NASALIZATION IN BALINESE VERBS

PENASALAN VERBA BAHASA BALI

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Abstract

Balinese has two forms in relation to nasal prefixes. First, the initial segment of the verb root can be assimilated with the homorganic nasal and both coalesce. Second, the nasal prefix still assimilates with the first segment of the verb root but forms a CC cluster. The data source of this study is Balinese dictionaries and analyzed by Optimality Theoretic (OT) so it was found that the affix nasal did not form a cluster with the first segment of the verb root uniformly occurred in verbs where the first segment is obstruent both voiced and voiceless while the one forming the cluster is the first segment of a verb root which is realized by a sonorant. The first phenomenon can be handled by the constraint * NC (obs) while the second one by violates linearity constraint, namely, Align-L (root) constraint. OT analysis also predicts that the ungrammaticality of an output verb structure *ngmaang* 'to give' due to fact that the correct underlying form *baang* is confused with its corresponding surface form.

Keywords: nasalization, obstruent, sonorant, OT analysis

Abstrak

*Bahasa Bali mempunyai dua bentuk dalam kaitannya dengan prefix nasal. Pertama, segmen awal dari akar verba bisa berasimilasi dengan nasal yang homorganik dan keduanya berkoalisi. Kedua, nasal prefiks masih berasimilasi dengan segmen pertama akar verba, tetapi membentuk klaster CC. Sumber data penelitian ini adalah Kamus Bahasa Bali dan dianalisis dengan Optimality Theoretic (OT) sehingga didapatkan bahwa nasal afiks yang tidak membentuk klaster dengan segmen pertama akar verba secara seragam hanya terjadi pada verba yang mana segmen pertamanya adalah obstruent, baik bersuara maupun tak bersuara sedangkan yang membentuk klaster adalah segmen pertama verba yang direalisasikan oleh segmen bertipe sonorant. Yang pertama bisa ditangani oleh konstrein *NC (obs), sedangkan yang kedua adalah secara jelas melangggar konstrein linieritas, yaitu Align-L (root). Analisis OT juga memprediksi ketidakgramatikalan bentuk-output verba ngmaang 'memberi' yang bentuk dasarnya yang benar adalah baang dikacaukan dengan bentuk output-nya.*

Kata kunci: penasalan, hambatan, sonoran, Analisis OT

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INTRODUCTION

Balinese, which belongs to sub-group of western Austronesian, is most extensively studied language especially in the area of syntax (see for example (Artawa, 1994); (Arka, 2003); (Udayana, 2013)). Investigation into its phonology however is not much done. The present study focuses on the nasalization of Balinese verb, before coming to its account, in what follows, a general overview about Balinese is discussed.

Balinese, is spoken by around three million people, mainly on the island of Bali and the neighboring island of Nusa Penida, but outside Bali and Nusa Penida it is also widely spoken in the western part of Lombok Island and in transmigration areas (in other parts of Indonesia) such as southern part of Sumatera and Sulawesi. Balinese verbs are mainly divided into transitive and intransitive types (Arka, 2003). The first type, its prefix is always realized by *N* prefix. For example *ngeʤuk* ‘to arrest’(<*eʤuk*) , *ngopi* ‘to drink coffee’. (<*kopi*). (The symbol < used here means ‘derived from’). The second type which is used in intransitive falls into five subtypes. They are: the bare intransitive, the nasal intransitive, the *me*- transitive, the *meN* intransitive, and the reduplicated transitive. Intransitive morphology in data 1. Bare: e.g. *ulung* ‘to fall down’, *teka* ‘to come’. With N prefix : e.g. *negak* ‘sit’ <*tegak*); *nyongkok* ‘to squat’ (<jongkok). With *me*-prefix: e.g. *mekaad* ‘to go, to leave’ (<kaad); *melincer* ‘to spin’ (<*lincer*). With *meN* –prefix: e.g. *memules* ‘to pretend to sleep’ (<pules ‘sleep’). Reduplicated: e.g. *kecog-kecog* ‘to jump repeatedly’ (<*kecog*); *angguk–angguk* ‘to nod repeatedly’ (<*angguk*).

