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Sonorant Gemination in Old Tamil

Ramprashanth Venkatakrishnan
Madurai Kamaraj University, India

Somdev Kar
Indian Institute of Technology Ropar, India

Abstract Old Tamil exhibits two kinds of sonorant gemination, which were previously explained by two separate, linear phonological rules. We postulate that the rules explaining both these 'separate' phenomena are part of the same conspiracy. This study is devoted to exploring the optimality theoretic analysis of the phenomenon of morphologically derived geminates in Old Tamil, as depicted from Sangam poetic texts and the traditional Tamil Grammars (*Tolkāppiyam* and *Naṉṉūl*). We use optimality theoretic markedness or well-formedness constraints like Prosodic Word constraint (ProsWd) and faithfulness constraints like DEP-IO, MAX-IO, NoCoda, etc., as part of the explanatory apparatus. The analysis focuses on a unified ranking of constraints explaining the gemination phenomenon in Old Tamil.

Keywords Sonorant Gemination. Old Tamil phonology. Optimality theory. Prosodic word constraint. Conspiracy. Morphology.

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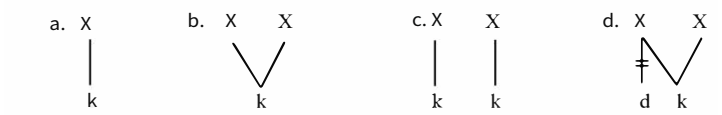
1 Introduction

Sonorant consonants are a subcategory of consonants that include the nasals, liquids (laterals and trills) and glides. These are distinguished from obstruents (stops, affricates, and fricatives) because of their relatively high sonority value. Geminates take a longer span of time to produce consonant sounds than singleton consonants. In Old Tamil, we can see two types of sonorant geminate formation. We have considered these two phonological phenomena to be part of the same conspiracy, i.e. one that prefers the optimal output of a sonorant geminate. This alternative explanation is parallel, i.e., in the framework of Optimality Theory (Kager 1999; McCarthy, Prince 1993; 1994; 1995), as opposed to linear phonological rules. The Sonorant consonants in Old Tamil are the Nasals (bilabial, dental, alveolar, palatal, retroflex and velar), Liquids (alveolar lateral, retroflex lateral, alveolar tap, alveolar trill and retroflex approximant) and Glides (labiodental and palatal). The Sonorant consonants that do not undergo this gemination are the velar nasal, alveolar tap/flap, alveolar trill and retroflex approximant.

Old Tamil (as well as Modern Tamil) is one of the unique languages that have morphologically derived geminates. A language like Tashlhiyt Berber has four kinds of geminates (which don't cover the type in Old Tamil, which we will discuss in this paper). It has (1a) singleton stops, (1b) lexical geminates, (1c) geminates due to morpheme concatenation, and (1d) geminates due to assimilation (Ridouane 2010).

(1)



1.1 Old Tamil

Tamil is a South Dravidian language (Krishnamurti 2003, 22) spoken in the state of Tamil Nadu in Southern India. It is spoken in southern India and north-eastern Sri Lanka since prehistoric times (Annamalai, Steever 1998, 100). It is spoken by 53 million speakers in India, according to data from the 2011 census (Ministry of Finance 2012). It has the status of an Official and National language in Sri Lanka. It has the status of an Official language only in India (Choudhry et al. 2016) and Singapore (Tan 2005), while it is recognised as a minority language in Mauritius (Meetarbhan 2017), South Africa (Kamusella, Ndhlovu 2018) and Malaysia (Schiffman 1999, 1). Tamil's closest relatives are Malayalam (spoken in the neighbouring state of

Kerala) and Irula (a tribal language spoken in the Nilgiris district of Tamil Nadu) (Annamalai, Steever 1998, 101). Tamil is classified as one of the South Dravidian languages (Krishnamurti 2003). Tamil is diglossic, the formal or literary variety still essentially conforming to standards set in the thirteenth century by the Tamil grammarian Pavananti, who composed a treatise called *Naṉṉūl* ("the good book") on Tamil grammar. This formal variety (High Tamil) is used in almost all written media and for certain high-register functions. In all other situations, colloquial Tamil (Low Tamil) is used and is characterised by considerable regional and social variation (Schiffman 2017). Old Tamil is said to have been spoken from 300 BCE to 700 CE, followed by Middle Tamil (700 CE to 1600 CE) and Modern Tamil (1600 CE to the present) (Lehmann 1998, 75). Such a periodisation, though convenient, is 'necessarily distortive' as many classical texts cover several strata of time and are not easily pinned down to one point in time (Wilden 2018, 4). High Tamil is considerably based on Old Tamil grammatical features and vocabulary.

All of the data on Old Tamil for this paper are obtained from the Sangam poetic texts and the traditional Tamil Grammars (*Tolkāppiyam* and *Naṉṉūl*). The Sangam corpus is the oldest extant literature on Old Tamil. It consists of text corpora like the *Eṭṭutokai* ('Eight Anthologies') and *Pattuppāṭṭu* ('Ten Idylls'), which are collections of Old Tamil poems of *Akam* (love poems) and *Puram* (heroic poems) genres.

(2) Sangam corpora: *Eṭṭutokai* ('Eight Anthologies') and *Pattuppāṭṭu* ('Ten Idylls')
a. Eight texts of *Eṭṭutokai*

- *Kuṟuntokai(kuṟu)*;
- *Aiṅkuṟunūṟu(aiṅ)*;
- *Naṯṯiṇai(naṯṯ)*;
- *Kalittokai(kali)*;
- *Patiṯṯuppattu(pati)*;
- *Paripāṭal(pari)*;
- *Akanāṉūṟu(aka)*;
- *Puṟanāṉūṟu(puṟa)*.

b. Ten texts of Pattuppāṭṭu

- *Tirumurukāṯṯuppaṭai(tiru)*;
- *Poruṇarāṯṯuppaṭai(poru)*;
- *Ciṟupāṇāṯṯuppaṭai(ciṟu)*;
- *Perumpāṇāṯṯuppaṭai(perum)*;
- *Mullaippāṭṭu(mull)*;
- *Maturaikkāñci(matu)*;
- *Neṭunalvāṭai(neṭu)*;
- *Kuṟiñcippāṭṭu(kuṟi)*;
- *Paṭṭiṉappālai(paṭṭ)*;
- *Malaipaṭukaṭām(malai)*.

