

Phonological processes in *-l- ~ -an/un* construction in Cebuano

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Abstract

This paper investigates phonological processes in the *-l- ~ -an/un* construction in Cebuano from two aspects: an Optimality-Theoretic perspective and a historical perspective. Initially reported by Wolff (1972), the *-l- ~ -an/un* construction involves infix *-l-* and suffix *-an/un* with an echo vowel after the infix *-l-*. In this paper, a dataset is established according to Yap and Bunye (1971) and Wolff (1972). In total, 59 roots are collected: 26 roots for simple affixation (*-an/un*) and 33 roots for complex affixation (*-l- ~ -an/un* construction). Different functions of affixes are also taken into consideration. The results suggest that stress in complex affixation tends to fall on the penultimate syllable, while stress in simple affixation tends to be on the final syllable in the outputs. According to the distributions in the dataset, four OT constraints in two rankings are proposed to account for the patterns of stress shift. Finally, this paper also discusses intervocalic *-l-* deletion from the aspect of sound change. It is found that *-l-* deletion has not yet swept the *-l-* in the *-l- ~ -an/un* construction in Cebuano.

Keywords: Cebuano, *-l- ~ -an/un* construction, stress shift, affixation, Optimality theory, *-l-* deletion

ISO 639-3 language codes: ceb

1. Introduction

The phonology of Cebuano, a major language spoken in the Central Philippines, has been sketched by Wolff (1962, 1972, 2001, 2009), Bunye and Yap (1971), Yap and Bunye (1971), Zorc (1977), Newton (1991), Shryock (1993), Tanangkingsing (2011) and Blust (2013).^{*} In prosody, two factors influence stress: syllable weight and functions of affixes. Wolff (1962) outlines the Cebuano stress patterns and suggests that syllable weight affects stress assignment. From a generative approach, Shryock (1993) points out that the functions of suffixes pertain to stress assignment as well. According to Shryock (1993), *-an* has multiple functions and different stress patterns: one as a verbal suffix with/out stress and the other as a nominal suffix with stress. When *-an* is a verbal suffix, the position of stress after affixation is similar to that before affixation, as in *súmbag* ‘hit’, which is *sumbáag-an* ‘hit-LPF’ (Shryock 1993: 139).¹ The stress in this example

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¹ In Shryock (1993), LPF is an abbreviation for local passive punctual future, which corresponds to the Leipzig Glossing Rules (Bickel, Comrie, & Haspelmath 2015). This paper uses LV for locative voice, *-an*. Other abbreviations

similarly falls on the penultimate syllables before and after affixation. In another example, *palít* ‘buy’, the stress falls on the suffix after affixation, *palit-án* ‘buy-LPF’ (Shryock 1993: 140). This example shows that the suffix carries stress and therefore the stress falls on the final syllable. On the other hand, when *-an* is a nominal suffix, the stress falls on the suffix itself, as in *nánkaʔ* ‘jack fruit’, and the affixed form is *nangkaʔ-án* ‘jack fruit plantation’ (Shryock 1993: 142).

Although stress shift due to affixation is pervasive in Austronesian languages, most observation is made on the basis of simple affixation, namely, a morphological process with only one affix, suffix in particular. In Cebuano, there is a construction, *-l- ~ -an/un*, that involves infix *-l-* and suffix *-an/un* (Wolff 1972). The stress shift in this complex construction has not yet been thoroughly investigated. In Shryock (1993), the relationship between affixes and stress is only based on suffixes, and thus the accentual phenomena are incomplete without taking the complex structure into account. If stress shift exists in the *-l- ~ -an/un* construction, a question arises as to what stress assignment the *-l- ~ -an/un* construction follows. It may assign the stress on the nominal or non-nominal suffix. Or it may also show a third type of stress assignment.

This paper aims at providing a concomitant account for the stress and the functions of affixation, and more importantly, at suggesting that the accentual phenomena are a part of the shape of the morpheme (cf. Stevens 1969). To seek a general picture of phonological processes in the *-l- ~ -an/un* construction, this paper not only focuses on complex affixation but also compares it with simple affixation that is added to a root originally containing consonant *-l-* between the first and second syllables.² This paper argues that the two types of affixation are significantly different in the directionality of stress shift. The stress of complex affixation tends to fall on the penultimate syllable in the output while the stress of simple suffixation tends to fall on the final syllable in the output. To look into the distribution of stress patterns in the two types of affixation, this paper established a dataset based on Yap and Bunye (1971) and Wolff (1972). This paper also adopts an Optimality-Theoretic account by proposing four constraints which are in two rankings to show how stress in the two types of affixation is assigned in a consistent fashion.

In addition to stress assignment in the *-l- ~ -an/un* construction, this paper also explores *-l-* deletion, a common phonological process in Cebuano when intervocalic *l* is surrounded by two low or back vowels. When a root contains *l*, it is likely that *-l-* deletion interacts with the *-l- ~ -an/un* construction due to the fact that the *-l- ~ -an/un* construction creates a phonological environment for *-l-* deletion. Whenever there is an interaction, it is predicted that the *-l-* in the *-l- ~ -an/un* construction reduces to a simple form, that is, a long vowel *-aa-* or *-uu-*. For example, the root *bati* ‘feel’ has a nominal form, as in *balatian* ‘feelings’. If *-l-* deletion takes place in the word *balatian*, the output should be *baatian*, or more possibly, *ba:tian*. However, there is no *-l-* deletion for *balatian*. Whether *-l-* deletion and the *-l- ~ -an/un* construction indeed interact or not requires more data, and this issue is discussed from the aspect of sound change in section 6.

With the two aims to discuss the phonological processes in the *-l- ~ -an/un* construction, this paper is organized as follows: Section 2 sketches Cebuano phonology and focuses on stress assignment and shift when affixation takes place. Section 3 introduces the *-l- ~ -an/un* construction and *-l-* deletion. Section 4 discusses a dataset in which the data are collected from Yap and Bunye (1971) and Wolff (1972). The collected data are divided into complex (*-l- ~ -an/un* construction) and simple (*-an/un*) affixations, and they are shown in three aspects: positions, stress shift, and

are PV for patient voice, *-un*, and NMLZ for nominalizer/nominalization *-an*. In this paper, the Leipzig Glossing Rules are used to present the data, while Shryock’s terminology (1993) is maintained when the work is cited.

