Irregular Behaviours of Coda /M/ in Tamil Reduplications

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ABSTRACT

In Reduplication, the Base and Reduplicant usually undergo various phonological changes to reconcile and harmonise them. Despite this general view, not many studies have attested to credibility of a single phoneme for its capacity of triggering various reactions, otherwise known as the *emergence of the unmarked* (TETU). A specific coda of such nature, bilabial /m/, in one of the Dravidian language Tamil is known for registering irregular reactions at the juncture of Base and Reduplicants, forcing the coda to trigger seven types of phonological reactions, a phenomenon that probably hard to witness in universal grammar. This study discusses the phonological and morphological reactions of reduplicative words as the consequences of TETU, which were resolved in language-specific ways, within Optimality Theoretic parameters. The results verify that as long as the conflicting markedness constraints do not interrupt reconciliation of reduplicative words in Tamil, the reconciliations take place systematically without markedness reduction or increase in reduplicant, except in reduplicative words ending with labial /m/. The reduplicants tend to reduce markedness of its prosodically weak position in many ways, while the same markedness is tolerated within the base words, in isolation or otherwise. It responds, at least, in seven different ways (in isolation or simultaneously) in reduplications, suggesting that the markedness reducing and markedness increasing should be addressed as a context-sensitive issue of reduplicant-base, in the lights of natural and prosodic phonology, collectively, but not in the absence of one against another, at least for the sensitive phonemic coda, like /m/, in hand.

Keywords: Reduplication; TETU; Bilabial nasal deletion; Assimilation; Optimality Theory

INTRODUCTION

Reduplication is a considerably popular creative exercise in a language that capable of enlarging its lexical items. Tannen (1987) verifies it as a limitless resource ‘for individual creativity and the central linguistic meaning-making strategy’. Its formation might be explained either, phonologically or morphologically. Phonologically speaking, reduplications are formed by reduplicated components, including sequences of sound-segments or prosodic elements, such as syllables or moras. Morphologically, it is an activity of doubling linguistic components such as root/stem/word. Both definitions address the components of reduplication differently but reaching the same end-product, the creation of new terms as in (1).

1) Agta Reduplication

a. tak.ki ’leg’	tak-tak.ki	legs
b. ba.ri ’body’	bar.ba.ri-k kid-in	‘my whole body’

(Kager, 1999: 200)

Malay Reduplication

a. waŋgi ’smell’	waŋgi-waŋgian	‘smells’
b. la.ki ‘man’	ləla.ki	‘man’

(Hairul and Khan, 1990)

Tamil Reduplication

a.	perum - perum	perumperum	‘big and big’
b.	enɾum-enɾum	enɾ<>enɾum	‘forever’

(Mohana Dass, 2010)

The examples from Agta, Malay and Tamil languages, respectively, show two types of end-results of reduplications, i.e., Total Reduplication (TR) (as in 1a) and Partial Reduplication (PR) (as in 1b). In TR both constituents were retained but in PR, only selective elements were retained. Besides indicating that there is no single form of reduplication in practice, it also shows that like the other vocabulary enlarging exercises in a language, reduplication also bound to certain forms of restrictions. They are aimed at improving the status of markedness within the reduplicants. Languages manage the reduplicative interactions handily by placing certain sound segments that are ultimately conditioned by the phonetic, phonological and morphological qualities at the word-final coda positions. In most of the instances, the interaction between two segments tends to trigger a single phonological change or two when ensued by external forces, in any language. Examples for this claim could be arrayed from various languages. In Tamil, one of the Dravidian languages under investigation does adhere to such a requirement, except for one segment, labial nasal /m/. While other segments show regular alteration patterns, the /m/ showcases a handful of alterations in Coda positions to satisfy the prosodic requirement of the structure, interestingly. The irregular phenomenon is even obvious within both TR and PR.

There are some noteworthy studies that have scrutinized the differences between the reduplicative words and the ‘ordinary terms’ (Alderete et al., 1999: Bell, 1983; Haugen et al., 2009; Marantz, 1982; McCarthy & Prince, 1995b; Wilbur, 1973; Zoll, 2002). These studies have commonly proved that languages tend to reduce markedness of its prosodically weak positions in many ways, especially within the reduplicants; but, the same markedness is tolerated within the base words. This has been attested as a case of markedness reducing and markedness increasing in a range of word-languages. Nevertheless, the tests were limited to behaviours of segments, one to one or many reactions. The literature, probably, has yet seen the multiple behaviour patterns of a single segment of a language. The present study offers evidence from the oldest Dravidian language, Tamil. Tamil, language belongs to Central Dravidian Family, has a segment behave irregularly at the intersections. The segment alters itself or undergoes various alterations when face segments belong to different phonological qualities. This is same within formal lexical words, phrasal inter-sections or within reduplications. Lexical items ending with word-final labial nasal /m/ responds differently when conjoined with the same or different segment/s. In this way, the language ensures only an optimal reduplicant candidate surfaces in a prosodically weak position, the final coda of the reduplicant. As such, it is interesting to note how the labial segment responds in seven ways, at least, in an isolated or simultaneous environment showing that both the markedness reducing and markedness increasing activities within the reduplicative words are context-sensitive issues within the language, and it is worthwhile to underscore proper generalisations.

Almost all vowels and sonorous consonant segments in this language are free to occur within TR and PR. Except for the bilabial /m/, other sonorous consonants display systematic phonological reactions at the word-final coda in reduplications. This could be seen in the following data.

2) i) Other base words with different coda segment

Input	*Output*	
[1]RED –pa:r	pa:r-pa:r	see-see
RED -ve:l	ve:l-ve:l	chanting
RED -po:r	po:r-po:r	war!-war!
RED -mey	mey-mey	true-true
RED -te:ɭ	te:ɭ-te:ɭ	scorpion-scorpion!
RED -kãɳ	kãɳ-kãɳ	eye-eye
RED -mĩn	mĩn-mĩn	sparkle

ii)

RED - perʉ̃m̚	per ʉ̃m̚<>-perʉ̃m̚	'big and big'
RED - ã:m̚	a:<>-**m**ã:m̚	'true'
RED - tĩnãm̚	tĩnã**n̻**-tĩnãm̚	'every day'
RED -mãrãmã:	mãra<>-mãramã:	'tree-by tree'
RED -va:rãm	va:ra:<>-va:rãm̚	'every week'
RED -enɽʉ̃m̚	enɽ<>-enɽʉ̃m̚	'forever'
RED - meːlʉ̃m̚	me:**n**<>-meːlʉ̃m̚	'more and more'

Data show that the labial nasal /m/ within coda instigates significant irregular outcomes in Tamil reduplications. A lexical final labial nasal is retained in base words, but the same segment is deleted or undergoes non-uniform changes within the reduplicants, expect when it succeeds a homorganic stop. At least seven non-systematic reactions surface before finalising the optimal reduplicants as a result of various conditioning factors, including, phonetics, phonology and morphology. Examples in 2(i) show the reduplicative base with sonorous segments that surfaced without phonological alterations. All coda segments, in order, laterals namely light /l/ and dark /ɭ/, liquids namely rhotic /r/ and glide /y/, nasals coronal /n/ and /ɳ/ in base have responded uniformly. Examples in 2(ii) are with labial nasal /m/ coda in the base. The sampling set shows that the output sustained both reduced markedness and increased markedness, except for the RED - perʉ̃m̚> perʉ̃m̃̚<>perʉ̃m̚perʉ̃m̃̚ 'big and big', where coda, /m/, share place of articulation with onset, /p/. This included no-change, onset-maximisation, coda-conditioning, segment deletion, segment deletion and vowel lengthening, copying the heavy syllable of base, and lastly deletion followed by sonority relegation, in order.