Balinese has speech levels. Its lexicons can generally be classified into high and low register. The verb morphology of the two registers is the same. For example, low register (l.r) verbs with N-prefix such as the verb *meli* ‘to buy’ also has N- prefix in its high register (h.r.) counterpart i.e. *numbas*; and the h.r. counterpart of the l.r. verb *ngopi* ‘drink coffee’ is *ngwedang*. The same is true with zero prefix/ bare verbs, the corresponding h.r verb of l.r. verb *teka* ‘come’, for example, also has zero prefix, i.e. *rauh*.

Balinese has six vowels: /a/, /e/, /i/, /o/, /u/, and /ə/. In some dialects of Balinese, a schwa is often epenthesis in CC clusters. We analyze the NC clusters (the sequence of N plus Obstruent and N plus sonorant (glide and nasal)). Thus, both the data from Balinese with schwa and without schwa epenthesis will be taken into account.

Balinese consonant inventory is presented in Tableau 1 which illustrates that Balinese has three kinds of stops: bilabial, alveolar, and velar stops. It only has one glottal fricative, /h/, and one voiceless alveolar fricative, /s/. However, if the other fricatives such as /f/ and / v/ are found, they are due to borrowings. Retroflex sound (precisely voiceless retroflex stop ʈ) is also available in Balinese. However, its use is allophonic in nature, i.e. it is commonly in complementary distribution with [t] when it is used word-medially. In addition, it has both voiceless and voiced alveolar affricate, /ʧ/ and /ʤ/. It also has central approximant /w, j, and r/, lateral approximant /l/, and a trill.

Table 1 Consonant Inventory of Balinese

	Bilabial		Alveolar		Retroflex		Palatal		Velar		Glottal	
Plosive	p	b	t	d	ʈ				k	g		
Nasal	m		n	d			ɲ			ŋ		
Fricative			s								h	
Affricative			ʧ	ʤ								
Central approximant		w		r				j				
Lateral approximant				l								

METHOD

The data for this paper is mostly taken from two Balinese dictionaries. The first one is entitled Kamus Bali-Indonesia Beraksara Latin dan Bali ‘Balinese-Indonesian Dictionary with Latin and Balinese Script (2014) published by Badan Pembina Bahasa, Aksara, dan Sastra Provinsi Bali’ Balinese Language and Literature Development Agency of Bali Province. The second one is entitled *Kamus Bahasa Bali (Bali-Indonesia, Indonesia-Bali)* (Anandakusuma, 1986) published by CV Kayumas Agung Denpasar. Although I am a Balinese speaker myself, to capture the properties and behavior of the Balinese verbs, I also consulted to other Balinese to have their native judgment of the data used here.

Optimality Theory (OT) was developed in the early 1990s by Prince and Smolensky. It first emerged in the field of phonology but in line with its development now it is also put into practice within other areas of linguistics including syntax, semantics, and pragmatics (Benz & Mattausch, 2011). Its development in phonology stemmed from the weaknesses seen in the generative phonology which employed a rewrite rule like that found in syntax. The obvious problem confronted by rewrite rule as found in SPE (Sound Pattern of English) book written by Chomsky and Halle in 1968 (the theory then called SPE phonology) is the analysis of phonological processes involving phonological conspiracies, which instead can be handled by OT framework (McCarthy, 2008). Although OT theoretic analysis and SPE have one thing in common in that they both belong to generative grammar, the former is deemed to be more powerful than the latter in accounting for phonological problems. The heart of the OT-based phonological analysis is associated with input-output mechanisms by employing constraints. The main claim of the OT framework is that all constraints are universal and they are said to be universally present in all languages (McCarthy, 2002; Price & Smolensky, 2004). Although a particular constraint can be language particular, it remains to be violable. The nature of the violation thus can be different from language to language. The ultimate working procedure of the OT theoretic accounts is that the constraints of every output candidate are ranked and the output candidate that has the least violation indicates the correct or optimal output, thereby serving as the victor or the correct structure.

