

TREATING DUTCH LOANWORDS IN INDONESIAN AS TRUNCATION: A PROSODIC MORPHOLOGY APPROACH

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Abstract

This paper aims to analyze the process of loanword adaptation in Indonesian, focusing specifically on those with foreign suffixes and treating this phenomenon as a truncation process. Traditionally, Indonesian loanwords have been analyzed as undergoing a regular phonological process, as they often involve only a single segmental change. However, in some instances, the changes involve more than one segment, which challenges the explanatory power of the regular phonological approach. Since this approach can account only for single-segment changes, it proves inadequate in such cases. To address this issue, we propose analyzing these loanwords as a syllable truncation, in which foreign suffixes are truncated and replaced with Indonesian suffixes. The loanwords examined in this study are derived from Dutch and were retrieved from the *Kamus Besar Bahasa Indonesia* (KBBI). The study finds that the Indonesian suffix /tas/ actually replaces the Dutch suffix /-teit/. Truncation, in this context, is treated as a form of reduplication, wherein only the root word is copied into the reduplicative morpheme, following the constraint $BASE \neq RED$. Importantly, only the reduplicative morpheme needs to appear in the output, followed by the /tas/ suffix. To account for this pattern, the constraints OCP(X) and ALIGN-PROSODIC-STEM are employed in the analysis. This study thus views Indonesian loanwords as undergoing phonological changes of entire syllables rather than individual segments. Furthermore, it treats truncation as a form of reduplication, suggesting a strong relationship between the two processes as interconnected aspects of prosodic morphology.

Keywords: Loanwords, phonological processes, prosodic morphology, truncation, reduplication

Abstrak

Makalah ini bertujuan untuk menganalisis proses adaptasi kata serapan dalam bahasa Indonesia, dengan fokus pada kata serapan yang memiliki sufiks asing, serta memperlakukan fenomena ini sebagai proses pemotongan. Secara tradisional, kata serapan dalam bahasa Indonesia dianalisis sebagai proses fonologis yang bersifat reguler, karena sering kali hanya melibatkan satu perubahan segmen. Namun, dalam beberapa kasus, perubahan yang terjadi melibatkan lebih dari satu segmen, yang menantang penjelasan dari pendekatan fonologis yang biasa. Karena pendekatan ini hanya dapat menjelaskan perubahan satu segmen, maka pendekatan ini menjadi tidak memadai dalam kasus-kasus tersebut. Untuk mengatasi masalah ini, kami mengusulkan untuk menganalisis kata-kata serapan tersebut sebagai pemotongan silabel, di mana sufiks asing dipotong dan digantikan dengan sufiks bahasa Indonesia. Kata serapan yang dianalisis dalam studi ini berasal dari bahasa Belanda dan diambil dari Kamus Besar Bahasa Indonesia (KBBI). Studi ini menemukan bahwa sufiks bahasa Indonesia /tas/ sebenarnya menggantikan sufiks bahasa Belanda /-teit/. Pemotongan, dalam konteks ini diperlakukan sebagai bentuk reduplikasi, di mana hanya kata dasar yang disalin ke dalam morfem pengulangan, sesuai dengan batasan $BASE \neq RED$. Yang penting,

hanya morfem pengulangan yang perlu muncul dalam output, diikuti oleh sufiks /tas/. Untuk menjelaskan pola ini, digunakan batasan OCP(X) dan ALIGN-PROSODIC-STEM dalam analisis. Dengan demikian, studi ini memandang kata serapan dalam bahasa Indonesia telah mengalami perubahan fonologis pada seluruh silabel, bukan hanya segmen individu. Lebih jauh lagi, pemotongan diperlakukan sebagai bentuk pengulangan, yang menunjukkan adanya hubungan yang erat antara kedua proses tersebut sebagai aspek yang saling terhubung dalam morfologi prosodik.

Kata kunci: Kata serapan, proses fonologis, morfologi prosodik, pemotongan, reduplikasi

INTRODUCTION

Loanwords are a common phenomenon found in most living languages worldwide. Regardless of how ‘modern’ a language may be, it inevitably borrows certain words or other linguistic elements from other languages throughout its history—and will likely continue to do so. No language is so complete as to possess all the necessary vocabulary to discuss every possible topic across the past, present, and future (Lapoliwa, 1982). According to Sarkar (2012), the phonology of loanwords reveals the adaptations employed by native speakers, who rely on their own phonological system to perceive and produce forms originating from another phonological system. Since this process is entirely phonological, loanwords entering a borrowing language from a source language typically undergo structural modifications to conform to the phonological constraints of the borrowing language.

For an extended period, the adaptation of loanwords has primarily been viewed as a regular phonological process. In this process, donor words undergo phonological adjustments to align with the recipient language’s segmental, phonotactic, and suprasegmental constraints, as outlined by Tsvetkov and Dyer (2016). An illustration of this phenomenon can be seen in the introduction of foreign words into Indonesian, resulting in variations in pronunciation, spelling, and, to some extent, phonological description (Lapoliwa, 1982).

