

A MORPHOLOGICAL ANALYZER FOR TAMIL

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Abstract

This thesis deals with the designing and implementation of a morphological analyzer for the Tamil language. It also involves a comparative study of certain other models of morphological processing, in order to analyze the advantages of each, in terms of suitability for adaptation for a language like Tamil. This is primarily aimed at constructing a complete morphological module for Tamil that could be used in any NLP application like a spell checker, POS tagger, or parser.

Aspects of designing a computational model for morphological analysis include:

1. Deciding a model based on psycholinguistic factors.
2. Designing formal methods/ techniques that would enable converting theoretical descriptions into computational models.

The analyzer under consideration relies on a theoretical blend of the LA and IP approaches to morphological decomposition. Wherever automatic phonological rules operate largely, IP is incorporated. In areas where complex but non-automatic morphophonemics (*sandhi*) is involved, LA is the choice.

Qualitative and quantitative methods in corpus linguistics were employed to extract frequency counts and collocations of words. All possible contexts of occurrence and usage of a word were studied. For every grammatical category of the language, an extracted list of the minimum number of word-forms required for a sufficient coverage had been prepared. Based on such attributes, and in consideration of the factors of coverage and efficiency for a morphological analyzer, an essential set of morphological paradigms for each word class in Tamil had been established. This served as a database comprising of different tables of inflectional forms of a word, for all the words in the language.

An analysis of two other well-established models of morphological analysis: AMPLE and KIMMO had also been taken up for the purpose of comparison. They formed good platforms for implementing morphological analyzers in various languages. Implementation of these have been compared with the Tamil Morph developed here, taking into consideration factors such as, the cost of implementation in terms of effort and time, coverage and efficiency.

Transliteration Table

Tamil	Modified IPA	The WX scheme	Kimmo	AMPLE
அ	a	a	a	a
ஆ	ā	A	A	A
இ	i	i	i	i
ஈ	ī	I	I	I
உ	u	u	u	u
ஊ	ū	U	U	U
எ	e	eV	e	e
ஏ	ē	e	E	E
ஐ	ai	E	Y	Y
ஒ	o	oV	o	o
ஓ	ō	o	O	O
ஔ	au	O	W	W
க	k	k	k	k
ச	c	c	c	c
ட	ṭ	t	t	t
த	t	w	w	w
ப	p	p	p	p
ற	ṛ	rY	R	R
ந	ṇ	F	F	F
ங	ṅ	f	f	f
ண	ṇ	N	N	N
ந்	<u>n</u>	n	n	n
ம	m	m	m	m
ன	<u>n</u>	nY	M	M
ய	y	y	y	y
ர	r	r	r	r
ள	ḷ	L	L	L
வ	v	v	v	v
ழ	z	IYY	Z	Z
ல	l	l	l	l

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Chapter 1

Introduction

1.1 Aims And Scope

The research that is reported here involves the design and implementation of a morphological analyzer for modern standard Tamil that is used in formal writing and reading. The present thesis is an effort towards constructing a morphological **analyzer**. It also involves a comparative study of certain other models of morphological processing, in order to analyze the advantages of each, in terms of suitability for adaptation for a language like Tamil. This is **primarily** aimed at constructing a complete morphological module for Tamil that could be used in any NLP application like a spell **checker**, POS tagger, or parser.

As a component of various natural language processing systems involving Tamil, the morphological analyzer, requires to identify the given input - a word or a word form, and provide **the** output in terms of its compositionality - the word and its constituent morphemes consulting an inbuilt lexicon that provides specific grammatical feature of words. The *combinatorial* technique underlies the morphological processing of word forms.

1.2 Sources and Data

A corpus **is** considered as a **rich** reservoir of a language use in that it provides all its form and functions, and is considered as one of the important resources for any linguistic study. The Tamil corpus developed at CIIL, had been the source for the present study. A statistical study of the Tamil corpus was conducted to obtain information regarding various suffixes and their **allomorphs**.

In order to ensure sufficient coverage for the proposed morphological analyzer, frequency lists of word-forms in the corpus are examined. Inflectional and other relevant information is obtained from these by studying the reverse list of word forms.

This database has served as a footing for this scheme of morphological analysis.

1.3 Morphological Theories

The existing morphological theories are, by and large viewed as the **Combinatorial**, or the **Relational** kind. The former is far more common among linguists as against the latter. Within the combinatorial approach, there are three different models proposed for morphological analysis.

The Item and Arrangement model (Hockett 1958), assumes a concatenative approach wherein morphemes are lexical units, morphology, an agglutination of such units and words, seen as linear sequences of morphs. Describing the morphological patterning of a language would in consequence involve — a specification of the inventory of the morphemes (items), of the possible sequences in which these morphemes can occur (arrangement), and defining those morphs through which every morpheme of the language is realized (a morphological link). A word is analyzed as involving no process at **all**, but only a sequential ordering of morphemes, each of which finds a concrete realization through its **allomorphs**. The LA model is essentially morphemic, and **non-processual**

The **Item and Process** model (Hockett 1958), works on **the** conception that word forms constitute paired features of structure and function, or rather form and meaning, and that elements undergo a variety of modifications through processes to result in newer forms. Morphology is regarded as a set of derivational processes, acting on word forms, producing new word forms. However there exists in IP, only one recognized underlying basic allomorph that contextually varies.

The **Word and Paradigm** model of morphology (Robbins 1963), takes the 'word' operating within a paradigm of variables, as its basic unit. The WP model is distinct in that it focuses primarily on each word as a whole and on its overall effect to **the** unique set of properties that it expresses. The model evades complexities since it divides **the** word into to sequences of non-overlapping units: one for formal elements, and the other for functional and semantic properties. In the WP **framework**, it is a morphophonemic (MP) rule, a conglomerated set of **morphosyntactic** and morphosemantic operations that associate with a word, not a phonological (P) rule. There exist no absolute constraints that might limit the nature or number of correspondences between morphological properties and morphological processes.

Models like the **Item and Arrangement**, the **Item and Process**, and the **Word and Paradigm**, represent the combinatorial approach, wherein analysis involves a necessary segmentation of a morphological string into a base and one or more affixes. Models like the **Word Network** (Singh and Ford 1984), characterize the relational approach, which implicates **the** concept that it is the 'word', and not the morpheme, which underpins morphological analysis **and**, an understanding of the complex relationship it shares with other words.

1.4 Framework For A Morphological Analyzer

The implementation of a morphological analyzer needs to provide for the analysis of a word in terms of its constituents and their corresponding feature values.

An analyzer fashioned in the **LA** framework of morphology, crucially maintains **that** 'all morphemes are lexical items', and enlists all morphemes of the language **with** the necessary feature specifications for each item on the list. Stems and affixes would be separately stored with information on **relatable** pairs of stems and affixes. Analysis of word-forms is then done through pattern matching, denoted by identity of features that build affixes onto the word stems to produce word-forms of increasing complexity.

If it is the IP model of morphology that the analyzer uses, according to the theoretical assumptions it makes, the abstract underlying morpheme finds its surface realization through different morphs in contextually determined morphophonemic states. Both roots and affixes are listed and pattern matching is done based on permitted allomorphic combinations.

Morphophonemic rules are incorporated, that account for these alternations, and which specify conditions of **allomorphy**.

The use of the WP model of morphology for the analysis of word-forms can be seen as more of a Relational approach, when compared to the **IA** or the **IP**. A listing of representatives of each paradigm is rather necessary, since derivatory processes operating within the cells of each paradigm exhibit idiosyncratic behaviour. Only roots, here, are recognized as lexical entries and all possible affixations on various roots or stems are made possible through the introduction of **WFRs**. Analysis of word-forms is triggered by rules working on these combinatorial links.

The Word and Network model that settles in for similar considerations can be regarded as a Full-listing model for morphological analysis. The essence of the Relational approach seems to be more favourable for the production and recognition of word-forms. Since 'affixes don't exist anywhere outside the words in which they appear', (Singh 2000, personal communication) adopting this theory for an analyzer presupposes a comparison of networks between forms rather than view it as a series of **derivatory** operations, as in the WP. No morphological stance is given to concepts like the 'root', or the 'affix', although for technical purposes one would need to observe these distinctions.

The scheme used here, for the purpose of morphological analysis is one based on the consideration of morphological classes as paradigm '**types**'. (cf. McCarthy (1998). The notion of a paradigm' as used in this thesis conforms to what Carstairs (1987) as quoted in McCarthy (1998), defines as: "...a set of inflectional realizations appropriate to a given inflection class." Each cell in the paradigm reflects a distinct inflectional stem and the surface realization of the formative it subsumes.

What is required for a word form to be analyzed is a necessary database **comprising** of different tables of inflectional forms of a word, for all the words in the language. **Every** such table constitutes a set of roots or stems that represent the paradigmatic patterns they follow, implicit in that particular table, for the analysis of word-forms. All the words that fall under a particular table behave **in** a morphologically similar fashion, exhibiting those features peculiar to them, alone.

It is important to note here that the concept of morphological paradigms are in effect grounded within the **theory** of the models used, and a listing of the formatives in each of the paradigm types, further serve as a structured database for the implementation of the models.

The analyzer under consideration is based on an **IA** model for morphological decomposition. However, whenever the alternations are **declared**, the **EP** model is incorporated. Therefore the actual implementation involves a hybrid model.

15 Morphological Classes And Categories In Tamil

Based on certain **morpho-syntactic** factors that help identify morphological classes (and as have been discussed earlier), Nouns, Verbs, Adjectives, Adverbs, Pronouns and Numerals have been identified as the common morphological categories in Tamil.

¹ cf. McCarthy's (1998) use of the term 'paradigm'. Our use of the term conforms to Carstairs's sense, and corresponds more to what McCarthy terms the 'inflectional class'

Nouns, pronouns and number words normally inflect for the categories of number, gender and case. Tamil permits 2 numbers (Singular and Plural), 3 grammatical genders (Masculine, Feminine and Neuter), and 8 cases (Nominative, Accusative, Dative, Sociative, Locative, Instrumental, Benefactive and Ablative).

Verbs chiefly inflect for tense, aspect and modality. Tamil records 3 tenses (Past, Present, Future), 5 aspects (Verbal Participles, Positive Conditional, Negative Conditional, Durative Conditional, Infinitive), 6 **modals** (Negative Past, Negative Future, Hortative, Admonitive, Prohibitive, Imperative).

In analyzing word-forms, establishing distinct word categories through identifying and classifying inflections and affixes peculiar to them would be the **primary** step of linguistic description. Depending on the stem variations resulting through the processes of affixation, paradigms within each word class had been established. Flow charts for each word class had been prepared in order to account for the nature and levels of affixation. Rules accounting for changes at the infra-word level behaviour were incorporated into programmes, for an analysis of morphophonemic precision.

Nouns, Verbs and Adjectives have been regarded as the three major word classes in Tamil. Pronouns and Numerals would be treated as distinct but minor word classes.

1.6 More Analyzers

Besides implementing a morphological analyzer based on a hybrid model in **PERL**, the work also focuses on a comparative analysis of two implementations of two other well-established platforms for morphological analysis: **AMPLE** and **KIMMO**. Tamil morphology needs to be restructured as a computational **database**, to set up working models of the latter. Morphological theory has to be rendered into distinct formalism in order that it suits the modus operandi of the two different word **processors**. Such an enterprise draws upon several aspects of theory and formalism.

An understanding of the formalisms is necessary for an insight into the theory that underlies its functioning. A perspective into the translation **of** theory into practice is **essential** for a proficient documentation of grammar into a well-defined morphological catalogue.

Implementation begins when morphological information **is** restructured in terms of formal methods and techniques that fit into the relevant models of word analysis. **When**, after a working model is ready, testing is a vital factor in the confirmation of correctly analyzed output. Over analysis has to be constrained so that morphologically well-formed words will be realized. This is achieved through debugging.

In order to achieve the above goal, the study requires a comparison of the means and methods involving different analyzers. The efficiency of an analyzer would be calculated in terms of linguistic **and** computational economy, the percentage of coverage, and the efficiency or accuracy of the resultant parse **or** analysis.

This is chiefly done with a view that through such an analysis, a comparison of the features of **AMPLE** and **KIMMO** could provide a better idea on the complexity of the analyzer under consideration.

Chapter 2

Tamil Morphology: An Introduction

2.1 Word Classes

It is a language's morphologically realized inflectional properties that help establish the morphological **categories**, and consequently, the word classes of the language. Morphologically determining these word categories would mean the identification of differences that cause certain affixes to attach only to a particular category, and certain other affixes to another. This entails an exhaustive enumeration of attested affixes ascribed specifically to a word-class based on the factors of morphological and syntactic distinctiveness. The common instances of various morphological categories found **with** the category of nouns are number, gender and case. Number can be described as 'a category of morphosyntactic properties used to distinguish the **quantity** to which a noun phrase refers' (Stump 1998). A majority of languages make use of the Singular and the Plural (a few **like** Sanskrit have the Dual number too). Gender is a category that is found to be not always grammatical. In Tamil where gender is morphologically expressed, the inflections mark the three distinct types: the Masculine, **Feminine**, and the Neuter. Case bundles up morphosyntactic features that express the distinctions in the relations, a noun phrase bears to **its** governing head, the verb. The far more commonly recognized cases are the Nominative, Accusative, and Dative. The remaining cases that express more of a semantic relation than a syntactic one are the Instrumental, Locative and the Ablative.

The inflectional properties that are expressed on verbs are those of Tense, Aspect, Modality, Voice, and Polarity. Tense identifies the temporal reference of an action denoted by a finite verb. The Past, Present, and sometimes the Future, mark the conceptually natural three-way distinction. Aspect helps to recognize the way a particular event locates itself in a particular time interval. Mood or Modality expresses the ways in which a proposition may relate to actuality (in the speaker's mind). Indicative, Optative, and the Imperative are the three basic kinds.

Voice describes the thematic relations that obtain between a verb, and its argument, which plays the syntactic role of subject. Active and Passive are the two commonly found types. Polarity can be defined as 'a category of morphosyntactic properties distinguishing affirmative sentences from negative sentences.' Though in some languages adjectives reflect nominal inflections as a result of governance by the head noun, the general inflectional features needed to identify adjectives are markers of degrees of comparison: namely, the Positive, Comparative, and the Superlative.

2.2 Tamil Grammar

Tamil morphology is primarily agglutinating, and **suffixal**. In other words, 'inflections are marked by suffixes attached to a lexical base, which may be augmented by derivational suffixes.' (Annamalai & Steever 1998). The traditional treatises on Tamil grammar define a distinction through free forms (the major grammatical classes), and bound forms (items like particles, and clitics). *Tolkappiyam* recognizes Tamil as constituting two major word classes: nouns, termed *peVyarcoVl* (in Tamil) and verbs, termed *vinYEcoVl*. As per the classical grammatical treatises, and as recorded in Pope (1985), each of these is characterized by a narrow set of features, all of which are necessarily morphological. Pope's answer to the question of how nouns must be characterized and classified, morphologically substantiates this point: 'we must know four characteristics of nouns: 'class', 'division', 'person', and 'case'. 'Class is of two kinds, 'rational' and 'irrational'. As to the number of divisions of nouns, 'there are **five**: 'masculine', 'feminine', 'rational-plural', 'irrational-singular', and 'irrational-plural'. The three divisions of 'masculine', 'feminine', 'irrational-singular' are called the 'singular-number'. The two other divisions are called the 'plural-number'. There are three 'persons' recognized: the first, second, and the third. Cases are eight: nominative, accusative, sociative, dative, ablative, instrumental and the locative.

2.3 Morphological Classes And Categories In Tamil

In **Arden's** (1891) study of Tamil morphology nouns are divided as rational vs. irrational, the rational corresponding to the animate, the irrational corresponding to the inanimate. Singular and Plural are the two numbers. In the organization of case, nine thematic relations are realized - the Nominative, Accusative, Instrumental, Social, Dative, Ablative (of motion), Genitive, **Locative** and the Vocative. The Benefactive is subsumed under the Dative. The Vocative, as a referential case has been included. Gender has also been seen as a grammatical feature of nouns.

Based on morphosyntactic properties of a word **Lehmann (1989)** introduces eight parts of speech in Tamil i.e., nouns, verbs, postpositions, adjectives, adverbs, quantifiers, determiners and conjunctions. Narrowing down to morphological features, there is a further line of reasoning on how lexical items can fall under a broad classification of nominal vs. verbal roots (that cover a large portion of roots in Tamil), and a minor classification of adjectival and adverbial roots (that subsume the rest). Apart from nouns and verbs, a separate set of uninflected words, called **indeclinables**, form an additional morphological class. Noun stems are seen as inflecting for the plural suffix, oblique, euphonic and the case suffix.

Annamalai & Steever (1998) largely discuss nominal and verbal morphology, and treat other classes as minor. According to this study of morphology, nouns inflect for gender, number and case. Gender here, is believed to be determined by the kind of locative case marker used, that determines the distinction between what they call *iyartinai* ('rational' corresponding to human), and *akerinai* ('non-rational' corresponding to non-human). The validation for this argument is that the marker *itam* is used in the case of the rational and *il*, in the case of non-rational. This being the case, the application of the marker *itam*, on nouns with the features +rational, +human should be an exclusive rule, which means it cannot apply to nouns that lack this feature. Consequently, the noun form *naAy-itam* should be an

invalid one, but which is not really the case. For that matter *nAy-il* is not a valid occurrence. Therefore rather, the terms *uyartinai* and *akerinai* could be redefined in their *original* sense¹

In addition there is also recognition of two numbers and eight cases, including the unmarked singular, in number and the unmarked nominative, in case. An allusion to the vocative case has also been made. Pronouns have been semantically categorized, based on number and person. Labeled as singular or plural, pronouns are grouped under the 1st, 2nd or the 3rd person separately. This includes a list of twelve pronominal forms. Verbs again are semantically classified as either belonging to the 'strong' or the 'weak' class. Finite verbs are classified into the Past, Present, Future, Future Negative, Imperative, Negative Imperative and the Optative. Non-finite forms comprise a group of Verbal nouns, Infinitives, Conjunctions, Negative verbal forms, Conditionals, Negative Conditionals and Deverbal forms.

Other classes such as adjectives, adverbs, conjunctions, particles and postpositions seen as minor parts of speech in different grammars, are treated as cases of defective morphology, incapable of playing a part in the inflectional range of nouns or verbs. Therefore these are regarded as derivatives of nouns or verbs. The argument in favour of this is: "Yet, to say that a form is a defective noun or verb is still to say that it is a noun or verb."

For purposes of implementation, what is borne in mind is a morphological classification of inflectional classes in Tamil. Theoretically therefore, based on certain *morpho-syntactic* factors that help *identify* morphological classes (and as have been discussed earlier), Nouns, Verbs, Adjectives, Pronouns and Numerals have been identified as the common morphological classes in Tamil (Uma Maheshwara Rao, 1999, 2002). Nouns, Verbs and Adjectives are treated as three major classes, Pronouns and Numerals being regarded as distinct word classes, that could not supposedly be grouped as subclasses of Nouns.

2.3.1 NOUNS

Nouns normally inflect for the categories of number and case. Tamil permits two numbers the Singular and the Plural. In Tamil the thematic roles that these nouns play in relation to the verb that they modify are indicated by a series of affixes commonly called as the Nominative, Accusative, Dative, Sociative, Genitive, Locative, Instrumental, Benefactive and the Ablative cases. Nominative is unmarked.

2.3.1.1 Number

The Singular number is unmarked in Tamil. The Plural is indicated by the suffix *kaY*, which is optional. Of the twenty-four classes of nouns, twenty-two have the suffixation of *kaY* for plural marking. Two other classes that end in long vowels have an allomorphic variant *kekaY* as their plural suffix. These are, classes / ('fly'), and *pU* ('flower'). Within the Item and Arrangement (IA) description, plural suffixes are listed as two separate entries *kaY* and *kekaY*, where the geminate suffix combines with stems that end in long vowels, and the non-geminate applies as the elsewhere condition. In the Item and Process (IP) model, *kaY* is held as the basic plural morpheme from which the allomorph *kekaY* is derived in instances where the preceding stem ends in a long vowel.

¹ As in the sense of *Tolkappiyam*

From among the classes of nouns, there are the following four kinds, wherein the allomorphy is involved as part of pluralization. These are: *maṇṬiwaṇṬ*, *maram*, *muṬ* and *pul*.

1. *maṇṬiwaṇṬ* *maṇṬiwaṇṬ* → *maṇṬiwaṇ* + *kaṬ*
2. *maram* *maram* → *maṛaṭ* + *kaṬ*
3. *muṬ* *muṬ* → *muṭ* + *kaṬ*
4. *pul* *pul* → *puṛ* + *kaṬ*

Each of these noun stems undergoes a morphophonemic change before the addition of the plural suffix.

2.3.1.2 Case

Case inflections are obtained in Tamil through two parallel mechanisms — the direct, as in the Nominative and the indirect, as in (other than the nominative) the Oblique. The Nominative case is unmarked in Tamil. The Oblique base in singular represents a stem that is open to further inflections. The Accusative, Dative, Genitive, Sociative, Locative, Benefactive and the Ablative case suffixes follow the Oblique form of the stem.

Case	Case Marker
Nominative	ϕ
Accusative	<i>E</i>
Dative	<i>kku</i> / <i>ukku</i> / <i>akku</i>
Instrumental	<i>Ai</i>
Locative	<i>il</i> (inanimate.) / <i>itam</i> or <i>kitte</i> (animate.)
Ablative	<i>ilṛunṇu</i> (animate.) / <i>ilamirunṇu</i> (inanimate)
Genitive	<i>uṭṬiya</i> (colloq.) / <i>awu</i> , <i>iṇṬ</i> , <i>iṇṬawu</i> (classical.)
Benefactive	<i>kkAka</i>
Sociative	<i>otu</i> (colloq.) / <i>uṭaṇṬ</i> (classical.)

Table 2.1: Case Matters in Tamil

The Accusative case is indicated by the suffix *E*. The Dative case is indicated by the suffix *kku* following a vowel ending stem, or *ukku*, when following a consonant ending stem. The Instrumental case is indicated by the suffix *Ai*. The Locative case is indicated by the suffix *itam* or *kitte* for the animate and *il* for the inanimate nouns. Similarly, the Ablative case is marked by the suffix *ilamirunṇu*, for the animate and *ilṛunṇu*, for the inanimate nouns. The Genitive case is marked by either *uṭṬiya* or *awu* / *iṇṬawu*. On lines similar to that of the Dative, the Benefactive case is marked by *kkAka* following a vowel ending stem, or *ukkeAka* following a consonant ending stem. The Sociative case is indicated by the suffix *otu* or *uṭaṇṬ*.

From among the twenty-four classes of nouns, there are the following five kinds of stems that exhibit allomorphic change for case suffixation. These are: *AṭṬu*, *kAṭu*, *maram*, *naraṇṇu* and *vaṇṇu*.

1. *AṭṬu* *AṭṬu* → *AṭṬ*
2. *kAṭu* *kAṭu* → *kAṭ*
3. *maram* *maram* → *maṛa*
4. *naraṇṇu* *naraṇṇu* → *naraṇṇ*
5. *vaṇṇu* *vaṇṇu* → *vaṇṇ*

Apocope, or the loss of the final segment (vowel or consonant) is the single fundamental **morphophonemic** rule that characterizes these stems.

There are certain **morphophonemic** changes that operate on noun stems to enable them to take suffixes. Nine such generic instances form the base for case suffixes. These are: *AṛY*u, *eVḷi*, *kaN*, *kAtu*, *maram*, *muṆ*, *poVnṆ*, *puḷ* and *pU*.

1.	<i>AṛY</i> u	<i>ṛY</i>	<i>AṛY</i> u → <i>AṛYṛY</i>
2.	<i>eVḷi</i>	<i>y</i>	<i>eVḷi</i> → <i>eVḷiy</i>
3.	<i>kaN</i>	<i>N</i>	<i>kaN</i> → <i>kaNN</i>
4.	<i>kAtu</i>	<i>t</i>	<i>kAtu</i> → <i>kAtt</i>
5.	<i>maram</i>	<i>ww</i>	<i>maram</i> → <i>maraww</i>
6.	<i>muṆ</i>	<i>Ṇ</i>	<i>muṆ</i> → <i>muṆṆ</i>
7.	<i>poVnṆ</i>	<i>nṆ</i>	<i>poVnṆ</i> → <i>poVnṆnṆ</i>
8.	<i>puḷ</i>	<i>ḷ</i>	<i>puḷ</i> → <i>puḷḷ</i>
9.	<i>pU</i>	<i>v</i>	<i>pU</i> → <i>pUv</i>

There are three kinds of morphophonemic rules that operate here:

2.1. Gemination

If a noun stem ends in any of the consonants *ṛY*, *N*, *t*, *Ṇ*, *nṆ* or *ḷ*, the latter undergo some morphophonemic change of assimilation in accordance with the following segment of the case suffix.

2.2. Glide Insertion

If a noun stem ends in any of the vowels, glide insertion occurs. If the suffix initial vowel is a front vowel, **y-insertion** occurs, and if it is a back vowel, **v-insertion** occurs.

2.3. Insertion cum Gemination

If a noun stem ends in the nasal 'm' the consonant *w* is inserted as a geminate before a following vowel.

2.3.1.3 Gender

Early treatises on Tamil noun morphology have made a distinction between *ṣṣartinaṭ* and *akerinaṭ* as referring to +animate and -animate respectively. Arden (1976) describes nouns as being classified into two:

1. High-caste or Rational
2. No-caste or Irrational

The former is a class said to denote "rational persons or beings", and which further divides into the Masculine (that denotes "gods and men") and the Feminine (that denotes "goddesses and women only"). The latter (2) has been ascribed as a set of nouns "denoting animals and inanimate things" and which are regarded as "Neuter".

There are however two **formatives** *kAraṇ* and *kAṇ*, indicative of the Masculine and Feminine forms of the agentive noun. Examples are: *veḷḷekAṇ* (woman servant) *vottakkAraṇ* (gardener). In addition, Arden (1976) notes the use of the Masculine Singular suffix *Aṇ*, Feminine *AṆ* and Plural suffix *Ar* or *Arkaṇ*, as attaching to the nominal base to form a personal noun like *saṃṣṣaAṇ* (a truthful man).

Such suffixes are not very productive, and occur with a relatively small set of nouns. There are a few instances of occurrences like *vaḷḷeAṇ* vs. *vaḷḷeṇi* that can be listed in the lexicon, since gender in such cases is lexically realized rather than morphologically. It **can**

therefore be maintained that Gender as a grammatical category in Tamil is not largely productive.

2.3.1.4 Other Attachments

Apart from Number and Case, other functional elements like Adverbials, Postpositions, Particles and Clitics attach to nouns.

Postpositions and Adverbials attach to nouns only if they are in the Nominative or the Dative case. Adverbials are largely, of a spatial or temporal nature. Particles attach to nouns if they are in the Nominative, Accusative or Dative case. Clitics can be added to any noun form irrespective of number or case.

2.3.1.5 The Nominal Paradigm

On the basis of allomorphy exhibited by nouns when inflected for number and case, nouns are classified into twenty-three distinct sets in order to generate correct word forms. The following table illustrates the features of contrast:

Sl. No.	Noun	Base ending	Base modification	Oblique Singular	Oblique Plural
1	AN	N	Ø	Ø	+kaY
2	ArYu	rYu	Ø	rY >> rYrY	+kaY
3	eVli	i	Ø	Ø >> y	+kaY
4	iIE	E	Ø	Ø >> y	+kaY
5	iwaYY	IYY	Ø	Ø	+kaY
6	I	I	Ø	Ø >> y	+kkaY
7	kaN	N	Ø	N >> NN	+kaY
8	kAl	l	Ø	Ø	+kaY
9	kAtu	tu	Ø	t >> tr	+kaY
10	manYrwanY	nY	nY >> r	Ø	+kaY
11	maram	m	m >> f	m >> ww	+kaY
12	muY	IY	IY >> t	IY >> IYIY	+kaY
13	mAnY	nY	Ø	Ø	+kaY
14	narampu	u	Ø	Ø	+kaY
15	nAy	y	Ø	Ø	+kaY
16	poVnY	nY	Ø	nY >> nYnY	+kaY
17	poVy	y	Ø	y >> yy	+kaY
18	pul	l	l >> rY	l >> ll	+kaY
19	poVruY	IY	IY >> t	Ø	+kaY
20	pU	U	Ø	Ø >> v	+kkaY
21	vaNtu	tu	Ø	Ø	+kaY
22	wer	r	Ø	Ø	+kaY
23	wolY	IY	Ø	Ø	+kaY

Table 2.2: The Nominal Paradigm: Noun Classes

The table records the morphophonemic changes that stems and suffixes undergo in different morphological contexts. The base endings indicate the specific phonological shape

a particular class ends in. The base modifications specify the phonological change the base undergoes prior to number suffixation. The table accounts for five instances of morphophonemic change in the oblique base of the noun stem, and fourteen instances of stem change prior to case suffixation. *kaŋ* is the basic plural morpheme, used with its allomorphic variant that is phonologically conditioned.

2.3.2 PRONOUNS

Pronouns normally inflect for the categories of number, gender and case. Tamil permits two numbers (Singular and Plural), three grammatical genders (Masculine, Feminine and Neuter), and nine cases (Nominative, Accusative, Dative, Sociative, Genitive, Locative, Instrumental, Benefactive and Ablative).

2.3.2.1 Number

The singular and plural forms of Pronouns are lexically identified as distinctly separate words and therefore the need for recognizing number, as a morphological category of pronouns does not arise. This is the significant difference between nouns and pronouns.

2.3.2.2 Case

The similar set of case markers that apply for nouns, apply for pronouns too. The Nominative and the Oblique, form the primary branching in case marking. The Nominative case remains unmarked. The Oblique case represents a stem that is open to further inflections. The Accusative, Dative, Genitive, Sociative, Locative, Benefactive and the Ablative case suffixes follow the Oblique form of the stem. (For details on case marking refer Table 2.1)

Pronouns are all lexical and fully specified for functional formants in the lexicon. The chief morphophonemics involving pronominal stems is the gemination of the stem final consonant when followed by a vowel initial suffix, when in the oblique form.

Nominative	Oblique1	Oblique2
<i>aʷu</i>	<i>aʷ</i>	<i>aʷw</i>
<i>n.A nŋ</i>	<i>eV nŋ</i>	<i>eV nŋ nŋ</i>
<i>n.A /kaŋ</i>	<i>eV /kaŋ</i>	<i>eV /kaŋ</i>
<i>nI</i>	<i>uŋ</i>	<i>uŋ nŋ</i>
<i>nI /kaŋ</i>	<i>u /kaŋ</i>	<i>u /kaŋ</i>
<i>nIr</i>	<i>uŋ</i>	<i>uŋŋ</i>
<i>ɟ.A m</i>	<i>eV m</i>	<i>eV m m</i>
<i>w.A m</i>	<i>w aŋ</i>	<i>w aŋ m</i>
<i>n.A m</i>	<i>n aŋ</i>	<i>n aŋ m</i>
<i>w.A /kaŋ</i>	<i>w a /kaŋ</i>	<i>w a /kaŋ</i>
<i>w.A nŋ</i>	<i>w a nŋ</i>	<i>w a nŋ nŋ</i>

Table 2.3: Pronominal Bases

As can be seen, each case involves a distinct vowel or consonant geminate; it is not possible to state a single rule in a segment formant. It proves rather economical to list these forms in the lexicon.

2.3.2.3 Gender, Number, Person

Since every member of the pronominal paradigm forms part of the lexicon, the concept of gender realization is a semantic feature of each of these lexemes. It is only the 3rd. person pronouns in their singular forms, which have the feature of gender. While *avaY* refers to the 3rd. person Feminine Singular, *avanY* refers to the 3rd. person Masculine, and *awu*, to the 3rd. person Neuter.

2.3.2.4 Other Attachments

like that of a noun, pronouns do take Postpositions, Particles and Clitics to form larger strings to indicate the relevant semantics. Postpositions follow pronouns that are in their Nominative or Dative case. Particles follow pronouns if they are in the Nominative, Accusative or Dative case. Clitics can be appended to any pronominal form irrespective of case.

2.3.2.5 The Pronominal Paradigm

In accordance with the discussion above, fifteen distinct forms of pronouns are required in order to generate correct word forms. The following table illustrates the features of contrast:

Sl. No.	Pronoun	Ending	Oblique Base1	Oblique Base2
1	avaY	lY	Ø	Ø
2	avanY	nY	Ø	Ø
3	avar	r	Ø	Ø
4	awu	u	Ø	aw / aww
5	avE	E	Ø	avarYrY
6	nAnY	nY	eVnY	eVnYnY
7	nAfkalY	fkalY	eVfkalY	eVfkalY
8	nI	I	unY	unYnY
9	nIfkalY	fkalY	ufkalY	ufkalY
10	nIr	r	um	umm
11	wAfkalY	fkalY	wafkalY	wafkalY
12	wAm	m	wam	wamm
13	wAnY	nY	wanY	wanYnY
14	yAm	m	eVm	eVmm
15	nAm	m	nam	namm

Table 2.4: The Pronominal Paradigm: Pronoun Classes

The table lists the fifteen distinct pronominal forms in their nominative forms with the relevant stem changes alongside each entry in different columns for the distinct oblique counterparts. The base endings indicate the specific phonological shape a particular class ends in. Forms in Oblique2 necessitate a following case suffix, while those in Oblique1 do not.

2.3.3 NUMERALS

Numerals form a subcategory of nouns inflecting for categories of number, gender and case. Tamil permits two numbers (Singular and Plural), three grammatical genders (Masculine, Feminine and Neuter), and nine cases (Nominative, Accusative, Dative, Sociative, Genitive, Locative, Instrumental, Benefactive and Ablative). In addition to this there are certain distinct inflections that occur only with numeral words, which make them a distinct subcategory of nouns.

2.3.3.1 Number

The Singular number is unmarked in Tamil. The Plural is indicated by the suffix *kaY*. All of the classes of numerals have the suffixation of *kaY* for plurality. The only stem that undergoes morphophonemic change for number suffixation is *Ayiram*, and which undergoes nasal assimilation.

1. *Ayiram* *Ayiram* —* *Ayiraf*

2.3.3.2 Case and Ordinality

The Nominative stem remains an unmarked one. The Oblique form of the numeral stem is open to further inflections. There are two kinds of Oblique bases. The first kind, **Oblique1**, allows case inflections and a specific set of quantitative particles peculiar to the class of numerals. The Accusative, Dative, Cienitive, **Sociative**, Locative, Benefactive and the Ablative case suffixes follow the Oblique form of the stem. (For a discussion of particles see section 2.3.3.4, Table 2.8)

All classes of numerals exhibit stem allomorphic change in the oblique **case**, prior to inflection for case, or any other kind of suffixation. There is a morphophonemic difference however, in the stem realization between the two kinds of oblique bases in numeral words. The following table makes a note of stem changes in different phonological and morphological contexts:

No.	Nominative	Oblique 1
1	<i>oV'nY'ɽ'u</i>	<i>oV'nY'ɽ'</i>
2	<i>iraNtu</i>	<i>iraNt</i>
3	<i>mUnY'ɽ'u</i>	<i>mUnY'ɽ'</i>
4	<i>nAnY'ku</i>	<i>nAnY'k</i>
5	<i>Ennu</i>	<i>Enn'</i>
6	<i>Aɽ'u</i>	<i>Aɽ'</i>
7	<i>eɽY'u</i>	<i>eɽY'</i>
8	<i>eV'itu</i>	<i>eV'it</i>
9	<i>oV'nY'pawu</i>	<i>oV'nY'paw'</i>
10	<i>pawwu</i>	<i>paww'</i>
11	<i>nUnY'u</i>	<i>nUnY'ɽ'</i>
12	<i>Ayiram</i>	<i>Ayiraww'</i>
13	<i>latcam</i>	<i>latcaww'</i>
14	<i>koti</i>	<i>kotiy</i>

Table 2.5: Numeral Bases - 1

Apocope, the rule of loss of the final segment (vowel or consonant) is the fundamental **morphophonemic** rule characterizing these stems.

Numerals also assume a similar set of stems to indicate **ordinality**. The ordinality suffix denoted by *Am* or *Avawu*, effects certain other morphophonemic changes. Two classes of numerals, *nUrY'u*, and *Ayiram* illustrate this change:

1. *nUrY'u* *nurY'u* → *nUrY'Y'*
2. *Ayiram* *Ayiram* → *Ayiraww*

These changes are mainly effected by rules of gemination and assimilation operating on the numeral stem.

2.3.3.3 Gender, Number & Person

In addition to number and case, some of the numeral stems inflect for GNP suffixes as well. It is on the second kind of the oblique stem, Oblique 2, that specific GNP inflections and a set of temporal particles are permissible. The following is a list of the relevant GNP suffixes:

GNP	Suffix
3 rd . Sing. Feminine	<i>wu</i>
3 rd . Sing. Masculine	<i>vanY'</i>
3 rd . Sing. Honoric/Plural	<i>var</i> / <i>²mar</i>

Table 26: GNP suffixes for Numerals

Gender, Number and Person inflections are possible up to the first eight classes of numerals. The 3rd.singular masculine, and feminine suffixes, apply only to class 1 of the numeral paradigm, *oVnY'rY'u*. The 3rd. singular honorific/ plural suffix, applies to all of the other classes (including *oVnY'rY'u*). A complete list of the numerals that inflect for GNP along with their **allomorphic** stem variations in the oblique **form**, could be shown as:

No.	Nominative	Oblique 2
1	<i>oVnY'rY'u</i>	<i>oV'ru</i>
2	<i>iraNtu</i>	<i>iru</i>
3	<i>mUnY'rY'u</i>	<i>mU</i>
4	<i>nAnY'ku</i>	<i>nAl</i>
5	<i>Enwu</i>	<i>E</i>
6	<i>A'rY'u</i>	<i>aru</i>
7	<i>eN'Y'u</i>	<i>eV'N'Y'u</i>
8	<i>eV'itu</i>	<i>eV'N</i>
9	<i>oV'nY'pawu</i>	-
10	<i>pawwu</i>	-
11	<i>nUrY'u</i>	-
12	<i>Ayiram</i>	-
13	<i>latcam</i>	-
14	<i>koti</i>	-

Table 2.7: Numeral Bases - 2

²Applies only in the case of the numeral *el'itu*

Morphophonemic changes in the case of GNP **suffixation** in numerals are complex, and the phonological processes involve more than a single level of transformation or derivation.

2.3.3.4 Other Attachments

Adverbials, Postpositions, Particles, Clitics and Vocatives are the other inflections that apply on numerals. Adverbials that follow particles need to be followed by the locative or dative case. Postpositions follow numerals that are in their Nominative or Dative case.

Two different sets of particles attach to numerals in their oblique form. **Quantitative** Particles such as *(e)kAl* 'quarter', *arE* 'half', *arEkkAl* 'one-eighth', *(e)mukkAl* 'three-quarters', occur after Oblique 1 forms, while certain **other** Particles such as those indicative of like *maNi* 'o'clock', occur after the Nominative form of classes other than *oVnYŋYu*, in which case it occurs only after its Oblique 2 form. Other particles like *peVyar* 'number of persons' occur after the nominative forms of numerals.

The following table indicates a list of permissible inflectional combinations applicable to each allomorph:

Sl.No.	Numeral	Case Suffixes	Ordinality (Am/Arawu)	Particles1 (ma.Ni)	Particles2 (ekA, acE, arEkkA, mukkaI)	Class1 Particles (kA, ciA, ciAr, cirYu)	Particle other than for Class1 (pe Vyar)
1	<i>oVnYrYu</i>	x	x	x	x	x	x
2	<i>oVnYrY</i>	✓	✓	x	✓	x	x
3	<i>oVru</i>	x	x	✓	x	✓	x
4	<i>iraNtu</i>	x	x	✓	x	x	✓
5	<i>iraNt</i>	✓	✓	x	✓	x	x
6	<i>iru</i>	x	x	x	x	x	x
7	<i>mUnYrYu</i>	x	x	✓	x	x	✓
8	<i>mUnYrY</i>	✓	✓	x	✓	x	x
9	<i>mU</i>	x	x	x	x	x	x
10	<i>nAnYku</i>	x	x	✓	x	x	✓
11	<i>nAnYk</i>	✓	✓	x	✓	x	x
12	<i>nA/</i>	x	x	x	x	x	x
13	<i>Ennu</i>	x	x	✓	x	x	✓
14	<i>Enw</i>	✓	✓	x	✓	x	x
15	<i>E</i>	x	x	x	x	x	x
16	<i>ArYu</i>	x	x	✓	x	x	✓
17	<i>ArY</i>	✓	✓	x	✓	x	x
18	<i>aru</i>	x	x	x	x	x	x
19	<i>eYYu</i>	x	x	✓	x	x	✓
20	<i>eYY</i>	✓	✓	x	✓	x	x
21	<i>eV/YYu</i>	x	x	x	x	x	x
22	<i>eV/ttu</i>	x	x	✓	x	x	✓
23	<i>eV/tt</i>	✓	✓	x	✓	x	x
24	<i>eV/N</i>	x	x	x	x	x	x
25	<i>oVnYpawu</i>	x	x	✓	x	x	✓
26	<i>oVnYpaw</i>	✓	✓	x	✓	x	x
27	<i>pawwu</i>	x	x	✓	x	x	✓
28	<i>paww</i>	✓	✓	x	✓	x	x

Table 2.8: Permissible Suffixes in Numerals

2.3.3.5 The Numeral Paradigm

On the basis of allomorphy exhibited by numerals when inflected for number, case/ordinality and GNP, fourteen distinct classes of numerals are required in order to generate correct word forms. The following table illustrates the features of contrast:

Sl. No.	Numeral	Oblique1	Oblique2	Ordinality Suffix
1	oVnYrYu	oVnYrY	oVru	muwal
2	iraNru	iraNt	iru	_Am/Avawu
3	mUnYrYu	mUnYrY	mU	_Am/Avawu
4	nAnYku	nanYk	nAl	_Am/Avawu
5	Enwu	Enw	E	_Am/Avawu
6	ArYu	ArY	arYu	_Am/Avawu
7	eYYu	eYY	eVYYu	_Am/Avawu
8	eVru	eVr	eVN	_Am/Avawu
9	oVnYpawu	oVnYpaw	Ø	_Am/Avawu
10	pawwu	paww	Ø	_Am/Avawu
11	nUrYu	nUrYrY	Ø	_Am/Avawu
12	Ayiram	Ayiraww	Ø	Ø
13	latcam	latcaww	Ø	Ø
14	koti	koti	Ø	Ø

Table 2.9: The Numeral Paradigm; Numeral Classes

The table lists the fourteen distinct numeral forms in their nominative forms with the relevant stem changes along with their oblique corresponding forms. Case inflections and ordinality markers can occur after Oblique 1 bases, while GNP inflections can append to the Oblique 2 base forms.

2.3.4 VERBS

Verbs chiefly inflect for tense, aspect and modality. Tamil records 3 tenses (Past, Present, Future), 5 aspects (Verbal Participles, Positive Conditional, Negative Conditional, Durative Conditional, Infinitive), 6 modals (Negative Past, Negative Future, Hortative, Admonitive, Prohibitive, Imperative).

2.3.4.1 Tense

Verbs in Tamil have three morphological tenses: the Past, Present and the Future

2.3.4.1.1 PAST

Verbs can be classified into fourteen classes, based on allomorphic variations exhibited by the verb stem before the past tense suffix. The following is a list of paradigmatic classes of verbal declension in the past tense.

From among the 24 classes of verbs, there are 14 stems that exhibit allomorphic change before past tense suffixation. These are: *Aku*, *ANcA*, *ceVl*, *coVl*, *kAN*, *keŋ*, *koVŋ*, *ni*, *no*, *peVŋu*, *potu*, *vA* and *wUfku*.

SLNo	Root	Stem	Morphophonemic Process
1	<i>Aku</i>	<i>A</i>	Final Syllable Deletion
2	<i>AN</i>	<i>AN</i>	Assimilation
3	<i>aŋYu</i>	-	-
4	<i>cA</i>	<i>ceV</i>	Vowel Shortening
5	<i>ceVl</i>	<i>ceVnŋ</i>	Assimilation
6	<i>ceVy</i>	-	-
7	<i>coVl</i>	<i>coVnŋ</i>	Assimilation
8	<i>eVnŋ</i>	-	-
9	<i>ikaŋŋ</i>	-	-
10	<i>iru</i>	-	-
11	<i>kAN</i>	<i>kaN</i>	Vowel Shortening
12	<i>keŋ</i>	<i>ket</i>	Assimilation
13	<i>koVŋ</i>	<i>koVN</i>	Assimilation
14	<i>ni</i>	<i>ninŋ</i>	Assimilation
15	<i>no</i>	<i>noV</i>	Vowel Shortening
16	<i>pai</i>	-	-
17	<i>peVŋu</i>	<i>peVŋ</i>	Final Vowel Deletion
18	<i>po</i>	-	-
19	<i>potu</i>	<i>pot</i>	Final Vowel Deletion
20	<i>pUN</i>	-	-
21	<i>uN</i>	-	-
22	<i>vA</i>	<i>va</i>	Vowel Shortening
23	<i>uŋYu</i>	-	-
24	<i>wUfku</i>	<i>wUfke</i>	Final Vowel Deletion

Table 2.10(a): Verb Stem Allomorphy in the Past Tense forms

Various kinds of morphophonemic rules come into operation in the instance of stem changes. There are 7 kinds of variations in the past tense suffixes. These are: *nŋ*, *t*, *wu*, *ŋ*, *w*, *nu* and *inŋ*.

SLNo	Verb Stem	Past Suffix	Variant Change	Morphophonemic Process
1	<i>Aku</i>	<i>nŋ</i>	<i>ANŋ</i>	Final Syllable Deletion
2	<i>AN</i>	<i>t</i>	<i>ANt</i>	Assimilation
3	<i>aŋYu</i>	<i>w</i>	<i>aŋYuw</i>	-
4	<i>cA</i>	<i>wu</i>	<i>ceVwu</i>	Vowel Shortening
5	<i>ceVl</i>	<i>ŋ</i>	<i>ceVnŋŋ</i>	Assimilation
6	<i>ceVy</i>	<i>w</i>	<i>ceVyw</i>	-
7	<i>coVl</i>	<i>nŋ</i>	<i>coVnŋnŋ</i>	Assimilation
8	<i>eVnŋ</i>	<i>ŋ</i>	<i>eVnŋŋ</i>	-
9	<i>ikaŋŋ</i>	<i>nu</i>	<i>ikaŋŋnu</i>	-
10	<i>iru</i>	<i>nu</i>	<i>irunu</i>	-
11	<i>kAN</i>	<i>t</i>	<i>kaNt</i>	Vowel Shortening
12	<i>keŋ</i>	<i>t</i>	<i>ket</i>	Assimilation
13	<i>koVŋ</i>	<i>t</i>	<i>koVNt</i>	Assimilation
14	<i>ni</i>	<i>ŋ</i>	<i>ninŋŋ</i>	Assimilation

15	<i>no</i>	<i>nu</i>	<i>noVnu</i>	Vowel Shortening
16	<i>pai</i>	<i>uw</i>	<i>pauiuw</i>	-
17	<i>peVɽu</i>	<i>ɽ</i>	<i>peVɽɽ</i>	Final Vowel Deletion
18	<i>po</i>	<i>nɽ</i>	<i>ponɽ</i>	-
19	<i>potu</i>	<i>t</i>	<i>poti</i>	Final Vowel Deletion
20	<i>pUN</i>	<i>t</i>	<i>pUNt</i>	-
21	<i>uN</i>	<i>t</i>	<i>uNt</i>	-
22	<i>uA</i>	<i>nu</i>	<i>uanu</i>	Vowel Shortening
23	<i>uiɽɽu</i>	<i>nu</i>	<i>uiɽɽunu</i>	-
24	<i>wU/ku</i>	<i>inɽ</i>	<i>wU/kuinɽ</i>	Final Vowel Deletion

Table 210(b): Verb Suffix Allomorphy in the Past Tense forms

There are three kinds of morphophonemic rules that operate here:

2. Apocope

There are 4 instances of final vowel deletion in the verbal paradigms. If a verbal base ends in the vowel *u*, which is preceded by a stop consonant, the vowel gets deleted before suffixation of the past tense marker.

2. Assimilation

There are 6 instances, or rather 3 types, of assimilation in the verbal paradigm, particularly along with rule of gemination. Specific changes include *ɽ* to *N*, /to *nɽ* and *fl* to */*. The trend can be described as a liquid assimilating to a nasal stop, in the context of a stop.

2. Vowel Shortening

There are 4 instances of vowel shortening in the verbal paradigm. Any of the verbal stems, that end in a vowel gets shortened if it is followed by a stop or a sequence of nasal + stop.

Apart from the Past tense, aspectuals like the Past Adjectival Participle, Positive Verbal Participle and the Positive Conditionals also inflect on the same base. The Past Adjectival Participle involves an additive *a*, after the past tense marker, the Positive Verbal Participle involves an additive *u* or *i*, and the Positive Conditional, and additional *AL*

23.4.1.2 PRESENT

Verbs can be classified into five classes, based on allomorphic variations exhibited by the verb stem for the present tense. There are 5 stems that exhibit allomorphic change before present tense suffixation. These are: *Aku*, *keɽ*, *koVɽ*, *mlpUN* and *vA*. The following is a list of paradigmatic classes of verbal declension in the present tense.

Sl.No	Root	Stem	Morphophonemic Process
1	<i>Aku</i>	<i>A</i>	Final Syllable Deletion
2	<i>Aɽ</i>	-	-
3	<i>aɽɽu</i>	-	-
4	<i>ɛA</i>	-	-
5	<i>ɛVl</i>	-	-
6	<i>ɛVɽ</i>	-	-
7	<i>ɛVl</i>	-	-
8	<i>eVnɽ</i>	-	-
9	<i>ikaɽɽ</i>	-	-

10	<i>iru</i>	-	-
11	<i>kAN</i>	-	-
12	<i>keŋ</i>	<i>ket</i>	Assimilation
13	<i>koVŋ</i>	-	-
14	<i>niŋ</i>	<i>niŋ</i>	Assimilation
15	<i>no</i>	-	-
16	<i>pai</i>	-	-
17	<i>peVŋu</i>	-	-
18	<i>po</i>	-	-
19	<i>potu</i>	-	-
20	<i>pUN</i>	<i>pUNu</i>	Vowel Insertion
21	<i>uN</i>	-	-
22	<i>uA</i>	<i>varu</i>	Final Syllable Insertion
23	<i>viŋŋu</i>	-	-
24	<i>wUŋku</i>	-	-

Table 2.11(a): Verb Stem Allomorphy in the Present Tense forms

The present tense suffix is *kirŋ*, that functions as default, excepting in cases of stems that end in the vowels *u* or *i*, where the allomorphic variant *kekirŋ* appears. The following is how the present tense suffix allomorphs *kirŋ* and *kekirŋ* are distributed.

Sl.No	Verb Stem	Present Suffix	Variant Change	Morphophonemic Process
1	<i>Aku</i>	<i>kirŋ</i>	<i>Akirŋ</i>	-
2	<i>Aŋ</i>	<i>kirŋ</i>	<i>Aŋkirŋ</i>	-
3	<i>aŋŋu</i>	<i>kirŋ</i>	<i>aŋŋukirŋ</i>	-
4	<i>cA</i>	<i>kirŋ</i>	<i>cAkirŋ</i>	-
5	<i>ceVl</i>	<i>kirŋ</i>	<i>ceVlkirŋ</i>	-
6	<i>ceVy</i>	<i>kirŋ</i>	<i>ceVykirŋ</i>	-
7	<i>coVl</i>	<i>kirŋ</i>	<i>coVlkirŋ</i>	-
8	<i>eVnŋ</i>	<i>kirŋ</i>	<i>eVnŋkirŋ</i>	-
9	<i>ikaŋŋ</i>	<i>kirŋ</i>	<i>ikaŋŋkirŋ</i>	-
10	<i>iru</i>	<i>kekirŋ</i>	<i>irakekirŋ</i>	Gemination
11	<i>kAN</i>	<i>kirŋ</i>	<i>kANkirŋ</i>	-
12	<i>keŋ</i>	<i>kirŋ</i>	<i>ketkirŋ</i>	-
13	<i>koVŋ</i>	<i>kirŋ</i>	<i>koVŋkirŋ</i>	-
14	<i>niŋ</i>	<i>kirŋ</i>	<i>niŋkirŋ</i>	-
15	<i>no</i>	<i>kirŋ</i>	<i>nokirŋ</i>	-
16	<i>pai</i>	<i>kekirŋ</i>	<i>patikekirŋ</i>	Gemination
17	<i>peVŋu</i>	<i>kirŋ</i>	<i>peVŋukirŋ</i>	-
18	<i>po</i>	<i>kirŋ</i>	<i>pokirŋ</i>	-
19	<i>potu</i>	<i>kirŋ</i>	<i>potukirŋ</i>	-
20	<i>pUN</i>	<i>kirŋ</i>	<i>pUNukirŋ</i>	-
21	<i>uN</i>	<i>kirŋ</i>	<i>uNkirŋ</i>	-
22	<i>uA</i>	<i>kirŋ</i>	<i>varukirŋ</i>	-
23	<i>viŋŋu</i>	<i>kirŋ</i>	<i>viŋŋukirŋ</i>	-
24	<i>wUŋku</i>	<i>kirŋ</i>	<i>wUŋkukirŋ</i>	-

Table 2.11(b): Verb Suffix Allomorphy in the Present Tense (bans

In instances where a verb stem ends in short vowel, the suffix geminates its initial stop consonant.

2.3.4.1.3 FUTURE

Verbs can be classified into five classes, based on allomorphic variations exhibited by the verbs before the future tense suffix. There are 5 stems that exhibit allomorphic change. These are: *Aku*, *keŋʸ*, *niŋ*, *pUN*, and *uA*. The following is a list of paradigmatic classes of verbal declension in the future tense.

Sl.No	Root	Stem	Morphophonemic Process
1	<i>Aku</i>	<i>A</i>	Final Syllable Deletion
2	<i>Aŋʸ</i>	-	-
3	<i>aŋʸu</i>	-	-
4	<i>cA</i>	-	-
5	<i>ceVʹl</i>	-	-
6	<i>ceVʹy</i>	-	-
7	<i>coVʹl</i>	-	-
8	<i>eVʹnʸʸ</i>	-	-
9	<i>ikaŋʸʸ</i>	-	-
10	<i>iru</i>	-	-
11	<i>keAN</i>	-	-
12	<i>keŋʸ</i>	<i>ket</i>	Assimilation
13	<i>keVʹŋʸ</i>	-	-
14	<i>niŋ</i>	<i>niŋʸ</i>	Assimilation
15	<i>no</i>	-	-
16	<i>pali</i>	-	-
17	<i>peVʹŋʸu</i>	-	-
18	<i>po</i>	-	-
19	<i>potu</i>	-	-
20	<i>pUN</i>	<i>pUNu</i>	Vowel Insertion
21	<i>uN</i>	-	-
22	<i>uA</i>	<i>varu</i>	Final Syllable Insertion
23	<i>viŋʸʸu</i>	-	-
24	<i>uʷʃku</i>	-	-

Table 2.12(a): Verb Stem Allomorphy in the Future Tense forms

There are 3 variants of the future tense suffix. These are: *v*, *p* and *pp*. 17 of these stems take *v*, 5 take *p*, and 2 take the geminate *pp*. The following is how the future tense suffix allomorphs *v*, *p* and *pp* are distributed.

Sl.No	Verb Stem	Future Suffix	Variant Change	Morphophonemic Process
1	<i>Aku</i>	<i>v</i>	<i>Av</i>	-
2	<i>Aŋʸ</i>	<i>v</i>	<i>Aŋʸv</i>	-
3	<i>aŋʸu</i>	<i>v</i>	<i>aŋʸuv</i>	-
4	<i>cA</i>	<i>v</i>	<i>cAv</i>	-
5	<i>ceVʹl</i>	<i>v</i>	<i>ceVʹlv</i>	-
6	<i>ceVʹy</i>	<i>v</i>	<i>ceVʹyv</i>	-
7	<i>coVʹl</i>	<i>v</i>	<i>coVʹlv</i>	-
8	<i>eVʹnʸʸ</i>	<i>p</i>	<i>eVʹnʸp</i>	-
9	<i>ikaŋʸʸ</i>	<i>v</i>	<i>ikaŋʸv</i>	-
10	<i>iru</i>	<i>pp</i>	<i>irapp</i>	Gemination

11	<i>kAN</i>	<i>p</i>	<i>kANp</i>	-
12	<i>keŋ</i>	<i>p</i>	<i>ketp</i>	-
13	<i>koVŋ</i>	<i>v</i>	<i>koVŋv</i>	-
14	<i>niŋ</i>	<i>p</i>	<i>nirŋp</i>	-
15	<i>no</i>	<i>v</i>	<i>nov</i>	-
16	<i>pati</i>	<i>pp</i>	<i>patipp</i>	Gemination
17	<i>peVrŋu</i>	<i>v</i>	<i>peVrŋuv</i>	-
18	<i>po</i>	<i>v</i>	<i>por</i>	-
19	<i>potu</i>	<i>v</i>	<i>potuv</i>	-
20	<i>pUN</i>	<i>v</i>	<i>pUNuv</i>	-
21	<i>uN</i>	<i>p</i>	<i>uNp</i>	-
22	<i>vA</i>	<i>v</i>	<i>varuv</i>	-
23	<i>viŋŋu</i>	<i>v</i>	<i>viŋŋuv</i>	-
24	<i>wUŋku</i>	<i>v</i>	<i>wUŋkuv</i>	-

Table 2.12(b): Verb Suffix Allomorphy in the Future Tense forms

There are three kinds of morphophonemic rules that operate here:

2. Deletion

In deletion, the final consonant and vowel sequence i.e., a syllable gets deleted, prior to the addition of a glide.