The main constraints used in this paper are as follows. First, Align-L (root). The left edge of the root coincides with the left edge of the PrWd. This constraint is used to handle the verbal affix when the verb root's initial syllable is open (monosyllabic) and when the root of the word starts with a glide. Second, *NC (obs). No Nasal plus obstruent sequences. This constraint is needed to disallow the sequence of nasal prefix and the root of the verb which starts with a glide. Third, uniformity-IO. Output may not have multiple correspondence in input. This constraint is needed to disallow the sequence of the nasal prefix with the root of the verb which begins with an obstruent. Fourth, DEP-IO (seg). Output segments must have input correspondence. This constraint is against epenthesis. Fifth, MAX-IO (seg). Input segment must have output correspondence. This constraint is against deletion. Sixth, Ident-IO (nasal). Correspondents in input and output have identical values (for nasal). Seventh, Linearity-IO. The output reflects the precedence structure of the input, and vice versa.

FINDING AND DISCUSSION

In this paper, nasalization in Balinese verbs will be comprehensively discussed. More importantly, the analysis focuses on whether a nasal segment and the initial segment of a verb root can form a cluster. There are specifically two kinds of segment that begin a verb root in Balinese, an obstruent and a sonorant. In what follows, the former will be analyzed and then followed by the latter, the nasal-sonorant cluster. In addition, I wish to also have a look at the common mistake often found in Balinese having to do with verbal formation which inherently shows the incorrect input-output mechanism.

N+ Obstruent

Obstruents which include oral stops, affricates, and fricatives (Jacobs & Gussenhoven, 2017), occur in verbs with *N*- prefix in Balinese. (*N* here indicates that a nasal that has not been specified for its place of articulation). Consider the following examples:

Data 1

a. /N+ʧan.tɔk/ ⟶ nyantok 'to stir'
b. /N+guluŋ/ ⟶ ngulung 'to fold'
c. /N+ sampat/ ⟶ nyampat 'to sweep'
d. /N+bagi/ ⟶ magi 'to divide'
e. /N+kopi/⟶ ngopi (l.r) 'to drink coffee'
f. /N+depin/ ⟶ nepin 'to leave'
g. /N+tanem/ ⟶ nanem 'to plant'

It is noted that the verb roots in Data (1) all start with an obstruent (voiced and voiceless), and the nasal-obstruent cluster in the input does not appear in the output. This phenomenon is referred to as fusion or coalescence yielding nasal substitution (Kager, 1999; Pater, 1995). The word *tanem* 'plant' /N+tanem/, for example, which becomes *nanem* on the surface, can be described in the following diagram.

Data 2

Input N_1 t_2

\ /

Output $n_{1,2}$

As has been noted, it is very important in the OT architecture that the analysis is based on the input-output representation. The input reflects a lexicon that exists in the language. That is, a lexical item that must be found in the dictionary of a language (often it enters into the lexical entry of a dictionary). The output on the other hand indicates the result that obtains or comes about after the phonological process undergone by the input which might not appear in lexical entry in a dictionary. In the input-output correspondence that is illustrated in Data (2) relates to coalescence where two sound segments with different features merge resulting in the occurrence of a sound change where a pair of input segments has its single output correspondence.

As a result of the coalescence, an alignment is formed between the edge of the root and the edge of a prosodic word whose unmarked form relates to a morphological word (Schiering, Bickel, & A.Hildebrandt, 2010; Trask, 1996). Alignment having to do with the prosodic word of this sort is also a common phenomenon in other Austronesian languages such as Javanese (Oakes, 2009) and Madurese (Davies, 2010). This alignment constraint can be stated as in Data (3).

Data 3

Align-L (Root)

The left edge of the Root coincides with the left edge of the prosodic word (PrWd).

In order for the Align-L (Root) to apply, we need another constraint which militates against this alignment constraint. This can be shown by the faithfulness constraint of Uniformity-IO presented in Data (4).

Data 4

Uniformity -IO

Output may not have multiple correspondences in input (Kager, 1999).

Tableau 1 shows that UNIF-IO is ranked below the Align-L (root) constraint. The failed candidate (b) violates Align-L (root) since it does not coincide with the prosodic word. In contrast, the optimal candidate (a) forms an alignment with the prosodic word thus satisfying the Align-L (root) constraint at the expense of violating the UNIF-IO constraint.

Tableau 1 Align-L (Root) >> UNIF-IO

/N_1+$tʃ_2$antɔk/	Align-L (Root)	Unif-IO
☞ a. $ɲ_{1,2}$ an.tɔk		*
b.ɲtʃan.tɔk	*!	