(1) Loanwords from Dutch in Indonesian (Zahra and Maslakhah, 2019)

	Dutch	Indonesian
(i)	/a:.ne:.mer/ ‘contractor’	[a.nɛ.mer]
(ii)	/ap.sɛnt/ ‘absent’	[ap.sɛn]
(iii)	/por.sə.lɛin/ ‘porcelain’	[porsɛlɛn]
(iv)	/kap.la:rs/ ‘rubber boot’	[kap.la.res]
(v)	/vər.lof/ ‘leave’	[per.lop]

As we can see in (1) above, all the loanwords listed differ from their original spelling by a segment only (either through epenthesis, deletion, or substitution). In this case, it can be simply solved by phonological process analysis (either through rule-based or constraint-based analysis). It can be seen in the works of Lapoliwa (1982), Hadi, et al. (2003), Fauzi (2005), Zahra and Maslakhah (2019), as well as Gunardi (2020). The examples can be seen in (2) below.

(2) Phonological Process of Indonesian Loanwords (Zahra and Maslakhah, 2019)

	Dutch	Indonesian	Phonological Process
(i)	/a:.ne:.mer/ 'contractor'	[a.nɛ.mer]	apheresis – substitution of [a:] sound at the beginning to [a]
(ii)	/ap.sɛnt/ 'absent'	[ap.sɛn]	apocope – [i] sound at the end was dropped
(iii)	/por.sə.lɛin/ 'porcelain'	[porselɛn]	monophthongization – substitution of [ɛi] sound to [ɛ]
(iv)	/kap.la:rs/ 'rubber boot'	[kap.la.res]	epenthesis – addition of [e] sound at the middle of the word
(v)	/vər.lof/ 'leave'	[per.lop]	sound change – [f] sound to [p]

However, in some cases, loanwords can undergo a complete syllabic transformation to better adapt to the borrowing language, as illustrated in (3) below.

(3) Loanwords from Dutch in Indonesian with a Full Syllable Change (Hasan, 1995)

	Dutch	Indonesian
(i)	/kua.li.teit/ 'quality'	[kua.li.tas]
(ii)	/ak.ti.vi.teit/ 'activity'	[ak.ti.vi.tas]
(iii)	/u.ni.ver.si.teit / 'university'	[u.ni.ver.si.tas]

The examples in (3) illustrated some of Dutch words being loaned into Indonesian. Both Dutch and Indonesian are considered to be a phonetic language. One can look at a written Indonesian word and know how to pronounce it, or one can hear an Indonesian word and know how to spell it (Karlina, Rahman & Chowdhury, 2020). A similar situation occurs also in Dutch. Hence, there is a strong connection between the phonological and morphological structure for both languages.

However, within the Optimality Theory (OT; constraint-based) framework, the full syllabic change instead of segmental caused by the adaptation process here has brought a problem. According to McCarthy and Prince (1986), phonological processes in general cannot refer to arbitrary strings of segments, because they must respect the Locality Principle.

(4) **LOCALITY PRINCIPLE** (McCarthy and Prince, 1986)

A rule may fix on one specified element and examine a structurally adjacent element and no other.

To simplify, phonological processes typically account for up to two segments. Given that the adaptation of the words mentioned in (3) involves more than two segments, their structure must be characterized in terms of another level of linguistic structure. The constant shapes observed in the adaptation process of prosodic morphemes align precisely with well-known prosodic entities, namely the syllable or foot. Traditional phonological processes, however, prove insufficient to describe the adaptation processes outlined in (3). Therefore, we propose a novel

approach to this analysis. Instead of assuming that elements in the base are a string of segments, we define them as a single prosodic constituent—specifically, the syllable. In essence, phonological changes affect the entire syllable rather than a single segment.

In this paper, we attempt to treat the adaptation process of loanwords from Dutch in Indonesian as a truncation process. Truncation, as defined by Benua (1995), is a process that consists of the reduction of a word to one or more of its parts. At the same time, relevant prosodic as well as other phonological aspects of this adaptation process are analyzed, and we provide an alternative, constraint-based approach analysis known as Optimality Theory for this adaptation process. The type of word formation that we will be analyzing in this paper falls under the general heading of Prosodic Morphology. Prosodic Morphology is a theory of how morphological and phonological determinants of linguistic form interact with one another in grammatical systems (McCarthy and Prince, 1986).

The adaptation process of Indonesian loanwords, as illustrated in (3), is indeed prosodically conditioned. The /tas/ suffix is considered to be one of the foreign language absorption affixes to Indonesian (Farras, 2023) and becomes attached to the base after a truncation process has taken place. This claim aligns with the findings of Wiese (2001) and Fleischer and Barz (1995), who have indicated suffixation following the truncation of personal names in German (refer to (4)). Hence, we argue that the adaptation process in (2) should be considered a truncation process. The truncation process discussed here occurs within Dutch words, whereby the non-native suffix /teit/ is truncated and subsequently replaced by the Indonesian foreign affix /tas/. Unlike other Indonesian truncations (such as the one shown in (7)), the truncation of Dutch loanwords is not bound by any size minimality requirement. Words formed after truncation may vary in size, as long as the final syllable /teit/ is removed. We will demonstrate how this truncation in Indonesian loanwords occurs by employing the same tools of analysis that were successfully used by other scholars (Ota, 1998; Wiese, 2001; Syed Jaafar, 2017) to analyze the same process. These tools refer to the constraints under Optimality Theory (OT), a theory relying on the interaction of violable and universal grammatical constraints.