2. Assimilation

As examples of assimilation, the retroflex lateral *ŋ* changes to the obstruent *t*, in the context of the following obstruent. The change can be described as a liquid assimilating to a stop, if the context is governed by another stop consonant.

2. Gemination

The suffix geminates, if the verb stem's penultimate vowel is short.

2.3.4.2 Aspect

2.3.4.2.1 INFINITIVE

The Infinitive form serves as the basis for many non-finite verbal stems. Verbs can be classified into 9 classes, based on allomorphic variations exhibited by the verb stems before the infinitive. The 14 classes that decline for the infinitive form are: *Aku*, *aŋŋu*, *keŋ*, *niŋ*, *peVrŋu*, *potu*, *vA*, *viŋŋu* and *wUŋku*.

Sl.No	Root	Stem	Morphophonemic Process
1	<i>Aku</i>	<i>Ak</i>	Final Syllable Deletion
2	<i>Aŋ</i>	<i>Aŋ</i>	Assimilation
3	<i>aŋŋu</i>	<i>aŋŋ</i>	-
4	<i>ɕA</i>	<i>ɕA</i>	Vowel Shortening
5	<i>ɕVl</i>	<i>ɕVl</i>	Assimilation
6	<i>ɕVy</i>	<i>ɕVy</i>	-
7	<i>ɕVl</i>	<i>ɕVl</i>	Assimilation
8	<i>ɛVnŋ</i>	<i>ɛVnŋ</i>	-
9	<i>ikaŋŋ</i>	<i>ikaŋŋ</i>	-
10	<i>iru</i>	<i>iru</i>	-
11	<i>kAN</i>	<i>kAN</i>	Vowel Shortening

12	<i>keŋ'</i>	<i>ket</i>	Assimilation
13	<i>koVŋ'</i>	<i>koVŋ'</i>	Assimilation
14	<i>ni</i>	<i>niŋ'</i>	Assimilation
15	<i>no</i>	<i>no</i>	Vowel Shortening
16	<i>pati</i>	<i>pati</i>	-
17	<i>peVŋ'u</i>	<i>peVŋ'</i>	Final Vowel Deletion
18	<i>po</i>	<i>po</i>	-
19	<i>potu</i>	<i>pot</i>	Final Vowel Deletion
20	<i>pUN</i>	<i>pUN</i>	-
21	<i>uN</i>	<i>uN</i>	-
22	<i>ɪA</i>	<i>ɪar</i>	Vowel Shortening
23	<i>viŋŋ'u</i>	<i>viŋŋ'</i>	-
24	<i>wUŋŋu</i>	<i>wUŋŋ</i>	Final Vowel Deletion

Table 2.13(a): Verb Stem Allomorphy in the Infinitive forms

Most of these changes involve final vowel deletion of the stem, in the case of a following vowel. There are two instances of assimilation. There are 7 suffix variants for the infinitive form. These are: *a*, *ka*, *la*, *ya*, *keka*, *ŋ'a* and *Na*.

Sl.No	Verb Stem	Infinitival Suffix	Variant Change	Morphophonemic Process
1	<i>Aku</i>	<i>A</i>	<i>Ake</i>	-
2	<i>Aŋ'</i>	<i>A</i>	<i>Aŋ'</i>	-
3	<i>aŋŋ'u</i>	<i>A</i>	<i>aŋŋ'</i>	-
4	<i>ɛA</i>	<i>ka</i>	<i>ɛA</i>	-
5	<i>ɛV'l</i>	<i>la</i>	<i>ɛV'l</i>	-
6	<i>ɛV'y</i>	<i>ya</i>	<i>ɛV'y</i>	-
7	<i>ɔV'l</i>	<i>la</i>	<i>ɔV'l</i>	-
8	<i>eV'nŋ'</i>	<i>a</i>	<i>eV'nŋ'</i>	-
9	<i>ikaŋŋ'</i>	<i>a</i>	<i>ikaŋŋ'</i>	-
10	<i>iru</i>	<i>kka</i>	<i>iru</i>	Gemination
11	<i>kAN</i>	<i>a</i>	<i>kAN</i>	-
12	<i>keŋ'</i>	<i>ka</i>	<i>ket</i>	-
13	<i>koVŋ'</i>	<i>ŋ'a</i>	<i>koVŋ'</i>	-
14	<i>ni</i>	<i>ka</i>	<i>niŋ'</i>	-
15	<i>no</i>	<i>ka</i>	<i>no</i>	-
16	<i>pati</i>	<i>kka</i>	<i>pati</i>	Gemination
17	<i>peVŋ'u</i>	<i>a</i>	<i>peVŋ'</i>	-
18	<i>po</i>	<i>ka</i>	<i>po</i>	-
19	<i>potu</i>	<i>a</i>	<i>pot</i>	-
20	<i>pUN</i>	<i>a</i>	<i>pUN</i>	-
21	<i>uN</i>	<i>Na</i>	<i>uN</i>	-
22	<i>ɪA</i>	<i>a</i>	<i>ɪar</i>	-
23	<i>viŋŋ'u</i>	<i>a</i>	<i>viŋŋ'</i>	-
24	<i>wUŋŋu</i>	<i>a</i>	<i>wUŋŋ</i>	-

Table 2.13(b): Verb Suffix Allomorphy in the Infinitive forms

There are three kinds of morphophonemic rules that operate here:

Apocope + Insertion

Classes 1, 2, 3, 17, 19, 23 and 24 involve first, a deletion of the stem final vowel, that is in turn replaced by the infinitive marker *a*.

2.3.4.2 Insertion

Classes 4, 10, 12, 14, 15, 16 and 18 involve insertion. A stop consonant segment gets inserted between the stem and the suffix, when the verb ends in a vowel.

2.3.4.2.1 Gemination

Classes 5, 6, 7, 13, and 21 are examples of **gemination** where, the suffix geminates the consonant or glide that the verb stem ends in.

2.3.4.2.2 PARTICIPLES

Participles are of two types: Adjectival and Verbal.

2.3.4.2.2.1 Adjectival

Adjectival Participles branch into the Past, Present, Habitual and the Negative, according to the corresponding tense base.

2.3.4.2.2.1.1 PAST ADJECTIVAL PARTICIPLE

Verbs can be classified into 12 classes, based on allomorphic variations exhibited by the verb stems for the Past Adjectival Participle. The 12 stems that decline for the past adjectival form, are: *Aku*, *anY'u*, *keN'*, *niI*, *peVrY'u*, *potu*, *vA*, *niNY'u* and *wUfku*.

1.	<i>Aku</i>	<i>Aku</i> → <i>AnY'</i>
2.	<i>AN'</i>	<i>AN'</i> → <i>AN</i>
3.	<i>cA</i>	<i>cA</i> → <i>ceV'</i>
4.	<i>kAN</i>	<i>kAN</i> → <i>kaN</i>
5.	<i>keN'</i>	<i>keN'</i> → <i>ket</i>
6.	<i>koVN'</i>	<i>koVN'</i> → <i>koVN</i>
7.	<i>niI</i>	<i>niI</i> → <i>nirY'</i>
8.	<i>no</i>	<i>no</i> → <i>noV'</i>
9.	<i>peVrY'u</i>	<i>peVrY'u</i> → <i>peVrY'</i>
10.	<i>potu</i>	<i>potu</i> → <i>pot</i>
11.	<i>vA</i>	<i>vA</i> → <i>va</i>
12.	<i>wUfku</i>	<i>wUfku</i> → <i>wUfke</i>

Most of these changes involve final vowel deletion of the stem, in the case of a following vowel. There are 2 instances of assimilation. There are 8 suffix variants for the past adjectival participial form. These are: *a.ta*, *wwa*, *wa*, *rYa*, *nYnYa*, *nwa* and *inYa*.

1.	<i>Aku</i>	+	<i>a</i>	<i>Aku</i> → <i>AnYa</i>
2.	<i>AN'</i>	+	<i>ta</i>	<i>aY'</i> → <i>ANta</i>
3.	<i>cA</i>	+	<i>wwa</i>	<i>cA</i> → <i>ceVwwa</i>
4.	<i>ceVy</i>	+	<i>wa</i>	<i>ceVy</i> → <i>ceVywa</i>
5.	<i>ceVl</i>	+	<i>rYa</i>	<i>ceVl</i> → <i>ceVnYrYa</i>
6.	<i>coVl</i>	+	<i>nYnYa</i>	<i>coVN'</i> → <i>coVnYnYa</i>
7.	<i>iru</i>	+	<i>nwa</i>	<i>iru</i> → <i>irunwa</i>
8.	<i>wUfku</i>	+	<i>inYa</i>	<i>wUfku</i> → <i>wUfkinYa</i>

There are three kinds of **morphophonemic** rules that operate here:

2.1. Apocope

Classes 1, 2, 3, 17, 19, 23 and 24 involve deletion of the stem final vowel, that is in turn replaced by the past adjectival participial marker *a*.

2.2. Insertion

Classes 4, 10, 12, 14, 15, 16 and 18 involve insertion. A stop consonant segment gets inserted between the stem and the suffix, when the verb ends in a vowel.

2.3. Gemination

Classes 5, 6, 7, 13, and 21 are examples of gemination where, the suffix geminates the consonant or glide that the verb stem ends in.

2.3.4.2.2.1.2 PRESENT ADJECTIVAL PARTICIPLE

Verbs can be classified into two classes, based on **allomorphic** variations exhibited by the verb stem for the present adjectival participial form. Allomorphy is simple, if any. Verb stems do not undergo any phonological change. The present tense suffix is *kiiY*, that functions as default, excepting in cases of stems that end in the vowels *u* or *i*, where the allomorphic variant *kkiiY* appears. The Present Adjectival Participle involves an additive *a*, after the present tense marker. The following is how the suffixes *kiiYa* and *kkiiYa* for the present adjectival participle function.

- | | | | |
|----|------------|---------------|------------------------------|
| 1. | <i>Aku</i> | <i>kiiYa</i> | <i>Aku</i> → <i>AkukiiYa</i> |
| 2. | <i>iru</i> | <i>kkiiYa</i> | <i>iru</i> → <i>irukkiYa</i> |

In instances where a verb stem ends in short vowel, the suffix geminates its initial stop consonant.

2.3.4.2.2.1.3. HABITUAL ADJECTIVAL PARTICIPLE

Verbs can be classified into 9 classes, based on allomorphic variations exhibited by the verb stems for the **Habitual** Adjectival Participle. The 9 stems that decline accordingly, for the **habitual participle** are: *Aku*, *aŋY^u*, *keŋY^u*, *niŋ*, *peVŋY^u*, *potuA*, *viŋY^u* and *wUŋkeu*.

- | | | |
|----|--------------------------|---|
| 1. | <i>Aku</i> | <i>Aku</i> → <i>Ak</i> |
| 2. | <i>aŋY^u</i> | <i>aŋY^u</i> → <i>aŋY^u</i> |
| 3. | <i>keŋY^u</i> | <i>keŋY^u</i> → <i>ket</i> |
| 4. | <i>niŋ</i> | <i>niŋ</i> → <i>nirY^u</i> |
| 5. | <i>peVŋY^u</i> | <i>peVŋY^u</i> → <i>peVŋY^u</i> |
| 6. | <i>potu</i> | <i>potu</i> → <i>pot</i> |
| 7. | <i>vA</i> | <i>vA</i> → <i>var</i> |
| 8. | <i>viŋY^u</i> | <i>viŋY^u</i> → <i>viŋY^u</i> |
| 9. | <i>wUŋkeu</i> | <i>wUŋkeu</i> → <i>wUŋke</i> |

Most of these changes **involve** final vowel deletion of the stem, in the case of a following vowel. There are 2 instances of assimilation. There are 7 suffix variants for the habitual form. These are: *urn*, *kum*, *lum*, *yum*, *kkum*, *ŋurn* and *Num*.

- | | | | | |
|----|-------------|---|------------|------------------------------|
| 1. | <i>Aku</i> | + | <i>um</i> | <i>Aku</i> → <i>Akum</i> |
| 2. | <i>cA</i> | + | <i>kum</i> | <i>cA</i> → <i>cAkum</i> |
| 3. | <i>ceVŋ</i> | + | <i>lum</i> | <i>ceVŋ</i> → <i>ceVllum</i> |

4.	<i>ceVy</i>	+	<i>yum</i>	<i>ceVy</i> → <i>ceVy^hyum</i>
5.	<i>iru</i>	+	<i>kekum</i>	<i>iru</i> → <i>irukekum</i>
6.	<i>koVɲ'</i>	+	<i>ɲ'um</i>	<i>koVɲ'</i> → <i>koVɲ'ɲ'um</i>
7.	<i>uN</i>	+	<i>Num</i>	<i>uN</i> → <i>uNNum</i>

There are three kinds of morphophonemic rules that operate here:

2. Apocope

Classes 1, 2, 3, 17, 19, 23 and 24 involve first, a deletion of the stem final vowel that is in turn replaced by the habitual adjectival participial marker *um*.

2. Insertion

Classes 4, 10, 12, 14, 15, 16 and 18 involve insertion. A stop consonant segment gets inserted between the stem and the suffix, when the verb ends in a vowel.

2. Gemination

Classes 5, 6, 7, 13, and 21 are examples of gemination where, the suffix geminates the consonant or glide that the verb stem ends in.

2.3.4.2.1.4 NEGATIVE ADJECTIVAL PARTICIPLE

Verbs can be classified into 9 classes, based on allomorphic variations exhibited by the verb stems for the Negative Adjectival Participle. The 9 stems that decline accordingly, are: *Aku*, *aiɲYu*, *keɲ'*, *ni*, *peVɲ'u*, *potu*, *uA*, *riɲYu* and *wUʃku*.

1.	<i>Aku</i>	<i>Aku</i> → <i>Ak</i>
2.	<i>aiɲYu</i>	<i>aiɲYu</i> → <i>aiɲY'</i>
3.	<i>keɲ'</i>	<i>keɲ'</i> → <i>kes</i>
4.	<i>ni</i>	<i>ni</i> → <i>nirY'</i>
5.	<i>peVɲ'u</i>	<i>peVɲ'u</i> → <i>peVɲ'ɲ'</i>
6.	<i>potu</i>	<i>potu</i> → <i>pot</i>
7.	<i>uA</i>	<i>uA</i> → <i>var</i>
8.	<i>riɲYu</i>	<i>riɲYu</i> → <i>riɲY'</i>
9.	<i>wUʃku</i>	<i>wUʃku</i> → <i>wUʃk</i>

Most of these changes involve final vowel deletion of the stem, in the case of a following vowel. There are 2 instances of assimilation. There are 7 suffix variants for the negative adjectival participial form. These are: *Awa*, *keAwa*, *LAwa*, *yAwa*, *kekAwa*, *ɲ'Awa* and *NAwa*.

1.	<i>Aku</i>	+	<i>Awa</i>	<i>Aku</i> → <i>AkeAwa</i>
2.	<i>cA</i>	+	<i>keAwa</i>	<i>cA</i> → <i>cAkeAwa</i>
3.	<i>ceVl</i>	+	<i>LAwa</i>	<i>ceVl</i> → <i>ceVllAwa</i>
4.	<i>ceVy</i>	+	<i>yAwa</i>	<i>ceVy</i> → <i>ceVy^hyAwa</i>
5.	<i>iru</i>	+	<i>kekAwa</i>	<i>iru</i> → <i>irukekAwa</i>
6.	<i>koVɲ'</i>	+	<i>ɲ'Awa</i>	<i>koVɲ'</i> → <i>koVɲ'ɲ'Awa</i>
7.	<i>uN</i>	+	<i>NAwa</i>	<i>uN</i> → <i>uNNAwa</i>

There are three kinds of morphophonemic rules that operate here:

2. Apocope

Classes 1, 2, 3, 17, 19, 23 and 24 involve first, a deletion of the stem final vowel, that is in turn replaced by the negative adjectival participial marker *Awa*.

2. Insertion

Classes 4, 10, 12, 14, 15, 16 and 18 involve insertion. A stop consonant segment gets inserted between the stem and the suffix, when the verb ends in a vowel.

2. Gemination

Classes 5, 6, 7, 13, and 21 are examples of gemination where, the suffix geminates the consonant or glide that the verb stem ends in.

2.3.4.2.2.2 Verbal

The Verbal Participles branch into the Positive and the Negative.

2.3.4.2.2.2.1 POSITIVE VERBAL PARTICIPLE

Verbs can be classified into 14 classes, based on allomorphic variations exhibited by the verb stems for the Positive Verbal Participle. The 14 stems that decline accordingly, are: *Aku*, *Aŋ*, *aŋY_uCA*, *ceVl*, *coVl*, *kAN*, *keŋ*, *koVŋ*, *niŋ*, *no*, *peVrY_u*, *potu*, *vA*, and *wUjku*.

1.	<i>Aku</i>	<i>Aku</i> → <i>Ak</i>
2.	<i>Aŋ</i>	<i>Aŋ</i> → <i>AN</i>
3.	<i>cA</i>	<i>cA</i> → <i>ceV</i>
4.	<i>ceVl</i>	<i>ceVl</i> → <i>ceVnY</i>
5.	<i>coVl</i>	<i>coVl</i> → <i>coVnY</i>
6.	<i>kAN</i>	<i>kAN</i> → <i>kaN</i>
7.	<i>keŋ</i>	<i>keŋ</i> → <i>ket</i>
8.	<i>koVŋ</i>	<i>koVŋ</i> → <i>koVN</i>
9.	<i>niŋ</i>	<i>niŋ</i> → <i>nirY</i>
10.	<i>no</i>	<i>no</i> → <i>noV</i>
11.	<i>peVrY_u</i>	<i>peVrY_u</i> → <i>peVrY</i>
12.	<i>potu</i>	<i>potu</i> → <i>pot</i>
13.	<i>vA</i>	<i>vA</i> → <i>var</i>
14.	<i>wUjku</i>	<i>wUjku</i> → <i>wUjke</i>

Most of these changes involve final vowel deletion of the stem, in the case of a following vowel. There are 8 instances of assimilation. There are 8 suffix variants for the positive verbal participial form. These are: *i*, *tu*, *uu*, *www*, *nuu*, *rY_u*, *it*, and *y*.

1.	<i>Aku</i>	+	<i>i</i>	<i>Aku</i> → <i>Aki</i>
2.	<i>Aŋ</i>	+	<i>tu</i>	<i>Aŋ</i> → <i>ANtu</i>
3.	<i>cA</i>	+	<i>www</i>	<i>cA</i> → <i>ceVwww</i>
4.	<i>ceV_y</i>	+	<i>uu</i>	<i>ceV_y</i> → <i>ceV_yuu</i>
5.	<i>coVl</i>	+	<i>li</i>	<i>coVl</i> → <i>coVli</i>
6.	<i>ikaŋY</i>	+	<i>nuu</i>	<i>ikaŋY</i> → <i>ikaŋYnuu</i>
7.	<i>peVrY_u</i>	+	<i>rY_u</i>	<i>peVrY_u</i> → <i>peVrYrY_u</i>
8.	<i>po</i>	+	<i>y</i>	<i>po</i> → <i>po_y</i>

There are three kinds of morphophonemic rules that operate here:

2. Apocope

Classes 1, 2, 3, 17, 19, 23 and 24 involve deletion of the stem final vowel, which is in turn replaced by the positive verbal participial marker *i* or *u*.

2.3.4.2.2.1 Insertion

Classes 4, 10, 12, 14, 15, 16 and 18 involve insertion. A stop consonant segment gets inserted between the stem and the suffix, when the verb ends in a vowel.

2.3.4.2.2.2 Gemination

Classes 5, 6, 7, 13, and 21 are examples of gemination where, the suffix geminates the consonant or glide that the verb stem ends in.

2.3.4.2.2.2.2 NEGATIVE VERBAL PARTICIPLE

Verbs can be classified into 9 classes, based on allomorphic variations exhibited by the verb stems for the Negative Verbal Participle. The 9 stems that decline accordingly, are: *Aku*, *aŋYu*, *keŋ*, *mi*, *peVrYu*, *potu*, *vA*, *viŋYu* and *wUŋke*.

1.	<i>Aku</i>	<i>Aku</i> → <i>Ak</i>
2.	<i>aŋYu</i>	<i>aŋYu</i> → <i>aŋY</i>
3.	<i>keŋ</i>	<i>keŋ</i> → <i>ket</i>
4.	<i>mi</i>	<i>mi</i> → <i>nirY</i>
5.	<i>peVrYu</i>	<i>peVrYu</i> → <i>peVrY</i>
6.	<i>potu</i>	<i>potu</i> → <i>pot</i>
7.	<i>vA</i>	<i>vA</i> → <i>var</i>
8.	<i>viŋYu</i>	<i>viŋYu</i> → <i>viŋY</i>
9.	<i>wUŋke</i>	<i>wUŋke</i> → <i>wUŋk</i>

Most of these changes involve final vowel deletion of the stem, in the case of a following vowel. There are 2 instances of assimilation. There are 7 suffix variants for the negative verbal participial form. These are: *AmaL*, *kAmaL*, *LAmaL*, *yAmaL*, *kkAmaL*, *ŋAmaL* and *NAmaL*.

1.	<i>Aku</i>	+	<i>AmaL</i>	<i>Aku</i> → <i>AkAmaL</i>
2.	<i>cA</i>	+	<i>kAmaL</i>	<i>cA</i> → <i>cAkAmaL</i>
3.	<i>ceVl</i>	+	<i>LAmaL</i>	<i>ceVl</i> → <i>ceVllAmaL</i>
4.	<i>ceVy</i>	+	<i>yAmaL</i>	<i>ceVy</i> → <i>ceVyyAmaL</i>
5.	<i>iru</i>	+	<i>kkAmaL</i>	<i>iru</i> → <i>irukkaAmaL</i>
6.	<i>koVŋ</i>	+	<i>ŋAmaL</i>	<i>koVŋ</i> → <i>koVŋŋAmaL</i>
7.	<i>uN</i>	+	<i>NAmaL</i>	<i>uN</i> → <i>uNNAmaL</i>

There are three kinds of morphophonemic rules that operate here:

2.3.4.2.2.2.2.1 Apocope

Classes 1, 2, 3, 17, 19, 23 and 24 involve deletion of the stem final vowel, which is in turn replaced by the negative verbal participial marker *AmaL*.

2.3.4.2.2.2.2.2 Insertion

Classes 4, 10, 12, 14, 15, 16 and 18 involve insertion. A stop consonant segment gets inserted between the stem and the suffix, when the verb ends in a vowel.

2.3.4.2.2.2.2.3 Gemination

Classes 5, 6, 7, 13, and 21 are examples of gemination where, the suffix geminates the consonant or glide that the verb stem ends in.

2.3.4.2.2.3 Conditional

The Conditionals branch into the Positive and the Negative.

2.3.4.2.3.1 Positive Conditional

Verbs can be classified into 9 classes, based on allomorphic variations exhibited by the verb stems for the Positive Conditional. The 9 stems that decline accordingly, are: *Aku*, *anYu*, *keY*, *ni*, *peVYu*, *potu*, *vA*, *niYu* and *wUjku*.

1.	<i>Aku</i>	<i>Aku</i> → <i>AnY</i>
2.	<i>AN</i>	<i>AN</i> → <i>AN</i>
3.	<i>cA</i>	<i>cA</i> → <i>ceV</i>
4.	<i>kAN</i>	<i>kAN</i> → <i>kaN</i>
5.	<i>keN</i>	<i>keN</i> → <i>ket</i>
6.	<i>koVN</i>	<i>koVN</i> → <i>koVN</i>
7.	<i>ni</i>	<i>ni</i> → <i>niY</i>
8.	<i>no</i>	<i>no</i> → <i>noV</i>
9.	<i>peVYu</i>	<i>peVYu</i> → <i>peVY</i>
10.	<i>potu</i>	<i>potu</i> → <i>pot</i>
11.	<i>vA</i>	<i>vA</i> → <i>va</i>
12.	<i>wUjku</i>	<i>wUjku</i> → <i>wUjke</i>

Most of these changes involve final vowel deletion of the stem, in the case of a following vowel. There are 2 instances of assimilation. There are 8 suffix variants for the positive conditional form. These are: *Al*, *lAl*, *wuAl*, *wAl*, *YAl*, *nYnYAl*, *nuAl* and *inYAl*.

1.	<i>Aku</i>	+	<i>Al</i>	<i>Aku</i> → <i>AnYAl</i>
2.	<i>AN</i>	+	<i>lAl</i>	<i>AN</i> → <i>ANlAl</i>
3.	<i>cA</i>	+	<i>wuAl</i>	<i>cA</i> → <i>ceVwuAl</i>
4.	<i>ceVy</i>	+	<i>wAl</i>	<i>ceVy</i> → <i>ceVywAl</i>
5.	<i>ceVl</i>	+	<i>YAl</i>	<i>ceVl</i> → <i>ceVnYnYAl</i>
6.	<i>coVl</i>	+	<i>nYnYAl</i>	<i>coVl</i> → <i>coVnYnYAl</i>
7.	<i>iru</i>	+	<i>nuAl</i>	<i>iru</i> → <i>irunuAl</i>
8.	<i>wUjku</i>	+	<i>inYAl</i>	<i>wUjku</i> → <i>wUjkinYAl</i>

There are three kinds of morphophonemic rules that operate here:

2. Apocope

Classes 1, 2, 3, 17, 19, 23 and 24 involve deletion of the stem final vowel that is in turn replaced by the positive conditional marker *Al*.

2. Insertion

Classes 4, 10, 12, 14, 15, 16 and 18 involve insertion. A stop consonant segment gets inserted between the stem and the suffix, when the verb ends in a vowel.

2. Gemination

Classes 5, 6, 7, 13, and 21 are examples of gemination where, the suffix geminates the consonant or glide that the verb stem ends in.

2.3.4.2.2.3.2 Negative Conditional

Verbs can be classified into 9 classes, based on allomorphic variations exhibited by the verb stems for the negative conditional. The 9 stems that decline hereby, are: *Aku*, *aŋYu*, *keŋ*, *niŋ*, *peVŋu*, *potu*, *vA*, *viŋYu* and *wUŋku*.

1.	<i>Aku</i>	<i>Aku</i> → <i>Ak</i>
2.	<i>aŋYu</i>	<i>aŋYu</i> → <i>aŋY</i>
3.	<i>keŋ</i>	<i>keŋ</i> → <i>ket</i>
4.	<i>niŋ</i>	<i>niŋ</i> → <i>niŋY</i>
5.	<i>peVŋu</i>	<i>peVŋu</i> → <i>peVŋY</i>
6.	<i>potu</i>	<i>potu</i> → <i>pot</i>
7.	<i>vA</i>	<i>vA</i> → <i>var</i>
8.	<i>viŋYu</i>	<i>viŋYu</i> → <i>viŋY</i>
9.	<i>wUŋku</i>	<i>wUŋku</i> → <i>wUŋk</i>

Most of these changes involve final vowel deletion of the stem, in the case of a following vowel. There are 2 instances of assimilation. There are 7 suffix variants for the negative conditional form. These are: *AvittAl*, *kAvittAl*, *LAvittAl*, *yAvittAl*, *keAvittAl*, *ŋAvittAl* and *NAvittAl*.

1.	<i>Aku</i>	+	<i>AvittAl</i>	<i>Aku</i> → <i>AkAvittAl</i>
2.	<i>cA</i>	+	<i>kAvittAl</i>	<i>cA</i> → <i>cAkAvittAl</i>
3.	<i>ceVl</i>	+	<i>LAvittAl</i>	<i>ceVl</i> → <i>ceVllAvittAl</i>
4.	<i>ceVy</i>	+	<i>yAvittAl</i>	<i>ceVy</i> → <i>ceVyɣAvittAl</i>
5.	<i>iru</i>	+	<i>keAvittAl</i>	<i>iru</i> → <i>irukkeAvittAl</i>
6.	<i>koVŋ</i>	+	<i>ŋAvittAl</i>	<i>koVŋ</i> → <i>koVŋŋAvittAl</i>
7.	<i>uN</i>	+	<i>NAvittAl</i>	<i>uN</i> → <i>uNNAvittAl</i>

There are three kinds of morphophonemic rules that operate here:

2. Apocope + Insertion

Classes 1, 2, 3, 17, 19, 23 and 24 involve deletion of the stem final vowel, which is in turn replaced by the negative conditional suffix, *AvittAl*.

2. Insertion

Classes 4, 10, 12, 14, 15, 16 and 18 involve insertion. A stop consonant segment gets inserted between the stem and the suffix, when the verb ends in a vowel.

2. Gemination

Classes 5, 6, 7, 13, and 21 are examples of gemination where, the suffix geminates the consonant or glide that the verb stem ends in.

2.3.4.2.2.3.3 Durative Conditional

From among the 24 classes of verbs, there are 14 stems that exhibit allomorphic change prior to the realization of the durative conditional. The verb stems that inflect for the durative conditional suffix are: *Aku*, *Aŋ*, *cA*, *ceVl*, *coVL*, *kAN*, *keŋ*, *koVŋ*, *niŋ*, *no*, *peVŋu*, *potu*, *vA* and *wUŋku*. The Durative Conditional involves the marker *kekoVNtiru*, on the positive verbal participial base of the verb. The following is a list of the relevant verb declensions:

1.	<i>Aku</i>	<i>Aku</i> → <i>Ak</i>
2.	<i>AN</i>	<i>AN</i> → <i>AN</i>
3.	<i>cA</i>	<i>cA</i> → <i>ceV</i>
4.	<i>ceVl</i>	<i>ceVl</i> → <i>ceVnN</i>
5.	<i>coVl</i>	<i>coVl</i> → <i>coVnN</i>
6.	<i>kAN</i>	<i>kAN</i> → <i>kaiN</i>
7.	<i>keN</i>	<i>keN</i> → <i>ket</i>
8.	<i>koVN</i>	<i>koVN</i> → <i>koVN</i>
9.	<i>no</i>	<i>no</i> → <i>noV</i>
10.	<i>nil</i>	<i>nil</i> → <i>ninN</i>
11.	<i>peVrYu</i>	<i>peVrYu</i> → <i>peVrN</i>
12.	<i>potu</i>	<i>potu</i> → <i>pot</i>
13.	<i>vA</i>	<i>vA</i> → <i>va</i>
14.	<i>wUfku</i>	<i>wUfku</i> → <i>wUfke</i>

There are 8 kinds of variations in the suffixes. These are: *ikokoVNturu*, *tukokoVNturu*, *wukokoVNturu*, *nyukokoVNturu*, *likekoVNturu*, *mwukokoVNturu* and *kikokoVNturu*.

1.	<i>Aku</i>	+	<i>ikokoVNturu</i>	<i>Aku</i> → <i>AkikokoVNturu</i>
2.	<i>AN</i>	+	<i>tukokoVNturu</i>	<i>AN</i> → <i>ANtukokoVNturu</i>
3.	<i>cA</i>	+	<i>wukokoVNturu</i>	<i>cA</i> → <i>ceVnwukokoVNturu</i>
4.	<i>ceVl</i>	+	<i>nyukokoVNturu</i>	<i>ceVl</i> → <i>ceVnNnyukokoVNturu</i>
5.	<i>coVl</i>	+	<i>likekoVNturu</i>	<i>coVl</i> → <i>coVllikekoVNturu</i>
6.	<i>no</i>	+	<i>mwukokoVNturu</i>	<i>no</i> → <i>noVmwukokoVNturu</i>
7.	<i>po</i>	+	<i>yekokoVNturu</i>	<i>po</i> → <i>peyekokoVNturu</i>
8.	<i>wUfku</i>	+	<i>ikokoVNturu</i>	<i>wUfku</i> → <i>wUfkeikokoVNturu</i>

There are three kinds of morphophonemic rules that operate here:

2.2. Apocope

There are 4 instances of final vowel deletion in the verb paradigm. Classes 1, 17, 19 and 24 exhibit this property'. If a verbal base ends in the vowel *u*, which is preceded by a stop consonant, the final vowel gets deleted before suffixation of the past tense marker.

2.2. Assimilation

There are 6 instances, or rather 3 types, of assimilation in the verb paradigm. Classes 2, 5, 7, 12, 13 and 14 exhibit this property, particularly along with rule of gemination. Specific changes include *N* to *N*, *l* to *nN* and *N* to *t*. The trend can be described as a liquid assimilating to a nasal, if the context is governed by a geminate.

2.2. Vowel Shortening

There are 4 instances of vowel shortening in the verb paradigm. Any of the verbal stems, that end in a vowel gets shortened if it is followed by a stop or a sequence of nasal + stop.

2.3.4.3 Mood

2.3.4.3.1 NEGATIVE PAST

Verbs can be classified into 9 classes, based on allomorphic variations exhibited by the verb stems for the Negative Past. The 9 stems that decline hereby are: *Aku*, *anYu*, *keN*, *nil*, *peVrYu*, *potu*, *vA*, *niYu* and *wUfku*.

1.	<i>Aku</i>	<i>Aku</i> → <i>Ak</i>
2.	<i>aŋY_u</i>	<i>aŋY_u</i> → <i>aŋY</i>
3.	<i>keŋ</i>	<i>keŋ</i> → <i>ket</i>
4.	<i>niŋ</i>	<i>niŋ</i> → <i>nirY</i>
5.	<i>peVrY_u</i>	<i>peVrY_u</i> → <i>peVrY</i>
6.	<i>potu</i>	<i>potu</i> → <i>pot</i>
7.	<i>vA</i>	<i>vA</i> → <i>var</i>
8.	<i>viŋY_u</i>	<i>viŋY_u</i> → <i>viŋY</i>
9.	<i>wUjŋ_u</i>	<i>wUjŋ_u</i> → <i>wUjŋ</i>

Most of these changes involve final vowel deletion of the stem, in the case of a following vowel. There are 2 instances of assimilation. There are 7 suffix variants for the negative past form. These are: *ville*, *keville*, *hville*, *yville*, *keville*, *ŋville* and *Naville*.

1.	<i>Aku</i>	+	<i>aville</i>	<i>Aku</i> → <i>Akaville</i>
2.	<i>cA</i>	+	<i>keville</i>	<i>cA</i> → <i>cAkeville</i>
3.	<i>ceVl</i>	+	<i>laville</i>	<i>ceVl</i> → <i>ceVllaville</i>
4.	<i>ceVy</i>	+	<i>yaville</i>	<i>ceVy</i> → <i>ceVy_yaville</i>
5.	<i>iru</i>	+	<i>kekaville</i>	<i>iru</i> → <i>irukkekaville</i>
6.	<i>koVŋ</i>	+	<i>ŋaville</i>	<i>koVŋ</i> → <i>koVŋŋaville</i>
1.	<i>uX</i>	+	<i>Naville</i>	<i>uN</i> → <i>uNNaville</i>

There are three kinds of morphophonemic rules that operate here:

2. Apocope + Insertion

Classes 1, 2, 3, 17, 19, 23 and 24 involve the deletion of the stem final vowel, which is in turn replaced by the negative past marker *aville*.

2. Insertion

Classes 4, 10, 12, 14, 15, 16 and 18 involve insertion. A stop consonant segment gets inserted between the stem and the suffix, when the verb ends in a vowel.

2. Gemination

Classes 5, 6, 7, 13, and 21 are examples of gemination where, the suffix geminates the consonant or glide that the verb stem ends in.

2.3.4.3.2 NEGATIVE FUTURE

Verbs can be classified into 9 classes, based on allomorphic variations exhibited by the verb stems for the Negative Future. The 9 stems that decline hereby are: *Aku*, *aŋY_u*, *keŋ*, *niŋ*, *peVrY_u*, *potu*, *vA*, *viŋY_u* and *wUjŋ_u*.

1.	<i>Aku</i>	<i>Aku</i> → <i>Ak</i>
2.	<i>aŋY_u</i>	<i>aŋY_u</i> → <i>aŋY</i>
3.	<i>keŋ</i>	<i>keŋ</i> → <i>ket</i>
4.	<i>niŋ</i>	<i>niŋ</i> → <i>nirY</i>
5.	<i>peVrY_u</i>	<i>peVrY_u</i> → <i>peVrY</i>
6.	<i>potu</i>	<i>potu</i> → <i>pot</i>
7.	<i>vA</i>	<i>vA</i> → <i>var</i>
8.	<i>viŋY_u</i>	<i>viŋY_u</i> → <i>viŋY</i>
9.	<i>wUjŋ_u</i>	<i>wUjŋ_u</i> → <i>wUjŋ</i>

Most of these changes involve final vowel deletion of the stem, in the case of a following vowel. There are 2 instances of assimilation. There are 7 suffix variants for the negative future form. These are: *amAtt*, *kamAtt*, *lamAtt*, *yamAtt*, *kekamAtt*, *tʃamAtt* and *NamAtt*.

1.	<i>Aku</i>	+	<i>amAtt</i>	<i>Aku</i> → <i>AkamAtt</i>
2.	<i>cA</i>	+	<i>kamAtt</i>	<i>cA</i> → <i>cAkamAtt</i>
3.	<i>ceVl</i>	+	<i>lamAtt</i>	<i>ceVl</i> → <i>ceVllamAtt</i>
4.	<i>ceVy</i>	+	<i>yamAtt</i>	<i>ceVy</i> → <i>ceVy YamAtt</i>
5.	<i>iru</i>	+	<i>kekamAtt</i>	<i>iru</i> → <i>irukkamAtt</i>
6.	<i>koVɲ</i>	+	<i>ɲamAtt</i>	<i>koVɲ</i> → <i>koVɲɲamAtt</i>
7.	<i>uN</i>	+	<i>NamAtt</i>	<i>uN</i> → <i>uNNamAtt</i>

There are three kinds of morphophonemic rules that operate here:

2. Apocope + Insertion

Classes 1, 2, 3, 17, 19, 23 and 24 involve the deletion of the stem final vowel, which is in turn replaced by the negative future marker *amAtt*.

2. Insertion

Classes 4, 10, 12, 14, 15, 16 and 18 involve insertion. A stop consonant segment gets inserted between the stem and the suffix, when the verb ends in a vowel.

2. Gemination

Classes 5, 6, 7, 13, and 21 are examples of gemination where, the suffix geminates the consonant or glide that the verb stem ends in.

2.3.4.3.3 HORTATIVE

Verbs can be classified into 9 classes, based on allomorphic variations exhibited by the verb stems for the Hortative. The 9 stems that decline hereby are: *Aku*, *aɲɲu*, *keɲ*, *niɭ*, *peVɲu*, *potu*, *vA*, *viɲɲu* and *wɯʃku*.

1.	<i>Aku</i>	<i>Aku</i> → <i>Ak</i>
2.	<i>aɲɲu</i>	<i>aɲɲu</i> → <i>aɲɲ</i>
3.	<i>keɲ</i>	<i>keɲ</i> → <i>ket</i>
4.	<i>niɭ</i>	<i>niɭ</i> → <i>nirɲ</i>
5.	<i>peVɲu</i>	<i>peVɲu</i> → <i>peVɲɲ</i>
6.	<i>potu</i>	<i>potu</i> → <i>pot</i>
7.	<i>vA</i>	<i>vA</i> → <i>var</i>
8.	<i>viɲɲu</i>	<i>viɲɲu</i> → <i>viɲɲ</i>
9.	<i>wɯʃku</i>	<i>wɯʃku</i> → <i>wɯʃk</i>

Most of these changes involve final vowel deletion of the stem, in the case of a following vowel. There are 2 instances of assimilation. There are 7 suffix variants for the hortative form. These are: *alAm*, *kalAm*, *lalAm*, *yalAm*, *kekalAm*, *ʃiʔalAm* and *NalAm*.

1.	<i>Aku</i>	+	<i>alAm</i>	<i>Aku</i> → <i>AkalAm</i>
2.	<i>cA</i>	+	<i>kalAm</i>	<i>cA</i> → <i>cAkalAm</i>
3.	<i>ceVl</i>	+	<i>lalAm</i>	<i>ceVl</i> → <i>ceVllalAm</i>
4.	<i>ceVy</i>	+	<i>yalAm</i>	<i>ceVy</i> → <i>ceVy yalAm</i>
5.	<i>iru</i>	+	<i>kekalAm</i>	<i>iru</i> → <i>irukkekalAm</i>
6.	<i>koVɲ</i>	+	<i>ɲalAm</i>	<i>koVɲ</i> → <i>koVɲɲalAm</i>

$$7. \text{ uN} + \text{ Na} \text{ lAm} \quad \text{uN} \rightarrow \text{uNNa} \text{ lAm}$$

There are three kinds of morphophonemic rules that operate here:

2. Apocope + Insertion

Classes 1, 2, 3, 17, 19, 23 and 24 involve the deletion of the stem final vowel that is in turn replaced by the hortative marker *alAm*.

2. Insertion

Classes 4, 10, 12, 14, 15, 16 and 18 involve insertion. A stop consonant segment gets inserted between the stem and the suffix, when the verb ends in a vowel.

2. Gemination

Classes 5, 6, 7, 13, and 21 are examples of gemination where, the suffix geminates the consonant or glide that the verb stem ends in.

2.3.4.3.4 ADMONITIVE

Verbs can be classified into 9 classes, based on allomorphic variations exhibited by the verb stems for the Admonitive. The 9 stems that decline hereby are: *Aku*, *alŋYʉ*, *keŋY*, *niŋ*, *peVŋYʉ*, *potu*, *vA*, *viŋYʉ* and *wUŋke*.

1.	<i>Aku</i>	<i>Aku</i> → <i>Ak</i>
2.	<i>alŋYʉ</i>	<i>alŋYʉ</i> → <i>alŋY</i>
3.	<i>keŋY</i>	<i>keŋY</i> → <i>ket</i>
4.	<i>niŋ</i>	<i>niŋ</i> → <i>nirY</i>
5.	<i>peVŋYʉ</i>	<i>peVŋYʉ</i> → <i>peVŋY</i>
6.	<i>potu</i>	<i>potu</i> → <i>pot</i>
7.	<i>vA</i>	<i>vA</i> → <i>var</i>
8.	<i>viŋYʉ</i>	<i>viŋYʉ</i> → <i>viŋY</i>
9.	<i>wUŋke</i>	<i>wUŋke</i> → <i>wUŋk</i>

Most of these changes involve final vowel deletion of the stem, in the case of a following vowel. There are 2 instances of assimilation. There are 7 suffix variants for the admonitive form. These are: *a*, *ka*, *la*, *ya*, *keka*, *ŋ'a* and *Na*.

1.	<i>Aku</i>	+	<i>a</i>	<i>Aku</i> → <i>Aka</i>
2.	<i>cA</i>	+	<i>ka</i>	<i>cA</i> → <i>cAka</i>
3.	<i>ceVl</i>	+	<i>la</i>	<i>ceVl</i> → <i>ceVlla</i>
4.	<i>ceVj</i>	+	<i>ya</i>	<i>ceVj</i> → <i>ceVjya</i>
5.	<i>iru</i>	+	<i>keka</i>	<i>iru</i> → <i>irukeka</i>
6.	<i>koVŋY</i>	+	<i>ŋ'a</i>	<i>koVŋY</i> → <i>koVŋYŋ'a</i>
7.	<i>uN</i>	+	<i>Na</i>	<i>uN</i> → <i>uNNa</i>

There are three kinds of morphophonemic rules that operate here:

2. Apocope + Insertion

Classes 1, 2, 3, 17, 19, 23 and 24 involve the deletion of the stem final vowel that is in turn replaced by the admonitive marker *a*.

2. Insertion

Classes 4, 10, 12, 14, 15, 16 and 18 involve insertion. A stop consonant segment gets inserted between the stem and the suffix, when the verb ends in a vowel.

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Classes 5, 6, 7, 13, and 21 are examples of gemination where, the suffix geminates the consonant or glide that the verb stem ends in.

2.3.4.3.5 PROHIBITIVE

Verbs can be classified into 9 classes, based on **allomorphic** variations exhibited by the verb stems for the Prohibitive. The 9 stems that decline hereby are: *Aku*, *aŋŋu*, *keŋ*, *niŋ*, *peVŋu*, *potu*, *vA*, *viŋŋu* and *wiŋŋu*.

1.	<i>Aku</i>	<i>Aku</i> → <i>Ak</i>
2.	<i>aŋŋu</i>	<i>aŋŋu</i> → <i>aŋŋ</i>
3.	<i>keŋ</i>	<i>keŋ</i> → <i>ket</i>
4.	<i>niŋ</i>	<i>niŋ</i> → <i>niŋ</i>
5.	<i>peVŋu</i>	<i>peVŋu</i> → <i>peVŋ</i>
6.	<i>potu</i>	<i>potu</i> → <i>pot</i>
7.	<i>vA</i>	<i>vA</i> → <i>var</i>
8.	<i>viŋŋu</i>	<i>viŋŋu</i> → <i>viŋŋ</i>
9.	<i>wiŋŋu</i>	<i>wiŋŋu</i> → <i>wiŋŋ</i>

Most of these changes involve final vowel deletion of the stem, in the case of a following vowel. There are 2 instances of assimilation. There are 7 suffix variants for the prohibitive form. These are: *Aw*, *kAw*, *LAw*, *ɣAw*, *keAw*, *ŋAw* and *NAw*.

1.	<i>Aku</i>	+	<i>Aw</i>	<i>Aku</i> → <i>AkAw</i>
2.	<i>cA</i>	+	<i>kAw</i>	<i>cA</i> → <i>cAkAw</i>
3.	<i>ceVl</i>	+	<i>LAw</i>	<i>ceVl</i> → <i>ceVlLAw</i>
4.	<i>ceVy</i>	+	<i>ɣAw</i>	<i>ceVy</i> → <i>ceVyɣAw</i>
5.	<i>iru</i>	+	<i>keAw</i>	<i>iru</i> → <i>irukAw</i>
6.	<i>koVŋ</i>	+	<i>ŋAw</i>	<i>koVŋ</i> → <i>koVŋŋAw</i>
7.	<i>uN</i>	+	<i>NAw</i>	<i>uN</i> → <i>uNNAw</i>

There are three kinds of morphophonemic rules that operate here:

2. Apocope + Insertion

Classes 1, 2, 3, 17, 19, 23 and 24 involve the deletion of the stem final vowel that is in turn replaced by the prohibitive marker *Aw*.

2. Insertion

Classes 4, 10, 12, 14, 15, 16 and 18 involve insertion. A stop consonant segment gets inserted between the stem and the suffix, when the verb ends in a vowel.

2. Gemination

Classes 5, 6, 7, 13, and 21 are examples of gemination **where**, the suffix geminates the consonant or glide that the verb stem ends in.

2.3.4.3.6 IMPERATIVE

The Imperative always assumes the basic, rather the uninflected form of the verb. The only suffixes possible are the plural or the **honorific**, in which case, the addition of the plural or **honorific** suffix, *uŋkaŋ* is required.

classes of verbs are affected by the morphophonemic rule of apocope, during the **suffixation** of the plural/honorific marker. These are: *Aku*, *alYYu*, *iru*, *peVrYU*, *potu*, *viYYu* and *wUfku*.

- | | | |
|----|----------------|------------------------------|
| 1. | <i>Aku</i> | <i>Aku</i> → <i>Ak</i> |
| 2. | <i>alYYu</i> | <i>alYYu</i> → <i>alYY</i> |
| 3. | <i>iru iru</i> | → <i>ir</i> |
| 4. | <i>peVrYU</i> | <i>peVrYU</i> → <i>peVrY</i> |
| 5. | <i>potu</i> | <i>potu</i> → <i>pot</i> |
| 6. | <i>viYYu</i> | <i>viYYu</i> → <i>viYY</i> |
| 1. | <i>wUfku</i> | <i>wUfku</i> → <i>wUfke</i> |

The basic rule in stem change is that of final vowel deletion, in the context of a following vowel segment. The morphophonemics involved here, falls in line with the pattern of the 'infinitive'. The suffix varies based on the phonological nature of the stems it attaches itself to.

- | | | | | |
|----|--------------|---|------------------|--------------------------------------|
| 1. | <i>cA</i> | + | <i>kufkealY</i> | <i>cA</i> → <i>cAkufkealY</i> |
| 2. | <i>ceVl</i> | + | <i>lufkealY</i> | <i>ceVl</i> → <i>ceVlufkealY</i> |
| 3. | <i>ceVy</i> | + | <i>yufkealY</i> | <i>ceVy</i> → <i>ceVyufkealY</i> |
| 4. | <i>koVlY</i> | + | <i>lYufkealY</i> | <i>koVlY</i> → <i>koVlYlYufkealY</i> |
| 5. | <i>pati</i> | + | <i>yufkealY</i> | <i>pati</i> → <i>patiyufkealY</i> |
| 6. | <i>uN</i> | + | <i>NufkealY</i> | <i>uN</i> → <i>uNNufkealY</i> |
| 7. | <i>vA</i> | + | <i>rufkealY</i> | <i>vA</i> → <i>vArufkealY</i> |

There are two kinds of morphophonemic rules that operate here:

2. Insertion

Classes 4, 10, 16, 18 and 22 are examples of insertion, wherein a consonant segment gets inserted between the stem and the suffix. This often happens when the verb ends in a long vowel.

2. Gemination

Classes 5, 6, 7, 13, 14 and 21 are examples of gemination where, the suffix geminates the consonant that the verb stem ends in.

2.3.4.4 Other Attachments

Apart from Tense, Modal and Aspectual features, verbs also take on other functional elements like Adverbials, Particles, Auxiliary verbs, Clitics and Vocative Clitics. They also inflect for Gender, Number and Person.

Particles attach to both finite and non-finite verbs, as do Clitics and Vocative Clitics. Finite forms of a verb take on GNP suffixes after they inflect for tense. Adverbials and Auxiliary verbs attach only to non-finite forms of a verb.

2.3.4.5 The Verb Paradigm

Considering verbal variations based on different kinds and levels of inflections, paradigms of distinct, attested verb forms representative of their class had been established. Based on the verb stem and suffix allomorphy a total of twenty-four classes of verbs have been identified:

Sl.No.	Base1/ Suffix1	Base2/Suffix2 (Future)	Base3/Suffix3 (Present)	Base4/Suffix4 (Future)	Base5/Suffix5 (Non-Finite)
1	Aku	A nY	A kirY	A v	Ak a
2	AIY	AN t	AIY kirY	AIY v	AIY a
3	aYYu	aYYu w	AIYYu kirY	aYYu v	aYY a
4	cA	ceV ww	cA kirY	cA v	cA ka
5	ceVl	ceVnY rY	ceVl kirY	ceVl v	ceVl la
6	ceVy	ceVy w	ceVy kirY	ceVy v	ceVy ya
7	coVl	coVnY nY	coVl kirY	coVl v	coVl la
8	eVnY	eVnY rY	eVnY kirY	eVnY p	eVnY a
9	ikaYY	ikaYY nw	ikaYY kirY	ikaYY v	ikaYY a
10	iru	iru nw	iru kkirY	iru pp	iru kka
11	kAN	kaN t	kAN kirY	kAN p	kAN a
12	keY	ket t	ket kirY	ket p	ket ka
13	koVIY	koVN t	koVIY kirY	koVIY v	koVIY IYa
14	niI	ninY rY	nirY kirY	nirY p	nirY ka
15	no	noVnY w	no kirY	no v	no ka
16	pati	pati ww	pati kkirY	pati pp	pati kka
17	peVrYu	peVrY rY	peVrYu kirY	peVrYu v	peVrY a
18	po	po nY	po kirY	po v	po ka
19	potu	pot t	potu kirY	pot v	pot a
20	pUN	pUN t	pUNu kirY	pUNu v	pUN a
21	uN	uN t	uN kirY	uN p	uN Na
22	va	va nw	varu kirY	varu v	var a
23	viYYu	viYYu nw	viYYu kirY	viYYu v	viYY a
24	wUfku	wUfk inY	wUfku kirY	wUfku v	wUfk a

Table 2.14: The Verbal Paradigm: Verb Classes

The table records the morphophonemic changes that stems and suffixes undergo in different morphological contexts. The base endings indicate the specific phonological shape a particular class ends in. The base modifications specify the phonological change the base undergoes prior to number suffixation.

2.3.5 ADJECTIVES

Adjectives in Tamil are of two kinds: Basic, and Derived. A few basic adjectives are *nalla*, *cinY nY a*, and *paau*. Inflectionally, adjectives do have specific affixal patternings peculiar to them alone, to mark them off as a category on their own. Morphologically therefore, one cannot rule out adjectives as an inflecting class¹. Adjectives in Tamil do not morphologically mark comparative and superlative degrees of relation. To syntactically express these, either of the two nominal postpositions, *pola*, and *vita* is used after the bound form of a noun, which

¹ For a discussion on how adjectives form a distinct morphological class, refer Ch.6, sec.6.1

performs the predicative adjectival function. Although adjectives can be **derived** from both nouns and verbs taking the suffixes, what really brings in morphological distinction, is the phenomenon of Affixal **Homonymy**. Adjectives generally inflect for GNP, and certain Particles and Postpositions.

2.3.5.1 Gender, Number, Person

It is only the 3rd. person GNP suffixes that can follow adjectives. These are as follows:

GNP	Suffix
3 rd . Sing. Feminine	<i>avalY</i>
3 rd . Sing. Masculine	<i>avanY</i>
3 rd . Sing. Honorific/Plural	<i>avar</i>
3 rd . Sing. Neuter	<i>awu</i>

Table 2.15: GNP suffixes for Adjectives

Class 1 in the adjectival paradigm remains unmarked, and therefore directly takes any of these suffixes onto its unmarked bound base. Class 2 has to be followed by the GNP base marker *iya*, before taking on any of these suffixes. Both classes of adjectives exhibit stem **allomorphic** change for the bound base and GNP. As far as bound stem formation is concerned, stems of Class 2 stems lose their final vowel in their bound form.

1. *nalla* *nalla*—* *nall*
2. *puwu* *puwu*—→ *puw*

In the case of GNP **suffixation**, stems of Class 2 stems lose their final vowel prior to the addition of GNP suffixes.

1. *nalla* *nalla*—* *nall*
2. *puwu* *puwiy*a—→ *puwiy*

Apocope is the important change that these stems involve.

2.3.5.2 Other Attachments

There are certain comparative Particles that follow adjectival forms such as *mAwiri*, *wiwam* and *pai*. All of these particles need to be followed by the adverbial postposition *Aka*, while occurring after an adjectival base.

2.3.5.3 The Adjectival Paradigm

Only two classes of adjectives can be morphologically established. They have been considered distinct due to *allomorphy* of the base. Whereas *nalla* does not exhibit any morphophonemic variation, the form *puwu* undergoes a change to the bound form, *puwiya*. Based on such a distinction, the following adjectival paradigm has been established:

Sl. No.	Stem1/Suffix1	Stem2/Suffix2	Stem3/Suffix3
1	nalla Ø	nalla Ø	nalla Ø
2	puwu Ø	puw iya	puwiya Ø

Table 2.16: The Adjectival Paradigm: Adjective Classes

The table lists two distinct adjectival forms in their free/direct forms with the relevant stem changes along with their corresponding bound /indirect forms. GNP inflections can occur on the bound forms, after the augment *iya*.

Chapter 3

Modeling Morphology

3.1 Linguistic Theories

As has already been discussed in Ramaswamy, V. (2000), theories of morphology greatly differ in their view with respect to the morpheme, as a building block or as a basic unit of morphological analysis. The relevant issues in the pursuit of research in morphology therefore remain in focus with respect to the identification and the realization, of the unique and unified **functional** aspects of the basic morphological unit.

Hockett's, two models of morphology viz, the Item and Arrangement (1958), and Item and Process (1958) embody Structuralism in morphology. A **morpheme**, in that sense, was 'the smallest individually meaningful element in the utterance of a language' (Hockett.1958: 123).

The Item and Arrangement (**IA**) assumes a concatenative approach wherein morphemes are lexical units, morphology is an agglutination of such units, and words are seen as linear sequences of **morphs**. The central observation of the model is that certain forms reflect a partial phonetic-semantic resemblance to other forms. Describing the morphological patterning of a language would in consequence involve — a specification, of the inventory of morphemes (items), of the possible sequences in which these morphemes can occur (arrangement), and defining those morphs through which every morpheme of the language is realized (a morphological link). A word is analyzed as involving no process at all, but only a permissive sequence of morphemes. The IA model is thus essentially **morphemic**, but **non-processual**.

The **Item and Process (IP)** model works on the conception that word-forms constitute paired features of structure and function, or rather form and meaning, and that elements undergo a variety of modifications, through transformations, to result in newer forms. Morphology is regarded as a set of derivational processes, acting on morphemes or words, producing new word-forms. Hence in IP, there is only one recognized underlying basic **allomorph** that contextually takes the form of an allomorph.

In contrast, the **Word and Paradigm (WP)** (Robbins 1963), model of morphology takes the '**word**' operating within a paradigm of variables, as its basic unit. The WP model is distinct in that it focuses primarily on each word as a whole, and on its overall effect to the unique set of properties that it expresses. The model evades complexities since it divides the word into two parallel non-overlapping units: one for formal elements, and the other for functional properties. In the WP framework, it is a **morphophonemic (MP)** rule, a conglomerated set of **morphosyntactic** and **morphosemantic** operations that align with a word, and not a phonological (P) rule. Parallel to instances in **analytic phonology**, there

exist no absolute constraints that might limit the nature or number of correspondences between morphological properties and morphological forms.