The word Sangam refers to the Sangam period or age, which is the historical period of ancient Tamil Nadu, Kerala and parts of Sri Lanka (then known as Tamiḻakam) spanning from 300 BCE to 700 CE (Parameswara Iyer 1953). It was named after the famous 'Sangam' (meaning congregation) academies of poets and scholars. Tolkāppiyam is the earliest extant grammatical treatise on Old Tamil that discusses grammar and poetics. A particular chapter called *Eḻuttatikāram* (*Eḻuttu* means 'letter' and can be interpreted as meaning a phoneme) in Tolkāppiyam deals with the phonology and phonotactics of Old Tamil (Rangan 2012, 5-6). We are informed about much of Old Tamil phonology through these traditional grammars. For example, one of the phonological rules that we deal with in § 2 which is part of a conspiracy, is taken from a *Naṉṉūl* aphorism.

There have been several treatments of the Morphophonology of Tamil in the past. These include descriptive studies by Balasubramaniam (1989) and Subramoniam (2003), a study on generative phonology by Vasanthakumari (2000), a work on lexical phonology by Christdas (2013), and constraint-based studies by Beckman (2009) and Ramasamy (2011). There has been a brief sketch of Old Tamil Phonology in Lehmann (1998). But there has not been any explanatory work on Old Tamil phonology. All the literature on Old Tamil phonology is a descriptive treatise of traditional grammar. This study may be considered a pioneering attempt to address this gap in the literature.

1.2 Notes on Transliteration and Examples

All of the names and terms from Old Tamil texts are transliterated by using the convention called International Alphabet of Sanskrit Transliteration (IAST), which is used to transliterate the names and texts written in Indic scripts. However, the data from Old Tamil is given in IPA. The phonetic realisations of Old Tamil words and allophony are gauged by the aphorisms on articulation and phonology in the traditional Tamil grammars. The glossing convention (including the abbreviations) used in this paper is as per The Leipzig Glossing Rules.

Most of the examples are cited, i.e. their source texts are mentioned. However, there are a few examples that are hypothetical. [kɐll-ɪl] is given as an example in (8). While the word /kal/ 'stone' and the locative suffix /-il/ find mention in the Sangam texts, their combination is not. We have utilised such hypothetical but very possible Old Tamil examples in our paper.

1.3 Segment inventory of Old Tamil

Old Tamil has ten vowels, five short and five long: /a/, /ā/, /i/, /ī/, /u/, /ū/, /e/, /ē/, /o/, /ō/. The seventeen consonants include six stops: /k/, /c/, /ṭ/, /ṯ/, /t/, /p/; five nasals: /ñ/, /ṇ/, /n̪/, /n/, /m/; two laterals: /l/, /ḷ/; two glides /y/, /v/; one tap /r/; and one approximant /l̪/ (Lehmann 1998, 76).

1.3.1 Vowels

Surface realization of Old Tamil vowels with their approximate positioning as per the cardinal vowel chart.

Chart 1 Cardinal vowel chart (reconstructed by the authors)

ɪ/iː		ʊ/uː ɯ
ɛ/eː		o/oː
	ɐ/aː	

Here, the short vowels phonetically have a slightly lower pronunciation when compared to their cardinal, longer counterparts. For example, /i/ would be realized as [ɪ] while its longer version would be [iː]. Of the short vowels mentioned above, only /u/ has an allophone – an unrounded counterpart [ɯ].

1.3.2 Consonants

Old Tamil has a six-way contrast in articulation. This is seen in the surface realization of six stops and nasals. Besides these, Old Tamil possesses laterals, rhotics and glides. As for stop segments, there is no contrast of voice feature.

Table 1 Consonant inventory

	Labial	**Dental**	**Alveolar**	**Retroflex**	**Palatal**	**Velar**
Stops	p	t̪	t	ʈ	c	k
Nasals	m	n̪	n	ɳ	ɲ	(ŋ)
Taps			ɾ			
Laterals			l	ɭ		
Glides	ʋ				j	
Approximant				ɻ		

Note: (Lehmann 1998, 77)
( ) indicates allophone

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The velar nasal is an allophone of other nasals. It occurs only before the velar stop. There is a rare fricative [h] called *āytam*, which can be considered as an allophone of the glide /j/. All the consonants, except the stop class pattern as sonorants in Old Tamil.

2 The Two Rules

2.1 Sonorant Consonant Gemination: Type A (SCG-A)

Let us consider this phonological rule in Old Tamil: Given a monosyllabic root (noun or verb) of the shape (C)VC where the Consonant in round brackets is optional and the vowel is a short one, when the coda sonorant consonant forms a juncture with another concatenating morpheme that begins in a vowel, the consonant geminates. The important condition is that this geminating consonant has to be a sonorant (i.e. a nasal, a liquid or a glide). Even though in Old Tamil, the flap/tap and retroflex approximant count as sonorants, they do not geminate at all at the surface level. We propose to term this specific pattern of gemination 'Sonorant Consonant Gemination: Type A'(henceforth, SCG-A). The following is the formal representation of the above-stated SCG-A:

(3) $[+con, +son] \rightarrow [+con, +son][+con, +son]/\#C_0[-con][+con, +son]\_\_\_\_\_\#[-con]$

The above phonological rule is expressed in the form of an aphorism in the traditional grammar *Tolkāppiyam* (aphorism no. 161, line no. 2) (*Tolkāppiyam* 2021, 86):

(4) குறியதன் முன்னர்த் தன் உரு இரட்டலும்
kuṟiyataṉ muṉṉart taṉ uru iraṭṭalum

This can be translated as: "the letter (coda consonant) geminates before a short syllable (of the form (C)VC". It is also mentioned in the other traditional grammatical treatise *Naṉṉūl* (aphorism no. 205) (Vijayavenugopal 1968, 210):

(5) தனிக்குறில் முன்ஒற்று உயிர்வரின் இரட்டும்
taṉikkuṟil muṉoṟṟu uyirvariṉ iraṭṭum

This can be translated as: "The letter (the coda consonant) in a short syllable (of type (C)VC) doubles before an oncoming vowel (of the vowel-initial concatenating morpheme)".