It is the nature of a language that thrives to reach maximum resemblances between the base and the reduplicant in TR or PR. This end-result is reached typically through a language depended exercises. Studies claim that it was due to the interference of intervening constraints, such flexibility is sustained. At least within one of the components of reduplication became necessary, if not on both elements. As such, the reduplicants are forced to reduce markedness or increase it; while the bases are allowed to sustain all phonological freedom. Kager (1999: 215) claims that this is an act of reducing segmental or prosodic markedness in reduplicant. Nonetheless, the worthwhile question to ask is what makes the labial nasal behave differently, while other coda segments at word-final positions are not.

We shall seek some clarification for the foregoing statement. Obviously the deletion or alterations within the data in 2(ii) is not default in Tamil. They are the response to the different phonological requirements at the reduplicant-base interfaces. Notice that even the two lexical items with the same phonological requirements /RED-a:m/, and /RED-enɽum/ did not behave similarly. They opted for two different outputs despite having similar onset and coda in the input; vowel at the beginning and labial nasal as the coda. The force to minimize and maximise the level of markedness within reduplicants ending with /m/ are seemingly triggered by various

[1] RED = Reduplicant

faithfulness and markedness constraints, including segmental, sub-segmental, structural and morphological constraints. They were not limited to phonological changes alone. In nutshell, the present paper argues that phonological consequences related to labial nasal within reduplicant are consequences of *the emergence of the unmarked* (TETU). The language solves the issues in language-specific ways. The empirical goal of this article is arguing for significant behaviour of reduplicative words that ending with a labial nasal coda in reduplications within the framework of OT (Prince & Smolensky, 1993b). Besides, it also tends to verify the striking consequences of TETU, by assuming that as long as conflicting markedness constraints do not intervene reduplication in Tamil, reconciliations takes place systematically without markedness reduction or increase in reduplicant, except for labial /m/. The present paper explores and identifies the factors that conditioning the irregular behaviour of labial nasal /m/ in reduplications within the Optimality Theoretic framework.

Studies on theoretical linguistics are exclusive in Tamil, even rarefied are the studies on phonology typology. Tamil has remained as an under-explored language in this perspective, for unknown reasons. Notable studies, on the other hand, paid keen interest in descriptive and generative phonology. One of this is T. Vasanthakumar (1989, 2000), presumably, is outdated as it was produced a few decades ago, for a dialect spoken in the southern part of India. Though a few explorations could be found in the era of generative grammar, they remained descriptive and paid the least interest in unveiling the phonological concealments. Beckman (2004) is an exception, where she has offered an optimality treatment in justifying the nature of Coda-Conditioning in Tamil. The study has offered general notes on how codas are conditioned at the word-final positions, their importance, and clarification on phonological behavior of selective phonemes, when they meet other counterparts, at the juncture. It also has offered a great deal of information on the phonological typology of simple structural words; but, reduplications were not addressed in her study. The literature in this area of study is even scarcity in the Malaysian background. The trending of linguistics endeavors is more fended towards applied linguistics, especially, on sociolinguistics and educational linguistics. Noteworthy studies on the phonology of Tamil are almost rare, and we may potentially say that studies on reduplications were almost none. Notes on reduplicative words could only be noted with a brief explanation in the grammar texts and grammar books and textbooks. These materials were at the off-limit attention of the present study. Having seen this, it could be concluded that there is no empirical studies involving the Dravidian languages (any till to date) that have been conducted in this area of interest. Even, intriguing is that none of the available studies on reduplication in the literature, or in Tamil have paid proper interest in studying and verifying the remarkable reactions of the emergence of the markedness of the coda that resembling the /m/ at the hand. This makes the present study first of its kinds in verifying and adding values to the universal grammar, by clarifying that, unlike other languages, the coda /m/ in the Dravidian language of Tamil is of inherent qualities that potentially have no match in other languages, perfectly, be the best sampling for any TETU based study.

This study is aimed at studying the regular forms of interactions such as deletion, assimilation, insertion and so on are common reactions at the juncture in the total and partial reduplicative words. Besides, it also aimed at studying how the reduplicative words and 'ordinary terms' behave differently; especially the reduplicant within the former that tends to reduce markedness of its prosodically weak position in many ways, while the same markedness is tolerated within the base words. The outcome is expected to offer add-ons empirical evidence to the advancement of TETU related studies, from the perspectives of one of the largest family group of the living languages, the Dravidian languages.

The rest of the paper is organised as follows. Following the introduction is the theoretical background of the study. The data is introduced before the constraint-based study for TR and PR, respectively, are offered. The last one is the conclusion.

THEORETICAL BACKGROUND

Reduplication was a hotly debated topic in the pre-OT era (Marantz, 1982; McCarthy & Princes, 1986; Shaw, 1987; Steriade, 1988; Uhrbach, 1987; Wilbur, 1973). The trend was continued within the OT framework as well (Alderete et al., 1999; Blevins; 2003, Inkelas, 2008; Kager, 1999; McCarthy & Prince, 1994; McCarthy & Prince, 1995a). Apart from this study, Malay reduplication also has received a formal attention, where PR in Malay has been studied by Junaini Kasdan et al. (2011), discussing the fixed segmentism in Malay PR using TETU. The study "reveals that while the formation of the terms ensures the retention of their "Malayness", the coinage has not been done arbitrarily but has been based on structured patterns and system." The effects of TETU within Malay PRs have been studied by Sharifah Raihan Syed Jaafar and Zaharani Ahmad (2013) to some extent as well. Sahid Teguh & Marmanto (2017), on the other hand, have verified that Javanese has a number of words that derived from root words, using reduplication as one of its lexical enlarging methods.

The Tamil reduplications did not enjoy such treatment in Malaysia. Flexibility and the advancement reached within the Optimality Theoretic framework in prosodic morphology studies paved the path for accommodating general constraints of morphological alignment and avoiding morphemes specific reduplicative constraints in studies related to reduplications (Urbanczyk, 1996; Alderete et al., 1999; McCarthy & Prince, 1999; Ussishkin, 1999; Walker, 2000; Yip, 2001; Kennedy, 2009; Struijke, 2002; Nelson, 2005; Hendricks, 1966, In Nuger (2010, pp. 45-46). These analyses have developed a compatible mechanism under the rubric of TETU (McCarthy & Prince, 1994), providing ways to evaluate the marked/unmarked structure within reduplicant' while the same marked/unmarked being permitted elsewhere in the grammar.

Correspondence Theory (CT) (McCarthy & Prince, 1995a) has made significant contributions to OT in a number of ways. CT (McCarthy & Prince, 1995a) formally re-established relational correspondence between input and output segments of identity relationships existing between a reduplicant and a base. CT of reduplication argues that structural well-formedness arrives through interaction between three types of constraints namely faithfulness constraint, well-formedness constraint and Base-Reduplicant Identity (BRI). The Faithfulness constraint (FC) advocates for the lexical identity of input and surface forms; the well-formedness constraint refers to markedness constraints, while the B-R Identity requires identity between the base and the reduplicant.

The CT model representing the identity between base and reduplicant is known as Basic Model.

3) The basic model (McCarthy and Prince, 1995a, In Kager, 1999))
Basic Model

Input: /AF_{RED} + Stem/ ↓ IO-Faithfulness (IOF)

↔

Output: R B

BR-Identity (BRI)

The model consists of two levels, input and output. The input has stem and unspecified reduplicative affix. The IOF requires stems' inputs to be respected in the AF_{RED} (RED), while BRI requires both the base and the reduplicant to be identical. The given model and the basis input-output interactive model in OT have a handful of similarities.

CT (McCarthy and Prince, 1995a) generalizes over these types of faithfulness.