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Stump (1998) describes the word and paradigm approach to inflection as follows: "a rule's applicability to a stem X is conditioned by the set of morphosyntactic properties associated with X , by X 's phonological *form*, by X 's membership in a particular morphological class, or by some combination of such factors." Rules of inflection here are specified into sets each of which applies to only one of its kind. With regard to the role of paradigm, the supposition is like this: "a is a cell in the paradigms of lexemes belonging to some class C , and that the *paradigm function* for cell σ is that function f_σ such that for each $L \in C$, f_σ applies to the root of L to yield the word form occupying σ ; one can then say that the sequence of rule blocks in a language may vary according to the definition of its individual paradigm functions."

Generative grammar developed a remarkably powerful device in grammatical theory, i.e., transformations, a computational tool connecting different linguistic levels. Morphological processes were rather derivational mechanisms than transformational operations. Leading to the proposal of the Lexicalist **Hypothesis** (Chomsky 1970), which expressed the need for an autonomous component of morphology in Generative grammar. The theory addressed two central claims about the organization of the grammar of a language: (1) that all morphological operations are governed by the lexical component; (2) that all morphological facts are accounted for, by specific rules called *Word Formation Rules* (WFRs).

Halle's (1973) proposition was the first model consistent with the Lexicalist Hypothesis. As to the association between morphology and native intuition, Halle developed a model constituting an inventory of morphemes, a set of WFRs, a Filter to rule out possible but non-existent words analyzed by WFRs, and a Dictionary containing all and only the actual words of the language, in all their paradigmatic forms, ready to undergo lexical insertion. A major point of disagreement, against this however culminated in what was called later, the **Word-Based** model, as proposed by Aronoff (1976). Aronoff's hypothesis has the following claims to make: (1) All regular *word-formation* processes are word-based; (2) A new word is formed by applying a regular rule to a single already existing word; (3) Both the new word and the existing one are members of major lexical categories.

The Word-Based approach distinguishes two different kinds of rules, operating at two levels: Word Formation Rules (WFRs), and Readjustment Rules (RRs). According to Aronoff (1976), WFRs function not merely in deriving new words, they also account for their internal structure. Readjustment rules are those of the lexical component, which operate after the WFRs. Readjustment rules are optional in the sense that they need to operate only if the morphological environment demands so.

The **Word Network** model (Singh and Ford 1984) following a relational approach to morphology, establishes firmly the dependency of morphology on the lexicon. The approach defines morphology on two primary ideals: (1) the basis of morphological analysis is not the morpheme, but the word; (2) words, as units relate to each other through complex networks.

The Word Network model has certain fundamental assumptions as to what the nature of morphology is: (1) Rejection of 'multiple morphologies'. No distinction is made between binary types such as inflectional vs. *derivational*, concatenative vs. non-concatenative, or non-linear etc. (2) Determining the 'word' as the basic unit upon which morphology operates. No morphological status is given to concepts like 'root', 'stem', 'lexeme', etc.

(3) Persistence on a 'unified' morphological operation. No intermediate level of representation between morphology and phonology is allowed. (4) Insistence on word 'networks' rather than operations. No morphological operation has any privileged direction, such as giving rise to concepts of 'basic' or 'derived' forms. (5) The contention that no category is exclusively determined morphologically is strongly favored. (6) Sustenance of the morphological integrity of the word. No conditions or constraints are to be **postulated**. (e.g. No place for anything like the 'adjacency **condition**').

Morphology, here, JS seen as 'the study of words that are formally and semantically related.' In order to be considered a 'word', an expression must be characterized as having three features: (1) a phonological form (2) a category and (3) a meaning. The Word Network model proposes a single unified theory **that** captures cross-linguistic generalizations. It presupposes universals in morphology. A rule known as a Morphological Strategy (MS) or a Word Formation Strategy (WFS) defines morphological relationships between words.

3.2 Psycholinguistic Theories

3.2.1 Storage And Retrieval Of Morphological Structure from The Mental Lexicon

One general **view** of morphology describes it as dealing fundamentally 'with the internal structure of the potentially complex words of a language.' All of these words might not be actually existent, but **all** of these are governed by the set pattern of morphological operations. Different views of the '**lexicon**' are held. Contrary to the general conception of the lexicon of a language', the lexicon has been treated as exclusively an individualistic, independent, internalized linguistic component. Either way, the lexicon can be best defined as 'a list of existing items **in** the language, those that a speaker has to know because they are arbitrary signs: unpredictable in some way' (Aronoff & Anshen 1998)

A priori, one might be led to infer that, since morphology trades in potential words, and the lexicon, only in actually existing ones, the two might not have anything substantially common enough to relate to each other. As a matter of fact, **this** could be proved a misconception, for two valid reasons: (1) both morphology and the lexicon, dealing primarily with words, serve the same linguistic function. (2) morphology and the lexicon, share a fundamentally interdependent relation.

Quoting Aronoff & Anshen (1998), "The difference between which words exist and which are potential is defined solely in terms of the individual's lexicon and morphology.' That morphology and the lexicon proceed from each other is implied by the production of morphologically complex words. This is largely through the application of morphological rules, to actually occurring base words that are stored in a speaker's mental lexicon. Another instance of lexical words being governed by rules of morphology is in the 'inheritance of irregularity' wherein complex words having conventional semantics exhibit a slight variation from their predicted sense. The morphology depends on the lexicon, however, inasmuch as the bases of morphologically complex words are normally lexical entries'

Several views of word recognition processes in morphological theory have been proposed as possible solutions to the question of how morphological structures are represented in the central lexicon. Various queries arise, in this regard.

I quote (McQueen & Cutler 1998), "Is the mental lexicon organized in a way which codes morphological relationships? For example, is the fact that two words share the same **stem**, or the same affix, coded in the lexicon? This is primarily a question of representation: what information about the internal structure of words is stored in long-term memory and how? But it is also a question of processing. When a word and its morphology are recognized, does this involve contact with other entries (words and/or morphemes) in the lexicon? What role does morphological structure play in the process of mapping perceptual information, from spoken or written input, on to the mental lexicon? Again there are questions of both processing and representation: what type of morphological parsing must take place, and what form of access representations might be the product of such a process?"

Do humans actually parse words while they access it? And if they do, what **theoretical**, logical or, statistical assumptions underlie these analyses? These remain another set of questions. Regardless of what might determinedly answer **these**, or what can be decidedly established about the question, whether there are as many morphologies as there are speakers, is that, morphology provides a common universal framework across a number of lexica, since rule patternings are unexceptional. Though a lexicon may be regarded as an individualized conception, morphological processes capture generalizations that surface evenly across different lexica. Differences in the lexicon need not imply differences in morphology.

To study the **differing** views about the role of morphology in lexical access, the following psychological models of morphology may be considered.

3.22 Kinds Of Models

A volley of questions can be raised **with** respect to the psycholinguistic modeling of morphology. Does perception of morphological structure play a role in access, or **arise** from it? Are stems and affixes stored and retrieved in the same way, in conjunction with each other, **in** the same lexicon, or are different records and processes involved? As to **the** nature of the lexicon and the representation of word forms therein, might the storage be so abstract as to obliterate differences between written, spoken, read and heard forms of words? Or, might it be considered as an assemblage of separate, but interlinked, specialist lexicons?

Such are the critical questions that relate to the status of morphological structure in **lexical** access. The question of how words of a language are accessed from the lexicon is rather decisive to how the human mind parses complex words. In an attempt to examine mental morphology, a few vital psycholinguistic models of word-recognition were explored. Different theories of lexical access have been proposed, a discussion of which follow suit.

3.2.2.1 STRING-SCAN MODELS

☞ The Transition Network Model

Forster (1976) suggests a direct model of lexical access that tries to retrieve a word from the mental lexicon based on the principle of manual **dictionary** search for a required string. The mechanism is that of a transition network, which scans for the string from left to right, sequentially progressing with each letter at a time, until the string is exhausted. At each phase, the transition progresses if a match is found, with backtracking occurring wherever

necessary. Search for a string is according to that of a dictionary search, with phonological conditioning filtering an improbable output. A finite state network for the word determines if the progress is on correct lines.

Although economy has been noted in:

- 📌 Merging of Pathways: A merging of pathways is achieved by merely stating a single instance of a letter for each position in a word. A structural positioning of letter-elements would enable search paths to define the existence of particular entries.
- 📌 Number of Pathways: The instances of specified pathways through the network are less than the number of all possible transitions.
- 📌 Structure of Pathways: The structure of a pathway may often correctly determine the word form, even before the completion of the scan.

The disadvantages the model however faces, as Forster observes are:

- 📌 Non-words are more easily detectible
- 📌 Longer words consume a longer time to be accessed.

The model has been observed to fail in accounting for an aspect of lexical access that takes into account the word-frequency factor. The model in fact seems to be more of a phoneme-detection model, rather than a word-detecting one. Moreover, Garman's (1990:262) observation cannot be overlooked in what he points out as a shortcoming in the mechanism: "We know that the normal sort of dictionary is in the form of a book, in which all the separately listed items are spelled out fully; but this involves considerable redundancy in the interests of ease of use in turning over the pages and scanning their contents; and it is possible that this sort of organization is not required and actually too cosy, as far as the mental lexicon is concerned."

🔗 The Autonomous Search Model

After the letdown of the direct method, Forster's (1979) alternative was a two-stage processing model with a serial mode of operation where the first stage ends before the second begins. In the first stage, the search is ordered by frequency of the lexical items. Unlike the earlier model, focus is on frequency-rank ordering rather than physical structure. Rather than a scanning of the input string, an abstract location marker in the second phase of operation helps gain access to the lexical item, based on a hint obtained in the first phase. The mechanism is similar to that of cataloguing. A master file holds the catalogued information, which aids further access and retrieval.

The Autonomous Search model has the following implications:

- 📌 High frequency words are accessed faster than low-frequency words.
- 📌 Rejection of non-words takes a longer time than the acceptance of real words.

Experiments however observe that the theoretical and logical tenets of the two-stage model aren't really promising.

🔗 The Logogen Model

Morton's (1969) analyzer claims prospective assumptions about the lexical identity of the input string apparent at each stage, with an aided correlation between phonological analysis and lexical access.

Words are realized on the basis of selectively tuned response characteristics. The system does not merely rely on the specific linguistic properties, but is also able to pick up signals to the presence of a word from extra-linguistic signals as well. These are the *Logogens*, the tuned perceptual devices that respond to sensory and semantic input. The sensory and contextual inputs interact, and give rise to outputs, to the cognitive system.

The *Logogen* model implies that high-frequency words have lower thresholds associated with them, and hence require less processing to yield access. Forster questions the efficiency of the filtering mechanism in this model. In other words high frequency items are more available both as correct and incorrect responses. Although this has been noted as truly a word-detection model¹ that focuses on the auditory/visual properties of words, their contexts, and frequency ranking of words, the incapacity to reject incorrect analyses makes the model not very popular.

❧ The Cohort Model

Designed by Marslen-Wilson & Welsh (1978), this has been an improvement upon the transition network, and the logogen models in which activation levels can be precisely stated. Instead of a partial activation of logogens in some unknown proportions, a preference of only two degrees of activation has been suggested, - zero or, full.

A complete activation of all members of a *cohort* occurs on the basis of the first item of the input sequence. Thereafter, instead of the summation of partial activations to individual threshold values, there would be a progressive elimination of fully activated items, as the left-to-right processing of the sequence continues. The point of recognition would be determined, not by the end of the string, but by the elimination of the last alternative letter from the cohort.

Hybrid features of the earlier models effect vital implications here:

- ❧ It embodies the sequential nature of the auditory signal directly into the nature of word-recognition.
- ❧ There is a 'uniqueness' point at which the item diverges in linear structures from all other words in the language (and the cohort).

The cohort model follows the *letter-tree* theory as discussed in Knuth (1973). Theoretically though, the mechanism and predictions of the model could not be confirmed by theorists like Katz et al. (1987).

3.2.2.2 CATEGORY-SPLIT MODELS

❧ Henderson's review of the Taft & Forster Model

This was the first time a *psycholinguistic* model makes explicit the role of morphological analysis in word recognition, specifically considering the model for written word recognition by Taft and Forster (1975). The process involves a stripping of affixes from stems 'prior to' lexical access. (See Fig. 3.1) Crucial to its operation is the identification of word boundaries. The following is a flow chart that illustrates the working of this model.

¹ In Forster's sense.

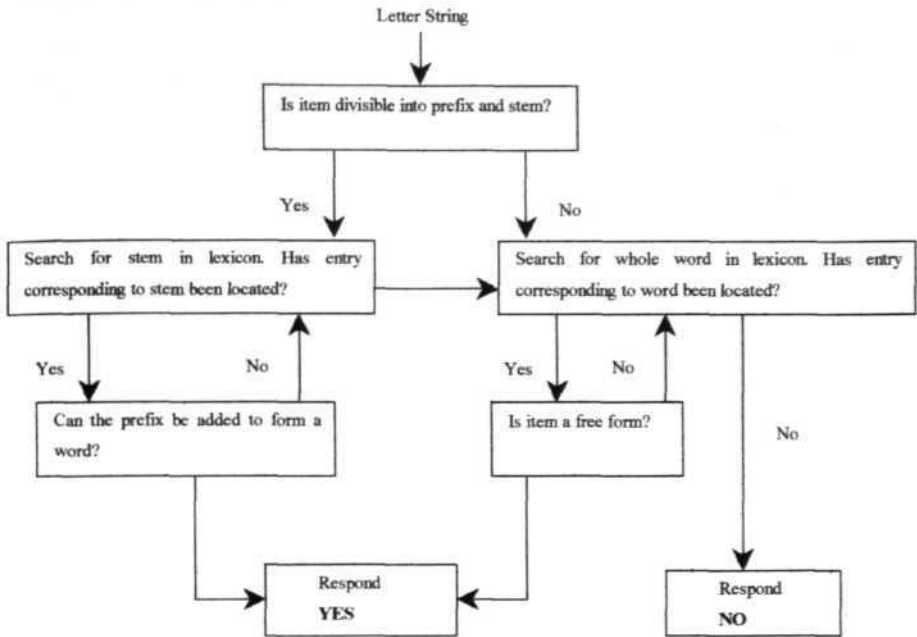


Figure 3.1 Morphological analysis in word recognition.
(From Taft and Forster 1975: fig. 1, p.644.) as reproduced in Garman (1990: 275)

The model is a serial one that operates on a set of stages in an ordered fashion. Such a decomposition model, argue Taft and Forster, allows for economy of stored representations, since a stem need be represented, by merely a single instance of itself. Stripping operates at each level, and lexical search continues on the basis of the remnant stem. As conceived by Henderson, the model requires a lexicon with a set of stem-morpheme entries, and a set of composition rules activated by the stripped affixes, and which in rum determine the characteristics of particular word formations.

⌘ Augmented Addressed Morphology

This is in opposition to the Taft & Forster model, which believes in lexical access through morphological decomposition. Caramazza et al (1988) defend the theory of 'augmented addressed morphology', which supports the view that morphologically complex words simultaneously trigger both the whole word, and its constituent morphemes, in the mental lexicon. Lexical access via achieved through whichever form is encountered first, by the subject. This is in opposition to the Taft & Forster model, which believes in lexical access through morphological decomposition. Experiments have however shown that the predictions made are not in accord with results.

❧ Satellite Entries Model

Lukatela et al (1988) hold the claim to the *satellite entries* model. The **hypothesis** states a basic **allomorph** that holds together all other **allomorphs** in a relational manner. This slightly differs from the IP theory of morphology, in the sense that instead of derivation of allomorphs from a base form, they are linked to each other relationally, in the WN fashion.

Sproat (1992) is of the view that the Lukatela model can be accommodated within a model of morphological parsing. Emphasis is on the base allomorph, through which all other allomorphs relate.

❧ Separate-Entries Model

Another 'separate-entries' model (S. Andrews 1986; Fowler et al. 1985; Grainger et al. 1991; Schreuder et al. 1990; Schriefers et al. 1991, 1992) believes that the various forms of a word ought to be accessed via their surface form. This has its basis on the frequency of the various surface forms.

❧ Naïve Decompositional Model

The naive 'decompositional' model is on the lines of the Taft & Forster model **that** maintains lexical access through stems and affixes.

3.3 Implications Of Psycholinguistic Findings

The fact that native speakers have the internal knowledge of the morphological structure of their language and that they access the lexicon via morphological **decomposition**, has been established through psychological evidence (Caramazza et al. 1988; Taft & Forster 1975; Tyler & Nagy 1990; Holmes & O'Regan 1992; Laudanna et al. 1992; Marslen Wilson 1994). Undoubtedly therefore a preference for category-split models, over **string-scan** models appears favourable.

Forster's model can be computationally viewed as a hash-table representation of the lexical database. Hash codes generated on the basis of the first few letters would lead on to the main lexicon. Forster's prediction however, about the transition network model that predicts a word before its realization, appears to go wrong in respect of the reaction time the concerned word, fails to evoke.

That, words are ordered by frequency-rank in the mental lexicon is almost instinctive. Nevertheless, designing a computational model might not be plausible, since such a concept cannot be wholly accommodative as it were. On these lines, the autonomous search model too does not appear to be popular.

3.4 A Fitting Model For Computational Purposes

The **questions** posed by Sproat (1992) are:

- 2a. Does the model of lexical retrieval used in the system resemble a good deal of what humans actually do?
- 2b. A majority of computational models of considerable interest involve greater or lesser amounts of morphological decomposition; are the algorithms and representations employed reasonable models of the way humans do things?

Psychological reality in morphological analysis is a prerequisite to a system that believes in natural language parsing **in** an intuitive **way**. Accessing a word from the mental lexicon can be either *pre-lexical* (indirect) or *post-lexical* (direct). A **pre-lexical** access would involve processing of the input up to the point of entry into **the** lexicon. In other words, words are split up into their constituent morphemes before they are identified or retrieved from the mental lexicon. Post-lexical processing occurs after a lexical entry has been accessed. Its phonological and graphological form specifications become simultaneously available for analysis.

Although studies on the Taft & Forster model had been viewed as unsuccessful by Emmorey (1998), experiments have indeed revealed that real stems and real affixes are easily rejected as non-words, than **pseudo-stems** and pseudo-affixes. Whatever be **the** inferences, the claim that inflectional class vitally determines **the** process of morphological decomposition, **is** what **is** of consequence here. McQueen & Cutler (1998) opine: "Access to morphologically structured lexical representations, ... need not involve morphological structure overtly, decomposition of derived forms may be an optional procedure, available when the whole-word access procedure fails."

Experiments have established that for English, analysis of words began **with** stripping of items that resembled prefixes, proceeded to stems and **then** to suffixes. Relative access time for an entry is a controversial issue in such models.

Any computational representation of morphology needs to ingrain certain aspects of psychological evidence to explicate the nature of natural language processing in the human mind. Bearing in mind the pros and cons of the models considered, it can be reasoned out that any category-split model that accounts for a reasonable level of morphological analysis that bases itself either on the **IA**, **IP**, or on a model that features a blend of both, could be regarded as feasible for application.

AMPLE as a case in point, would characteristically involve a listing of stems and affixes, along with constraints that define which affix could combine with which stem. Those, in the case of the **KIMMO** model would be used as 'continuation patterns'. This would presuppose storage of the basic morphological forms, alongside the essential rules of phonology and **morphophonology**. The analyzer developed in **PERL**, chooses, for reasons of simplicity, a model that ingrains features of both the **IA** and the **IP model**, with a parsing mechanism based on morphological paradigms.

Chapter 4

Nouns, Pronouns, Numerals

4.1 NOUNS

Nouns normally inflect for categories of number, gender and case. Tamil permits two numbers (Singular and Plural), three genders (Masculine, Feminine and Neuter), and eight cases (Nominative, Accusative, Dative, Sociative, Locative, Instrumental, Benefactive and Ablative and one adnominal relation marking the Genitive).

4.1.1 Nominal Classes

On the basis of allomorphy exhibited by nouns when inflected for number and case, twenty - three distinct types of nouns are required in order to generate correct word forms. The following table illustrates the features of contrast:

Sl. No.	Noun	Base Ending	Specialbase	Nom_Pl	Obl_Sing
1	AN	N	-	+kaY	Ø
2	ArYu	rYu	-	+kaY	+rYrY
3	eVli	i	-	+kaY	+y
4	iLE	E	-	+kaY	+y
5	iwaYY	IYY	-	+kaY	Ø
6	I	I	-	+kkaY	+y
7	kaN	N	-	+kaY	+N
8	kAl	l	-	+kaY	Ø
9	kAtu	tu	-	+kaY	+t
10	maNyrwaY	nY	+r (pl.)	+kaY	Ø
11	maram	m	+f (pl.)	+kaY	+ww
12	maY	IY	+t (pl.)	+kaY	+IY
13	maNAY	nY	-	+kaY	Ø
14	naNampu	u	-	+kaY	Ø
15	nAY	y	-	+kaY	Ø
16	poVnY	nY	-	+kaY	+nY
17	poVY	y	-	+kaY	+y
18	pul	l	+rY (pl.)	+kaY	+l
19	poVruY	IY	+t (pl.)	+kaY	Ø
20	pU	U	-	+kkaY	+v
21	vaNtu	tu	-	+kaY	Ø
22	wer	r	-	+kaY	Ø
23	wolY	IY	-	+kaY	Ø

Table 4.1: Noun Classes

4.1.2 Levels Of Nominal Extensions

Besides case and number that nouns inflect for, they additionally may be followed by certain other suffixes, clitics, particles, special postpositions, and adverbials to indicate various **functions**. Hence they can be said to have the following levels of extensions:

Level 1: Clitics

Level 2: Particles

Level 3: Postpositions

Level 4: Adverbials

Vocative Clitics are elements of address that occur after an inflected noun. **Clitics** and **Particles** may occur after the inflected noun. Postpositions occur only after the nominative, accusative, and the dative forms. They may be added to nominative **forms**, while they are obligatory, after the accusative, and the dative forms of nouns. Adverbials are added either to the nominative or the dative forms.

4.1.3 Analyzing Nouns

An analysis of nouns in Tamil would begin by stripping off at the **morpho-syntactic** level, Clitics, and at the purely morphological level, which include various semi-bound and bound Particles and Postpositional and/or Adverbial markers, down to primary inflectional markers of Case and Number. After segmenting items of each level based on their order of occurrence, the stem and/or the base of the noun may be obtained.

4.1.3.1 Clitics

Clitics are morphosyntactic elements by category. According to Halpern (1998), a clitic phonologically refers to 'any prosodically weak (unaccented) element, which is not a canonical inflectional or **derivational affix**.' Clitics, as distinct from independent words, reflect the inability to constitute an independent utterance. All that needs to be precisely said about clitics is as recorded by Stump (1998) as, 'elements which exhibit an **affix-like** phonological dependency on a word but whose syntax is word-like'.

The clitics following nouns are as follows:

Clitic	Feature / Function Value
+ um	Conjunctive
+ o	Disjunctive, Complementative, Dubitative
+ e	Emphatic2
+ wAnY	Emphatic1
+ A	Interrogative
+ mattum	Restrictive
+ kUta	Inclusive
+ Avawu	Minimal, Coordinative
+ Am	Suppositive
+ ata	Vocative/3 rd . Singular, Masculine
+ atey	Vocative/3 rd . Singular, Masculine, / 3 rd . Plural, Human
+ atI	Vocative/3 rd . Singular, Feminine
+ ayyA	Vocative/3 rd . Singular, Human, Honoric, Masculine

+ ammA/mA	Vocative/3 rd . Singular, Human, Honorific, Feminine
+ appA/pA	Vocative/3 rd . Singular, Human, Honorific, Masculine
+ afka/ufka	Vocative/3 rd . Plural, Human, Colloquial

Table 4.2: Clitics

4.1.3.2 Particles

Particles, unlike clitics are more category specific, but less particular than postpositions. They could in a sense be termed as category sensitive clitics. They cannot however, recur on the same base as clitics do. According to Asher (1985), particles are 'invariable bound forms which can be suffixed to a wide range of major sentence constituents (as contrasted with, for instance, case suffixes, which can only be added to nouns and nominalised forms, and tense markers, which can only be affixed to verbal roots).' The particles that follow the nouns inflected for case, both in the singular and plural number are as follows:

Nominative Particles	Feature & Function Value	Accusative Particles	Feature & Function Value
N_0 + mAwiri	Comparative	N_E + wavira	Exclusive
N_0 + pol	Comparative	N_E + vita	Comparative
N_0 + ponYrYu	Comparative	N_E + parYrYi	Descriptive
N_0 + e\N_YrYu	Referential		
N_0 + eVnYrYa	Referential		
N_0 + eVnYum	Referential		
N_0 + eVnYa	Referential		
N_0 + eVnYpawu	Referential		
N_0 + eVnYappatuvawu	Referential		

Table 4.3: Particles

4.1.3.3 Postpositions

Nouns in Tamil quite often are attached with a number of postpositions that can be regarded as some sort of reduced adverbials, falling midway between case affixes and particles. Asher (1985) defines a postposition as 'an element that can be added to a nominal to form a postpositional phrase standing in a functional relationship with a verb.' They can be seen as 'a somewhat heterogeneous class with members ranging from fully bound to free forms.' The postpositions that follow nouns in different cases, both in the singular and plural number are as follows:

Nominative Postpositions	Feature & Function Value	Accusative Postpositions	Feature & Function Value	Dative Postpositions	Feature & Function Value
N_Ø + mUlam	Instrumental	N_E + kuriwwu	Referential	N_ukku + Aka	Comparative
N_Ø + varE	Spatial	N_E + oVtti	Positional	N_ukku + uriya	Possessive
N_Ø + Aka	Comparative	N_E + koVNtu	Instrumental		
N_Ø + illA	Disjunctive	N_E + wawirwwu	Exclusive		
N_Ø + illAwapowu	Disjunctive	N_E + kAttilum	Comparative		
N_Ø + illAwa	Disjunctive	N_E + mattilum	Restrictive		

Table 4.4: Postpositions

4.1.3.4 Adverbials

Nouns in Tamil often take a number of adverbials, a specific kind of postpositional class of items that denote spatial and temporal relations. They however, much unlike postpositions, could take on more than one category host as anchor. Another characteristic feature of these adverbials is that they can be inflected further for directional and locational case markers. The following are adverbials, which are attached to nouns:

Adverbial	Feature & Function Value	Gloss
pinY	Temporal	after
pinYnYAl	Temporal	behind
pinwi	Temporal	next
pinYpu	Temporal	thereafter
pirYaku	Temporal	thereafter
pirYp.Atu	Temporal	thereafter
munY	Temporal	before
munYnYAl	Temporal	in front of
munwi	Temporal	previous
munYpu	Temporal	previous
varE	Spatial	till
appuram	Temporal	afterwards
appAl	Directional	beyond
atuwwa	Spatial	next
itE	Positional	between
curYrYi	Directional	around
ulY	Positional	in/inside
veVIYi	Positional	out/outside
mel	Positional	on/upon
kIlYY	Positional	below
mawwi	Positional	in the middle
natu	Positional	at the centre
kurukke	Directional	across
aruke	Directional	near
ati	Positional	below
eVwir	Directional	opposite to
ner	Directional	in front of
kiYYakku	Directional	east
merYku	Directional	west
vatakk	Directional	north
weVrYku	Directional	south

Table 4.5: Adverbials

4.1.3.5 Case

The second layer of inflection is Case. Generally most nouns exhibit two distinct case stems both in singular and plural. A noun in its nominative form, whether singular, or plural, does not take any suffix. (Ex. *marum: maraŋkaŋ*). The oblique form of nouns is the basis for all other cases.

There are three identifiable classes in case inflection, characterized by morphophonemic alternations exhibited either by the stem or suffix:

- 2. Class 1: A majority of nouns that terminate in /nY/, or /m/, lose their final consonants.
- 2. Class 2: Nouns that terminate in /tu/, or /ŋu/, geminate their final consonants.
- 2. Class 3: Nouns other than 1 and 2, which do not exhibit any variation in the stem.

Details of morphophonemic changes and allomorphy for case marking, follow in section 4.1.4. For details on Oblique bases of nouns refer Table 2.1

4.1.3.6 Number

A noun in singular does not take any explicit number suffix. ex. *ulu* 'house(sg)'. Nouns in plural are inflected with /kaŋ/. Nouns that terminate in long vowels have an allomorphic variant [kkaŋ]. ex. *pU* 'flower', would be /pUkkaŋ/, in the plural. Other nouns assume /kaŋ/ in the plural. ex. *vaŋtu* 'beetle', would be *vaŋtukaŋ*, in the plural. Theoretically, there are six major distinct classes identified, characterized by morphophonemic alternations exhibited either by the stem or suffix in the process of number inflection in nouns:

- 2. Class 1: Nouns ending in /nY/.
- 2. Class 2: Nouns ending in /m/.
- 2. Class 3: Nouns ending in /// preceded by a short vowel.
- 2. Class 4: Nouns ending in /ŋ/ preceded by a long vowel.
- 2. Class 5: Nouns that end in long vowels.
- 2. Class 6: All other nouns that do not exhibit any change in plural formation.

Details of morphophonemic changes and allomorphy for number, follow in section 4.1.4

4.1.4 Nouns: Morphophonemics & Allomorphy

The process of **suffixation** effects certain phonological and morphophonemic changes on stems and suffixes. The following describes and accounts for such changes at each level of nominal inflection. It is interesting to note the emerging patterns of stem and suffix allomorphy.

Tamil noun morphology involves two numbers - the Singular and the Plural. Considering the phonological or morphophonemic changes both in noun stems and the number suffix(es), it can be observed that apart from the 20 stem types, and 1 suffix (for the plural), there **remain** 4 stem types and 1 suffix that exhibit allomorphic change.

The classes of stems that need to be analyzed when number suffix is stripped off are:

Class 10 - *manYiwanY*- *manYiwanY* + *kaY* → *manYiwanYkaY*

Rule: *r* → *nY* / _#

Class 11 - *maram* - *maram* + *kaY* → *marafkaY*

Rule: *f* → *m* / _#

Class 12 - *mulY* - *mulY* - *mulY* + *kaY* → *mutkaY*

Rule: *t* → *Y* / _#

Class 18 - *pul* - *pul* + *kaY* → *puYkaY*

Rule: *rY* → *l* / _#

The singular number remains 'unmarked', i.e., has a null suffix. The plural number is marked by the suffix *kaY*. The suffix *kaY* applies as the default rule for pluralization, except following stems that end in long vowels, in which context, the rule of plosive gemination applies, accommodating its allomorphic variant *kekaY*.

Tamil exhibits eight case relations - Nominative, Accusative, Dative, Locative, Sociative, Ablative, **Benefactive** and one adnominal relation marking the Genitive. Of the 23 noun classes, 5 stems exhibit allomorphic change. Although there are only eight case suffixes, case marking gets multiplied by nine, since phonological alternation realizes in nine instances of the classes of case suffixes, through the process of suffixation.

The classes of stems that need to be analyzed when case affixes are stripped off are:

Class 2 - *ArYu* - *ArYu* + *otu* → *ArYuYuotu*

Rule: $\emptyset$ → *u* / _

Class 9 - *kAtu* - *kAtu* + *otu* → *kAttotu*

Rule: $\emptyset$ → *u* / _

Class 11 - *maram* - *maram* + *otu* → *marawwotu*

Rule: *ww* → $\emptyset$ / _[V]

Class 14 - *narampu* - *narampu* + *otu* → *narampotu*

Rule: $\emptyset$ → *u* / _

Class 21 - *vaNtu* - *vaNtu* + *otu* → *vaNtotu*

Rule: $\emptyset$ → *u* / _

The stems that need to be analyzed as when case marking is stripped off are:

Class 2 - *rY* - *ArYu* + *otu* → *ArYuYuotu*

Rule: *rY* → $\emptyset$ / *rY* _[V]

Class 3,4,6,20 - *y* - *ArYu* + *otu* → *eliyotu*

Rule: *y* → $\emptyset$ / [*Y*] _[V]

Class 7 - *N* - *kaN* + *otu* → *kaNNotu*

Rule: *N* → $\emptyset$ / *N* _[V]

Class 9 - *t* - *kAtu* + *otu* → *kAttotu*

Rule: *t* → $\emptyset$ / *t* _[V]

Class 11 - *ww* - *maram* + *otu* → *marawwotu*

Rule: *rY* → $\emptyset$ / *rY* _[V]

Class 12 - *Y* - *mulY* + *otu* → *mutYotu*

Class 16 - $nY - poVnY + otu \rightarrow poVnYnYotu$

Rule: $nY \rightarrow \emptyset / nY_ [V]$

Class 18 - $l - pul + otu \rightarrow pullotu$

Rule: $l \rightarrow \emptyset / l_ [V]$

Class 20 - $v - pU + otu \rightarrow pUvotu$

Rule: $p \rightarrow \emptyset / [Vbk]_ [V]$

The choice of listing the plural suffix kaY , as the basic allomorph, with another allomorph $kkaY$, derived through morphophonemics, or as two distinct suffixes in the lexicon is a matter of convenience in implementation. Similarly, the case of listing just eight simple case suffixes, instead of the numerous case marker allomorphs, again is a matter of choice of the end-user, based on his relevant requirements.

An IA model would describe plurality as:

$A\check{r}YukaY \rightarrow A\check{r}Yu + kaY$

$pUkkaY - pU + kkaY$

or case-marking as:

$A\check{r}Y\check{r}il \rightarrow A\check{r}Y + \check{r}il$

$pU\check{r}il \rightarrow pU + \check{r}il$

However, an IP model would describe plural allomorphy as:

$A\check{r}YukaY \rightarrow A\check{r}Yu + kaY$

$pUkkaY \rightarrow pU + kaY$

or case-marking as:

$A\check{r}Y\check{r}il \rightarrow A\check{r}Yu + il$

$pU\check{r}il \rightarrow pU + il$

Although different models have different views on allomorphy, I wish to list here, for reasons of clarity, the plural markers with two distinct allomorphs - kaY and $kkaY$, and the various case suffixes with all their 72 distinct allomorphic forms.

23 Basic Stems	5 stem variants for case	5 stem variants for number	9 oblique markers	8 case suffixes	1 basic number suffix	1 number variant
AN	-	-	-	*Cases (1-8)	kaY	-
ArYu	ArY	-	rY	*Cases (1-8)	kaY	-
eVli	-	-	y	*Cases (1-8)	kaY	-
iIE	-	-	y	*Cases (1-8)	kaY	-
iwaYY	-	-	-	*Cases (1-8)	kaY	-
I	-	-	y	*Cases (1-8)	-	kkaY
kaN	-	-	N	*Cases (1-8)	kaY	-
kAl	-	-	-	*Cases (1-8)	kaY	-
kAtu	kAt	-	t	*Cases (1-8)	kaY	-
manYrwanY	-	manYrwar	-	*Cases (1-8)	kaY	-
maram	mara	maraf	ww	*Cases (1-8)	kaY	-
mulY	-	mut	lY	*Cases (1-8)	kaY	-
mAnY	-	-	-	*Cases (1-8)	kaY	-
narampu	naramp	-	-	*Cases (1-8)	kaY	-

nAy	-	-	-	*Cases (1-8)	kaY	-
poVnY	-	-	nY	*Cases (1-8)	kaY	-
poVy	-	-	y	*Cases (1-8)	kaY	-
pul	-	purY	l	*Cases (1-8)	kaY	-
poVruY	-	poVrut	-	*Cases (1-8)	kaY	-
pU	-	-	v	*Cases (1-8)	-	kkaY
vaNtu	vaNt	-	-	*Cases (1-8)	kaY	-
wer	-	-	-	*Cases (1-8)	kaY	-
wolY	-	-	-	*Cases (1-8)	kaY	-
* Accusative (E), Dative (ukku), Sociative (otu/utanY), Locative (il/itam), Instrumental (A), Benefactive (ukkaAka), Ablative (ilrunnu/ilanrunnu), Genitive (utEya/inY/anY)						

Table 4.6: Total allomorphs for Nouns

The total number of resulting allomorphs would include 23 basic stems, 10 stem variants for number and case, and for a valid consideration of a true case suffix, the oblique marker suffix that realizes, as one of its 9 variants would have to further combine with one of the 8 different case suffixes. This would in fact, result in 72 suffix allomorphs for case marking alone. The total would then mean a sum of: 23 basic stems + 10 stem variants + 9 oblique markers (x 8 case suffixes) + 8 basic case suffixes + 1 basic number suffix + 1 number suffix variant = 115 allomorphs for nouns.

4.1.5 The Analyzer Chart for Nouns

The input to the Hybrid Tamil Morph would be a noun form that undergoes a series of morphemic strippings at each level of inflection as illustrated in the chart that follows.

The string is first scanned for a possible clitic at level 1. If found, it is stripped off by the 'Clitic Stripper' and stored in a temporary array with its relevant tag. The rest of the string is reconstructed and passed on to the next level of inflectional scan. Level 2 is that of Particle stripping. A similar processing takes place here, with the Particle being stripped off, tagged, and stored in a temporary array, the remaining string being reconstructed and passed on to the level 3 of Postpositions. This proceeds to level 4 of Adverbials, where an adverbial found is stripped away. Until after the level of adverbial extensions, case inflections remain.

Any of the eight cases that fall under either the Nominative or Oblique, is recognized, and the case marker stripped off by the 'Case Stripper'. The next level of number marking is tackled by the 'Number Stripper' that reconstructs the nominal base after number has been determined. The resulting string is declared as the root noun, with the rest of the remaining inflections and suffixes declared with their tags, as encountered at each level of the parse.

A comprehensive list of all nominal affixes is also provided alongside.

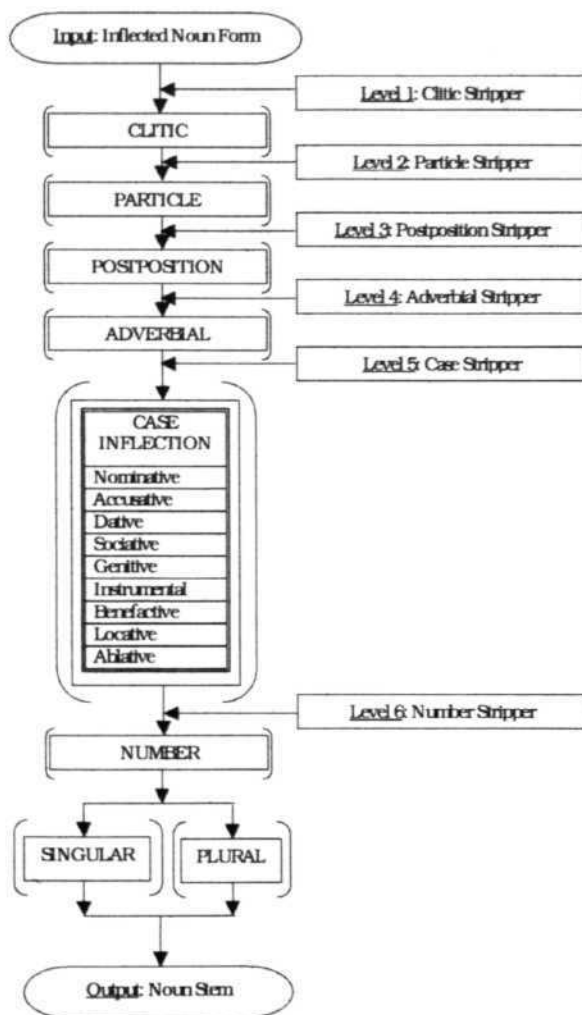


Figure 4.1(a): Morphological Analyzer Chart: Noun

Nominal Inflections

Clitics: Awawu, A, o, e, um, kUta, mattum, wAnY, Am
Particles after the Nominative: mAwini, pol, pola, ponYrYu, ponYrYa, eVnYrYu, eVnYrYa, eVnYum, eVnYa, eVnYpawu, eVnYappatuvawu Particles after the Accusative: wavira, vita, parYrYi
Postpositions after the Nominative: mUlam, varE, illA, illAwa, illAwapowu Postpositions after the Accusative: kuriwwu, koVNtu, wavirwwu, kAttilum, mattilum Postpositions after the Dative: Aka, uriya
Adverbials after the Accusative: curYrYi, Adverbials after the Dative: pinY, pinYnYAl, pinwi, pinYpu, pirYaku, pirYpAtu, munY, munYnYAl, munwi, munYpu, appuram, appAl, aruwwa, itE, ulY, veVYi, mel, kIIYY, mawwi, natu, kurukke, aruke, ati, eVwir, ner, kiIYYakku, merYku, vatakk, weVrYku Adverbials after the Genitive: kiIYYakku, vatakk, weVrYku, merYku, pakkam, mel, kIIYY
Case Inflections: Ø, E, ukku/kku, inY(awu)/utEya, Al, utanY, il/itam, otu, ukkAka/kkAka, ilirunwu/itamirunwu
Number Inflections: Ø, kaY/kkaY

Figure 4.1(b): List of Nominal Inflections/Suffixes

4.2 PRONOUNS

Pronouns normally inflect for categories of gender and case. Tamil permits three genders (Masculine, Feminine and Neuter), and eight cases (Nominative, Accusative, Dative, Sociative, Locative, Instrumental, **Benefactive** and Ablative and one **adnominal** relation marking the Genitive).

4.2.1 Pronominal Classes

Pronouns are a group of irregular members of the class. The plural members of pronouns cannot be derived from their corresponding singulars, since the rules required are specific to each form and do not apply elsewhere, or to any other member. Strictly speaking, they have to be listed in the dictionary.

On the basis of **allomorphy** exhibited by pronouns when inflected for number and case fifteen distinct forms of pronouns are required in order to generate correct word forms. The following table illustrates the features of contrast:

Sl. No.	Pronoun form	Base Ending	Feature	Base1	Base2
1	avaY	aY	3fs	-	-
2	avanY	anY	3ms	-	-
3	avar	r	3hp	-	-
4	awu	wu	3ns	-	aw / aww
5	avE	vE	3np	-	avarYrY
6	nAnY	AnY	1s	eVnY	eVnYnY
7	nAfkalY	AfkalY	1p	eVfkalY	eVfkalY
8	nAm	Am	1pincl	nam	namm
9	nI	I	2s	unY	unYnY
10	nIfkalY	IfkalY	2p	ufkalY	ufkalY
11	nIr	Ir	2ph	um	umm
12	wAfkalY	AfkalY	2ph	wafkalY	wafkalY
13	wAm	Am	2ph	wam	wamm
14	wAnY	AnY	2s	wanY	wanYnY
15	yAm	Am	1sincl.	yam	yam

Table 4.7: Pronoun Classes

4.2.2 Levels Of Pronominal Extensions

Pronouns, like nouns have the same levels of inflectional categorizations:

Level 1: Clitics

Level 2: Particles

Level 3: Postpositions

Level 4: Adverbials

(See Sections 4.1.3.1 (pg.50) to 4.1.3.4 (pg.53) for a list of pronominal inflections)

Clitics are **morphosyntactic** elements that may occur on a word form without any contrast to specify case inflections. Particles, Postpositions and Adverbials, occur only after the nominative, accusative, and the dative forms.

4.2.3 Analyzing Pronouns

Pronouns show a set of inflectional properties, very specific to them. Unlike nouns, pronouns inflect only for case and **not for number**, and follow the same patterning of inflection. (For details on pronominal cases refer Table 2.1 (pg.9)). For an account of how pronouns assume different stem bases in different case forms, refer Table 2.3 (pg. 12).

4.2.4 Pronouns: Morphophonemics & Allomorphy

Since Pronouns in Tamil do not seem to derive plurals from their corresponding singulars, the inflection at the level of number may be considered as absent or not existing.

Case **suffixation** in pronouns chiefly falls under three classes - the Nominative, Direct Oblique, and Indirect Oblique. The Accusative, Dative, Locative, Sociative, Ablative, Benefactive and the Genitive cases form a part of the Indirect Oblique. Of the 14 pronoun classes, 11 stems exhibit **allomorphic** change.

The classes of stems that undergo change for the Indirect Oblique case are:

Class 4 - **awu** - awu +otu → awuotu

Rule: w → 0 / » * _ #

Class 8 - **nAm** - nAm +otu → nammotu

Rule: am → A / n_m + otu

Class 7 - **nAfkalY** - nAfkalY +otu → eVfkalYotu

Rule: eV' → nA / _fkalY + otu

Class 9 - **nI** - nIfkalY +otu → unYnYotu

Rule: unYnY' → nI / _ + otu

Class 10 - **nIfkalY** - nIfkalY +otu → ufkalYotu

Rule: u → nI / _fkalY + otu

Class 11 - **nIr** - nIr + otu → ummotu

Rule: umm → nIr / _ +otu

Class 12 - **wAfkalY** - wAfkalY +otu → wafkalYotu

Rule: a → A / w_fkalY + otu

Class 13 - **wAm** - wAm +otu → wammotu

Rule: am → A / w_m + otu

Class 14 - **wAnY** - wAnY +otu → wanYnYotu

Rule: anY → A / w_nY + otu

Class 15 - **yAm** - yAm +otu → yammotu

Rule: am → Am / y_m + otu

The chief rule that operates at the level of stem allomorphy is the Rule of lengthening, alternatively, intra-consonant insertion.

The kinds of change that the classes of case suffixes are affected by case marking are:

Class 4 — **w**— *awu* + *otu* → *rnnwotu*

Class 8 - **m**— *nAm* + *ntu* → *nammotu*

Class 14 - **nY**- *wAnY* + *otu* → *wanYnYotu*

The rule of degemination operates in the instances of suffix alternations.

An IA model would describe case marking as:

eVnYnYitam → *eVnY* + *nYitam*

nammitan → *nam* + *mitam*

An IP model however, would describe case marking as:

eVnYnYitam → *nAnY* + *itam*

nammitam → *nAm* + *itam*

SL No.	15 Basic Stems	12 stem variants for oblique	12 stem variants for case	2 oblique markers	8 case suffixes
1	avaY	-	-	-	*Cases (1-8)
2	avanY	-	-		*Cases (1-8)
3	avar	-	-		*Cases (1-8)
4	awu	aw	aw/aww	w	*Cases (1-8)
5	avE	avarYrY	avarYrY		*Cases (1-8)
6	nAnY	eVnY	eVnYnY	nY	*Cases (1-8)
7	nAfkaY	eVfkaY	eVfkaY		*Cases (1-8)
8	nAm	nam	namm	m	*Cases (1-8)
9	nI	unY	unYnY	nY	*Cases (1-8)
10	nIfkaY	ufkaY	ufkaY		*Cases (1-8)
11	nIr	um	umm	m	*Cases (1-8)
12	wAfkaY	wafkaY	wafkaY		*Cases (1-8)
13	wAm	wam	wamm	m	*Cases (1-8)
14	wAnY	wanY	wanYnY	nY	*Cases (1-8)
15	yAm	eVm	eVmm	m	*Cases (1-8)
* Accusative (E), Dative (ukku), Sociative (otu/utanY), Locative (il/itam), Instrumental (Al), Benefactive (ukkeAka), Ablative (ilrnnwu/itamirnnwu), Genitive (utE:ya/inY/anY)					

Table 4.8: Total allomorphs for Pronouns

The total number of resulting allomorphs would include 15 basic stems, 12 oblique stems 12 stem variants for case **suffixation**, and for a valid consideration of a true case suffix, the oblique marker suffix that realizes, as one of its 3 variants would have to further combine with one of the 8 different case suffixes. The total would then mean a sum of: 15 basic stems + 12 oblique stems + 12 stem variants for case marking + 3 oblique markers (x 8 case suffixes) + 8 basic cases suffixes = 71 allomorphs for pronouns.

4.2.5 The Analyzer Chart for Pronouns

The input to the Hybrid Tamil Morph would be a pronoun form that undergoes a series of morphemic strippings at each level of inflection as illustrated in the chart that follows.

The string is first scanned for a possible clitic at level 1. If found, it is stripped off by the 'Clitic Stripper' and stored in a temporary array with its relevant tag. The rest of the string is reconstructed and passed on to the next level of inflectional scan. Level 2 is that of Particle stripping. A similar processing takes place here, with the Particle being stripped off, tagged, and stored in a temporary array, the remaining string being reconstructed and passed on to the level 3 of Postpositions. This proceeds to level 4 of Adverbials, where an adverbial found is stripped **away**. Until after the level of adverbial extensions, case inflections remain.

Any of the eight cases that fall under either the Nominative or Oblique, is recognized, and the case marker stripped off by the 'Case Stripper'. This reconstructs the pronominal base after case has been determined. The resulting string is declared as **the** stem pronoun, with the rest of the remaining inflections and suffixes declared **with** their tags, as encountered at each level of the parse.

A comprehensive list of all pronominal affixes is also provided alongside.

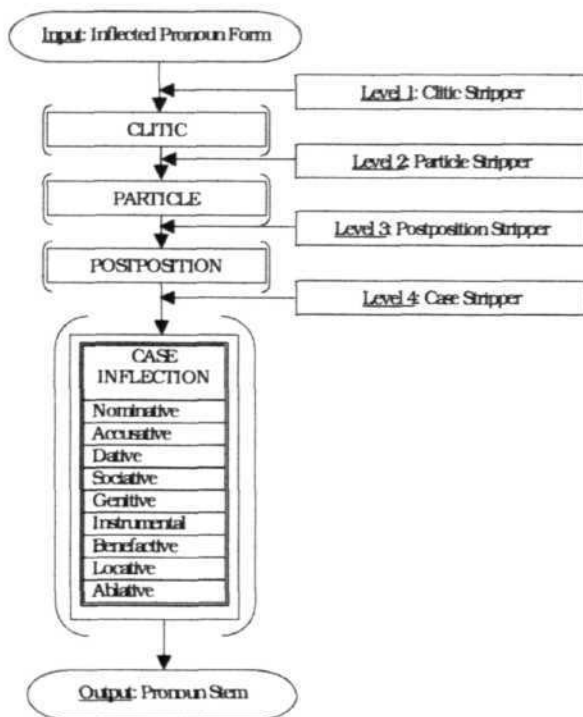


Figure 4.2(a): Morphological Analyzer Chart: Pronoun

Pronominal Inflections

Clitics: Awawu, A, o, e, um, kUta, mattum, wAnY, Am
Particles after the Nominative: mAwiri, pol, pola, ponYrYu, ponYrYa, eVnYrYu, eVnYrYa, eVnYum, eVnYa, eVnYpawu, eVnYappaturawu Particles after the Accusative: wavira, vita, parYrYi
Postpositions after the Nominative: mUlam, varE, illA, illAwa, illAwapowu Postpositions after the Accusative: kuriwwu, koVNtu, wavirwwu, kAtilum, matnilum Postpositions after the Dative: Aka, uriya
Case Inflections: Ø, E, ukku/kku, inY(awu)/utEya, Al, utanY, il/itam, otu, ukkAka/kkAka, ilirunwu/itamirunwu

Figure 4.2(b): last of Pronominal Inflections/Suffixes



4.3 NUMERALS

Numerals normally inflect for the categories of number, gender and case. Tamil permits two numbers (Singular and Plural), (For details on number distinction refer section 2.3.1.1 (pg.7)), three grammatical genders (Masculine, Feminine and Neuter), and nine cases (Nominative, Accusative, Dative, Sociative, Genitive, Locative, Instrumental, Benefactive and Ablative) (For details on numeral base variation for case and **ordinality**, refer Table 2.5 (pg.13) and Table 2.7 (pg. 14)).

4.3.1 Numeral Classes

The following paradigm classes can be established for numerals:

Sl. No.	Numeral	Obl.1 (Particles)	Obl.2 (GNP Base)	Ordinal
1	oVnYrYu	oVnYrY	oVru	_Am/Avawu
2	iraNru	iraNt	iru	_Am/Avawu
3	mUnYrYu	mUnYrY	mU	_Am/Avawu
4	nAnYku	nAnYk	nAl	_Am/Avawu
5	Enwu	Enw	E	_Am/Avawu
6	ArYu	ArY	arYu	_Am/Avawu
7	eYYu	eYY	eVYYu	_Am/Avawu
8	eVru	eVr	eVN	_Am/Avawu
9	oVnYpawu	oVnYpaw	-	_Am/Avawu
10	pawwu	paww	-	_Am/Avawu
11	nUrYu	nUrYrY	-	_Am/Avawu
12	Ayiram	Ayira	-	Ayiraww
13	latcam	latca	-	latcaww
14	koti	koti	-	-

Table 4.9: Numeral Classes

4.3.2 Levels Of Numeral Extensions

A representative class, which falls under the category of nouns, numerals have an exclusive set of inflections specific to them, in addition to the set of nominal adverbials, postpositions and particles. Like nouns, they branch off inflectionally, at the **primary** level of Nominative vs. Oblique. The common levels are:

- Level 1: Clitics
- Level 2: Adverbials
- Level 3: Particles
- Level 4: Case

For the regular list of numeral inflections, see Sections 4.1.3.1 (pg.50) to 4.1.3.4 (pg.53). This apart, numerals extend their specific extensions to a set of Particles that assume the first kind of **inflectional** pattern. Whether they occur after Nominative, or Oblique forms, they are obligatory. Case, as in the case of nouns, as an inflectional form for numerals, is

obligatory, only if there are a series of **adverbials** that follow them. (For details on numeral cases refer Table 2.1 (pg.8)). Otherwise, they remain optional. **Adverbials** are a set of units that are optional and fall at the third level of inflection, only if **caseal forms**, at the second level, precede it. Clitics are optional properties that may not, or may occur, after any particle. They are recursive to a certain degree.

4.3.3 Analyzing Numerals

Numerals in Tamil are of two types: Cardinals, and Ordinals. An analysis of numerals in Tamil would begin by stripping off at the morpho-syntactic level, Clitics, and at the purely morphological level, various semi-bound and bound Particles and Postpositional and/or Adverbial markers, down to primary inflectional markers that inflect for Case and then Number. After segmenting items of each level based on their order of occurrence, the noun stem may be obtained.

4.3.3.1 Particles, Postpositions And Other Suffixes

The chief inflections that suffix onto the oblique forms of all numerals are Particles, Postpositions, Adverbials and GNP endings. (For details on GNP suffixes in numerals refer Table 2.6 (pg.14), and Table 2.7 (pg.14) for GNP base variation in numerals). There are specific restrictions on what sort of base these suffixes can attach to. Some of these suffix to the nominative base alone, and certain others inflect for the oblique base alone.

In general, Particles are of two types: ones that suffix on to the oblique base, and others to the accusative base. Particles like *maNi* 'b'clock', *riwam* 'kind', *maYE* 'number of times', *wait* 'per head', *uakE* 'type', follow the oblique base, and are applicable exclusively to Class 1 of the numeral paradigm. These sometimes are followed by adverbials. Most of these are quantitative or attributive particles. As in the case of nouns, Particles like *uvira*, *vila*, *polo*, *ponYyu*, *paYyi* attach to the accusative form of numerals. Most of these are relative particles.

Apart from these, there are two sets of Particles numerals specifically take. The first set consists of 4 Particles that can occur only after the oblique stem of class 1. They are as follows:

Particle1	Feature / Function Value	Example	Gloss
kAl	Conditional	<i>oVru kAl varalAm</i>	He may come
cila	Quantitative1	<i>oVru cila punvakalkaY</i>	A few books
cilar	Quantitative2	<i>oVru cilar pAtinYArkaY</i>	A few/some sang
cirYu	Quantitative3	<i>oVru cirYu velai</i>	A few odd jobs

The second set consists of the Particle *peI yar*, which can occur on the nominative stem of any class, excepting the first.

Particle2	Feature / Function Value	Example	Gloss
peVyar	Attributive	<i>iraNtu peVyar irunArkaY</i>	There were two people

Adverbials that follow particles need to be followed by the locative or dative base. The few of these adverbials are: *uAkkilaYnu*, *uY*, *eVlAm*.

Postpositions like *kuriṇṇu*, *kAttilum*, *mattilum*, *vaṇṇṇu*, and *oVtti*, inflect for the accusative base, and are most often relative in nature.

Among the GNP suffixes, the 3rd singular masculine and feminine suffixes, apply only to Class 1 of the numeral paradigm. The 3rd singular honorific/ plural suffix, applies from Classes 1 to 8 of the numeral paradigm.

4.3.4 Numerals: Morphophonemics & Allomorphy

Numerals in Tamil inflect for number, case and sometimes, for gender and person. Considering the phonological or morphophonemic changes both in numeral stems and suffixes, it can be observed that apart from the 14 default stems, there remain 4 stems and 1 suffix that exhibit allomorphic change.

All of the classes of stems do inflect for number, however none of them undergo any morphophonemic change. This is so because the plural suffix *kaṇ*, in numerals does not have any allomorphic variant.

Ordinality is expressed under the oblique case. Apocope is the general rule for stem allomorphy in the first eleven classes. The classes of stems that undergo change for case are:

Class 1 - *oVnYrYu* - *oVnYrYu* + *Am/Avan* → *oVnYrYAm/Avan*

Rule: *u* → 0 *I_A*

Class 2 - *iraNtu* - *iraNtu* + *Am/Avan* → *iraNtAm/Avan*

Rule: *u* → 0 / *_A*

Class 3 - *mUnYrYu* - *mUnYrYu* + *Am/Avan* → *mUnYrYAm/Avan*

Rule: *u* → 0 *I_A*

Class 4 - *nAnYku* - *nAnYku* + *Am/Avan* → *nAnYkAm/Avan*

Rule: *u* → 0 / *_A*

Class 5 - *EnYwu* - *EnYwu* + *Am/Avan* → *EnuAm/Avan*

Rule: * → 0 / *_A*

Class 6 - *ArYu* - *ArYAm/Avan* → *ArYu* + *Am/Avan*

Rule: *u* → 0 *I_A*

Class 7 - *eYYu* - *eYAm/Avan* → *tVYu* + *Am/Avan*

Rule: *u* → Ø / *_A*

Class 8 - *eVrru* - *eVrrAm/Avan* → *eVttu* + *Am/Avan*

Rule: *u* → 0 / *_A*

Class 9 - *oVnYpawu* - *oVnYpawu* + *Am/Avan* → *oVnYpawu* + *Am/Avan*

Rule: *u* → 0 *f_A*

Class 10 - *pawwu* - *pawwu* + *Am/Avan* → *pawwu* + *Am/Avan*

Rule: *u* → 0 *I_A*

Class 11 - *nUrYu* - *nUrYAm/Avan* → *nUrYu* + *Am/Avan*

Rule: *u* → 0 / *_A*

Classes 12 and 13 involve a change of the final bilabial nasal to a geminated alveolar fricative, 'w'.