² In this paper, the suffix *-an/un* is treated as a simple process and is therefore called simple affixation. The complex process in the *-l- ~ -an/un* construction is called complex affixation.

morphological types. Section 5 investigates stress shift after affixation from an Optimality-Theoretic account. Four constraints are proposed, and they are ordered in two rankings for the stress shift in complex and simple affixations. Section 6 explores stress assignment and the interaction of *-l-* deletion and the *-l- ~ -an/un* construction from sound changes. Section 7 concludes this paper.

2. Sketch of Cebuano Phonology

This section sketches Cebuano phonology. There are eighteen consonants in Cebuano (Wolff 1972, 2001), and Table 1 shows the consonants.

Table 1

Cebuano consonants

Manner \ Place		Place				
		Bilabial	Dental	Palatal	Velar	Glottal
Stops	Voiceless	<i>p</i>	<i>t</i>	<i>c</i>	<i>k</i>	<i>ʔ</i>
	Voiced	<i>b</i>	<i>d</i>	<i>j</i>	<i>g</i>	
Fricatives			<i>s</i>			<i>h</i>
Nasals		<i>m</i>	<i>n</i>		<i>ŋ</i>	
Liquids			<i>l, r</i>			
Glides				<i>y</i>	<i>w</i>	

In Cebuano, there are three vowels: /a, i, u/. The back vowel /u/ has an allophone [o], and it is positionally restricted. Tanangkingsing (2011: 17) observes that the vowel [u] often appears in word-initial position, while [o] is limited to a word-final syllable. For example, the word for ‘brain’ is *utuk* [u.tok]. The first vowel is [u] and the second vowel [o].³

Stress assignment in Cebuano has been thoroughly discussed by Wolff (1962), Zorc (1977), Newton (1991), Shryock (1993), and Blust (2013). The syllable types are related to stress assignment. Accented syllable or stress is phonetically a matter of the length or phonologically a matter of the weight of the penultimate syllable of a phonological word. Closed penultimate syllables are long or heavy and therefore accented with a very small number of exceptions of borrowed forms or proper names, as in *karangkál* ‘man’s name’ (Wolff 1962: 84). Open penultimate syllables are long and therefore accented if the vowel nucleus is long or a diphthong where the off-glide acts like a consonant, as in *ká:qun* ‘eat’ or *kánqun* ‘eat’ (Wolff 1962: 84). If the vowel of the penultimate syllable is short, namely the penultimate syllable as a light syllable, it is not accented and the accent falls on the final syllable, as in *nag-kaqún* ‘is eating’ (Wolff 1962: 84). Furthermore, only one long vowel or heavy syllable may occur in a phonological word, and the stress can only fall on the penultimate or the final syllable. Exceptions that occur in long vowels in the final syllable only are attested in the case of *-l-* deletion, e.g., *gadáa* (from *gadalá*) ‘is carrying’.

³ There is no such alternation in Wolff (1972) and Zorc (1977). They consistently use vowel *u* in word-final syllable. When presenting examples from Wolff (1972) or Zorc (1977), this paper uses the original forms. Thus, the word ‘brain’ is *utuk*, not *utok*; however, the paper follows the convention of the vowel *u* in word-final syllables and in *o* when presenting examples from the online dictionary (<http://www.binisaya.com/cebuano>).

In Cebuano, when a root is affixed, the stress might shift depending on the types of affixation. Wolff (1972) generalizes two patterns of stress shift. The first pattern is that when an affix is added to a root with penultimate stress, the stress falls on the final syllable. The second pattern shows a reversed directionality. When a root has final stress, the stress falls on the penultimate syllable after affixation. Wolff's examples (1972) are given in (1). (Arrows refer to the directionality of stress shift).

- | | | | | | | |
|-----|----|-------------------------------|-----------|---|----------------------------|-----------------|
| (1) | a. | <i>káun</i> /káʔun/ 'eat' | + nag-(→) | = | <i>nagkaun</i> /nagkaʔún/ | 'is eating' |
| | | <i>tugnaw</i> /túgnaw/ 'cold' | + -un(→) | = | <i>tugnawun</i> /tugnawún/ | 'be cold' |
| | b. | <i>sakáy</i> /sakáy/ 'ride' | + nag-(←) | = | <i>nagsákay</i> /nagsákay/ | 'ride together' |
- From Wolff (1972)

In (1a), the stress of *káun* 'eat' is on the penultimate syllable.⁴ The stress shifts to the final syllable after the prefix *nag-* is added (directionality as rightward). The other directionality of stress shift (1b) is leftward. When the default stress is on the final syllable, it shifts to the penultimate syllable after affixation.⁵

Zorc (1977: 64-67) outlines five patterns of stress shift when roots are affixed. The five patterns are summarized in Table 2 below. The first pattern lacks stress shift after affixation. The roots and the affixed forms have the same positions of stress. For example, *sakáy* 'ride' and *tápus* 'finish' are different in their default stress. When the two roots are affixed, the stress stays in the same position, as in *sakáy* 'ride' > *sakay-án* 'boat' for final stress and *tápus* 'finish' > *tapús-un* 'will be finished' for penultimate stress. The second pattern involves a penult-accent: affixed forms with stress on the penultimate syllable. For instance, *buqút* 'good' has final stress. After affixation, the stress shifts to the penultimate syllable, such as *buqút-an* 'good'. The third pattern involves an ultima-accent. When a root has penultimate stress, affixation shifts stress from the penultimate syllable to the final syllable, as in *túgnaw* 'cold' > *tugnaw-ún* 'feel cold'. In the fourth pattern, the stress is reversed, which means stress alternates between the penultimate and final syllables. This pattern is usually attested in circumfix, like *mag-<in>-ay*. When the stress falls on the final syllable, the affixed form has penultimate stress, as in *sulát* 'write' > *magsinulátay* 'will write to one another'. The stress that falls on the penultimate syllable shifts to the ultimate syllable, as in *sábut* 'come to an agreement', which becomes *magsinabtanáy* 'will understand each other's viewpoint'. The fifth pattern involves an internal shift with zero affixation, a process often associated with a stative morpheme. The stress often shifts rightward, as in *tápus* 'finish' > *tapús* 'finished'. When a root has final stress, the stress does not need to shift, as in *patáy* 'kill' > *patáy* 'dead'.