This gemination occurs across a wide range of morphophonological contexts, namely noun derivation, verbal inflection, case suffixation, compound noun formation, etc. Let us see some examples of this phenomenon:

(6)	Noun derivation	/min/ root noun	+ /al/ noun-forming suffix	> [mɪnnɐl] 'lightening'
(7)	Verb inflection	/cej/ 'do'	+ /um/ 3.SG.N.FUT	> [cɛjjum] '(it) will do'
(8)	Case suffixation	/kal/ 'stone'	+ /il/ LOC	> [kɐllɪl] 'in the stone'
(9)	Compound Noun	/muɭ/ 'thorn'	+ /ilaj/ 'leaf'	> [mʊɭlɪlɐj] 'thorny leaf'
(10)	Noun + Finite Verb	/pal/ 'tooth'	+ /uʈaj-n̪ʈ-aʈ/ 'break'-PST-3.SG.N	> [pɐllʊɖɐɪn̪ɖɐɖɯ] '(its) tooth broke'

The following are examples of sonorant consonants geminating on concatenation with a vowel-initial morpheme. The first morpheme in the examples is mostly nouns and pronouns (except in the case of gemination of labiodental glide, where we have given only examples of a deictic root plus a vowel-initial noun), which are being suffixed by case markers. The following examples are grouped by the kind of sonorant consonant that is geminating (Podhuvan 2025):

(11) Bilabial nasal

a.	/em/ 1PL.EXCL.O	+ /oʈ/ SOC	>[ɛmmoɖɯ] 'with us'	(aka 11.7)
b.	/t̪am/ 3PL.R.O	+ /aj/ ACC	> [t̪ɐmmɐj] 'them'	(kali 85.30)
c.	/n̪am/ 1PL.INCL.O	+/in/ GEN	[n̪ɐmmin] 'our'	(nar̲r̲ 245.9)
d.	/n̪um/ 2PL.O	+ /oʈ/ SOC	> [n̪ʊmmoɖɯ] 'with you all'	(aka 168.1)

(12) Alveolar nasal

a.	/t̪an/ 3SG.R.O	+ /il/ LOC	> [t̪ɐnnɪl] 'in himself/herself'	(tiru 33.1)
b.	/n̪in/ 2SG.O	+ /aj/ ACC	> [n̪innɐj] 'you(acc.)'	(aiṅ 420.3)
c.	/en/ 1SG.O	/aj/ ACC	> [ɛnnɐj] 'me'	(aka 212.12)

d.	/min/	+ /oʈ/	> [mɪnnoɖɯ]	(aka 43.2)
	‘star’	SOC	‘with the star’	

(13) Retroflex nasal

a.	/maɳ/	+ /aj/	> [mɛɳɳɐj]	(aka 24.12)
	‘earth’	ACC	‘earth(acc.)’	
b.	/eɳ/	+ /il/	> [ɛɳɳɪl]	(puṟa 213.15)
	‘fate’	LOC	‘in fate’	
c.	/kaɳ/	+ /oʈ/	> [kɛɳɳoɖɯ]	(aka 164.9)
	‘eye’	SOC	‘with the eye’	
d.	/paɳ/	+ /in/	> [pɛɳɳɪn]	(aka 352.15)
	‘song’	GEN	‘of the song’	

(14) Alveolar lateral

a.	/kal/	+ /in/	> [kɐllɪn]	(paṭṭ 11.2)
	‘stone’	GEN	‘of the stone’	
b.	/pal/	+ /in/	> [pɐllɪn]	(kali 21.10)
	‘tooth’	GEN	‘of the tooth’	
c.	/pul/	+ /in/	> [pʊllɪn]	(kali 94.19)
	‘grass’	GEN	‘of the grass’	
d.	/n̪el/	+ /in/	> [n̪ɛllɪn]	(aka 46.14)
	‘paddy’	GEN	‘of the paddy’	

(15) Retroflex lateral

a.	/kaɭ/	+ /in/	> [kɐɭlɪn]	(aka 256.4)
	‘toddy’	GEN	‘of the toddy’	
b.	/muɭ/	+ /uʈaj/	> [mʊɭlʊɖej]	(naṟṟ 203.2)
	‘thorn’	‘having’	‘thorn-having’	
c.	/uɭ/	+ /il/	> [ʊɭlɪl]	(puṟa 160.21)
	‘inside’	LOC	‘in the inside’	

(16) Palatal glide

a.	/kaj/	+ /il/	> [kɐjjɪl]	(kali 33.18)
	‘hand’	LOC	‘in the hand’	
b.	/n̪ej/	+ /oʈ/	> [n̪ɐjjoɖɯ]	(aiṅ 211.1)
	‘oil’	SOC	‘with the oil’	
c.	/maj/	+/il/	> [mɐjjɪl]	(aiṅ 235.1)
	‘ink’	LOC	‘in the ink’	

d.	/mej/	+ /aj/	> [mɛjjɐj]	(aka 310.3)
	‘body’	ACC	‘body(acc.)’	

(17) Labiodental glide

a.	/aʊ/	+ /iʈam/	> [ɐʊʊɪɖɐm]
	distal demonstrative prefix	‘place’	‘that place’
b.	/iʊ/	+ /iʈam/	> [ɪʊʊɪɖɐm]
	proximate demonstrative prefix	‘place’	‘this place’

The sonorants that do not form this kind of geminate are also ones that do not occur as a coda in the (C)VC roots. Those are the dental, palatal and velar nasals. It may be noted that in the first set of forms with sonorant consonant geminates is that it is the sonorant coda in the first morpheme that geminates.

2.2 Sonorant Consonant Gemination – Type B (SCG-B)

Apart from SCG-A, another pattern of gemination involving sonorant consonants is observed in Old Tamil. This pattern, where the sonorant that geminates is not part of a (C)VC morpheme, but the juncture is one of a monosyllabic short vowel and a sonorant. We propose to term this “Sonorant Consonant Gemination: Type B” (hereafter, SCG-B). Some of the examples in (18-21) are from (Vijayakrishnan 1982, 54) and represent the pattern of SCG-B:

(18)	Labiodental glide	/i/	+ /ʋalaj/	> [ɪʊʊɐlɐj]
		‘this’	‘net’	‘this net’

(19)	Dental nasal	/i/	+ /n̪e:ram/	> [ɪn̪ n̪e:rɐm]
		‘this’	‘time’	‘this time’

(20)	Bilabial nasal	/mu/	+ /maʈi/	> [mʊmmɐɖɪ]
		‘three’	‘folds’	‘three folds’

(21)	Palatal nasal	/a/	+ /ɲa:lam/	> [ɐɲɲa:lɐm]
		‘that’	‘earth’	‘that earth’

The crucial thing that needs to be noted here is that it is the initial sonorant consonant of the second morpheme that geminates. The velar nasal, alveolar nasal and retroflex nasal that do not form the word-initial onset of the second morpheme do not geminate this way.

(22) Illustrates the pattern of gemination discussed above.