Class 12 - *Ayiram* - *AyirawundanY* → *Ayiram* + *utanY*

Rule: *w* → *m* / *_#*

Class 13 - **latcam** - *latcamvutanY* → *latcam* + *utanY*

Rule: **w** → **m** / _# (analysis)

Suffix allomorphy in the case of classes 12 and 13, would involve a **morphophonemic** insertion of the unit 'w', prior to case suffixation.

Class 14 does not exhibit any allomorphy.

Complex morphophonemics are involved at the GNP level of inflection in numerals. The gender, number and person markers (GNP), that pronouns take on as suffixes are restricted to the first eight classes of the paradigm. Each of these classes involves distinct morphophonemic processes, peculiar to them alone. In consequence, no simple direct rule derivations are provided here. The classes of stems that undergo change for GNP marking are:

Class 1 can accommodate, the 3rd. person feminine, masculine, neuter or the honorific personal ending suffixes.

Class 1 - **oVnYrYu** - *oVru* → *oVnYrYu* + *var*

Classes 2 to 8 can take on only, the 3rd. person honorific suffix.

Class 2 - **iraNtu** - *iravar* → *iraNtu* + *var*

Class 3 - **mUnYrYu** - *mUvar* → *mUnYrYu* + *var*

Class 4 - **nAnYku** - *nAivar* → *nAnYku* + *var*

Class 5 - **EnYwu** - *Evar* → *EnYwu* + *tar*

Class 6 - **ArYu** - *arivar* → *ArYu* + *var*

Class 7 - **eYYu** - *eVrYivar* → *eYYu* + *var*

Class 8 - **eVttu** - *eVNmar* → *eVttu* + *var*

Sl. No	14 Basic Stems	13 stem variants for case & ordinality	2 stem variants for number	8 stem variants for GNP*	3 oblique markers	8 case suffixes	2 ordinality suffixes	1 basic number suffix	1 number variant
1	oVnYrYu	oVnYrY	-	oVru	-	*Cases (1-8)	Am/Avawu	kalY	-
2	iraNtu	iraNt	-	iru	-	*Cases (1-8)	Am/Avawu	kalY	-
3	mUnYrYu	mUnYrY	-	mU	-	*Cases (1-8)	Am/Avawu	kalY	-
4	nAnYku	nAnYk	-	nAl	-	*Cases (1-8)	Am/Avawu	kalY	-
5	Enwu	Enw	-	E	-	*Cases (1-8)	Am/Avawu	kalY	-
6	ArYu	ArY	-	arYu	-	*Cases (1-8)	Am/Avawu	kalY	-
7	eIYYu	eIYY	-	eVIYYu	-	*Cases (1-8)	Am/Avawu	kalY	-
8	eVttu	eVtt	-	eVN	-	*Cases (1-8)	Am/Avawu	-	kkalY
9	oVnYpawu	oVnYpaw	-	-	-	*Cases (1-8)	Am/Avawu	kalY	-
10	pawwu	paww	-	-	-	*Cases (1-8)	Am/Avawu	kalY	kkalY
11	nUrYu	nUrY	-	-	rY	*Cases (1-8)	Am/Avawu	kalY	-
12	Ayiram	Ayira	Ayiraf	-	ww	*Cases (1-8)	wwu	kalY	-
13	latcam	latca	latcaf	-	ww	*Cases (1-8)	wwu	kalY	-
14	koti	-	-	-	-	*Cases (1-8)	-	kalY	-
* Accusative (E), Dative (ukku), Sociative (otu/utanY), Locative (il/itam), Instrumental (-Ah), Benefactive (ukku/ka), Ablative (ilirunwu/itamirunwu), Genitive (ntEya/inY/anY)									
GNP suffixes 3sh (nar) for all classes except class 8, 3sm (namY) & 3sf (wuu) for class 1, 3sh (mar)* for class 8									

Table 4.10: Total allomorphs for Numerals

The total number of resulting allomorphs would include 14 basic stems, 13 stem variants for case and ordinality, 2 stem variants for number, 8 stem variants for GNP marking, 2 oblique markers (x 8 case suffixes), 2 oblique markers (x 2 ordinality suffixes), 1 basic, and 1 variant allomorph for the plural number, 4 suffixes for gender, number and person. The total would then mean a sum of: 14 basic stems + 23 stem variants + 26 suffix variants = 63.

4.3.5 The Analyzer Chart for Numerals

The input to the 1 hybrid Tamil Morph would be a numeral form that undergoes a series of morphemic strippings at each level of inflection as illustrated in the chart that follows.

The string is first scanned for a possible clitic at level 1. If found, it is stripped off by the 'Clitic Stripper' and stored in a temporary array with its relevant tag. The rest of the string is reconstructed and passed on to the next level of inflectional scan. Level 2 is that of Particle stripping. A similar processing takes place here, with the Particle being stripped off, tagged, and stored in a temporary array, the remaining string being reconstructed and passed on to the level 3 of Postpositions. This proceeds to level 4 of Adverbials, where an adverbial found is stripped away. Until after the level of adverbial extensions, case inflections remain.

Any of the eight cases that fall under either the Nominative or Oblique, is recognized, and the case marker stripped off by the 'Case Stripper'. The next level of number marking is tackled by the 'Number Stripper' that reconstructs the numeral base after the number has been determined. The resulting string is declared as the stem numeral, with the rest of the remaining inflections and suffixes declared **with** their tags, as encountered at each level of the parse.

A comprehensive list of all numeral affixes is also provided alongside.

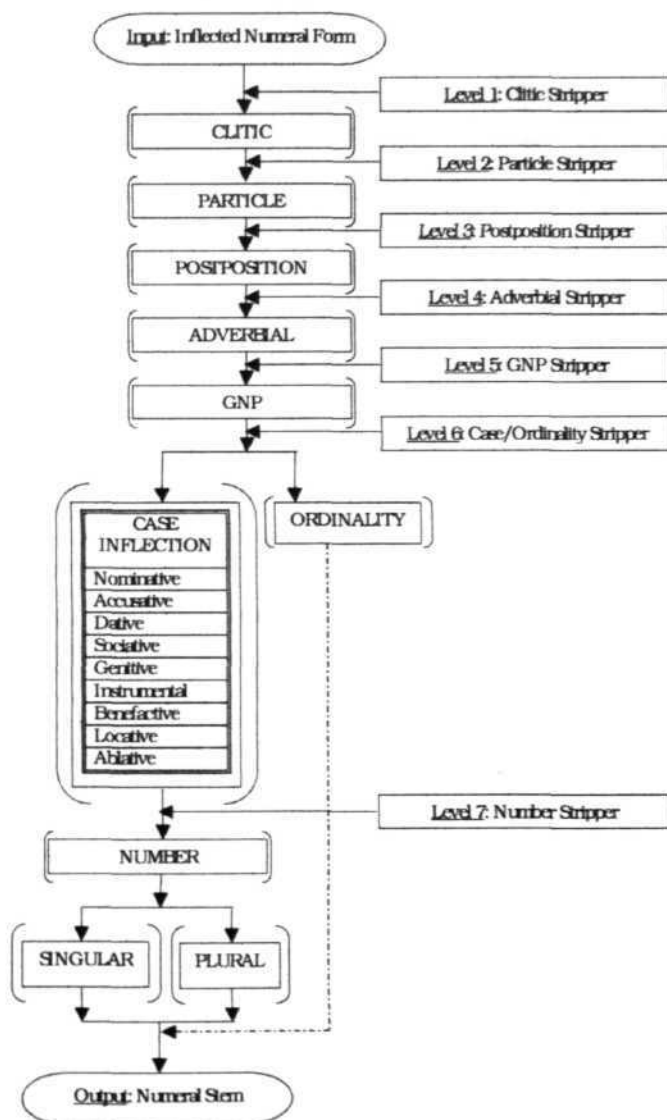


Figure 4.3(a): Morphological Analyzer Chart: Numeral

Numeral Inflections

Clitics: Awawu, A, o, e, um, kUta, mattum, wAnY, Am
Particles after the Oblique: maNi, viwam, murYE, kAl, cilar, cirYu, wale, vakE, peVyar, kAl, arYE, arYEkkAl, mukkkAl Particles after the Nominative: mAwiri, pol, pola, ponYrYu, ponYrYa, eVnYrYu, eVnYrYa, eVnYum, eVnYa, eVnYpawu, eVnYappaturawu, Particles after the Accusative: wavira, vita, darYrYi
Postpositions after the Accusative: kuriwwu, koVNtu, wavirwwu, kAttilum, mattilum
Adverbials after the Locative/Dative: alYavu, vAkku, ulY, eVlAm
GNP Inflections: wwi, avanY, avar
Case Inflections: Ø, E, ukku/kku, inY(awu)/utEya, Al, utanY, il/itam, otu, ukkAka/kkAka, ilirunwu/itamirunwu
Ordinality Inflection: Am
Number Inflections: Ø, kaY/kkaY

Figure 4.3(b): List of Numeral Inflections/Suffixes

Chapter 5

Verbs

5.1 VERBS

A **verb** form in Tamil may occur inflected for either Finite or Non-Finite. The basic distinction between the two is that finite verbs, which inflect for Tense, Aspect and Mood, are always and immediately followed by Gender, Number and Person whereas **non-finite verbal** forms are not.

5.1.1 Verb Classes

Considering the variation exhibited by the verbs in inflection, the following distinctions in paradigms have been established. Based on the verb stem and suffix allomorphy a total of 24 classes of verbs have been distinguished. (See Table 5.1)

No.	Lexical entry - Imperative	Past Stem] - Past Suffix	Present Stem] - Present Suffix	Future Stem] - Future Suffix	Infinitive Stem] - Infinitive Suffix
1	Aku	A nY	A kirY	A v	Ak a
2	AlY	AN t	AlY kirY	AlY v	AlY a
3	alYYu	alYYu w	AlYYu kirY	alYYu v	alYY a
4	cA	ceV ww	cA kirY	cA v	cA ka
5	ceVl	ceVnY rY	ceVl kirY	ceVl v	ceVl la
6	ceVy	ceVy w	ceVy kirY	ceVy v	ceVy ya
7	coVl	coVnY nY	coVl kirY	coVl v	coVl la
8	eVnY	eVnY rY	eVnY kirY	eVnY p	eVnY a
9	ikalYY	ikalYY nw	ikalYY kirY	ikalYY v	ikalYY a
10	iru	iru nw	iru kkirY	iru pp	iru kka
11	kAN	kaN t	kAN kirY	kAN p	kAN a
12	kelY	ket t	ket kirY	ket p	ket ka
13	koVIY	koVN t	koVIY kirY	koVIY v	koVIY lYa
14	nil	ninY rY	nirY kirY	nirY p	nirY ka
15	no	noVnY w	no kirY	no v	no ka
16	pati	pati ww	pati kkirY	pati pp	pati kka
17	peVrYu	peVrY rY	peVrYu kirY	peVrYu v	peVrY a
18	po	po nY	po kirY	po v	po ka
19	potu	pot t	potu kirY	pot v	pot a
20	pUN	pUN t	pUNu kirY	pUNu v	pUN a
21	uN	uN t	uN kirY	uN p	uN Na
22	vA	va nw	varu kirY	varu v	var a
23	vilYYu	vilYYu nw	vilYYu kirY	vilYYu v	vilYY a
24	wUfku	wUfk inY	wUfku kirY	wUfku v	wUfk a

Table 5.1: Verb Classes

5.1.2 Levels Of Verbal Extensions

Finite verbs have the following levels of extensions:

Level 1: Tense non-finite inflections	(obligatory)	(Primary)
Level 2: Auxiliary Verb	(optional)	(Secondary)
Level 3: Gender, Number, Person	(obligatory)	(Secondary)
Level 4: Particle	(optional)	(Tertiary)
Level 5: Clitic	(optional)	(Tertiary)

The construction of a finite verb can be shown thus:

Verb + **Tense/Non-finite** inflection + Aux.Vb + **Gender,Number,Person** + Particle + Clitic

In the process of analysis, Clitics form the outermost layer of verbal analysis. They are optionally preceded by Particles. Particles follow the GNP suffixes at the third level of suffixation, if the verb stem is a finite form. The next level is occupied by Tense. Auxiliary verbs assume an optional layer between the stem and the Tense. These decompose into the verbal root.

A non-finite verb can be analyzed as:

Non-finite Verb + **Infl** (Tense) (+ Aux.Vb) + **Advl** + Particle + Clitic

5.1.3 Analyzing Verbs

A verb form in Tamil may occur inflected for either Finite or Non-Finite. The basic distinction between the two is that finite verbs, which inflect for Tense, Aspect and Mood are always and immediately followed by Gender, Number and Person, whereas non-finite verbal forms are not.

5.1.3.1 Clitics

Clitics of the following kind occur after finite as well as non-finite verb forms to realize various **morphosyntactic** functions as noted below. Votive clitics are a list of addressives that denote the referent or an addressee. Votive clitics show **variations** for number, and gender. Any of the following votive clitics can be attached to any finite verb form. Votive clitics, like grammatical function clitics, are optional. They follow the terminal layer.

Clitic	Feature / Function Value
+ um	Conjunctive
+ o	Disjunctive, Complementative, Dubitative
+ e	Emphatic2
+ wAnY	Emphatic1
+ A	Interrogative
+ mattum	Restrictive
+ kUta	Inclusive
+ Avawu	Minimal, Coordinative
+ Am	Suppositive
+ ata	Vocative/3 rd , Singular, Masculine
+ atey	Vocative/3 rd , Singular, Masculine, / 3 rd , Plural, Human
+ atI	Vocative/3 rd , Singular, Feminine

+ ayyA	Vocative/3 rd . Singular, Human, Hononific, Masculine
+ ammA/mA	Vocative/3 rd . Singular, Human, Hononific, Feminine
+ appA/pA	Vocative/3 rd . Singular, Human, Hononific, Masculine
+ afka/ufka	Vocative/3 rd . Plural, Human, Colloquial

Table 5.2 Clitics

5.1.3.2 Particles

Of the list of particles given below, there are selectional restrictions on the kind of particle chosen to place after a verb of a particular inflectional type. Particles of the following kind occur after finite as well as non-finite verb forms to realize various morphosyntactic functions as noted below.

Particle	Feature / Function Value
eVnpawu	Quotative1
eVnYrYu	Quotative2
eVnYrYa	Quotative3
eVnYa	Quotative4
eVnYrAl	Quotative-suppositional
mAwiri	Comparative5
AnYAl	Suppositional

Table 5.3: Particles

Vb.Past + Particle

Particles that are attached directly to the past finite form of the verb.

Ex. ayalY kAtrukku ponYAIY el' *nYpawu* nijam

It's true that she did go to the forest

Vb.Present + Particle

Particles that are attached directly to the present finite form of the verb.

Ex. ayalY ippolYYuwu camEkkirYAIY el' *nYrAl*/nAnY pokamAttenY

I won't leave, if she is cooking now.

Vb.Future+ Particle

Particles that are attached **directly** to the future finite form of the verb.

Ex. Acariyar eVnYnYE atippAro el' *nYa* nampukirYenY

I believe **that** the teacher would beat me.

Vb. Negative Past + Particle

Particles that are attached directly to the negative past finite form of the verb.

Ex. avanY pEyyE wirutaville el' *nYr'a* nijam veVIYivanwawu

The truth that he did not steal the bag became obvious.

Vb.Negative Future + Particle

Particles that are attached directly to the negative finite form of the verb.

Ex. avanY pEyyE wirutamAttanY el' *nYru* nampufkalY

Believe that he would not steal the bag

Vb.Imperative+ Particle

Particles that suffix directly on to the imperative form of the verb.

Ex. ‘ceVy’, *ceVnYrYa* ucoVnYnYenY

I said "Do it"

Vb.Hortative+ Particle

Particles that attach to the hortative form of the verb.

Ex. patikkalAm *AmYAl* puriyumA?

Let’s read, but would we understand?

Vb.NegativeVbl.PrtpI + Particle

Particles that are attached directly to the negative form of the verbal participle.

Ex. kAwu ketkkAwa *mAmiri* natiwwAnY

He acted as if he was deaf

5.1.3.3 ADVERBIALS

Adverbials follow only the Adjectival participial forms of verbs. Adverbials 1 follow the Present, Past and Future forms, while Adverbials 2, follow the Negative adjectival participle.

Adverbials – 1			
Adverbial	Feature / Function Value	Example	Gloss
pinY	Temporal (fut)	ceVnYrYa pinY	After having gone
pirYaku	Temporal (fut)	ceVywa pirYaku	After doing
pirYpAru	Temporal (fut)	coVnYnYa pirYpAru	After having said
pinYpu	Temporal (fut)	cAppitta pinYpu	After eating
munYpu	Temporal (pst)	ceVyyum munYpu	Before doing
varE	Spatial	coVlkirYa varE	Until said
appoVITYuwu	Temporal (indef)	ceVywa appoVITYuwu	When it was done
appuram	Temporal (indef)	cAppitta appuram	After having eaten
utanY	Temporal (indef)	ceVywa utanY	As soon as it was done

Table 5.4(a): Adverbials

Adverbials – 2			
Particle	Feature / Function Value	Example	Gloss
varE	Spatial	coVlAwa varE	Not until said
appoVITYuwu	Temporal (indef)	ceVyyAwa appoVITYuwu	When it was not done

Table 5.4(b): Adverbials

5.1.3.4 AUXILIARY VERBS

An Auxiliary verb is that which attaches to another verb, imparting an extensible meaning to the verbal phrase as a whole. As indicative of their verbal function, they are identifiably restricted to the category of verbs. Verbal extensions involving auxiliary verbs are possible

only in case the main verb is inflected for the infinitive, or a verbal participle. Auxiliary verbs, when attached to a verb stem, indicate various functions such as Aspect, Modality, and Voice.

In a sequence of one or more verbs, the functional head of the verb phrase lends itself to both finite and non-finite morphological inflections. The lexical head remains inert. The two together behave as a single **morphosyntactic** unit. In literature, verbs other than the main verbs are termed as light verbs, vectors, explicators and auxiliaries. Such verbs are bleached of their lexical sense. They are a group of secondary verbs that "bring changes in the valence, voice and certain aspects of the viewpoint of the action denoted by the main verb" (Uma Maheshwara Rao 2002, Annamalai & Steever 1998, Hook 1974, Subbarao).

Annamalai & Steever (1998) define the role of auxiliary compound verbs as conveying "grammatical categories that are not expressed by any simple verbal inflection of the language."

Accordingly, explicators and auxiliaries occur on any of the following types of verb structures:

- 1) Causative Verbs: V|*caus* (ex: vE, coVl)
- 2) Intransitive Verbs: V|*intr* (+ sudden change of state) (ex: utE, viri)
- 3) Intransitive Verbs: V|*intr* (- sudden change of state) (ex: karugu, koVwi)

The Auxiliaries can be grouped into 2 different classes based on their distribution and function.

5.1.3.4.1 Auxiliary Verb Class 1 (AuxVbl)

There are 13 auxiliary verbs in this class. These occur on the infinitival form of the verb. It can occur with both transitive and intransitive verbs.

Auxiliary Verb	Feature Value	Function Value	Example: Vb + Inf + Aux	Gloss
vE	Direct Causative	Valence	avE uUfka vE	make s'one/thing sleep
koV'tu	Completive	Valence	cAppita koV'tu	give s'one/thing to eat
coV'l	Indir. Causative	Valence	peca coV'l	ask s'one/thing to talk
potu	Completive	Valence	woykeka potu	put s'thing to be washed
po	Inceptive	Valence	cAppita po	about to eat
patu	Passive	Voice	atikka pattavu	was being beaten
vitu	Permissive	Deontic	patikka vitu	allow s'one/thing to read
mutiyum	Abilitative	Deontic	ceV'ya mutiyum	I can do
illE	Negative	Defective Verb	uUfka illE	did not sleep
kuLAwu	Prohibitive1	Defective Verb	ciV'ikka kuLAwu	should not laugh
veNtAm	Prohibitive2	Defective Verb	poka veNtAm	need not go
veNtum	Necessitative	Defective Verb	poka veNtum	should go
avacyam illE	Prohibitive3	Defective Verb	avacyam illE	not necessary

Table 5.5(a): Auxiliary Verbs 1

5.1.3.4.2 Auxiliary Verb Class 2 (AuxVb2)

There are 10 auxiliary verbs in this class. These occur on the positive verbal participial form of a verb. It can occur with both transitive and intransitive verbs.

Auxiliary Verb	Feature Value	Function Value	Example: Vb + Vb.Ppl + Aux	Gloss
<i>potu</i>	Completive	Viewpoint	<i>woywu potu</i>	finish washing
<i>po</i>	Completive	Viewpoint	<i>karEnnu po</i>	lessen/decrease
<i>vE</i>	Beneficial	Viewpoint	<i>camEnnu vE</i>	keep s'thing cooked
<i>wIr</i>	Certainitive	Viewpoint	<i>ceVyu wIruvenY</i>	(at any cost) I'll do it !
<i>muti</i>	Completive	Viewpoint	<i>cAppittu muti</i>	finish eating
<i>woVIE</i>	Contemptive	Viewpoint	<i>paNNi woVIE</i>	(for heaven's sake)do it!
<i>pAr</i>	Attemptive	Viewpoint	<i>avanYitam peci pAr</i>	try talking to him
<i>koVnY</i>	Reflexive	Viewpoint	<i>nIye ceVyu koVnY</i>	do it yourself
<i>waYnY</i>	Intensive	Viewpoint	<i>eVnYam waYnYinYAY</i>	she went on writing
<i>AyirYnY</i>	Completive	Defective Verb	<i>ceVyu AyirYnY</i>	has been finished

Table 5.5(b): Auxiliary Verbs 2

5.1.4 FINITE & NON-FINITE VERB FORMS

5.1.4.1 FINITE VERB FORMS

There are ten distinct finite verb forms in Tamil. Five of these have tense markers followed by a full set of GNP suffixes, while the rest have selectional restrictions in the choice of GNP suffixes.

5.1.4.1.1 GENDER, NUMBER AND PERSON

As part of gender, number and person inflections on verbs (features of finite verb agreement), four distinct classes of GNP suffix sets are found, characteristic of a particular set of finite inflections:

Class	Functional Category	Feature Value (GNP)	Example (v+fc+fv)	Gloss
1	Imperative	Singular - Ø	<i>wUfku</i>	Sleep
		Plural - <i>kalY</i>	<i>wUfku^{kalY}</i>	Sleep (hon.)
2	Negative Future	1sa - <i>enY</i>	<i>wUfka^{enY}</i>	I will not sleep
		1pa - <i>om</i>	<i>wUfka^{om}</i>	We will not sleep
		2sa - <i>Ay</i>	<i>wUfka^{Ay}</i>	You will not sleep
		3sm - <i>AnY</i>	<i>wUfka^{AnY}</i>	He will not sleep
		3sf - <i>AIY</i>	<i>wUfka^{AIY}</i>	She will not sleep
		3sh - <i>Ar</i>	<i>wUfka^{Ar}</i>	He/She (hon.) will not sleep
		3p - <i>ArkaY</i>	<i>wUfka^{ArkaY}</i>	They will not sleep
3	Prohibitive	2s - <i>e</i>	<i>wUfka^e</i>	Don't sleep
4	Past, Present, Future	2ph - <i>IrkaY</i>	<i>wUfka^{IrkaY}</i>	You (hon.) slept
		1sa - <i>enY</i>	<i>wUfka^{enY}</i>	I slept
		1pa - <i>om</i>	<i>wUfka^{om}</i>	We slept

	2sa – Ay	<i>wUʃkeɪnYʔAy</i>	You slept
	2pa– IrkaY / eY / fka	<i>wUʃkeɪnYʔIrkaYʔ</i>	You (hon.) slept
	3sm – AnY	<i>wUʃkeɪnYʔAnYʔ</i>	He slept
	3sf – AIY	<i>wUʃkeɪnYʔAIYʔ</i>	She slept
	3sn – awu / um	<i>wUʃkeɪnYʔawu / wUʃkeum</i>	It slept
	3pi – anYa	<i>wUʃkeɪnYʔa</i>	They slept
	3h – Ar	<i>wUʃkeɪnYʔAr</i>	He/She (hon.) slept
	3ph – ArkaY	<i>wUʃkeɪnYʔArkaYʔ</i>	They slept

Table 5.6: GNP classes for Verbs

5.1.4.1.2 TENSE, ASPECT, MODALITY

5.1.4.1.2.1 PAST

Depending on the conjugational class of the verb, the past tense suffix exhibits the allomorphs: *[nYʔ]*, *[t]*, *[w]*, *[ww]*, *[ʔYʔ]*, *[nw]*, *[inYʔ]*. Verbs are classified as eighteen types, based on the variations exhibited by verb stem before the past tense inflection. The following is a list of how verbs decline for the past tense.

Verbal stem + Past tense

Examples:

Sl.No.	Class	Lexical Meaning	Inflected Form	Gloss
1	<i>Aku</i>	become	<i>A+nYʔ+enYʔ</i>	I became
2	<i>Aʔ</i>	rule	<i>AʔN+i+enYʔ</i>	I ruled
3	<i>aʔYʔu</i>	cry	<i>aʔYʔu+w+enYʔ</i>	I cried
4	<i>eA</i>	die	<i>eAʔ'+w+enYʔ</i>	I died
5	<i>eVʔ</i>	go	<i>eAʔ'+nYʔ+ʔYʔ+enYʔ</i>	I went
3	<i>eVʔy</i>	do	<i>eAʔ'+y+w+enYʔ</i>	I did
6	<i>eVʔʔ</i>	say	<i>eAʔ'+nYʔ+nYʔ+enYʔ</i>	I said
7	<i>eVʔnYʔ</i>	think	<i>eVʔnYʔ+ʔYʔ+enYʔ</i>	I thought
8	<i>ikuʔYʔ</i>	disparage	<i>ikuʔYʔ+nu+enYʔ</i>	I disparaged
8	<i>iru</i>	be	<i>iru+nu+enYʔ</i>	I had been
9	<i>kaAN</i>	see	<i>kaAN+i+enYʔ</i>	I saw
10	<i>keʔ</i>	listen	<i>keʔ+i+enYʔ</i>	I listened
2	<i>koVʔʔ</i>	hold	<i>koVʔʔN+i+enYʔ</i>	I held
5	<i>niʔ</i>	stand	<i>niʔYʔ+ʔYʔ+enYʔ</i>	I stood
11	<i>no</i>	pain	<i>noVʔ+nu+enYʔ</i>	I was pained
12	<i>pai</i>	read	<i>pai+w+enYʔ</i>	I read
13	<i>peVʔʔʔu</i>	get	<i>peVʔʔʔ+ʔYʔ+enYʔ</i>	I got
14	<i>po</i>	go	<i>po+nYʔ+enYʔ</i>	I left / went
15	<i>potu</i>	drop	<i>pot+i+enYʔ</i>	I dropped
16	<i>pUN</i>	wear	<i>pUN+i+enYʔ</i>	I wore
16	<i>uN</i>	eat	<i>uN+i+enYʔ</i>	I ate
17	<i>uA</i>	come	<i>uA+nu+enYʔ</i>	I came
8	<i>niʔYʔʔu</i>	fall	<i>niʔYʔʔu+nu+enYʔ</i>	I fell
18	<i>wUʃkeu</i>	sleep	<i>wUʃke+inYʔ+enYʔ</i>	I slept

5.1.4.1.2.2 PRESENT

The present and present continuous tense are indicated by the suffix /*kirŋ*/ or by its allomorphic variant [*kekirŋ*]. Verbs when inflected for the present continuous tense exhibit seven classes of stem variation before the suffix. The following is a list of how verbs decline for the present continuous tense.

Verbal stem + Present tense

Examples:

Sl.No.	Class	Lexical Meaning	Inflected Form	Gloss
1	<i>Aku</i>	become	<i>A+kirŋ+enŋ</i>	I am becoming
2	<i>Añ</i>	rule	<i>Añ+kirŋ+enŋ</i>	I am ruling
2	<i>añŋu</i>	cry	<i>añŋu+kirŋ+enŋ</i>	I am crying
2	<i>ɕA</i>	die	<i>ɕA+kirŋ+enŋ</i>	I am dying
2	<i>ɕV/</i>	go	<i>ɕV/+kirŋ+enŋ</i>	I am going
2	<i>ɕV/y</i>	do	<i>ɕV/y+kirŋ+enŋ</i>	I am doing
2	<i>ɕV/</i>	say	<i>ɕV/+kirŋ+enŋ</i>	I am saying
2	<i>eV/nŋ</i>	think	<i>eV/nŋ+kirŋ+enŋ</i>	I am thinking
2	<i>ikañŋŋ</i>	disparage	<i>ikañŋŋ+kirŋ+enŋ</i>	I am disparaging
3	<i>iru</i>	be	<i>iru+kekirŋ+enŋ</i>	I am being
2	<i>kAN</i>	see	<i>kAN+kirŋ+enŋ</i>	I am seeing
4	<i>keñ</i>	listen	<i>ket+kirŋ+enŋ</i>	I am listening
2	<i>koV/ñ</i>	hold	<i>koV/ñ+kirŋ+enŋ</i>	I am holding
5	<i>ni</i>	stand	<i>nirŋ+kirŋ+enŋ</i>	I am standing
2	<i>no</i>	pain	<i>no+kirŋ+enŋ</i>	I am paining
3	<i>pati</i>	read	<i>pati+kekirŋ+enŋ</i>	I am reading
2	<i>peV/ñŋu</i>	get	<i>peV/ñŋu+kirŋ+enŋ</i>	I am getting
2	<i>po</i>	go	<i>po+kirŋ+enŋ</i>	I am leaving/going
2	<i>potu</i>	drop	<i>potu+kirŋ+enŋ</i>	I am dropping
6	<i>pU/N</i>	wear	<i>pU/Nu+kirŋ+enŋ</i>	I am wearing
2	<i>uN</i>	eat	<i>uN+kirŋ+enŋ</i>	I am eating
7	<i>uA</i>	come	<i>uru+kirŋ+enŋ</i>	I am coming
2	<i>uñŋŋu</i>	fall	<i>uñŋŋu+kirŋ+enŋ</i>	I am falling
2	<i>wU/ku</i>	sleep	<i>wU/ku+kirŋ+enŋ</i>	I am sleeping

5.1.4.1.2.3 FUTURE

Unlike in the past or in the present tense inflections, verb stems in the future exhibit less variation. However, the tense marker itself has three allomorphs determined by the corresponding verb stems, as: [*u*] [*p*] [*pp*]. There are totally nine classes of verb stem variation before the future tense inflection. The following is a list of how verbs decline for the future tense.

Verbal stem + Future tense

Examples:

Sl.No.	Class	Lexical Meaning	Inflected Form	Gloss
1	<i>Aku</i>	become	<i>A+r+enŋ</i>	I will become
2	<i>Añ</i>	rule	<i>Añ+r+enŋ</i>	I will rule
2	<i>añŋu</i>	cry	<i>añŋu+r+enŋ</i>	I will cry
2	<i>ɕA</i>	die	<i>ɕA+r+enŋ</i>	I will die
2	<i>ɕV/</i>	go	<i>ɕV/+r+enŋ</i>	I will go
2	<i>ɕV/y</i>	do	<i>ɕV/y+r+enŋ</i>	I will do
2	<i>ɕV/</i>	say	<i>ɕV/+r+enŋ</i>	I will say

3	<i>eV'nŋ'</i>	think	<i>eV'nŋ'+p+enŋ'</i>	I will think
2	<i>ikaŋŋ'</i>	disparage	<i>ikaŋŋ'+v+enŋ'</i>	I will disparage
4	<i>iru</i>	be	<i>iru+pp+enŋ'</i>	I will be
5	<i>kaN</i>	see	<i>kaN+p+enŋ'</i>	I will see
6	<i>keŋ'</i>	listen	<i>ket+p+enŋ'</i>	I will listen
2	<i>koV'ŋ'</i>	hold	<i>koV'ŋ'+v+enŋ'</i>	I will hold
7	<i>niŋ</i>	stand	<i>niŋ'+p+enŋ'</i>	I will stand
2	<i>no</i>	pain	<i>no+v+enŋ'</i>	I will pain
4	<i>pati</i>	read	<i>pati+pp+enŋ'</i>	I will read
2	<i>peV'ŋ'u</i>	get	<i>peV'ŋ'u+v+enŋ'</i>	I will get
2	<i>po</i>	go	<i>po+v+enŋ'</i>	I will leave / go
2	<i>potu</i>	drop	<i>potu+v+enŋ'</i>	I will drop
8	<i>pUN</i>	wear	<i>pUNu+v+enŋ'</i>	I will wear
5	<i>uN</i>	eat	<i>uN+p+enŋ'</i>	I will eat
9	<i>uA</i>	come	<i>Varu+v+enŋ'</i>	I will come
2	<i>uŋŋ'u</i>	fall	<i>uŋŋ'u+v+enŋ'</i>	I will fall
2	<i>wUŋku</i>	sleep	<i>wUŋku+v+enŋ'</i>	I will sleep

5.1.4.1.2.4 NEGATIVE PAST

The negative past form of a finite verb is indicated by attaching the marker *illE*, on the infinitival base of the verb. There are no distinct gender, number or person indicators. I however, the ending indicates a neutralized GNP.

Verbal stem + Infinitive base + *illE*

Examples:

<i>nANŋ' wUŋkavillE</i>	I did not sleep
<i>nAŋkaŋŋ' wUŋkavillE</i>	We did not sleep
<i>nI wUŋkavillE</i>	You did not sleep
<i>nŋŋkaŋŋ' wUŋkavillE</i>	You (p/h) did not sleep
<i>avavŋ' wUŋkavillE</i>	He did not sleep
<i>avavŋ' wUŋkavillE</i>	She did not sleep
<i>avar wUŋkavillE</i>	He/She (h) did not sleep
<i>avarkavŋ' mIŋkavillE</i>	They did not sleep
<i>avvu wUŋkavillE</i>	It did not sleep

5.1.4.1.2.5 NEGATIVE FUTURE

The negative future form of a finite verb is expressed by attaching the marker *mAtt*, on the infinitival base of the verb, followed by the relevant GNP suffix.

Verbal stem + Infinitive base + *mAtt* + GNP

Examples:

<i>nA nŋ' cAppitamA ttenŋ'</i>	I will not eat
<i>nAŋkaŋŋ' cAppitamA ttom</i>	We will not eat
<i>mI cAppitamA ttAy</i>	You will not eat
<i>nŋŋkaŋŋ' cAppitamA ttIrkaŋŋ'</i>	You (p/h) will not eat
<i>maI' cAppitamA ttANŋ'</i>	He will not eat
<i>avaŋŋ' cAppitamA ttANŋ'</i>	She will not eat
<i>mar cAppitamA ttAr</i>	He/She (h) will not eat
<i>avarkavŋ' cAppitamA ttA rkaŋŋ'</i>	They will not eat

5.1.4.1.2.6 IMPERATIVE

The imperative stem is often identical to the root form of the verb. There is no explicit inflectional increment that is exhibited by the imperative word form. In the imperative, plural number is inflected for the plural suffix.

Verbal stem + Imperative marker¹

Examples:

<i>uUfku</i>	Sleep (s)
<i>uUfku + ufkaiY'</i>	Sleep (p/h)

5.1.4.1.2.7 PROHIBITIVE

The negative imperative form that also functions as the prohibitive is marked by the inflection *Aw*, followed by the second person suffix, in the singular /e/, and in the plural /IrkaY'/. The verb stem which ends in a vowel, loses it, before the prohibitive suffix.

Verbal stem + Infinitive base + Aw + 2nd.GNP

Examples:

<i>uUf + Aw + e</i>	Do not sleep (s)
<i>uUfku + Aw + IrkaY'</i>	Do not sleep (p/h)
<i>cAppit + Aw + e</i>	Do not eat (s)
<i>cAppit + Aw + IrkaY'</i>	Do not eat (p/h)

5.1.4.1.2.8 ADMONITIVE

The suffix that marks the admonitive form of the verb is the suffix *a*, adds on to the infinitival base of the verb. Admonitives function as expletives.

Verbal stem + Infinitive base + a

Example:

<i>avunY' nAcamApok + a</i>	Fie upon him!
<i>urn)' uttu pAAY' Ak + a</i>	May TOUT house be destroyed!

5.1.4.1.2.9 HORTATIVE

The verbal form that functions as the hortative is derived from the infinitival form of the verb and adding the suffix *Am* to it.

Verbal stem + Infinitive base + /Am

Example:

<i>uUfkaAm</i>	Let us sleep
<i>cAppitaAm</i>	Let us eat

5.1.4.2 NON-FINITE VERB FORMS

Non-finite verb forms are usually known as verb forms without agreement marking, such as gender, number and person. A non-finite verb form at the tertiary level is inflected for verbal participles, adjectival participles, conditionals, and infinitivals. These non-finite verbal

¹ The Imperative marker is always a zero morph in Tamil.

² Homophonous with the Infinitive suffix

participles and infinitives are a great source for the derivation of complex, compound verbal forms by auxiliation (Steever 1987).

5.1.4.2.1 PARTICPLES

Participles are of two types: Adjectival and Verbal.

5.1.4.2.1.1 Adjectival Participles

Adjectival participial forms are formed by the inflection of the suffixes similar to the past, and present, followed by the suffix *a*.

Example: Past Adjectival Participle

cAppitta that which has been eaten

Example: Present Adjectival Participle

cAppitukitYa that which is eating

However the adjectival participial forms indicative of the habitual aspect are derived differently by adding *um*.

Example: Habitual Participle

cAppitum that which will eat

Adjectival participles also have negative forms realized by suffixing *Awa*, to the verb stem.

Example: Negative Adjectival Participle

cAppitAwa that which has not been eaten

5.1.4.2.1.2 Verbal Participles

Verbal participles, that are tenseless, express two semantic features: Positivity, and Negativity. They indicate the accomplishment or the non- accomplishment of an action or event, indicated by the verb. Positive verbal participles are formed by the suffixation of the markers *uu*, and its various allomorphs *tu*, *ŋu*, *nYu* and *i*.

Examples: Positive Verbal Participle

<i>uuŋk + i</i>	having slept
<i>cAppit + tu</i>	having heard

Negative verbal participles are obtained by suffixing *Amal*, to the verb base.

Examples: Negative Verbal Participle

<i>uuŋk + Amal</i>	not having slept
<i>cAppit + Amal</i>	not having eaten

5.1.4.2.2 CONDITIONALS

Conditionals are of three types: Positive, Negative and, Durative.

5.1.4.2.2.1 Positive Conditionals

The Positive conditional is formed by the suffixation of *A/*, to the past verb stem.

Examples: Positive Conditional

wUjkeA/ if you sleep
cAppitA/ if you eat

5.1.4.2.2.2 Negative Conditionals

Negative conditional is formed by the suffixation of the negative conditional marker *AnitA/* to the infinitival form of the verbal stem.

Examples: Negative Conditional

wUjkeAnitA/ if you do not sleep
cAppitAnitA/ if you do not eat

5.1.4.2.2.3 Durative Conditionals

Durative conditionals may be realized by the attachment of the auxiliary complex *koVNiru* on the past verb base followed by the conditional suffix *AL*

Examples: Durative Conditional

wUjkekoVNirumuA/ Had I been sleeping
cAppitukekoVNirumuA/ Had I been eating

5.1.4.23 INFINITIVES

Infinitival verb forms are a tenseless class of non-finite verb forms. The infinitive of a verb is obtained by suffixing the marker *a*, to the verbal base. Verb stems when inflected for the infinitive exhibit stem allomorphy which involve doubling of the stem final consonants when preceded by a short vowel, besides many other idiosyncrasies as shown below. There are totally eleven classes of verb stem variation before the future tense inflection. The following is a list of how verbs decline for the infinitive.

Verbal stem + Infinitival Base

Examples:

Sl.No.	Class	Lexical Meaning	Inflected Form	Gloss
1	<i>Aku</i>	become	<i>Ak+a</i>	to become
2	<i>Añ'</i>	rule	<i>Añ'+a</i>	to rule
1	<i>añ'Y'u</i>	cry	<i>añ'Y'+a</i>	to cry
3	<i>cA</i>	die	<i>cA+ka</i>	to die
4	<i>av'l</i>	go	<i>av'l+la</i>	to go
5	<i>av'y</i>	do	<i>av'y+ja</i>	to do
4	<i>av'l</i>	say	<i>av'l+la</i>	to say
2	<i>eV'nñ'</i>	think	<i>eV'nñ'+a</i>	to think
2	<i>ikañ'Y'</i>	disparage	<i>ikañ'Y'+a</i>	to disparage
6	<i>iru</i>	be	<i>iru+ka</i>	to be
2	<i>kAN</i>	see	<i>kAN+a</i>	to see
7	<i>keñ'</i>	listen	<i>keñ'+ka</i>	to listen

8	<i>koVn'</i>	hold	<i>koVn'+n'a</i>	to hold
9	<i>ni</i>	stand	<i>niŋ'+ka</i>	to stand
3	<i>no</i>	pain	<i>no+ka</i>	to pain
6	<i>pati</i>	read	<i>pati+kka</i>	to read
1	<i>peVŋ'u</i>	get	<i>peVŋ'+a</i>	to get
3	<i>po</i>	go	<i>po+ka</i>	to leave / go
1	<i>patu</i>	drop	<i>poi+a</i>	to drop
2	<i>pUN</i>	wear	<i>PUN+a</i>	to wear
10	<i>uN</i>	eat	<i>uN+N'a</i>	to eat
11	<i>uA</i>	come	<i>uŋ'+a</i>	to come
1	<i>uŋŋ'u</i>	fall	<i>uŋŋ'+a</i>	to fall
1	<i>uUjku</i>	sleep	<i>uUjke+a</i>	to sleep

5.1.5 VERBS: MORPHOPHONEMICS & ALLOMORPHY

Verbs in Tamil are broadly classified as - the Finite and the Non-finite. Finite verb forms inflect for Tense and GNP.

The Non-Finite verb forms form bases for a variety of Aspectual and Modal forms. Structurally elaborating, non-finite forms fall under three large categories - the Infinitive, the Participles, and the Conditionals. The Infinitive form, one of the chief classifications, in the non-finite group, assumes the base for many non-finite inflections to realize. Participles branch into the Adjectival and the Verbal participles. The adjectival participle constitutes the Past, Present, Habitual and the Negative forms. The verbal participle constitutes the Positive and the Negative forms. Conditionals branch into the Positive, Negative and the Durative forms. The durative further ramifies into the Past and the Non-Past.

With regard to the morphophonemic changes that the verbs exhibit before various suffixes the following 24 types are illustrated with examples in what follows.

The past tense records 14 stem variants and 7 suffix variants:

Class 1 - **Aku** - $A nY \rightarrow A + nY$

Rule: No direct P-rule or MP rule applies (analysis)

Class 2 - **AiY** - $ANt \rightarrow AN + t$

Rule: $N \rightarrow ft' / _ \#$ (analysis)

Class 4 - **cA** - $ceVuw \rightarrow ceV' + uw$

Rule: $eV' \rightarrow A / _ \#$ (analysis)

Class 5 - **ceVI** - $ceVnYŋ' \rightarrow ceVnY + ŋ'$

Rule: $nY \rightarrow // _ \#$ (analysis)

Class 7 - **coVI** - $coVŋ' nY \rightarrow coVnY + nY$

Rule: $nY \rightarrow / / _ \#$ (analysis)

Class 11 - **fcAN** - $kaNt \rightarrow kaN + t$

Rule: $a \rightarrow A / _ N \#$ (analysis)

Class 12 - **keIY** - $keti \rightarrow ket + i$

Rule: $t \rightarrow ŋ' / _ \#$ (analysis)

Class 13 - **koVIY** - $koVNt \rightarrow koVN + i$

Rule: $N \rightarrow ŋ' / _ \#$ (analysis)

Class 14 - **ni** - $niŋŋ' \rightarrow niŋY + ŋ'$

Rule: $nY \rightarrow // _ \#$ (analysis)

Class 15 - *no* — $noVnw \rightarrow noVn + w$

Rule: $oV \rightarrow o / _ \#$ (analysis)

Class 17 - **peVrYu** - $peVrYrY \rightarrow peVrY^4 \ rY$

Rule: $rY \rightarrow u / _ \#$ (analysis)

Class 19 - *potu* - $pott \rightarrow pot + t$

Rule: $t \rightarrow u / _ \#$ (analysis)

Class 22 - *vA* - $vamv \rightarrow va + mv$

Rule: $a \rightarrow A / _ \#$ (analysis)

Class 24 - **wUfku** - $wUfkinY \rightarrow wUfke + inY$

Rule: $inY \rightarrow u / _ \#$ (analysis)

7 suffix allomorphic variants exist.

SL No	24 Basic Stems	14 stem variants for Past	5 stem variants for Present	5 stem variants for Future	9 stem variants for the Non-finite	7 Past tense suffix marker variants	2 Present tense suffix marker variants	3 Future tense suffix marker variants	9 stem variants for Infinitive	9 Non-finite based suffix variants	4 Past tense based suffix variants	1 Present tense based suffix variants
1	Aku	AnY	A	A	Ak	nY	kirY	v	a	+ *NF forms (1-9)	nY + *Pt. forms (1-4)	kirY + *Pt. form
2	AlY	AN	-	-	-	t	kirY	v	a	+ *NF forms (1-9)	t + *Pt. forms (1-4)	kirY + *Pt. form
3	alYYu	-	-	-	alYY	w	kirY	v	a	+ *NF forms (1-9)	w + *Pt. forms (1-4)	kirY + *Pt. form
4	cA	ceV	-	-	-	ww	kirY	v	ka	k + *NF forms (1-9)	ww + *Pt. forms (1-4)	kirY + *Pt. form
5	ceVI	ceVnY	-	-	-	rY	kirY	v	la	l + *NF forms (1-9)	rY + *Pt. forms (1-4)	kirY + *Pt. form
6	ceVy	-	-	-	-	w	kirY	v	ya	y + *NF forms (1-9)	w + *Pt. forms (1-4)	kirY + *Pt. form
7	coVI	coVnY	-	-	-	nY	kirY	v	la	l + *NF forms (1-9)	nY + *Pt. forms (1-4)	kirY + *Pt. form
8	eVnY	-	-	-	-	rY	kirY	p	a	+ *NF forms (1-9)	rY + *Pt. forms (1-4)	kirY + *Pt. form
9	ikalYY	-	-	-	-	nw	kirY	v	a	+ *NF forms (1-9)	nw + *Pt. forms (1-4)	kirY + *Pt. form
10	iru	-	-	-	-	nw	kkirY	pp	kka	kk + *NF forms (1-9)	nw + *Pt. forms (1-4)	kkirY + *Pt. form
11	kAN	kaN	-	-	-	t	kirY	p	a	+ *NF forms (1-9)	t + *Pt. forms (1-4)	kirY + *Pt. form
12	keY	ket	ket	ket	ket	t	kirY	p	ka	k + *NF forms (1-9)	t + *Pt. forms (1-4)	kirY + *Pt. form
13	koVY	koVN	-	-	-	t	kirY	v	lYa	lY + *NF forms (1-9)	t + *Pt. forms (1-4)	kirY + *Pt. form
14	nul	ninY	nirY	nirY	nirY	rY	kirY	p	ka	k + *NF forms (1-9)	rY + *Pt. forms (1-4)	kirY + *Pt. form
15	no	noV	-	-	-	nw	kirY	v	ka	k + *NF forms (1-9)	nw + *Pt. forms (1-4)	kirY + *Pt. form
16	pai	-	-	-	-	ww	kkirY	pp	kka	kk + *NF forms (1-9)	ww + *Pt. forms (1-4)	kkirY + *Pt. form
17	peVrYu	peVrY	-	-	peVrY	rY	kirY	v	a	+ *NF forms (1-9)	rY + *Pt. forms (1-4)	kirY + *Pt. form
18	po	-	-	-	-	nY	kirY	v	ka	k + *NF forms (1-9)	nY + *Pt. forms (1-4)	kirY + *Pt. form
19	potu	pot	-	-	pot	t	kirY	v	a	+ *NF forms (1-9)	t + *Pt. forms (1-4)	kirY + *Pt. form
20	pUN	-	pUNu	pUNu	-	t	kirY	v	a	+ *NF forms (1-9)	t + *Pt. forms (1-4)	kirY + *Pt. form
21	uN	-	-	-	-	t	kirY	p	Na	N + *NF forms (1-9)	t + *Pt. forms (1-4)	kirY + *Pt. form
22	vA	va	varu	varu	var	nw	kirY	v	a	+ *NF forms (1-9)	nw + *Pt. forms (1-4)	kirY + *Pt. form
23	vilYYu	-	-	-	vilYY	nw	kirY	v	a	+ *NF forms (1-9)	nw + *Pt. forms (1-4)	kirY + *Pt. form
24	wUfku	wUfk	-	-	wUfk	inY	kirY	v	a	+ *NF forms (1-9)	inY + *Pt. forms (1-4)	kirY + *Pt. form

Table 5.7: 'Total allomorphs for Verbs

This would yield 24 basic roots, 33 stem variants (14 past tense, 5 present tense, 5 future tense, 9 non-finite), 7 past tense suffix marker variants, 2 present suffix markers, 3 future tense suffix markers, 7 infinitive suffix variants, 7 (x 9) non-finite based suffix variants and 7 (x 4) past tense based suffix variants, 2 (x 1) present tense based suffix variants and 1 future tense suffix. The total would then mean a sum of: 24 basic roots + 33 stem variants + 12 markers + 7 infinitive markers + 63 non-finite based suffix variants + 31 finite/tensed based suffix variants = 170 verb allomorphs.

5.1.6 THE ANALYZER CHART FOR VERBS

The input to the Hybrid Tamil Morph would be a verb form that undergoes a series of morphemic stripping at each level of inflection as illustrated in the chart that follows.

The string is first scanned for a possible clitic at level 1. If found, it is stripped off by the 'Clitic Stripper' and stored in a temporary array with its relevant tag. The rest of the string is reconstructed and passed on to the next level of inflectional scan. Level 2 is that of Particle stripping. A similar processing takes place here, with the Particle being stripped off, tagged, and stored in a temporary array, the remaining string being reconstructed and passed on to the level 3 of Adverbials. This proceeds to level 4 of GNP marking, where a GNP suffix found is *stripped away*. This is followed by the level of Tense, and then Aspectual and Modal markers. If an Auxiliary Verb follows, the verb is seen as a non-finite base. The auxiliaries are stripped away, and so are the non-finite inflectional markers. The remaining verbal base is now reconstructed as the verb root, with all the relevant tagged morphemes that are stripped from and declared as the output.

A comprehensive list of all verbal affixes is also provided alongside.

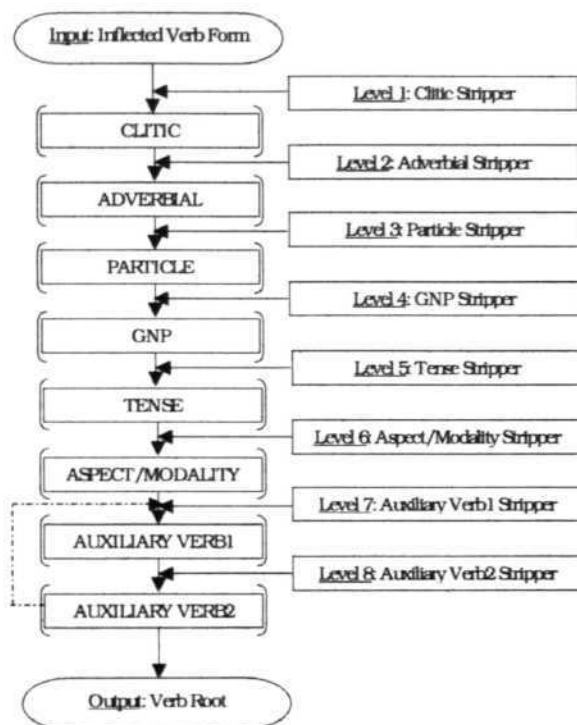


Figure 51(a): Morphological Analyzer Chart: Verb

Verbal Inflections

Clitics: Avawu, A, o, e, um, kUta, mattum, wAnY, Am Vocative Clitics: atA/tA, atI/tI, atey/tey, ayyA, ammA/mA, appA/pA, afka/ufka
Particles: eVnYpawu, eVnYrYu, eVnYrYa, eVnYa, eVnYrAl, mAwin, AnYAl
Adverbials: pinY, pirYaku, pirYpAtu, pinYpu, munYpu, varE, appoYYuwu, appuram, utanY
GNP Inflections: enY, om, Ay, IrkaLY/clY/Ifka, AnY, AIY, awu/um, Ar, ArkalY, anYa
Tense: tt/ww/t/inY/nY/rY/nw (Past), kirY/kkirY (Present), v/p/pp (Future)
Aspect & Modality: (a)lAm, (a)villE, (a)matt, Aw, Awa, Amal, AvittAl, um, koVNturu, Al
Auxiliary Verb1: (after the Infinitival base) vE, koVtu, coVl, potu, po, patu, vitu, mutiyum, illE, kUtAwu, veNtAm, veNtum, avaciyamillE
Auxiliary Verb2: (after the Positive Verbal Participle) potu, po, vE, wlr, muti, woVIE, pAr, koVIY, waLYYyu, AyirYrYu

Figure 5.1(b): list of Verbal Inflections/Suffixes

Chapter 6

Adjectives

6.1 Adjectives As A Category

Inflectionally, adjectives do have specific affixal patternings peculiar to them to mark them off as a category on their own. Therefore, one may consider adjectives as an inflecting class due to reasons explicated below. As to whether adjectives do constitute a separate morphological class, the perspectives follow thus¹.

Consider the following arguments for the given derivatory processes.

Argument 1:

The adverbial marker *Aka* can be attached only to a nominal base but not to an adjectival base.

Case1:

$$\begin{array}{c} [X] \\ N \end{array} + Aka \rightarrow [X][Aka]$$

Ex. *maram* + *Aka* → *maramAka*
'As a tree'

Case2:

$$\begin{array}{c} [X] \\ Ad. \end{array} + Aka \rightarrow [X] [PE] [PP]$$

Ex. **nalla* + *Aka* → **nallaAka*
'As a good one'

Argument 2:

The following operation clearly demarcates adjectives from nouns when a 3rd. person ending is added to the nominal and adjectival bases. So then, they result in two pronominalized word-forms however, having different senses as shown below:

Case1:

$$\begin{array}{c} [X] \\ N \end{array} + PE \rightarrow \text{'ofN'}$$

Ex. *maram* + *awu* → *maramawu*
'Of a tree'

Case2:

$$\begin{array}{c} [X] \\ Adj. \end{array} + PE \rightarrow \text{the Adj.-one}$$

Ex. *nalla* + *awu* → *nallawu*
The one that is good/the good one'

¹ For more details similar to this analysis see, Ramesh (1998)

Argument 3:

The particle *mAwiri* when follows an adjective needs necessarily be followed by *Aka*, an adverbial particle, after it. This obligatory following of an adverbial particle is not so, when the *same* particle follows a noun.

Case1:

[X] + mAwiri → [X mAwiri]
N_Nom.

Ex. *mar am + mAwiri* → *maram mAwiri*
like a tree'

maram mAwiri nirYkAwe
'Don't stand like a log'

Casc2:

[X] + mAwiri → * [XmAwiri]
but,

Adj.

[X] + mAwiri + Aka → [XmAwiriAka]

Adj.

Ex. *nalla + mAwiri + Aka* → *nallamAwiriAka*
'Is good'

avaN ro V'mpa nallamAwiriAka irukke.N
She very good like is — 3fem.sg.
'She seems to be very good'

Adjectives in Tamil are of two kinds: Basic, and Derived. Two basic adjectives are *nalla* and *punu*. Derived adjectives can be distinguished as belonging to two types: (1) Denominal adjectives: those adjectives that are derived from nouns; (2) Deverbal adjectives: those that are derived from verbs. Denominal adjectives are derived by adding the suffix /+iya/, to the base form of nouns. This can be shown as:

	[X] _N	↔	[Xiya] _{Adj}
Ex.	<i>aN Yaku</i>	↔	<i>aN Yakiya</i>
	'beauty'	↔	'beautiful'

Verbal adjectives are derived through the addition of the suffix /+a/, following the tense base of the verb. This can be seen as:

	[X] _N	↔	X (tense) a] _{Adj}
Ex.	<i>aV y</i>	↔	<i>aV ywa</i>
	'do'	↔	'that which has been done'

Adjectives in Tamil do not morphologically mark comparative and superlative degrees of relation. To syntactically express these, either of the two nominal postpositions, *pola*, and *vita* is used after the oblique form of a noun, which performs the predicative adjectival function. Although adjectives can be derived from both nouns, and verbs, taking on their suffixes, what really brings in morphological distinction, is the phenomenon of *Affixal Homonymy*.

6.1.1 Levels Of Adjectival Extensions

Inflectional patterning in the case of adjectives is largely unlayered. Particles are the chief morphological items that adjectives take on as inflectional suffixes, apart from certain postpositions and GNP inflections.

- 1: Particles (obligatory)
- 2: Postpositions (optional)

It can be shown that adjectives either take Particles straight after themselves or after GNP suffixes.