⁴ As a root, *kaun* has a long vowel *aa*. After affixation, the stress shift shortens the long vowel.

⁵ Even if there is no affixation, it is possible that there is stress shift, similarly to the two patterns in (1). Examples in (i) illustrate this type of stress shift.

- | | | | | | | | | |
|-----|--------------|---------|---------|---|-----|---|--------------|---------|
| (i) | <i>inúm</i> | /ʔinúm/ | 'drink' | + | (←) | = | <i>inum</i> | /ʔínúm/ |
| | <i>búnal</i> | /búnal/ | 'beat' | + | (→) | = | <i>bunal</i> | /bunál/ |

From Wolff (1972)

Table 2

Five patterns of stress shift in Zorc (1977)

		root		affix		output	
a.	same- accent	<i>sakáy</i>	‘ride’	-an	>	<i>sakay-án</i>	‘boat’
		<i>tápus</i>	‘finish’	-un	>	<i>tapús-un</i>	‘will be finished’
b.	penult- accent	<i>buqút</i>	‘good’	-an	>	<i>buqút-an</i>	‘good’
c.	ultima- accent	<i>túgnaw</i>	‘cold’	-ən	>	<i>tugnaw-ín</i>	‘feel cold’
		<i>sulát</i>	‘write’	mag-<in>-ay	>	<i>magsinulátay</i>	‘will write to one another’
d.	reverse	<i>sábut</i>	‘come to an agreement’	mag-<in>-ay	>	<i>magsinabtanáy</i>	‘will understand each other's viewpoint’
e.	zero	<i>tápus</i>	‘finish’	-----		<i>tapús</i>	‘finished’
		<i>patáy</i>	‘kill’	-----		<i>patáy</i>	‘dead’

Different functions of affixes have different stress patterns in Cebuano. Shryock (1993) provides a sophisticated analysis and suggests that inflectional suffixes behave differently from derivational suffixes. For example, the suffix *-an* has two functions. It is an inflectional suffix for locative voice. This suffix is also a derivational suffix for ‘location’, as a nominalizer. When *-an* is an inflectional suffix, there are three patterns of stress shift, as seen in (2).

- (2) a. *lóa.lis* ‘argue’ *la.lii.s-an* ‘argue-LPF’
háa.tag ‘give’ *ha.táa.g-an* ‘give-LPF’
súm.bag ‘hit’ *sum.báa.g-an* ‘hit-LPF’
díd.ʔan ‘prevent’ *did.ʔáa.n-an* ‘prevent-LPF’
- b. *pa.lít* ‘buy’ *pà.li.t-án* ‘buy-LPF’
sa.káy ‘ride’ *sà.ka.y-án* ‘ride-LPF’
hu.wám ‘borrow’ *hù.wa.m-án* ‘borrow-LPF’
- c. *dráyb* ‘drive’ *dráy.b-an* ‘drive-LPF’
típ ‘tip’ *tíi.p-an* ‘tip-LPF’
húuk ‘hook’ *húu.k-an* ‘hook-LPF’

From Shryock (1993: 139-140)

In (2a), the stress falls on the penultimate syllable in the roots and affixed forms. Meanwhile, vowel length also alternates when the stress shifts. For example, the low vowel is long in *lóa.lis* ‘argue’. Stress shift prolongs the high vowel in *la.lii.s-an* ‘argue-LPF’. In (2b), the roots have final stress and the stress shifts to the final syllable. The patterns (2a–2b) reveal that suffix *-an* does not destruct the default stress pattern. The penultimate/final stress maintains in the affixed forms. When the root is monosyllabic, as in (2c), the stress does not shift.

On the other hand, when the suffix *-an* is derivational, there is only one pattern for stress shift, as shown in (3).

- | | | | | |
|--------|-------------------|--------------|----------------------|-------------------------|
| (3) a. | <i>ta.máa.tis</i> | ‘tomato’ | <i>tà.ma.ti.s-án</i> | ‘tomato field’ |
| | <i>nàŋ.kaʔ</i> | ‘jack fruit’ | <i>nàŋ.kaʔ-án</i> | ‘jack fruit plantation’ |
| | <i>hu.máy</i> | ‘rice’ | <i>hù.ma.y-án</i> | ‘rice field’ |
| b. | <i>sáa.yaw</i> | ‘dance’ | <i>sà.ya.w-án</i> | ‘dance hall’ |
| | <i>pán.day</i> | ‘forge’ | <i>pàn.da.y-án</i> | ‘blacksmith shop’ |
| | <i>sa.káy</i> | ‘ride’ | <i>sà.ka.y-án</i> | ‘motor park’ |

From Shryock (1993: 142)

In (3a–3b), stress consistently shifts to the final syllable in the affixed forms. Following Shryock’s (1993) generalization, this paper also takes into account the different functions of affixes, but this paper uses the names of nominal affix and non-nominal affix. Details regarding this issue are discussed in section 4.

3. The *-l- ~ -an/un* construction and *-l-* deletion in Cebuano

Initially reported by Wolff (1972), the *-l- ~ -an/un* construction involves two affixes: infix *-l-* and suffix *-an/un*. This construction is a variant of *-anan*, or a derivational disyllabic suffix, *-aa.nan*, in Shryock’s (1993) terminology. According to Wolff (1972), this construction functions similarly to nominal suffix *-an*, as he defines *-anan* as (a) a place or person for whom something is done and (b) a thing to which something is to be done.⁶ In Zorc (1977: 65), *-anan* is defined as ‘having the quality of [x]’.⁷ If the major function of the *-l- ~ -an/un* construction is a nominal suffix, it is predicted that the *-l- ~ -an/un* construction shares a similar stress pattern as the nominal suffix, which carries stress falling on the final syllable *-an/un*.

Structurally, in this construction, the infix *-l-* is not randomly inserted, but is limited to the interval between the first and second syllables. There are two positions for the infix *-l-*: between the first and second syllables and before the vowel in the first syllable. The insertion process triggers vowel epenthesis to fulfill the CV requirement, and the inserted vowel must be an echo vowel. There are two possible directionalities in the copying of the vowel. The echo vowel corresponds to the vowel before or after the infix *-l-*. When the infix *-l-* is inserted between the interval of the first and second syllables, the vowel in the first syllable is copied. When the infix *-l-* is inserted before the vowel in the first syllable, the vowel is copied. These two different directionalities are illustrated by the verb *bátì* ‘feel s.th., have symptoms of a sickness’ in (4).