4) *Correspondence* (McCarthy & Prince, 1995a, p. 262)
Given two strings S_1 and S_2 related to one another as underlying and surface, base and reduplicant, and so on, correspondence is a relation $\mathscr{R}$ between the elements of S_1 and S_2. Elements $\alpha \in S_1$ and $\beta \in S_2$ are correspondents of one another when $\alpha \mathscr{R} \beta$.

The distinction of the correspondence relation between the strings depends on how they are related to each other. In standard OT, S_1 and S_2 stand in relation to each other as underlying input and surface output (I-O correspondence), but in Base-Reduplication correspondence, S_2 is a reduplicant and S_1 is the string that is affixed to the base. Reduplicative identity, S_1 and S_2 stand in relation to each other as base and reduplicant (B-R correspondence) - the reduplicant is the surface exponent of reduplicative morpheme (RED) and the Base is the output string to which it is attached to (for more information see Kager, 1999; McCarthy & Prince, 1994; McCarthy & Prince, 1995a).

The followings are the CT's Faithfulness constraints noted for establishing correspondence relation between S_1 and S_2 (McCarthy & Prince, 1995a):

5) MAXIMALITY (MAX)
If S_1 then there exists some S_2, every segment of S_1 has correspondent in S_2
6) DEPENDENCE (DEP)
If S_1 then there exists some S_2, every segment of S_1 has a correspondent in S_2
7) IDENTITY (FEATURE) IDENT(F)
Every feature of S_1 has correspondent segments of S_2 has identical values for the feature F

MAX is a segment-preserving constraint that militate against deletion in I-O correspondence. In other words, it is in the favour of total copying in Base-Red correspondence. DEP denies insertion of epenthesis in I-O correspondence or, any intrusive component within Base-Red correspondence. IDENT(F) calls for matching between features found within input and output segments in correspondence. Any alteration of feature compositions of segments, such as assimilation or dissimilation violates this requirement. The distinctness and parallelism carries over to I-O and B-R pairs of faithfulness constraints can be defined in simple manner- the MAX-IO is transposed to MAX-BR, the DEP -IO is transposed to a DEP-BR, and IDENT-IO is transposed to IDENT -BR. This is obvious because the input/output and base/reduplicant pairs are not connected by distinct but parallel correspondence relations.

EMERGENCE OF THE UNMARKED

Having seen the basic setting and the relation between IO and B-R, let us turn to the requirement of Emergence of the Unmarked (TETU), a specific framework of constraint sets that capture the generalisation of reduplicative terms.

Language typology is achieved by reordering selective constraints in specific ways within OT (Kager, 1999; Prince & Smolensky, 1993a). When FC dominates MC or FC dominates MC, the grammar ought to generate a fixed result, a surface candidate which is faithful to input or unfaithful, respectively. In the situation where FCs are being undominated, and satisfaction of MC is warranted within the same structure, the I-O mapping may surface some Markedness violating forms (Alderete et al., 1999; McCarthy & Prince, 1994). These sorts of effects are common within non-reduplicative terms claim the studies.

However, the same situation has different impacts on reduplications. McCarthy and Prince (1994) clarifies that when a MC crucially dominates a faithfulness constraint, FBR, that governs the BR correspondence relation, then MC will be obeyed in the reduplicant but not in the base, 'even at the expense of inexactly copying the base'. This situation is called *the emergence of the unmarked* (TETU): the normally inactive markedness constraint reveals itself in BR mappings where IO faithfulness is not relevant (McCarthy & Prince, 1994). In other words, reduplicants are intolerant to segmental or prosodic markedness, while the non-reduplicants in the same language are tolerant to them.

The aforementioned setting is represented by the following general schema of TETU.

8) *Ranking schema for reduplicative TETU* (McCarthy & Prince, 1994)
FAITH-IO » M » FAITH-BR

Assuming that the M is a segmental constraint, $*m]_\sigma$, then, we may obtain the following ranking.

9) MAX-IO » $*m]_\sigma$ » MAX-BR

A language with the mentioned ranking allows labial nasal in coda positions freely because deletion is not permitted by undominated Max-IO. The same language, however, allows the deletion of coda in reduplicant, because $*m]_\sigma$ dominates Max-BR. In B-R correspondence the grammar prefers an open word-final syllable. A situation where the same segment is allowed in the base, while it is blocked in other, is termed as the effect of *TETU*. The same theoretical background is sufficient to account for *TETU* effects within reduplicant in Tamil.

With this necessary theoretical background at hand, we may apply the theory to available data and see how Tamil reduces the markedness within reduplicants non-uniformly by responding to the contextual sensitivity.

THE DATA

This study is designed with a qualitative approach, as the analysis of the data engages both the phonological and prosodically phenomenon of a language, especially within the reduplicative words. In detail, this study examines the formation of the partial and full reduplicative words found in Tamil, for giving rise to the TETU eccentricities, a phenomenon that could hardly noticed in other languages. In this way, the imposed varieties by the natural grammar of the language ensure the received structures satisfy the phonological and morphological requirement of the language, satisfactorily. The Base-Red Model proposed by McCarthy and Prince (1995a), which directly links the base and the reduplicant elements within the language itself, was used in this study. It offers basic techniques to study the integral parts of the formed reduplicative words, directly.

The data for the study is taken from the author's work entitles, Selective Topics in the Morphophonology of Tamil: An Optimality Theoretic Analysis (Mohana Dass, 2010). The study has a large database of lexical items collected from speakers of standard spoken Tamil in Malaysia, a language which is spoken by Indian migrants in Malaysia. It is a sister language of Tamil spoken in the Southern part of the Indian sub-continent, which was brought in as spoken language by the migrated denture labourer to Malaysia in the late 19th century. The study claims that data for the study taken from spoken Tamil used in radio plays and platform speeches. They were recorded and transcribed for these purposes. There are about 421 reduplications discovered in the study; only reduplications that ending with labial /m/, registering irregularities that have been selected and analysed in this study. The list consists of 19 TR and 2 PT, altogether 21 reduplicative words in total. Nevertheless, it must be reminded that the number is definitely even more in the natural language, as their application could be found in every domain of language usage.

Interaction between various segments within TR and PR in Tamil exhibit systematically organized phonological behaviour. In general, TR in Tamil copies the entire root/stem/word, but PR copies prosodic constituent, either CVC or CV:C syllables, alone. If the word-initial syllable did not fulfil the requirement and left as an open syllable, the grammar supplies a coda /c/ or onset resembling the succeeding syllable. On top of this basic requirement, the grammar also responds individually to segments participating at the coda.

The following data illustrate the significant behaviour of reduplicative words ending with nasal /m/.

10) Full-Reduplication		
Input	Output	Glossary
i. No change -retain the coda /m/		
RED - perum	peru**m**<>perum	huge-huge
RED -panam	pana**m**<>panam	money-money
ii. Onset-Maximisation		
RED-em	em<>**m**em	ours
RED-a:m	a: <>**m**a:m	true
RED-innum	innu**m**innum	more and more
iii. Coda-Condition		
RED- tinam	tina**n̪**<>tinam	every day
RED-kudam-a:	kuda**ŋ**<>gudama:	pot by pot
RED-kuɭama:	kuɭa**ŋ**<>guɭama:	pond by pond
RED- n̪a:ɭum	n̪a:ɭu**n̪**<>n̪a:ɭum	every day
iv. Deletion of coda /m/		
a) Deletion of coda /m/		
RED -marama:	mara<>marama:	tree-by tree
RED -vadda:rama:	vadda:ra<>vadda:rama:	area by area
b) Deletion /m/ and Gemination		
RED -kaddama:	kadda<**k**>kaddama:	stage by stage
RED -tam	ta**<t>**tam	every one's
c) Deletion /m/ and word-final syllable-vowel lengthening		
RED- ma:tam	ma:t**a:**<>ma:tam	every month
RED- maːsam	ma:**sa:**<>ma:sam	every month
RED - n̪e:ram	n̪e:r**a:**<>n̪e:ram	in right time
RED -va:ram	va:r**a:**<>va:ram	every week
RED -ka:lam	ka:l**a**:<>kalam	for a long time
* RED -varudam	varud**a**:<>varudam	every year
11) Partial Reduplication		
a) Copying the heavy syllable base		
RED -enɽum	en**ɽ**<>enɽum	forever
b) Copying the base and sonority relegation		
RED - meːlum	mə̃**n**<>meːlũm̚	more and more

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The bold-faced segments and the (<>) marks at the interfaces highlights the significant changes underwent by the reduplicants as a result of two crucial factors, phonotactics of the onset and the morphological class.