Adj_base + (GNP) +Particle + (Postposition)

6.1.2 Adjectival Classes

Only two classes of adjectives can be morphologically established. Most of the adjectives that are not basic are **derived** from either nouns or verbs and hence classified as derived. The two following classes of adjectives could be considered distinct due to allomorphy of the base.

Sl. No.	Adjective	Base ending	Bound Base
1	nalla	a	0
2	puwu	u	+iya

Table 6.1: Adjectival Classes

While *nalla* does not exhibit any morphophonemic variation for the bound base, the stem *puwu* changes to the bound form *puwuya*. In the case of GNP inflection, *nalla* loses its final vowel, prior to suffixation, while in the case of *puwu*, it is the augment *ya*, that serves as base for GNP suffixation.

6.1.3 Analyzing Adjectives

An analysis of adjectives in Tamil would begin by stripping off at the morpho-syntactic level, Clitics, and at the purely morphological level, semi-bound and bound Particles, down to primary inflectional markers that inflect for the 3rd. person GNP suffixes. After segmenting items of each level based on their order of occurrence, the stem may be obtained.

6.1.3.1 Particles and GNP Suffixes

Particles are of two kinds: Non-adverbial, and Adverbial. Those that follow adjectives at the primary level are three:

<i>viwam</i>	Comparative 1
<i>ma win</i>	Comparative 2
<i>pati</i>	Comparative 3

Table 6.2 Adjectival Particles

Two adverbial postpositions *AnYa* and *Aka* necessarily follow any of the three preceding particles.

The addition of the 3rd. person pronominal endings renders adjectives as nouns, as shown below:

Adj _ + awu	3 rd . Singular Neuter
Adj _ + ava Y	3 rd . Singular Feminine
Adj _ + ava nY	3 rd . Singular Masculine
Ad _ + avar	3 rd . Sing.Hon. /Plural

Table 6.3: Adjectival GNP suffixes

It is only the 3rd. person GNP suffixes that can attach to the adjectival base.

6.1.4 Adjectives: Morphophonemics & Allomorphy

The process of suffixation effects certain phonological and morphophonemic changes on stems and suffixes. The following describes and accounts for such changes at each level of adjectival inflection.

In Tamil adjectives may be divided into two classes based on **their** morphophonemic behaviour.

The stem for Class 1 remains unmarked, i.e., has a null suffix, whereas Class 2 involves an additive augment *ɾja*, which forms the base for the addition of GNP suffixes.

The class of stems that undergoes a change for the combining form is as follows:

Class 2 — *puwu* — *puwu* + *ɾja* → *puwɾja*

Rule: *u* → 0 / _*ɾja*

There are 4 GNP suffixes that can attach on to the combining base of adjectives, all of which are the 3rd. person suffixes. Before the addition of **the** GNP suffixes, it is the augment in the bound form that undergoes the final vowel deletion.

Class 2 - *puwu* — *puwɾja* + *ava*Ÿ' → *puwɾja*avaŸ'

Rule: *a* → 0 / _*ava*Ÿ'

SL No.	2 Basic Stems	1 Stem variant	1 GNP base	4 GNP suffixes
1	nalla	-	-	•GNP (1-4)
2	puwu	puw	ɾja	*GNP (1-4)
*GNP suffixes 3sh (<i>avar</i>), 3sm (<i>avan</i> Ÿ'), 3sf (<i>ava</i> Ÿ') & 3sn (<i>awu</i>)				

Table 6.4: Total allomorphs for Adjectives

The **number** of resulting **allomorphs** therefore, would include 2 stems each with 1 variant, and 5 suffixes. The total would then mean a sum of: 2 basic stems + 1 stem variant + 1 GNP base + 4 GNP suffixes = 8 allomorphs for adjectives.

6.1.5 The Analyzer Chart for Adjectives

The input to the **Hybrid Tamil Morph** would be an adjective form that undergoes a series of morphemic **strippings** at each level of inflection as illustrated in the chart that follows.

The string is first scanned for a possible clitic at level 1. If found, it is stripped off by **the** 'Clitic Stripper' and stored in a temporary array with its relevant tag. The rest of the string is reconstructed and passed on to the next level of inflectional scan. Level 2 is that of GNP stripping. A similar processing takes place here, with the GNP suffix being stripped off, tagged, and stored in a temporary array, while **the** remaining string is reconstructed and passed on to the level 3 of Postpositions. These stripped off, the analysis moves on to level 4 of the Particles. Thereafter, the parse proceeds to level 5 of the Direct or Indirect (bound) forms, which detects the combining marker to be stripped off by the 'Augment Stripper'. This reconstructs the adjectival base after the augment has been determined. The resulting string is declared as the adjectival stem, with the rest of the remaining inflections and suffixes declared with their tags, as encountered at each level of the parse.

A comprehensive list of all adjectival affixes is also provided alongside.

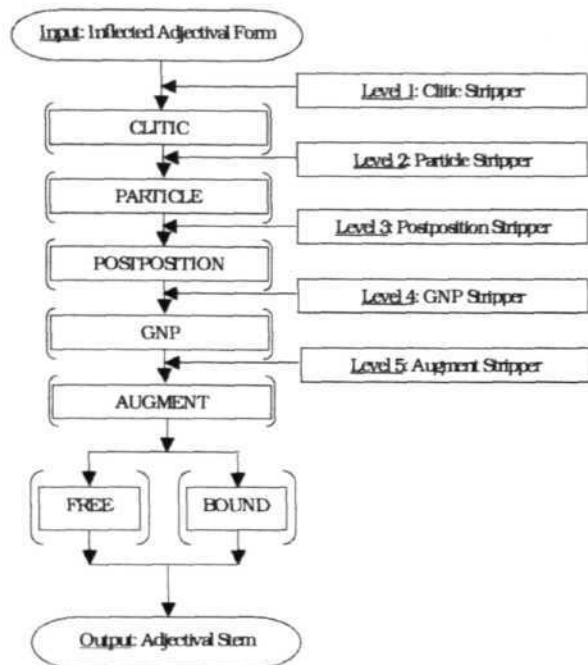


Figure 6.1(a): Morphological Analyzer Chart: Adjective

Adjectival Inflections

Clitics: Avawu, A, o, e, um, kUta, mattum, wAnY, Am
Particles after the Free form: mAwini, pati, viwam Particles after the Bound form: evnYa, eVnYappatuvawu, eVnYrYAl, eVnYrYu, eVnYpawu
Postpositions after the Oblique: AnYa, Aka
GNP Inflections: avalY, avanY, avar, awu
Augment Inflections: Ø, iya

Figure 6.1(b): List of Adjectival Inflections/Suffixes

Chapter 7

Computational Models

7.1 Computational Models

Morphological analyses involve by and large either the *Combinatorial*, or the *Relational* approaches. Models like the *Item and Arrangement* (Hockett 1958), the *Item and Process* (Hockett 1958) involve a necessary segmentation of a morphological string into a base and one or more affixes, whereas the *Word and Paradigm* (Robbins 1963), represents both the combinatorial and relational approaches. Models like the *Word Network* (Singh and Ford 1984) characterize the relational approach, which implicates the concept that it is the 'word', and not the morpheme, and morphology can be interpreted as a complex relationship it shares with other similar words.

An analyzer fashioned in the LA model of morphology, crucially maintains that 'all morphemes are lexical items', and enlists all morphemes of the language with the necessary feature specifications for each item on the list. Stems and affixes would be separately stored with information on reliable pairs of stems and affixes. Analysis of word-forms is then done through pattern matching, denoted by identity of the morphemic **formants** in word-forms of variable complexity.

If it is the IP model of morphology that the analyzer uses, according to the theoretical assumptions it makes, the abstract underlying morpheme finds its surface realization through different **morphs** in contextually determined morphophonemic states. Both roots and affixes are listed in their basic allomorphic shapes and pattern matching of variant surface **allomorphic** combinations are accessed through the operation of morphophonemic rules that account for these alternations, and which specify conditions of **allomorphy**.

The use of the **WP** model of morphology for the analysis of **word-forms** in spirit can be seen as more of a Relational approach, when compared to the LA or the IP. A mere listing of representatives of each paradigm is not sufficient, since **derivatory** processes operating within the cells of each paradigm exhibit idiosyncratic behaviour. Only roots, here, are recognized as **lexical** entries and all possible affixations on various roots or stems are made possible through the introduction of **WFRs**. Analysis of word-forms is triggered by rules working on these combinatorial links.

The Word and Network model is regarded as a Full-listing model for morphological analysis. The essence of the Relational approach seems to be more favourable for the production and recognition of word-forms. Since '**affixes** don't exist anywhere outside the words in which they appear', (Singh 1996) adopting this theory for an analyzer presupposes a comparison of networks between forms rather than view it as a series of derivatory operations, as in the WP. No specific morphological status is given to concepts like the

'root', or the 'affix', although for technical purposes one would need to observe these distinctions.

Platforms like AMPLE and KIMMO, the two comparatively well-established computational formalisms, served to design morphological analyzers and generators for various languages.

In a sense though AMPLE is designed based on an Item and Arrangement model of morphology, the underlying principle could be better defined as one of "allomorph matching". The linguistic database comprises of a comprehensive listing of all the allomorphs, for each of the word classes of the language. Wrong combinations of stems and suffixes can be disallowed through specifying phonological, morphophonemic or morphological constraints wherever necessary.

KIMMO is largely based on the theory of generative phonology, and implemented as a bi-directional processor of underlying basic allomorphs to surface orthographic forms, called "two level morphology". A phonological rule builds up a direct correspondence between the underlying form of a word and its surface realization based on the actual environment where it occurs. Rules relate the nature of a transformational rule based on context of occurrence, along with specifying the frequency of application. The functioning relies on what may be termed as a "finite state automaton", which processes an input word through a sequential scanning of the given string.

A theoretically established set of principles cannot be transferred per se to fit into a computational framework. Implementing morphological class features or processes, into a specific formalism would invariably necessitate certain technical adjustments of theory, in order that it evolve as a fine-tuned sophisticated working model. Different implementations of models of morphological analysis that we have attempted here are with a view to learn if theory and formalism do indeed go hand-in-hand, through the process of implementation.

7.1.1 THE HYBRID MODEL

The Hybrid model developed and implemented in PERL constitutes a framework of an in-built lexicon and a set of IA and IP rules for every distinct word class of the language. An analysis of this is demonstrated by way of invoking the corresponding subroutines that function based on the provided morphophonemic rules. Designed to handle word-forms of every category, it functions on what is dictated by internal files of the main setup. There is an inherent encoding of linguistic information in the programme. What is actually done is a processing of linguistic information through open-ended morphophonemic and allomorphy rules.

The model finds its theoretical basis in a blend of the IA and IP models of morphology. The functioning can be described as defining a transformation depending on the morphemic nature of the word stem. A word is parsed after it has passed through the whole series of conditionals specified at each stage of inflectional stripping.

The analysis module performs a scanning of the string from the right to the left periphery scanning each suffix at a time, stripping it, and reconstructing the rest of the word with the aid of P and MP rules exemplified in each instance. This goes on till the string is exhausted. Output is in the form of morphemes, those that have been identified, and then validated.

7.1.1.1 Theory and Implementation

The model is oriented towards the **IA** approach of morphology, and resorts to IP for solutions to non-concatenative phenomena such as *Sandhi*. Every phonological or **morphophonological** phenomenon is embedded in transformational rules. Morphophonemic changes involving every item of a morphological paradigm are illustrated through a set of substitution or transformational rules.

7.1.1.2 Formalism & Construct

The Hybrid model that is implemented in PERL is a computational model that can function either as a unified model operating through a main control programme invoking smaller modules **functioning** as 5 separate blocks working independently. The controlling module requires the following six portions as part of the control information:

1. NounTamil
2. PronounTamil
3. NumeralTamil
4. VerbTamil
5. AdjectiveTamil
6. Lexicon
7. Exit

Sections 1 to 5 include the analysis component for each of the word classes in Tamil. Each of these sections includes the rules for the analysis of the relevant word class in Tamil. Analysis proceeds with the stripping of the closing suffix or inflection at every level, proceeding from the right end of the input string (For details on the nature of analysis, refer the flow charts - Figures 4.1(a,b), 4.2(a,b), 4.3(a,b), 5.1(a,b), 6.1(a,b)).

The control file calls the internal commands in the programme. Any given word form that is taken in as input undergoes a series of checks by the 5 analysis modules built to tackle each of the word classes in Tamil, i.e., Noun, Pronoun, Numeral, Verb and Adjective. A successful parse is produced as the output. The central loop looks like the following:

```
#!/usr/bin/perl  
# Required Include Code Files  
  
require "lexicOML";  
require "Noun";  
require "Pronoun";  
require "Numeral";  
require "Verb";  
require "Adjective";  
require "Exit";  
require "Error";  
  
# Start of Main Block  
$ch='y';  
while($ch=~ /y/) {  
    system("clear");  
    print "          \n\t\t\tthe The HYBRID Morph - Tamil \n\n";  
    print "\t\tEnter the word to analyze ... ";  
    $word=<>;  
    chop($word);  
    Noun();
```

```

Pronoun();
Numeral();
Verb();
Adjective();
print "\n\t\tDo you want to continue ( Y/N ) ? ";
$ch=<>;
$ch=lc($ch);      # Continue Main Block if needed
chop($ch);
}
while($ch=~ /n/)
{
    exit();
}
1,                # End of Main Block

```

The lexicon file LEXICON forms a component that consists of a comprehensive list of all the inflections and suffixes that follow the word forms, the format of which would appear as this:

```

#/usr/bin/perl

@< litic = qw ( mattum e o A Avawu wAnY kUta urn);
@NounPl_Acc = qw ( wavira vita pola pol ponYrYa parYrYl );
@NounPP_Nom = qw ( mt lla varE illAwa illAwapowu );
@NounAdv_Dat = qw ( itE ulY veVtYi mel kIlYY mawwi aruk ati eVwir natu appAl munY munYpu munwi
munYnYAl pinY pinYpu pinwi pinYnYAl pirYaku appuram atuwa merYku vatakku
kIlYY akku weVrYku );

```

The suffixes needed to be recorded as lexical entries since inflections are seen as **allophonic** conditionings in the transformational component. For instance, the string *utEya*, indicative of the Genitive case would form the key word for a loop dealing with a set of transformations. This can be shown as:

```

if($word =~ /[A-Za-z](utEya)([A-Za-z])/)
{
    $nomcase="Genitive";
    $nomcaseform="utEya";
    $nounword =- s/(.*kkaY)utEya(.*)/$1/;
    $nounword =~ s/(.*l)utEya(.*)/$1/;
    $nounword =~ s/(.*rYkaY)utEya(.*)/$1/;
    $nounword =~ s/(.*lY)utEya(.*)/$1/;
    $nounword =~ s/(.*lYkaY)utEya(.*)/$1/;
    print "\t\tCase: $nomcase\ ($nomcaseform)\n";
}

```

All information in the model is handled within the programme.

Information with regard to a morpheme's category, its phonological and morphological properties and the constraint that binds it are all provided as tagged variables. Both morphophonemic and **morphotactic** constraints can be imposed only through ordering of loops, and ordering of rules within loops. Phonotactics and Phonological constraints are imposed as specifications for a particular morpheme within its loop.

String Environment **Constraints**¹ (SECs) apply to every **allomorph** of the affix, specifically at leading morpheme boundary markers. Morpheme Environment Constraints

¹ For details on SECs and MECs see Section 7.1.2.2, pg. 112.

(MECs) impose morpheme environment constraints on the **allomorph** of the current morpheme.

7.1.1.3 Framework for The Hybrid model

Capturing the complex agglutinative morphology of Tamil morphological classes in a formalism like the present model demands a detailed listing of both stem and suffix allomorphy, along with the relevant combinatorial constraints. This is so, because the model **draws** its basic principles from the Item and Arrangement (IA) model of morphology.

It is here, in accordance with Maxwell's views that I wish to reason out that although theoretically, the IA and IP models represent wide differences, such principles converge in practice. (For a detailed discussion refer Ch.8, Sec.8.9)

7.1.1.4 Allomorphy

The concern for economy in stem and suffix allomorphy needs to be given forethought. What therefore remains to be determined is whether a simplification of allomorphy illustrates economy in **formalism**, and if it does, which part of the word form needs to be morphologically simplified. On grounds of intuition, if shifting the burden of allomorphy from stem to suffix or vice-versa seems more justifiable, the paradigmatic structure of the word classes needs to be changed accordingly, to suit implementation.

Economy in allomorphy can be compromised over economy in rules and/or constraints. Hence the best way to recapture morphology in the **IA** framework would be to enlist all **allomorphic** variants of the morphological forms of the language. The theoretical set of paradigms therefore can be directly adapted for the purposes of implementation.

7.1.1.4.1 NOUNS

In the model below, we need to set up 23 paradigm types for Tamil nouns, as in the following:

Sl. No.	Stem1/Suffix1 (Dict. Entry)	Stem2/Suffix2	Stem3/Suffix3
1	AN	AN Ø	AN kaL
2	ARu	AR R	ARu kaL
3	eli	eli y	eli kaL
4	iLY	iLY y	iLY kaL
5	rwaZ	rwaZ Ø	rwaZ kaL
6	I	I y	I kkaL
7	kaN	kaN N	kaN kaL
8	kAl Ø	kAl Ø	kAl kaL
9	kAru	kAt t	kAru kaL
10	maMiwaM	maMiwaM Ø	maMiwar kaL
11	maram	mara ww	maraf kaL
12	muL	muL L	mut kaL
13	mAM	mAM Ø	mAM kaL
14	narampu	naramp Ø	narampu kaL
15	nAy	nAy Ø	nAy kaL

16	poM	poM M	poM Ø
17	poy	poy y	poy kaL
18	pul	pul l	puR kaL
19	poruL	poruL Ø	porut kaL
20	pU	pU v	pU kkaL
21	vaNru	vaNr Ø	vaNru kaL
22	wEr	wEr Ø	wEr kaL
23	wOL	wOL Ø	wOL kaL

Table 7.1: Paradigm Types/Stem Variations for Nouns in the Hybrid model

The total number of resulting allomorphs would include 23 basic stems, 10 stem variants for number and case, and for a valid consideration of a true case suffix, the oblique marker suffix that realizes, as one of its 9 variants would have to further combine with one of the 8 different case suffixes. This would in fact, result in 72 suffix allomorphs for case marking alone. The total would then mean a sum of: 23 basic stems + 10 stem variants + 9 oblique markers (x 8 case suffixes) + 8 basic case suffixes + 1 basic number suffix + 1 number suffix variant = 115 allomorphs for nouns.

7.1.1.4.2 PRONOUNS

In the model below, we need to set up 15 paradigm types for Tamil pronouns, as in the following:

Sl. No.	Stem1/Suffix1 (Dict. Entry)	Stem2/Suffix2	Stem3/Suffix3
1	avaL	avaL Ø	avaL Ø
2	avaM	avaM Ø	avaM Ø
3	avar Ø	avar Ø	avar Ø
4	awu	aw Ø	aw w
5	nAM	eM Ø	eM M
6	nAfkaL	efkaL Ø	efkaL Ø
7	ni	uM Ø	uM M
9	nIfkaL	ufkaL Ø	ufkaL Ø
10	nIr	um Ø	um m
11	yAm	yam Ø	em m
12	wAfkaL	wafkaL Ø	wafkaL Ø
13	wAm	wam Ø	wam m
14	wAM	waM Ø	waM M
15	nAm	nam Ø	nam m

Table 7.2: Paradigm Types/Stem Variations for Pronouns in the Hybrid model

This comprises of 15 basic stems, 11 stem variants, 3 oblique case marker variants and 8 cases. The three oblique marker variants combine with one of the 8 different case suffixes. The total would then mean a sum of: 15 basic stems + 11 stem variants + 8 basic cases suffixes + 3 oblique markers (x 8 case suffixes) = 58 pronoun allomorphs.

7.1.1.4.3 NUMERALS

In the model below, we need to set up 14 paradigm types for Tamil numerals, as in the following:

SL No.	Stem1/Suffix1 (Dict. Entry)	Stem2/Suffix2	Stem3/Suffix3	Stem4/Suffix4
1	oMRu	oMR Ø	oru v	oMR Am
2	iraNtu	iraNt Ø	iru v	iraNt Am
3	mUMRu	mUMR Ø	mU v	mUMR Am
4	nAMku	nAMk Ø	nAl v	nAMk Am
5	Ynwu	Ynw Ø	Y v	Ynw Am
6	ARu	AR Ø	aRu v	AR Am
7	EZu	EZ Ø	eZu v	EZ Am
8	ettu	ett Ø	eN m	ett Am
9	oMpawu	oMpaw Ø	oMpawu Ø	oMpaw Am
10	pawwu	paww Ø	pawwu Ø	paww Am
11	nURu	nUR R	nURu Ø	nUR RAm
12	Ayiram	Ayira ww	Ayiram Ø	Ayira ww
13	latcam	latca ww	latcam Ø	latca ww
14	kOti	kOti y	kOti Ø	kOti Ø

Table 7.3: Paradigm Types/Stem Variations for Numerals in the Hybrid model

This comprises of 14 basic stems, 13 stem variants (for case and ordinality), 3 ordinality marker variants, 2 GNP marker variants, 4 GNP suffixes, 3 oblique case marker variants and 8 cases. The three oblique marker variants combine with one of the 8 different case suffixes. The total would then mean a sum of: 14 basic stems + 13 stem variants + 3 ordinality suffixes + 2 GNP marker variants (x 1 GNP suffix) + 3 GNP suffixes + 8 basic cases suffixes + 3 oblique markers (x 8 case suffixes) = 67 numeral allomorphs.

7.1.1.4.4 VERBS

In the model below, we need to set up 24 paradigm types for Tamil verbs, as in the following:

SL No.	Base1/Suffix1 (Dict. Entry)	Base2/Suffix2 (Past)	Base3/Suffix3 (Present)	Base4/Suffix4 (Future)	Base5/Suffix5 (Non-finite)
1	Aku	A M	A kiR	A v	Ak a
2	AL	AN t	AL kiR	AL v	AL a
3	aZu	aZu w	aZu kiR	aZu v	aZ a
4	cA	ce ww	cA kiR	cA v	cA ka
5	cel	ceM R	cel kiR	cel v	cel la
6	cey	cey w	cey kiR	cey v	cey ya
7	col	coM M	col kiR	col v	col la
8	eM	eM R	eM kiR	eM p	eM a
9	ikaZ	ikaZ nw	ikaZ kiR	ikaZ v	ikaZ a
10	iru	iru nw	iru kkiR	iru pp	iru kka
11	kAN	kaN t	kAN kiR	kAN p	kAN a

12	kEL	kEt t	kEt kiR	kEt p	kEt ka
13	koL	koN t	koL kiR	koL v	koL La
14	niL	niM R	niR kiR	niR p	niR ka
15	nO	no nw	nO kiR	nO v	nO ka
16	pati	pati ww	pati kkiR	pati pp	pati kka
17	peRu	peR R	peRu kiR	peRu v	peR a
18	pO	pO M	pO kiR	pO v	pO ka
19	pOtu	pOt t	pOtu kiR	pOtu v	pOt a
20	pUN	pUN t	pUNu kiR	pUNu v	pUN a
21	uN	uN t	uN kiR	uN p	uN Na
22	vA	va nw	varu kiR	varu v	var a
23	viZu	viZu nw	viZu kiR	viZu v	viZ a
24	wUfku	wUfk iM	wUfku kiR	wUfku v	wUfk a

Table 7.4: Paradigm Types/Stem Variations for Verbs in the Hybrid model

This would yield 24 basic roots, 33 stem variants (14 past tense, 5 present tense, 5 future tense, 9 non-finite), 7 past tense suffix marker variants, 2 present tense suffix markers, 3 future tense suffix markers, 7 infinitive suffix variants, 7 (x 9) non-finite based suffix variants and 7 (x 4) past tense based suffix variants, 2 (x 1) present tense based suffix variants and 1 future tense suffix. The total would then mean a sum of: 24 basic roots + 33 stem variants + 12 tense markers + 7 infinitive markers + 63 non-finite based suffix variants + 31 finite/tensed based suffix variants = 170 verb allomorphs.

7.1.1.4.5 ADJECTIVES

In the model below, we need to set up 2 paradigm types for Tamil adjectives, as in the following:

Sl. No.	Stem1/Suffix1 (Dict. Entry)	Stem2/Suffix2	Stem3/Suffix3
1	nalla	nalla Ø	nalla v
2	puwu	puw iya	puwiya v

Table 7.5: Paradigm Types/Stem Variations for Adjectives in the Hybrid model

This comprises of 2 basic stems, 1 stem variant, 1 augment, 1 GNP marker and 3 GNP suffixes. The total would then mean a sum of: 2 basic stems + 1 stem variant + 1 augment suffix + 1 GNP suffix + 1 GNP marker (x 3 GNP suffixes) = 8 adjective allomorphs.

7.1.1.5 Implementing the HYBRID model

The Hybrid model essentially has five subroutines meant for the analysis of each of the five different word classes in Tamil. Since the model largely works on the Item and Arrangement model of morphology, the database involves an **inventory** of the entire set of word stems or bases that exhibit Sandhi change encountered at each level of **analysis**, and appropriate rules that would account for the phonological or **morphophonemic** change, followed by a reconstruction of the remaining word **stem**, after the preceding suffix has been stripped off.

As a case in point, an analysis of a complex noun form such as *manjkaAnYukeumeluAnY*

can be shown thus — To begin with, a word-form is an input string to the noun subroutine 'Noun ()'. The scanning of the string begins at the right periphery, and enters the initial loop for clitic recognition:

```

foi<$i=O;$i<=$#Clitic;$i++)
{
$len=-(length($Clitic[$i]));
$temp=substr($word,$len);
if($temp =~ $Clitic[$i])
{
$nounword =~ s/$Clitic[$i]//;
$clitic=$Clitic[$i];
}
if($word =~ /( [A-Za-z] )(wAnY$/)
{
    $cliticform="Emphatic2";
    $clitic="wAnY";
    $nounword = s/(.*)wAnY/$1/;
print "\t\tClitic: $cliticform\ ($clitic)\n";
}
:

```

The current implementation essentially draws upon the Item and Arrangement model for morphological parsing. The database comprises of a comprehensive list of all the stems and their suffixes, in all their **allomorphic** variations, along with string environment constraints, morpheme environment constraints and morpheme co-occurrence constraints, that function as combinatorial rules, or rather, contextual constraints, to prevent overgeneration.

On psycholinguistic lines, the model's morphology does not conform to any of the frameworks of the string-scan models. It can be grouped rather with the category-split models, particularly in accordance with the Taft & Forster model. Scanning of a given string sequence proceeds from the left to the right. Suffixes relatively are more prone to allophonic/allomorphic changes than stems are, and therefore **left-to-right** parsing apparently resolves ambiguity a lot more simply.

In effect, 6 of the routines in the model are language specific, depending on the number of word classes in the relevant language. Tamil involves 5 files or routines for language data encoding, one each for Nouns, Pronouns, Numerals, Verbs and Adjectives. Besides, there is a **Lexicon** module, which requires a listing of all suffixes of the language, along with their relevant tags, stated in specialized arrays. Each of the data files to be processed is programmed as a subroutine that proceeds in accordance with the specified order of inflectional stripping.

While outer levels of inflectional extensions such as Adverbials, Postpositions, Particles, Auxiliary Verbs and Clitics are specified in the common lexicon, class-specific, inflections such as number, case and tense forms are declared in specific loops in the relevant category-specific subroutines.

In consultation with the lexicon, each inflection/suffix is stripped off, tagged and stored in a temporary array, while the remaining stem reconstructed and passed on to the next level of inflectional stripping, until all possible suffixes in an input string have been exhausted. Finally, all of the recognized inflections/suffixes along with the reconstructed word stem are displayed as the final result.

Since all morphemes are declared per se, the need for a phonemic inventory' of the language is not necessary. Morpheme strings are tagged in the respective loops they occur in. For a list of tags used, please refer *Abbreviations*.

Phonological and **Morphophonemic** changes for inflectional stripping and reconstruction of the remnant stem are incorporated into the rules at each level. Unlike AMPLE or KIMMO, that involve an additional component for String and Morpheme classes, there is no comprehensive way of encoding a negation class, to tackle either **phonotactics** or **morphotactics**. Instead environmental and **co-occurential** constraints are directly rooted in a particular morphemic **string** in each loop. This executes the necessary changes for each paradigmatic entry for a word class.

The model is flexible in that it accommodates its text input format. Any tranliteration scheme can be used, with no restraints on the number of characters to represent any specific letter in an alphabet.

7.1.1.6 Testing & Debugging

After the entire database has been all set, the process of testing the analyzer begins with a textual input through an input file comprising of the list of words to be parsed. Word analysis progresses when the batch file is processed, whereby each entry in the file then passes through a series of tests, and the output is rendered in a specified output file, indicating the outcome of the parse(s) in a particular format.

7.1.1.7 Output Samples

Entries in the input file can be fed in a linear order, each separated by spaces. The analyzed output would be something as illustrated below:

1) *kAttYccuRRimattumA*

is analyzed as:

Noun Form:	kAttEccurYrYimattumA
(Clitic:	Interrogative2 (A)
Clitic:	Restrictive1 (mattum)
Case:	Accusative (E)
Number	Singular (0)
Oblique suffix	t
Noun Root:	kAtu

2) *ufkaLOtuwAME*

is analyzed as:

Pronoun Form:	ufkaLYotuwaNYe
Clitic	Emphatic2 (e)
Clitic:	Emphatic1 (wAnY)
Case:	Sociative (otu)
PronGNP form;	2nd.person,Plural/Honorific,(Masc/Fem)
	(ufkaLY)
Oblique suffix:	0
Pronoun Root:	nlfkaLY

3) *ettEmukkAlwAMO*

is analyzed as:

Numeral Form: eVttemukkAlwAnYo
 Clitic: Interrogative1 (o)
 Clitic: i mphatic:1 (wAnY)
 Postposition: Nominative (emukkAl)
 Case: Oblique (0)
 Oblique suffix: 0
 Numeral Root: eVttu

4) *ceyyamA tirkalA*

is analyzed as:

Clitic: Interrogative2 (A)
 VbGNPsuffix: 2nd.person (person)
 Plural/Honorific (number)
 Masculine/Feminine (gender)
 1 J reran- (dialect)
 (IrkaY)
 TAM: Negative Future (mAtt)
 Base: NonFinite
 Verb Root: ceVy

5) *puwiyaval*

is analyzed as:

Adjectival Form:puwiyavalY
 Case: Augment (iya)
 GNP suffix: 3rd.person,Singular, Feminine (avalY)
 Adjective Root: puwu

A zero in the analysis field, as in the following example, indicates a failure in parse. The input string *maNkaL* is not a valid string in Tamil. The output analysis for this word form is therefore indicated as a failure.

7.1.2 THE AMPLE ANALYZER

AMPLE can be called 'generic' in the sense that it does not have any **language-specific** functions embedded in it. AMPLE functions on what is dictated by external files. AMPLE is designed to handle prefixes, infixes, suffixes, roots, compound roots, and any combination of these. Null morpheme occurrences can also be tackled through strict in-built constraints.

AMPLE does not have as its basis of functioning, either '**transition** network grammar', or 'finite state machines'. AMPLE uses not a single, but a number of computational mechanisms, so as to model a range of linguistic phenomena. Various constraints that form the **central** process of functioning in AMPLE are established through linguistic notations, and not through computational ones. There is no inherent encoding of linguistic information in the AMPLE programme. What is actually done is a processing of language data through external files carrying linguistic information. A large portion of information is provided through open-ended morpheme dictionaries.

AMPLE finds its theoretical basis on the Item and Arrangement model of morphology. The functioning can be described as "allomorph matching". Processing words involves the functioning of two modules. The **TXN** module first relieves the input text of all white space characterizations, punctuation, formatting, and the like. This text then forms input to the Analysis module, which performs a scanning of the string from the left periphery stopping at each character to check for a match for an identifiable **morpheme**. This goes on

till the string is exhausted. Output is in the form of morphemes, those that have been identified, and then validated. Two kinds of tests serve to check the validity of the output. First, the 'successor' tests that compare the proposed allomorph to its immediately preceding morpheme. Secondly, the 'final' tests check the validity of its occurrence, after the whole parse has been made. Only those strings that pass the successor tests can find their way to the final tests. Potentially invalidated analyses are thus filtered out in an efficient fashion.

7.1.2.1 Theory and Implementation

AMPLE is oriented more towards the "Item and Arrangement" approach of morphology, aiming at simpler and faster functioning. AMPLE provides a *concatenative* solution to non-concatenative phenomena such as Ablaut, Vowel harmony, Tone,,etc... A solution would be to list the allomorphs and constrain their co-occurrence.

For instance, 'foot' and 'feet' can either be listed as different root entries with no link established about their relatedness; or else, 'feet' is given as an allomorph input of 'foot' (feet + Ø plural suffix).

7.1.2.2 Formalism & Construct

AMPLE is a construct of two modules:

- 1) TEXT INPUT module (TXTIN - text input).
- 2) ANALYSIS module (morphological parsing).

TXTIN functions splitting off punctuation marks, format marking, white space, and capitalization details. 'Words', then are passed on to ANALYSIS. ANALYSTS functions, analyzing every word into its constituent morphemes returning the morph name (gloss).

The ANALYSIS module requires the following five types of control information:

- i. Analysis Data File. (Eliminates false analyses by controlling types of affix dictionaries; specifies categories and *feature-values*; checks morpheme co-occurrence *constraints*).
- ii. Dictionary Code Table. (Establishes link between field codes and codes by which AMPLE identifies different types of data).
- iii. Dictionary Orthography Change Table. (Orthographic representations of allomorphs are converted into a more phonemic one, while the dictionary is loaded).
- iv. Suffix Dictionary.
- v. Root Dictionary.

All information in AMPLE is handled as a 'database'. A database file is a collection of one or more records. A record is made up of fields. Field codes encode the information.

The affix dictionary contains allomorphic variants, morphophonemic/morphotactic properties, *categorical* properties (in terms of pre- and post- unification operations), gloss, and the number indicating the relative order of affixes, etc...

The field codes in a root dictionary include information on the root word's allomorphy, etymology, category, gloss, morpheme property and the constraint that binds it.

Controls over morphological analyses are imposed through the fine established morphotactic constraints like Order Class Constraints (OCC), Categorical Constraints (CC), Morpheme Co-occurrence Constraints (MCC) and, morphophonemic constraints like String

Environment Constraints (SEC) and, Morpheme Environment Constraints (MEC). Certain ad hoc mechanisms, Successor and Final Tests, also regulate the analysis.

OCCs indicate the position of the affix relative to other morphemes. Through assigning numerical values to prefixes as negative, roots as zero and suffixes as positive, they never allow two affixes of the same 'order' to co-occur. Order class is assigned in such a way that the numbers for any acceptable sequence of affixes increases from left to right Constraints can thus be easily imposed, on the ordering of morphemes. CCs not merely involve defining of unique grammatical categorizations for each entry in the analysis data file but also, necessitate an explicit representation of the transition of morphological categories effected through unification of feature structures. MCCs restrict the occurrence of a morpheme, or a group of contiguous morphemes.

SECs apply to every allomorph of an affix, specifically at leading morpheme boundary markers. MECs impose morpheme environment constraints on the allomorph of the current morpheme.

7.1.2.3 Framework for the AMPLE Model

Capturing a set of Tamil morphological classes in a formalism like AMPLE, demands a detailed listing of both stem and suffix allomorphy, along with the relevant combinatorial constraints. This is so, because AMPLE is designed on the Item and Arrangement (IA) model of morphology.

It is here, in accordance with Maxwell's views that I wish to reason out that although theoretically, the IA and IP models represent wide differences, such principles converge in practice. (For a detailed discussion refer Ch.8)

7.1.2.4 Allomorphy

The concern for economy in stem and suffix allomorphy needs to be given forethought. What therefore remains to be determined is whether a simplification of allomorphy culminates in economy in formalism, and if it does, which part of the word form needs to be morphologically simplified. On grounds of naturalness, the shifting of the burden of allomorphy from stem to suffix seems more justifiable, and accordingly the paradigm types of the word classes changed.

Economy in allomorphy can be compromised over economy in rules and/or constraints. Hence the best way to recapture morphology in the IA framework would be to enlist all allomorphic variants of the morphological forms of the language. The theoretical set of paradigms therefore can be directly adapted for the purposes of implementation.

7.1.2.4.1 NOUNS

In the model below, we need to set up 23 paradigm types for Tamil nouns, as in the following:

Sl. No.	Stem1/Suffix1 (Dict. Entry)	Stem2/Suffix2	Stem3/Suffix3
1	AN	AN Ø	AN kaL
2	ARu	AR R	ARu kaL

3	eli	eli y	eli kaL
4	iY	iY y	iY kaL
5	iwaZ	iwaZ 0	iwaZ kaL
6	i	i y	ilkaL
7	kaN	kaN N	kaN kaL
8	kAl	kAl Ø	kAl kaL
9	kAtu	kAt t	kAtu kaL
10	maMiwaM	maMiwaM 0	maMiwar kaL
11	maram	mar ww	maraf kaL
12	muL	muL L	mur kaL
13	mAM	mAM 0	mAM kaL
14	narampu	naramp 0	narampu kaL
15	nAy	nAy Ø	nAy kaL
16	poM	poM M	poM 0
17	poy	poy y	poy kaL
18	pul	pul l	puR kaL
19	poruL	poruL 0	porut kaL
20	pU	pU v	pU kkaL
21	vaNtu	vaNt 0	vaNtu kaL
22	wEr	wEr 0	wEr kaL
23	wOL	wOL Ø	wOL kaL

Table 7.6: Paradigm Types/Stem Variations for Nouns in the AMPLE Analyzer

The total number of resulting allomorphs would include 23 basic stems, 10 stem variants for number and case, and for a valid consideration of a true case suffix, the oblique marker suffix that realizes, as one of its 9 variants would have to further combine with one of the 8 different case suffixes. This would in fact, result in 72 suffix allomorphs for case marking alone. The total would then mean a sum of: 23 basic stems + 10 stem variants + 9 oblique markers (x 8 case suffixes) + 8 basic case suffixes + 1 basic number suffix + 1 number suffix variant = 115 allomorphs for nouns.

?.1.2.4.2 PRONOUNS

In this model, we need to set up 15 paradigm types for Tamil pronouns, as in the following:

SL No.	Stem1/Suffix1 (Dict. entry)	Stem2/Suffix2	Stem3/Suffix3
1	avaL	avaL Ø	avaL 0
2	avaM	avaM 0	avaM 0
3	avar	avar 0	avar 0
4	awu	aw 0	aw w
5	nAM	eM 0	eM M
6	nAfkaL	efkaL 0	efkaL 0
7	ni	uM Ø	uM M
9	niIfkaL	ufkaL Ø	ufkaL 0
10	nIr	um Ø	urn m
11	yAm	em Ø	em m
12	wAfkaL	wafkaL 0	wafkaL 0
13	wAm	wam 0	wam m

14	wAM	waM 0	waM M
15	nAm	nam 0	nam m

Table 7.7: Paradigm Types/Stem Variations for Pronouns in the AMPLE Analyzer

This comprises of 15 basic stems, 11 stem variants, 3 oblique case marker variants and 8 cases. The three oblique marker variants combine with one of the 8 different case suffixes. The total would then mean a sum of: 15 basic stems + 11 stem variants + 8 basic cases suffixes + 3 oblique markers (x 8 case suffixes) = 58 pronoun allomorphs.

7.1.2.4.3 NUMERALS

In this model, we need to set up 14 paradigm types for Tamil numerals, as in the following:

SL No.	Stem1/Suffix1 (Dict. entry)	Stem2/Suffix2	Stem3/Suffix3	Stem4/Suffix4
1	oMRu	oMR Ø	oru v	oMR Am
2	iraNru	iraNt 0	iru v	iraNt Am
3	mUMRu	mUMR Ø	mU v	mUMR Am
4	nAMku	nAMk Ø	nAl v	nAMk Am
5	Ynwu	Ynw 0	Y v	Ynw Am
6	ARu	AR Ø	aRu v	AR Am
7	EZu	EZ Ø	eZu v	EZ Am
8	ettu	ett Ø	eN m	ett Am
9	oMpawu	oMpaw 0	oMpawu 0	oMpaw Am
10	pawwu	paww 0	pawwu 0	paww Am
11	nURu	nUR R	nURu Ø	nUR RAm
12	Ayiram	Ayira ww	Ayiram 0	Ayira ww
13	latcam	latca ww	latcam 0	latcaw ww
14	kOti	kOti y	kOti Ø	kOti Ø

Table 7.8: Paradigm Types/Stem Variations for Numerals in the AMPLE Analyzer

This comprises of 14 basic stems, 13 stem variants (for case and ordinality), 3 ordinality marker variants, 2 GNP marker variants, 4 GNP suffixes, 3 oblique case marker variants and 8 cases. The three oblique marker variants combine with one of the 8 different case suffixes. The total would then mean a sum of: 14 basic stems + 13 stem variants + 3 ordinality suffixes + 2 GNP marker variants (x 1 GNP suffix) + 3 GNP suffixes + 8 basic cases suffixes + 3 oblique markers (x 8 case suffixes) = 67 numeral allomorphs.

7.1.2.4.4 VERBS

In this model, we need to set up 24 paradigm types for Tamil verbs, as in the following:

SL No.	Base1/Suffix1 (Dict. Entry)	Base2/Suffix2 (Past)	Base3/Suffix3 (Present)	Base4/Suffix4 (Future)	Base5/Suffix5 (Non-finite)
1	Aku	A M	A kiR	Alv	Ak a
2	AL	AN t	AL kiR	AL v	AL a
3	aZu	aZu w	aZu kiR	aZu v	aZ a
4	cA	ce ww	cA kiR	cA v	cA ka

5	cel	ceM R	cel kiR	cel v	cel la
6	cey	cey w	cey kiR	cey v	cey ya
7	col	coM M	col kiR	col v	col la
8	eM	eM R	eM kiR	eM p	eM a
9	ikaZ	ikaZ nw	ikaZ kiR	ikaZ v	ikaZ a
10	iru	iru nw	iru kkiR	iru pp	iru kka
11	kAN	kaN t	kAN kiR	kAN p	kAN a
12	kEt	kEt t	kEt kiR	kEt p	kEt ka
13	koL	koN t	koL kiR	koL v	koL La
14	niI	niM R	niR kiR	niR p	niR ka
15	nO	no nw	nO kiR	nO v	nO ka
16	pan	pati ww	pati kkiR	pati pp	pati kka
17	peRu	peR R	peRu kiR	peRu v	peR a
18	pO	pO M	pO kiR	pO v	pO ka
19	pOru	pOr t	pOru kiR	pOru v	pOr a
20	pUN	pUN t	pUNu kiR	pUNu v	pUN a
21	uN	uN t	uN kiR	uN p	uN Na
22	vA	va nw	varu kiR	varu v	var a
23	viZu	viZu nw	viZu kiR	viZu v	viZ a
24	wUfku	wUfk iM	wUfku kiR	wUfku v	wUfk a

Table 7.9: Paradigm Types/Stem Variations for Verbs in the AMPLE Analyzer

This would yield 24 basic roots, 33 stem variants (14 past tense, 5 present tense, 5 future tense, 9 non-finite), 7 past tense suffix marker variants, 2 present tense suffix markers, 3 future tense suffix markers, 7 infinitive suffix variants, 7 (x 9) non-finite based suffix variants and 7 (x 4) past tense based suffix variants, 2 (x 1) present tense based suffix variants and 1 future tense suffix. The total would then mean a sum of: 24 basic roots + 33 stem variants + 12 tense markers + 7 infinitive markers + 63 non-finite based suffix variants + 31 finite/tensed based suffix variants = 170 verb allomorphs.

7.1.2.4.5 ADJECTIVES

In this model, we need to set up 2 paradigm types for Tamil adjectives, as in the following:

SL No.	Stem1/Suffix1 (Dict. Entry)	Stem2/Suffix2	Stem3/Suffix3
1	nalla	nalla 0	nalla v
2	puwu	puw iva	puwiya v

Table 7.10: Paradigm Types/Stem Variations for Adjectives in the AMPLE Analyzer

This comprises of 2 basic stems, 1stem variants, 1 augment suffix, 1 GNP marker and 3 GNP suffixes. The total would then mean a sum of: 2 basic stems + 1 stem variants + 1 augment + 1 GNP suffix + 1 GNP marker (x 3 GNP suffixes) = 8 adjective allomorphs.

7.1.2.5 Implementing the AMPLE Model

AMPLE essentially has two dictionaries, one for the roots, and another for suffixes of the language. Since AMPLE largely works on the Item and Arrangement model of morphology, the database involves a long listing of all the allomorphs of Tamil in each of the respective

lexicon files. A few examples from the lexicon files are reproduced here. The format of the root dictionary for Tamil is as follows:

\id tamroot.dic root dictionary

\r	Record marker
\a	Allomorph
\c	Category pair from/to
\mp	Morpheme property
\ge	English Gloss
\co	Comment
\noload	Do not load
\nocap	No caps change

Example 1: Noun

\r	maram	
\a	maram	+/_~Plr.num
\a	maraf	+/_Plr.num
\a	mara	+/_~Plr.num
\c	Noun	
\ge	tree	

Example 2: Verb

V	Aku	
\a	Aku	
\a	A	/_~k(non-past)
\a	Ak	
\c	Verb	
\ge	become	

Example 3: Numeral

\r	oMRu	
\a	oMRu	
\a	oMR	
\a	oru	+/_Pl.Obl
\c	Numeral	
\ge	one	
\mcc	one	

Example 4: Pronoun

\r	nI	
\a	nI	
\a	uM	
\c	Pronoun	
\ge	you(2S)	

Example 5: Adjective

\r	puwu	
\a	puwu	
\a	puw	
\c	Adjective	
\ge	new	

The format of the suffix dictionary for Tamil is as follows:

\id tamsuff.dic suffix dictionary

\s	Record marker
\a	Allomorph
\c	Category pair from/to
\mp	Morpheme property
\ge	English Gloss
\co	Comment
\noload	Do not load
\nocap	No caps change

Example 1: Number

\s	kaL	
\a	kaT.	/~[V]g_
\a	kkal.	/[V]g_
\c	Noun/Noun	
\ge	Plr.num	

Example 2: Case

lr	Al	
\a	Al	/~[V]_
\a	RA1	
\a	yAl	
\a	NA1	
\a	tAl	
\a	wwAl	
\a	LAl	
\a	MA1	
\a	lAl	
\a	vAl	
\a	mAl	
\c	Noun/Noun	Pronoun/Pronoun
\ge	Instr.cs	

Example 3: Hortative

\s	alAm
\a	alAm
\a	lalAm
\a	kalAm
\a	yalAm
\a	kkalAm
\a	al...Am
\a	NalAm
\c	V _{erb} /Verb
\ge	Hort.

Example 4: Auxiliary Verb

\s	pAr
\a	pAr
\c	Verb/Verb
\ge	Aux.Vb2 +/Pos .Vbl.Pp_

Example 5: GNP for Numerals

```
\s      wwI
\A      wwI
\c      Numeral/Numeral
\ge     3Sfnum.gnp
```

Example 6: GNP for Adjectives

```
\s      vaM
\A      vaM
\c      Adjective/ Adjective
\ge     3SM.pe
```

In AMPLE the database comprises of a comprehensive list of all the stems and their suffixes, in all their allomorphic variations, along with string environment constraints, morpheme environment constraints and morpheme co-occurrence constraints, that function as combinatorial rules, or rather, contextual constraints, to prevent overgeneration.

On psycholinguistic lines, AMPLE's morphology does not fall within the framework of the string-scan models. It can be grouped rather with the *category-split* models, particularly in accordance with the Taft & Forster model. Scanning of a given string sequence proceeds from the left to the right. Suffixes are relatively more prone to allophonic/allomorphic changes than stems are, and therefore *left-to-right* parsing apparently resolves ambiguity a lot more simply.

In effect, 4 of the files in AMPLE have to be constructed anew, to set up a working model for Tamil. These are, the Root Dictionary file (XXRT01.TXT), Suffix Dictionary file (XXSF01.TXT), the Analysis Data file (XXAD01.CTL), and the Text Input Control file (XXINTX.CTL). The root and the suffix dictionaries consist of a list of the root and suffix allomorphs of all morphological classes in Tamil, respectively. String environment constraints, denoted by \sec, are encoded alongside relevant entries in the main dictionaries.

The set of dictionary field code changes for a root dictionary file begins with \root, optionally followed by the record marker field code for the root dictionary. Similarly, the set of dictionary field code changes for a suffix dictionary file begins with \suffix, optionally followed by the record marker field code for the suffix dictionary. Different types of fields are used in the different types of dictionary files. The mapping from the actual field codes used in the dictionary files to the type codes that AMPLE uses internally, is controlled by the dictionary code table file.

- Allomorph: Internal code A
- **Category:** Internal code C
- **Elsewhere allomorph:** Internal code E
- **Feature descriptor** Internal code F
- **Root gloss:** Internal code G
- **Infix location:** Internal code L
- **Morph name:** Internal code M
- **Internal code:** O
- **Morpheme property:** Internal code P
- **Morpheme type:** Internal code T

- **Underlying** form: Internal code U
- **Morpheme co-occurrence constraint:** Internal code Z.
- Do not load: Internal code!

The Analysis Data file comprises of all the string classes and morpheme classes, that represent the phonological and morphological attributes of the lexical entries.

String classes comprise the phonemic inventory of the language. It is denoted by the \scl field code followed by the class name, which is followed in turn by one or more contiguous character strings. The individual members of the class are separated by spaces. Each \scl field defines a single string class, and any number of such fields may be used, provided each of them is defined before being used. The following are the string class names used for Tamil:

\sd	V	a A i I u U e E Y o O W	Vowels
\scl	Vsh	a i u e o	Short Vowels
\scl	Vlg	A I U F. O	Long Vowels
\sd	Vhg	i I u U	High Vowels
\sd	Vlw	a A o O	Low Vowels
\sd	Vfr	i I e F.	Front vowels
\sd	Vbk	u U o O	Back vowels
\sd	Vd	W Y	Diphthongs
\sd	Nas	F f N n M m	Nasals
\sd	G	v y	Frictionless continuants
\scl	Liq	r l Z L	Liquids
\sd	C	k c t w p R	Obstruents

Morpheme classes are tags used to represent generic classes that encompass more than one subclass of inflections under them. Any constraint that applies to a particular tag, applies to all classes of inflections that form part of it. It is defined by the \mcl field code followed by the class name, which is followed in turn by one or more morpheme names. The following are the morpheme classes used for Tamil:

\mcl	GenAdv	Adv.Gen
\mcl	GenDatAdv	Adv.Dat/Gen
\mcl	PpnNom	Ppn.Nom
\mcl	PpnDat	Ppn.Dat
\mcl	PpnGen	Ppn.Gen
\mcl	PpnNomDat	Ppn.Nom/Dat
\mcl	PlNom	Pl.Nom
\mcl	PlAcc	Pl.Acc
\mcl	PlObl	Pl.Obl
\mcl	PastAdjPpl	Past.Adj.Ppl
\mcl	PresAdjPpl	Pres.Adj.Ppl
\mcl	Admon	Adm.
\mcl	AdjGNP	3SM.pe 3SF.pe 3S.hon.pe 3SN.pe
\mcl	VbGNP	1S.pe 1P.incl.pe 2S.pe 2S.hon.pe 2S.hon/2P.pe 3SM.pe 3SF.pe 3S.hon.pe 3SN.pe
\mcl	Aux1	Aux.Vb1
\mcl	Aux2	Aux.Vb2

Morpheme Environment Constraints and the Morpheme Co-occurrence Constraints tackle morphophonemics of a language. MECs specify the environment in which a particular

- 2) *ufkaLOtuwAME*
is analyzed as: \a < Pronoun you(2P/2S.hon) > Soc1.cs Emph2.Cl Emph1.Cl
 \d ufkaL-Otu-wAM-E
 \w ufkaLOtuwAME
- 3) *ettEmukkaAlwAMO*
is analyzed as: \a < Numeral eight > Pl.Qnt Emph2.Cl Intrg2.Cl
 \d ett-EmukkaAl-wAM-O
 \w ettEmukkaAlwAMO
- 4) *ceyyamAttirkaLA*
is analyzed as: \a < Verb do > Neg.Fut 2S.hon/2P.pe Intrg1.Cl
 \d cey-yamAtt-IrkaLA
 \w ceyyamAttirkaLA
- 5) *puwiyavaL*
is analyzed as: \a < Adjective new > Bd.Qlf 3SF.pe
 \d puw-iyavaL
 \w puwiyavaL

A zero in the analysis field, as in the following example, indicates a failure in parse. The input string *maNkaL*, is not a valid string in Tamil. The output analysis for this word form is therefore shown as a failure:

```
\a %Z%maNkaL%
\d %Z%maNkaL%
\w maNkaL
```

Multiple parses are indicated by numbers in the analysis field, according to the number of analyses.

7.1.3 THE KIMMO ANALYZER

Two-level phonology traces its linguistic heritage to "classical" generative phonology as codified in The Sound Pattern of English (Chomsky and Halle 1968). The phonologist C. Douglas Johnson (1972) showed that the SPE theory of phonology could be implemented using finite state devices by replacing sequential rule application with simultaneous rule application. At its core, then, two-level phonology is rule formalism, not a complete theory of phonology. One feature that two-level phonology shares with classical generative phonology is linear representation. That is, phonological forms are represented as linear strings of symbols. This is in contrast to the nonlinear representations used in theories like autosegmental and metrical phonology. On the computational side, two-level phonology is consistent with natural language processing systems that are designed to operate on linear orthographic input.

As a processor, Kimmo involves both generation and analysis. Analysis involves a surface form as input, over which a rule applies, considering the relevant correspondence in the lexicon, and the parsed output, the lexical form along with its gloss. The same set of bi-directional rules apply reversibly for morphological generation. Kimmo is implemented as a finite state machine. Rules and Correspondences are translated as Finite State Transducers (FST) in the rule file, and as Finite State Automata (FSA) in the lexicon file.

7.1.3.1 Theory and Implementation

A preview of the transformational nature of rules of generative phonology is vital to the understanding of the functioning of two-level rules. Three theoretically important features are to be considered:

- 1) Transformational / Processual / Re-write rules
- 2) Sequential rules
- 3) Ordered rules (the description specifying the sequence in which the rules must apply)

Although theoretically grounded in generative phonology, two-level rules are decidedly distinct from generative rules in the following ways:

Ordering: whereas generative rules apply in a sequential order, two-level rules apply simultaneously, better described as applying in parallel.

Levels of Representation: whereas sequentially applied generative rules create intermediate levels of derivation, simultaneously applied two-level rules require only two levels of representation: the underlying or lexical level and the surface orthographic level.

Correspondences: whereas generative rules relate the underlying and surface levels by rewriting underlying symbols as surface symbols, two-level rules express the relationship between the underlying and surface levels by positing direct, static correspondences between pairs of underlying and surface orthographic symbols. Whereas generative rules have access only to the immediate form at each stage of the derivation, two-level rules have access to both underlying and surface environments.

Rules: in generative phonology, rules apply in a certain sequential order and control the interaction between a pair of rules.

In two-level phonology, rule interactions are controlled not by ordering the rules but by carefully specifying their environments as strings of two-level correspondences. Whereas generative, rewriting rules are often unidirectional (that is, they operate most often in an underlying to surface direction), two-level rules are bi-directional. Two-level rules can operate either in an underlying to surface direction (generation mode) or in a surface to underlying direction (recognition mode).

7.1.3.2 Formalism and Construct

The Two Level Approach

The two-level model treats the relationship between the underlying form and the surface form as a direct, symbol-to-symbol correspondence. Each pair of lexical and surface symbols is a correspondence pair denoted with the notation <underlying symbol>:<surface symbol>. A two-level rule has three parts: the correspondence, the operator, and the environment.

The model is based on the traditional distinction between *morphotactics* (which enumerates the inventory of morphemes and specifies in what order they can occur), and *morphophonemics* (which accounts for alternate forms or 'spellings' of morphemes according to the phonological context in which they occur).

Conceptually, a two-level phonological description of a data can be understood as follows. First, the two-level description declares an alphabet of all the segmental

orthographic inventory used in the data in both underlying and surface forms. Second, the description declares a set of feasible pairs, which is a complete set of all underlying-to-surface correspondences of segments that occur in the data. The set of feasible pairs for a specific data set is the union of the set of default correspondences, whose underlying and surface segments are different and the set of special correspondences, whose underlying and surface segments are different.

A different implementation of Kimmo Koskeniemi's model in LISP is one developed by Lauri Karttunen (Karttunen 1983). The following figure illustrates this model:

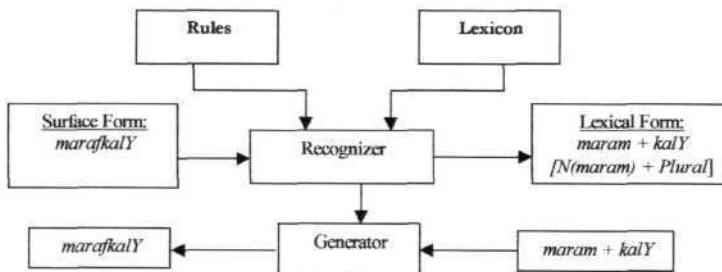


Figure 7.1: Karttunen's Implementation of KIMMO in LISP

2. The Finite State Technology

Kimmo is fashioned on the mechanics of what can be termed as the 'Finite State Technology'. The finite-state mechanics works on crucial sub-machinery such as automaton and transducers. Information from these, have to be converted to a machine-readable coding through a finite-state table.

A Finite State Machine during analysis scans a morphological string, examining each character for its positional co-occurrence validity, progressing each character at a time, until the string is exhausted. If during this process, progress fails; 'backtracking' is adopted as a strategy to fulfill the requirements of the rules of the grammar, specified. The machine follows another path in order that the scan is successful.