With respect to the example data above, what is clear is that they involve the constraint prohibiting the sequence of nasal plus obstruent. Thus, the sequence constitutes the marked form, the form which needs to be avoided (de Lacy, 2006). Like the ranking shown in Tableau 1, we will show that we need an output associated with the violation of a faithful constraint. First, let us deal with the first constraint. In giving his account to the nasalization of the Indonesian verbs, Pater adopts the following constraint.

Data 5

*NC̥

No n̊asal/ voiceless obstruent sequences (Pater, 1995, 2004).

The constraint as is shown in the definition is applied to a cluster that disallows a combination of nasal and voiceless obstruents (marked by the C which gets a ring diacritic below the consonant). Note that, unlike Indonesian, the Balinese data show that coalescence does not only apply to voiceless obstruents but also to voiced obstruents. Thus, we need to slightly modify the constraint in Data (5) to allow both voiced and voiceless obstruents. Thus, in the constraint above, the ring diacritic needs to be removed. However, with the removal of the symbol, the problem still persists in that the symbol C now might apply to sonorants not only to obstruents due to the fact that sonorants can be in the form of a consonant; thus the C is specified with obs to indicate that it is solely associated with obstruents. The constraint that has been specified in Data (5) now looks like Data (6).

Data 6
***NC (obs)**
No Nasal plus obstruent sequences.

With this constraint in mind, we need another constraint to prove *NC (obs) operates. Pater (1995, 2004) makes it clear that fusion or coalescence only is not automatically operational to determine the confirmation of the correct phonological process. In other words, this means that it needs at least one constraint violation to guarantee that the constraint *NC (obs) can work optimally to capture its superiority over the other constraint.

Another possible violation that can be linked to coalescence is the interaction between *nc constraint and unif-io, that is, considering the order that holds between the nasal segment and the root segment as exemplified in data (2). The coalesced segment, on the one hand, respects the *nc (obs) constraint. However, it contravenes the unif-io constraint suggesting that *nc (obs) is ranked above unif-io as shown in Tableau 2.

Tableau 2 *NC (obs) >> UNIF-IO

/N$_1$+ʧ$_2$antɔk/	*NC (obs)	Unif-IO
☝ a. ɲ $_{1,2}$ an.tɔk		*
b. ɲ$_1$ʧ$_2$an.tɔk	*!	

Hauser & Hughto (2018) point out in their analysis on Bedouin Arabic that faithfulness constraints help to resolve the opacity of the phonological processes. With respect to the ban of the impossible combination of a nasal and an obstruent in Balinese, the resulting structure crucially involves segment linearity, which ultimately contravenes a faithfulness constraint having to do with input-output correspondence (Kager, 1999; Pater, 1995, 2004). In fact, as Kager (1999) notes that linearity constraint is thought of as more workable than the UNIF-IO constraint for the reason that linearity as will be shown must also take into account that it only applies to a word initial position not word medially. In Data (2), we can notice that difference in underlying and the surface representations. That is, the linearity of the input segment is different from that of the output. This is an instance of constraint of linearity, which is statable as in Data (7).

Data 7
Linearity-IO
The output reflects the precedence structure of the input, and vice versa (Kager, 1999).

In accounting for coalescence in Balinese verbs, as shown by the same phenomenon in Indonesian, *NC (obs) needs to be ranked lower than Lin-IO. This stands to reason that the faithful candidate (b) is not as harmonic as that of the coalesced one (Kager, 1999). Thus, the Lin-IO constraint is the winner as presented in Tableau 3. In addition to this, the suboptimal candidate (b) is ruled out as it fatally violates, marked by (!). The optimal candidate (a) eschews this violation at the expense of violating the lower-ranked *NC (obs). This violation is, however, not significant since the winner has already been determined. As suggested in Optimality Theory, once a winner emerges, the remaining lower ranked constraint becomes irrelevant whether the sole surviving candidate obeys it or not, it does not affect its grammaticality.

Tableau 3: *NC (obs) >> LIN-IO

/N_1+d_2əpin/	*NC (obs)	LIN-IO
☞. a. $n_{1,2}$əpin		*
b.*n_1d_2əpin	*!	