Interaction between labial nasal coda and onset settled with much resistance, except when they share the same natural class- they settled 'with no-visible changes'. Place feature of the coda also has been conditioned accordingly, as in *kudam-kudam-a: > kuda**ŋ**gudama:* 'pot by pot'. In some instances, it encouraged radical changes, deletion of coda is followed by subsequent changes, as in *ma:tam-ma:tam > ma:t**a:**<>ma:tam* 'every month' and *meːlum-meːlum > mə̃**n**<>meːlʉ̃m̚* 'more and more'.

Changes within partial reduplications are rather intriguing. Instead of deleting a segment, PR copies the heavy syllable of the initial parts of the stem. Within *meːlum-meːlum> mə̃**:n**<>meːlʉ̃m̚* 'more and more', the reduplicant with heavy syllable CVC has been copied to the base. This is an instance of increased markedness, whereas the grammar compensates in another way to reduce structural inconsistencies. Nasalisation of the liquid shows that the reduplicant also has experienced routine phonological changes such as sonority relegation at the reduplicant-base interfaces, aiming for markedness reduce and markedness increase in reduplicants.

The morphological distinction is noticed within one instance. As shown by data in (10).iv.(c), temporal nouns are behaving differently from other types of lexical. When a temporal noun with word-final nasal reduplicated, the nasal is deleted while the vowel of a word-final syllable is lengthened.

Phonologically, the labial /m/ has responded differently to reduplicant-base interfaces according to the phonotactics of the initial stem of the base. When the initial segment of the base word and the labial nasal /m/ share the same place of articulation both segments are retained without much resistance. In certain cases, coda deletion became inevitable as well, as in /m-v/ (varudam-varudam) and /m-m/ in (10).iv.(a). This reveals that the grammar still accounts for other necessities, as well.

On the other hand, when the coda and onset fall within different natural-classes, the coda is licensed according to the place feature of the onset. Nevertheless, the flexibility of place assimilation is not extended by default for every onset without considering their natural classes. In the succession of the coda-onsetless segment, the grammar relies on universal preference to maximize the latter as the onset. When two segments from the same region interact at the interface, the grammar sacrifices the coda and retains the onsets. The deletion also seemed to be initiating additional phonological reactions, such as gemination, as in *kaddam-kaddama: > kadda<k>kaddama:* 'stage by stage'. The response of the segments to phonotactics of the initial segment across the morphological boundary has been consistent, in a broad sense. In summary, word-final nasal /m/ reduplications and irregularities borne at the interfaces of TR and PR words in Tamil can be listed as in (12 and 13).

12) Total Reduplications
  - i. retain the labial /m/, when coda-onset share same place of articulation as in 10) i.
  - ii. maximise the labial /m/ as onset when it is succeeded by a vowel, as in 10) ii.
  - iii. condition the labial /m/ according to the place of articulation of onset, as in 10) iii.
  - iv. delete the labial /m/ and respond to simultaneous reactions, as in 10) iv.

13) Partial Reduplication
  - i. retain the heavy syllable of initial base, as in 11) a).
  - ii. retain the heavy syllable of initial base and relegate the sonority as in 11) b).

In what follows, we will see how the language has responded uniquely to different phonological requirement of the labial nasal reduplicant, in order.

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TOTAL REDUPLICATIONS MARKEDNESS REDUCTION AND DELETION

It has been established that languages tend to reduce the prosodic markedness of the reduplicant in many ways. Among them, segment deletion is the universal preference. Tamil is not exceptional to this. It reduces the markedness of reduplicant by deleting coda segments that cannot be licensed economically. The segments at the prosodically weak-position, such as coda of the reduplicants, are easily deleted when they interact with another segment, as seen in (10). iv. a), were given here in (14).

14) Deletion of labial /m/ in reduplicants

Deletion of coda /m/

maram-maram	mara<>marama:	tree-by tree
vadda:ram-vadda:rama:	vadda:ra<>vadda:rama:	area by area

As it could be seen, when coda and onset segments belong to the same natural class, [+Labial], of disyllabic and polysyllabic reduplicants interact, the former is deleted. Two crucial constraints are seemingly playing crucial role to in reducing markedness at the interaction. One is Max-IO and the other is NoCoda. It seems that Max-IO, a constraint that avoids deletion of segments, is undominated in this language. Meanwhile, the same data also reveal that NoCoda is heavily dominated in this language. The initial ranking, as in (17) is of importance for the forthcoming analysis endeavour.

15) MAX-IO
An input must have a representation output
16) NOCODA
Coda must not surface

Finalising the status of NOCODA in Tamil is vital before finalising the same within reduplication. Tamil is a not a NOCODA undominated language like that of Bumaa Fijian, which prefers all syllables to be open-ended (Kager, 1999). The language prefers to retain coda segments in most of the instances.

17) MAX-IO »NOCODA
18) Tableau analysis for /maram/

Input /maram/	MAX-IO	NOCODA
☞a. maram		*
b.mara	*!	

In short, MAX-IO ensures the coda is retained, while NOCODA was unsuccessful to protect its necessities. Therefore, the structural harmony was preserved on the expenses of Markedness constraints (MC).

The same ranking in (17) is sufficient to account for the reduplicant in /RED-maram/, provided it receives an additional constraint referring the status of reduplicant. A new relevant constraint, MAX-BR, might be inserted within the schema of TETU as follows.

19) MAX-IO » NOCODA » MAX-BR

The validity of the ranking could be demonstrated within the following tableau illustration.

20) Tableau analysis for / RED-maram/

Input / RED- maram/	MAX-IO	NOCODA	MAX-BR
☞a. mara-maram		*	*
b. maram-maram		**!	

Candidate (a) is selected as winner on the ground of minimal violation against high-ranking constraint. Candidate (b) was denied optimality for registering double violations against NOCODA compared to one by the winner, indicating that violating high ranking constraint such as NOCODA is more vulnerable than satisfying the low-ranking constraint, MAX-BR.

So far the result is good. It shows that the labial nasal also behaved in a universally preferred manner to minimise the markedness in reduplicants. However, as we will see, this universal tendency is not withheld in other contexts influenced by constraints with different requirements.

MARKEDNESS REDUCTION AND ONSET-MAXIMISATION

In this section, we would see how markedness reduction is sustained through Onset-Maximisation. The interaction between prosodically weak and strong positions appeared to be settled in accordance with universally-preferred way. However, the interaction of consonants in the weak position and vowel in the prominent position is showing different resettlement in order to respond to the requirement of structural differences. The language prefers markedness reduction in the favour of Onset-Maximisation, supporting the view that Tamil is an onset-friendlier language (Mohana Dass, 2010). In accordance with this requirement, therefore, the language repairs syllable that not fulfilling this requirement at the surface as a result of morphological concatenation. This is evident from the data below.