THE CHARACTERISTICS OF DUTCH LOANWORDS

The adaptation process of loanwords in Indonesian is often considered a part of the phonological process. However, as mentioned earlier, certain adaptation processes (refers to (3)) may involve changes to more than one segment. This cannot be addressed by phonological processes alone, as McCarthy and Prince (1986) state that phonological processes can only account for up to two changes. In this paper, we will examine this adaptation process not in terms of individual segments but as a syllable, similar to how it is highlighted in Prosodic Morphology.

Dutch has borrowed many complex words from Greek and Latin, often with French as an intermediate language, and also from French itself (Booij, 2015). Moreover, many English complex words have been borrowed into Dutch. The rise of new word formation schemas involving non-native affixes is additionally supported by the presence of internationalisms, complex words that are found in various forms across the majority of European languages. Booij (2015) has listed several non-native suffixes that exist in Dutch, one of them include /-iteit/. He also mentioned that non-native suffixes only attach to non-native base words. In Indonesian, this suffix is equal to /tas/ which according to Farras (2023), is considered as one of the foreign affixes.

Since the words listed above are non-native Dutch words, why did we use them as a comparison with Indonesian? Why not compare them with the original languages, such as English, Greek, or Latin? To answer this, we have to look back at the history of Indonesia itself. The absorption of Dutch vocabulary into Indonesian occurs due to a process known as language contact. Language contact is the use of more than one language in the same place at the same time (Thomason, 2001). The interaction between these languages can result in various phenomena, including the borrowing of words, phrases, or grammatical structures from one language to another. The language contact that occurred in Indonesia was influenced by the historical situation during the colonial era (Zahra and Malakhah, 2019). Interactions among speakers led to the Indonesian society of that time being able to use the Dutch language. Therefore, a significant number of loanwords from Dutch are found in the Indonesian language. Maier (2005) even argues that loanwords from Dutch amount to 20% of Indonesian lexicon. Although some of the Dutch words are considered as borrowed words, they are still counted as Dutch words when they are loaned into Indonesian. To put it another way, Dutch language borrowed a fair number of words from other language, then Malay-Indonesian borrowed many words from Dutch (Hardini and Granger, 2016). In this paper, we will analyze how some Dutch loanwords are formed through truncation, specifically those that include the suffix /tas/. Before we delve into the OT analysis in this paper, let us review some of the earlier works regarding truncation.

TRUNCATION THROUGHOUT THE LANGUAGES OF THE WORLD

According to McCarthy and Prince (1986), truncation is not referring to a specification of a template to which the melody is directly associated. Words are not being chopped to fit by leaving off prosodic units. Instead, the melodic elements of a word are associated with a template starting at some designated point. Truncation mostly can be found in systems of vocative or nickname formation. However, some languages do enforce a foot/minimal word template, resulting in systematic patterns of shortening input words. Truncation patterns are described in the literature as arising through the truncation of a base word down to a predictable form which can be defined in terms of prosodic categories (Alber and Arndt-Lappe, 2021).

Truncation is similar to partial reduplication, as both processes involve realizing a predictable form filled with material from a base. The main difference between the two word-formation processes is that reduplication usually generates affixes, while the outputs of truncation are freestanding forms (ibid.). Under the framework of Prosodic Morphology, the output form of truncation patterns has traditionally focused on the templatic shape of such forms, which is often taken to be invariant for a given truncation pattern. For example, in German, there is a concept known as *i-formations* or *Kurzwörter* (literally means ‘short words’) where as a word it was truncated and ended with *-i*. The examples in (5) below indicate the *i-formations* in German.

(5) *i*-formation in German (Wiese, 2001)

(a) Personal Names

	Normal Form	Truncated Form
(i)	/ru.dolf/	[ru.di]
(ii)	/an.dreas/	[an.di]
(iii)	/litt.bar.ski/	[lit.ti]
(iv)	/gor.bat.show/	[gor.bi]

(b) Other Formations

	Normal Form	Truncated Form
(i)	/spon.ta.nər/ 'member of a spontaneous faction of a party'	[spon.ti]
(ii)	/pro.fes.si.jo.nel.lər/ 'professional'	[pro.fi]
(iii)	/zo.sia.list/ 'member of a left-wing party'	[zo.si]
(iv)	/ʃaw.fi.nist/ 'chauvinist'	[ʃaw.fi]

Fleischer and Barz (1995) decided to interpret /i/ as a suffix if it is not part of the base. Hence, this type of truncation is characterized by a reduction in material plus the suffix /i/. However, there is a problem regarding this definition. According to Wiese (2001), the supposed suffix does not display the properties otherwise associated with a derivational suffix: neither does the suffix determine the gender of the form, nor does it determine other grammatical features, such as those of word class or those marking the distinction between common nouns and proper nouns. He still interprets /i/ as a suffix but with a hypocoristic (diminutive form of a name) meaning. Name truncation also happens in Malay and Indonesian. However, it is quite simple compared to truncation process in German. The examples in (6) and (7) below indicate name truncation in both languages:

