a me/	<i>'oya'</i>
e.	<i>layze:</i> /lajðə:/	'son'	<i>lai e</i> /laj e/	} <i>korkoring</i> 'child'
f.	<i>moize:</i> /moiðə:/	'daughter'	<i>moi e</i> /moj e/	
g.	<i>'a.ko:</i> /ʔa:ko:/	'older brother'	<i>a go</i> /a ko/	} <i>minatini'</i>
h.	<i>'a.cé:</i> /ʔa:tse:/	'older sister'	<i>a ze</i> /a ze/	
i.	<i>lo:t^hay</i> /lo:t ^h aj/	'younger brother'	<i>lo tai</i> /lo t ^h aj/	} <i>minayti'</i>
j.	<i>lo:moy</i> /lo:moj/	'younger sister'	<i>lo moi</i> /lo moi/	
k.	<i>'a.kiw ~ 'a:k^hiw</i> /ʔa:kiw/~ʔak ^h iw:/	'uncle' (mother's brother)	<i>a kiu</i> /a kju/	
l.	<i>'akiwmé: ~</i> <i>'ak^hiwmé:</i> /ʔakiwme:/ ~ /ʔak ^h iwme:/	'aunt' (wife of mother's brother)	<i>a kiu me</i> /a kju me/	

35.4.2 Calques

Calques involve the borrowing of a word, phrase, or expression from another language through literal translation. They are always complex words that usually involve morphological derivation (affixation, reduplication, modification, and/or compounding).

In Mantauran Rukai, compounds consist of two separate words, which remain phonologically separate (Zeitoun 2007, pp. 62–66). It is probable that

compounds in this language are calques from Mandarin,¹⁹ as shown in the following pairs of examples: Mt Rukai *dha'olo kavale* 'rubber boots', lit. 'raining shoes' (< *dha'olo* 'rain', *kavale* 'shoes') vs. Mandarin *yuxie* 'rubber boots', lit. 'raining shoes' (< *yu* 'rain', *xie* 'shoes'); Mt Rukai *lamolai solate* 'story book' (< *lamolai* 'story', *solate* 'book') vs. Mandarin *gushi shu* 'story book' (< *gushi* 'story', *shu* 'book').

In Saisiyat, compounds also consist of two (or three) separate words, in a head-and-modifier relationship, and are also most likely calques from Mandarin.

(13) Saisiyat (Zeitoun 2013)

a. *hae:wan ka-lawi'-an*

night REAL-walk.randomly-LOC.NMLZ

'night market' (from Mandarin *ye* 'night', *shi* 'market')

b. *paewhiil nonak ka-s'ael-en*

choose self REAL-eat-PAT.NMLZ

'(restaurant) self-service' (from Mandarin *zi* 'self', *zhu* 'help', *can* 'meal')

c. *ka-pa-pama'-an*

siak

REAL-CAUS-carry.on.back-LOC.NMLZ card

'bus card' (from Mandarin *gongche* 'bus', *ka* 'card')

35.4.3 Morphological Borrowing

Morphological borrowing occurs cross-dialectally and cross-linguistically.

One example of cross-dialectal morphological borrowing involves the occurrence of the second-person pronoun =*mo'o* in Mantauran Rukai, which likely comes from Maga Rukai *musu* '2SG.NOM' (note the regular shift of Proto-Rukai *s to the glottal stop ' in Mantauran Rukai) (Zeitoun 2007).

An example of cross-linguistic borrowing is Puyuma, which exhibits an alienable/inalienable distinction, the origin of which has yet to be accounted for. In Tamalakaw (Tsuchida 1995, pp. 797–798), it manifests itself in two different sets of bound genitive pronouns, one of which attaches to kinship terms, e.g., *ama-li* 'my father/uncle', and nouns referring to body parts used in a figurative sense, e.g., *brima-li* 'in my possession', lit. 'my hand'. Teng (2008, p. 97) shows that Nanwang Puyuma only partially exhibits this distinction, with the inalienable genitive occurring only on a few nouns, e.g., *muli* 'my grandparent'.

19 One exception is *lelepe mavoroko* 'green beans' (< *lelepe* 'beans', *mavoroko* 'monkey').

Of interest here is the fact that the pronoun *-li* has likely been borrowed from Tanan Rukai, which is geographically adjacent to Puyuma, but such a morphological borrowing is not accompanied by heavy lexical borrowing from Rukai to Puyuma, and Puyuma must have exerted much more linguistic influence on Rukai than vice versa (Tsuchida 1995, p. 802).