- | | | |
|--------|--------------------|---|
| (4) a. | Input | <i>bátì</i> |
| | Infix <i>-l-</i> : | <i>balti</i> (after the first vowel) |
| | Echo vowel: | <i>balati</i> (from left to right) |
| | Output | <i>ba-la-tí-an</i> ‘feelings, sensitivities’ n. |
| b. | Input | <i>bátì</i> |
| | Infix <i>-l-</i> : | <i>blati</i> (before the first vowel) |
| | Echo vowel: | <i>balati</i> (from right to left) |
| | Output | <i>ba-la-tí-an</i> ‘feelings, sensitivities’ n. |

⁶ In Cebuano, *ig- ~ -l-* is another construction that also functions as a nominal, which is an analog of the conveyance passive verb, *i-*. This construction consists of a prefix *ig-* and an infix *-l-*. This construction is not productive in Cebuano and will not be discussed in this paper.

⁷ Zorc (1977) classifies *-anan* as a suffix in Aklanon and Hiligaynon.

As for stress assignment in the *-l- ~ -an/un* construction, the stress is predicted to fall on the final syllable *-an/un*, as it is a derivational process (Shryock 1993). Nevertheless, the output in (4) does not conform to the prediction. Instead, the stress is penult. A comparison of the actual and predicted positions for stress shift in the *-l- ~ -an/un* construction is given in (5).

(5)		Actual	Predicted
	<i>ági</i> ‘go by, through a place’ v.	<i>a-la-gí-an</i>	* <i>a-la-gi-án</i>
	<i>bátì</i> ‘feel s.th., have symptoms of a sickness’ v.	<i>ba-la-tí-an</i>	* <i>ba-la-ti-án</i>
	<i>támáy</i> ‘despise, look down on, usually with derision’ v.	<i>ta-la-máy-un</i>	* <i>ta-la-may-ún</i>

In (5), stress falls on the penultimate syllable instead of the final syllable. One question arises immediately as to the incompatibility between the actual stress in the *-l- ~ -an/un* construction and Shryock’s generalization. It is clear that the nominal suffix does not account for the stress assignment in (4). In Wolff (1972), Zorc (1977), and Shryock (1993), the formations with *-aa.nan* and *-uu.nun* are variants of *-l- ~ -an* and *-l- ~ -un*, respectively.⁸ According to Shryock (1993), the stress assignment of *-aa.nan* and *-uu.nun* is shown in (6).

(6)	<i>háa.tag</i>	‘give’	<i>hà.ta.g-áa.nan</i>	‘recipient’
	<i>hu.máy</i>	‘rice’	<i>hù.ma.y-úu.nun</i>	‘piece of land for planting rice’
	<i>sán.dig</i>	‘lean against s.t.’	<i>sà.di.g-áa.nan</i>	‘backrest’
	<i>páa.hid</i>	‘wipe, rub on s.t.’	<i>pà.hi.r-áa.nan</i>	‘rag to wipe hands’

From Shryock (1993: 143)

In (6), the output stress is similar to that in (4) in terms of penultimate stress, and therefore one might assume that the stress assignment in the *-l- ~ -an/un* construction simply follows that in the variants of *-anan/-unun*. This paper argues that the stress assignment in the *-l- ~ -an/un* construction is more complex than expected.⁹ This is answered based on the dataset in section 4.

In addition to stress assignment in the *-l- ~ -an/un* construction, intervocalic *l* in Cebuano undergoes deletion (Wolff 1972, Newton 1991, Tanangkingsing 2011) when it appears between two similar vowels (low vowel + *l* + low vowel or back vowel + *l* + back vowel). A long vowel consequently emerges when the intervocalic *l* is deleted, *-vlv- > -vv-*. Surrounded by low and back vowels (low + *l* + back or back + *l* + low), the liquid is assimilated to *w*, *-alu- > -awu-*, or *-ula- > -uwa-*. Examples of the changes are shown in (7).

⁸ The variants with *-anan* and *-unun* are characteristic of northern (*l*-deletion) dialects, and the variants with *-l-* are characteristic of southern (*l*-retaining) dialects.

⁹ The variant with *-aa.nan* has the same accentual pattern as the variant with *-l-~an*, and the variant with *-uu.nun* has the same accentual pattern as the variant with *-l-~un*—i.e., with any given root if there a shift with *-l-~an* in the southern dialects there is also a shift with *-aa.nan* in the northern dialects, and if there was a shift with *-l-un* in the southern dialects there would also be a shift with *-uu.nun* in the northern dialects (with some exceptions).

(7)	Two similar vowels		Two different vowels		
	/l/ → /Ø/		/l/ _ /w/		
	<i>kalabaw</i> → <i>ka:baw</i>	‘carabao’	<i>hulat</i> → <i>huwat</i>	‘wait’	
	<i>dalan</i> → <i>da:n</i>	‘road; street’	<i>bulan</i> → <i>buwan</i>	‘month’	
	<i>wala</i> → <i>wa:</i>	‘left (side)’	<i>lahum</i> → <i>lawum</i>	‘deep’	
	<i>ulu</i> → <i>u:</i>	‘head’	<i>kahibalu</i> → <i>kahibawo</i>	‘know’	

From Tanangkingsing (2011: 20)

When the *-l- ~ -an/un* construction is taken into account, a possible scenario is that the intervocalic *l* is deleted. For example, *tubag* ‘answer (v.)’ is the root of *tulubagon* ‘responsibility that one has to answer for’, and one possible output is *tuubagon*. However, *-l-* deletion does not take place in *tulubagon*. Besides, in Wolff (1972: 982), the root *tandug* ‘touch’ has an entry, *talandugan* ‘touchy, critical’. This example has become an archaic form nowadays.¹⁰ The *-l- ~ -an/un* construction is productive in Wolff (1972), but it becomes less productive contemporarily. Section 6 probes into the sound changes in the *-l- ~ -an/un* construction.