(22) [+con, +son] → [+con, +son][+con, +son]/#([+con])[-con]_____#[+con, +son]

2.3 Phonotactics of Sonorant Consonants in Old Tamil

Crucial to our point about sonorant consonant gemination is a discussion on what sonorant consonants can and cannot occur morpheme-initially or as a coda of a monosyllabic morpheme, hence having implications as to whether they geminate as elaborated above. If a sonorant consonant can occur morpheme-initially, it can geminate as per Rule 2 (§ 2.2). If a sonorant consonant can occur as a coda consonant of a monosyllabic morpheme with a short vowel, it can geminate as per Rule 1 (§ 2.1). Below is a summary of this phonotactic information:

Table 2 Conditions governing the occurrence of sonorant consonants

Sonorant Consonants	Can occur as a coda	Can occur Morpheme-initially
Bilabial nasal	YES	YES
Alveolar nasal	YES	NO
Retroflex nasal	YES	NO
Alveolar lateral	YES	NO
Retroflex lateral	YES	NO
Palatal glide	YES	YES
Labiodental glide	YES	YES
Palatal nasal	NO	YES
Dental nasal	NO	YES
Velar nasal	NO	NO
Alveolar tap/flap	YES	NO
Retroflex approximant	YES	NO
Alveolar trill	NO	NO

The following table contains information about what sonorant consonants can occur as coda and can geminate as per Rule 1 (column 1) and what sonorant consonants can occur as coda but cannot geminate as per Rule 1 (column 2).

Table 3 Conditions governing gemination

Sonorant Consonants that can geminate as per Rule 1	Sonorant Consonants that cannot geminate as per Rule 1
Bilabial nasal	Alveolar tap/flap
Alveolar nasal	Retroflex approximant
Retroflex nasal	
Alveolar lateral	
Retroflex lateral	
Palatal glide	
Labiodental glide	

The following table contains information about what sonorant consonants can occur morpheme-initially and can geminate as per Rule 2 (column 1) and what sonorant consonants can occur morpheme-initially but cannot geminate as per Rule 2 (column 2):

Table 4 Conditions governing gemination (morpheme-initially)

Sonorant Consonants that can geminate as per Rule 2	Sonorant Consonants that cannot geminate as per Rule 2
Bilabial nasal	–nil–
Palatal glide	
Labiodental glide	
Palatal nasal	
Dental nasal	

2.4 Prohibition of Gemination

There is a blocking of gemination of the sonorant consonant when the vowel in the first morpheme is a long one instead of a short one. So there is a blocking of gemination in the following examples (Vijayakrishnan 1982, 55):

(26)	/ṭiː/	+ /n̪aːttam/	> [ṭiːn̪aːttem]	*[ṭiːn̪n̪aːttem]
	bad	‘smell’	‘bad smell’	

(27)	/maː/	+ /n̪ilam/	> [maːn̪ɪlem]	*[maːn̪n̪ɪlem]
	big	‘land’	‘earth’	

2.5 Sonorant Consonants that Do not Geminate

There are a few sonorant consonants that do not geminate in the above elaborated morphophonological context and otherwise. These are the velar nasal ங் /ŋ/, alveolar tap ற் /ɾ/, alveolar trill ற் /r/ and retroflex approximant ழ் /ɻ/.

The velar nasal neither occurs as the coda of a monosyllabic root (with a short vowel) nor does it occur morpheme-initially. Hence, it doesn't occur at all in the above-mentioned morphophonological context to geminate. You do not find lexical geminates involving a velar nasal. "The geminated velar nasal appears only in words *iṅṅaŋam*, *aṅṅaŋam* and must represent a dialectal form" (Vacek 2019, 99). There are surface constraints in Old Tamil against the occurrence of geminates of certain sonorant consonants. This includes the alveolar tap and retroflex approximant. The geminate of an alveolar tap or flap is articulatorily not feasible. Hence, you do not find lexical geminates of alveolar tap or retroflex approximant. As for the alveolar trill, it is an allophone of the voiceless alveolar plosive. By complementary distribution, the alveolar trill occurs only intervocalically, while the voiced alveolar plosive occurs post-nasally, and the voiceless alveolar plosive occurs as a geminate alone.

(28)	Root + Verbal noun suffix	/ʋaɾ/ 'come'	+ /al/	> [ʋɐɾɐl] 'the coming'	*[ʋɐrrɐl]
(29)	Root + Noun formative	/ʋaːɻ/ 'live'	+ /aː/	> [ʋaːɻaː] 'not live'	*[ʋaːɻɻaː]

3 Optimality Theoretic Analyses

3.1 A Preliminary Analysis

Let us go into OT analyses of some of the examples cited previously. First, we consider a case that illustrates the inadequacy of the existing constraints like Onset, NoCoda, and *Gem in choosing the optimal candidate with sonorant consonant gemination. Previous literature shows that the constraint Onset ranks high above a constraint like NoCoda (Ramasamy 2020). Hence, we have chosen the constraint hierarchy, as seen in Tableau 1. The failure of our preliminary analysis spurs us to postulate a new constraint (§ 3.2).

Let us define the constraints to be used in the preliminary analysis.

(30) Onset
Every syllable must have an Onset.

This constraint penalises any syllable with no onset consonant (Kager 1999). A candidate like [kɐl.ɪl] (see (33)) would incur one violation of the Onset constraint as its second syllable has no onset consonant.

(31) NoCoda
Each syllable should not have any Coda.

This constraint penalises any candidate that has a syllable with a coda consonant (Kager 1999). A candidate like [kɐl.lɪl] (see (33)) would incur two violations of the NoCoda constraint as both its syllables have coda consonants.

(32) *Gem
No Geminate consonants are allowed in a word.

This constraint penalises any candidate with geminates (Pajak 2009). A candidate like [kɐl.lɪl] (see (33)) would incur one violation of *Gem constraint as it has a geminate alveolar lateral.

Let us consider a preliminary OT analysis of example (8).

(33) Tableau 1: Onset >> NoCoda >> *Gem

	/kal/ + /il/	Onset	NoCoda	*Gem
a.	[kɐ.lɪl]		*	
b.	[kɐl.ɪl]	*!	*	
c.	[kɐl.lɪl]		**!	*

In Tableau 1 (33), candidate (b) violates the highest-ranking constraint, Onset, in addition to NoCoda. This fatal violation rules out candidate (b). On the other hand, both candidates (a) and (c) violate the high-ranked constraint NoCoda. While candidate (a) incurs one violation of this constraint, candidate (c) violates it twice and, hence, is ruled out. As a result, candidate (a) emerges as the optimal candidate. However, empirically, we know that the optimal candidate should be [kɐl.lɪl], as in candidate (c). So, the OT analysis fails to identify the correct candidate as the winning one. Between [kɐ.lɪl] and [kɐl.lɪl], if there is a higher constraint prohibiting the former, the latter (known empirically as the optimal one) will win. In the following section (3.2), we propose one such constraint that will help in identifying the optimal candidate.