An example of structural borrowing involves Saisiyat, which has borrowed heavily from Hakka. The Hakka loanwords *boy*= 'will' (< Hakka *voi*) and *kin*- 'pray' (< Hakka *gin*) have been reinterpreted as clitics, e.g., *boy*=*kin*-*pakong* 'will pray to the God of the Earth' (< Hakka *voi gin bag gong*), and affixes, e.g., *kin*-*pakong* ~ *k*<*om*>*in*-*pakong* 'to pray for the God of the Earth (AV)'. The distinction between these affixes and clitics in Saisiyat is that the affixes only attach to loanwords, as shown in *kin*-*pakong*,²⁰ while clitics can attach to both loans and native words (yielding loan blends). Compare, for instance, *boy*=*kin*-*pakong* 'will pray to the God of the Earth', *boy*=*kise* 'will kiss' (< *kise* 'kiss' from Japanese *kissu*) and *boy*=*l*<*om*>*amlam* 'will wander (AV)' (< *l*<*om*>*amlam* 'wander (AV)', a native Saisiyat verb).

It is more difficult to determine and assess certain resemblances across geographically proximate languages, because drift and inheritance cannot always be completely excluded. The prefix *ki*- 'get' (followed by a noun), which can be reconstructed for PAN, is found across the Formosan languages, with related meanings such as 'harvest, pick up, gather, get' (e.g., Tona Rukai *ki*-*becenge* 'harvest millet', Nanwang Puyuma *ki*-*kawi* 'chop wood', Paiwan *i*-*kasiw* 'chop wood', Kanakanavu *ki*-*tammi* 'gather sweet potatoes', Saaroa *ki*-*mairange* 'gather sweet potatoes', Kavalan *qi*-*tamun* 'pick vegetables'). In Rukai, Southern Paiwan, and Puyuma, *ki*- also functions as a passive, as the result of grammaticalization (cf. *ki*- 'get N' > *ki*- 'get V'), e.g., Tona Rukai *ki*-*kane* 'be eaten', Nanwang Puyuma *ki*-*sulu*-*sulud* 'be pushed', and Paiwan *i*-*pangul* 'be beaten'. While the direction of diffusion between Puyuma and Rukai cannot be completely ascertained, it is most likely that the usage of *ki*- as a passive in Southern Paiwan is the result of borrowing, as the passive is restricted to only a few dialects of this language (see Zeitoun & Teng 2009 and Teng 2020, p. 41).

20 The only prefix that we have found to occur with native words is borrowed from Mandarin; cf. *law*-*koko* 'the old grandmother' (Mandarin *lao* 'old').

35.5 Effects on Phonology: An Overview of Phonological Rules and Language Change

35.5.1 *Phonological (Partial/Total) Integration*

Loanwords may be partially or fully adapted to the native phonology of a language, or simply adopted (§ 35.5.1.1), and different rules are found in the recipient languages (§ 35.5.1.2). They may be completely integrated to the phonological system (§ 35.5.1.3), or they may include a set of marginal phonemes, aside from the native phonemes (§ 35.5.1.4).

35.5.1.1 Adaptation vs. Adoption of Loan Phonemes

Adoption refers to the process by which loanwords are transferred into a recipient language without any change in pronunciation. It takes place when the phonemes found in the loanword are identical or very close in pronunciation to those found in the recipient language. For instance, the Hakka phoneme /v/ is identified as nearly identical to the bilabial voiced fricative [β] in Saisiyat and is not treated as a loan phoneme; cf. Hakka *vun vun* /vun vun/ : Saisiyat *bunbun* /βunβun/ 'dirty'. Adaptation involves the replacement of certain features in order to fit into the recipient language, e.g., the change from *ng* to *n* in Bunun loanwords in Thao, as in Bunun *laung* : Thao *laun* 'masculine name', or the devoicing of *d* to *t* in Japanese loanwords in Tsou, e.g., Japanese *denwa* : Tsou *tenwa* (Y. Chen 2002, p. 96). Rules that may account for these changes are given in § 35.5.1.2.

It is important to consider the origins of the loanwords and how they were received (adoption or adaptation) into the recipient language, so we provide different cases that illustrate this point.

First, adoption or adaptation may provide some clues about the time depth of certain loanwords in a language. On the one hand, Goderich (2020, p. 186) shows, for example, that Seediq /q/ and /r/ were borrowed in Pngawan Atayal /ʔ/ and /ɿ/, respectively (e.g., Truku Seediq /qəpatur/ : Pngawan Atayal /ʔapatur/ 'frog'), at an early time, because these loanwords underwent the same changes as native vocabulary. On the other hand, "words where Seediq /q/ and /r/ correspond to Pngawan /k/ and /r/ are newer borrowings", as in Seediq /tsəmilaq/ 'to snap' and Pngawan /tsumilak/ 'to cut open', Seediq /rumigaw/ and Pngawan /rumigaw/ 'to walk around, to stroll'. Li (2013, p. 228) also mentions that Thao loans from Bunun containing /r/ were borrowed at an earlier stage, whereas those containing /l/ were borrowed later.