4. Reanalysis of *-l- ~ -an/un* construction

Section 3 has discussed the stress shift in the *-l- ~ -an/un* construction, and the patterns do not conform to the previous analyses (Wolff 1972, Shryock 1993). This section reanalyzes Wolff’s (1972) data and shows that the stress assignment in the *-l- ~ -an/un* construction differs from Shryock’s generalization for derivational/inflectional affixes and the stress assignment in the variants of *-aa.nan/-uu.nun*. To provide more details, this paper establishes a small dataset by collecting data from Wolff (1972). The data selection criteria are discussed in section 4.1; the results are reported in section 4.2, in which the data are divided into complex (*-l- ~ -an/un* construction) and simple (*-an/un*) affixations, and they are presented in terms of positions, stress shift, and morphological types.

4.1 Data selection criteria

This paper uses Wolff (1972) as the primary source and Yap and Bunye (1971) as the reference source. Wolff (1972) marked stress in the *-l- ~ -an/un* construction and provided an arrow (←) or (→) to show the directionality of stress shift. The addition of an affix entails a shift if the affixed form has a different accentual pattern from the unaffixed root—that is, if the root has penultimate accentuation and the affixed form’s accent falls on the final syllable, then the affixed form has a rightward shift marked by an arrow (→). If the root has final-syllable accentuation, and the affixed form has the accent on the penult, then the affixed form has a leftward shift marked by an arrow (←). If both the root and the affixed form have penultimate accent, there is no shift. Likewise, if both the root and the affixed form have final syllable accentuation, there is no shift.

This paper collects roots in the *-l- ~ -an/un* construction from Wolff (1972). Although numerous roots appear in the *-l- ~ -an/un* construction, the stress is not always explicitly marked in the source. When there is no clear marking, another reference is needed. In this paper, the collected examples from Wolff (1972) were double-checked against Yap and Bunye’s (1971) findings. Only roots with clear stress marking in the two sources were included in the dataset. For example, in Wolff (1972), *mahal* ‘dear, expensive’ appears in the *-l- ~ -an/un* construction, but

¹⁰ According to the online dictionary (<http://www.binisaya.com/cebuano>), *talandugan* is not listed as an individual entry. Only the morphological analysis is listed.

there is no stress. On the other hand, Yap and Bunye (1971) marked *mahál* with final stress. With a clear marking in Yap and Bunye (1971), the root *mahal* is included in the dataset.

After the data were sorted, stress marking was checked. Not all the roots in the *-l-~-an/un* construction were explicitly marked by arrows for stress shift in Wolff (1972). Sometimes, the outputs in the *-l-~-an/un* construction only appear in example sentences, not as individual lexical items. In addition, Wolff (1972) simply marked stress on the examples without providing the directionality of stress shift. Take *támay* ‘despise, look down on, usually with derision’ as an example. Wolff (1972) marked *talamáyun* ‘contemptible’ with penultimate stress without specifying the directionality of stress shift. Although the directionality of this example is not specified, the affixed form is deciphered as NO shift, because both the root and the affixed form have a penultimate accent. After examples are properly sorted, the default stress and the directionality of stress shift are marked separately for further analysis.

For contrast, this paper also includes roots that originally contained an intervocalic *l*, $-v_1lv_2-$ ($v_1 = v_2$), such as *pálaw* ‘to plant’ and *ílis* ‘give s.th. in lieu of s.th. received’.¹¹ Suffix *-an/un* is added to the two examples, and the outputs *palaw-án* ‘name for a similar aroid’ and *ilis-án* ‘clean clothes’ resemble those in the *-l-~-an/un* construction at the surface level. The data selection criteria for simple affixation are similar to those in the *-l-~-an/un* construction. Only roots with clear stress marking in Wolff (1972) or Yap and Bunye (1971) are used for analysis. The results are reported in section 4.2.

4.2 Results of stress in complex and simple affixations

In the dataset, there are 59 roots: 33 roots for complex affixation (*-l-~-an/un* construction) and 26 roots for simple affixation (*-an/un*). The distribution of different positions, penultimate vs. final, is given in Table 3.

Table 3

Distribution of different positions for complex and simple affixations

Affixation \ Stress position	Penultimate	Final	Total
Complex	22	11	33
Simple	9	17	26
Total	31	28	59

In the 33 roots of complex affixation, 22 roots have penultimate stress, and eleven roots have final stress. On the other hand, the 26 roots in simple affixation include nine roots with penultimate stress and seventeen roots with final stress. Figure 1 shows the details of the stress shift in simple affixation and the *-l-~-an/un* construction.¹²

¹¹ There could be a set of examples without any affixation, and their surface forms resemble the $-v_1lv_2-$ ($v_1 = v_2$) \sim *-an/un*. This paper omits this type of examples due to inadequate tokens.

¹² According to Blust’s (2013: 179) statistics based on 200 roots, 62% of stress falls on the penultimate syllable (124/200), and 38% on the final syllable (76/200). In Figure 1, there are 48 roots with penultimate stress, and there are 11 roots with final stress. Penultimate stress is still the majority.