(6) Name Truncation in Malay (Syed Jaafar, 2017)

(a) Personal Names

	Normal Form	Truncated Form
(i)	/saf.wa.na/	[wa.na]
(ii)	/sjaz.wa.na/	[wa.na]
(iii)	/li.lis/	[lis]
(iv)	/sjaz.wan/	[wan]

(b) Terms of Address

	Normal Form	Truncated Form
(i)	/a.jah/ 'father'	[jah]
(ii)	/i.bu/ 'mother'	[bu]
(iii)	/ka.kaʔ/ 'sister'	[kaʔ]
(iv)	/a.baŋ/ 'brother'	[baŋ]

(7) Name Truncation in Indonesian (Cohn, 2003)

(a) Personal Names

	Normal Form	Truncated Form
(i)	/a.gus/	[gus]
(ii)	/bu.tet/	[tet]
(iii)	/gli.son/	[son]
(iv)	/moy.tar/	[tar]

(b) Terms of Address

	Normal Form	Truncated Form
(i)	/ka.kək/ 'grandfather'	[kək]
(ii)	/em.bok/ 'mother'	[bok]
(iii)	/pa.pa/ 'father'	[pap]
(iv)	/pa.pi/ 'father'	[pap]

In Malay, personal names that are longer than two syllables could be truncated to either two syllables or single syllable. In contrast, the truncation of personal names in Indonesian is in the form of monosyllables. Both languages have violated the disyllabic minimality as only single syllable appeared after the truncation. According to Syed Jaafar (2017), the violation of minimal size is due to obedience to satisfy $BASE \neq TRUNC$ that requires bases and truncated forms be distinguished. In order to satisfy this constraint, disyllabic full forms are truncated to a single syllable.

Some languages only allow the truncated words to be in disyllabic form only and this can be seen in Taviano dialect of Salentino Italian. According to Kenstowicz (2019), a truncation has no fixed size in contrast to hypocoristics, which target a disyllabic trochaic foot. The examples in (8) below indicate some name truncation in this dialect. The truncation process in this dialect aligns, in general terms, with those reported in other Italian dialects such as Sardinian, Algherese Catalan, and certain Romanian dialects.

(8) Name Truncation in Taviano (Salentino) Italian (Kenstowicz, 2019)

	Normal Form	Truncated Form
(i)	Lisándru	Sándru
(ii)	Salvatóre	Tótu
(iii)	Ntunjétta	Étta, Tétta
(iv)	Duméniku	Mímmu

Hypocoristics in Spanish also allows the truncated form to be in disyllabic form only. According to Piñeros (2008), there are two types of hypocoristics in Spanish, one that preserves segmental material from the initial syllables (Type-A), and another one that subsumes truncated forms that resemble the final syllables (Type-B). Examples are shown below.

(9) Name Truncation in Spanish (Piñeros, 2008)

		Type-A	Type-B
(i)	/xe.sús/ 'Jesus'	[xé.su]	[čú.čo]
(ii)	/el.βí.ra/ 'Elvira'	[él.βi]	-

Truncation could also be distinguished between child and adult forms. According to Ota (1998), the BT-Identity is linked with adult prosodic morphology, such as hypocoristic formation and loanword truncation in adult Japanese. For children, however, it can be argued that BT-Identity is linked to a primitive operation of word truncation. The purpose of truncation to create hypocoristic meaning was also highlighted by Wiese (2001). While most previous works on truncation have focused on personal names, Ota (1998) states that truncation can also be found in loanwords, coincidentally aligning with what we are trying to prove here.

METHODS

This study makes use of the *Kamus Besar Bahasa Indonesia* (KBBI) as the main source of data. A list of loanwords ending with the suffix /tas/ was retrieved from this dictionary, and the pattern of each word was observed. Consequently, these words were then compared to their counterparts in Dutch. Although Farras (2023) categorized /tas/ as a foreign suffix, the *Kamus Besar Bahasa Indonesia* (KBBI) does not classify it as such. For example, the word 'universitas' is listed as a single morpheme within the dictionary. In order to identify whether a certain morpheme is a Dutch loanword or not, an online Indonesian-Dutch dictionary is used to assist in the translation process. Only those with corresponding Dutch words that end in /-teit/ and retain the same meaning in both languages were used as data for this study. A theory known as Correspondence Theory, developed under the umbrella of Optimality Theory, was used to analyze the data. The next subsection explains this theory in more detail and how it can provide an effective analysis of the loanword process in Indonesian.

Optimality of Truncations

In Optimality Theory (OT), the grammar of a language is viewed as a system of interacting constraints. Constraints will determine the universal grammatical well-formedness condition. A key concept in OT is that the optimal output form results from the interplay between markedness constraints and faithfulness constraints. Markedness constraints dictate that output forms align with specific segmental or prosodic criteria. On the other hand, faithfulness constraints demand that outputs remain identical to their lexical inputs, resisting changes such as segment deletion, segment insertion, or featural alterations. Within the framework of OT, several theories have been developed, and one of these is the Correspondence Theory. The definition of this theory is explained below.