21) Onset-Maximisation

a:m-a:m	a:**m**a:m	true
innum-innum	innu**m**innum	more and more
em-em	em**m**em	ours

Interaction between the final coda of reduplicants and the vowel initial syllable bases have responded in two different ways. Onset Maximisation in vowel-initial bases is fulfilled by resyllabification of the final coda at the reduplicative morphemes into the following syllable, which has no onset. The resyllabification process provides an onset to the initial syllable of the base. The situation at hand differs from other languages such as Kosraean, a Micronesian the language spoken on the island of Kosrae, in the Eastern Caroline Islands (Kennedy, 2008). The language prefix VC element in reduplication involving polysyllabic vowel-initial roots, which is described as syllabified by itself (Kennedy, 2008). Intervocalic environments emerge as a result of the formation is unhindered. Surprisingly, the vowels within the polysyllabic vowel-initial roots are syllabified independently without, defying the norms of the universal preferences – to maximise the vowel as the onset.

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22) Prefixed vowel-initial disyllables

ipihs [ipis]	'to roll'
ipipihs [**ip**.i.pis]	'to roll bit by bit'
olang [olaŋ]	'to open'
ololang [**ol**.o.laŋ]	'to open again and again'
ewuh[ewu]	'to lift'
ewewuh [**ew**.e.wu]	'to lift little by little' (Kennedy, 2008)

Kosraean seemed to be flexible with word-medial vowel syllable in reduplications, but Tamil prefers otherwise. It adopts the universal preferences, where all syllable must begin with consonant word-medially.

The C-V interaction is an instantiation of Onset-Maximisation, as well. Rice (2002) formulates Maximise-Onset (Onset-Maximisation (OnsMax), on the principle that a coda may be retained if only if it is of greater sonority compared to the consonant succeed it. In other words, if the coda is of less sonority compared to the succeeding segment, then, the former is maximised as the onset for the subsequent syllable. This shows that the language has a constraint denying onsetless syllable word internally. The following constraints might be proposed as responsible for this effect.

23) $*[_\sigma V^{\text{word-medial}}$ $(*[_\sigma V^{\text{w-m}})$[2]
Word-internal syllable must begin with an onset

OnsMax
Maximise-Onset (Onset-Maximisation)

It must be stressed that the formulated constraint needs to avoid onsetless syllable word-medially because of the language allows onsetless syllable word-initially, alone. Therefore, applying a plain constraint such as $*[_\sigma V$ (*Onsetless) will not perform the same task as this language-specific well-formedness constraint.

Although the expected changes have taken place without much restriction in the first two examples in (21), the last example has shown a slight resistance. The coda in the reduplicant posits some extrametrical requirement, which has enforced the *em-em* > *em**m**em* 'ours', sharing the same intervocalic environment as others, to undergo gemination. We will return to this issue of special requirements involving the *em-em* > *em**m**em* 'ours', after analysing the requirement of the first two examples.

As we have seen before, the act of allowing prosodic markedness in base and denying its presence in reduplicant is the effect of TETU, where the Max-IO dominates the well-formedness constraint, NoCoda, but the same dominate Max-BR.

24) MAX-IO » NOCODA »MAX-BR

This ranking should accommodate two more well-formedness constraints that have a stake in the surface structure as well to account for the alteration that take place within the shown examples. The Onset-Maximisation and constraint denying onsetless syllable surface in word-

[2] A participant of the conference argues that the effect of the formulated constraint can be achieved by ranking *ONSET above DEP-IO, therefore the constraint is redundant. The language allows onsetless syllable word-initially but blocks in word-medially through every possible way, except for the insertion of epenthesis. In this case, applying DEP-IO will not solve the problem to any extent.

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medially, *[$_\sigma$V$^{w\text{-}m}$, must be assigned within the ranking as well. Following the principle of TETU, placing these constraints along the markedness constraint would provide the desired outcome – a reduplicant which is denied with prosodic markedness.

25) Tableau analysis for / RED-innum/.

Input / RED-innum /	MAX-IO	*[$_\sigma$V$^{w\text{-}m}$	ONSET-MAX	NOCODA	MAX-BR
☞a. innu-**m**innum				***	*
b. innu-innum		*!	*!	***	*
c. innum-nnum	*			***	

26) Tableau analysis for / RED-a:mam/

Input / RED-a:m /	MAX-IO	*[$_\sigma$V$^{word\text{-}medial}$	ONSET-MAX	NOCODA	MAX-BR
☞a. a:.ma:m				*	*
b. a:m.a:m		*!	*	*	*

Analysis of both /RED-*innum* / and / RED-*a:m*/ reveal that the language prefers reduction in reduplicant freely but ensure the base respects the language-specific requirements sufficiently. While the interface between polysyllables and heavy syllables such as V:C behaved in such way, light syllable word, VC, within reduplications behaved differently. It challenges constraints ranking reached in (25 & 26) to predict the right optimal candidate, as illustrated in the following tableau:

27) Tableau analysis for / RED-em/

Input / RED-em /	MAX-IO	*[$_\sigma$V$^{word\text{-}medial}$	ONSET-MAX	NOCODA	MAX-BR
☞a. em.mem				**	
b. em.em		*!	*	**	

The input-friendlier candidate lost the competition for allowing an onsetless syllable word-medially. But the same tableau did not explain why the winner should surface with a geminate. We shall pursue the current issue which has been left unexplained before.

The necessity for the gemination lies within the prosodic requirement of the language, where it ensures all minimal words satisfy moraic requirements. The *MINIMAL-BIMORAICITY requirement of the language is explained in the following diagram.

```
28)   * MIBIM        MIBIM            σ      σ  (Disyllabic)
        |              |              |      |
        i  x   -    m u ɽ ai    →   i(m) m u ɽ ai
        | |            |   \          | |    |   \
        μ (μ)          μ   μ μ        μ μ    μ   μ μ

29)   MIBIM         MIBIM             σ            σ  (Disyllabic)
        |              |              |            |
        e m    -      e m     →       e. m. (m) e m
        | |           | |             | |         |  |
        μ μ           μ μ             μ μ         μ μ
```

The diagrams show the interaction between monomoraic prefix and a disyllabic word. The moraic shortfall in the prefix is levelled at the surface, where the onset /m/ at the intervocalic position (VCV syllable form), supplied a moraic geminate. This outcome corresponds to claim by Mohana Dass (2010) who argues that all codas within stem/word-initial (VCV) syllables in Tamil are moraic; the language retains them uncompromisingly.

Diagram (28) shows minimal bimoraic words in reduplication. The base and the reduplicants consist of moraic coda within prosodically weak positions, which cannot be given away easily. Meanwhile, the same language also disfavours an onsetless syllable forming word-medial syllables. It is necessary for the structure to fulfil these dual requirements, economically.

The necessity of minimal-bimoraicity has been fulfilled by gemination triggered within stem/word initial (VCV) at the intervocalic position, which shows the diagram (28). Besides reducing the markedness within reduplicant, it also has increased the structural well-formedness of the base. The geminate skipped coda-condition because they share the same place feature with onset (Ito, 1986). This also indicates that NoGemination (NoGem) is a dominated well-formedness constraint in this language.

30) *MINIMAL-BIMORAICITY (*MINBIM)
Minimal word must be bimoraic

31) NOGEMINATION (NOGEM)
Do not geminate

The constraints at hand targeting the base have different ranking requirements. Among them, the MINIMAL-BIMORAICITY is an undominated constraint that outranks all other constraints. Therefore, an otherwise ranking would produce an ill-formed structure, violation of language-specific requirement. NoGem, on the other hand, targets the well-formedness of the base as well. Therefore, assigning *Minimal-Bimoraicity along with Max-IO and the NoGem with well-formedness constraints is necessary for the structure to sustain harmony.