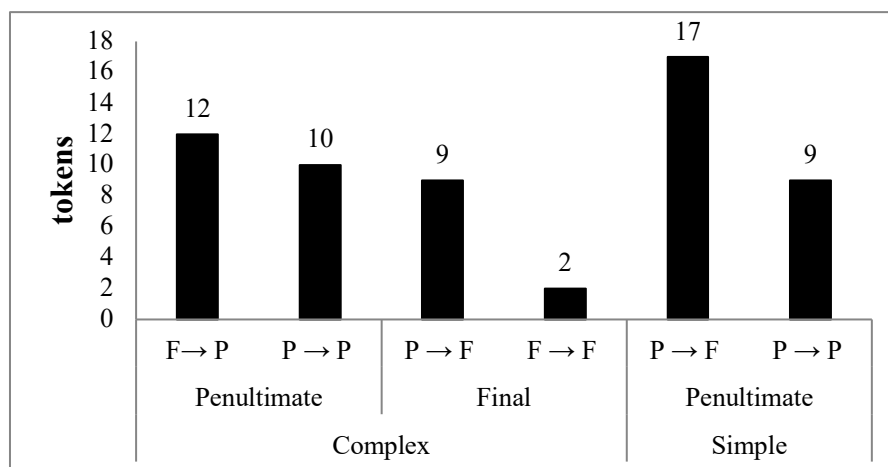


Figure 1. Distribution of stress shift in complex and simple affixations¹³

In Figure 1, there are four patterns of stress shifts in complex affixation. First, stress shifts from the final syllable to the penultimate syllable in twelve examples, as in *sabút* ‘understand’ → *salabútan* ‘mind, intellect’. Second, ten examples do not undergo stress shift. The penultimate stress in a root remains as penultimate in the output, such as *sáysay* ‘narrate’ → *salaysáyan* ‘eventful’. Nine examples show stress shift from the penultimate syllable to the final syllable, as in *búhat* ‘do, work’ → *buluhátún* ‘things to do’. Two entries show similar positions in their final stress, as in *tunghá* ‘appear’ → *tunghaán* ‘school’. In simple affixation, there are only two patterns of stress shift. Seventeen examples have penultimate stress in the roots, which have final stress after affixation, such as *tálaw* ‘back off’ → *talawán* ‘cowardly’. Nine examples do not have stress shift, maintaining penultimate stress in the outputs, as in *húlug* ‘drop’ → *hulúgan* ‘drop’.¹⁴ The four patterns in Figure 1 correspond to three types of stress shift: leftward shift (F → P), rightward shift (P → F), and NO shift (P → P, F → F), as shown in (8).¹⁵

(8)	Leftward shift	Rightward shift	NO shift
	F→P	P→F	P→P
	σσ→σσ-σ	σσ→σσ-σ	σσ→σσ-σ
			F→F
			σσ→σσ-σ

The first type is leftward shift (F → P). In roots with final stress, the stress shifts to the penultimate syllable in the outputs. The second type is rightward shift (P → F), in which the roots have penultimate stress, and the output stress falls on the final syllable. NO shift has two subtypes. When the root has penultimate stress, the output still has penultimate stress (P → P); when the root has final stress, the output still has final stress (F → F).

¹³ In Figure 1, P is used for penultimate and F for final.

¹⁴ Theoretically speaking, there should be final stress as the default and final stress after affixation. It is also possible to have final stress as the default and penultimate stress after affixation. The dataset lacks examples of these two types of stress shift.

¹⁵ The three types correspond to Zorc’s (1977) classification in Table 1. Leftward shift corresponds to penult-accent, NO shift to same-accent, and rightward shift to ultima-accent.

In addition to the directionality of stress shift in the *-l- ~ -an/un* construction, this paper also considers the functions of the affixation. Table 4 shows the distribution of complex and simple affixations in nominal and non-nominal affixes.

Table 4

Distribution of different morphological types for complex and simple affixations

Affixation type	Morphology	Nominal		Non-nominal		Total
		Pen	Fin	Pen	Fin	
Complex		12	8	10	3	33
Simple		3	12	6	5	26

*Pen = penultimate syllable; Fin = final syllable

In complex affixation, penultimate stress outnumbered final stress in both nominal and non-nominal suffixes. The examples for the four patterns are *sabút* ‘understand’, *támay* ‘despise, look down on, usually with derision’, *búhat* ‘do something; do work’, and *tándug* ‘touch something lightly to disturb it’. In *salabútan* ‘mind, intellect’ for nominal suffix and *talamáyun* ‘contemptible’ for non-nominal suffix, the stress falls on the penultimate syllable; in *buluhatún* ‘things to do, work to be done’ for nominal suffix, and *talandugún* ‘critical, grave in health or condition’ for non-nominal suffix, the stress falls on the final syllable.

In simple affixation, there are seventeen roots with final stress. Twelve roots belong to the nominal suffix, and five roots to the non-nominal suffix. For example, the nominal form of the verb *balábag* ‘lie across a path’ is *balabagán* ‘fishes with a transverse line, e.g., k.o. snappers’, and the adverb of the verb *tálaw* ‘back off, be afraid to do s.t. for lacking nerve’ is *talawán* ‘cowardly’. There are eight roots with penultimate stress, three in nominal suffix, as in *ulúhan* ‘toy’ from the verb *úlu* ‘lead, be at the head’, and five in non-nominal suffix, as in *balákan* from the verb *bálak* ‘recite verses’.¹⁶ The results regarding the simple affix in Table 4 conform to Shryock’s (1993) generalization in (3) regarding simple affixation. That is, a nominal suffix triggers final stress.¹⁷

Table 5 shows the details with regard to the directionalities of stress shift in Table 4. In Table 5, the distribution that nominal affixes behave differently from non-nominal affixes suggests that nominal affixes are more likely to shift stress in the roots to the other positions than the non-nominal affixes do. Tokens with stress shift to different positions significantly outnumber those without stress shift in nominal affixes (24 vs. 9), while tokens with stress shift are equal to those without stress shift in non-nominal affixes (12 vs. 12).

¹⁶ When the final syllable of the root is open, consonant *-h-* is inserted to fulfill the CV requirement.

¹⁷ In Wolff (1972), the vowel length is not specified. Thus, there is no way of knowing whether stressed syllables are indeed longer.

Table 5

Distribution of different directionalities of stress shift for complex and simple affixations

Morphology Affixation type \ Stress shift	Nominal			Non-nominal			Total
	No	L	R	No	L	R	
Complex	6	8	6	6	4	3	33
Simple	3	---	12	6	---	5	26

* No = no stress shift, L = leftward shift, R = rightward shift

Thus far, this paper has discussed the distribution of complex and simple affixations. It is clear that stress in the *-l- ~ -an/un* construction tends to fall on the penultimate syllable, and the stress of simple affixation tends to fall on the final syllable. Besides, different types of affixes show different tendencies. More roots undergo stress shift in nominal affixes.

5. Optimality-theoretic account¹⁸

The results in section 4 suggest that there is no absolute directionality for stress shift in Cebuano. In Table 3, there are seventeen examples with final stress, and nine examples with penultimate stress in simple affixation. In contrast, 22 examples have penultimate stress, and eleven examples have final stress in complex affixation. Thus, four constraints are proposed in (9).

- (9)
- a. RIGHTMOST: The head foot is rightmost in a prosodic word (Kager 1999: 167, 300)
 - b. TROCHEE: feet are trochaic
 - c. IAMB: feet are iambic
 - d. *STRESSSHIFT: stress must maintain in the same position in the head foot

The first constraint, RIGHTMOST, requires the head foot in a prosodic word to be the rightmost. Constraints, TROCHEE and IAMB, demand different positions of stress in a foot. Constraint (9d) prohibits stress shift after affixation. According to Shryock (1993), a foot in Cebuano is formed from right to left. Thus, the constraint, RIGHTMOST, should be ranked the highest to prevent stress from falling on the antepenultimate syllable. As suggested by the results that stress would shift after affixation, the constraint, *STRESSSHIFT, is ranked the lowest. The rankings of the four constraints are twofold: RIGHTMOST » IAMB » TROCHEE » *STRESSSHIFT for penultimate stress in the outputs and RIGHTMOST » TROCHEE » IAMB » *STRESSSHIFT for final stress in the outputs. The tableaux in (10) illustrate the ranking for No stress shift (penultimate → penultimate).