A Finite State Automaton (FSA) or a Transducer (FST), constitutes a number of states and transition arcs that connect these states. Traversing arcs from one state to another does the recognition of a string. Initial and Final states mark the beginning and end of input strings. The correspondence between 'lexical' and 'surface' forms can be directly established, and the validity of the strings checked, by the list of constraints imposed by the specified list of 'default' and 'special' correspondences. An FSA or and FST, behave in a similar fashion, the only difference being, an FSA operates on a single input string at a time, while an FST can operate on a pair of input strings simultaneously.

The State Transition Table is an alternative representation of an FSA/FST in a technical format as input to the parser. All correspondences in a state table are listed as column headers. The table is so constructed that the entire set of feasible pairs in the description is

partitioned among the column headers with no overlap. The columns represent the transition arcs from one state to the other. The number of states present is denoted by the rows of the table, each numbered and marked as finite or non-finite; final states being marked with a colon, the non-finite ones, with a period. The cells at the intersection of a row and a column indicate which state to make a transition to, if the input symbol matches the column header. Zero in a cell indicates that there is no valid transition from that state for that input symbol. When an input string is exhausted, it reaches the final state and any input symbol that follows it, is not accepted.

7.1.3.3 Framework for the KIMMO Model

RULES AND THE LEXICON

Two kinds of analytical databases are involved - the 'Rules' and the 'Lexicon'. The two-level rules accounted for regular phonological or orthographic alternations. The lexicon lists all morphemes (stems and affixes) in their lexical form and specified morphotactic constraints.

The general structure of the rules file is a list of declarations composed of a keyword followed by data. The set of valid keywords in a rules file includes COMMENT, ALPHABET, NULL, ANY, BOUNDARY, SUBSET, RULE, and END. The COMMENT, SUBSET and RULE declarations are optional and also can be used more than once in a rules file. The END declaration is also optional, but can only be used once.

Rules must be written to account for correspondences between the lexical representations and the surface representations. For example, the two-level rule for the *m:f* correspondence looks like this:

m:f0_(+:0)k

The rule is to be read as /m/ alternates with /f/ before a following /k/ preceded by or separated from the earlier string by a morpheme boundary.

The environment of the rule is also specified as a string of two-level correspondences. The structure of any rule specification entry would be as follows:

ALPHABET

a A i l u U e E Y o O W k c t w p R F f N n m M y r L v Z l +

NULL

ANY @

BOUNDARY #

SUBSETV a A i l u U e E Y o O W ; vowels

SUBSET C o k c t w p R ; obstruents

SUBSET C f t p R ; front consonants

SUBSET C n F f N n m M ; nasals

SUBSET C s y r l v z l ; sonorants (non-nasals)

SUBSET C c y L l ; continuants

SUBSET V l g A U I E O ; long vowels

SUBSET V s h a i u e o ; short vowels

SUBSET V f r Y i I y ; front vowels

SUBSET V b k U ; back vowels

SUBSET V l A O U ; back long vowels

RULE "1 Consonant defaults" 1 19

	k	c		t	w	p	R	F		f	N	n	m	M	y		r	L	v	Z	1	@	Surface
	k	c		t	w	p	R	F		f	N	n	m	M	y		r	L	v	Z	1	@	Underlying
1	:	1		1	1	1	1	1		1	1	1	1	1	1		1	1	1	1	1	1	

RULE "2 Vowels and other defaults" 1 13

	a	A	i	I	u	U	e	E	Y	o	O	W	@	Surface
	a	A	i	I	u	U	e	E	Y	o	O	W	@	Underlying
1:	1	1	1	1	1	1	1	1	1	1	1	1	1	

A lexicon consists of one main lexicon file plus one or more files of lexical entries. The general structure of the main lexicon file is a list of keyword declarations. The set of valid keywords is ALTERNATION, FEATURES, FIELD CODE, INCLUDE, and END.

The lexicon file is of use only during the process of morphological analysis. Other information like the lexical form, the morphological constraints, and the gloss associated with each lexical item are represented. Several sub-lexicons constitute the main lexicon. Different allomorphic restrictions classify lexical entries (in the main lexicon), under different groups.

7.1.3.4 Allomorphy

The subject of allomorphy does not arise in the context of Kimmo, since almost all instances of phonological and morphophonemic changes are handled by the rule component of Kimmo. Hence the best way to restate morphology in terms of the TP model would be to enlist all classes of the paradigm per se, leaving *Sandhi* variations to be stated by rules in the Kimmo rule file. The theoretical set of paradigms consequently needs to be changed for reasons of implementation. As it were, all morphemes have a single underlying morpheme from which other variants are derived through two level rules of morphology.

7.1.3.4.1 NOUNS

In this model, we need to set up 24 paradigm types for Tamil nouns, as in the following:

SL No.	Stems
1	A N
2	Aru
3	eli
4	iY
5	iwaZ
6	I
7	kaN
8	kAl
9	kAtu
10	maMiwaM
11	maram
12	muL
13	mAM
14	narampu
15	nAy

16	poM
17	poy
18	pul
19	poruL
20	pU
21	vaNtu
22	wEr
23	wOL

Table 7.11: Paradigm Types/Stem Variations for Nouns in the KTMMO Analyzer

This includes 23 basic stems, 8 case suffixes and 1 number suffix. The total would be: $23 + 8 + 1 = 32$ noun allomorphs.

7.1.3.4.2 PRONOUNS

In this model, we need to set up 15 paradigm types for Tamil pronouns, as in the following:

Sl. No.	Stem
1	avaL
2	avaM
3	avar
4	awu
5	avE
6	nAM
7	nAfkaL
8	nI
9	nIfkaL
10	nIr
11	yAm
12	wAfkaL
13	wAm
14	wAM
15	nAm

Table 7.12: Paradigm Types/Stem Variations for Pronouns in the KTMMO Analyzer

This includes 15 basic stems and 8 case suffixes. The total would be: $15 + 8 = 23$ pronoun allomorphs.

7.1.3.4.3 NUMERALS

In this model, we need to set up 14 paradigm types for Tamil numerals, as in the following:

SL No.	Stems
1	oMRu
2	iraNtu
3	mUMRu
4	nAMku
5	Ynwu

6	ARu
7	EZu
8	ettu
9	oMpawu
10	pawwu
11	nURu
12	Ayiram
13	latcam
14	kOti

Table 7.13: Paradigm Types/Stem Variations for Numerals in the KTMMO Analyzer

This includes 14 basic stems, 1 number suffix, 8 case suffixes, 1 ordinality suffix and 3 GNP suffixes. The total would be 27 numeral allomorphs.

7.1.3.4.4 VERBS

In this model, we need to set up 24 paradigm types for Tamil verbs, as in the following:

SL No.	Stems
1	Aku
2	AL
3	aZu
4	cA
5	ceI
6	cey
7	col
8	eM
9	ikaZ
10	iru
11	kAN
12	kEL
13	koL
14	nil
15	nO
16	pati
17	peRu
18	pO
19	pOru
20	pUN
21	uN
22	vA
23	viZu
24	wUfku

Table 7.14: Paradigm Types/Stem Variations for Verbs in the KTMMO Analyzer

This includes 24 basic stems, 7 past tense suffixes, 1 present tense suffix, 2 future tense suffixes, 1 infinitive suffix, 13 non-finite suffixes and 6 finite suffixes. The total would be: 54 verb allomorphs.

7.1.3.4.5 ADJECTIVES

In this model, we need to set up 2 paradigm types for Tamil adjectives, as in the following:

Sl. No.	Stems
1	nalla
2	puwu

Table 7.15: Paradigm Types/Stem Variations for Adjectives in the KIMMO Analyzer

This comprises of 2 basic stems, 1 augment and 4 GNP suffixes. The total would then mean a sum of 6 adjective allomorphs.

7.1.3.5 Implementing the KIMMO Model

Kimmo focuses more on the set of phonological rules provided rather than the lexicon of the language. It follows an inductive approach. A small set of data is given that exemplifies certain phonological alternations and rules to account for it are constructed. Then the data is expanded to include exceptional cases, forcing revision of the rules. Finally, as more are added to account for the other alternations, interactions with previously written rules may require that the rules be revised in order to operate together correctly.

The Kimmo parser constitutes 2 vital components: the Rule file and the Lexicon file(s).

In accordance with the language concerned, the Rule file of the Kimmo component needs a setting up of the Alphabet, and the Subset(s).

The rule file must first declare the alphabet. The Alphabet comprises the total set of both the lexical and surface characters to be used by the rules and the lexicon. The ALPHABET declaration most often occurs first in the file. It is followed by any number of lines of symbols, each separated by at least one space. The Alphabet for Tamil consists of 30 characters, excluding the morpheme boundary symbol:

a A i l u U e E Y o O W k c t w p R F f N n m M y r L v Z l +

There are certain instances that require characters that are not part of the Alphabet. The NUI.J. (empty or zero) symbol used in instances of deletion, is declared as 0 (zero). Similarly, the ANY ("wildcard") symbol is declared as @, and the BOUNDARY (word boundary) symbol is indicated by #

Subsets are lists of phonetically or phonologically categorized characters used in a language. It may be recalled that this is similar to the Paninian Maheshwara Sutras, the metarules for phonological categorization of phonemic inventory based on their participation in rule/sandhi. These are language-specific. A subset declaration is composed of the keyword SUBSET followed by a subset name followed by a list of subset characters. A subset name can be any alphanumeric string (one or more characters, no spaces) so long as it is unique; that is, it cannot be a single character already declared in the alphabet. All characters defined, as belonging to a subset must also be in the complete alphabet.

The Tamil Rule file uses the following 11 subsets:

SUBSETV a A i I u U e E Y o O W ; vowels
 SUBSET Co k c t w p R ; obstruents
 SUBSET Cf t p R ; front consonants
 SUBSET Cn F f N n m M ; nasals
 SUBSET Cs y r l v Z l ; sonorants (non-nasals)
 SUBSET Cc y l l ; continuants
 SUBSET Vlg A U I E O ; long vowels
 SUBSET Vsh a i u e o ; short vowels
 SUBSET Vft Y i l y ; front vowels
 SUBSET Vbk U ; back high vowels
 SUBSET Vbl A O ; back low vowels

A rule declaration is composed of the keyword **RULE** followed by the rule name, number of states, number of columns, and the state table itself. The rule name is enclosed in a pair of identical delimiter characters such as double quotes. The number of states (rows in the table) that will be defined here, must begin at 1 and go in sequence through the number defined as the final state. The number of columns is the number of state transitions (columns in the table) that will be defined for each state. The rule name has no effect on the operation of the table. It is also useful to include a sequence number for each rule, as rules are referred to by number, in some of the diagnostic displays for rule debugging. The default rules are stated first for reasons of clarity. Tamil has had to use about 13 rules, to tackle a large part of its phonotactics and morphotactics. The default rules in Tamil are:

RULE "1 Consonant defaults" 1 19

	k	c	t	w	p	R	F	f	N	n	m	M	y	r	L	v	Z	1	@	
1:	k	c	t	w	p	R	F	f	N	n	m	M	y	r	L	v	Z	1	@	
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Surface
Underlying

RULE "2 Vowels and other defaults" 1 13

	a	A	i	I	u	U	e	E	Y	o	O	W	@	
1:	a	A	i	I	u	U	e	E	Y	o	O	W	@	
	1	1	1	1	1	1	1	1	1	1	1	1	1	

Surface
Underlying

Sandhi rules in nouns show up in inflections of number and case. The following is a model of **Kimmo** adaptation for Tamil nouns, explaining correspondences and rules that handle nominal inflections. For example, the process of Gemination can be defined in Tamil by a rule like:

RULE "3 Gemination, 0: {k,l,y,L,N,M} => {Vbl,l,y,L,N,M} (+:0)___" 7 14

	Vbl	l	l	L	N	M	+	0	0	0	0	0	to	
b	Vbl	l	y	l	N	M	0	k	l	y	l	N	@	
	2	3	4	5	6	7	1	0	0	0	0	0	1	
2:	2	3	4	5	6	7	2	:	0	0	0	0	1	
3s	0	3	4	5	6	7	3	0	1	0	0	0	1	
4:	2	3	4	5	6	7	4	0	0	1	0	0	1	
5:	2	3	0	S	6	7	5	0	0	0	1	0	1	
6:	2	3	4	0	6	7	6	0	0	0	0	1	1	
7:	2	3	4	5	0	7	7	0	0	0	0	1	1	

Surface
Underlying

The rule explains that either of the segments *l*, *y*, *L*, *N* or *M* realize after a morpheme boundary, if the final segment of the preceding word ends in any of their corresponding geminates. This accounts for gemination in the case of glides, liquids and nasals.

Apart from the main lexicon Tamil.Lex, 14 lexicon files have been used for Kimmo. These can be regarded as the root and the relevant suffix lexicons for each of the word classes in Tamil. They are:

- Noun_Root.Lex

This is the main lexicon for noun roots. It has 23 entries, as given in the paradigm.

- Pronoun_Root.Lex

This is the main lexicon for pronoun roots. It has 15 entries, as given in the paradigm.

- Numeral_Root.Lex

This is the main lexicon for numeral roots. It has 14 entries, as given in the paradigm.

- Adjective_Root.Lex

This is the main lexicon for adjective roots. It has 2 entries, as given in the paradigm.

- Verb_Root.Lex

This is the main lexicon for verb roots. It has 24 entries, as given in the paradigm.

- Number.Lex

This is the lexicon for number inflections in nouns and numerals. It has 2 entries, for the singular and the plural, although the singular is an unmarked entry.

- Case.Lex

This is the lexicon for case inflections in nouns, pronouns and numerals. It has 9 entries for the nominative, accusative, dative, sociative, genitive, locative, instrumental, benefactive and the ablative cases.

- Tense.Lex

This is the lexicon for verbal inflections at the level of tense, aspect and modality. It has a total of 43 entries - 7 for the past tense, 1 for the present tense, 2 for the future tense, 1 for the infinitive, 1 for the negative past, 1 for the negative future, 1 for the hortative, 1 for the prohibitive, 1 for the admonitive, 7 for the past adjectival participle, 1 for the present adjectival participle, 1 for the negative adjectival participle, 1 for the habitual participle, 7 for the positive verbal participle, 1 for the negative verbal participle, 7 for the positive conditional, 1 for the negative conditional and 1 for the durative conditional.

- Noun_Inflections.Lex

This is the lexicon for nominal and pronominal inflections that includes adverbials, postpositions and particles. It has 27 entries for adverbials, 13 for postpositions and 9 for particles; a total of 49 entries.

- Numeral_Inflections.Lex

This is the lexicon for numeral inflections that includes adverbials, postpositions, particles and GNP suffixes. It has 3 entries for adverbials, 10 for postpositions, 19 for particles and 4 for GNP suffixes; a total of 36 entries.

- Verb_Inflections.Lex

This is the lexicon for verbal inflections that includes adverbials, particles, auxiliary verbs and GNP suffixes. It has 12 entries for adverbials, 17 for particles, 23 for auxiliary verbs and 14 for GNP suffixes; a total of 72 entries.

- Adjective_Inflections.Lex

This is the lexicon for adjectival inflections that includes postpositions, particles and GNP suffixes. It has 2 entries for postpositions, 3 entries for particles and 5 for GNP suffixes; a total of 10 entries.

This is the lexicon for a specific set of 3rd person GNP inflections, or rather, personal endings that apply to both verbs and adjectives. This includes a total of 5 entries.

- Common_Inflections.Lex

This is the lexicon for a set of inflections that apply to all grammatical classes, i.e., nouns, pronouns, numerals, verbs and adjectives. It has a total of 15 entries - 8 for functional/grammatical clitics and 7 for expressive vocatives.

7.1.3.6 Testing & Debugging

The cataloguing once done, the application (pckimmo.exe) can be run to test the analyzer. The rule file is loaded first, and then, the lexicons. The analyzer module is then run. To view the progress of the parse, the 'tracing' module is set on. The 'trace' module would help understand the parsing mechanism, through a systematic description of the morphological decomposition of the input string that appears in the log file of the trace function, that is given as output. To illustrate the analysis of a string, (say) *marufkaLXppaRRijym*, refer section (Conclusions).

The word form that needs to be analyzed is given as input, for which a parsed output is displayed as in 7.1.3.7.

7.1.3.7 Output Samples

Examples of analyzed word forms are illustrated below:

- 1) *kAtYcuRRimattumA* is analyzed as:
kAtu + Y + cuRRi + mattum + A
[Noun (kAtu) + SG + ACC + Adv.Acc + Restr.Cl + Inter.Cl]
- 2) *ufkaLOtuwAME* is analyzed as:
ufkaL + Otu + wAM + E
[Pronoun (nIfkaL) + SOC + Emph2.Cl + Emph1.Cl]
- 3) *ettEmukkeA IO* is analyzed as:
ettu + EmukkAl + wAM + O
[Numeral (ettu) + Pl.Qnt + Emph2.Cl + Intrg2.C.I]
- 4) *ceyyamA tIrkaLA* is analyzed as:
cey + amAtt + IrkaL + A
[Verb (cey) + Negative Future + 2S.hon/2P.pe + Inter.Cl]
- 5) *puviyaval* is analyzed as:
puwu + iya + vaL
[Adjective (puwu) + Adj.Bd. + Aug. + 3SF.gnp]

An unrecognized form is indicated as *** NONE *** in the output. The input string *maNkaL* is not a valid one in Tamil. The output analysis for this word form is therefore shown as failure in output.

Multiple parses are indicated by numbers in the analysis field, according to the number of analyses.

7.1.4 Other Morphological Analyzers

7.1.4.1 TAGTAMIL

Morphological parsing in *TagTamil* (Renganathan 1998) is based on the framework of Lexical phonology. The description of the morphological nature of Tamil is in terms of level ordering wherein, the operation of inflectional processes falls under level-2 and level-3 suffixes, as stem changing vs. stem maintaining and, grammatical role changing vs. grammatical-role maintaining suffixes.

TagTamil, defines a nominal structure as:

Noun + oblique suffix + plural + case + conjunctive suffix + interrogative suffix

According to *TagTamil*, a verbal structure has the following order:

Verb + tense/ infinitive/ adverbial participle suffix + aspectual forms + (person, number and gender)/ relative participle marker + participial forms.

The model makes use of a database, a full list of all the root and inflectional forms in Tamil. Affixes being distinguished as either belonging to the morpheme boundary or word boundary type, the base forms of junctures that involve sandhi, are stored as pairs of alternants that constitute a paradigm class. Secondly, it involves a component that involves a complete listing of all the phonological and morphophonemic rules in Tamil. Thirdly, it makes use of a component for index marching, allotting a unique index to a particular inflection that marks a specific paradigm class. Analysis therefore involves a right to left scan of an input string that is searched for among the pairs of base endings, as in the database. Suffixes are stripped, based on class ordering.

Nouns and verbs are tackled by different modules, based on their morphological requirements. *TagTamil* theoretically defines the primary inflections for a noun as number, case and clitics, and the chief verbal inflections tense and aspectual forms, GNP suffixes, and participial forms.

Further information on this morphological tagger could not be obtained.

7.1.4.2 THE 'API' ANALYZER

To have a practical understanding of the nature of the model, the developers of the API analyzer were personally contacted. No information however could be procured beyond what theoretically can be reproduced here.

The API morphological analyzer claims a twofold focus - first, one of inflectional stripping, and the second, of deciphering syntactic information. The model involves a constructor, to load the root and suffix dictionaries and the state table. The input string is first checked for its validity of the root constituent, and then split using an automata table. The resultant morphemes with their grammatical tags are stored in the constructor.

The principle of splitting a word is based on a specified delimiter. The input string along with the delimiter are said to be passed on as arguments to a method `split`. That part of the string that finds a possible match in the lexicon is returned as a tagged morpheme. After splitting the case marker from the stem using the automata table, the stem is stripped off the

sandhi characters. A match is searched for in the stem list. If not found, the sandhi characters are substituted by the base ending. The suffix dictionary includes the morpheme along with its category information. What is stored as a morpheme here, is that part of the split that is retrieved from a state-table. This is then tagged. The state table for Tamil follows Rajendran's (1998) chart of analysis. The table explains the paths needed to decompose the morphemes of an input word-form from right to left. The implementation is an approach based on a finite automaton state table.

The following describes the steps carried out in sequence:

- BEGIN: The state of the machine is set to be 0.0
- ROOT: Is the word in the dictionary? (Such dictionary words are called root words) If so, we are done, go to FINISH: ("root.java")
- MORPHEME: Find the longest (inflectional) morpheme at the end of the word. These morphemes are listed in the file "staterable.dar". If no such morpheme is found, goto SANDHI:
- If a morpheme is found, remove it from the end of the word and go to ROOT:

As has already been said, the sandhi component seems to be not very efficient. Moreover, the analyzer seems not to be cost-effective, since it involves a large number of components. Further, the tagging scheme in use seems to lack uniformity.

7.1.4.3 THE GS MORPH

A recent description of Tamil verbs discussed in Cruz (2002) underlie a computational model of morphological processing termed as the Grapheme Oriented Structuralist Morphological Processor (GSMorph), as based on the IA model, an improvement over the 'naive model', which is discussed in Sengupta (1997). This implementation of Tamil concerns with verbs only.

The root and suffix lexicons of the morph comprise the citation forms or 'lexemes', their gloss, marked by an arbitrary index of numbers. An item marked by a specific number in a lexicon can concatenate with an item marked by the same number in the other lexicon. The processor, based on the IA model of morphology, functions on the mechanism of index matching; all allomorphic variants of roots and the suffixes are listed, marked by numerical tags. Tags from the root lexicon that match those in the suffix lexicon are rendered permissible and concatenation is thus done.

What has been considered, as a root is the maximal initial sub-string common to all the words in the paradigm. A revised version of the model presumes what it would call a suffix would be the point in the word till where there is any grammatical information in the word. However considering the fact that Tamil is agglutinative, what has actually been resorted to, is a shift from the string-sequence to **root/suffix allomorphy**.

Considering the ~~taminE~~ ~~pinE~~ distinction of classical grammar that roughly corresponds to the pair of **transitive** vs. intransitive, or, causative vs. **non-causative**, both members of the pair are represented as a single lexical entry. Morphophonemically however, they are shown to fall under different paradigms, and therefore given distinct glosses and numerical indexes.

An entry in the root lexicon is listed as²:

Root Entry

10a col : col "say,tell": 8
b coll: col "say,tell": b
c con: col "say,tell": c

Suffix Entry

11.a ven: +v+en +fut+1s: 28ehl
b ikkontirukkiren: +ik+kontiru+kkiren +vbp+cont+pr+1s: 7b
c nen: +n+en +pt+1s: ch

The verb *col* "say,tell" has three allomorphs in the root file. The suffixes listed in the suffix lexicon are the corresponding formatives the entries can take. It has been observed that in order to reduce the size of the suffix lexicon, **allomorphy** has been induced, in cases where it does not naturally happen.

The verbal paradigm for this model of morphological processing involves a classification based on allomorphy exhibited in the tense formation (Past, Present and Future), in the verbal **participial** and infinitival forms. The numbers of classes listed in the paradigm include 26, which are as follows:

Sl.No.	Root	Pst	Pr	Fut	Vbp	Inf	imp	class
1.	alYYu	w	kirY	v	wu	ka	0	1
2.	AIY	-	kirY	v	-	a	0	2
3.	ceVl	-	kirY	vAr	-	-	0	3
4.	acE(wwal)	ww	kkirY	pp	wwu	kka	0	4
5	acE(nwal)	nw	kirY	v	nwu	ya	0	5
6	viYYu	nw	kirY	v	nwu	-	0	6
7	akav	inY	kirY	v	i	a	U	7
8	akal	-	kirY	v	nYrYu	a	U	8
9	veN	rY	-	-	rYu	-	-	9
10	iru	nw	kirY	pp	nwu	kka	0	a
11	coVnY	nY	-	-	-	-	-	b
12	akappat	t	ukirY	uv	tu	a	u	c
13	coVll	-	-	-	i	a	U	d
14	po	nY	kirY	v	y	-	0	e
15	peVrVrY	rY	kirY	v	rYu	a	U	f
16	ikalYY	nw	kirY	v	nwu	a	0	g
17	AtkoVN	t	-	-	tu	-	-	h
18	uNN	-	-	-	-	a	-	i
19	no	n\\f	-	-	nwu	-	-	i
20	eVnY	rY	kirY	p	rYu	a	-	k
21	ceV	ww	-	-	ww	-	-	l
22	cA	-	kirY	V	-	-	0	m
23	ket	i	kirY	p	tu	-	-	n
24	ceVy	w	kirY	V	wu	-	0	o
25	UN	-	kirY	p	-	a	0	P
26	paravu	-	kirY	V	-	-	-	Q

² The transliteration scheme as originally used in Cruz (2002) does not follow ours. For reasons of ease it has been represented here in the WX-notation.

In evaluating a morphological paradigm for word classes in a language, established for purposes of computing, the following factors need to be reviewed:

- 1) The manner it conceptualizes itself morphologically
- 2) Whether there exist 'form' relationship between its members
- 3) Whether such a morphological classification has any computational gain
- 4) Whether such a classification is morphologically intuitive to a native speaker

Considering the morphological paradigm presented above, the implementation of GSMorph for Tamil verbs clearly violates factors 2 and 4. The classification fails to achieve a sufficient morphological 'form' relationship between its members, and this invariably would mean an unintuitive morphological paradigm for a native speaker of the language concerned. Whether such a classification has any computational gain, needs to be determined. There are more than a few instances of vacuous applications of rules, as in the case of the Past tense suffix in class 17.

To tackle the problem of the huge lexicon, and the recursive nature of auxiliary verbs, three additional blocks exclusively meant for these have been added as sub-blocks.

Chapter 8

Conclusions

8.1 Introduction

This work describes the theoretical and practical aspects of designing a morphological analyzer for the Tamil language. Focus has been on developing a morphological analyzer for Tamil that is endowed **with** greater coverage and efficiency. Aspects of designing a computational model for morphological **analysis** include:

- 24. Deciding a model based on **psycholinguistic** factors.
- 24. Designing formal methods/techniques that would enable converting theoretical descriptions into computational models.
- 24. Actual implementation based on the above.

8.2 Modeling

Each of these three morphological analyzers discussed here is based on a distinct model of morphological analysis. The analyzer that is developed here is a blend of the **IA** and **IP** approaches to morphological decomposition. Wherever automatic phonological rules operate largely, **IP** is incorporated. In areas where complex but non-automatic morphophonemics (*sandhi*) is involved, **IA** is the choice. *AMPLE* is purely an adaptation of the concatenative mechanism of the Item and Arrangement model, whereas *Kimmo* is based on the processual approach of the Item and Process model.

8.3 Basic mechanisms

The analyzer developed here is based on the concept of a morphological paradigm. Phonological and **morphophonemic** rules for representative samples of stems and suffixes in each paradigm are illustrated through a series of transformational rules, governed by phonological and morphological conditioning **contexts**, operating upon these entries in each instance of Sandhi change. *AMPLE* does not involve the concept of a paradigm, and therefore entails a long listing of all the lexical entries that need to be called for in parsing. All **allomorphic** variants of roots and suffixes that are required to be parsed are entered in the root and suffix dictionaries. Decomposition of words into stems and suffixes occurs in accordance with rules that are either made permissible or constrained by a series of specified **SECs**, **MECs** and **MCCs**. Phonological constraints are encoded along with the relevant entries they apply on, while morphophonemic and morphotactic constraints find a place in the analysis data file. *Kimmo*, though heavily ingrained in phonological processes in a discreet way, does not seem to necessitate an extensive listing. *Kimmo* uses the alternation declaration in its lexicon as a means of constraining impermissible combinations of stems

and suffixes. In a fashion similar to that of AMPLE, **Kimmo** documents the basic inventory of the stems and suffixes, while allomorphic variants are contextually determined by two-level rules of the rule component.

8.4 Methodology

Qualitative and quantitative methods in corpus linguistics were employed to extract frequency counts and collocations of roots/stems and affixes. For every grammatical category of the language, an extracted list of the minimum number of **word-forms** required for a sufficient coverage had been prepared. Based on such attributes, and in consideration of the factors of coverage and efficiency for a morphological analyzer, a minimum number of morphological paradigms for each word class in Tamil had been established.

The scheme used here, for the purpose of a morphological analyzer is one based on paradigmatic features of words. What is required for a word form to be analyzed is a necessary database comprising of different tables of inflectional forms of a word, for all the words in the language. Every such table constitutes a set of roots or stems that represent the paradigmatic patterns they follow, implicit in that particular table, for the analysis of word-forms.

An analysis of two other well-established models of morphological analysis: AMPLE and KIMMO had also been taken up for the purpose of comparison. They formed good platforms for implementing morphological **analyzers** in various languages. **Implementation** of these have been compared with the Tamil analyzer developed here, taking into consideration factors such as, the cost of implementation in terms of effort and time, coverage and efficiency.

8.5 Computational Models: Implementation

Any theoretical framework cannot be directly transferred per se to fit into a computational framework. Implementing a morphological framework into a computational formalism would invariably necessitate certain technical adjustments of the framework, in order that it evolve a fine-tuned sophisticated working model. Specific theoretical models of morphology have been implemented in different computational models with a view to learn if theory and formalism do indeed go hand-in-hand, through the process of implementation to check the suitability of each for a specific language.

8.5.1 THE HYBRID MORPH FOR TAMIL

The analyzer for Tamil developed and described in this thesis, is a hybrid model that finds its theoretical basis in a blend of the LA and IP models of morphology. It constitutes an in-built lexicon and involves a decomposition of words in terms of morphemes within the model to realize surface well-formed word-forms. The functioning can be described as defining a transformation depending on the morphemic nature of the word stem. The analysis involves a scanning of the string from the right to the left periphery scanning each suffix at a time, stripping it, and reconstructing the rest of the word with the aid of P and MP rules exemplified in each instance. This goes on till the string is exhausted. (For details of implementation see Ch.7, **Sec.7.1.1**, and Appendices I(a-e) for the database.)

8.5.2 THE AMPLE IMPLEMENTATION FOR TAMIL

AMPLE illustrates an Item and Arrangement model of morphology, which underlies the principle of "allomorph matching". The Tamil morphological database comprises of a comprehensive listing of all the allomorphs, for each of the word classes of the language (both roots and suffixes). Wrong combinations of stems and suffixes have been barred by specifying phonological, morphophonemic or morphological constraints wherever necessary. (For details of implementation see Ch.7, Sec.7.1.2, and Appendix 2 for the database.)

8.5.3 THE KIMMO IMPLEMENTATION FOR TAMIL

KIMMO is largely principled on the theory of *two level phonology*. A phonological rule builds up a direct correspondence between the underlying form of a word and its surface realization based on the actual environment that it occurs in. Rules relate the nature of a transformational rule based on context of occurrence, along with a specification of the frequency of application. The functioning relies on what may be termed as a *finite state automaton*, which processes an input word through a sequential scanning of the given string. (For details of implementation see Ch.7, Sec.7.1.3, and Appendix 3 for the database.)

8.6 Computational Models: Comparison of Results

✎ Parsing a sample string¹

A sample noun string from Tamil *marafkaLYppaRRiyum* 'about the trees', will be taken up as an example to illustrate the parsing mechanism in each of the three models.

Input: *marafkaLYppaRRiyum* (corresponds to *marafkaLYppaYrYiyunin* in the WX notation)

Output: *maram* + *kaL* + *Y* + *paRRi* + *um*

Gloss: 'tree' (noun) + (plural) + (acc.) + 'about' (accparticle) + 'also' (inclusive clitic)

Translation: 'also about the trees'

8.6.1 Parsing in the HYBRID model

In the Hybrid model, developed and implemented in PERL, the following rules have to be declared, besides the lexical search for inflections:

```
$nounword =~ s/(.*)yum/$1/;  
$nounword =~ s/(.*)fkaLYE)ppaYrYi/$1/;  
$nounword =~ s/(.*)fkaLYE/$1/;  
$nounword =~ s/(.*)fkaLY/$1/;  
$nounword =~ s/(.*)f/$1m/;
```

Here, we have a *right-to-left* analysis of the given string. Each character at a time, from the right periphery up to the point of entry is presumed a possible morpheme. This is checked with a feasible pair (in the rule file) & simultaneously with a possible set of entries in the lexicon file. Each lexical entry is interpreted as a letter tree. The analyzer tries the possibility of moving down a letter tree. The parse progresses if the following character in the string finds a match in the letter tree. This part of the matched suffix is then stored in a

¹ Two different notations have been used in this thesis. Correspondences of these with the IPA notation have been provided in the Transliteration Table in the beginning of the thesis.

temporary array, with the corresponding tag. If a match is not found, the recognizer backtracks to try out another alternative as a possible progress down that letter tree. Global **P-rules** apply at large, in the reconstruction of the stem, immediately after a suffix has been stripped. Sandhi rules apply wherever necessary. The ordering of rules is such that the analysis involves a stripping of each inflectional suffix starting from the outermost level.

The parse progress of the string can be shown **algorithmically** as follows:

```

1. Enter Main
2. Let Lexicon.pl be Lexicon
3. Let Noun.pl be subNoun
4. Let Pronoun.pl be subPronoun
5. Let Numeral.pl be subNumeral
6. Let Verb.pl be subVerb
7. Let fldjective.pl be subAdjective
8. Prompt for <STDIN>
9. Let <STDIN> - "marafkalYEpparYrYiyum" (input string)
10. Chop "marafkalYEpparYrYiyum"
11. Go to subNoun
12. Enter subNoun
13. Let nounword be wf
14. Let nouncaseform be ncf
15. Let nouncase be nc
16. Let nounbaseform be nbf
17. Let nounbase be nb
18. Let nounnumform be nnf
19. Let nounnum be nn
20. Print "Noun Form is wf is maraf kalYEpparYrYiyum"
21. Enter loop Clitic
22. Foreach identified clitic
23. Substitute clitic (yum) by null
24. Reconstruct wf as marafkalYEpparYrYi
25. Print "clitic is um"
26. Exit loop
27. Enter loop Particle
28. Foreach identified particle
29. Substitute particle (parYrYi) by null
30. Reconstruct wf
31. Print "particle is particleform"
32. Exit loop
33. Enter loop Case
34. Foreach identified case
35. Substitute case (E) by null
36. Reconstruct wf
37. Print "case is caseform"
38. Exit loop
39. Enter loop Base
40. Foreach identified base
41. Substitute base (Ø) by null
42. Reconstruct wf
43. Print "base is baseform"
44. Exit loop
45. Enter loop Number
46. Foreach identified number
47. Substitute number (kalY) by null
48. Reconstruct wf
49. Print "number is numberform"
50. Exit loop
51. Print "Noun Root is w maram"
52. Go to subPronoun
53. Execute loop(s)
54. If wf finds a match
55. Display result
56. Go to subNumeral

```

```

57. Execute loop(s)
58. If wf finds a match
59. Display result
60. Go to subVerb
61. Execute loop(s)
62. If wf finds a match
63. Display result
64. Go to subAdjective
65. Execute loop(s)
66. If wf find3 a match
67. Display result
68. Exit

```

The morphological string is decomposed and displayed as follows:

Noun Form:	marafkalYEpparYrYiyum
Clitic:	Inclusive1 (um)
Particle:	Accusative (parYrYi)
Base:	Accusative (E)
Number	Plural (kalY)
Oblique. Suffix:	0
Noun Root:	maram

8.6.2 Parsing in the AMPLE model

For the string to be parsed in AMPLE, the following declaration of root and suffix allomorphs, (in the specified format) are required in the AMPLE lexicon files, along with the corresponding phonological and morphophonemic constraints that apply to specific allomorphs.

Root Lexicon

```

\l      maram
\l      maram  +/_Plr.num ((constraint on a following plural affixing suffix (MEC))
\l      maraf
\l      mara  +/_Plr.num ((constraint on a following plural affixing suffix (MEC))
\c      Noun/Noun
\ge     tree

```

Suffix Lexicon

```

\s      kaL
\l      kaL  /[Vlg]~_ ((constraint on a preceding long vowel (SEC))
\l      kkaL  /[Vsh]~_ ((constraint on a preceding short vowel (SEC))
\c      Noun/Noun
\ge     tree

\l      Y
\l      Y  /[Casex1]~_ ((constraint on a set of preceding phonemes, declared as an exclusion scl. (SEC))
\l      RY  /[Casex2]~_ ((constraint on a set of preceding phonemes, declared as an exclusion scl. (SEC))
\l      yY  /[Casex3]~_ ((constraint on a set of preceding phonemes, declared as an exclusion scl. (SEC))
\l      NY  /[Casex4]~_ ((constraint on a set of preceding phonemes, declared as an exclusion scl. (SEC))
\l      tY  /[Casex5]~_ ((constraint on a set of preceding phonemes, declared as an exclusion scl. (SEC))
\l      wwY  /[Casex6]~_ ((constraint on a set of preceding phonemes, declared as an exclusion scl. (SEC))
\l      LY  /[Casex7]~_ ((constraint on a set of preceding phonemes, declared as an exclusion scl. (SEC))
\l      MY  /[Casex8]~_ ((constraint on a set of preceding phonemes, declared as an exclusion scl. (SEC))
\l      IY  /[Casex9]~_ ((constraint on a set of preceding phonemes, declared as an exclusion scl. (SEC))
\l      vY  /[Casex10]~_ ((constraint on a set of preceding phonemes, declared as an exclusion scl. (SEC))
\l      mY  /[Casex11]~_ ((constraint on a set of preceding phonemes, declared as an exclusion scl. (SEC))

```

```

\c      Noun/Noun Pronoun/Pronoun Numeral/Numeral
\ge     Acc.cs

\s      paRRi
\va     paRRi
\va     ppaRRi
\c      Noun/Noun Pronoun/Pronoun
\ge     PLAcc

\s      um
\va     um      /[Casex1]~_ ((constraint on a set of preceding phonemes, declared as an exclusion s.c. (SEC))
\va     yum     /[Casex2]~_ ((constraint on a set of preceding phonemes, declared as an exclusion s.c. (SEC))
\va     yum     /[Casex3]~_ ((constraint on a set of preceding phonemes, declared as an exclusion s.c. (SEC))
\c      Noun/Noun Pronoun/Pronoun Numeral/Numeral Adjective/Adjective Verb/Verb
\ge     Incl.1.Cl

```

AMPLE adopts a left-to-right scan, each stem at a time scanned and checked for a possible entry in the root lexicon file. If a match for a root is found the scan proceeds to the suffix lexicon. A parse can progress, only if the string satisfies the specified SEC/MEC/MCC(s). As long as a suffix is found, the parse progresses until the string is exhausted, the suffix being stripped off at each level. The parse goes through a series of both succession and final tests, to check the validity of a parse and its ambiguity levels, before the output is declared.

The parse progress of the string is shown as follows:

```

Parsing marafkaLYppaRRiyum
root: maraf tree Noun +/_ ~Plr.num
No more suffixes found.
root: maraf tree Noun
sfx: kaL Plr.num Noun/Noun oc = 0 / [Vlg] ~_
sfx: Y Acc.cs Noun/Noun oc = 0
sfx: ppaRRi Pl.Acc Noun/Noun oc = 0
sfx: yum Habitual.Ppl Verb/Verb oc = 0
Suffix test PROGRESSIVE_CATEGORY_ST failed.
sfx: yum Incll.Cl Noun/Noun oc = 0 / [Casex3] ~_
No more suffixes found.
End of word found; checking final tests
Analysis: < Noun tree > Plr.num Acc.cs Pl.Acc Incll.Cl
Decomposition: maraf-kaL-Y-ppaRRi-yum
sfx: yum Incll.Cl Pronoun/Pronoun oc = 0 / [Casex3] ~_
Suffix test PROGRESSIVE_CATEGORY_ST failed.
sfx: yum Incll.Cl Numeral/Numeral oc = 0 / [Casex3] ~_
Suffix test PROGRESSIVE_CATEGORY_ST failed.
sfx: yum Incll.Cl Adjective/Adjective oc = 0 / [Casex3] ~_
Suffix test PROGRESSIVE_CATEGORY_ST failed.
sfx: yum Incll.Cl Verb/Verb oc = 0 / [Casex3] ~_
Suffix test PROGRESSIVE_CATEGORY_ST failed.
sfx: ppaRRi Pl.Acc Pronoun/Pronoun oc = 0
Suffix test PROGRESSIVE_CATEGORY_ST failed.
sfx: pp Fut.tns Verb/Verb oc = 0 / [Futx2] ~_
Suffix test PROGRESSIVE_CATEGORY_ST failed.
sfx: p Fut.tns Verb/Verb oc = 0 / [Futx1] ~_
Suffix test PROGRESSIVE_CATEGORY_ST failed.
sfx: Y Acc.cs Pronoun/Pronoun oc = 0
Suffix test PROGRESSIVE_CATEGORY_ST failed.
sfx: ka Inf. Verb/Verb oc = 0
Suffix test PROGRESSIVE_CATEGORY_ST failed.

```


The morphological string is decomposed as follows:

```
\a <Noun tree> Plr.num Acc.cs PLAcc Incl.Cl
\d maraf-kal-Y-ppaRRi-yum
\w marafkalYppaRRiyum
\n\n
```

8.6.3 Parsing in the KIMMO model

For the string to be parsed in KIMMO, the following two-level rules (in the specified format), have to be declared in the rule component of KIMMO, along with the necessary lexicons turned on.

RULE "1 Consonant defaults" 119

	k	C	t	v	p	r	f	N	n	m	M	y	R	L	v	Z	1	@	#	Surface
1:	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	Underlying

RULE "2 Vowels and other defaults" 113

	a	A	i	I	u	U	e	E	Y	o	0	W	@	#	Surface
1:	1	1	1	1	1	1	1	1	1	1	1	1	1	1	Underlying

RULE "3 Gemination, 0:{k,l,v,t,N,p} ⇒ {Vb,l,v,t,N,p} (+:0)___" 7 14

	Vbl	1	v	t	N	p	+	0	0	0	0	0	0	0	@	Surface
	Vbl	1	v	t	N	p	0	k	1	v	t	N	p	0	@	Underlying
1:	2	3	4	5	6	7	1	0	0	0	0	0	0	0	1	
2:	2	3	4	5	6	7	2	1	0	0	0	0	0	0	1	
3:	0	3	4	5	6	7	3	0	1	0	0	0	0	0	1	
4:	2	0	4	5	6	7	4	0	0	1	0	0	0	0	1	
5:	2	3	0	5	6	7	5	0	0	0	1	0	0	0	1	
6:	2	3	4	0	6	7	6	0	0	0	0	1	0	0	1	
7:	2	3	4	5	0	7	7	0	0	0	0	0	0	1	1	

RULE "5 Nasal Assimilation, nrf ⇒ ___(+:0) k" 3 4

	m	+	k	@	Surface
	f	0	k	@	Underlying
1:	2	1	1	1	
2:	0	3	0	0	
3:	0	0	1	0	

RULE "8 Glide Insertion, 0:{v,y} ⇒ {Vbk,Vft} (+:0)___V" 4 6

	Vbk	Vft	+	0	0	@	Surface
	Vbk	Vft	0	v	y	@	Underlying
1:	2	3	1	0	0	1	
2:	0	3	2	1	0	1	
3:	0	0	3	0	1	1	
4:	2	0	4	0	0	1	

KIMMO adopts a left-to-right parse, scanning and checking each character with a feasible pair (in the rule file) & simultaneously with a possible set of entries in the lexicon

ENTERING LEXICON INITIAL		ACCEPTING NULL ENTRY IN LEXICON INITIAL	
ENTERING LEXICON	NOUN_ROOT	ENTERING LEXICON	NOUN_ROOT
m:m	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
a:a	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	m	[
r :	1 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1 1	ma	[
a:a	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	mar	[
m :	1 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1 1	mara	[
ENTERING LEXICON NUMBER			
+0	1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1	maram	
(maram)			
k:k	1 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1	maram+	
(maram)			
a:a	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	maram+k	
(maram)			
l:l	1 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1 1	maram+ka	
(maram)			
ENTERING LEXICON CASE			
+0	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	maram+kaL	
(maram)+PL			
Y:Y	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	maram+kaL+	
(maram)+PL			
ENTERING LEXICON NOUN_INFLECTIONS			
+0	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	maram+kaL+Y	
(maram)+PL+ACC			
p:p	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	maram+kaL+Y+	
(maram)+PL+ACC			
0:p	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
ram+kaL+Y+p	[N(maram)+PL+ACC		
a:a	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
ram+kaL+Y+p0	[N(maram)+PL+ACC		
R:R	1 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1 1		
ram+kaL+Y+p0a	[N(maram)+PL+ACC		
R:R	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
ram+kaL+Y+p0aR	[N(maram)+PL+ACC		
i:i	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
ram+kaL+Y+p0aRR	[N(maram)+PL+ACC		
ENTERING LEXICON NOUNINFLECTIONS			
+0	1 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1 1		
ram+kaL+Y+p0aRRi	[N(maram)+PL+ACC+PL+Acc		
0:y	1 1 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1		
ram+kaL+Y+p0aRRi+	[N(maram)+PL+ACC+PL+Acc		
u:u	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
ram+kaL+Y+p0aRRi+0	[N(maram)+PL+ACC+PL+Acc		
BLOCKED IN LEXICON NOUN_INFLECTIONS: INPUT -	m		
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
ram+kaL+Y+p0aRRi+0	[N(maram)+PL+ACC+PL+Acc		
BLOCKED IN LEXICON NOUNINFLECTIONS: INPUT =	um		
1 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1 1			
ram+kaL+Y+p0aRRi+	[N(maram)+PL+ACC+PL+Acc		
BLOCKED IN LEXICON NOUN_INFLECTIONS: INPUT -	yum		
1 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1 1			
ram+kaL+Y+p0aRRi	[N(maram)+PL+ACC+PL+Acc		
0:y	1 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1 1		
ram+kaL+Y+p0aRRi	[N(maram)+PL+ACC+PL+Acc		
+0	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
ram+kaL+Y+p0aRRi0	[N(maram)+PL+ACC+PL+Acc		

```

2 0 u:u 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
maram+kaL+Y+p0aRRi0+ [N(maram)+PL+ACC+Pl.Acc
21- BLOCKED IN LEXICON NOUNINFLECTIONS: INPUT = m
20< 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
maram+kaL+Y+p0aRRi0+ [N(maram)+PL+ACC+Pl.Acc
20- BLOCKED IN LEXICON NOUN INFLECTIONS: INPUT - um
19< 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
maram+kaL+Y+p0aRRi0 [N(maram)+PL+ACC+Pl.Acc
19- BLOCKED IN LEXICON NOUN INFLECTIONS: INPUT - um
18< 1 1 1 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1
maram+kaL+Y+p0aRRi [N(maram)+PL+ACC+Pl.Acc
BACKING UP FROM LEXICON NOUN INFLECTIONS TO LEXICON NOUN_INFLECTIONS
ENTERING LEXICON VERB INFLECTIONS
1 8 +:0 1 1 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1
maram+kaL+Y+p0aRRi [N(maram)+PL+ACC+Pl.Acc
1 9 0:y 1 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1
maram+kaL+Y+p0aRRi+ [N(maram)+PL+ACC+Pl.Acc
20- BLOCKED IN LEXICON VERB INFLECTIONS: INPUT = um
19< 1 1 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1
maram+kaL+Y+p0aRRi+ [N(maram)+PL+ACC+Pl.Acc
19- BLOCKED IN LEXICON VERB INFLECTIONS: INPUT = yum
18< 1 1 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1
maram+kaL+Y+p0aRRi [N(maram)+PL+ACC+Pl.Acc
1 8 0:y 1 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1
maram+kaL+Y+p0aRRi [N(maram)+PL+ACC+Pl.Acc
1 9 +:0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
maram+kaL+Y+p0aRRi0 [N(maram)+PL+ACC+Pl.Acc
20- BLOCKED IN LEXICON VERB INFLECTIONS: INPUT = um
19< 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
maram+kaL+Y+p0aRRi0 [N(maram)+PL+ACC+Pl.Acc
19- BLOCKED IN LEXICON VERB INFLECTIONS: INPUT = um
18< 1 1 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1
maram+kaL+Y+p0aRRi [N(maram)+PL+ACC+Pl.Acc
BACKING UP FROM LEXICON VERBINFLECTIONS TO LEXICON NOUN_INFLECTIONS
ENTERING LEXICON COMMON INFLECTIONS
1 8 +:0 1 1 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1
maram+kaL+Y+p0aRRi [N(maram)+PL+ACC+Pl.Acc
1 9 0:y 1 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1
maram+kaL+Y+p0aRRi+ [N(maram)+PL+ACC+Pl.Acc
2 0 u:u 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
maram+kaL+Y+p0aRRi+0 [N(maram)+PL+ACC+Pl.Acc
2 1 m:m 1 1 1 1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1
maram+kaL+Y+p0aRRi+0u [N(maram)+PL+ACC+Pl.Acc
ENTERING LEXICON COMMONINFLECTIONS
2 2 +:0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
maram+kaL+Y+p0aRRi+0um [N(maram)+PL+ACC+Pl.Acc+ Incl1.Cl
23- BLOCKED IN LEXICON COMMON INFLECTIONS: INPUT =
22< 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
maram+kaL+Y+p0aRRi+0um [N(maram)+PL+ACC+Pl.Acc+ Incl1.Cl
BACKING UP FROM LEXICON COMMONINFLECTIONS TO LEXICON COMMON_INFLECTIONS
ENTERING LEXICON End
ACCEPTING NULL ENTRY IN LEXICON End

```

RESULT = maram+kaL+Y+p0aRRi+0um [N(maram)+PL+ACC+Pl.Acc+ Incl1.Cl]

```

22< 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
maram+kaL+Y+p0aRRi+0um [N(maram)+PL+ACC+Pl.Acc+ Incl1.Cl
BACKING UP FROM LEXICON End TO LEXICON COMMONINFLECTIONS
21< 1 1 1 1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1
maram+kaL+Y+p0aRRi+0u [N(maram)+PL+ACC+Pl.Acc
20< 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
maram+kaL+Y+p0aRRi+0 [N(maram)+PL+ACC+Pl.Acc
19< 1 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1 1
maram+kaL+Y+p0aRRi+ [N(maram)+PL+ACC+Pl.Acc
18< 1 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1 1
maram+kaL+Y+p0aRRi [N(maram)+PL+ACC+Pl.Acc
BACKING UP FROM LEXICON COMMONINFLECTIONS TO LEXICON NOUN_INFLECTIONS

```


Sl.No.	Feature for Computation	Label
1	Theory	A
2	Number of Components	B
3	Number of Rules	C
4	Number of Allomorphs	D
5	Number of Constraints	E
6	Number of Backtrackings/Blockings	F
7	Ambiguity Level(s)/Failure(s)	G
8	Parsing Time	H

TAMIL MORPH	A	B	C	D	E	F	G	H
implemented in AMPLE	1A/Pattern matching (Concatenative)	6	0	16	17	17	0	3.2s
implemented in KIMMO	Two-level phonology (Processual)	7	3	5	7	7	0	3.8s
The Hybrid model	1A/IP (P/MP rules)	6	3	6	0	0	0	2.9s

Table 8.1: Benchmarking the Analyzers

8.8 Discussion

The above presentation calls for a discussion on three aspects of parsing:

- 1) How a particular string is analyzed by the three models; (Example from a noun in Tamil)
- 2) The limitations and merits of each model;
- 3) Problems posed during the parse progress.

Discussions on these issues follow.

PROBLEMS

I. The AMPLE Analyzer

The problems in the case of AMPLE are twofold:

- i) AMPLE involves a huge set of allomorphs for each root and suffix entry in the lexicons.
- ii) In addition, there are very many constraints in the case of each allomorph, necessary to constrain impermissible combinations, hence cost on analyst's effort and process time.

II. The KIMMO Analyzer

The problems faced in this implementation and testing of KIMMO are threefold:

- i) KIMMO requires several lexicons to parse a single string.
- ii) KIMMO requires fine-grained alternation declarations to parse a single string.

There have been various other kinds of problems reported handling Kimmo for a language like Tamil. Limitations of Kimmo in tackling morphologically complex languages have already been stated: "Only restricted infixation and reduplication can be handled

adequately with the present system. Some extensions or revisions will be necessary for an adequate description of languages possessing extensive infixation or reduplication." (Koskeniemi 1983: 27, as quoted in Beesley & Karttunen 2000)

Sarkar, basically addresses the problem of descriptive inadequacy, faced in the adaptation of Kimmo's two-level morphology to Indian languages, particularly Tamil. An extension of this formalism through an allowance of co-existing conflicting phonological rules, without disturbing the working or complexity of the fundamental model, is seen as a solution to this problem

In "Two Level Morphology with Composition" of Karttunen, Kaplan et. al), find that a processual mechanism as that of Kimmo tends to fail. The reasons he attributes to this are:

a) Lexical representations tend to be arbitrary.

Encoding forms for a morphologically complex language necessitate the use of symbols and/or diacritics. Writing and testing a two-level system in such a case tends to be logically tedious and morphologically cumbersome, in the sense that 'radically dissimilar' links between the surface and lexical forms do not satisfy the condition of being phonologically intuitive.

b) Morphological categories are not directly encoded as part of the lexical form.

Due to a representation of string structures in non-grammatical terms, a morphological understanding of string processes is not enabled.

Finite-state morphology rests on the observation that ordinary morphological alternations involve regular relations. When the relationship between lexical and surface forms is complex, the descriptive task of setting up rules that relate the two levels can be simplified by decomposing the complex relation to a series of less opaque matches. For efficient recognition and generation, the resulting cascade can be reduced to a single transducer. This is the basis of the early work by Kaplan and Kay (2000) on converting ordered rewrite rules to a cascade of transducers and the parallel transducers of Koskeniemi's two-level model.

On the psychological standpoint of two-level morphology, Karttunen, Kaplan et. al., have the following to say: "The fact that it is possible to construct a lexical transducer for the whole language raises interesting theoretical issues. In linguistics it is commonly assumed that lexical entries and the rules for realizing them exist independently from one another. The initial separation between the lexicon and the rules is useful in constructing a system for word recognition and generation. The rules are, in a sense, a decomposition of a very complex mapping between lexical and surface forms to a set of simpler relations that we can comprehend and manipulate. But in the construction of the final result individual rules and the distinct lexicon disappear. The rules play no role at all in the actual generation and recognition process. They are needed only for the purpose of enlarging the lexicon, although other acquisition methods can be envisioned. The rules are true generalizations about the two-level lexicon constructed with them but they are not a part of it. In linguistics the psychological reality of rules is often taken to be established by the observation that a simple listing of all forms would be not only implausible but even impossible, given that the brain must have some storage limitations. The general organization of the system like the one we have described suggests that the role of rules might be quite different. Instead of being essential for the production and comprehension of speech, the rules that linguists are trying to discover may be - if they exist in the mind at all - only secondary reflections on the generalizations that can be encoded in the finite-state lexical structure itself."

III. The Hybrid Analyzer

The main problem in the implementation of the Hybrid model is that:

- i) It involves a specific ordering of rules for the analysis to be performed correctly, and for the inflections to be stripped systematically. This however can be taken care of, through a finer specification of **phonotactics/morphotactics** for each inflection.

COVERAGE

A set of 23 classes of nouns formed the input to the parsers. AMPLE does not have the feature of paradigmatic functioning ingrained. It therefore fails to account for a nominal form, not listed in the lexicon. Although KIMMO functions on generic rules, it too does fail to parse the input that is not listed in its lexicon. The Hybrid model for Tamil accounts for any noun that falls within any one of the 23 specified classes in the nominal paradigm.

ECONOMY

KIMMO involves numerous steps in analysis compared to AMPLE and the Hybrid model. Backtracking proves costly.

8.9 Some Theoretical Issues

I wish to draw attention to Maxwell's claim on the possibility of a direct mapping of an Item and Arrangement (IA) model into an Item and Process (IP) description in the context of computational implementations of morphological models.

Theoretically, IA and IP have been distinguished in varying ways, specifically in their concept and treatment of morphemes and allomorphs. Structurally, IA is one, which regards both roots and affixes as morphemes, and IP, that considers roots as morphemes and affixes as rules. Functionally, IA involves a concatenative approach to word formation. Words are composed of stems and affixes, in agreement with specific combinatorial rules of grammar. IP rather adopts a **processual** mechanism in word formation. Every morpheme has one basic underlying allomorph from which all other allomorphic forms find their origin through transformational rules of phonology.

Descriptively, and in a **formalistic** framework, in accordance with Bybee 1985 and Pike & Pike 1982, the bifurcation is reframed as one between the *Multiple Underlying Form* model (**MUF**) and the *Single Underlying Form* model (SUF). MUF models that assume a complete listing of all allomorphs of all morphemes to be listed in the lexicon of the language roughly correspond to the IA theory. SUF models that presuppose a single underlying basic allomorph in the lexicon, from which all other allomorphs of the relevant morpheme are derived through phonological rules of the language, corroborate with the IP theory of morphology.

Maxwell is of the view that although IP is ideal in its theoretical basis, it is essential that IA be given more allowance at the descriptive level in practice.

A MUF model assigns a fundamental status to allomorphs, all of which are stored in the lexicon, and a specific one of them is chosen for lexical insertion based on the relevant phonological or morphosyntactic context. In a SUF model however, only one basic underlying allomorph is stored in the lexicon, the others being derived from this through the application of P-rules.