3.2 The Prosodic Word Constraint

In all the instances of sonorant consonant gemination illustrated above, we see that there is a preference in Old Tamil for words to begin with a heavy (bimoraic) syllable. Hence, we propose a Prosodic Word constraint, ProsWd. It is defined as follows:

(34) ProsWd (Prosodic Word)
Words must begin with a heavy (bimoraic) syllable.

The constraint in (34) requires that a prosodic word in Old Tamil begin with a heavy syllable. The heaviness or lightness of a syllable is measured in terms of the number of morae in it. An open syllable of the shape CV with a short vowel would be one mora, whereas a syllable of the shape CVC or CV: (with a long vowel) would consist of two morae. A syllable of one mora is called a light syllable, and that of two syllables is called a heavy syllable. A super-heavy syllable is of the shape CVCC or CV:C. It becomes clear that vowel length and coda consonantal length are what count as significant in measuring morae. This ProsWd constraint explains the resultant forms in derivations such as the following:

(35)	/col/	+ /in/	> [col.lɪn]	*[co.lɪn]
	'word'	GEN	'of the word'	

(36)	/eɭ/	+ /il/	> [eɭ.ɭɪl]	*[e.ɭɪl]
	'sesame seeds'	LOC	'in the sesame seeds'	

The gemination in the above examples results in a word-initial heavy syllable of two morae. They contain a short vowel followed by a coda consonant, each contributing one mora. The ungrammatical forms *[co.lɪn] and *[e.ɭɪl], where there is no gemination, initially have only a light syllable word.

It must also be mentioned that this prosodic word constraint requires a word-initial heavy or bimoraic syllable. It doesn't lay any constraint on the second or any other syllable apart from the first. The second syllable (or any other) can either be monomoraic (as in [col.lɪ] 'having said'), bimoraic (as in [col.lɪn] 'of the word') or trimoraic (as in [col.laːl] 'with the word'). A similar constraint has been proposed to account for consonant gemination in Japanese loan words, albeit in the form of a prohibition of trimoraic syllables if not a preference for bimoraic syllables word-initially (Ito et al. 2017).

3.3 Why This Particular Notion of Mora?

Here in this section, we argue for why this particular notion of mora is important in analysing Tamil phonology. What we need to prove here is why the length of the vowel nucleus and the number of segments in the coda contribute to the syllabic weight, in Old Tamil. In all the

examples considered above, we can easily see that the non-obligatory onset of the monosyllable has nothing to do with sonorant gemination. Consider the examples [pɐl.lɪl] 'in the tooth' (< /pal/ + /il/) and [paː.lɪl] 'in the milk' (< /paːl/ + /il/). These should be the optimal candidates in any correct OT analysis since they are the empirically attested ones, right down to their syllabifications. There is gemination in the first case, while it is blocked in the latter. Both are identical forms except for their first syllable. The first syllable of the first form has a short vowel and a coda lateral. The first syllable of the latter has a long vowel. In what ways can we structurally unify, call as identical a VC and a V:? That is by way of introducing the notion of syllabic weight, where a short vowel and a single coda consonant contribute one mora each, while a long vowel would contribute two morae. So the first syllables of the first and second example would be each two morae. The case is solved. Now, both the examples considered are identical mora-wise. We can go further and claim that there is a requirement in Old Tamil for prosodic words to begin with a bimoraic syllable. That is the trigger for gemination in the first example.

3.4 Evidence of Moraic Sensitivity in Tamil

In this section, we argue in favour of Tamil (Old and Modern) as a moraic-sensitive language. Having proven that Tamil is moraic sensitive, one can accept the validity of the ProsWd constraint, i.e. the notion of mora is important in Tamil, and such a constraint on the initial moraic structure of prosodic words is acceptable. We also look at a few arguments that directly substantiate the postulation of the ProsWd constraint in §§ 3.5.1-3.5.3.

3.4.1 Traditional Poetics

In the traditional poetic grammar, there is a notion of மாத்திரை / *māttiray*/ [maːt̪̪ɪɾɐj], i.e. syllable weight. According to this concept of measuring syllable weight, both the open syllables [ɐ] அ and [kɐ] க would be of one *māttiray* or one mora. Also, the open syllables [aː] ஆ and [kaː] கா would be of two *māttiray* or two morae. Hence, we can understand that the notion of *māttiray* is the same as mora. We can also see that any onset consonant does not contribute to the syllabic weight. A coda consonant, however, contributes one mora or one *māttiray*.

The basic units of Tamil metre are the எழுத்து *eḻuttu's*, which are the letters or characters. In the abugida system that is Tamil script, each consonant grapheme, /e/, along with its vowel diacritic, denotes an onset consonant plus the nucleus vowel. For example, கி

[kɪ] represents the consonant /k/ with the diacritic for the vowel /i/. Such consonant-plus-vowel letters are classified into two: குறில் *kuṟil* 'letters with a short vowel diacritic' and நெடில் *neṭil* 'letters with a long vowel diacritic'. Besides these consonant-plus-vowel letters, there are pure vowel letters like அ [ɐ] and ஆ [aː], and pure consonant letters like க் [k] and ய் [j]. They are called as உயிர் *uyir* and ஒற்று *oṟṟu* letters respectively. The *uyir* or pure vowel letters always form the nuclei of syllables, while the *'oṟṟu'* letters always form the coda consonant of syllables. Only these four, namely *'kuṟil'*, *'neṭil'*, *'uyir'* and *'oṟṟu'* letters, are the basic building blocks of Tamil metre. We can clearly see that only the vowel length matters when it comes to measuring *māttiray*, '*kuṟil'* of one *māttiray* and '*neṭil'* of two *māttiray*. While the '*uyir'* and '*oṟṟu'* contribute one *māttiray* each.

3.4.2 Sanskrit Loan Words

There is the case of Sanskrit loan words in Old Tamil. The Sanskrit words that end with a long vowel like [aː] are nativised as [ɐj]. This preserves the syllable weight or the number of morae of the loaned word. The long vowel [aː] is of two morae, while its nativised form [ɐj] is also of two morae where the short vowel contributes one mora and the coda semivowel contributes another mora. The examples in (35) may be inferred from the above discussion:

(37) a. Sanskrit [leŋkaː] a place name > Old Tamil [ɪleŋgɐj]
b. Sanskrit [ʊpɐmaː] 'metaphor' > Old Tamil [ʊvɐmɐj]

This phenomenon of mora preservation as a nativisation strategy in Sanskrit loan words has been formulated as an aphorism in *Naṉṉūl* (Ganeshasundaram, Vaidyanathan 1958). Some more examples that can be cited are *gaṅgā* > *kaṅkai*, *cōdanā* > *cōtanai*, *icchā* > *iccai*, *sīmā* > *cīmai*. In the above examples, we have transcribed the Old Tamil examples with the diphthong *ai*, as that is how it is written in the Old Tamil Sangam corpus. However, phonologically, there is no diphthong in Old Tamil, and the underlying representation of *ai* is /aj/.