¹⁸ Optimality Theory is a phonological model where inputs are evaluated by output constraints. Before the evaluation process, constraints have to be clearly defined. In the evaluation, an input has numerous candidates. In Optimality Theory, one characteristic different from other phonological models is the violation of the constraints. Only the optimal candidate surfaces as the output. For more details of how Optimality Theory is operated, please refer to Prince and Smolensky (1993), Kager (1999), and McCarthy (2008).

(10)

a. No stress shift in complex affixation: penultimate → penultimate

<i>túkib</i> ‘detailed’ + <i>-l- ~ -an/un</i>		RIGHTMOST	IAMB	TROCHEE	*STRESSSHIFT
☞	tulu(kíbun)			*	
	tulu(kibún)		*!		*
	tu(lukí)bun	*!	*		*
	tu(lúki)bun	*!			

b. No stress shift in simple affixation: penultimate → penultimate

<i>tílib</i> ‘take a thin slice off of s.t.’ + <i>-an/un</i>		RIGHTMOST	IAMB	TROCHEE	*STRESSSHIFT
☞	ti(líban)			*	
	ti(libán)		*!		*
	(tílí)ban	*!	*		*
	(tíli)ban	*!		*	

In (10), the inputs have penultimate stress, and the stress consistently falls on the penultimate syllable in the outputs after affixation. The ranking in (10) is also applicable to leftward shift in complex affixation (final → penultimate), as in (11).

(11)

a. Leftward shift in complex affixation: final → penultimate

<i>kuyáw</i> ‘frightful’ + <i>-l- ~ -an/un</i>		RIGHTMOST	IAMB	TROCHEE	*STRESSSHIFT
☞	kulu(yáwan)			*	*
	kulu(yawán)		*!		
	ku(luyá)wan	*!	*		
	ku(lúya)wan	*!		*	*

Likewise, the leftward stress shift in (11) comes from the change that the final stress falls on the penultimate syllable in the output. The tableaux in (12) exemplify the ranking for final stress in the outputs when the inputs have penultimate stress.

(12)

a. Rightward shift in complex affixation: penultimate → final

<i>útan</i> ‘cook vegetables’ + <i>-l- ~ -an/un</i>		RIGHTMOST	TROCHEE	IAMB	*STRESSSHIFT
	ulu(tánun)		*!		
☞	ulu(tanún)			*	*
	u(lutá)nun	*!		*	*
	u(lúta)nun	*!	*		

b. Rightward shift in simple affixation: penultimate → final

<i>balábag</i> ‘lie across a path’ + <i>-an/un</i>		RIGHTMOST	TROCHEE	IAMB	*STRESSSHIFT
	bala(bágan)		*!		
☞	bala(bagán)			*	*
	ba(labá)gan	*!		*	*
	ba(lába)gan	*!	*		*

In addition to the two patterns in (10), NO stress is also attested in simple affixation with final stress in the default and at the surface level, as in (13).

(13)

a. No stress shift in simple affixation: final → final

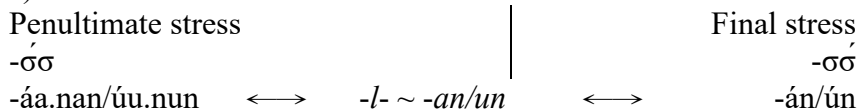
<i>tunghá</i> ‘appear’ + <i>-an/un</i>	RIGHTMOST	TROCHEE	IAMB	*STRESSSHIFT
tung(háan)		*!		*
☞ tung(haán)			*	
(tunghá)an	*!		*	
(túngha)an	*!	*		*

In Optimality Theory, the three types of stress shift in (8) are succinctly presented by two rankings with a minimal change of the two constraints, TROCHEE and IAMB. When TROCHEE outranks IAMB, the ranking presents the grammar of shifting stress to the penultimate syllable in the outputs. On the other hand, when IAMB outranks TROCHEE, the grammar suggests that stress falls on the final syllable in the outputs.

6. Phonological changes in the *-l- ~ -an/un* construction

This section discusses two phonological changes in the *-l- ~ -an/un* construction: stress assignment and *-l-* deletion. Recall that the *-l- ~ -an/un* construction is a variant of the disyllabic derivational suffix *-aa.nan/-uu.nun* with the default stress on the penultimate syllable, as in (6) above. It could be argued that the default stress of the disyllabic suffix is the origin of the penultimate stress for the *-l- ~ -an/un* construction. The relationship between the disyllabic derivational suffix *-aa.nan/-uu.nun* and the *-l- ~ -an/un* construction is an intriguing issue. If the disyllabic derivational suffix is indeed the source of this construction, there should be no final stress. However, the distribution in Table 4 reveals that final stress takes one-third of the corpus examples. It might be suggested that stress in the *-l- ~ -an/un* construction is gradually assimilated by the stress pattern of simple affixation *-an/un*, which is characterized as final stress. The changes regarding stress in the *-l- ~ -an/un* is portrayed in (14), in which the *-l- ~ -an/un* construction is placed in the middle and still related to *-áa.nan/úu.nun*, but it is an ongoing process moving to the final stress.

(14)



In Cebuano, intervocalic *-l-* deletion is a common phonological phenomenon. In the *-l- ~ -an/un* construction, the infix *-l-* and the echo vowel creates a phonological environment for *-l-* deletion. This paper examined 33 examples with the *-l- ~ -an/un* construction in the dataset to check whether *-l-* deletion has become pervasive in Cebuano, and whether *-l-* deletion interacts with the *-l- ~ -an/un* construction in stress assignment. First, although Cebuano has three vowels /a, i, u/, intervocalic *-l-* deletion only takes place between two low vowels or two back vowels (Tanangkingsing 2011: 20). In other words, there is no *-l-* deletion between two high front vowels,

-ili-. In the dataset, the 33 roots were classified into three groups according to the first vowel of a disyllabic word. Table 6 shows the results collected from an online dictionary.¹⁹

Table 6

Distribution of the types of vowels in the first syllable

Vowels	/a/	/u/	/i/	Total
Tokens	13	13	7	33

There are thirteen roots in low vowels and thirteen roots in back vowels. Only seven roots in front vowels are attested. After the roots are double-checked with those collected from the online dictionary, there was an intriguing finding. In the dataset, roots with vowel *i* behave differently from those with vowels *a* and *u*. Six roots with vowel *i* do not have outputs in the *-l- ~ -an/un* construction.²⁰ One root has a possible derivation, as in *isilipan* ‘mind’ (cf. Wolff’s *ilisipan* (1972: 394)).²¹ This example should be an archaic form.