When originating from two or more different donor languages, a loan phoneme may have been transferred into the recipient language in two or more ways. Both Hakka and Southern Min have three phonemes /s, ts, ts^h/ that have

been borrowed into Tungho Saisiyat. Their phonetic realizations are quite different, though, depending on the language from which they were borrowed. The loan phonemes from Hakka are pronounced \underline{s} /s/,²¹ c /ts/, c^h /ts^h/, respectively, while those from Southern Min are all pronounced as s /θ/ (Kaybaybaw et al. 2020, pp. 183–187). Compare the following examples: Hakka *sa liau* /sa ljaw/ : Saisiyat *sa:lyaw* /sa:ljaw/ ‘sand shovel’; Hakka *mi ziu* /mi tsju/ : Saisiyat *mi:cyu:* /mi:tsju:/ ‘rice wine’; Hakka *zhu rhiu* /tʃu zju/ : Saisiyat *c^hu:yo:* /tʃu:jo:/ ‘lard’; Southern Min *siong-tiong* /sioŋ tioŋ/ ‘(1) serious illness; (2) expensive’: Saisiyat *syongtyong* /θjoŋtjoŋ/ ‘(1) serious situation; (2) expensive’; Southern Min *khit-tsiah* /k^hit tsiaʔ/ : Saisiyat *kisiae* /kiθiæʔ/ ‘beggar’; Southern Min *tshin-tshai* /tʃ^hin tʃ^hai/ : Saisiyat *sinsay* /θinθaj/ ‘arbitrarily’.

Different languages may have borrowed the same loanword from different donor languages. That is the case, for instance, with the Japanese word *doraibā* ‘screwdriver’, found in Tk Seediq as *dorayba* and Saisiyat as *dorayba*. This word was borrowed into Hakka and Southern Min, and then borrowed into other Formosan languages as well, e.g., Hakka *do lai ba* vs. Puyuma *dolayba*.

The same loan might be pronounced differently by members of different age groups: for instance, Japanese *budō* vs. Saisiyat *budo*: ‘grape’ (among informants over 90 years old), but *buzo*: or *bozo*: (among informants below 90 years old), Japanese *denki* vs. *dénki*’ (older speakers) vs. *zinki*’ (younger speakers) ‘electricity’. Older speakers, who learned Japanese when they were very young, have adopted Japanese loanwords, while younger speakers have adapted the pronunciation of these loanwords to Saisiyat.

35.5.1.2 Borrowing Rules in Phonology

The following are some of the rules that apply when a loanword is borrowed to adapt to the phonological system of the recipient language. Note that this list is far from exhaustive and that each of these rules is language-specific and does not apply across the board.

Velarization or uvularization: Southern Min loanwords transferred into Paiwan tend to have *h* replaced by a velar or uvular stop (Huang 2012), e.g., Southern Min *hun-tshue* vs. Paiwan *quncu* ‘tobacco pipe’, Southern Min *sai-hu* ‘master worker’: Paiwan *saigu* ‘can, be able to’. The glottal fricative *h* is kept when the donor language is Japanese, e.g., Japanese *hako* : Paiwan *haku* ‘box’.

Develarization: Bunun *ng* is adapted as *n* in Thao,²² e.g., Bunun *kal’ing* : Thao *kal’in* ‘to fry’, Bunun *bungan* : Thao *shi-na-bunan* ‘spear’. Note, however, that the

21 When *s* /s/ is followed by /i/ in Hakka, it can be realized in Saisiyat by \underline{s} /s/ or s /θ/, for instance Hakka *nga sii* /ŋa si/ : Saisiyat *nga:se:* /ŋa:θa:/ ~ *nga:se:* /ŋa:sa:/ ‘gas’.

22 The Thao borrowing *shanglaw* ‘vegetable’ is a rare exception in that it contains a velar nasal, and it must have been a more recent borrowing.

phoneme /n/ is realized as a velar nasal in Thao before the back consonants /k/ and /q/, e.g., *kazingkin* 'earring' (vs. Bunun *kazingking*), *pangqa* 'to stop, rest'.

Deuvularization: PAN *q has become zero in Rukai, but loanwords from Paiwan are characterized by the change of Paiwan *q* to Rukai *k*, for instance, Paiwan *qarizang* : Bd Rukai *karidrange* (expected form **aridrange) 'pigeon pea', Paiwan *puluq* : Bd Rukai *pulruk* (expected form **pulru) 'ten' (< PAN *puluq 'ten'), Paiwan *caqi* : Bd Rukai *caki* (expected form **cai) 'excrement' (< PAN *Caqi).