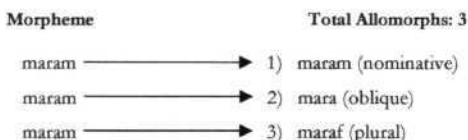
To trace the link between the 2 theories, I quote from Maxwell (1998: 3):

".... SUF theories in fact provide an "escape" mechanism, which allows the translation of an MUF description into an SUF description in a way, which is both mechanical and transparent to the user. The implication is that while an underlying parsing engine may implement SUF morphology internally, it can in fact process descriptions couched in terms of either SUF or MUF morphology, with a minor amount of preprocessing."

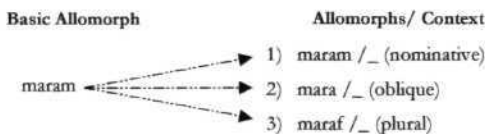
The necessity of the IA scheme is seen in instances where phonologically conditioned allomorphy is sometimes unaccountable through derivation. Moreover a simplified statement of allomorphy through the long listing technique as in the MUF model, would serve for a more concrete understanding of the nature of allomorphy rules. The IP model envelops in its allomorphy rules, principles of the IA model. As a matter of fact, any lexical item, with multiple allomorphs can be mechanically transformed into a lexical item with a single underlying basic allomorph, together with one or more allomorphy rules to derive the rest. To illustrate this line of reasoning:

The lexical entry *maram* 'tree', as represented in the IA & IP model, is as follows:

Item & Arrangement:



Item & Process:



Translating an IA description into an IP one, rather more precisely, an MUF to an SUF model would involve a diacritical marking of the allomorph that is chosen as the prime underlying one. The remaining allomorphs could be realized in their specific environments through rules, 'sensitive' to the diacritic feature. Allomorphy statements can, at any stage be collapsed into allomorphy rules.

Benefits of a system that describes one theory in terms of another, as Maxwell states, "is re-use of the parsing engine, at the cost of building a user interface to translate theories."

The Hybrid Model considers a word as a morpheme. As to the treatment of allomorphy, the Hybrid Model is an amalgam of the MUF and SUF approaches to morphological decomposition. Allomorphs are predominantly used, but principles of the IP are at work, whenever the alternations are declared. Morpheme-specific phonological and morphological constraints are incorporated in the loop on the lines of a MUF model. The functioning of the Hybrid Model can be said to be grounded in a linguistic approach to morphology, rather than a pure computational approach.

AMPLE considers a word as a string-sequence. Natural classes of sounds are described in terms of string 'classes'. As to the treatment of allomorphy, AMPLÉ represents a MUF approach to word processing. The contextual restrictions on the occurrence of particular allomorphs are imposed by 'Morpheme Co-occurrence Constraints' (MCCs), 'Morpheme Environment Constraints' (MECs) and 'String Environment Constraints' (SECs), which fairly correspond to the theoretical concepts of 'morphotactic', 'morphophonemic' and 'phonological' factors of contextual conditioning. In addition to such constraints, AMPLÉ also has features such as the 'morpheme property' and 'allomorph property', which are assigned to individual morphemes and allomorphs respectively. Attributes like morpheme property or constraints, have to be externally devised, since AMPLÉ does not have these features ingrained. AMPLÉ can therefore be observed as one with a straight computational bent in its approach to morphology, rather than a linguistic one.

KIMMO too, considers a word as a string-sequence. In the treatment of allomorphy however, KIMMO adopts a SUF approach to word processing. There is no allomorphy involved. The concept of contextual restrictions is entirely phonological. Morphophonemic or Phonological change on the one basic lexical entry is handled by the specification of a two-level rule. KIMMO's approach to parsing a word can be viewed as one with a phonological approach to morphology, rather than a strictly morphological one.

Bibliography

- Aduriz I. _; Agirre E.; Aldezabal I.; Alegria I.; Arregi X.; Arriola J. M.; Artola X.; Gojenola K.; Maritxalar A.; Sarasola K.; and Urkia M. _ 2000. A word-grammar based morphological analyzer for agglutinative languages. Basque Country: University of the Basque Country. <http://nlp3.korea.ac.kr/proceeding/coling2000/COLING/pdf/001.pdf>
- Agesthialingom, S. 1967. Generative Grammar of Tamil. Annamalai University.
- Agesthialingom, S; and Varma G. Srinivasa (eds.) 1980. Auxiliaries in Dravidian. Annamalai University.
- Aiyar, Swaminatha R. 1987. Dravidian Theories. Madras: Motilal Banarsidas.
- Albert, D. 1985. Tolkaappiyam. Phonology and Morphology (An English Translation). Madras: International Institute of Tamil Studies.
- Aldezabal. I; Aranzabe. M; Atutxa. A; Gojenola. K; Oronoz. M; and Sarasolak. Application Of Finite-State Transducers to The Acquisition Of Verb Subcategorization Information <http://ixa.si.edu.es/Ixa/Argitalpenak>
- Alegria I.; Artola X.; Sarasola K.; and Urkia M (1996) *Automatic morphological analysis of Basque: Literature and Linguistic Computing*, 11 (4): 193-203. Oxford University.
- Ambedkar, Ganesan. 1998. Strategies in the Formation of Word-Level Equivalence with Special Reference to Tamil Words. Unpublished Ph.D Thesis. Hyderabad: University of Hyderabad.
- Andronov, M. S. 1977. Dravidian Languages. Vijayawada: VisalAndhra.
- Annamalai, E., and Steever, B. Sanford, 1998. Modern Tamil, In Steever, B. Sanford, (ed.) The Dravidian Languages. London: Routledge.
- Antworth, L. Evan. 1990. PC-KIMMO: A Two Level Processor for Morphological Analysis. Dallas: Summer Institute of Linguistics.
- Arden, A. H. 1976. A Progressive Grammar of the Tamil Language. Madras: The Christian Language Society.
- Aronoff, Mark. 1985. Word Formation in Generative Grammar. Massachusetts: Massachusetts Institute of Technology.
- Arulmozhi. 1998. Aspects of Inflectional Morphophonology — A Computational Approach. Unpublished Ph.D Thesis. Hyderabad: University of Hyderabad.
- Asher. 1985. Tamil. London: Croom Helm.
- Ayyar, C P. Venkatarama; Subbaya, K.V.; and Pillai, S. Anavaratrinayakam. 1987. Dravidic Studies. Madras: Sri Satguru.
- Bharari Akshar, Chaitanya, Vineet; and Sangal, Rajeev. 1995. Natural Language Processing. A Paninian Perspective. New Delhi: Prentice Hall of India.

- Bharati Akshar**, Chaitanya, Vineet; **Kulkarni, P.Amba**; and Sangal, Rajeev. 1997. *Anusaraka*: Machine Translation in Stages. **Mumbai**: **Vivek**, A Quarterly in Artificial Intelligence, Vol.10, No.3 (pp.22-25), NCST.
- Bharati Akshar**, **Bhatia, Medhavi**; Chaitanya, Vineet; and Sangal, Rajeev. 1997. Paninian Grammar Framework Applied to English. New Delhi: South Asian Language Review.
- Black, H. Andrew** and **Black, A. Cheryl**. 1999. A Conceptual Introduction to Morphological Parsing using AMPLÉ. Dallas: Summer Institute of Linguistics.
- Carstairs-McCarthy, Andrew**. 1998. Paradigmatic Structure: Inflectional Paradigms and Morphological Qasses, In Spencer, Andrew and Zwicky, Arnold (eds.) *The Handbook of Morphology*. Oxford: **Blackwell**.
- Cruz**. 2002. Parsing and Generation of Tamil Verbs in GSMorph. Unpublished M.Phil Dissertation. Hyderabad: University of Hyderabad.
- Garman, Michael**. 1990. Psycholinguistics. Great Britain: Cambridge University Press.
- Harel, David**. 1987. *Algorithmics: The Spirit of Computing*. Great Britain: Wesley Publishers.
- Hiroshi. Sano**; Ryoichi, **Kawada**; and Minako, **Hasimoto**. Morphological Grammar Rules: an implementation for JUMAN. Japan: Toshiba Kansai Research Laboratory. <http://citeseer.nj.nec.com/hiroshi94morphological.html>
- Hooper, B. Joan**. 1976. An Introduction to Natural Generative Phonology. New York: Academic press.
- Innaasi, S.** 1985. Colliyal. Madras. **Abhirami Publications**.
- Karttunen. Lauri**; **Kaplan. M. Ronald**; and Zaenen. **Annie**. 1992. Two-Level Morphology with Composition. Xerox Palo Alto Research Center. Stanford University. <http://www.ling.gu.se/~lager/kurser/FST/papers/coling92.ps>
- Katamba, Francis**. 1994. Morphology. London: **Macmillan**.
- Kenneth. R. Bessley** and **Karttunen, Lauri** 2000. Finite-State Non-Concatenative Morphotactics. Proceedings of the Fifth Workshop of the ACL Special Interest Group in Computational Phonology. p. 1-12. Luxembourg.
- Kiparsky, Paul**. 1982. Explanation in Phonology. (Publication in Language Sciences). Dodrecht — Holland: Foris.
- Kulkarni, Charulatha**. 1997. Preparations for Morphological Analyser for **Marathi**. Unpublished M.Phil Dissertation. Hyderabad: University of Hyderabad.
- Leavitt, R.R John**. MORPHE: A Practical Compiler for Reversible Morphology Rules. Pittsburgh. Carnegie Mellon University. <http://acl.ldc.upenn.edu/A/A92/A921034.pdf>
- Lehmann, Thomas**. 1989. A Grammar of Modern Tamil. **Pondicherry**: Pondicherry Institute of Linguistics and Culture.
- Lemay, Laura**. 1999. SAMS Teach yourself Perl in 21 days. (Indian edn.). New Delhi: **Techmedia**.
- Matthews, P. H.** 1972. Inflectional Morphology. London: Cambridge University Press.

- _____. 1974. Morphology. Introduction to the Theory of Word Structure. Cambridge: Cambridge University Press.
- McCarthy, James. 1998. Morpheme Structure Constraints and Paradigm Occultation. **Amherst**: University of Massachusetts.
- McConnel, Stephen and **Black**, H. Andrew. 2002. AMPLE Reference Manual: A Morphological Parser for Linguistic **Exploration**; version 3.5. Dallas: Summer Institute of Linguistics.
- Oflazer, Kemal** 1999. Dependency Parsing with an Extended Finite State Approach. Computing Research Laboratory. New Mexico: New Mexico State University.
<ftp://ftp.lcsl.msu.edu.tr/pub/papers/cmlr.ps.gz>
- Pope, G. U.** 1985. A First Catechism of Tamil Grammar. Madras: The South India Saiva Siddhantha Works Publishing Society.
- Ramaswamy, **Vaishnavi**. 2000. A Morphological Generator for Tamil. Unpublished M.Phil Dissertation. Hyderabad: University of Hyderabad.
- Ramesh, G. V.** 1997. Improvement of Telugu Morphological Analyzer for Anusaaraka (Machine Translation) Applications. A study of Adjectives. Unpublished M.Phil Dissertation. Hyderabad: University of Hyderabad.
- Rangaswamy, R. 1995. Comparative Dravidian. Coimbatore: Bharathiar University.
- Ritchie, D. Graeme**; **Russell, J. Graham**; **Black, W. Alan**; and **Pulman, G. Stephen**. 1992. Computational Morphology. Practical Mechanisms for the English Lexicon. Massachusetts: Massachusetts Institute of Technology.
- Sarkar, Anoop. 1993. Extending Kimmo's Two-Level Model of Morphology. CDAC. Pune: Pune University. <http://www.sfu.ca/~anoop/papers/pdf/kimmo.pdf>
- Scalise, Sergio**. 1984. Generative Morphology. Holland: Forris.
- Shanmugam, S. V.** 1967. Naccinarkkiniyar's Conception of Phonology. Annamalainagar: Anna University.
- _____. 1978. Theory of Morphology in Tolka:ppiyam, in **Agesthalingom, S., Raja.N.Kumaraswami** (eds.) Studies in Early Dravidian Grammars. Annamalainagar. Annamalai University.
- Singh, Rajendra** and **Agnihotri, Ramakant**. 1997. Hindi Morphology. A Word-Based Description. New Delhi: **Motilal Banarsidas**.
- Spencer, Andrew**. 1991. Morphological Theory. An Introduction to word structure in Generative Grammar. Oxford. Basil Blackwell.
- Spencer, Andrew** and **Zwicky, Arnold** (eds.) 1998. Handbook of Morphology. Oxford: Blackwell.
- Sproat, Richard William**. 1992. Morphology and Computation. Massachusetts: **Massachusetts Institute** of Technology.
- Uma Maheshwara Rao, G.** 1999. Morphological Analyser for Telugu (electronic form). Hyderabad: University of Hyderabad.

_____. 2000. Morphological Complexity in Telugu (Mimeo) Hyderabad: University of Hyderabad.

_____. 2002. A Computational Grammar of Telugu (Vol.1: Morphology) (Mimeo) Hyderabad: University of Hyderabad.

_____. 2002. Compound Verb Construction in Telugu. In Swarajalakshmi (ed.) Case for Language Structures, Papers in Honour of Prof. B. Laxmi Bai, 157-178. CAS in Linguistics, Osmania University: Hyderabad.

Vasanthakumari, T. 1989. Generative Phonology of Tamil. New Delhi: Mittal.

Weber, J. David, Black, H. Andrew, and McConnel, R. Stephen. 1998. AMPLE. A Tool for Exploring Morphology. Dallas: Summer Institute of Linguistics.

Maxwell, Mike. 1998. Two Theories of Morphology, One Implementation. Dallas: Summer Institute of Linguistics. <http://www.sil.org/silewp/1998/001/SILEWP1998-001.html>

McConnel, Stephen and Black, H. Andrew. 2002. AMPLE Reference Manual: A Morphological Parser for Linguistic Exploration; version 3.5. Dallas: Summer Institute of Linguistics.

Abbreviations

1pl	1 st person Plural (Feminine/Masculine)
1s	1 st person Singular (Feminine/Masculine)
2p/h	2 nd person –Plural/Honorific (Feminine/Masculine)
2s	2 nd person Singular (Feminine/Masculine)
2sh.br	2 nd person Singular, Honorific, Brahminical (Feminine/Masculine)
2shl/p	2 nd person Singular, Honorific, Literary/Plural (Feminine/Masculine)
3p/h	3 rd person - Plural/Honorific (Feminine/Masculine)
3sf	3 rd person Singular Feminine
3sh	3 rd person Singular Honorific (Feminine/Masculine)
3sm	3 rd person Singular Masculine
3an	3 rd person Singular Neuter
abl	Ablative
acc	Accusative
adm	Admonitive
adv	Adverbial
aux	Auxiliary Verb
bd	Bound/Indirect
ben	Benefactive
cl.emph1	Emphatic Clitic1
cl.emph2	Emphatic Clitic2
cl.incl1	Inclusive Clitic1
cl.incl2	Inclusive Clitic2
cl.intr1	Interrogative Clitic1
cl.intr2	Interrogative Clitic2
cl.min	Minimality Clitic
d.rest	Restrictive Clitic
dat	Dative
fin	Finite
fr	Free/Direct
fut	Future
gen	Genitive
gnpbase	Base for Gender, Number and Person
hab	Habitual
inf	Infinitive
ins	Instrumental
loc	Locative
negadjpl	Negative Adjectival Participle
negcdl	Negative Conditional
negfut	Negative Future
negpst	Negative Past
negvbpl	Negative Verbal Participle
nom	Nominative
npstdurcdl	Non-Past Durative Conditional
obl	Oblique
pl	Particle
pl1	Particle1
pl2	Particle2
plur	Plural
poscdl	Positive Conditional
posvbpl	Positive Verbal Participle
pp	Postposition
pr	Present
pradjpl	Present Adjectival Participle
proh	Prohibitive
pst	Past
pstadjpl	Past Adjectival Participle
pstdurcdl	Past Durative Conditional
rt	Root
soc	Sociative
voc.f	Feminine Vocative
voc.m	Masculine Vocative
voc.mh	Masculine, Honorific Vocative

Appendix I — a

Algorithm for the Noun Analyzer in the Hybrid Model

```

Enter subroutine Noun()
    Let nounword=word;
    Let nomcase=" ";
    Let cliticform=" ";
    Let clitic=" ";
    Let nomnum=" ";
    Let nomcaseform=" ";
    Let nombase=" ";

print "Noun Form:      $word\n\n";

Enter loop Clitic
Set i=0
Set length = length of clitic
Set word = length of word form
Set temp = word + length
if(i<=Clitic)
    && temp = $Clitic[$i]
then substitute clitic by null
reconstruct word
Set clitic=$Clitic[$i];
print "Clitic:      $cliticform($clitic)\n";
i++
Exit loop Clitic

Enter loop Dative.Adverbial
Set i=0
Set length = length of dat.adv
Set word = length of word form
Set temp = word + length
if(i<=Dat.Adv)
    && temp = $Dat.Adv[$i]
then substitute dat.adv by null
reconstruct word
Set dat.adv=$Dat.Adv[$i];
print "Dat.Adv: $dat.advform($dat.adv)\n";
i++
Exit loop Dative.Adverbial

Enter loop Dative.Postposition
Set i=0
Set length = length of dat.postppn
Set word = length of word form
Set temp = word + length
if(i<=Dat.Postpn)
    && temp = $Dat.Postpn[$i]
then substitute dat.postppn by null
reconstruct word
Set dat.postppn=$Dat.Postpn[$i];
print "Dat.Postpn:      $dat.postppnform($dat.postppn)\n";
i++
Exit loop Dative.Postposition

```

```

Enter loop Accusative.Adverbial
Set i=0
Set length = length of acc.adv
Set word = length of word form
Set temp = word + length
if(i<=Acc.adv)
    && temp = $Acc.adv[$i]
then substitute accadv by null
reconstruct word
Set acc.adv=$Acc.adv[$i];
print "Acc.adv:  $accadvform($acc.adv)\n";
i++
Exit loop Accusative.Adverbial

```

```

Enter loop Accusative.Particle
Set i=0
Set length = length of acc.pl
Set word = length of word form
Set temp = word + length
if(i<=Acc.pl)
    && temp = $Acc.pl[$i]
then substitute acc.pl by null
reconstruct word
Set acc.pl=$Acc.pl[$i];
print "Acc.pl:  $acc.plform($acc.pl)\n";
i++
Exit loop Accusative.Particle

```

```

Enter loop Accusative.Postposition
Set i=0
Set length = length of acc.postppn
Set word = length of word form
Set temp = word + length
if(i<=Acc.postppn)
    && temp = $Acc.postppn[$i]
then substitute accpostppn by null
reconstruct word
Set acc.postppn=$Acc.postppn[$i];
print "Accpostppn:  $acc.postppnform($acc.postppn)\n";
i++
Exit loop Accusative.Postposition

```

```

Enter loop Nominative.Postposition
Set i=0
Set length = length of Nom.postppn
Set word = length of word form
Set temp = word + length
if(i<=Nom.postppn)
    && temp = $Nom.postppn[$i]
then substitute Nom.postppn by null
reconstruct word
Set Nom.postppn=$Nom.postppn[$i];
print "Nom.postppn:  $Nom.postppnform($Nom.postppn)\n";
i++
Exit loop Nominative. Postposition

```



```

Enter loop Nominative.Adverbial
Set i=0
Set length = length of Nom.adv
Set word = length of word form
Set temp = word + length
if(i<=Nom.adv)
    && temp = $Nom.adv[$i]
then substitute Nom.adv by null
reconstruct word
Set Nom.adv=$Nom.adv[$i];
print "Nom.adv: $Nom.advform($Nom.adv)\n";
i++
Exit loop Nominative.Adverbial

```

```

Enter loop Genitive.Particle
Set i=0
Set length = length of Gen.pl
Set word = length of word form
Set temp = word + length
if(i<=Gen.pl)
    && temp = $Gen.pl[$i]
then substitute Gen.pl by null
reconstruct word
Set Gen.pl=$Gen.pl[$i];
print "Gen.pl: $Gen.plform($Gen.pl)\n";
i++
Exit loop Genitive.Particle

```

```

Enter loop Nominative.Particle
Set i=0
Set length = length of Nom.pl
Set word = length of word form
Set temp = word + length
if(i<=Nom.pl)
    && temp = $Nom.pl[$i]
then substitute Nom.pl by null
reconstruct word
Set Nom.pl=$Nom.pl[$i];
print "Nom.pl: $Nom.plform($Nom.pl)\n";
i++
Exit loop Nominative.Particle

```

```

Enter loop Genitive.Case1
if $word = "utEya"
nomcase= "Genitive.Case1"
nomcaseform="utEya"
then substitute "utEya" by null
reconstruct word
print "\t\tCase      : nomcase\ (nomcaseform)\n"
Exit loop Genitive.Case1

```

```

Enter loop Genitive Case2
if Sword = "inY"
nomcase= "Genitive Case2"
nomcaseform="inY"
then substitute "inY" by null
reconstruct word
print "\t\tCase      : nomcase\ (nomcaseform)\n"
Exit loop Genitive Case2

```

```

Enter loop Genitive Case3
if $word = "awu"
nomcase= "Genitive Case3"
nomcaseform="awu"
then substitute "awu" by null
reconstruct word
print "\t\tCase      : nomcase\ (nomcaseform)\n"
Exit loop Genitive Case3

```

```

Enter loop Benefactive Case1
if Sword = "ukkAka"
nomcase= "Benefactive Case1"
nomcaseform="ukkAka"
then substitute "ukkAka" by null
reconstruct word
print "\t\tCase      : nomcase\ (nomcaseform)\n"
Exit loop Benefactive Case1

```

```

Enter loop Benefactive Case2
if Sword = "IrYkAka"
nomcase= "Benefactive Case2"
nomcaseform="IrYkAka"
then substitute "IrYkAka" by null
reconstruct word
print "\t\tCase      : nomcase\ (nomcaseform)\n"
Exit loop Benefactive Case2

```

```

Enter loop Dative Case1
if Sword = "ukku"
nomcase= "Dative Case1"
nomcaseform="ukku"
then substitute "ukku" by null
reconstruct word
print "\t\tCase      : nomcase\ (nomcaseform)\n"
Exit loop Dative Case1

```

```

Enter loop Dative Case2
if Sword = "irYku"
nomcase= "Dative Case2"
nomcaseform="irYku"
then substitute "irYku" by null
reconstruct word
print "\t\tCase      : nomcase\ (nomcaseform)\n"
Exit loop Dative Case2

```

```

Enter loop Sociative Case1
if $word = "otu"
nomcase= "Sociative Case1"
nomcaseform="otu"
then substitute "otu" by null
reconstruct word
print "\t\tCase          : nomcase\ (nomcaseform)\n"
Exit loop Sociative Case1

```

```

Enter loop Sociative Case2
if $word = "utanY"
nomcase= "Sociative Case2"
nomcaseform="utanY"
then substitute "utanY" by null
reconstruct word
print "\t\tCase          : nomcase\ (nomcaseform)\n"
Exit loop Sociative Case2

```

```

Enter loop Instrumental Case
if $word = "AI"
nomcase= "Instrumental Case"
nomcaseform="AI"
then substitute "AI" by null
reconstruct word
print "\t\tCase          : nomcase\ (nomcaseform)\n"
Exit loop Instrumental Case

```

```

Enter loop Ablative Casel
if $word = "ilirunwu"
nomcase= "Ablative Casel"
nomcaseform="ilirunwu"
then substitute "ilirunwu" by null
reconstruct word
print "\t\tCase          : nomcase\ (nomcaseform)\n"
Exit loop Ablative Casel

```

```

Enter loop Ablative Case2
if $word = "itamirunwu"
nomcase= "Ablative Case2"
nomcaseform="itamirunwu"
then substitute "itamirunwu" by null
reconstruct word
print "\t\tCase          : nomcase\ (nomcaseform)\n"
Exit loop Ablative Case2

```

```

Enter loop Locative Casel
if $word = "il"
nomcase= "Locative Casel"
nomcaseform="il"
then substitute "il" by null
reconstruct word
print "\t\tCase          : nomcase\ (nomcaseform)\n"
Exit loop Locative Casel

```

```

Enter loop Locative Case2
if $word = "itam"
nomcase= "Locative Case2"
nomcaseform="itam"
then substitute "itam" by null
reconstruct word
print "\t\tCase          : nomcaseX (nomcaseform)\n"
Exit loop Locative Case2

```

```

Enter loop Accusative Case
if $word = "E"
nomcase= "Accusative Case"
nomcaseform="E"
then substitute "E" by null
reconstruct word
print "\t\tCase          : nomcaseX (nomcaseform)\n"
Exit loop Accusative Case

```

```

Enter loop Plural Number1
if $word = "kkalY"
nomcase= "Plural Number1"
nomcaseform="kkalY"
then substitute "kkalY" by null
reconstruct word
print "\t\tCase          : nomcaseX (nomcaseform)\n"
print "\t\tNumber         : nomnum (nomnumform)\n"
Exit loop Plural Number1

```

```

Enter loop Plural Number2
if $word = "kalY"
nomcase= "Plural Number2"
nomcaseform="kalY"
then substitute "kalY" by null
reconstruct word
print "\t\tCase          : nomcaseX (nomcaseform)\n"
print "\t\tNumber         : nomnum (nomnumform)\n"
Exit loop Plural Number2

```

Enter loop ObliqueCase

```

if $word = (.*?)rYkalY
then substitute "(.*?)rYkalY" by $1l
reconstruct word
elsif $word = (.*?)rkalY
then substitute "(.*?)rkalY" by $1nY
reconstruct word
elsif $word = (.*?)fkalY
then substitute "(.*?)fkalY" by $1m
reconstruct word
elsif $word = (.*?)tkalY
then substitute "(.*?)tkalY" by $UY
reconstruct word
elsif $word = (.*?)kalY
then substitute "(.*?)kalY" by $1
reconstruct word
elsif $word = (.*?)ww

```

```

then substitute "ww" by $1m
reconstruct word
elseif $word = (*.rY)rY
then substitute "(.rY)rY" by $1u
reconstruct word
elseif fword = (*.t)t
then substitute "(.t)t" by $1u
reconstruct word
elseif $word = (*.t)t
then substitute "(.t)t" by $1u
reconstruct word
elseif $word = (*.N)N
then substitute "(.N)N" by $1
reconstruct word
elseif $word = (*.Y)Y
then substitute "(.Y)Y" by $1
reconstruct word
elseif $word = (.1)1
then substitute "(.1)1" by $1
reconstruct word
elseif $word = (*.l)y
then substitute "(.l)y" by $1
reconstruct word
elseif $word = (*.i)y
then substitute "(.i)y" by $1
reconstruct word
elseif $word = (*.E)y
then substitute "(.E)y" by $1
reconstruct word
elseif $word = (*.U)v
then substitute "(.U)v" by $1
reconstruct word
elseif $word = (*.A)v
then substitute "(.A)v" by $1
reconstruct word
elseif $word = (*.y)y
then substitute "(.y)y" by $1
reconstruct word
elseif $word = (*.nY)nY
then substitute "(.nY)nY" by $1
reconstruct word
elseif $word = (*.mp)
then substitute "(.mp)" by $1u
reconstruct word
nombase= "ObliqueCase"
nombaseform="0"
print "\t\tOblique suffix: nombase\n"
Exit loop ObliqueCase

```

```

Enter loop Singular Number
if $word = (.*tt)
then substitute "(.*)ww" by "$1m"
if $word = s/(.*mp)/lu/

nomcase= "Singular Number"
nomcaseform="0"
then substitute "0" by null
reconstruct word
print "\t\tCase: nomcase\ (nomcaseform)\n"
print "\t\tNumber:      nomnum (nomnumform)\n"
Exit loop Singular Number

Enter loop NominativeCase
if $word = "0"
nomcase= "NominativeCase"
nomcaseform="0"
then substitute "0" by null
reconstruct word
print "\t\tCase: nomcase\ (nomcaseform)\n"
Exit loop NominativeCase

print "Noun Root:      $nounword\n";

Exit subroutine Noun()

```

Appendix I—b

Algorithm for the Pronoun Analyzer in the Hybrid Model

Enter subroutine Pronoun()

```
Let pronword=word;
Let proncase=" ";
Let cliticform=" ";
Let clitic=" ";
Let prongnp=" ";
Let prongnpform=" ";
Let proncaseform=" ";
Let pronbase=" ";
```

print "Pronoun Form: \$word\n\n";

Enter loop Clitic

Set i=0

Set length = length of clitic

Set word = length of word form

Set temp = word + length

if(i<=Clitic)

```
    && temp = $Clitic[$i]
```

then substitute clitic by null

reconstruct word

Set clitic=\$Clitic[\$i];

print "Choc: \$cliticform(\$clitic)\n";

i++

Exit loop Clitic

Enter loop DativeAdverbial

Set i=0

Set length = length of dat.adv

Set word = length of word form

Set temp = word + length

if(i<=Dat.Adv)

```
    && temp = $Dat.Adv[$i]
```

then substitute dat.adv by null

reconstruct word

Set dat.adv=\$Dat.Adv[\$i];

print "Dat.Adv: \$dat.advform(\$dat.adv)\n";

i++

Exit loop DativeAdverbial

```

Enter loop Dative.Postposition
Set i=0
Set length = length of dat.postppn
Set word = length of word form
Set temp = word + length
if(i<=Dat.Postpn)
    && temp = $Dat.Postpn[$i]
then substitute dat.postppn by null
reconstruct word
Set dat.postppn=$Dat.Postpn[$i];
print "Dat.Postpn:    $dat.postppnform($dat.postppn)\n";
i++
Exit loop Dative.Postposition

Enter loop Accusative.Particle
Set i=0
Set length = length of acc.pl
Set word = length of word form
Set temp = word + length
if(i<=Acc.pl)
    && temp = $Acc.pl[$i]
then substitute acc.pl by null
reconstruct word
Set acc.pl=$Acc.pl[$i];
print "Acc.pl:    $acc.plform($acc.pl)\n";
i++
Exit loop Accusative.Particle

Enter loop Accusative.Postposition
Set i=0
Set length = length of acc.postppn
Set word = length of word form
Set temp = word + length
if(i<=Acc.postppn)
    && temp = $Acc.postppn[$i]
then substitute acc.postppn by null
reconstruct word
Set acc.postppn=$Acc.postppn[$i];
print "Accpostppn:    $acc.postppnform($acc.postppn)\n";
i++
Exit loop Accusative.Postposition

Enter loop Nominative.Postposition
Set i=0
Set length = length of Nom.postppn
Set word =length of word form
Set temp = word + length
if(i<=Nom.postppn)
    && temp = $Nom.postppn[$i]
then substitute Nom.postppn by null
reconstruct word
Set Nom.postppn=$Nom.postppn[$i];
print "Nom.postppn:    $Nom.postppnform($Nom.postppn)\n";
i++
Exit loop Nominative.Postposition

```



```
reconstruct word
print "\t\tCase      : proncase\ (proncaseform)\n"
Exit loop Genitive Case2
```

```
Enter loop Genitive Case3
if $word = "awu"
proncase= "Genitive Case3"
proncaseform="awu"
then substitute "awu" by null
reconstruct word
print "\t\tCase      : proncase\ (proncaseform)\n"
Exit loop Genitive Case3
```

```
Enter loop Benefactive Case1
if $word = "akkAka"
proncase= "Benefactive Case1"
proncaseform="akkAka"
then substitute "akkAka" by null
reconstruct word
print "\t\tCase      : proncase\ (proncaseform)\n"
Exit loop Benefactive Case1
```

```
Enter loop Benefactive Case2
if $word = "arYkAka"
proncase= "Benefactive Case2"
proncaseform="arYkAka"
then substitute "arYkAka" by null
reconstruct word
print "\t\tCase      : proncase\ (proncaseform)\n"
Exit loop Benefactive Case2
```

```
Enter loop Dative Case1
if $word = "ukku/akku"
proncase= "Dative Case1"
proncaseform="ukku/akku"
then substitute "ukku/akku" by null
reconstruct word
print "\t\tCase      : proncase\ (proncaseform)\n"
Exit loop Dative Case1
```

```
Enter loop Dative Case2
if $word = "arYku"
proncase= "Dative Case2"
proncaseform="arYku"
then substitute "arYku" by null
reconstruct word
print "\t\tCase      : proncase\ (proncaseform)\n"
Exit loop Dative Case2
```

```
Enter loop Sociative Case1
if $word = "otu"
proncase= "Sociative Case1"
proncaseform="otu"
then substitute "otu" by null
reconstruct word
print "\t\tCase      : proncase\ (proncaseform)\n"
```

Exit loop Sociative Case1

```
Enter loop Sociative Case2
if Sword = "utanY"
prncase= "Sociative Case2"
prncaseform="utanY"
then substitute "utanY" by null
reconstruct word
print "\t\tCase      : prncase\ (prncaseform)\n"
Exit loop Sociative Case2
```

```
Enter loop Instrumental Case
if $word = "Al"
prncase= "Instrumental Case"
prncaseform="Al"
then substitute "Al" by null
reconstruct word
print "\t\tCase      : prncase\ (prncaseform)\n"
Exit loop Instrumental Case
```

```
Enter loop Ablative Casel
if Sword = "ilirunwu"
prncase= "Ablative Casel"
prncaseform="ilirunwu"
then substitute "ilirunwu" by null
reconstruct word
print "\t\tCase      : prncase\ (prncaseform)\n"
Exit loop Ablative Casel
```

```
Enter loop Ablative Case2
if Sword = "itamirunwu"
prncase= "Ablative Case2"
prncaseform="itamirunwu"
then substitute "itamirunwu" by null
reconstruct word
print "\t\tCase      : prncase\ (prncaseform)\n"
Exit loop Ablative Case2
```

```
Enter loop Locative Casel
if Sword = "il"
prncase= "Locative Casel"
prncaseform="il"
then substitute "il" by null
reconstruct word
print "\t\tCase      : prncase\ (prncaseform)\n"
Exit loop Locative Casel
```

```
Enter loop Locative Case2
if Sword = "itam"
prncase= "Locative Case2"
prncaseform="itam"
then substitute "itam" by null
reconstruct word
print "\t\tCase      : prncase\ (prncaseform)\n"
Exit loop Locative Case2
```



```

elseif $word = "awu"
prncase= "Oblique"
prongnp="3rd.person,Neuter"
prongnp form="awu"
then substitute "awu" by null
reconstruct word
print "\t\tPronGNP form      : Sprongnp ($prongnpform)\n"
print "\t\tOblique suffix: $prncase\n"

```

Exit loop GNP

Enter loop ObliqueCase

```

if $word = "eVnYnY"
prncase= "Oblique"
prongnp="1st.person,(Masc/Fem)"
prongnpbase="nY"
prongnp form="eVnYnY"
then substitute "eVnYnY" by nAnY
reconstruct word
print "\t\tPronGNP form      : Sprongnp ($prongnpform)\n"
print "\t\tOblique suffix: $prncase\n"

```

```

elseif $word = "eVnY"
prncase= "Oblique"
prongnp="1st.person,(Masc/Fem)"
prongnpbase="0"
prongnp form="eVnY"
then substitute "eVnY" by nAnY
reconstruct word
print "\t\tPronGNP form      : Sprongnp ($prongnpform)\n"
print "\t\tOblique suffix: $prncase\n"

```

```

elseif $word = "nAnY"
prncase= "Nominative"
prongnp="1st.person,(Masc/Fem)"
prongnpbase="0"
prongnp form="nAnY"
then substitute "nAnY" by null
reconstruct word
print "\t\tPronGNP form      : Sprongnp ($prongnpform)\n"
print "\t\tOblique suffix: $prncase\n"

```

```

elseif $word = "unYnY"
prncase= "Oblique"
prongnp="2nd.person,(Masc/Fem)"
prongnpbase="nY"
prongnp form="unYnY"
then substitute "unYnY" by nI
reconstruct word
print "\t\tPronGNP form      : Sprongnp ($prongnpform)\n"
print "\t\tOblique suffix: $prncase\n"

```

```

elseif $word = "unY"
prncase= "Oblique"

```

```

prongnp="2nd.person,(Masc/Fem)"
prongnpbase="0"
prongnpform="unY"
then substitute "unY" by nI
reconstruct word
print "\t\tPronGNP form      : Sprongnp ($prongnpform)\n"
print "\t\tOblique suffix: $pronbase\n"

```

```

elseif $word = "nI"
prncase= "Nominative"
prongnp="2nd.person,(Masc/Fem)"
prongnpbase="0"
prongnpform="nI"
then substitute "nI" by null
reconstruct word
print "\t\tPronGNP form      : $prongnp ($prongnpform)\n"
print "\t\tOblique suffix: $pronbase\n"

```

```

elseif $word = "eVmm"
prncase= "Oblique"
prongnp="1 st.person,Hon.(Masc/Fem)"
prongnpbase="nY"
prongnpform="eVmm"
then substitute "eVmm" by yAm
reconstruct word
print "\t\tPronGNP form      : $prongnp ($prongnpform)\n"
print "\t\tOblique suffix: $pronbase\n"

```

```

elseif $word = "eVm"
prncase= "Oblique"
prongnp="1 st.person,Hon.(Masc/Fem)"
prongnpbase="0"
prongnpform="eVm"
then substitute "eVm" by yAm
reconstruct word
print "\t\tPronGNP form      : Sprongnp ($prongnpform)\n"
print "\t\tOblique suffix: $pronbase\n"

```

```

elseif $word = "yAm"
prncase= "Nominative"
prongnp="1st.person,Hon.(Masc/Fem)"
prongnpbase="0"
prongnpform="yAm"
then substitute "yAm" by null
reconstruct word
print "\t\tPronGNP form      : Sprongnp ($prongnpform)\n"
print "\t\tOblique suffix: $pronbase\n"

```

```

elseif $word = "umm"
prncase= "Oblique"
prongnp="2nd.person,Hon.(Masc/Fem)"
prongnpbase="nY"
prongnpform="umm"
then substitute "umm" by nIr
reconstruct word
print "\t\tPronGNP form      : Sprongnp ($prongnpform)\n"

```

```

print "\t\tOblique suffix: $pronbase\n"

elif $word = "um"
prncase= "Oblique"
prongnp="2nd.person,Hon.(Masc/Fem)"
prongnpbase="0"
prongnpform="um"
then substitute "um" by nIr
reconstruct word
print "\t\tPronGNP form      : Sprongnp ($prongnpform)\n"
print "\t\tOblique suffix: $pronbase\n"

elif $word = "nIr"
prncase= "Nominative"
prongnp="2nd.person,Hon.(Masc/Fem)"
prongnpbase="0"
prongnpform="nIr"
then substitute "nIr" by null
reconstruct word
print "\t\tPronGNP form      : $prongnp ($prongnpform)\n"
print "\t\tOblique suffix: $pronbase\n"

elif $word = "wanYnY"
prncase= "Oblique"
prongnp="2nd.person,Hon.(Masc/Fem)"
prongnpbase="nY"
prongnpform="wanYnY"
then substitute "wanYnY" by wAnY
reconstruct word
print "\t\tPronGNP form      : Sprongnp ($prongnpform)\n"
print "\t\tOblique suffix: $pronbase\n"

elif $word = "wanY"
prncase= "Oblique"
prongnp="2nd.person,Hon.(Masc/Fem)"
prongnpbase="0"
prongnpform="wanY"
then substitute "wanY" by wAnY
reconstruct word
print "\t\tPronGNP form      : $prongnp ($prongnpform)\n"
print "\t\tOblique suffix: $pronbase\n"

elif $word = "wamm"
prncase= "Oblique"
prongnp="2nd.person,Hon.(Masc/Fem)"
prongnpbase="m"
prongnpform="wamm"
then substitute "wamm" by wAm
reconstruct word
print "\t\tPronGNP form      : Sprongnp ($prongnpform)\n"
print "\t\tOblique suffix: $pronbase\n"

elif $word = "wam"
prncase= "Oblique"
prongnp="2nd.person,Hon.(Masc/Fem)"
prongnpbase="0"

```

```

prongnpform="wam"
then substitute "wam" by wAm
reconstruct word
print "\t\tPronGNP form      : $prongnp ($prongnpform)\n"
print "\t\tOblique suffix: $pronbase\n"

```

```

elsif Sword = "namm"
prncase= "Oblique"
prongnp="1st.person,plural(incl.)/Hon.(Masc/Fem)"
prongnpbase="m"
prongnpform="namm"
then substitute "namm" by nAm
reconstruct word
print "\t\tPronGNP form      : Sprongnp ($prongnpform)\n"
print "\t\tOblique suffix: $pronbase\n"

```

```

elsif fword = "nam"
prncase= "Oblique"
prongnp="1st.person,plural(incl.)/Hon.(Masc/Fem)"
prongnpbase="0"
prongnpform="nam"
then substitute "nam" by nAm
reconstruct word
print "\t\tPronGNP form      : fprongnp ($prongnpform)\n"
print "\t\tOblique suffix: $pronbase\n"

```

```

elsif Sword = "wafkalY"
prncase= "Oblique"
prongnp="2nd.person,Honorific,(Masc/Fem)"
prongnpbase="m"
prongnp form="wafkalY"
then substitute "wafkalY" by wAfkalY
reconstruct word
print "\t\tPronGNP form      : Sprongnp ($prongnpform)\n"
print "\t\tOblique suffix: $pronbase\n"

```

```

elsif Sword = "wafkalY"
prncase= "Oblique"
prongnp="2nd.person,Honorific,(Masc/Fem)"
prongnpbase="0"
prongnpform="wafkalY"
then substitute "wafkalY" by wAfkalY
reconstruct word
print "\t\tPronGNP form      : $prongnp ($prongnpform)\n"
print "\t\tOblique suffix: $pronbase\n"

```

Exit loop ObliqueCase

```

print "Pronoun Root   Spronword\n";

```

```

Exit subroutine Pronoun()

```


Appendix I - c

Algorithm for the Numeral Analyzer in the Hybrid Model

```
Enter subroutine NumeralO
    Let nounword=word;
    Let numcase=" ";
    Let cliticform=" ";
    Let clitic=" ";
    Let numnum=" ";
    Let numcaseform=" ";
    Let numbase=" ";

print "Numeral Form:  $word\n\n";

Enter loop Clitic
Set i=0
Set length = length of clitic
Set word = length of word form
Set temp = word + length
if(i<=Clitic)
    && temp = $Clitic[$i]
then substitute clitic by null
reconstruct word
Set clitic=$Clitic[$i];
print "Clitic:  $cliticform($clitic)\n";
i++
Exit loop Clitic

Enter loop Oblique.Postposition
Set i=0
Set length = length of obl.postppn
Set word = length of word form
Set temp = word + length
if(i<=Obl.postppn)
    && temp = $Obl.postppn[$i]
then substitute obl.postppn by null
reconstruct word
Set obl.postppn=$Obl.postppn[$i];
print "Obl.postppn:  $obl.postppnform($obl.postppn)\n";
i++
Exit loop Oblique.Postposition

Enter loop Nominative.Particle1
Set i=0
Set length = length of Nom.pl1
Set word = length of word form
Set temp = word + length
if(i<=Nom.pl1)
    && temp = $Nom.pl1[$i]
then substitute Nom.pl1 by null
reconstruct word
Set Nom.pl1=$Nom.pl1[$i];
print "Nom.pl1: $Nom.pl1form($Nom.pl1)\n";
i++
Exit loop Nominative.Particle1
```

```

Enter loop Nominative.Particle2
Set i=0
Set length = length of Nom.pl2
Set word = length of word form
Set temp = word + length
if(i<=Nom.pl2)
    && temp = $Nom.pl2[$i]
then substitute Nom.pl2 by null
reconstruct word
Set Nom.pl2=$Nom.pl2[$i];
print "Nom.pl2: $Nom.pl2form($Nom.pl2)\n";
i++
Exit loop Nominative.Particle2

```

```

Enter loop Dative.Adverbial
Set i=0
Set length = length of dat.adv
Set word =length of word form
Set temp = word + length
if(i<=Dat.Adv)
    && temp = $Dat.Adv[$i]
then substitute dat.adv by null
reconstruct word
Set dat.adv=$Dat.Adv[$i];
print "Dat.Adv: $dat.advform($dat.adv)\n";
i++
Exit loop Dative.Adverbial

```

```

Enter loop Dative.Postposition
Set i=0
Set length = length of dat.postppn
Set word = length of word form
Set temp = word + length
if(i<=Dat.Postpn)
    && temp = $Dat.Postpn[$i]
then substitute dat.postppn by null
reconstruct word
Set dat.postppn=$Dat.Postpn[$i];
print "Dat.Postpn: $dat.postppnform($dat.postppn)\n";
i++
Exit loop Dative.Postposition

```

```

Enter loop Accusative.Adverbial
Set i=0
Set length = length of accadv
Set word = length of word form
Set temp = word + length
if(i<=Acc.adv)
    && temp = $Acc.adv[$i]
then substitute accadv by null
reconstruct word
Set acc.adv=$Acc.adv[$i];
print "Acc.adv: $accadvform($accadv)\n";
i++
Exit loop Accusative.Adverbial

```

```

Enter loop Accusative.Particle
Set i=0
Set length = length of acc.pl
Set word = length of word form
Set temp = word + length
if(i<=Acc.pl)
    &&& temp = $Acc.pl[$i]
then substitute acc.pl by null
reconstruct word
Set acc.pl=$Acc.pl[$i];
print "Acc.pl:  $acc.plform($acc.pl)\n";
i++;
Exit loop Accusative.Particle

Enter loop Accusative.Postposition
Set i=0
Set length = length of accpostppn
Set word = length of word form
Set temp = word + length
if(i<=Accpostppn)
    &&& temp = $Acc.postppn[$i]
then substitute accpostppn by null
reconstruct word
Set acc.postppn=$Acc.postppn[$i];
print "Acc.postppn:  $acc.postppnform($acc.postppn)\n";
i++;
Exit loop Accusative.Postposition

Enter loop Nominative.Postposition
Set i=0
Set length = length of Nom.postppn
Set word = length of word form
Set temp = word + length
if(i<=Nom.postppn)
    &&& temp = $Nom.postppn[$i]
then substitute Nom.postppn by null
reconstruct word
Set Nom.postppn=$Nom.postppn[$i];
print "Nom.postppn:  $Nom.postppnform($Nom.postppn)\n";
i++;
Exit loop Nominative.Postposition

Enter loop Nominative.Adverbial
Set i=0
Set length = length of Nom.adv
Set word = length of word form
Set temp = word + length
if(i<=Nom.adv)
    &&& temp = $Nom.adv[$i]
then substitute Nom.adv by null
reconstruct word
Set Nom.adv=$Nom.adv[$i];
print "Nom.adv: $Nom.advform($Nom.adv)\n";
i++;
Exit loop Nominative.Adverbial

```

```

Enter loop Genitive. Particle
Set i=0
Set length = length of Gen.pl
Set word = length of word form
Set temp = word + length
if(i<=Gen.pl)
    && temp = $Gen.pl[$i]
then substitute Gen.pl by null
reconstruct word
Set Gen.pl=$Gen.pl[$i];
print "Gen.pl:  $Gen.plform($Gen.pl)\n";
i++
Exit loop Genitive.Particle

Enter loop Nominative.Particle
Set i=0
Set length = length of Nom.pl
Set word = length of word form
Set temp = word + length
if(i<=Nom.pl)
    && temp = $Nom.pl[$i]
then substitute Nom.pl by null
reconstruct word
Set Nom.pl=$Nom.pl[$i];
print "Nom.pl:  $Nom.plform($Nom.pl)\n";
i++
Exit loop Nominative.Particle

Enter loop Genitive Case1
if Sword = "utEya"
numcase= "Genitive Casel"
numcaseform="utEya"
then substitute "utEya" by null
reconstruct word
print "\t\tCase      : numcase\ (numcaseform)\n"
Exit loop Genitive Casel

Enter loop Genitive Case2
if Sword = "inY"
numcase= "Genitive Case2"
numcaseform="inY"
then substitute "inY" by null
reconstruct word
print "\t\tCase      : numcase\ (numcaseform)\n"
Exit loop Genitive Case2

Enter loop Genitive Case3
if Sword = "awu"
numcase= "Genitive Case3"
numcaseform="awu"
then substitute "awu" by null
reconstruct word
print "\t\tCase      : numcase\ (numcaseform)\n"
Exit loop Genitive Case3

```

```

Enter loop Benefactive Case1
if Sword = "ukkAka"
numcase= "Benefactive Case1"
numcaseform="ukkAka"
then substitute "ukkAka" by null
reconstruct word
print "\t\tCase      : numcase\ (numcaseform)\n"
Exit loop Benefactive Case1

```

```

Enter loop Benefactive Case2
if Sword = "irYkAka"
numcase= "Benefactive Case2"
numcaseform="irYkAka"
then substitute "irYkAka" by null
reconstruct word
print "\t\tCase      : numcase\ (numcaseform)\n"
Exit loop Benefactive Case2

```

```

Enter loop Dative Case1
if Sword = "ukku"
numcase= "Dative Case1"
numcaseform="ukku"
then substitute "ukku" by null
reconstruct word
print "\t\tCase      : numcase\ (numcaseform)\n"
Exit loop Dative Case1

```

```

Enter loop Dative Case2
if $word = "irYku"
numcase= "Dative Case2"
numcaseform="irYku"
then substitute "irYku" by null
reconstruct word
print "\t\tCase      : numcase\ (numcaseform)\n"
Exit loop Dative Case2

```

```

Enter loop Sociative Case1
if Sword = "otu"
numcase= "Sociative Case1"
numcaseform="otu"
then substitute "otu" by null
reconstruct word
print "\t\tCase      : numcase\ (numcaseform)\n"
Exit loop Sociative Case1

```

```

Enter loop Sociative Case2
if Sword = "utanY"
numcase= "Sociative Case2"
numcaseform="utanY"
then substitute "utanY" by null
reconstruct word
print "\t\tCase      : numcase\ (numcaseform)\n"
Exit loop Sociative Case2

```

```

Enter loop Instrumental Case
if $word = "Al"

```

```

numcase= "Instrumental Case"
numcaseform="Al"
then substitute "Al" by null
reconstruct word
print "\t\tCase      : numcaseX (numcaseform)\n"
Exit loop Instrumental Case

Enter loop Ablative Case1
if Sword = "ilirunwu"
numcase= "Ablative Case1"
numcaseform="ilirunwu"
then substitute "ilirunwu" by null
reconstruct word
print "\t\tCase      : numcase\ (numcaseform)\n"
Exit loop Ablative Case1

Enter loop Ablative Case2
if Sword = "itamirunwu"
numcase= "Ablative Case2"
numcaseform="itamirunwu"
then substitute "itamirunwu" by null
reconstruct word
print "\t\tCase      : numcase\ (numcaseform)\n"
Exit loop Ablative Case2

Enter loop Locative Case1
if Sword = "il"
numcase= "Locative Case1"
numcaseform="il"
then substitute "il" by null
reconstruct word
print "\t\tCase      : numcase\ (numcaseform)\n"
Exit loop Locative Case1

Enter loop Locative Case2
if Sword = "itam"
numcase= "Locative Case2"
numcaseform="itam"
then substitute "itam" by null
reconstruct word
print "\t\tCase      : numcaseX (numcaseform)\n"
Exit loop Locative Case2

Enter loop Accusative Case
if $word = "E"
numcase= "Accusative Case"
numcaseform="E"
then substitute "E" by null
reconstruct word
print "\t\tCase      : numcaseX (numcaseform)\n"
Exit loop Accusative Case

Enter loop GNP
if Sword = "avanY"
numcase= "Oblique"
numgnp="3rd.person,Singular,Masculine"

```

```

numgnp form="avanY"
then substitute "avanY" by null
reconstruct word
print "\t\tCase      : numcase\ (numcaseform)\n"
print "\t\tGNP suffix : $numgnp ($numgnpform)\n"

```

```

elseif $word = "wwi"
numcase= "Oblique"
numgnp="3rd.person,Singular,Feminine"
numgnp form="wwi"
then substitute "wwi" by null
reconstruct word
print "\t\tCase      : numcase\ (numcaseform)\n"
print "\t\tGNP suffix : $numgnp ($numgnpform)\n"

```

```

elseif $word = "avar"
numcase= "Oblique"
numgnp="3rd.person,Singular,Honorific"
numgnpform="avar"
then substitute "avar" by null
reconstruct word
print "\t\tCase      : numcase\ (numcaseform)\n"
print "\t\tGNP suffix : $numgnp ($numgnpform)\n"

```

Exit loop GNP

```

Enter loop Plural Numberl
if $word = "kalY"
numcase= "Plural Numberl"
numcaseform="kalY"
then substitute "kalY" by null
reconstruct word
print "\t\tCase      : numcase\ (numcaseform)\n"
print "\t\tNumber      : numnum (numnumform)\n"
Exit loop Plural Numberl

```

Enter loop Oblique Case

```

if $word = (*.nY)nY
then substitute "(*.nY)nY" by $1
reconstruct word
elseif $word = (*.mp)
then substitute "(*.mp)" by $1u
reconstruct word
numbase= "Oblique Case"
numbaseform="0"
print "\t\tOblique suffix: numbase\n"
Exit loop Oblique Case

```

```

Enter loop Singular Number
if $word = (*.tt)
then substitute "(*.tt)ww" by "$1m"
if $word = s/(.mp)/1u/

```

```

numcase= "Singular Number"
numcaseform="0"

```

```

then substitute "0" by null
reconstruct word
print "\t\tCase: numcase\ (numcaseform)\n"
print "\t\tNumber: numnum (numnumform)\n"
Exit loop Singular Number

Enter loop NominativeCase
if $word = "0"
numcase= "NominativeCase"
numcaseform="0"
then substitute "0" by null
reconstruct word
print "\t\tCase: numcase\ (numcaseform)\n"

Exit loop NominativeCase

print "Numeral Root: $nounword\n";

Exit subroutine Numeral()

```


Appendix I — d

Algorithm for the Verb Analyzer in the Hybrid Model

```

Enter subroutine Verb()
    Let verbword=word;
    Let tam=" ";
    Let diticform=" ";
    Let ditic=" ";
    Let nomnum=" ";
    Let ramform=" ";
    Let nombase=" ";

print "Verb Form:      $word\n\n";

Enter loop Vocative
Set i=0
Set length = length of vocative
Set word = length of word form
Set temp = word + length
if(i<=Vocative)
    && temp = $Vocative[$i]
then substitute vocative by null
reconstruct word
Set vocative=$Vocative[$i];
print "Vocative: $vocativeform($vocative)\n";
i++
Exit loop Vocative

Enter loop Clitic
Set i=0
Set length = length of clitic
Set word = length of word form
Set temp = word + length
if(i<=Clitic)
    && temp = $Clitic[$i]
then substitute clitic by null
reconstruct word
Set clitic=$Clitic[$i];
print "Clitic:      $cliticform($clitic)\n";
i++
Exit loop Clitic

Enter loop VerbGNP
Set i=0
Set length = length of vbgnp
Set word = length of word form
Set temp = word + length
if(i<=VerbGNP)
    && temp = $VerbGNP[$i]
then substitute vbgnp by null
reconstruct word
Set vbgnp=$VerbGNP[$i];
print "VerbGNP:      $vbgnpform($vbgnp)\n";
i++

```



```

if(i<=NonFin.P11)
    && temp = $NonFin.P11[$i]
then substitute nonfin.pl1 by null
reconstruct word
Set nonfin.pl1=$NonFin.P11[$i];
print "NonFin.P11:    $nonfin.pl1form($nonfin.pl1)\n";
i++
Exit loop NonFinite.Particle1

```

```

Enter loop Auxiliary Verb
Set i=0
Set length = length of auxvb
Set word = length of word form
Set temp = word + length
if(i<=AuxVb)
    && temp = $AuxVb[$i]
then substitute auxvb by null
reconstruct word
Set auxvb=$AuxVb[$i];
print "AuxVb:    $auxvbform($auxvb)\n";
i++
Exit loop Auxiliary Verb

```

```

Enter loop Adverbial
Set i=0
Set length = length of adv
Set word = length of word form
Set temp = word + length
if(i<=Adv)
    && temp = $Adv[$i]
then substitute adv by null
reconstruct word
Set adv=$Adv[$i];
print "Adv:    $advform($adv)\n";
i++
Exit loop Adverbial

```

```

Enter loop Prohibitive
if $word = "Aw"
tam= "Prohibitive"
tamform="Aw"
then substitute "Aw" by null
reconstruct word
print "\t\tTAM          : $tam ($tamform)\n";
print "\t\tBase         : $vbbase\n";
Exit loop Prohibitive

```

```

Enter loop Positive Conditional
if $word = "A1"
tam= "Positive Conditional"
tamform="A1"
then substitute "A1" by null
reconstruct word
print "\t\tTAM          : $tam ($tamform)\n";
print "\t\tBase         : $vbbase\n";
Exit loop Positive Conditional

```

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```

Enter loop Admonitive
if Sword = "a"
tam= "Admonitive"
tamform="a"
then substitute "a" by null
reconstruct word
print "\t\tTAM      : $tam ($tamform)\n";
print "\t\tBase     : $vbbase\n";
Exit loop Admonitive

```

```

Enter loop Hortative
if Sword = "IAm"
tam= "Hortative"
tamform="IAm"
then substitute "IAm" by null
reconstruct word
print "\t\tTAM      : $tam ($tamform)\n";
print "\t\tBase     : $vbbase\n";
Exit loop Hortative

```

```

Enter loop Negative Future
if Sword = "mAtt"
tam= "Negative Future"
tamform="mAtt"
then substitute "mAtt" by null
reconstruct word
print "\t\tTAM      : $tam ($tamform)\n";
print "\t\tBase     : $vbbase\n";
Exit loop Negative Future

```

```

Enter loop Negative Past
if Sword = "illE"
tam= "Negative Past"
tamform="illE"
then substitute "illE" by null
reconstruct word
print "\t\tTAM      : $tam ($tamform)\n";
print "\t\tBase     : $vbbase\n";
Exit loop Negative Past

```