32) Tableau analysis for / RED-em/

Input / RED-em/	MAX-IO	*MINBIM	*[$_\sigma$V$^{\text{word-medial}}$	ONSET-MAX	NOGEM	NOCODA	MAX-BR
☞a. em-mem					*	**	
b. em.em			*!	*		**	
c.e.mem		*!				*	

Candidate C is ousted from further evaluation for not favouring requirement of minimal bimoraicity. The input-friendlier candidate also faces the same result for allowing onsetless syllable word-medially. Violation registered against low-ranked well-formedness constraints seemed to be necessary for minimal bimoraic words to surface with reduced markedness.

Several findings were unveiled in this section. It proved that the language imposes stricture adaptation requirements as far as the natural phonological requirements are concerned, especially that revolving around the coda. On top of that, the findings also took us close to the needs of prosodically modified characteristics within the phonological structure of the reduplicants. The extra-metrical requirements and adding seen within the reduplicants were, in fact, resulted from the need to meet the prosodic requirements such as the *MINIMAL-BIMORAICITY, triggering an unprecedented change in the reduplicant.

MARKEDNESS REDUCTION AND CODA-CONDITION

The language also thrives another way to minimise the markedness of the labial nasal coda in reduplicants. It conditions the codas to establish harmonic contact between onset and coda. In other words, another aspect of labial nasal evolution within reduplicative words is coda-condition (Ito, 1986).

Whenever consonants of different classes in reduplicant codas and onsets interact, place assimilation is triggered. This is done to avoid unnecessary tension at the interface that may jeopardise the structural harmony. Place assimilation between onset and coda that triggered to avoid unnecessary perceptual tension is evident in the following examples.

33) Coda-Condition

tinam-tinam	tina**n̪**tinam	every day
kudam-kudam-a:	kuda**ŋ**gudama:	jug by jug
kuɭam-kuɭama:	kuɭa**ŋ**guɭama:	pond by pond
n̪a:lum- n̪a:lum	n̪a:lu**n̪**n̪a:lum	every day

34) Retain the coda /m/

perum - perum	peru**m**perum	huge-huge
panam - panam	pana**m**panam	money money

All examples show apparent place assimilations. Interaction of onset of dorsal and coronal with unlicensed labial coda is conditioned according to that of the onsets in polysyllable words. The coda is altered to become homorganic nasal sharing place of articulation with onset, which allows the interface to minimise the distance of the place of articulation between both, the nasal and onset stops.

On the other hand, reduplicants with labial nasal coda retain the coda. This became possible, if and only if, the former share place of articulation with the word-initial onset of succeeding term, as well, shows the data in (33). Interaction between a labial nasal coda and labial stop onset settled harmonically with no changes or markedness reduction, showing that segments from the same natural class, [+labial, +stop] may settle down uninterruptedly. It seems that the natural phonology of the language, placing sonorous segments within coda positions (Mohana Dass, 2010) favoured the markedness reduction in an economic way.

The abovementioned requirements are enforced by a well-formedness constraint, Coda-Condition, on top of Max-IO» NoCoda »Max-BR.

35) CODA-CONDITION
Coda must not have place specification

This constraint ensures no unlicensed coda surface in the output. Ranking the constraint along with NoCoda, would yield to obtain the right result – the coda in reduplicant without place feature, and allows structural harmony as the end result at a reasonable price. The following is the representative analysis for one of the examples we have seen in (33).

36) Tableau analysis for / RED-tinam/

Input / RED- tinam/	MAX-IO	CODACOND	NOCODA	MAX-BR
☞a. tinaṉ-tinam			**	
b. tinam-tinam		*!	**	
c. tina-tinam			*!	*
d. tinam-inam	*!		*	

This is a typical reaction, showing that 'when the initial segment of the base word and the labial nasal /m/ share the same place of articulation both segments are retained without much resistance', as has been explained before (refer to data for explanation). Though the candidate (a) incurred double violation against relatively low-ranked NOCODA, it emerges as the optimal candidate. This shows that satisfying the coda-conditioning and protecting the identity of the base is prominent than having satisfied the prosodic requirements in reduplicant. Candidate (b) lost the competition for violating coda conditioning, where the place assimilation did not take place. The close competitor, candidate (c), is proven to be sub-optimal for not satisfying, NOCODA in the base and not satisfying the Max-BR. The worst performer of all is the candidate (d), which incurred fatal violations against constraints requiring onset-maximization, Max-IO, a constraint that protecting the segments in the base.

The findings show that the phonology of Tamil did not impose a fixed requirement for reduplications ending with coda /m/. Though, the prosodic requirements were upheld as an important criterion in resolving the phonological conflict, the language still favours coda-conditioning and protecting the identity of the base is prominent, at all cost.

MARKEDNESS REDUCTION AND SEGMENT DELETION

Segment deletion is another preference of Tamil to reduce the prosodic markedness of the reduplicant. Earlier we have seen that the language employs deletion freely to avoid prosodic markedness. Tamil reduces the markedness of reduplicant by deleting coda segments that cannot be licensed economically. The deletion of labial /m/ within the following data should be viewed as an attempt to reduce the segmental markedness but not prosodic. In other words, the deletion targets labial nasal, /m/, at the coda but not the position. Segment deletion is common within polysyllabic reduplicant and monosyllabic reduplicant, as indicated by the data in (37).

37) Deletion - Gemination - Vowel Lengthening

a) Deletion /m/ and Gemination

tam-tam	ta<**t>**tam	everyone's
kaddam-kaddama:	kadda<k>kaddama:	stage by stage

b) Deletion and word-final syllable-vowel lengthening

ma:tam- ma:tam	ma:t**a:**<>ma:tam	every month
ma:sam - ma:sam	ma:**sa:**<>ma:sam	every month
n̪e:ram- n̪e:ram	n̪e:r**a:**<>n̪e:ram	in right time
va:ram-va:ram	va:r**a:**<>va:ram	every week
ka:lam-ka:lam	ka:l**a**:<>kalam	for a long time
*varudam-varudam	varud**a**:<>varudam	every year

From the data, we learn that all labial nasal codas within the reduplicants have been deleted, regardless to syllable quantity: all lexical words with monosyllable /*tam*/ to polysyllable such as /*kaddam*/ experienced the same result. Implicitly, this reveals that markedness reduction targets the labial nasal at coda, but not the lexical as whole.

The deletions led toward two types of markedness reduction in the data. Firstly, within the interaction between coda and onset belong to a different natural class, the former is deleted: the place vacated by the coda is substantiated by the onset. Data in 37(a) show that interaction between the onsets /k and t/ from [+Dorsal] and [+Coronal] and the coda /m/ from [+Labial], settled in the favour of the onsets. As shown by the data in 37(b), the language also compensates coda deletion in a language-specific way within morphological words denoting temporal meaning regardless of the onset and its natural class. The vacant emerged from deletion is compensated with vowel lengthening. We will deal with each one of the dissimilar behaviour in detail.

Let begin with segment deletion. Deletion of labial nasal /m/ in 37(a) results from constraint restricting the labial nasal coda. But the same restriction within 37(b) targets Temporal Nouns. To solve the conflict, the following constraints are proposed as factor enforcing the deletion in two different contexts, respectively.

38) *Temporal Noun end with m]$_\sigma$[3] (*TN-m]$_\sigma$)
No labial nasal /m/ at the coda

Replacing this markedness constraint, substituting NoCoda, within the schema of TETU may give the following order.

39) Max-IO » *TN-m]$_\sigma$ » Max-Br

The validity of the ranking could be demonstrated within tableau illustrations for temporal terms. For others, previous achieved ranking schema (24) is sufficient.

[3] Notice that nasal deletions in 37(b) are partially contributed by the morphological requirements as well. The constraint, *Temporal Noun end with -m]$_\sigma$ (*TN-m]$_\sigma$) therefore is necessary to account for this sort of context.