Palatalization: In early borrowings from Southern Min, the dental stop *t* and the lateral *l* have been palatalized as *tj* and *lj*, respectively, in Paiwan (Huang 2012, Ferrell 1982), e.g., Southern Min *poo-thau* : Tjuabar Paiwan *putjaw* 'axe', Southern Min *tiam* : Paiwan *tjiam* 'store', Southern Min *lau-tua* : Paiwan (Western dialects) *ljawtuan* 'first-born, headperson', Southern Min *liong-phau* 'imperial robe': Paiwan *ljungpav* 'traditional clothes for Paiwan women'. This palatalization process has not taken place in more recent Southern Min loanwords and is not found in loanwords from Japanese or Mandarin either; cf. Southern Min *bin-thang* : Paiwan *vintang* 'white iron washbasin', Japanese *tensyukyō* : Paiwan *tinsyukiu* 'Catholic Church', Mandarin *la-lian* : Paiwan *lalin* 'zippers'.

Depalatalization: The Paiwan palatals *dj*, *tj*, *lj* have been replaced by the nonpalatals *d*, *t*, *l*, respectively, in Rukai, e.g., Paiwan *djavac* : Bd Rukai *w-a-davace* 'to walk', Paiwan *qatjudray* : Bd Rukai *katodray* 'earthworm', Paiwan *mapiljay* : Bd Rukai *mapilay* 'lame'.

Retroflexivization: The lateral *l* found in Southern Min and Mandarin is usually replaced by the retroflex *l* /ʎ/ in Paiwan, e.g., Southern Min *mui-lang* : Paiwan *muilang* 'matchmaker', Mandarin *la-lian* : Puyuma *lalin* 'zipper' (Huang 2012).

Deretroflexivization: The retroflex *tr* /tʃ/ in Puyuma is replaced by the plain *t* in Rukai and Paiwan, e.g., Puyuma *mabutri* 'blind': Bd *mabuti*, To *maboti'i* and Mt *mavoti'i* 'blind'; Puyuma *trekelr* : Puljetji Paiwan *tekel* 'drink (AV)' (Huang 2012).

Spirantization: Japanese *b* is preserved as *b* in Sq Atayal, Tr Seediq, and Tg Saisiyat, but became *v* in Tsou and *f* in Central Amis, e.g., Japanese *abura* : Tg Saisiyat 'abura', Sq Atayal 'abura', Tr Seediq *abura* vs. Tsou 'avula' 'oil'; Japanese *ōtobai*, Mt Rukai and Tg Saisiyat 'ōtobay', Sq Atayal *otobay*, Thao, Isb Bunun, Tr Seediq *utubay* vs. Central Amis *otofay* 'motorcycle'. The Southern Min affricates *ts* and *tsh* are found as *s* /s/ in Thao, e.g., Southern Min *tshai-poo* : Thao *sajpu* 'turnip', and as *s* /θ/ in Tg Saisiyat, e.g., Southern Min *khit-tsieh* : Tg Saisiyat *kisiae* 'beggar' (see § 35.6.1.1).

Devoicing: Japanese *b*, *d*, *g*, which are usually preserved in loans in most languages, are devoiced in Kanakanavu as *p*, *t*, *k*, respectively, e.g., Japanese

bīru : Sq Atayal, Tg Saisiyat *biru* vs. Kanakanavu *piru* 'beer'; Japanese *denki* : Amis, Kavalan, Bunun vs. Kanakanavu *tenki* 'electricity'; Japanese *tegami* : Tg Saisiyat *tegami*²³ vs. Kanakanavu *tikami* ~ *tekami*; Japanese *gasu*, Sq Atayal *gasu*, Kavalan, Tr Seediq *gasu*, Kanakanavu *kasu* 'gas'. In Tsou, however, *b*, *d*, and *g* from Japanese loans are pronounced completely differently: *b* is spirantized as *v*, e.g., Japanese *bentō* : Tsou *ventoo* 'lunch box', *d* is devoiced as *t*, e.g., Japanese *budō* : Tsou *vutoo* 'grape', and *g* is retained as a loan phoneme, e.g., Japanese *gingko* : Tsou *gingko* 'bank' (Y. Chen 2002, p. 96).

Denasalization: Southern Min has nasal vowels, but the nasality is not transferred into most recipient languages, e.g., Southern Min *uann-kong* /uãkɔŋ/ : Thao *bakóng*, Amis, Puyuma *wakong*, Saisiyat *wa:kong* 'big bowl'.