The *NC (obs) constraint has to be noted that it only occurs in the initial segment where the initial segment of the root is substituted by the segment that occurs in an identical environment with the place of articulation of the nasal affix. It does not however occur in the medial position of the root, as shown in Data (8).

Data 8

a. e$n_1d_2$ep 'low' → endep
*en_{12}ep
b. a$m_1p_2$ak 'to open' → ampak
*am_{12}ak
c. sa$m_1b_2$el 'spice' → sambel
*sam_{12}el

Confirming the data fact shown in Data (8), the phonological process of *endep* 'low', for example, can be illustrated as in Tableau (4) in which the *NC (obs) constraint needs to be placed higher in rank than MAX-IO (seg) and DEP I-O (seg).

Tableau 4 MAX I-O (seg), DEP I-O (seg) >> *NC (obs)

/endep/	MAX I-O (seg)	DEP I-O (seg)	*NC(obs)
☞ a. e$n_1d_2$ep			*
b. $e_1d_2$ep	*!		
c. en_1ə$d_2$ep		*!	
d. en_{12}ep	*!		

In addition, related to linearity condition imposed on the affixation process of the Balinese verb whose root begins with a sonorant, Tableau (2) can now be alternatively depicted as in Tableau (5) to especially show that (c) is not harmonic either with respect to the condition.

Tableau 5 *NC (obs), DEP I-O (seg) >> LIN I-O

/N_1+$ʧ_2$antək/	*NC (obs)	DEP I-O (seg)	LIN-IO
☞ a. $ɲ_{1,2}$ antək			*
b. $ɲ_1ʧ_2$antək	*!		
c. $ɲ_1$ə$ʧ_2$antək		*!	

N+ Sonorant

For the rest of the data, sonorant is analyzed. According to Carr (1993), sonorant includes nasal stops, liquids, and glides. In Balinese, all sonorants can co-occur with nasal prefix as shown in the following examples.

Data 9

a. /N+jadɲa/ → ngyadnya 'to sacrifice'
b. /N+ləmpag/ → nglempag 'to hit'
c. /N+wedaŋ/ → ngwedang'to drink coffee'
d. /N+ramug/ → ngramug 'to make trouble'
e. /N+maliŋ/ → ngmaling 'to steal'
f. /N+alap/ → ngalap 'to pick'
g. /N+ əʤuk/ → ngejuk 'to arrest'

The *NC constraint above stipulates that a sequence of nasal and obstruent is prohibited. This is marked by the fact that when a nasal is followed by an obstruent (voiced and voiceless), the latter is deleted leaving its place of its articulation in the nasal. However, as noticed in Data (9), all of the words containing sonorants do not undergo nasal substitution at all. It is interesting to note that by the application of *NC (obs) constraint in the language implies that the NC cluster in which C is filled with a sonorant is allowable. Thus, there is no motivation in handling nasal-sonorant cluster with *NC (obs) constraint.

With the fact that no coalescence or fusion occurring but the nasal prefix and the first segment of the verb root. The obvious violation that comes into play is the alignment constraint, Align-L (Root). This situation makes both the nasal segment and the root segment preserved in the output affecting the alignment between the root and the edge of the prosodic word. To make this constraint operable, the Ident-IO (nasal) constraint is adopted and this constraint is ranked higher than Align-L (Root). Ident-IO

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constraint is formally defined as follows.

Data 10
Ident-IO (nasal)
Correspondents in input and output have identical values for (nasal) (Kager, 1999).

Tableau 6 shows that candidate (a) which preserves the nasal-sonorant cluster in the output beats candidate (b) which loses its nasal. However, the former violates the alignment constraint. This still makes the Align-L (Root) ranked below the Ident-IO (nasal) constraint because the latter is more harmonic than the former.

Tableau 6 Ident-IO (nasal) >> Align-L (Root)

/N+ramug/	Ident-IO (nasal)	Align-L (Root)
☞. a. ŋramug		*
b.*ramug	*!	