40) Tableau analysis for / RED-maram/

Input / RED- maram/	MAX-IO	NOCODA	MAX-BR
☞a. mara-maram		*	*
b. maram-maram		**!	

Candidate (a) is selected as winner on the ground of minimal violation against high-ranking constraint. Candidate (b) was denied optimality for registering double violations against $*m]_{\sigma}$, compared to one by the winner, conforming again that violating high ranking constraint is more vulnerable than satisfying the low-ranking constraint.

However, when the same ranking argument is applied for data in (37a) with additional candidate allowing deletion, the ranking gives incomplete results, as follows.

41) Tableau analysis for / RED-tam/

Input / RED- tam/	MAX-IO	NOCODA	MAX-BR
☞a. tat-tam		**!	*
b. tam-tam		**	
☹c. ta-tam		*	

42) Tableau analysis for / RED-ma:tam/ (Temporal Noun)

Input / RED-ma:tam/	MAX-IO	$*TN\text{-}m]_{\sigma}$	MAX-BR
☞a. ma:ta:-ma:tam		*	*
b. ma:tam-ma:tam		**	
☹c. ma:ta-ma:tam		*	

Both tableaux analyses for a temporal noun and non-temporal noun have predicted sub-optimal candidates, candidates (c) as winners, for incurring lesser violations. This shows that the tableaux are lack of a pertinent well-formedness constraint. Solutions for the foregoing shortcomings lie in the extra-prosodic elements generated by the reduplicants. Data in 37(a) have undergone gemination, word-medially and finally, and vowel-lengthening to compensate for the place vacated by the deletion of coda, as illustrated in the following diagrams.

43)

RED - Input	Output	Glossary
t a m t a m	tat-tam	self
t a t t a m	tat-tam	self
*t a(x) t a m	ta(x)-tam	-

44) RED-Input Output Glossary

m a: t a m m a: t a m ma:ta:ma:tam every month

| | | | |

m a: t a (a)(a:) m a: t a mma:ta:ma:tam every month

| | | | |

* m a: t a(x) m a: t a m ma:ta(x)ma:tam every month

Note that the place of coda /m/ is altered as dental /t/ to avoid perceptual conflict, instead of /n̪/, a common way of solving the issue in (43). Yet, it went extra-heap to relinquish coda /m/, before receiving, the dental /t/ at the onset. This is done just to maintain the language requirement, coda-licensing and conditioning are important within monosyllable words. The same is tolerated within non-monosyllable words.

Note that the asterisk marked structures are lack of representation in outputs, due to which the structures have been branded as ill-formed. This shows that the structural constraint HavePlace (following Ito and Mester, 1995) is operating at this juncture.

45) HavePlace (HvPlc)
Retain the place of every segment

Therefore, it is vital for any structure to satisfy this constraint to be optimal. Placing this constraint along with MC that denying labial nasal may rectify the shortcomings of the given tableaux and their analyses.

46) Tableau analysis for / Red-tam/ (Non-temporal noun)

Input / Red - tam/	Max-IO	HvPlc	NoCoda	Max-BR
☞a. tat-tam			*	*
b. tam-tam			**!	
c. ta-tam		*!	*	

47) Tableau analysis for / Red-ma:tam/ (Temporal Noun)

Input / Red-ma:tam/	Max-IO	HvPlc	*TN-m]$_\sigma$	Max-BR
☞a. ma:ta:-ma:tam			*	*
b. ma:tam-ma:tam			**!	
c. ma:ta-ma:tam		*!	*	

The rectified tableaux indicate that reduction of markedness in the reduplicants targets labial nasal alone, but not the place feature. Therefore, candidates (b) and (c) have been proved to be sub-optimal because of their inability to satisfy the requirement.

The foregoing analyses portrayed interesting outcomes. Phonological reactions within the reduplicants are multi-faced. They were not only controlled by the phonological requirements of the language alone, but also by the prosodic phonological requirements. On top of this, the reactions were also controlled by morphologically controlled words, where the mono-syllable terms and non-mono-syllable terms tend to behave differently.

MARKEDNESS REDUCTION AND PLACE ASSIMILATION

Reduplicant with labial nasal /m/ in Tamil retains the coda only if the former share place of articulation with the word-initial onset of succeeding term, like in the following.

48) Retain the coda /m/

perum - perum	peru**m**perum	huge-huge
panam - panam	pana**m**panam	money-money

Interaction between labial nasal coda and labial stop onset settled harmonically with no changes or markedness reduction, showing that segments from same natural class, [+labial, +stop] may settle down uninterruptedly.

The applied strategy is the revelation of result transmitted by the interaction between two crucial constraints. It seems that Max-IO, a constraint that avoids deletion of segments is an undominated constraint in this language. Meanwhile, the same data also confirms that Tamil is a NoCoda dominated language.

49) MAX-IO »NOCODA

50) Tableau analysis for /perum/

Input /perum/	MAX-IO	NOCODA
☞a. perum		*
b. peru	*!	

In short, MAX-IO ensures the coda is retained, while NOCODA was unsuccessful to protect its necessities; therefore, the structural harmony was preserved on the expenses of MC. The same ranking in (49) is sufficient to account for the reduplicant in /RED-perum/. Since the tableau offers no-reference to the status of reduplicant, a relevant constraint, MAX-BR, might be added as in (50) to account for the reduplication of /perum/.

51) MAX-IO » NOCODA » MAX-BR

52) Tableau analysis for / RED-perum/

Input / RED-perum/	MAX-IO	NOCODA	MAX-BR
☞a. perum-perum		**!	
b. peru-perum	*!	*	*

The result is straightforward. The victor, candidate (a), performed satisfactorily against the high-ranking constraint, MAX-IO, while the performance of both candidates against

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NoCoda was poor, indeed. Candidate (b) lost the competition for not satisfying the reduplicant against deletion.

The result reaffirmed, once again, the language-specific requirement. It is evident that the markedness of the prosodically weak position within reduplicant is tolerated, as long as it satisfies the basic phonological requirements of the language. However, this flexible tenure of reconciliation is not withheld in contexts showing onset/coda asymmetries. This scenario is even prevalent in PR shows the following investigation.

PARTIAL REDUPLICATION

MARKEDNESS REDUCTION AND DELETION

Partial reduplication in Tamil copies enough segments from the base to form a heavy syllable, a similar strategy which is apparent in Agta (Marantz, 1982). Instead of reducing the markedness in the reduplicants, Tamil and Agta increase the markedness in the reduplicant, in this way. Since Tamil is a NoCoda dominated language, the preference is allowed on the ground of Max-IO»NoCoda. The act of increasing markedness of the reduplicant, compared to the base form, still works well within the phonology grammar of the language.

Formation of partial reduplication in Tamil follows a fixed pattern-copying the heavy syllable of the base initial syllable. The syllable can be as large as CV:C or as minimal as CVC. If the base initial syllable does not support this requirement, the language forms a heavy syllable by acquiring the onset of the succeeding syllable. Since coda consonants make weight in Tamil, copying the onset appeared to solve the problem easily, shows the following syllables.

53) *meːlum - meːlum*	*mə̃**:n**<>meːlʉ̃m̚*	more and more
enɽum-enɽum	*enɽ<>enɽum*	forever

The same could be notice in PRs that not ending with /m/ as well. The followings, *RED – pala> paR<>pala* ‘variety’, and *RED-veRu<>veve:Ru* ‘multiple’ show that Tamil forms heavy syllable by acquiring the onset of the following syllable, proving that retain the heavy syllable in RED strategy is not limited to terms that having coda /m/ alone.

In the first example, the adjectival form of /*meːlum*/ dropped its conjugative suffix, /um/ in the reduplicant. The base with open initial syllable but the reduplicant copied the heavy syllable form-closed CV:C (*me:l*). Interaction between liquid and nasal is harmonized through feature spread which has been enforced by sonority constraints, MSD (54), requiring the adjacent segments to respect certain desired degree of sonority disparity.