Gliding: Thao does not have a phonemic /v/, so the Bunun fricative /v/ is replaced by /w/ in loanwords in Thao, e.g., Bunun *ma-biskav* : Thao *ma-biskaw* 'fast'.

Deaspiration: The aspiration found in Mandarin, Hakka, and Southern Min is not preserved in Thao, Kavalan, or Puyuma, e.g., Southern Min *phang* /p^haŋ/ : Thao *pang* /paŋ/ 'bread', but is found in Tg Saisiyat in forms such as Tg Saisiyat *p^hang* /p^haŋ/ 'bread' and *bint^hang* 'washing basin' (< Southern Min *bin-thang*).

Vowel simplification: Bunun permits diphthongs to be followed by a consonant, but Thao does not, so diphthongs are either simplified or monophthongized in Thao, e.g., Bunun *malaurkav* : Thao *malarkaw* 'tall', Bunun *haundul* : Thao *hundul* 'bridge'. The diphthong *au* is preserved in Thao after the deletion of the non-word-final syllable coda, cf. Bunun *madaukdauk* : Thao *mundau-dauk* 'slow'. Japanese long vowels are shortened in Paiwan, e.g., Japanese *kōri* 'ice': Paiwan *kuri* 'rice' but are preserved in Tg Saisiyat, e.g., Japanese *budō* : Tg Saisiyat *budo* 'grape'.

Coda deletion: Stops in Thao loanwords are deleted in non-word-final syllable codas; cf. Taiwanese *jit-pun* /dzitpun/ : Thao *lipun* 'Japan'.

Metathesis: Metathesis occurs sporadically when Bunun words are borrowed into Thao, e.g., Bunun *haqil* : Thao *qahil* 'paper' (with metathesis of *h* and *q*); Bunun *mapusqiv* : Thao *mapuqshiw* 'gray' (with metathesis of *s* and *q*); Bunun *taisaq* : Thao *tyasaq* 'dream' (with metathesis of *a* and *i*); Bunun *butqu* : Thao *buqtur* 'neck' (with metathesis of *t* and *q*). Compare these forms with Bunun *ma-sipul* and Thao *ma-fupilh* 'to read' < PAN *SupəR (with metathesis of *u* and *i* in Bunun), both of which appear to be inherited from PAN.

23 In Saisiyat, /g/ (pronounced as [g] or [ɣ]) is a loan phoneme from Japanese. It is not found in the native phonology of this language.

35.5.1.3 Integration of Loan Phonemes within the Native Phonological System

Extensive lexical borrowing may lead to the integration of loan phonemes into the native phonological system. This is a phenomenon witnessed in a number of dialects/languages, as exemplified by Rukai and Thao.

Tanan and Labuan are the only two dialects of Rukai to have the voiceless retroflex dental stop *tr* /tʃ/, e.g., *watravake* 'make a hole', *mwatratrongtrong* 'bump here and there', *katrekatre* 'trousers'. Though it has its origin in Puyuma²⁴ (Li 1973, p. 18), it has developed into a phoneme in both Tanan and Labuan Rukai, i.e., it is now part of the phonological inventories of these two dialects, e.g., the contrast between Tanan *mato'áhe* 'damaged' vs. *matroha* 'overripe'.

The Thao phoneme inventory consists of twenty consonants, *p* /p/, *t* /t/, *k* /k/, *q* /q/, ' /ʔ/, *b* /ʔb/, *d* /ʔd/, *m* /m/, *n* /n/, *f* /ɸ/, *s* /s/, *th* /θ/, *z* /ð/, *sh* /ʃ/, *h* /h/, *lh* /ɬ/, *l* /l/, *r* /r/, *y* /j/, *w* /w/, and three vowels, *i* /i/, *u* /u/, *a* /a/. However, on the basis of Table 35.2, it is clear that *b* /ʔb/, *d* /ʔd/, *l* /l/, *h* /h/, and ' /ʔ/ are not reflexes of reconstructed PAN phonemes in Thao and thus must be treated as loan phonemes from Bunun (Blust 1996, p. 274). This is because, in essence, these two languages are quite divergent phonologically, with only one shared phonological innovation: the merger of *d, *D, and *Z as *d* in Bunun and *s* in Thao.

TABLE 35.2 Bunun and Thao reflexes of PAN

PAN	*p	*b	*t	*C	*d	*D	*Z	*k	*g	*j
Bunun	p	b	t	t	d	d	d	k	k	∅
Thao	p	ɸ	t	θ	s	s	s	k	k	ð
PAN	*R	*q	*m	*ŋ	*n	*N	*ñ	*l	*r	*s
Bunun	l	q	m	ŋ	n	n	n	∅	l	s
Thao	ɬ	q	m	n	n	ð	ð	r	r	t
PAN	*S	*H	*w	*y	*a	*i	*u	*ə		
Bunun	s	h	v	ð	a	i	u	u		
Thao	f/∅	∅	w	y	a	i	u	i		

FROM LI 2015, P. 40

24 Tanan Rukai is geographically the closest to Puyuma, but Puyuma has influenced both Tanan and Labuan Rukai, which are closely related.