What is interesting with Balinese pertaining to nasal sonorant combination is that this combination not only uniformly occurs in word-initial position but also in the word-medial position. Thus, needless to say, the other segment position representing the word final position is not available in Balinese. What is also of interest here is that the immediate consequence of epenthesis that occur word medially adds the number of syllables in the word under consideration as illustrated in Data (11).

Data 11
a. ancruk 'beetle caterpillar'
an.cruk → an.ce.ruk
b. plaspas 'to sanctify'
plas.pas → pe.las.pas
c. astra 'weapon'
as.tra → as.te.ra

This phenomenon is also strongly supported by the fact that foreign words can commonly gain their currency in the language after they have schwa epenthesis. The evidence comes from words or lexicons borrowed from English. For example English words such as *glass, cream, and class* are realized as [gəlas], [kərim], and [kəlas] respectively

To comply with this state of affairs, the nasal-sonorant cluster, in all dialects of Balinese, can also have a schwa epenthesis. The relevant examples can be seen in Data (9) rewritten here as Data (12).

Data 12
a. /N+jadɲa / → ngeyadnya 'to sacrifice'
b. /N+ləmpag/→ ngelempag 'to hit'
c. /N+wedaŋ/ → ngewedang 'to drink coffee'
d. /N+ramug/ → ngeramug 'to make trouble'
e. /N+maliŋ/ → ngemaling 'to steal'

Now let us come to the OT analysis relevant to epenthesis. Epenthesis is associated with the violation of faithfulness constraint (Kager, 1999). The output does not correspond with the input by the occurrence of an epenthetic segment. The faithfulness constraint that violates epenthesis is DEPENDENCY-IO which is commonly abbreviated as DEP-IO is formally defined as follows.

Data 13
DEP-IO (seg)
Output segments must have input correspondence. ('No epenthesis') (Kager, 1999).

Like epenthesis, deletion involves faithfulness constraint. The constraint linked to deletion is MAXIMALITY-IO (MAX-IO) which demands that all the input segments must appear on the surface. This constrain is formally stated as in Data (14).

Data 14
MAX-IO (seg)
Input segment must have output correspondence. ('No deletion') (Kager, 1999)

What is important with the verb root that begins with a sonorant is that the derived verb does not coalesce with the affix leading to the situation that the constraint associated with epenthesis ranks higher than the faithful constraint (Féry & van de Vijver, 2003) as seen in Tableau (7).

Tableau 7 MAX-IO (seg) >> DEP –IO

/N+wedaŋ/	MAX-IO(seg)	DEP-IO (seg)
☞ a. ŋəwedaŋ		*
b. *wedaŋ	*!	

On a close examination, the situation also holds that the first segment of the verb root does not align with prosodic word (i.e. the verb form after undergoing the affixation process). Alternatively, the analysis in Tableau (7) can now be made as the one depicted in Tableau (8) in which the Align-L (root) is positioned as the highest constraint.

Tableau 8 Ident-IO (nasal) >> Align-L (root)

/N+wedaŋ/	Ident-IO (nasal)	Align-L (root)
☞ a. ŋəwedaŋ		*
b. *wedaŋ	*!	

The immediate consequence of the epenthesis that occur in the structure involving the nasal-sonorant cluster, like the epenthesis in nouns, illustrated in Data (11), also affect the number of syllables of the resultant lexicons as shown in Data (15).

Data 15

a. ŋramug 'to make trouble'
ngra.mug ⟶ nge.ra.mug
b. ŋwedang 'to drink coffee'
ngwe.dang ⟶ nge.we.dang

As pointed out by (Gouskova, Oostendorp, Ewen, & Hume, 2013; Kumagai, 2017; McCarthy, 2008) phonological analysis, both in generative phonology framework and OT-based phonology theorizing, involves a mechanism called conspiracy. That is a number of rules conspire to achieve a situation such that a certain structure cannot surface in the language. For instance, we have seen above with Balinese data that an obstruent cannot combine with a nasal, as shown in Data (16). On the other hand, a sonorant can do so. Recall that a verb that begins with a segment realized by a sonorant having the features nasal stop /m/ combines with a nasal on the surface, as illustrated in Data (17).