(10) **Correspondence Theory** (McCarthy and Prince, 1995)

Given two strings S_1 and S_2 , correspondence is a relation R from the elements of S_1 to those of S_2 . Elements $\alpha \in S_1$ and $\beta \in S_2$ are referred to as correspondents of one another when $\alpha R \beta$.

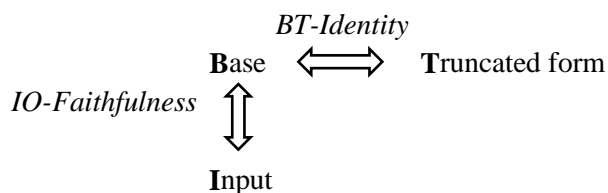
This theory emphasizes not only the relation between the input and output of a linguistic unit, but also the relation between different output forms (Wiese, 2001). In fact, Kager (2004) has listed some of the extended scope of Corresponding Theory as shown in (11) below.

(11) **Extended Scope of Correspondence Theory** (Kager, 2004)

- (i) Lexical–Surface (IO)
- (ii) Base–Reduplicant (BR)
- (iii) Base–Truncated stem (BT)
- (iv) Stem–Affixed stem (BA)

In this paper, we will be looking at the truncation constructions proposed by Benua (1995). She stated that truncation exclusively relate to their base (the full output form), but not to the input. The correspondence model postulated by Benua (1995) regarding the relations between units (input=I, base=B, truncation=T) is shown as below.

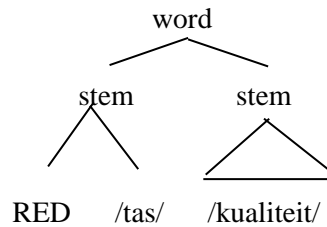
(12) **Correspondence Relations for Truncation** (Benua, 1995)



The truncated form (T) is a stem, a free-standing form, hence an output. This is related to a non-truncated form, itself a stem and free-standing form, which Benua (1995) refers to as the base (B). This base, similar to any output form, possesses its own input (I). The alignment between elements in the input (I) and the base (B) as an output is assessed through IO-faithfulness constraints in a standard manner. The alignment between the truncated form (T) and its base (B) is evaluated through BT-identity constraints, which discourage any dissimilarities between the two. However, following the work of Wiese (2001) on *i*-formation in German, we argue that truncation are basically reduplicative constructions but those in which prosodic well-formedness conditions prevent the double realization of the material. According to this scholar, both reduplication and truncation are equally constrained by prosodic constituent as well as containing

the prespecified material, such as phonological material that is not taken from the base and that is, the same time, not a derivational suffix for the overall word. The prespecified material that Wiese (2001) is talking about refer to the *-i* suffix as shown in (5). In Indonesian loanwords, the /tas/ seems to play the same role as the *-i* suffix. In order to determine the structure of truncation, two assumptions should be made first. If truncation have a canonical form and if they are virtually identical to reduplication, their morphological structure should be as shown below.

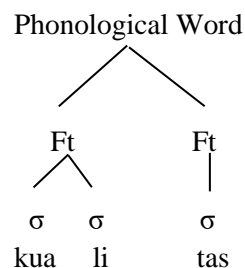
(13) Morphological Structure of Indonesian Loanwords Truncation



A reduplicative morpheme (RED) precedes the suffix /tas/, which, in turn, precedes a stem containing the base word. This structure specifies the phonological content of the three morphemes. It is plausible that the left-hand stem (comprising the RED and /tas/) may indeed be a complex prefix. However, the base stem is situated in the right-hand stem and therefore functions as the morphological head, determining all grammatical features of the word. Simultaneously, the reduplicative morpheme lacks phonological content, as there is no constant segmental or other content in truncation. It functions similarly to a truncation morpheme (TRUNC). Wiese (2001) argues that both RED(uplication) and TRUNC(ation) are instances of the same type of phonologically empty morpheme, concatenating like any other well-behaved morphemes. The scholar further asserts that truncations are not necessarily shorter with respect to the base. In the case of Indonesian loanwords truncation, the size of the loanword remains the same as the original, concerning the number of morphemes.

On the other hand, phonological structure differs from the morphological structure. In this structure, a phonological word is made up of rhythmic units called feet and these comprise one or more syllables. In English, three types of feet were recognized namely: binary (containing a strong then a weak syllable, $\sigma_S\sigma_W$), ternary (containing a strong followed by two weak syllables, $\sigma_S\sigma_W\sigma_W$), and non-branching (containing a single strong syllable, σ_S). It possible for a word to have more than one foot. Words can be built by combining sequentially the mentioned feet above, or indeed the feet with themselves. By following these structures, the phonological structure of the word /kualitas/ is as shown as below.

(14) Phonological Structure of Indonesian Loanwords Truncation



The stem containing the reduplicative morpheme is realized on the surface and not the rightmost stem. However, some of the material of the latter stem is still present, by virtue of the fact that RED receives all of its material from this stem. For example, the elements of /kua.li/ is still being preserved in the output as it was copied from the latter stem with an addition of /tas/ suffix. In the next section, we propose a new analysis of loanwords in Indonesian, in which they will be treated as truncations. This analysis is based on recent ideas formulated in Optimality Theory.