3.4.3 Compensatory Vowel Lengthening

There is a historical sound change in Tamil, which is the preservation of syllabic weights or morae, even in native words that undergo a deletion of onset and nucleus (a combination of consonantal and following vowel). When an intervocalic consonant (onset of the second syllable) is deleted along with the short vowel following it, the result is a lengthening of the first vowel. This could be termed

compensatory vowel lengthening. Hence, there is a preservation of the number of morae in the word that underwent a deletion of the onset and nucleus.

(38)	(a)	[ɐ. gɐt̪. t̪ɯ]	>	(b)	[a:t̪. t̪ɯ]
Number of morae		1 + 2 + 1 = 4			3 + 1 = 4
		'of the house'			'of the house'

In (38a), [ɐ. gɐt̪. t̪ɯ] is a trisyllabic wordform having a total of four morae. The process of compensatory vowel lengthening follows the deletion of the onset and nucleus. The resulting form (b) [a:t̪. t̪ɯ] retains the same number of morae and is in existence only in the Brahmin sociolect of Tamil. However, this new form has a super-heavy first syllable with a long vowel as the nucleus, followed by a coda. Let us consider a few more examples of the historical process of compensatory vowel lengthening:

(39)	(a)	[pɛ.jɐr]	>	(b)	[pe:r]
Number of morae		1 + 2 = 3			3
		'name'			'name'

(40)	(a)	[po.ɻʊ.d̪ɯ]	>	(b)	[po:.d̪ɯ]
Number of morae		1 + 1 + 1 = 3			2 + 1 = 3
		'time'			'while'

(41)	(a)	[ɛ.ɻʊn̪.d̪ɪ.ru]	>	(b)	[e:n̪.d̪ɪ.rɯ]
Number of morae		1 + 2 + 1 + 1 = 5			3 + 1 +1 = 5
		'arise, wake up'			'arise, wake up'

3.5 Analysis

Based on the discussion in § 3.4 on the moraic sensitivity of Old Tamil syllables, a specific ranking of relevant constraints is being adopted, leading to the emergence of the geminated form [kɐl.lɪl], from the example illustrated in (8).

(42) Tableau 2: /kal/+ /il/ 'in the stone' (Onset >> ProsWd >> NoCoda >> *Gem)

/kal/ + /il/		Onset	ProsWd	NoCoda	*Gem
a.	[kɐ.lɪl]		*!	*	
b.	[kɐl.ɪl]	*!		*	
c.	☞ [kɐl.lɪl]			*	*

The OT analysis in (42) offers a tentative ranking of Onset >> ProsWd >> NoCoda >> *Gem. The ProsWd constraint is ranked next to Onset because we envision candidates like (b) [kɐl.ɪl] that fulfil ProsWd by robbing the second syllable of its onset consonant. Hence, a highly ranked Onset would penalise such a candidate. The high-ranked constraint ProsWd prefers only a heavy syllable word initially, while the lowest-ranked constraint *Gem prevents any gemination. In this tableau, the first candidate (a) [kɐ.lɪl] has a light (L) syllable as its first syllable and hence violates ProsWd. This candidate is ruled out for the fatal violation of the high-ranking constraint ProsWd. Candidate (b), even though it satisfies the ProsWd constraint by having an initial bimoraic syllable, violates the highest-ranked constraint, Onset, and gets out of the competition. The constraint ProsWd triggers gemination in candidate (c), [kɐl.lɪl], resulting in an initial heavy syllable that satisfies the constraint. Although candidate (c) violates NoCoda and *Gem, the violations are not fatal as higher-ranked ProsWd and Onset dominate these two lower-ranked constraints. Candidate (c) [kɐl.lɪl] emerges as the optimal output. Hence, it is not an optimal candidate. Therefore, the third candidate wins even though it violates the lowly ranked *Gem constraint.

The OT analysis is an instance of sonorant consonant gemination as per the condition discussed in § 2.1. Let us consider another example from (20), /mu/ + /maʈi/ 'three folds', which satisfies the other type of Sonorant Consonant Gemination, which is (SCG-B), as discussed in § 2.2.

(43) Tableau 3: /mu/ + /maʈi/ 'three folds' (Onset >> ProsWd >> NoCoda >> *Gem)

	/mu/ + /maʈi/	Onset	ProsWd	NoCoda	*Gem
a.	[mʊ.mɛ.ɖɪ]		*!		
b.	[mʊm.ɐ.ɖɪ]	*!		*	
c.	☞ [mʊm.mɛ.ɖɪ]			*	*

The first candidate [mʊ.mɛ.ɖɪ] (candidate (a)) is ruled out because of the lack of a bimoraic initial syllable (as required by constraint ProsWd to be satisfied). On the other hand, candidate (b), [mʊm.ɐ.ɖɪ], even though it doesn't violate ProsWd, as it contains an initial bimoraic syllable, violates the highest-ranked constraint, Onset. Since candidate (c) is the only constraint left with violation of two low-ranked constraints, NoCoda and *Gem, after the elimination of candidates (a) and (b), it emerges as the optimal candidate in Tableau 3. It may be noted that the optimal candidate (c) is the one with the sonorant consonant gemination [mʊm.mɛ.ɖɪ].

In (43), the first morpheme has a short vowel. We attempt to analyse another example, from (27), where the first morpheme consists of a long vowel, as illustrated in Tableau 4 (44).

(44) Tableau 4: /maː/ + /n̪ilam/ 'earth' (Onset >> ProsWd >> NoCoda >> *Gem)

	/maː/ + /n̪ilam/	Onset	ProsWd	NoCoda	*Gem
a.	☞ [maː.n̪ɪ.lɐm]			*	
b.	[maːn̪.n̪ɪ.lɐm]		*!	**	*
c.	[maː.n̪ɪl.lɐm]			**!	*
d.	[maːn̪.ɪ.lɐm]	*!	*	**	

In tableau 4, the first candidate (candidate (a)), [maː.n̪ɪ.lɐm], starts with a heavy syllable (having a long vowel) and hence satisfies the high-ranking constraint, ProsWd. It is evident that it doesn't violate *Gem, as there is no gemination visible in it. Candidate (b), [maːn̪.n̪ɪ.lɐm], has a word-initial super-heavy syllable (a long vowel followed by a coda consonant). Hence, it violates ProsWd, in addition to NoCoda (twice) and *Gem. The third candidate (c) has a morpheme-internal gemination, which leads to the violation of *Gem, in addition to the double violation of NoCoda, which is a fatal violation. The fourth candidate (d), [maːn̪.ɪ.lɐm], fatally violates the highest-ranked constraint Onset as the second syllable lacks an onset, and violates the constraint ProsWd as it has a super-heavy initial syllable and also violates NoCoda twice. Hence, it gets eliminated. The winning candidate is the first one (candidate (a), [maː.n̪ɪ.lɐm], with minimal violations of high-ranked constraints.