Data 16

(a) bakta (h.r.) 'to carry' ⟶ makta
*ngbakta
(b) beleh 'to swalow' ⟶ meleh
*ngbeleh
(c) beli 'to buy' ⟶ meli
*ngbeli

Data 17

a. matiang 'to make sb die' ⟶ ngmatiang
b. margiang 'make sth. go (h.r.)' ⟶ ngmargiang
c. mem 'soak' ⟶ ngmem
d. mu 'suck on' ⟶ ngmu

It has been argued above that a lexical item has its lexical entry in a dictionary. With respect to verbs, the ones that appear in the lexical entry is the base form. That is the word that has not undergone a derivation or an inflectional process in the language. With the verb *maang* there is no basic verb as such found in the lexical entry of Balinese dictionary instead *baang* is available meaning that the form *maang* is an output form.

Data 18

a. *maang ⟶ ngmaang
b. baang ⟶ maang

With the two pairs, the OT analysis predicts that the correct one points to (b) rather than to (a) due to the fact that only (b) exhibits the input-output correspondence correctly in comparison to (b) confirming that (a) is ungrammatical, again, in the sense of its phonological processes. However, given that the input is correct, we are strongly committed to arguing that *ngmaang* is not the correct output as sketched in Tableau (9), which shows that candidate (a) is the winner. It suffices to employ only two constraints to account for determining the optimal candidate of the output, *NC (obs) and LIN –IO. Although each of the candidates only violates one constraint, the output (a) remains to be the winner due to the fact that output (b) and (c) have a fatal violation (marked by the symbol! next to the ungrammatical symbol).

Tableau 9 *NC (obs) >> LIN-IO

/N_1+$b_2$aang/	*NC(obs)	LIN-IO
☞. a. $m_{1,2}$aang		*
b.*$m_1b_2$aang	*!	
c. *ŋmaang	*!	

This instance of ungrammaticality is comparable with the Indonesian example as shown in the following data.

Data 19

a. ubah ‘to change’ → mengubah
b. *rubah ‘to change’ → merubah

In (19a), the underlying structure exists in the lexical entry of the (standard Indonesian) dictionary and the output is predictably correct as it constitutes a universal property that the nasal-affix *meN-* must assimilate with a vowel sound. However, (19b) represents the wrong selection of the underlying structure as there is no such a verbal form in Indonesian and the correct lexical category that can be assigned to the word is a noun. Therefore (19b) is obviously an error. Like the similar case in Balinese as illustrated in Data (18), even though *merubah* is assumed to be derived from the underlying form *ubah*, the result of the derivation remains to be incorrect as shown in Tableau (10). We have shown that the nasalization of the Indonesian verbs is similar to that of the Balinese verbs in that the markedness constraint can apply in a certain phonological process of *memilih* ‘choose’ and the combination of sonorant and nasal is also allowable. However, with respect to the underlying form *ubah* ‘change’, the *NC (obs) serves as the markedness constraint that controls the possible occurrences of the output (b) and (c). However, *merubah* and *meubah* are not harmonic as they all violate the faithfulness constraints (Ident-IO, Align L root and Max-IO) resulting in the ungrammaticality of the two structures.

Tableau 10: Ident-IO (nasal), Align-L (root) >> *NC (obs)

/meN+ubah/	Ident-IO (nasal)	Align-L (root)	MAX-IO	*NC (obs)
☞. a. meŋubah				*
b. merubah	*!	*	*	
c. meubah	*	*	*	

What is worthy of a note here is the idea of ungrammaticality related to the candidates (b) and (c), although the OT phonological analysis is constraint-based. (Complex) conspiracies that obtain in the phonological process might confuse the speakers of the language in question and more importantly children with a phonological delay who tend to make an error (Dinnsen, Gierut, Morrisette, & Rose, 2014).

CONCLUSION

This paper has demonstrated that there are a number of significant differences between Balinese verbs that start with an obstruent and those that start with a sonorant with respect to nasalization. In the former case, the first segment of the verb root coalesces with the nasal prefix N while in the latter case, the first segment of the verb root does not fuse with the nasal prefix. Another interesting point with respect to verbal affixation is that Balinese verb may avoid CCV initial syllable. Thus, it must be shifted to CV. As a consequence, epenthesis must occur, which is filled with a schwa. With respect to obstruent-sonorant distinction, it has been shown that there are two competing forms of the verb meaning ‘to give’ *baang* and *maang* in which the latter is thought of as the alternative form of the former as the underlying form, it was found out that the former is the true underlying form. The source of the problem may have to do with phonological conspiracies; there are a number of (phonological) rules that conspire to derive a correct structure in a language. In other languages, this phenomenon is evidenced from children with a phonological delay. Whether this is also true in Indonesian or in Balinese, it remains to be investigated, which points to future research.