TRUNCATION OF INDONESIAN LOANWORDS FROM DUTCH

Before the OT analysis begins, it is important to know all the constraints that will be involved in this analysis. The necessary constraint is formulated here, starting with a constraint known as OCP (X).

(15) OCP (X)

Two adjacent phonological constituents X, if sister nodes, do not contain identical phonological material.

The constraint mentioned above is used to ban any repetition. The X represents any phonological unit, either segments or phonological words. Obligatory Contour Principle (OCP) is a specific constraint designed by McCarthy (1986) to demand the non-repetition of adjacent identical elements. Since truncation here is treated as a partial reduplication, there will be a formation of reduplicative morpheme in the output. In order to comply with this constraint, any elements in the input should not be allowed to be in the output if the element is adjacent to the reduplicative morpheme. It is true that morphemes should be realized one-to-one, with each morpheme producing its own output, even while repetition is avoided. For this reason, McCarthy and Prince (1995:310) propose the constraint of MORPHEMIC DISJOINTNESS, which disallows the multiple exponence of the underlying material. The constraint is explained below.

(16) MORPHEMIC DISJOINTNESS

Distinct instances of morphemes have distinct contents, tokenwise.

Both MORPHEMIC DISJOINTNESS and OCP (X) constraints impose contradictory requirements on a string. MORPHEMIC DISJOINTNESS mandates that tokens of morphemes display their own content whereas OCP (X) prohibits the repetition of any constituents. In this analysis, it can be said that the MORPHEMIC DISJOINTNESS loses the battle and has to be placed at the lowest stage in the constraint hierarchy.

The final /tas/ in this truncation process is analyzed as a suffix on the reduplicative morpheme. Suffix is known to be a bound morpheme, morphemes that cannot stand alone and only occur as parts of words. Unlike free morphemes, bound morphemes must be connected to another morpheme to create a word. Hence, the /tas/ suffix needs a base to which it can attach on the right side. The next constraint is assumed to be an alignment constraint and will be used to define the position of the suffix.

(17) **ALIGN (/tas/, L, RED, R)**

The suffix /tas/ aligns its left edges with the right edge of its base, the reduplicative morpheme.

Truncations usually undergo syllable reduction, as the truncated form becomes shorter than its full form (Base). Unlike the name truncation in Malay and Indonesian, loanword truncation does not produce a fixed pattern. Dutch loanwords in Indonesian can be as small as two syllables or as big as four syllables. Since we considered truncation as a reduplication process, the final form will be known as a reduplicated form. The size of the reduplicated form will always be smaller than its base. To account for this, an anti-faithfulness constraint that requires a final form not to be exactly the same as its base is worthy of consideration. In this case, the relevant anti-faithfulness constraint is $BASE \neq RED$, which can be formalized as follows:

(18) **BASE \neq RED**

A reduplication morpheme is not identical to the corresponding base.

Another thing to be considered regarding the reduplicated form, it only copied the element from the base word only. The foreign suffixes are prohibited to be copied in the reduplicated form. To account for this, we will be looking at a constraint known as **ALIGN PROSODIC STEM**. According to Downing (2006), this constraint defines the prosodic stem as the base for the reduplicated form and affixes are not allowed to be copied into the reduplicative morpheme. This constraint can be defined as below.

(19) **ALIGN PROSODIC STEM**

Align (L, RED, R, Prosodic Stem)

The above constraint was also being used by Syed Jaafar (2011) to analyse prefixal reduplication in Malay. The constraint requires that the left edge of the reduplicative morpheme align with the right edge of the base. However, since our analysis focuses on the Indonesian suffixes, this constraint needs to be modified a bit in order to fit with the situation. The modified version of this constraint is as shown below.

(20) **ALIGN PROSODIC STEM**

Align (R, RED, L, Prosodic Stem)

The newly modified constraint in (20) requires that the right edge of the reduplicated form be aligned with the left edge of the suffix. Now, we shall discuss the ranking for every constraint mentioned before. Firstly, it is important for the output to consist only of reduplicated forms and not the base. Hence, the OCP (X) will be placed in the highest rank, which prevents any repetition of phonological units. Next, the /tas/ suffix needs to be at the right edge of the reduplicated form. Hence, **ALIGN (/tas/, R)** will define the position of this suffix and need to be placed on the second rank. The next two constraints that will define the reduplicated form are $BASE \neq RED$ and **ALIGN PROSODIC STEM**. $BASE \neq RED$ ensures that the reduplicated form contains fewer elements compared to the base, while **ALIGN PROSODIC STEM** ensures that only elements from the base are copied to create the reduplicated form (suffix copying is prohibited). Since **MORPHEMIC DISJOINTNESS** and OCP (X) are contradictory with each other, this constraint will be placed on

the lowest rank. The tableau below is an OT analysis for the formation of the loanword [fasilitas] (facility).