54) MINIMAL SONORITY DISTANCE (MSD)
Sonority distance between adjacent segments must be minimal

However, in the second instance, the language forced the onset to be copied to initial syllable to fulfil its structural requirement. Although Tamil and Agta share a lot of resemblances in deriving partial reduplications, both languages differ significantly at one point. Tamil does not tolerate violation of sonority distance at the interface, but Agta does.

55) Agta Reduplication

a. ba.ri ’body’	bar.ba.ri-k kid-in	my whole body	
b. tak.ki ’leg’	tak-tak.ki	legs	(Kager, 1999, p. 200)

In the first instance, the coda of the reduplicant, /r/, and the onset of the base, /b/, the sequence is considered as non-troublesome universally, as the sonority of the coda is greater than that of the onset. The sequence has a respected principle of Sonority Contact Law (SCL)(Vennemann, 1988), a law which requires adjacent consonants to respect some sonority distance–the preceding coda segment is expected to be greater in sonority than the succeeding onset. The important of SCL in Tamil has been verified extensively by Mohana Dass (2010).

However, the sequence of /k-t/ within the second instance is not that friendlier to two requirements, SCL and Coda-Condition. The requirement of SCL is violated as both segments come from the same sonority hierarchy (stops) and sequenced segments do not show disparity distinctions as they should. As for the second instance, it appears that Agta pays lesser care to phonological harmony between reduplicant and base, as it tolerates violation of place of articulation freely within reduplicated words. Since investigating the comprehensive effect of TETU in Agta as such is beyond the scope of the paper, this issue will not be pursued any further.

Tamil does not allow sonority disorder between reduplicant and base. It ensures the coda respects sonority requirement at all time, if not Tamil enforces different strategies to obtain the harmony. The feature spread seen within /*mə̃****:n***<>*me:lũ*m/ is an instance of this requirement, clarifies the following diagram.

```
56)               Coda   Onset
                      |      |
[+Lateral, +Alveolar]  [+Nasal, +Labial]
                      |      |
                   …l  –  m…
                      ¦ ⟋ |
                   …n  –  m…
                      |      |
[+Nasal, +Alveolar]    [+Nasal, +Labial]
```

The diagram shows that the lateral feature of coda has been blocked, while the onset has spread its nasality feature to coda and ensured both, the onset and the coda have some resemblances.

ANALYSIS

OT analysis for partial reduplication involving labial nasal /m/ in Tamil can be done straightforwardly by acquiring MC responsible for duplicating the heavy syllable and the sonority constraints, MSD. The following constraint will do the job sufficiently.

57) RED=$\sigma_{\mu\mu}$
The reduplicant must be heavy syllable

This constraint deserves a ranking along the MAX-IO and above the well-formedness and MAX -BR. Since the MSD thrives for structural-well formedness, it deserves a place along the NOCODA, and form a simple ranking, as in (58).

58) MAX-IO, RED=$\sigma_{\mu\mu}$ » MSD, NOCODA » MAX-BR

The foregoing is sufficient to predict the right candidate choice, for /*mɔ̃:**n**<>me:lɯ̃m̚*/ and for *enɾ<>enɾum*.

59) Tableau analysis for / RED- *me:lum/*

Input / RED - *me:lum/*	RED=σμμ	MAX-IO	MSD	NOCODA	MAX-BR
☞a. *mɔ̃:**n**-me:lɯ̃m̚*				**	*
b. *me:lum-me:lum*	*!			**	
c. *me:l-me:lum*			*!	**	*

60) Tableau analysis for / RED- *enɾum/*

Input / RED - *enɾum/*	RED=σμμ	MAX-IO	MSD	NOCODA	MAX-BR
☞a. *enɾ-enɾum*				***	*
b. *enɾum-enɾum*	*!			****	
c. *en-enɾum*	*!			***	*

The constraints did not show an otherwise result. They proved that partial reduplications must copy heavy syllables and respects the sonority-distance between coda of the reduplicant and the onset of the base. Candidates dissatisfying these requirements, therefore, are treated to be sub-optimal, as the case of candidates (b) and (c).

FINDINGS AND DISCUSSIONS

It has been mentioned earlier that this is the first of its kind of studies in the Tamil that has touched about the TETU peculiarities of the /m/ coda at the juncture within the total and partial reduplications. The findings offered here are novel in nature, though, a few might be seen as casual reactions, and others are of distinctiveness. The study clarified that there is a language still allows several heaps of tolerance involving a specific phoneme at the juncture, especially between the base and reduplicants. This includes the assertion, deletion, and assimilation reactions that witnessed at the juncture which are common coda-conditioning reactions, but, previous studied have yet verified this universality within a single phonemic coda, which was resulted from the flexibility inheritance properties of the phoneme. The study also confirmed that besides natural phonology, the prosodic phonology also has its stake in ensuring the well-formedness of the reduplications is maintained. Nevertheless, in some instances, it also indicated that contributions of morphological necessities, too, have influences in interactions. While these pre-requisites were common to TR in Tamil, the PR employs a steady policy, maintains the heavy syllable base and lets the coda undergo conditioning accordingly. The probability of finding a phoneme that could match such flexibility in other languages is very minimal.

CONCLUSION

This study has focused on TR and PR issues that evolve around specific circumstances involving bilabial nasal /m/ within a Dravidian language, Tamil. Unlike other nasal sounds in the language, it behaves differently at the coda positions, especially within the reduplicative words. Various strategies were used to improve the markedness involving the labial /m/ in the prosodically weak positions, specifically aiming at the coda /m/ within the reduplicants. The same markedness, however, is left untouched within the base words.

The results prove that this Dravidian language did use uniform strategies to improve the markedness of the reduplicants but responded individually in accords to language-specific requirements. As a result of this, the labial /m/ related words witnessed both, markedness reduction and increase, unlike other phonemes involved in the reduplications which show regular practices. Phonological consequences within reduplicants as such were consequences of TETU, and the Tamil solves the issues in accord to its phonological requirements.

Altogether, there are at least seven non-similar ways in which the bilabial nasal responds to the murkier circumstances in the event of finalising the harmonic reduplicants. Repairing strategies such as no change, reduction of place feature, onset-maximisation, coda-condition, segment deletion, and markedness increase have paved ways for the segment to retain the positional value in weak prosodic positions of the segment in unprecedented ways. The best strategy is selected based on the appropriateness and suitability of the circumstances. It shows that though the bilabial /m/ is a weak segment, its positions within the structures are not. The contextual sensitivity of reduplicant-base interfaces could not be treated lightly shows the study.

The study confirms that reduplication involving vowel final and consonant final in Tamil takes place systematically. It does not involve markedness reduction in reduplicant unless intervened by external well-formedness structures. However, the form of such a unity reaction is not applicable to reduplicants with the final labial nasal coda, /m/ that preceded by mid-low vowels. It also has been verified that the reduplicative words and ‘ordinary terms’ ending with coda /m/ behave differently, where the reduplicant within the former tends to reduce markedness of its prosodically weak position in many ways, while the same markedness is tolerated within the base words, in isolation or otherwise. It responds, at least, in seven different ways (in isolate or simultaneously) in reduplications, suggesting that the markedness reducing and markedness increasing should be addressed as a context-sensitive issues of reduplicant-base, in the lights of natural and prosodic phonology, collectively, but not in the absence of one against another. In sum, this study verified that even a single coda could trigger various the phonological and morphological reactions of reduplicative words as the consequences of TETU, which were resolved in language-specific ways, subsequently, adding a new perspective to TETU based studies, especially, that involving reduplications.

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