3.5.1 Verb Roots of the Shape CV

Does this preference for a word-initial heavy syllable (bimoraic) mean that all Old Tamil words start only with a heavy syllable? No. The preference for a word-initial heavy syllable is exercised only when the morphophonemics allow it to. We need to add a caveat to the definition of ProsWd constraint, i.e. it plays a role only in morphological contexts involving a monosyllable with a short vowel.

Consider the case of verb roots of the shape CV in the following examples:

(45) /ʊa-n̪ṯ̪-aːn/ (kali 70)
come-PST-3.Sg.M
'(he) came'

(46) /ṯ̪a-n̪ṯ̪-aːl/ (kali 84)
give-PST-3.Sg.F
'(she) gave'

The verbal roots in the above examples are /ʋa/ and /t̪a/ respectively. The verbal bases in Dravidian also function as imperative singular, as clear by the following quote from *The Dravidian Languages* by Bh. Krishnamurti:

> Synchronically, a verbal base (root with or without formatives) is said to be identified by its form in the imperative singular, e.g. wā 'come', koy 'cut' in most languages. (2003, 278)

So the imperative singular forms for the above-mentioned examples ought to be /ʋa/ and /t̪a/ respectively. But what we find is that the imperatives are [ʋaː] 'come' and [t̪aː] 'give'. This is to fulfil the ProsWd constraint, which acts on these monosyllabic roots with a short vowel, as mere /ʋa/ and /t̪a/ are of one mora only. Here we find that the constraint ProsWd is fulfilled by vowel lengthening rather than consonant gemination. Also, the strategy of vowel lengthening to fulfil the ProsWd constraint is employed here as such a lengthening doesn't change the meaning conveyed by the root.

3.5.2 Shortest Old Tamil Words

"If we compare the shortest Tamil words, we can see that no V or CV represents a free word" (Vacek 1969, 91). Hence, the shortest words in Old Tamil are of the shape VC or Vː. On observation, one can see that these are monosyllabic words of two morae precisely. They are the shortest words possible that obey the ProsWd constraint. Words shorter than these, such as shape (C)V (V or CV), are not feasible in Old Tamil. Hence, we can see that the individual short vowels do not make up a free word, while the long vowels like /aː/ 'cattle', /iː/ 'housefly' do make up the shortest words in Old Tamil. Examples of the shortest words in shape VC would be /aj/ 'lord, master', etc. Similarly, a consonant followed by a vowel, namely CV, doesn't make up the shortest word in Old Tamil.

3.5.3 Comparative Dravidian Data

There is evidence that the kind of sonorant gemination seen in Old Tamil also happened in Old Kannada (which has inscriptional and literary records). This means that this sonorant gemination must have started at the branching node of Tamil-Kannada in the South Dravidian family tree or higher up than that. Let us consider a few examples from Old Kannada (Shastri 2015):

(47)	/pal/	+ /ili/	> [pɐ**llɪ**lɪ]
	‘tooth’	‘one without’	‘tooth-less person’

(48)	/kaɳ/	+ /iɳ̪a/	> [kɐ**ɳɳ**ɪɳ̪ɐ]
	‘eye’	ABL	‘from the eye’

Illustrative examples for the operation of the ProsWd constraint are the monosyllabic deictic roots /i/ and /a/, which are proximate and distal, respectively. These short monosyllabic roots surface as [iː] ‘this’ and [aː] ‘that’ in Kannada (also Malayalam). This is to fulfil the requirement of two morae imposed by the constraint, ProsWd.

3.5.4 Sonorant Gemination in Modern Tamil

Certain word forms like /kal/ ‘stone’ have a surface realisation as [kɐl.lɯ] in Modern Tamil, whereas it was pronounced as just [kɐl] in Old Tamil (as seen in the Sangam corpus). This is because of the constraint in Modern Tamil against consonant-ending words. Also, if one observes, there is a gemination of the coda lateral in the word /kal/. This is triggered by the presence of the ProsWd constraint in Modern Tamil too. However, like in Old Tamil, there is blocking of gemination when monosyllabic words with a long vowel take the epenthetic [ɯ] to satisfy the no-consonant-ending constraint in Modern Tamil. Hence, the Old Tamil word /paːl/ ‘milk’ manifests as [paː.lɯ] and not *[paːl.lɯ] in Modern Tamil. There is a gemination of the lateral coda here.

3.5.5 The Role of Onset Constraint

The role of the Onset constraint in Sonorant Gemination is crucial. Since it is highly ranked, it prevents the C2 in a C1V1C2V2 from being parsed as a coda of the first syllable rather than the onset of the second syllable. This, with the ProsWd constraint, triggers the Sonorant Gemination. Hence, you get /kal/ > [kɐl.lɯ], *[kɐl.ɯ] or *[kɐ.lɯ].

4 Relic Forms Without Gemination

The *Eḻuttatikāram* chapter of *Tolkāppiyam* has an aphorism (no. 162, lines 1-2) which says that there is an 'exception' to the kind of Sonorant consonant gemination (*Tolkāppiyam* 2021, 87) that has been dealt with in this paper (§ 2). According to this aphorism, there is no gemination of a sonorant consonant when the 'sixth' or genitive case is affixed to a (C)VC noun root.

(49) ஆறான் உருப்பினும் நான்கன் உருப்பினும்
கூறிய கூற்றொற்று இரட்டல் இல்லை
āṟāṉ uruppiṉum nāṉkaṉ uruppiṉum
kūṟiya kūṟṟoṟṟu iraṭṭal illai

The above aphorism can be translated as "the sixth and the fourth case, when added to a short syllable (noun root of form (C)VC) the 'single letter' (the coda consonant) doesn't geminate".

Some oblique pronouns suffixed with the dative or 'fourth' case are /n̪ama-kk/ [n̪ɐmɛkkɯ] 'to him/her' and /n̺ama-kk/ [n̺ɐmɛkkɯ] 'to us'. The traditional grammars wrongly consider the epenthetic [ɐ] between the pronominal root and case suffix as part of the case suffix itself. For the traditional grammarians, the dative case suffix is hence /-akk-/ (hence it is treated as an exception to gemination triggered by a vowel-initial suffix). However, modern analysis says that the Old Tamil dative case marker is just /-kk-/ and it doesn't fall under the morphophonological context described by Rule 1 (§ 2.1).