OCP (X) >> ALIGN (/tas/, L, RED, R) >> BASE ≠ RED >> ALIGN PRSTEM >> MORPDIS

input: /RED + tas + fasiliateit/	OCP (X)	ALIGN (/tas/, R)	BASE ≠ RED	ALIGN PRSTEM	MORPDIS
a. fasili + tas + fasiliateit	*!				
b. fas + fasiliateit	*!				
c. tas + fasili		*!			*
d. fasiliateit + tas			*!	*	
e. siliteit + tas				*!	*
f. fasili + tas					*

Six candidates were presented in the tableau above. On the first tier of constraints, candidates (a) and (b) were eliminated due to the violation of OCP (X). The repetition of syllables in (a) and (b) has led to the violation of this constraint. Next, candidate (c) was eliminated due to the violation of ALIGN (/tas/, R). The alignment of the right edge of /tas/ with the left edge of the reduplicative morpheme has violated this constraint, simultaneously eliminating the candidate. In this analysis, truncation was treated as a reduplication process. It is important for the reduplicated form to be shorter than its full form. Since the reduplicated form in candidate (d) has the same size as its base, the BASE ≠ RED constraint was violated. Candidate (d) was eliminated due to this violation. The element in the reduplicated form also needs to come from the base, and no element from the suffix is allowed to be copied. Candidate (e) was eliminated due to the copying of a suffix in its output form which violated the ALIGN PROSODIC STEM. The remaining candidate, candidate (c), was chosen as the sole winner in this analysis despite violating the MORPDIS.

We already discussed how suffixation of /tas/ can be treated as a truncation process. Apart from /tas/, there are other foreign suffixes that are used in Indonesian. According to Mulyono (2013), these suffixes cannot be treated as one of the Indonesian loan affixes since they have not come out of their original form, as well as their inability to pair with Indonesian original words. Below are some examples of foreign suffixes that are currently being used in Indonesian.

(21) Foreign Suffixes in Indonesian from Dutch (Herniti, 2006)

	Dutch	Indonesian
(i) /si/	/ko.rek.si/ 'correction'	[ko.rek.si]
(ii) /is/	/prak.tis/ 'practice'	[prak.tis]
(iii) /logi/	/pi.si.jo.lo.xi/ 'physiology'	[pi.si.jo.lo.gi]
(iv) /if/	/de.mon.stra.tif/ 'demonstrative'	[de.mon.stra.tif]
(v) /isme/	/mo.de.nis.me/ 'modernisme'	[mo.de.nis.me]

The suffixes listed in (21) indicated that although there are some differences in the writing form between Dutch and Indonesian, the pronunciation of the words is almost similar. To put it simple, some loanwords in Indonesian have the same phonological structure as the original Dutch word. Hence, there is no phonological processes involved within these loanwords. In some cases, phonological processes only involved a certain segment only such as the segment change from /x/ to /g/ as shown in (21(iii)). Hence, it can simply be resolved by regular phonological process. However, we argue that Prosodic Morphology analysis can also be used in order to resolved this matter. Rather than interpreting these loanwords as a string of segment, they can be defined in terms of the authentic units of prosody: the mora, the syllable, the foot or the phonological word. By using the same constraints within the same hierarchy, the tableau below indicates an OT analysis for the formation of the loanword [pisijologi] (physiology).

OCP (X) >> ALIGN (/tas/, L, RED, R) >> BASE ≠ RED >> ALIGN PRSTEM >> MORPHEMIC DISJOINTNESS

/RED + logi + pisijoloxi/	OCP (X)	ALIGN (/tas/, R)	BASE ≠ RED	ALIGN PRSTEM	MORPDIS
a. pisijo + logi + pisijoloxi	*!				
b. pis + pisijoloxi	*!				
c. logi + pisijo		*!			*
d. pisijoloxi + logi			*!	*	
e. sijoloxi + logi				*!	*
f. pisijo + logi					*

Six candidates were presented in the tableau above. Due to the repetition of phonological constituents in the output, candidates (a) and (b) were eliminated since they have violated the OCP (X). Next, the positioning of /logi/ suffix at the left edge of reduplicated form has caused the candidate (c) to violate ALIGN (/tas/, R) and being eliminated. The BASE ≠ RED constraint requires that the size of reduplicated form to be different from its base. Since reduplicated form is candidate (d) copied the whole base segment, this constraint has been violated, causing the candidate to be eliminated. The element in the reduplicated form also needs to come from the base, and no element from the suffix is allowed to be copied. Candidate (e) was eliminated due to the copying of a suffix in its output form which violated the ALIGN PROSODIC STEM. The remaining candidate, candidate (f), was chosen as the sole winner in this analysis despite violating the MORPHEME DISJOINTNESS.

CONCLUSION

The adaptation of loanwords has been primarily viewed as a regular phonological process. However, phonological processes can only account for a single segment change. Hence, it is proven to be insufficient to describe the adaptation processes that involve the change of more than one segment. When it comes to adaptation processes involving foreign affixes such as /tas/, we claim that it is better to be treated as a truncation process. The input for this process is the original Dutch words. The last syllable will be truncated, and the foreign suffix /tas/ will be attached to the remaining syllables. In this analysis, truncation is treated as partial reduplication whereas some elements of the base were copied and the base itself was deleted in the output form. In order

to do this, some constraints were introduced in the analysis and being ranked accordingly in the constraint hierarchy.