In the dataset, roots with vowels *a* and *u* in the online dictionary are divided into two groups. The first group includes roots that can be in the *-l- ~ -an/un* construction. The online dictionary provides the derivation process, but the affixed forms are not listed as individual lexical items. For instance, *buhi* ‘alive’ has an affixed form, *buluhion*, which has not yet become an independent entry. The second group contains the roots in the *-l- ~ -an/un* construction, and the affixed forms have already become separate entries. The verb *tubag* ‘answer’ has an affixed form, *tulubagon* ‘responsibility’, which has been an individual entry in the online dictionary. Table 7 shows the distribution of the two groups of attestations in the online dictionary.

Table 7

Distribution of the -l- ~ -an/un construction in the online dictionary

Vowels	/a/	/u/	Total
Only in derivation	7	9	16
Lexical items	5	4	9
Total	12	13	25

In vowel *a*, seven roots appear only in affixed forms, and five roots have fully developed into lexical items.²² In vowel *u*, nine roots are attested only in affixed forms, and four roots have become real lexical items. The data suggest that the *-l- ~ -an/un* construction should have gradually become less uncommon in Cebuano, as it is recognized as a morphological process.

Until now, the data in Table 7 have been more than forty years after Wolff (1972) reported the *-l- ~ -an/un* construction. Vowels in the 1970s were not restricted, while vowel *i* is incompatible with this construction in the online dictionary. The phonological environment of *-l-* deletion might

¹⁹ The data were collected from the online dictionary (<http://www.binisaya.com/cebuano>).

²⁰ In Wolff (1972), vowel *i* can be in the *-l- ~ -an/un* construction. For example, *tiaw* is a verb meaning ‘to joke’, which is *tiliawan* ‘ridicule’ (Wolff 1972: 1001).

²¹ In the online dictionary, there is metathesis, *ilisipan* > *isilipan*.

²² In the online dictionary, the root *abog* ‘dust’ lacks the derivation process or the fully developed lexical item as *alabogan*. Hence, there are twelve roots in Table 7, while there are thirteen roots in Table 6.

give insight into sound changes. The *-l-* deletion does not occur in an environment where *-l-* is surrounded by two high front vowels. This development is summarized in Table 8.

Table 8

Two processes in two different sources

Sources	Processes		V _[-front] (/a/, /u/)	V _[+front] (/i/)
Wolff (1972)	Phonological	<i>-l-</i> deletion	✓	✗
	Morphological	<i>-l- ~ -an/un</i> construction	✓	✓
Online dictionary	Phonological	<i>-l-</i> deletion	✓	✗
	Morphological	<i>-l- ~ -an/un</i> construction	✓	✗

The *-l-* deletion is still an ongoing phonological process in Cebuano. The morphological process in the *-l- ~ -an/un* construction gradually becomes less productive, and finally, the construction is not applicable to roots with the vowel *i*. As for roots with vowels *a* and *u*, this construction is also less pervasive. Only a few lexical items preserve the construction in the online dictionary.²³

7. Conclusion

In summary, this paper has reexamined phonological processes in Cebuano, focusing on the *-l- ~ -an/un* construction. This paper has investigated the phenomena based on a dataset with 59 examples. First, simple affixation, *-an/un*, and complex affixation, *-l- ~ -an/un* construction, are distinguished. The results have suggested that stress shift and affixation are significantly different. In the affixed forms, stress falls on the final syllable in simple affixation, while stress falls on the penultimate syllable in complex affixation. In addition, the results have also suggested that there are three types of stress shift: (a) no shift, (b) leftward shift, and (c) rightward shift. This paper has also discussed the relationship of stress shift and types of affixes. The results have revealed that there is a difference between nominal and non-nominal affixation in the stress assignment.

According to the distribution in the dataset, this paper has proposed four OT constraints, RIGHTMOST, TROCHEE, IAMB, and *STRESSSHIFT in two rankings for the stress shift in Cebuano: RIGHTMOST » IAMB » TROCHEE » *STRESSSHIFT for penultimate stress in the outputs and RIGHTMOST » TROCHEE » IAMB » *STRESSSHIFT for final stress in the outputs. From an Optimality-theoretic perspective, both IAMB and TROCHEE play a role in determining the stress in Cebuano phonology, but they are simply ranked differently in a grammar.

In the *-l- ~ -an/un* construction, the echo vowels, *a* and *u*, create an environment for intervocalic *-l-* deletion. A look into the contemporary uses of the roots in the dataset has suggested that this construction has become less productive. Several attestations have been found in roots with vowels *a* and *u*. Roots with the vowel *i* do not appear in this construction. The deletion process in the *-l- ~ -an/un* construction needs a longer time.

²³ It seems that *-l-* deletion does not take place in *-l- ~ -an/un* construction. The reason is that if the intervocalic *-l-* is deleted, there is a long vowel *-a:-* or *-u:-*, which attracts stress. For example, *buhi* ‘alive’ in *-l- ~ -an/un* is *buluhion*. If *-l-* is deleted, it becomes *buuhion*. The stress would fall on *buu*, namely, the antepenultimate syllable. It is less likely to have the antepenultimate stress because this position is least favored in Cebuano (Lin 2017).

There are, however, more constructions like the *-l- ~ -an/un* construction in Cebuano. For example, there are similar complex constructions in Wolff (1972), such as *-in- ~ -ay* for *sinumbagáy* ‘fisticuffs’ (< *súmbag* ‘strike with the fist, box’) and *-in- ~ -an* for *binuhátan* ‘deeds performed’ (< *búhat* ‘do, do work’). Whether these constructions produce similar patterns of stress shift is not answered in this paper. This issue requires future research.

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