The sixth or genitive case takes the form /aṯ/ [ɐd̪ɯ]. It is to be noted here that what is considered as the 'sixth' case marker is only /aṯ/ [ɐd̪ɯ] and not other genitive case markers like /in/ [ɪn] or /uɖaj/ [ʊɖɐj]. Let us consider the suffixation of this particular case to a few pronominal roots:

(50)	/n̺am/	+ /aṯ/	> [n̺ɐmɛd̪ɯ]	*[n̺ɐmmɛd̪ɯ]
	1.PL	GEN	'our'	
(51)	/en/	+ /aṯ/	> [ɛnɛd̪ɯ]	*[ɛnnɛd̪ɯ]
	1.SG	GEN	'mine'	
(52)	/un/	+ /aṯ/	> [unɛd̪ɯ]	*[unnɛd̪ɯ]
	2.SG	GEN	'your's'	

Even though the above examples satisfy the morphophonological criteria for gemination, as mentioned in § 2, there is no gemination of the sonorant consonant coda. Hence, this forms a seeming 'exception' to the phenomenon under study. Let us consider an OT analysis of one of the examples mentioned above:

(53) Tableau 5: /n̪am/ + /at̪/ 'our' (Onset >> ProsWd >> NoCoda >> *Gem)

	/n̪am/ + /at̪/	Onset	ProsWd	NoCoda	*Gem
a.	[n̪ɐ.mɐ.d̪ɯ]		*!		
b.	[n̪ɐm.ɐ.d̪ɯ]	*!		*	
c.	💣 [n̪ɐm.mɐ.d̪ɯ]			*	*

In Tableau 5 (53), candidate (a) violates a high-ranking constraint, ProsWd, and hence, is ruled out. Candidate (b) fatally violated the highest-ranking constraint, Onset, which leads to the elimination of this constraint. The winning candidate (c), [n̪ɐm.mɐ.d̪ɯ], violates only the lower-ranked constraints, NoCoda and *Gem, it is the optimal choice in this tableau, as the other two were already ruled out. However, candidate (c) is not the empirically attested one. The first candidate (a), [n̪ɐ.mɐ.d̪ɯ], is the observed form in Old Tamil, even though it is not the optimal candidate, according to our constraint ranking. Hence, it forms an exception.

The reason for these seeming 'exceptions' could be attributed to them being relic forms, i.e. these words are frozen from a time when such a morphophonological gemination of sonorant consonants was not active in the language.

5 Do the Obstruents Geminate in Similar Morphophonological Contexts?

One is confronted with the question: Is it only the Sonorant consonants that geminate in the morphophonological contexts discussed above (§ 2)? What about the Obstruents? Consider the following examples:

(54) /iṯ/ + /il/ > [ɪḏɪl] *[ɪṯṯɪl]
'this' LOC 'in this'

(55) /ʊiṯ/ + /a:/ > [ʊɪḏa:] *[ʊɪṯta:]
'leave' NEG 'not leave'

(56) /keṯ/ + /in/ > [kɛḏɪn] *[kɛṯtɪn]
'spoil' COND 'if (it) spoils'

Even though the morphophonological context seems to be similar to the cases where sonorant consonants geminate, there is no gemination in the example above because the coda consonant of the first morpheme is a dental plosive – an obstruent and not a sonorant consonant. Obstruents in the same morphophonological contexts do not geminate because obstruent gemination has a grammatical

meaning, i.e. they create the oblique root forms. Oblique root forms are forms to which case suffixes, apart from the nominative (null), are appended. The mere oblique root can function as the genitive.

(57) [aːɖɯ] /aːʈ/ 'goat' > aːʈʈɯ /aːʈʈ/ 'of the goat'

However, sonorant gemination has no such grammatical function and hence can be employed to fulfil prosodic preferences.

We introduce another highly ranked markedness constraint *Gem(Obs), which prohibits obstruent geminates in a word. Consider the following analysis of example (55):

(58) Tableau 6: /ʊiʈ/ + /aː/ 'not leave' (Onset >> *Gem(Obs), ProsWd >> NoCoda >> *Gem)

	/ʊiʈ/ + /aː/	Onset	*Gem(Obs)	ProsWd	NoCoda	*Gem
a.	☞ [ʊɪ.ɖaː]			*		
b.	[ʊɪʈ.ʈaː]		*		*!	*
c.	[ʊɪɖ.aː]	*!				

However, obstruents seem to geminate in the context described in § 2.2 (Type B) as seen in example (59). We propose that this is not motivated by a constraint to achieve the optimal bimoraic initial syllable but to preserve the voicelessness of the initial obstruent of the conjoining word, since only word-initial and geminate obstruents are voiceless in Old Tamil. This motivation for obstruent gemination is clear, as it happens even in the context of the monosyllabic root/word having a long vowel, as in example (60).

(59) /mu/ + /kulam/ > [mʊkkʊlem]
'three' 'clan' 'three clans'

(60) /t̪iː/ + /paɻakkam/ > [t̪iːppeɻekkem]
'bad' 'habit' 'bad habit'

This obstruent gemination also happens in contexts not involving a monosyllable. Hence, its motivation is to preserve voicelessness and not to fulfil any prosodic constraint. Consider the following examples:

(61) /n̪ilaː/ + /kiːtt/ > [n̪ɪlaːkkiːttɯ]
'moon' 'rays' 'moon rays'

(62) /palaː/ + /kant/ > [pɐlaːkkɐndɯ]
'jackfruit' 'sapling' 'sapling of jackfruit'

6 Conclusion

This study has described and offered an exposition for a phonological problem in Old Tamil using the explanatory apparatus of Optimality Theory. The problem of sonorant consonant gemination was erstwhile regarded as two separate linear phonological rules that were unified as a single conspiracy using the formalism of OT. Only an Optimality theoretic analysis could have done justice in explaining this phenomenon, as it has the formalism to unify separate rules as a single conspiracy. A prosodic word constraint was postulated for Old Tamil (i.e. a preference for word-initial heavy syllables). Using this and other constraints, a ranking was constructed which explained the occurrence and blocking of sonorant consonant gemination. The OT ranking (Onset >> *Gem(Obs), ProsWd >> NoCoda >> *Gem) emerged as a robust ranking of constraints that works for 'almost' every scenario, with a few exceptions. More data needs to be analysed to refine the constraint ranking that can explain the exceptions as well.

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