An illustration of these loan phonemes is given in (14). Note that the consonants /ʔb ʔd h/ do not occur in word-final position in Bunun except for /-ʔb -ʔd/ in Isbukun (southern dialect) and /-h/ in Takituduh (northern dialect) (Li 1988). Since no Thao loanwords contain final *-b*, *-d*, or *-h*, it can be deduced that Thao has borrowed mainly from the central dialects of Bunun and only occasionally from the northern or southern dialects.

(14) From Li (2013, pp. 227–228)

Thao	Bunun	Gloss	Expected form
a. <i>bahat</i>	<i>bahat</i>	'pumpkin'	** <i>fahat</i>
b. <i>dumdum</i>	<i>dumdum</i>	'dark'	** <i>sumsum</i>
c. <i>mu-liqliq</i>	<i>mu-liqliq</i>	'tear'	** <i>mu-riqriq</i>
d. <i>hulus</i>	<i>hulus</i>	'clothes'	** <i>ulus</i>

As shown by the following near-minimal pairs, the consonants /ʔb ʔd l h ʔ/ have acquired phonemic status in Thao (Li 2013, 2015): *bahi* 'dream' (Bunun loan) vs. *fari* 'wind'; *ma-danul* 'to cherish' (Bunun loan) vs. *mu-tantu* 'go there (AV)'; *hul-hul* 'fragments' (Bunun loan) vs. *kufulh* 'thatch of roof'.

35.5.1.4 Loan Phonemes as a Separate Set of Phonemes

Most Formosan languages have only a few loan phonemes. For instance, we demonstrated in §35.6.1.2 that the *g* that Tsou has borrowed from Japanese is distinct from native phonemes. Saisiyat is noteworthy in having 15 loan phonemes, of which 13 are consonants, *p^h* /p^h/, *t^h* /t^h/, *k^h* /k^h/, *d* /d/, *g* /g/, *f* /f/, *s* /s/, *z* /z/, *j* /ʒ/, *c* /tʃ/, *c^h* /tʃ^h/, *ch* /tʃ/, *ch^h* /tʃ^h/, and 2 are vowels, *é* /e/ and *u* /u/ (Zeitoun et al. 2015, Kaybaybaw 2018, Kaybaybaw et al. 2020), as a result of extensive lexical borrowing from Hakka, and to a lesser extent Japanese. There are only a few loanwords from Taiwanese, and those from Mandarin are far too recent to have an impact on the phonological system of Saisiyat. Interestingly, aside from *d* /d/, *g* /g/, *z* /z/, borrowed from Japanese, all other loan phonemes come primarily from Hakka (Kaybaybaw et al. 2020). However, contrary to the situation described for Rukai and Thao in §35.6.1.3, these loan phonemes are only marginal and thus not fully integrated into the phonological system of Saisiyat (examples with some of these loan phonemes can be found in this chapter and will not be repeated here due to space limits).

35.5.2 Effect on Syllable Structure

There is not much literature on the effects of borrowing on syllable structure, so this section will concentrate on Saisiyat, for which we have more detailed descriptions.

The most common types of syllable structure for Saisiyat content words are CVC (e.g., *shí'shí* 'rice'), CV (e.g., *'oya* 'mother'), VC (but never in initial position, e.g., *kaat* 'to write'), CV: (e.g., *ba:yosh* 'typhoon'), CVG (e.g., *tawtaw* 'peanut'), and CGV (e.g., *lapwar* 'guava'). Loanwords undergo certain changes in syllable structure in Saisiyat. If a loanword is monosyllabic in the donor language, then it may be either reduplicated or resyllabified. If a loanword is disyllabic and the donor language is Hakka or Taiwanese (but not Japanese), then the vowel in the first or the second syllable is lengthened. If a borrowed word consists of only one syllabic nasal, then a glottal stop and a vowel are added before the nasal (Kaybaybaw 2018, Kaybaybaw et al. 2020). Examples are given below:

(15) Reduplication

Japanese CVC	<i>zan</i>	Saisiyat CVC.CVC	<i>zanzan</i>	'stairs'
	/zan/		/zanzan/	

Resyllabification

Hakka CGVC	<i>diam</i>	Saisiyat CV.VC	<i>ti.am</i>	'store'
	/tjam/		/tiam/	

Vowel lengthening

Hakka CV.CVC	<i>gu cong</i>	Saisiyat CV:.CVC	<i>ku:c'hong</i>	'uncle'
	/ku tsh'ɔŋ/		/ku:ts'hɔŋ/	
	CVC.CV <i>bag me</i>	CVC.CV:	<i>pakmé:</i>	'aunt'
	/pak me/		/pakme:/	