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REFERENCES

- Alber, B. & Arndt-Lappe, S. 2021. Anchoring in Truncation: A typological analysis. *Natural Language & Linguistic Theory* 41(2): 1-50.
- Alwi, H. 1995. *Senarai Kata Serapan dalam Bahasa Indonesia*. Jakarta: Pusat Pembinaan dan Pengembangan Bahasa, Departemen Pendidikan dan Kebudayaan.
- Benua, L. 1995. Identity Effects in Morphological Truncation. In J. Beckman, S. Urbanczyk & L. Walsh (eds.). *University of Massachusetts occasional papers in linguistics 18: Papers in Optimality Theory*. Amherst, Massachusetts: Graduate Linguistic Student Association.
- Booij, G. 2015. Dutch Word Formation. In P.O. Müller, I. Ohnheiser, S. Olsen, & F. Rainer (eds.). *An International Handbook of the Languages of Europe*. Berlin / New York: De Gruyter Mouton.
- Devianty, R. 201. Loan Words in Indonesian. *Vision: Journal for Language and Foreign Language Learning* 9(9): 1-12.
- Farras, S.K. 2023. Interferensi Afiks Serapan Bahasa Asing ke dalam Bahasa Indonesia: Analisis Perspektif Sociolinguistik. *Bhinneka: Jurnal Bintang Pendidikan dan Bahasa* 1(1): 22-27.
- Fauzi, A. 2005. *Analisis Perubahan Lafal dan Makna Kata Serapan Bahasa Arab dalam Bahasa Indonesia pada Buku Senarai Kata Serapan dalam Bahasa Indonesia*. Master thesis, Universitas Islam Negeri Syarif Hidayatullah, Jakarta.
- Fleischer, W. & Barz, I. 1995. *Wortbildung der Deutschen Gegenwartssprache*. Tübingen: Max Niemeyer.
- Gunardi, A. 2020. Bahasa Serapan Terhadap Bahasa Indonesia. *Jurnal Universitas Primagraha* 1(1): 34-39.
- Hadi, S., Soeratno, S.C., Ramlan, M. dan Putu Wijana, I.D. 2003. Perubahan Fonologis Kata-kata Serapan dari Bahasa Arab dalam Bahasa Indonesia. *HUMANIORA* 15(2): 121-132.
- Hardini, T.I. & Grange, P. 2016. An Overview of Indonesian Loanwords from French. *Indonesian Journal of Applied Linguistics* 6(1): 156-171.
- Herniti, E. (2006). Serapan Bahasa Asing dalam Bahasa Indonesia. *SOSIO-RELIGIA*, 5(4):1-16.
- Karlina, Y., Rahman, A., & Chowdhury, R. (2020). Designing Phonetic Alphabet for Bahasa Indonesia (PABI) for the Teaching of Intelligible English Pronunciation in Indonesia. *Indonesian Journal of Applied Linguistics*, 9(3), 724-732.
- Kenstowicz, M. 2019. The Analysis of Truncated Vocatives in Tavianio (Salentino) Italian. *Catalan Journal of Linguistics* 18: 131-159.

- Lapoliwa, H. 1982. Phonological Problems of Loanwords in Bahasa Indonesia. In A. Halim, L. Carrington and S.A. Wurm (eds) *Papers from the Third International Conference on Austronesian Linguistics*, vol. 2: *Tracking the Travellers* (pp. 285-297). Pacific Linguistics.
- Maier, H.M. 2005. A Hidden Language - Dutch in Indonesia. Other Recent Work.
- Mose, E.G. (2021). Phonological Processes in Ekegusii Borrowing: A Constraint-based Approach. *JL3T (Journal of Linguistics, Literature and Language Teaching)* 7(2): 83-100.
- Ota, M. 1998. Phonological Constraints and Word Truncation in Early Language Acquisition. In A. Greenhill, M. Hughes, H. Littlefield and H. Walsh (eds.). *Proceedings of the 22nd Annual Boston University Conference on Language Development* (pp. 598-609). Somerville, MA: Cascadilla Press.
- Piñeros, C.E. 2008. Prosodic and Segmental Unmarkedness in Spanish Truncation. *Linguistics* 38(1): 63-98.
- Syed Jaafar, S.R (2017). A Comparative Study of Truncation in Malay and Indonesian. *La Linguistique* 53(1): 51-68.
- Thomason, S.G. 2001. *Language Contact*. Edinburgh University Press Ltd.
- Tsvetkov, Y., & Dyer, C. 2016. Cross-lingual Bridges with Models of Lexical Borrowing. *Journal of Artificial Intelligence Research* 55: 63-93.
- Wiese, R. (2001). Regular Morphology vs. Prosodic Morphology? The Case of Truncations in German. *Journal of Germanic Linguistics* 13(2): 131-177.
- Zahra, M. & Maslakhah, S. 2019. Analisis Kata Serapan dari Bahasa Belanda ke dalam Bahasa Indonesia. *E-Journal Student: Sastra Indonesia* 8(1): 87-94.