REFERENCES

Anandakusuma, S. R. (1986). *Kamus Bahasa Bali (Bali-Indonesia, Indonesia-Bali)*. Denpasar: CV Kayumas Agung.

Anonymous. (2014). *Kamus Bali-Indonesia Beraksara Latin dan Bali 'Balinese-Indonesian Dictionary with Latin and Balinese Script*. Denpasar: Badan Pembina Bahasa, Aksara, dan Sastra Provinsi Bali' Balinese Language and Literature Development Agency of Bali Province.

Arka, I. W. (2003). *Balinese Morphosyntax: A Lexical Functional Approach*. Canberra: Research School of Pacific and Asian Studies, The Australian National University.

Artawa, K. (1994). *Ergativity and Balinese Syntax*. Melbourne: La Trobe University Dissertation.

Benz, A., & Mattausch, J. (2011). *Bidirectional Optimality Theory*. Amsterdam: John Benjamin Publishing Company.

Davies, W. D. (2010). *A Grammar of Madurese*. Berlin: Mouton de Gruyter.

de Lacy, P. (2006). *Markedness: Reduction and Preservation in Phonology*. Cambridge: Cambridge University Press.

Dinnsen, D. A., Gierut, J. A., Morrisette, M. L., & Rose, D. E. (2014). *Unraveling phonological conspiracies : A case study*. *28*(August), 463–476. https://doi.org/10.3109/02699206.2014.926996

Féry, C., & van de Vijver, R. (2003). *The Syllable in Optimality Theory*. Cambridge: Cambridge University Press.

Gouskova, M., Oostendorp, M. Van, Ewen, C. J., & Hume, E. (2013). *Marc van Oostendorp , Colin J . Ewen , Elizabeth Hume and Keren Rice (eds .) (2011). The Blackwell companion to phonology . Malden , Mass .: Wiley- Blackwell . Pp . xxxiii + 3106*. (May), 173–179. https://doi.org/10.1017/S0952675713000079

Hauser, I., & Hughto, C. (2018). *Faithfulness based opacity in Harmonic Serialism*.

Jacobs, H. M. G. ., & Gussenhoven, C. (2017). *Understanding Phonology* (4th ed.). London: Routledge.

Kager, R. (1999). *Optimality Theory*. Cambridge: Cambridge University Press.

Kumagai, G. (2017). *Cumulative Faithfulness Effect in Māori Loanword Adaptation : The Case of Repair for Consonant Clusters*. 77–84.

McCarthy, J. . (2002). *A Thematic Guide to Optimality Theory*. Cambridge: Cambridge University Press.

McCarthy, J. J. (2008). *Doing Optimality Theory: Applying Theory to Data*. Oxford: Blackwell Publishing.

Oakes, M. P. (2009). Javanese. In B. Comrie (Ed.), *The World's Major Languages* (2nd ed.). London: Routledge.

Pater, J. (1995). Austronesian Nasal Substitution and other NC Effects. *ROA*, 160–1196.

Pater, J. (2004). Austronesian National Substitution Effect and Other NC Effects. In John J. McCarthy (Ed.), *Optimality Theory in Phonology: A Reader*. Oxford: Blackwell Publishing.

Price, A., & Smolensky, P. (2004). *Optimality Theory Constraint Interaction in Generative Grammar*. Oxford: Blackwell Publishing.

Schiering, R., Bickel, B., & A.Hildebrandt, K. (2010). The Prosodic word is not universal, but emergent. *Journal of Linguistics*, *46*(3), 657–709.

Trask, R. L. (1996). *A Dictionary of Phonetics and Phonology*. London: Routledge.

Udayana, I. N. (2013). *Voice and Reflexives in Balinese*. Austin: University of Texat at Austin Dissertation.