Addition of a glottal stop and a vowel in monosyllabic nasal loanwords

Hakka C	<i>ng ien</i>	Saisiyat 'VC	<i>'engyéŋ</i>	'fish ball'
	/ŋ jen/		/ʔəŋjen/	

35.5.3 Effect from/on Stress and Pitch

As mentioned above, Thao has borrowed heavily from Bunun, and loanwords are realized differently depending on the placement of stress in the Bunun native words. If the Bunun form has penultimate stress, then Thao has an identical form, as stress in Thao falls on the penultimate syllable (Blust 2003, p. 19), e.g., Bunun *qálap*: Thao *qalup* 'peach'. If the Bunun form has final stress, then Thao drops the first vowel, as in Bunun *qalúp*, Thao *qlhup* 'pocket, bag'.

Stress generally falls on the penultimate syllable in Kanakanavu and is not phonemic. However, it is not totally regular because of the sound changes that

this language has undergone (H. Chen 2016). One interesting phenomenon is that with loanwords from Southern Min, stress falls on the last syllable, e.g., *tsanga*: 'green onion' (from Taiwanese *tshang-a*) and *tsana*: 'wet rice field' (from Taiwanese *tshan-a*) (H. Chen 2016, p. 85).

Stress falls on the last syllable in Kaxabu and is intrinsically related to pitch, perhaps as a result of contact, with a tone language such as Southern Min. The stressed syllable has a high pitch (henceforth H), which follows a low pitch (L) if the word is disyllabic, e.g., *pila* 'money' (L.H) and a mid pitch (M) if the word is trisyllabic, as in *gunugun* 'basket' (L.M.H). Quadrisyllabic and sesquisyllabic words represent a combination of disyllabic and trisyllabic, respectively, L.H.L.H, e.g., *dinaluman* 'domestic animals', L.H.L.M.H, e.g., *pakatahayak* 'thank you' (Lim 2016, Lim & Zeitoun, this handbook, Chapter 51).

35.5.4 Areal Features

One case of contact-induced diffusion of phonetic feature across languages in the same geographical area concerns the two preglottalized stops *b* /ʔb/ and *d* /ʔd/, which appear in three Formosan languages, Tsou, Bunun, and Thao, all spoken in central Taiwan (Li 2015).²⁵ The origin of the preglottalized stops in Tsou is well-known: they are derived historically from *k²⁶ immediately followed by a nasal (Tsuchida 1972), as in PAN *kumaən > **kumaənə > **kmaənə > ?*bonu* 'eat (AV)', PAN *k<um>aRaC > *kmaracə > ?*borcu* 'bite'. Synchronic evidence for the change of *km > *b* in Tsou is demonstrated by the alternation of *b* /ʔb/ ~ *m* /mʔ/ in the affixed reflexes of PAN *kilim 'seek', viz. *bir-biji* 'seek (AV)', *rimʔ-a* (< M) 'seek (UVP)' (see Tsuchida 1976, p. 290 for a detailed account). The preglottalized stops *b* /ʔb/ and *d* /ʔd/ in Bunun are derived historically from PAN *b and *d/*D/*Z, respectively, e.g., PAN *qabuH > *qabu* 'ash', PAN *bi(n)tuq-en > *bintuqan* 'star', PAN *daqis > *daqis* 'face', PAN *Dem-Dem > *ma-dumdum* 'dark', PAN *quZaN > *qudan* 'rain'. Though the possibility of the parallel development of preglottalized stops in Tsou and Bunun cannot be excluded, probably the preglottalization of the voiced stops in Bunun diffused from Tsou. Thao probably borrowed the preglottalized stops *b* /ʔb/ and *d* /ʔd/ from Bunun within the past two centuries.

25 The preglottalization of voiced stops in Bunun is found in the five Bunun dialects—Ibukun, Takhibakha, Takituduh, Takbanuaz, and Takivatan—spoken in Nantou (Li 1987) and in the Takivatan variety spoken in Hualien, but not in the Ibukun varieties spoken in Kaohsiung (Huang 1997, p. 352) and Taitung County. Preglottalization was most likely lost in the south and in parts of the east coast after the Bunun moved southward and eastward.

26 The velar stop *k* is otherwise lost word-initially.

35.6 Effects on Morphosyntax

Heavy borrowing may have some effects on morphosyntax. We provide two different examples below, the first from Kaxabu (§ 35.7.1), which has been in extensive contact with Southern Min, and the second comes from Yilan Creole (§ 35.7.2). In § 35.7.3, we explore the issues that surface when using language contact to explain morphosyntactic changes, as other factors might need to be taken into account.

35.6.1 *Kaxabu*

Kaxabu is undergoing morphological changes, and in particular degrammaticalization (due to extensive language contact with Southern Min) and is changing from an agglutinating to a more isolating language (V. Chen 2016, Lim 2022). Reflexes of PAN *-en and *-i have become clitics, viz. =*en* 'patient voice' and =*i* 'imperative' (e.g., *ngazip=en* 'bite (UVP)', *alep=i* 'close! (IMP)') and the PAN bimorphemic prefix **pa-ka-* 'CAUS (for stative verbs)', while still being preserved as a prefix (16a), is also being used as a free word which can be followed by a noun (16b).

(16) Kaxabu (Lim 2022)

a. *taumala pa-ka-tangiti ita.*

government CAUS-STAT-angry 1PL.INCL.NEUT

'The government made us angry.'

b. *paka ita tangiti ha=ki ohoni=a taumala.*

CAUS 1PL.INCL.NEUT angry EMPH=NOM now=LNK government

'The current government makes us angry.'

Chen (2016) suggests correctly that the free status of Kaxabu *paka* 'make, cause to' must have been influenced by Southern Min *ka*, which introduces a left-dislocated direct object occurring in preverbal position, and is a disposal marker, equivalent to Mandarin *bǎ*. The phonological similarity between Kaxabu *paka* (< PAN **pa-ka-*; Zeitoun & Huang 2000, Blust 2003, 2013) and Southern Min *ka* is just a coincidence, and their distribution is quite different: Kaxabu *paka* 'make, cause to' is a causative marker that introduces an object, while Southern Min *ka* requires the co-occurrence of a causative morpheme; cf. Taiwanese *tshong* 'make, cause to' (see Lim 2022, Lim & Zeitoun, this handbook, Chapter 51).

35.6.2 *Yilan Creole*

Yilan Creole was originally an Atayal dialect that was heavily influenced phonologically and morphosyntactically by Japanese and has borrowed from Southern Min and Mandarin (see, for instance, the Mandarin loanword *titi* 'younger brother' in (15)). Yilan Creole differs from most of the other Formosan languages in at least two major respects. First, verbs do not take any voice affixes. Rather, they have Japanese suffixes; cf. *-u* or *-ru* when the verb is marked as non-past affirmative (e.g., *kak-u* [write-NPST] 'will write', *ku-ru* [come-NPST] 'will come') (17a) and *-ta* when the verb is marked as past affirmative, e.g., *ki-ta* [come-PST] 'came' (17b). Second, it is a verb-final language (like Japanese), while Atayal, like most Formosan languages, is mostly predicate-initial, as shown in (17a–b) (Chien 2015, this handbook, Chapter 44).

(17) Chien (this handbook, Chapter 44)

a. *wasi titi=ni pila ager-u.*
 1SG younger.brother=DAT money give-NPST
 'I will give my younger brother money.'

b. *wasi anta=ni yu-ta.*
 1SG 2SG=DAT tell-PST
 'I told you.'

35.7 Conclusion

Evidence of language contact in Taiwan can be found throughout the Formosan dialects/languages. The most common manifestation is lexical borrowing, while the most drastic effect is the total shift to another language, as in the case of Kanakanavu and Saaroa to Bunun, or of Saisiyat to Atayal in Wufeng Township, Hsinchu County. There is clear evidence that over the past four centuries, the Formosan languages have influenced one another, and have been in contact, directly or indirectly, with Dutch, Spanish, Taiwanese, Hakka, Japanese, and Mandarin. They have borrowed from these different languages as well as Malay, Javanese, and various Philippine languages.

These contact situations have transformed indigenous societies and the languages that they originally spoke in sometimes striking ways. Formosan languages that were once located in the western and southwestern coastal areas and in the western interior areas have had close contact with Southern Min as well as Hakka for about 300 years. Most of these Formosan natives have shifted to Southern Min and/or Hakka, and many have lost their heritage languages.

Japan occupied Taiwan for half a century (1895–1945), and the Japanese-only policy imposed by the government resulted in the borrowing of a large number of Japanese loanwords in all the Formosan languages. However, Japanese has not noticeably influenced the phonology, morphology, or syntax of these languages, Yilan Creole being, to date, the sole exception. Since 1945, Mandarin Chinese has been the dominant language in Taiwan, and it might be the case that Mandarin replaces all of the Formosan languages long before the end of this century, if nothing is done to salvage them.

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