```

Enter loop Negative Verbal Participle
if Sword = "Amal"
tam= "Negative Verbal Participle"
tamform="Amal"
then substitute "Amal" by null
reconstruct word
print "\t\tTAM      : $tam ($tamform)\n";
print "\t\tBase     : $vbbase\n";
Exit loop Negative Verbal Participle

```

```

Enter loop Negative Adjectival Participle
if Sword = "Awa"
tam= "Negative Adjectival Participle"
tamform="Awa"
then substitute "Awa" by null

```

```

reconstruct word
print "\t\tTAM          : $tam ($tamform)\n";
print "\t\tBase         : $vbbase\n";
Exit loop Negative Adjectival Participle

```

```

Enter loop Present Adjectival Participle
if $word = "kirYa"
tam= "Present Adjectival Participle"
tamform="kirYa"
then substitute "kirYa" by null
reconstruct word
print "\t\tTAM          : $tam ($tamform)\n";
print "\t\tBase         : $vbbase\n";
Exit loop Present Adjectival Participle

```

```

Enter loop Habitual Participle
if $word = "um"
tam= "Habitual Participle"
tamform="um"
then substitute "um" by null
reconstruct word
print "\t\tTAM          : $tam ($tamform)\n";
print "\t\tBase         : $vbbase\n";
Exit loop Habitual Participle

```

```

Enter loop Past Duraive Conditional
if $word = "koVNtirunw"
tam= "Past Duraive Conditional"
tamform="koVNtirunw"
then substitute "koVNtirunw" by null
reconstruct word
print "\t\tTAM          : $tam ($tamform)\n";
print "\t\tBase         : $vbbase\n";
Exit loop Past Duraive Conditional

```

```

Enter loop Non-Past Duraive Conditional
if $word = "koVNtirukkirY"
tam= "Non-Past Duraive Conditional"
tamform="koVNtirukkirY"
then substitute "koVNtirukkirY" by null
reconstruct word
print "\t\tTAM          : $tam ($tamform)\n";
print "\t\tBase         : $vbbase\n";
Exit loop Non-Past Duraive Conditional

```

```

Enter loop Negative Conditional
if $word = "AvittAl"
tam= "Negative Conditional"
tamform="AvittAl"
then substitute "AvittAl" by null
reconstruct word
print "\t\tTAM          : $tam ($tamform)\n";
print "\t\tBase         : $vbbase\n";
Exit loop Negative Conditional

```

```

Enter loop Positive Verbal Participle
if $word = "i/u"
tam= "Positive Verbal Participle"
tamform="i/u"
then substitute "i/u" by null
reconstruct word
print "\t\tTAM          : $tam ($tamform)\n";
print "\t\tBase         : $vbbase\n";
Exit loop Positive Verbal Participle

```

```

Enter loop Present
if $word = "kirY/kkirY"
tam= "Present"
tamform="kirY/kkirY"
then substitute "kirY/kkirY" by null
reconstruct word
print "\t\tTAM          : $tam ($tamform)\n";
print "\t\tBase         : $vbbase\n";
Exit loop Present

```

```

Enter loop Past
if $word = "t/w/nw/ww/inY/rY"
tam= "Past"
tamform="t/w/nw/ww/inY/rY"
then substitute "t/w/nw/ww/inY/rY" by null
reconstruct word
print "\t\tTAM          : $tam ($tamform)\n";
print "\t\tBase         : $vbbase\n";
Exit loop Past

```

```

Enter loop Future
if $word = "v/p/pp"
tam= "Future"
tamform="v/p/pp"
then substitute "v/p/pp" by null
reconstruct word
print "\t\tTAM          : $tam ($tamform)\n";
print "\t\tBase         : $vbbase\n";
Exit loop Future

```

```

Enter loop Infinitive
if $word = "a"
tam= "Infinitive"
tamform="a"
then substitute "a" by null
reconstruct word
print "\t\tTAM          : $tam ($tamform)\n";
print "\t\tBase         : $vbbase\n";
Exit loop Infinitive

```

```

Enter loop Non-Finite
if $word = "(*)tk
then substitute "(*)tk" by $1Y
reconstruct word
elseif $word = "(*TY)
then substitute "(*TY)" by $1

```

```

reconstruct word
elsif $word = (*.kaYY)
then substitute "(.kaYY)" by $1
reconstruct word
elsif $word = (*.)IYY
then substitute "(.*)IYY" by $1u
reconstruct word
elsif $word = (*.Ak)
then substitute "(.Ak)" by $1u
reconstruct word
elsif $word = (*.cA)k
then substitute "(.cA)k" by $1
reconstruct word
elsif $word = (*.)l
then substitute "(.l)l" by $1
reconstruct word
elsif $word = (*.y)y
then substitute "(.y)y" by $1
reconstruct word
elsif $word = (*.nY)
then substitute "(.nY)" by $1
reconstruct word
elsif $word = (*.kk)
then substitute "(.kk)" by $1
reconstruct word
elsif $word = (*.aNN)
then substitute "(.aNN)" by $1u
reconstruct word
elsif $word = (*.N)
then substitute "(.N)" by $1
reconstruct word
elsif $word = (*.Y)IY
then substitute "(.Y)IY" by $1
reconstruct word
elsif $word = (*.rYk)
then substitute "(.rYk)" by $1l
reconstruct word
elsif $word = (*.o)k
then substitute "(.o)k" by $1
reconstruct word
elsif $word = (*.o)t
then substitute "(.o)t" by $1
reconstruct word
elsif $word = (*.UN)
then substitute "(.UN)" by $1
reconstruct word
elsif $word = (*.uN)N
then substitute "(.uN)N" by $1
reconstruct word
elsif $word = (*.var)
then substitute "(.var)" by vA
reconstruct word
elsif $word = (*.fk)
then substitute "(.fk)" by $1u
reconstruct word

```



```

print "\t\tTAM          : $tam (ftamform)\n";
print "\t\tBase         : $vbbase\n";
Exit loop Infinitive

```

```

Enter loop Imperative
if Sword = "0"
tam= "Imperative"
tamform="0"
then substitute "0" by null
reconstruct word
print "\t\tTAM          : $tam ($tamform)\n";
print "\t\tBase         : $vbbase\n";
Exit loop Imperative

```

```

print "Verb Root      $verbword\n";

```

```

Exit subroutine Verb()

```

Appendix I — e

Algorithm for the Adjective Analyzer in the Hybrid Model

```
Enter subroutine Adjective()
    Let adjword=word;
    Let dcliticform=" ";
    Let clitic=" ";
    Let adjbaseform=" ";
    Let adjbase=" ";

print "Adjective Form:  $word\n\n";

Enter loop Clitic
Set i=0
Set length = length of clitic
Set word = length of word form
Set temp = word + length
if(i<=Clitic)
    && temp = $Clitic[$i]
    then substitute clitic by null
    reconstruct word
    Set clitic=$Clitic[$i];
    print "Clitic:  $cliticform($clitic)\n";
    i++
Exit loop Clitic

Enter loop Bound.Postposition
Set i=0
Set length = length of bd.postppn
Set word = length of word form
Set temp = word + length
if(i<=Bd.postppn)
    && temp = $Bd.postppn[$i]
    then substitute bd.postppn by null
    reconstruct word
    Set bd.postppn=$Bd.postppn[$i];
    print "Bd.postppn:  $bd.postppnform($bd.postppn)\n";
    i++
Exit loop Bound.Postposition

Enter loop Free.Particle1
Set i=0
Set length = length of Fr.pl1
Set word = length of word form
Set temp = word + length
if(i<=Fr.pl1)
    && temp = $Fr.pl1[$i]
    then substitute Fr.pl1 by null
    reconstruct word
    Set Fr.pl1=$Fr.pl1[$i];
    print "Fr.pl1:  $Fr.pl1form($Fr.pl1)\n";
    i++
Exit loop Free.Particle1
```

```

Enter loop Free.Particle2
Set i=0
Set length = length of Fr.pl2
Set word = length of word form
Set temp = word + length
if(i<=Fr.pl2)
    && temp = $Fr.pl2[$i]
then substitute Fr.pl2 by null
reconstruct word
Set Fr.pl2=$Fr.pl2[$i];
print "Fr.pl2:  $Fr.pl2form($Fr.pl2)\n";
i++
Exit loop Free.Particle2

Enter loop GNP
if Sword = "avanY"
adjbase= "Bound"
adjgnp="3rd.person,Singular,Masculine"
adjgnpform="avanY"
then substitute "avanY" by null
reconstruct word
print "\t\t Base      : adjbase\ (adjbaseform)\n"
print "\t\t rGNP suffix : Sadjgnp ($adjgnpform)\n"

elseif Sword = "avalY"
adjbase= "Bound"
adjgnp="3rd.person,Singular,Feminine"
adjgnpform="avalY"
then substitute "avalY" by null
reconstruct word
print "\t\t Base      : adjbase\ (adjbaseform)\n"
print "\t\t rGNP suffix : $adjgnp ($adjgnpform)\n"

elseif Sword = "avarkalY"
adjbase= "Bound"
adjgnp="3rd.person,Plural/Honorific"
adjgnpform="avarkalY"
then substitute "avarkalY" by null
reconstruct word
print "\t\t Base      : adjbase\ (adjbaseform)\n"
print "\t\t rGNP suffix : Sadjgnp ($adjgnpform)\n"

elseif Sword = "avar"
adjbase= "Bound"
adjgnp="3rd.person,Singular,Honorific"
adjgnpform="avar"
then substitute "avar" by null
reconstruct word
print "\t\t Base      : adjbase\ (adjbaseform)\n"
print "\t\t tGNP suffix : Sadjgnp ($adjgnpform)\n"

```

```

elseif $word = "awu"
adjbase= "Bound"
adjgnp="3rd.person,Neuter "
adjgnp form="awu"
then substitute "awu" by null
reconstruct word
print "\t\t Base      : adjbase\ (adjbaseform)\n"
print "\t\tGNP suffix  : $adjgnp ($adjgnpform)\n"

```

Exit loop GNP

Enter loop Bound Base

```

if $word = nalla(.* )
then substitute "nalla(.* )" by $1
adjbase= "Bound Base"
adjbaseform="0"
reconstruct word
elseif $word = (.* )iya
then substitute "(.* )iya" by $1
adjbase= "Bound Base"
adjbaseform="iya"
reconstruct word
print "\t\tBound suffix : adjbase\n"
Exit loop Bound Base

```

Enter loop Free Base

```

if $word = "nalla|puwu [^A-Za-z]"
adjbase= "Free Base"
adjbaseform="0"
then substitute "0" by null
reconstruct word
print "\t\t Base:adjbase\ (adjbaseform)\n"

```

Exit loop Free Base

```

print "Adjective Root:  $adjword\n";

```

Exit subroutine AdjectiveO

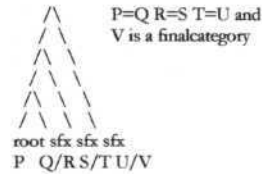
Appendix II

Database for the AMPLE Analyzer in Tamil (AMPLE Version - 1.7)

The Data Analysis File

\id tamad01.ctl analysis data

The category tests propagate categories progressively from the root out to the last suffix.



\begin

\co **DEFINE STRING CLASSES (\scl)**

\scl	V	a A i I u U e E Y o O W	Vowels
\scl	Vsh	a i u e o	Short Vowels
\sd	Vlg	A I U E O	Long Vowels
\sd	Vhg	i I u U	High Vowels
\sd	Vlw	a A o O	Low Vowels
\sd	Vft	i I e E	Front vowels
\sd	Vbk	u U o O	Back vowels
\sd	Vd	W Y	Diphthongs
\sd	Nas	F f N n M m	Nasals
\sd	G	v y	Frictionless continuants
\sd	Liq	r l Z L	Liquids
\sd	C	k c t w p R	Obstruents

=====
Exclusion Class Sets:

```

\scl Casex1      y u i Y I t M m a f L R v
\scl Casex2 u a Y Z I N l t M m a f L y v r
\scl Casex3 u Y Z I N l t M m a f L R v r
\scl Casex4      y u i Y Z I N l t M m a f L R v r
\scl Casex5      y u i Y Z I N l M m a f L R v r
\scl Casex6      y u i Y Z I N l t M m f L R v r
\scl Casex7      y u i Y Z I N l t M m a f R v r
\scl Casex8      y u i Y Z I N l t m a f L R v r
\scl Casex9      y u i Y Z I N t M m a f L R v r
\scl Casex10     y u i Y Z I N l t M m a f L R r
\scl Casex11     y u i Y Z I N l t M a f L R r
\scl Pastx1      N L Z l y t R r k w n w w e u O o i a
\scl Pastx2      M L Z l y R r k w n w w e u O o i a
\scl Pastx3      N M L Z l t R r k n w w e u O o i a

```

```

\scl Pastx4      NMLZlytRrkwnweuOo
\sd Pastx5      NLZlytrkwnwwweuOoia
\sd Pastx6      MNLZlytrkwRweOi
\sd Pastx7      MNLZlytrwRweuOI
\scl Futx1      MLZlyrkwnwwweuOoia
\scl Futx2      NLAZlyRrkwnwwweOo
\sd Futx3      NMtRrkwnwwweuoi1a
\sd Nfinx1      LZlyrMNkeuoia
\sd Nfinx2      LZtyrMNkeuoia
\sd Nfinx3      LZltrMNyeuoia
\sd Nfinx4      LZltrMkeuoia
\sd Nfinx5      lZtyrMNeuoia
\sd Nfinx6      LZtlyrMNkeoa
\sd Nfinx7      LlyrMNkeuoiae
\sd PosVbPplx1  NMLZytRrkwnwwweuOoia
\sd PosVbPplx2  LMZlyRrkwnwwweuOoia
\sd PosVbPplx3  NLMZltRrkwnwwweuOoia
\sd PosVbPplx4  NLMZlytRrkwnwwuOoa
\sd PosVbPplx5  NLZlytRrkwnwwweuOoi1a
\sd PosVbPplx6  NLMZlytRrkwnwwweuOI1
\sd PosVbPplx7  NLMZlytRrwnwwweuoi1a

```

```

\co      DEFINE MORPHEME CLASSES (\md)

```

```

\mcl GenAdv      Adv.Gen
\mcl GenDatAdv   Adv.Dat/Gen
\mcl PpnNom      Ppn.Nom
\mcl PpnDat      Ppn.Dat
\mcl PpnGen      Ppn.Gen
\mcl PpnNomDat   Ppn.Nom/Dat
\mcl PlNom       Pl.Nom
\md PlAcc        Pl.Acc
\md PlObl        Pl.Obl
\md PastAdjPpl   PastAdj.Ppl
\md PresAdjPpl   Pres.Adj.Ppl
\md Admon        Adm.
\md AdjGNP       3SM.pe 3SF.pe 3S.hon.pe 3SN.pe
\md VbGNP        1S.pe 1P.incl.pe 2S.pe 2S.hon.pe 2S.hon/2P.pe 3SM.pe 3SF.pe
                  3S.hon.pe 3SN.pe
\md Aux1         Aux.Vbl
\md Aux2         Aux.Vb2

```

```

\co      DEFINE MORPHEME PROPERTIES (\mp)

```

```

\co      DEFINE CATEGORIES (\ca)
\ca      Verb Noun Adjective Pronoun Numeral

```

```

\co      DEFINE CATEGORY CLASSES (\cd)
\cd      finalcategory Verb Noun Adjective Pronoun Numeral

```

```
=====
\co      ROOTS
\maxr 1  maximum number of roots
\co      Compound Root Categories (\cr)
\co      Root Tests (\rt)
\co      Root Adhoc Pairs (\rah)
```

```
=====
\co      SUFFIXES
\co      Suffix Tests (\st)
\st      PROGRESSIVE_CATEGORY_ST
         left to category is current from category
\co      Suffix Adhoc Pairs (\sah)
```

```
=====
\co      FINAL TESTS (\ft)
\ft      FINAL_CATEGORY_FT
         FINAL tocategory is member [finalcategory]
```

```
=====
\co      MORPHEME CO-OCCURRENCE CONSTRAINTS (\mcc)
```

```
\mcc  GenAdv      +/Gen2.cs_
\mcc  GenDatAdv   +/Gen2.cs_ +/Dat.cs_
\mcc  Past.tns    +/_~Inf +/_VbGNP
\mcc  Pres.tns    +/_VbGNP +/_~Inf.
\mcc  Inf.        +/_~Pres.Adj.Ppl_
\mcc  AdjGNP      +/Obl.Qlf_
\mcc  Pos.Cndl    +/_~3SM.pe_
\mcc  Adm.        +/VbGNP_ +/_~Past.tns_
\mcc  Pres.Adj.Ppl +/_~VbGNP
\mcc  Aux1        +/_Inf_ +/_~Adm.
\mcc  Aux2        +/Pos.Vbl.Ppl_ +/_~Past.tns +/_~PastAdjPpl
```

24 The Root Lexicon

\id **tamroot.dic** root dictionary

\r Record marker
 \a Allomorph
 \c Category pair from/to
 \mp Morpheme property
 \ge English Gloss
 \co Comment
 \noload Do not load
 \nocap No caps change

32 NOUNS

Field	Root/Stem	Phonological Constraint(s)	Morphological Constraint(s)
\r	AN		
\a	AN	-	-
\c	Noun		
\ge	male		
\r	ARu		
\a	ARu	/_~[V]	-
\a	AR	/_~[V]	+/_~Plr.num
\c	Noun		
\ge	river		
\r	eli		
\a	eli	/_~[V]	-
\c	Noun		
\ge	mouse		
\r	iY		
\a	iY	/_~[V]	-
\c	Noun		
\ge	leaf		
\r	iwaZ		
\a	iwaZ	-	-
\c	Noun		
\ge	petal		
V	I		
\a	I	/_~[V]	-
\c	Noun		
\gP	%		
\r	kaN		
\a	kaN	/_~[V]	-
\c	Noun		
\ge	eye		

\r	kAl	-	-
\a	kAl	-	-
\c	Noun	-	-
\ge	leg	-	-
\r	kAtu	/_~[V]	-
\a	kAtu	/_~[V]	-
\a	kAt	/_~[V]	+/_~Plr.num
\c	Noun	-	-
\ge	forest	-	-
\r	maMrwaM	-	+/_~Plr.num
\a	maMrwaM	-	-
\a	maMrwar	-	-
\c	Noun	-	-
\ge	man	-	-
\r	maram	/_~[V]	+/_~Plr.num
\a	maram	/_~[V]	-
\a	maraf	/_~[V]	-
\a	mara	/_~[V]	+/_~Plr.num
\c	Noun	-	-
\ge	tree	-	-
\r	muL	/_~[V]	+/_~Plr.num
\a	muL	/_~[V]	-
\a	mut	/_~[V]	-
\c	Noun	-	-
\ge	thorn	-	-
\r	mAM	-	-
\a	mAM	-	-
\c	Noun	-	-
\ge	thorn	-	-
\r	narampu	/_~[V]	-
\a	narampu	-	+/_~Plr.num
\a	naramp	-	-
\c	Noun	-	-
\ge	vein	-	-
\r	nAy	-	-
\a	nAy	-	-
\c	Noun	-	-
\ge	dog	-	-
\r	poM	/_~[V]	+/_~Plr.num
\a	poM	-	-
\c	Noun	-	-
\ge	gold	-	-
\r	poy	/_~[V]	-
\a	poy	-	-
\c	Noun	-	-
\ge	lie	-	-

\r	pul		
\a	pul	/_~[V]	+/_~Plr.num
\a	puR	/_~[V]	-
\c	Noun		
\ge	grass		
\r	poruL		
\a	poruL	-	+/_~Plr.num
\a	porut	/_~[V]	-
\c	Noun		
\ge	thing		
\r	pU		
\a	pU	/_~[V]	-
\c	Noun		
\ge	flower		
\r	vaNtu		
\a	vaNtu	/_~[V]	-
\a	vaNt	-	+/_~Plr.num
\c	Noun		
\ge	beetle		
\r	wEr		
\a	wEr	-	-
\c	Noun		
\ge	chariot		
\r	wOL		
\a	wOL	-	-
\c	Noun		
\ge	shoulder		

PRONOUNS

Field	Root/Stem	Phonological Constraint(s)	Morphological Constraint(s)
\r	avaL		
\a	avaL	-	-
\c	Pronoun		
\ge	she(3SF)		
\r	avaM		
\a	avaM	-	-
\a	Pronoun		
\ge	he(3SM)		
\r	avar		
\a	avar	-	-
\c	Pronoun		
\ge	he/she(3hon)		

\r	avE		
\a	avE	-	-
\a	avaRR	-	-
\c	Pronoun		
\gc	he/she(3hon)		
\r	awu		
\a	awu	-	-
\a	aw	-	-
\c	Pronoun		
\gc	it(3SN)		
\r	nAM		
\a	nAM	-	-
\a	eM	-	-
\c	Pronoun		
\gc	I(1S)		
\r	nAfkaL		
\a	nAfkaL	-	-
\a	efkaL	-	-
\c	Pronoun		
\gc	we(1P)		
\r	nI		
\a	nI	-	-
\a	uM	-	-
\c	Pronoun		
\gc	you(2S)		
\r	nIfkaL		
\a	nIfkaL	-	-
\a	ufkaL	-	-
\c	Pronoun		
\gc	you(2P)		
\r	nIr		
\a	nIr	-	-
\a	um	-	-
\c	Pronoun		
\gc	you(2S.hon)		
\r	yAm		
\a	yAm	-	-
\a	em	-	-
\c	Pronoun		
\gc	I(1S.hon)		
\r	wAfkaL		
\a	wAfkaL	-	-
\a	wafkaL	-	-
\c	Pronoun		
\gc	you(2S.hon)		

\r	wAm		
\a	wAm	-	-
\a	wam	-	-
\c	Pronoun		
\ge	you(2S.hon)		
\r	wAM		
\a	wAM	-	-
\a	waM	-	-
\c	Pronoun		
\ge	you(2S.reflx)		
\r	nAm		
\a	nAm	-	-
\a	nam	-	-
\c	Pronoun		
\ge	we(1P.incl)		

☞ NUMERALS

Field	Root/Stem	Phonological Constraint(s)	Morphological Constraint(s)
\r	avaL		
\a	avaL	-	-
\c	Pronoun		
\ge	she(3SF)		
\r	avaM		
\a	avaM	-	-
\a	Pronoun		
\ge	he(3SM)		
\r	avar		
\a	avar	-	-
\c	Pronoun		
\ge	he/she(3hon)		
\r	awu		
\a	awu	-	-
\a	aw	-	-
\c	Pronoun		
\ge	it(3SN)		
\r	nAM		
\a	nAM	-	-
\a	cM	-	-
\c	Pronoun		
\ge	I(1S)		
\r	nAfkaL		
\a	nAfkaL	-	-
\a	efkaL	-	-
\c	Pronoun		
\ge	we(1P)		

\r	nI		
\a	nI	-	-
\a	uM	-	-
\c	Pronoun		
\ge	you(2S)		
\r	nIfkaL		
\a	nIfkaL	-	-
\a	ufkaL	-	-
\c	Pronoun		
\ge	you(2P)		
\r	nIr		
\a	nIr	-	-
\a	um	-	-
\c	Pronoun		
\ge	you(2S.hon)		
\r	yAm		
\a	yAm	-	-
\a	em	-	-
\c	Pronoun		
\ge	I(1S.hon)		
\r	wAfkaL		
\a	wAfkaL	-	-
\a	wafkaL	-	-
\c	Pronoun		
\ge	you(2S.hon)		
\r	wAm		
\a	wAm	-	-
\a	wam	-	-
\c	Pronoun		
\ge	you(2S.hon)		
\r	wAM		
\a	wAM	-	-
\a	waM	-	-
\c	Pronoun		
\ge	you(2S.reflx)		
\r	nAm		
\a	nAm	-	-
\a	nam	-	-
\c	Pronoun		
\ge	we(1P.incl)		

❧ VERBS

Field	Root/Stem	Phonological Constraint(s)	Morphological Constraint(s)
\r	Aku		
\a	Aku	/_~[V]	+/~_[Pres.tns Fut.tns]
\a	A	-	-
\a	Ak	-	+/~_[Pres.tns Fut.tns]
\c	Verb		
\ge	become		
\r	AL		
\a	AL		
\a	AN		+/~_[Pres.tns Fut.tns]
\c	Verb		
\ge	rule		
\r	aZu		
\a	aZu	/_~[V]	-
\a	aZ	-	+/~_[Pres.tns Fut.tns]
\c	Verb		
\ge	cry		
\r	cA		
\a	cA	/_~[V]	-
\a	ce	/_~[V]	+/~_[Pres.tns Fut.tns]
\c	Verb		
\ge	die		
\r	cel		
\a	cel	-	-
\a	ceM	-	+/~_[Pres.tns Fut.tns]
\c	Verb		
\ge	leave		
\r	cey		
\a	cey	-	-
\c	Verb		
\ge	do		
\r	col		
\a	col	-	-
\a	coM	-	+/~_[Pres.tns Fut.tns]
\c	Verb		
\ge	say		
\r	eM		
\a	eM	-	-
\c	Verb		
\ge	think		
\r	ikaZ		
\a	ikaZ	-	-
\c	Verb		
\ge	disparage		

\r	inu		
\a	inu	/_~[V]	-
\c	Verb		
\ge	be		
\r	kAN		
\a	kAN	-	-
\a	kaN	-	+/~_[Pres.tns Fut.tns]
\c	Verb		
\ge	see		
\r	kEL		
\a	kEL	-	+/~_[Pres.tns Fut.tns]
\a	kEt	-	-
\c	Verb		
\ge	ask		
\r	koL		
\a	koL	-	-
\a	koN	-	+/~_[Pres.tns Fut.tns]
\c	Verb		
\ge	hold		
\r	niL		
\a	niL	-	+/~_[Pres.tns Fut.tns]
\a	niM	-	+/~_[Pres.tns Fut.tns]
\a	niR	-	-
\c	Verb		
\ge	stand		
\r	nO		
\a	nO	/_~[V]	-
\a	no	/_~[V]	+/~_[Pres.tns Fut.tns]
\c	Verb		
\ge	pain		
\r	pati		
\a	pati	/_~[V]	-
\c	Verb		
\ge	read/study		
\r	peRu		
\a	peRu	-	-
\a	peR	-	+/~_[Pres.tns Fut.tns]
\c	Verb		
\ge	get		
\r	pO		
\a	pO	/_~[V]	-
\c	Verb	-	-
\ge	go		

\r	pOtu		
\a	pOtu	/_~[V]	-
\a	pOt	-	+/~_[Pres.tns Fut.tns]
\c	Verb		
\ge	drop		
\r	pUN		
\a	pUN	-	+/~_[Pres.tns Fut.tns]
\a	pUNu	/_~[V]	-
\c	Verb		
\ge	wear		
\r	uN		
\a	uN	-	-
\c	Verb		
\ge	eat		
\r	vA		
\a	vA	/_~[V]	+/~_[Pres.tns Fut.tns]
\a	va	/_~[V]	+/~_[Pres.tns Fut.tns]
\a	var	-	+/~_[Pres.tns Fut.tns]
\a	varu	/_~[V]	-
\c	Verb		
\ge	come		
\r	viZu		
\a	viZu	/_~[V]	-
\a	viZ	-	+/~_[Pres.tns Fut.tns]
\c	Verb		
\ge	fall		
\r	wUfku		
\a	wUfku	/_~[V]	-
\a	wUfk	-	+/~_[Pres.tns Fut.tns]
\c	Verb		
\ge	sleep		

ADJECTIVES

Field	Root/Stem	Phonological Constraint(s)	Morphological Constraint(s)
\r	nalla		
\a	nalla	/_~[V]	-
\c	Adjective		
\ge	good		
\r	puwu		
\a	puwu	/_~[V]	-
\a	puw	-	-
\c	Adjective		
\ge	new		

2. The Suffix Lexicon

\id tamsuff.dic suffix dictionary

\s Record marker
 \a Allomorph
 \c Category pair from/to
 \mp Morpheme property
 \ge English Gloss
 \co Comment
 \noload Do not load
 \nocap No caps change

Field	Suffix	Phonological Constraint(s)	Morphological Constraint(s)
\s	kaL		-
\a	kaL	/~[Vlg]_	-
\a	kkaL	-	-
\c	Noun/Noun Numeral/Numeral		
\ge	Plr.num		
\s	Y		
\a	Y	/[Casex1]~_	-
\a	RY	/[Casex2]~_	-
\a	yY	/[Casex3]~_	-
\a	NY	/[Casex4]~_	-
\a	rY	/[Casex5]~_	-
\a	wwY	/[Casex6]~_	-
\a	LY	/[Casex7]~_	-
\a	MY	/[Casex8]~_	-
\a	IY	/[Casex9]~_	-
\a	vY	/[Casex10]~_	-
\a	mY	/[Casex11]~_	-
\c	Noun/Noun Pronoun/Pronoun Numeral/Numeral		
\ge	Acc.cs		
\s	Otu		
\a	Otu	/[Casex1]~_	-
\a	ROtu	/[Casex2]~_	-
\a	yOtu	/[Casex3]~_	-
\a	NOtu	/[Casex4]~_	-
\a	rOtu	/[Casex5]~_	-
\a	wwOtu	/[Casex6]~_	-
\a	LOtu	/[Casex7]~_	-
\a	MOtu	/[Casex8]~_	-
\a	lOtu	/[Casex9]~_	-
\a	vOtu	/[Casex10]~_	-
\a	mOtu	/[Casex11]~_	-
\a	Ot	/_[V]	-
\c	Noun/Noun Pronoun/Pronoun Numeral/Numeral		
\ge	Soc1.cs		
\s	utaM		
\a	utaM	/[Casex1]~_	-
\a	RutaM	/[Casex2]~_	-

\a	yutaM	/[Casex3]~	-
\a	NutaM	/[Casex4]~	-
\a	tutaM	/[Casex5]~	-
\a	wwutaM	/[Casex6]~	-
\a	LutaM	/[Casex7]~	-
\a	MutaM	/[Casex8]~	-
\a	lutaM	/[Casex9]~	-
\a	vutaM	/[Casex10]~	-
\a	mutaM	/[Casex11]~	-
\c	Noun/Noun Pronoun/Pronoun Numeral/Numeral		
\ge	Soc2.cs		

\s	Al		-
\a	Al	/[Casex1]~	-
\a	RAI	/[Casex2]~	-
\a	yAl	/[Casex3]~	-
\a	NAl	/[Casex4]~	-
\a	tAl	/[Casex5]~	-
\a	wwAl	/[Casex6]~	-
\a	LAl	/[Casex7]~	-
\a	MAl	/[Casex8]~	-
\a	lAl	/[Casex9]~	-
\a	vAl	/[Casex10]~	-
\a	mAl	/[Casex11]~	-
\c	Noun/Noun Pronoun/Pronoun Numeral/Numeral		
\ge	Instr.cs		

\s	lku		-
\a	lku	/[Casex1]~	-
\a	iRkAka	/[Casex1]~	-
\a	RiRku	/[Casex2]~	-
\a	yiRku	/[Casex3]~	-
\a	NiRku	/[Casex4]~	-
\a	riRku	/[Casex5]~	-
\a	wwiRku	/[Casex6]~	-
\a	LiRku	/[Casex7]~	-
\a	MiRku	/[Casex8]~	-
\a	liRku	/[Casex9]~	-
\a	viRku	/[Casex10]~	-
\a	ukku	/[Casex1]~	-
\a	Rukku	/[Casex2]~	-
\a	Nukku	/[Casex4]~	-
\a	tukku	/[Casex5]~	-
\a	wwukku	/[Casex6]~	-
\a	Lukku	/[Casex7]~	-
\a	Mukku	/[Casex8]~	-
\a	lukku	/[Casex9]~	-
\a	mukku	/[Casex11]~	-
\c	Noun/Noun Pronoun/Pronoun Numeral/Numeral		
\ge	Dat.cs		

\s	utYya		-
\a	utYya	/[Casex1]~	-
\a	RutYya	/[Casex2]~	-
\a	yutYya	/[Casex3]~	-
\a	NutYya	/[Casex4]~	-

\a	tutYya	/[Casex5]~	-
\a	wwutYya	/[Casex6]~	-
\a	LutYya	/[Casex7]~	-
\a	MurYya	/[Casex8]~	-
\a	lutYya	/[Casex9]~	-
\a	vutYya	/[Casex10]~	-
\a	mutYya	/[Casex11]~	-
\c	Noun/Noun Pronoun/Pronoun Numeral/Numeral		
\ge	Gen1.cs		
\s	iM		
\a	iM	/[Casex1]~	-
\a	RiM	/[Casex2]~	-
\a	yiM	/[Casex3]~	-
\a	NiM	/[Casex4]~	-
\a	tiM	/[Casex5]~	-
\a	wwiM	/[Casex6]~	-
\a	LiM	/[Casex7]~	-
\a	MiM	/[Casex8]~	-
\a	liM	/[Casex9]~	-
\a	viM	/[Casex10]~	-
\a	miM	/[Casex11]~	-
\c	Noun/Noun Pronoun/Pronoun Numeral/Numeral		
\ge	Gen2.cs		
\s	awu		
\a	awu	/[Casex1]~	-
\a	Rawu	/[Casex2]~	-
\a	yawu	/[Casex3]~	-
\a	Nawu	/[Casex4]~	-
\a	tawu	/[Casex5]~	-
\a	wwawu	/[Casex6]~	-
\a	Lawu	/[Casex7]~	-
\a	Mawu	/[Casex8]~	-
\a	lawu	/[Casex9]~	-
\a	vawu	/[Casex10]~	-
\a	mawu	/[Casex11]~	-
\c	Noun/Noun Pronoun/Pronoun Numeral/Numeral		
\ge	Gen3.cs		
\s	il		
\a	il	/[Casex1]~	-
\a	Ril	/[Casex2]~	-
\a	yil	/[Casex3]~	-
\a	Nil	/[Casex4]~	-
\a	til	/[Casex5]~	-
\a	wwil	/[Casex6]~	-
\a	Lil	/[Casex7]~	-
\a	Mil	/[Casex8]~	-
\a	lil	/[Casex9]~	-
\a	vil	/[Casex10]~	-
\a	mil	/[Casex11]~	-
\c	Noun/Noun Pronoun/Pronoun Numeral/Numeral		
\ge	Loc1.cs		

\s	itam		
\a	itam	/[Casex1]~_	-
\a	Ritam	/[Casex2]~_	-
\a	yitam	/[Casex3]~_	-
\a	Nitam	/[Casex4]~_	-
\a	titam	/[Casex5]~_	-
\a	wwitam	/[Casex6]~_	-
\a	Litam	/[Casex7]~_	-
\a	Mitam	/[Casex8]~_	-
\a	litam	/[Casex9]~_	-
\a	vitam	/[Casex10]~_	-
\a	mitam	/[Casex11]~_	-
\c	Noun/Noun	Pronoun/Pronoun	Numeral/Numeral
\ge	Loc2.cs		

\s	kkAka		
\a	kkAka	/[Casex1]~_	-
\a	iRkAka	/[Casex1]~_	-
\a	RiRkAka	/[Casex2]~_	-
\a	yiRkAka	/[Casex3]~_	-
\a	NiRkAka	/[Casex4]~_	-
\a	tiRkAka	/[Casex5]~_	-
\a	wwiRkAka	/[Casex6]~_	-
\a	LiRkAka	/[Casex7]~_	-
\a	MiRkAka	/[Casex8]~_	-
\a	liRkAka	/[Casex9]~_	-
\a	viRkAka	/[Casex10]~_	-
\a	ukkAka	/[Casex1]~_	-
\a	RukkAka	/[Casex2]~_	-
\a	NukkAka	/[Casex4]~_	-
\a	tukkAka	/[Casex5]~_	-
\a	wwukkAka	/[Casex6]~_	-
\a	LukkAka	/[Casex7]~_	-
\a	MukkAka	/[Casex8]~_	-
\a	lukkAka	/[Casex9]~_	-
\a	makkAka	/[Casex11]~_	-
\c	Noun/Noun	Pronoun/Pronoun	Numeral/Numeral
\ge	Ben.cs		

\s	ilirunwu		
\a	ilirunwu	/[Casex1]~_	-
\a	Rilirunwu	/[Casex2]~_	-
\a	yilirunwu	/[Casex3]~_	-
\a	Nilirunwu	/[Casex4]~_	-
\a	tilirunwu	/[Casex5]~_	-
\a	wwilirunwu	/[Casex6]~_	-
\a	Lilirunwu	/[Casex7]~_	-
\a	Milirunwu	/[Casex8]~_	-
\a	lilirunwu	/[Casex9]~_	-
\a	vilirunwu	/[Casex10]~_	-
\a	milirunwu	/[Casex11]~_	-
\c	Noun/Noun	Pronoun/Pronoun	Numeral/Numeral
\ge	Abl1.cs		

\s	itamirunwu			
\a	itamirunwu	/[Casex1]~	-	-
\a	Ritamirunwu	/[Casex2]~	-	-
\a	yitamirunwu	/[Casex3]~	-	-
\a	Nitamirunwu	/[Casex4]~	-	-
\a	titamirunwu	/[Casex5]~	-	-
\a	wwitamirunwu	/[Casex6]~	-	-
\a	Litamirunwu	/[Casex7]~	-	-
\a	Mitamirunwu	/[Casex8]~	-	-
\a	litamirunwu	/[Casex9]~	-	-
\a	vitamirunwu	/[Casex10]~	-	-
\a	mitamirunwu	/[Casex11]~	-	-
\c	Noun/Noun	Pronoun/Pronoun	Numeral/Numeral	
\ge	Abl2.cs			
\s	varY			
\a	varY	-	-	-
\c	Noun/Noun	Pronoun/Pronoun		
\ge	Adv.Nom			
\s	cuRRi			
\a	cuRRi	-	-	-
\a	ccuRRi	-	-	-
\c	Noun/Noun	Pronoun/Pronoun	Numeral/Numeral	
\ge	Adv.Acc			
\s	kittE			
\a	kittE	/[V]~	-	-
\a	kkittE	-	-	-
\c	Noun/Noun	Pronoun/Pronoun	Numeral/Numeral	
\ge	Adv.Obl			
\s	irY			
\a	irY	-	-	-
\c	Noun/Noun	Pronoun/Pronoun		
\ge	Adv.Dat			
\s	uL			
\a	uL	-	-	-
\a	uLL	/[V]~	-	-
\c	Noun/Noun	Pronoun/Pronoun		
\ge	Adv.Dat			
\s	veLi			
\a	veLi	/_[G] /~_[V]	-	-
\c	Noun/Noun	Pronoun/Pronoun		
\ge	Adv.Dat			
\s	nEr			
\a	nEr	-	-	-
\c	Noun/Noun	Pronoun/Pronoun		
\ge	Adv.Dat			
\s	piRaku			
\a	piRaku	/[V]~	-	-
\a	ppiRaku	-	-	-

\a	piRak	/[V]~_/[~_[C]	-
\a	ppiRak	/~_[C]	-
\c	Noun/Noun	Pronoun/Pronoun	
\ge	Adv.Dat		
\s	appAl		
\a	appAl	-	-
\c	Noun/Noun	Pronoun/Pronoun	
\ge	Adv.Dat		
\s	appuram		
\a	appuram	-	-
\c	Noun/Noun	Pronoun/Pronoun	
\ge	Adv.Dat		
\s	atuwwa		
\a	anrwwa	-	-
\c	Noun/Noun	Pronoun/Pronoun	
\ge	Adv.Dat		
\s	ati		
\a	ati	-	-
\c	Noun/Noun	Pronoun/Pronoun	
\ge	Adv.Dat		
\s	kurukk		
\a	kurukk	/[V]~_	-
\a	kkurukk	-	-
\c	Noun/Noun	Pronoun/Pronoun	
\ge	Adv.Gen		
\s	mEl		
\a	mEl	-	-
\c	Noun/Noun	Pronoun/Pronoun	
\ge	Adv.Dat/Gen		
\s	klZ		
\a	klZ	/[V]~_	-
\a	kkIz	-	-
\c	Noun/Noun	Pronoun/Pronoun	
\ge	Adv.Dat/Gen		
\s	weRku		
\a	weRku	/[V]~_	-
\a	weRk	/[V]~_	-
\a	wwerku	-	-
\a	wwerK	-	-
\c	Noun/Noun	Pronoun/Pronoun	
\ge	Adv.Dat/Gen		
\s	mERku		
\a	mERku	-	-
\a	mERk	-	-
\c	Noun/Noun	Pronoun/Pronoun	
\ge	Adv.Dat/Gen		

\s	kiZakku			
\a	kiZakku	/[V]~	-	-
\a	kiZakk	/[V]~	-	-
\a	kkiZakku	-	-	-
\a	kkiZakk	-	-	-
\c	Noun/Noun	Pronoun/Pronoun		
\ge	Adv.Dat/Gen			
\s	vatakk			
\a	vatakk	-	-	-
\a	vatakk	-	-	-
\c	Noun/Noun	Pronoun/Pronoun		
\ge	Adv.Dat/Gen			
\s	pakkam			
\a	pakkam	-	-	-
\c	Noun/Noun	Pronoun/Pronoun		
\ge	Adv.Dat/Gen			
\s	mawwi			
\a	mawwi	-	-	-
\c	Noun/Noun	Pronoun/Pronoun		
\ge	Adv.Dat/Gen			
\s	natu			
\a	natu	-	-	-
\c	Noun/Noun	Pronoun/Pronoun		
\ge	Adv.Dat/Gen			
\s	aruk			
\a	aruk	-	-	-
\c	Noun/Noun	Pronoun/Pronoun		
\ge	Adv.Dat/Gen			
\s	ewir			
\a	ewir	-	-	-
\c	Noun/Noun	Pronoun/Pronoun		
\ge	Adv.Dat/Gen			
\s	muM			
\a	muM	-	-	-
\a	muMpu	-	-	-
\a	muMMAl	-	-	-
\a	mumwi	-	-	-
\c	Noun/Noun	Pronoun/Pronoun		
\ge	Adv.Dat/Gen			
\s	piM			
\a	piM	/[V]~	-	-
\a	piMpu	/[V]~	-	-
\a	piMMAl	/[V]~	-	-
\a	pimwi	/[V]~	-	-
\a	ppiM	-	-	-
\a	ppiMpu	-	-	-
\a	ppiMMAl	-	-	-
\a	ppimwi	-	-	-

\c	Noun/Noun	Pronoun/Pronoun	
\ge	Adv.Dat/Gen		
\s	mUlam		
\a	mUlam	-	-
\c	Noun/Noun	Pronoun/Pronoun	
\ge	Ppn.Gen		
\s	uriya		
\a	uriya	-	-
\c	Noun/Noun	Pronoun/Pronoun	
\ge	Ppn.Dat		
\s	Aka		
\a	Aka	-	-
\c	Noun/Noun	Pronoun/Pronoun	Numeral/Numeral
\ge	Ppn.Dat		
\s	eMum		
\a	eMum	-	-
\c	Noun/Noun	Pronoun/Pronoun	Numeral/Numeral
\ge	Ppn.Nom		
\s	eMRa		
\a	eMRa	-	-
\c	Noun/Noun	Pronoun/Pronoun	Numeral/Numeral
\ge	Ppn.Nom		
\s	eMpawu		
\a	eMpawu	-	-
\c	Noun/Noun	Pronoun/Pronoun	Numeral/Numeral
\ge	Ppn.Nom		
\s	eMappatuvawu		
\a	eMappatuvawu	-	-
\c	Noun/Noun	Pronoun/Pronoun	Numeral/Numeral
\ge	Ppn.Nom		
\s	illA		
\a	illA	-	-
\c	Noun/Noun	Pronoun/Pronoun	Numeral/Numeral
\ge	Ppn.Nom		
\s	eMRu		
\a	eMRu	-	-
\c	Noun/Noun	Pronoun/Pronoun	Numeral/Numeral
\ge	Ppn.Nom/Dat		
\s	eMa		
\a	eMa	-	-
\c	Noun/Noun	Pronoun/Pronoun	Numeral/Numeral
\ge	Ppn.Nom/Dat		
\s	kuriwwu		
\a	kuriwwu	-	-
\a	kkuriwwu	-	-

\c	Noun/Noun	Pronoun/Pronoun	Numeral/Numeral	
\ge	Ppn.Acc			
\s	wawirwu			
\a	wwawirwu	-		-
\a	wwawirwu	-		-
\c	Noun/Noun	Pronoun/Pronoun	Numeral/Numeral	
\ge	Ppn.Acc			
\s	kAtilum			
\a	kAtilum	-		Ppn.Acc + /Acc.cs_
\a	kkAtilum	/~[Vlg]_		Ppn.Acc + /Acc.cs_
\c	Noun/Noun	Pronoun/Pronoun	Numeral/Numeral	
\ge	Ppn.Acc			
\mcc	Ppn.Acc + /Acc.cs_			
\s	mattilum			
\a	mattilum	-		-
\c	Noun/Noun			
\ge	Ppn.Acc			
\s	mAwiri			
\a	mAwiri	-		Pl.Nom + /~Obl.Qif_
\c	Noun/Noun	Pronoun/Pronoun	Numeral/Numeral	Adjective/Adjective
\ge	Pl.Nom			
\mcc	Pl.Nom + /~Obl.Qif_			
\s	pOMRa			
\a	pOMRa	/[V]~_		-
\a	ppOMRa			
\c	Noun/Noun	Pronoun/Pronoun		
\ge	Pl.Nom/Acc			
\s	pOla			
\a	pOla	/[V]~_		-
\a	ppOla			
\c	Noun/Noun	Pronoun/Pronoun		
\ge	Pl.Nom/Acc			
\s	pOMRu			
\a	pOMRu	/[V]~_		-
\a	ppOMRu			
\c	Noun/Noun	Pronoun/Pronoun		
\ge	Pl.Nom/Acc			
\s	pOl			
\a	pOl	-		-
\a	ppOl	-		-
\c	Noun/Noun	Pronoun/Pronoun		
\ge	Pl.Acc			
\s	vita			
\a	vita	-		-
\c	Noun/Noun	Pronoun/Pronoun		
\ge	Pl.Acc			

\s	paRRi		
\s	paRRi		
\a	ppaRRi	-	-
\c	Noun/Noun	Pronoun/Pronoun	
\ge	Pl.Acc		
\s	vAkkil		
\a	vAkkil	-	-
\c	Numeral/Numeral		
\ge	Adv.Obl		
\s	peyar		
\a	peyar	-	-
\c	Numeral/Numeral		
\a	Pl.Nom		
\s	maNi		
\a	maNi	-	-
\c	Numeral/Numeral		
\ge	Pl.Obl		
\s	watavY		
\a	watavY	-	-
\c	Numeral/Numeral		
\ge	Pl.Obl		
\s	muRY		
\a	muRY	-	-
\c	Numeral/Numeral		
\ge	Pl.Obl		
\s	kAl		
\a	kAl	-	-
\c	Numeral/Numeral		
\ge	Pl.Obl		
\s	viwam		
\a	viwam	-	-
\c	Numeral/Numeral		
\ge	Pl.Obl		
\s	vakY		
\a	vakY	-	-
\c	Numeral/Numeral		
\ge	Pl.Obl		
\s	EkAl		
\a	EkAl	-	-
\c	Numeral/Numeral		
\ge	Pl.Qnt		
\s	arY		
\a	arY	-	-
\c	Numeral/Numeral		
\ge	Pl.Qnt		

\s	arYkkAl		
\a	arYkkAl	-	-
\c	Numeral/Numeral		
\ge	Pl.Qnt		
\s	Emukkal		
\a	Emukkal	-	-
\c	Numeral/Numeral		
\ge	Pl.Qnt		
\s	muwal		
\a	muwal	-	-
\c	Numeral/Numeral		
\ge	Adv.tmp		
\s	vaM		
\a	vaM	-	-
\c	Numeral/Numeral		
\ge	3SM.num.gnp		
\s	var		
\a	var	-	-
\c	Numeral/Numeral		
\ge	3Shon.num.gnp		
\s	wwi		
\a	wwi	-	-
\c	Numeral/Numeral		
\ge	3Sfnum.gnp		
\s	kiR		
\a	kiR	/[Presx1]~_	-
\a	kiMR	/[Presx1]~_	-
\a	kkiR	/[Presx2]~_	-
\c	Verb/Verb		
\ge	Pres.tns		
\s	M		
\a	M	/[Pastx1]~_	-
\c	Verb/Verb		
\ge	Past.tns		
\s	t		
\a	t	/[Pastx2]~_	-
\c	Verb/Verb		
\ge	Past.tns		
\s	w		
\a	w	/[Pastx3]~_	-
\c	Verb/Verb		
\ge	Past.tns		
\s	ww		
\a	ww	/[Pastx4]~_	-
\c	Verb/Verb		
\ge	Past.tns		

\s	R		
\a	R	/[Pastx5]~_	-
\c	Verb/Verb		
\ge	Past.tns		
\s	nw		
\a	nw	/[Pastx6]~_	-
\c	Verb/Verb		
\ge	Past.tns		
\s	iM		
\a	iM	/[Pastx7]~_	-
\c	Verb/Verb		
\ge	Past.tns		
\s	P		
\a	p	/[Futx1]~_	-
\c	Verb/Verb		
\ge	Fut.tns		
\s	pp		
\a	pp	/[Futx2]~_	-
\c	Verb/Verb		
\ge	Fut.tns		
\s	v		
\a	v	/[Futx3]~_	-
\c	Verb/Verb		
\ge	Fut.tns		
\s	avillY		
\a	avillY	/[Nfinx1]~_	-
\a	lavillY	/[Nfinx2]~_	-
\a	kavillY	/[Nfinx3]~_	-
\a	yavillY	/[Nfinx4]~_	-
\a	kkavillY	/[Nfinx5]~_	-
\a	LavillY	/[Nfinx6]~_	-
\a	NavillY	/[Nfinx7]~_	-
\c	Verb/Verb		
\ge	Neg.Past		
\s	amAtt		
\a	amAtt	/[Nfinx1]~_	-
\a	lamAtt	/[Nfinx2]~_	-
\a	kamAtt	/[Nfinx3]~_	-
\a	yamAtt	/[Nfinx4]~_	-
\a	kkamAtt	/[Nfinx5]~_	-
\a	LamAtt	/[Nfinx6]~_	-
\a	NamAtt	/[Nfinx7]~_	-
\c	Verb/Verb		
\ge	Neg.Fut		
\s	alAm		
\a	alAm	/[Nfinx1]~_	-
\a	kalAm	/[Nfinx2]~_	-

\a	lalAm	/[Nfmx3]~	-
\a	kkalAm	/[Nfmx4]~	-
\a	yalAm	/[Nfmx5]~	-
\a	lalAm	/[Nfmx6]~	-
\a	NalAm	/[Nfmx7]~	-
\c	Verb/Verb		
\ge	Hort.		
\s	a		
\a	a	/[Nfmx1]~	-
\a	ka	/[Nfmx2]~	-
\a	la	/[Nfmx3]~	-
\a	kka	/[Nfmx4]~	-
\a	ya	/[Nfmx5]~	-
\a	la	/[Nfmx6]~	-
\a	Na	/[Nfmx7]~	-
\c	Verb/Verb		
\ge	Adm.		
\s	Aw		
\a	Aw	/[Nfmx1]~	-
\a	kAw	/[Nfmx2]~	-
\a	lAw	/[Nfmx3]~	-
\a	kkAw	/[Nfmx4]~	-
\a	yAw	/[Nfmx5]~	-
\a	LAw	/[Nfmx6]~	-
\a	NAw	/[Nfmx7]~	-
\c	Verb/Verb		
\ge	Proh.		
\s	a		
\a	a	/[Nfmx1]~	-
\a	ka	/[Nfmx2]~	-
\a	la	/[Nfmx3]~	-
\a	kka	/[Nfmx4]~	-
\a	ya	/[Nfmx5]~	-
\a	la	/[Nfmx6]~	-
\a	Na	/[Nfmx7]~	-
\c	Verb/Verb		
\ge	Inf.		
\s	kiRa		
\a	kiRa	/[Presx1]~	-
\a	kiMRa	/[Presx1]~	-
\a	kkRa	/[Presx2]~	-
\c	Verb/Verb		
\ge	Pres.Adj.Ppl		
\s	Ma		
\a	Ma	/[Pastx1]~	-
\a	ta	/[Pastx2]~	-
\a	wa	/[Pastx3]~	-
\a	wwa	/[Pastx4]~	-
\a	Ra	/[Pastx5]~	-
\a	awa	/[Pastx6]~	-
\a	iMa	/[Pastx7]~	-

\c	Verb/Verb		
\ge	Past.Adj.Ppl		
\s	um		
\a	um	/[Nfinx1]~	-
\a	kum	/[Nfinx2]~	-
\a	lum	/[Nfinx3]~	-
\a	kkum	/[Nfinx4]~	-
\a	yum	/[Nfinx5]~	-
\a	Lum	/[Nfinx6]~	-
\a	Num	/[Nfinx7]~	-
\c	Verb/Verb		
\ge	Habitual.Ppl		
\s	Awa		
\a	Awa	/[Nfinx1]~	-
\a	kAwa	/[Nfinx2]~	-
\a	lAwa	/[Nfinx3]~	-
\a	kkAwa	/[Nfinx4]~	-
\a	yAwa	/[Nfinx5]~	-
\a	LAwa	/[Nfinx6]~	-
\a	NAwa	/[Nfinx7]~	-
\c	Verb/Verb		
\ge	Neg.Adj.Ppl		
\s	li		
\a	li	/[PosVbPplx1]~	-
\a	tu	/[PosVbPplx2]~	-
\a	wu	/[PosVbPplx3]~	-
\a	wwu	/[PosVbPplx4]~	-
\a	Ru	/[PosVbPplx5]~	-
\a	nwu	/[PosVbPplx6]~	-
\a	i	/[PosVbPplx7]~	-
\c	Verb/Verb		
\ge	Pos.Vbl.Ppl		
\s	Amal		
\a	Amal	/[Nfinx1]~	-
\a	kAmal	/[Nfinx2]~	-
\a	lAmal	/[Nfinx3]~	-
\a	kkAmal	/[Nfinx4]~	-
\a	yAmal	/[Nfinx5]~	-
\a	LAmal	/[Nfinx6]~	-
\a	NAmal	/[Nfinx7]~	-
\a	Awu	/[Nfinx1]~	-
\a	kAwu	/[Nfinx2]~	-
\a	lAwu	/[Nfinx3]~	-
\a	kkAwu	/[Nfinx4]~	-
\a	yAwu	/[Nfinx5]~	-
\a	LAwu	/[Nfinx6]~	-
\a	NAwu	/[Nfinx7]~	-
\c	Verb/Verb		
\ge	Neg.Vbl.Ppl		

\s	MAI		
\a	MAI	/[Pastx1]~	-
\a	tAI	/[Pastx2]~	-
\a	wAI	/[Pastx3]~	-
\a	wwAI	/[Pastx4]~	-
\a	RAI	/[Pastx5]~	-
\a	nwAI	/[Pastx6]~	-
\a	iMAI	/[Pastx7]~	-
\c	Verb/Verb		
\ge	Pos.Cndl		
\s	AvittAI		
\a	AvittAI	/[Nfinx1]~	-
\a	kAvittAI	/[Nfinx2]~	-
\a	lAvittAI	/[Nfinx3]~	-
\a	kkAvittAI	/[Nfinx4]~	-
\a	yAvittAI	/[Nfinx5]~	-
\a	LAvittAI	/[Nfinx6]~	-
\a	NAvittAI	/[Nfinx7]~	-
\c	Verb/Verb		
\ge	Neg.Cndl		
\s	likkoNturu		
\a	likkoNturu	/[PosVbPplx1]~	-
\a	tuikkoNturu	/[PosVbPplx2]~	-
\a	wukkoNturu	/[PosVbPplx3]~	-
\a	wwukkoNturu	/[PosVbPplx4]~	-
\a	RukkoNturu	/[PosVbPplx5]~	-
\a	nwukkoNturu	/[PosVbPplx6]~	-
\a	ikkoNturu	/[PosVbPplx7]~	-
\c	Verb/Verb		
\ge	Dur.Cndl		
\s	pO		
\a	pO	-	-
\c	Verb/Verb		
\ge	Aux.Vb1		
\s	vENtAm		
\a	vENtAm	-	-
\c	Verb/Verb		
\ge	Aux.Vb1		
\s	vENTum		
\a	vENTum	-	-
\c	Verb/Verb		
\ge	Aux.Vb1		
\s	col		
\a	col	-	-
\c	Verb/Verb		
\ge	Aux.Vb1		

\s	vY		
\a	vY	-	-
\c	Verb/Verb		
\ge	Aux.Vb1		
\s	vitu		
\a	vitu	-	-
\c	Verb/Verb		
\ge	Aux.Vb1		
\s	pOtu		
\a	pOtu	-	-
\c	Verb/Verb		
\ge	Aux.Vb1		
\s	kotu		
\a	kotu	-	-
\c	Verb/Verb		
\ge	Aux.Vb1		
\s	mutiyum		
\a	mutiyum	-	-
\c	Verb/Verb		
\ge	Aux.Vb1		
\s	mutiyAwu		
\a	mutiyAwu	-	-
\c	Verb/Verb		
\ge	Aux.Vb1		
\s	koL		
\a	koL	-	-
\c	Verb/Verb		
\ge	Aux.Vb2		
\s	muti		
\a	muti	-	-
\c	Verb/Verb		
\ge	Aux.Vb2		
\s	wIr		
\a	wIr	-	-
\c	Verb/Verb		
\ge	Aux.Vb2		
\s	waLLu		
\a	waLLu	-	-
\c	Verb/Verb		
\ge	Aux.Vb2		
\s	vY		
\a	vY	-	-
\c	Verb/Verb		
\ge	Aux.Vb2		
\s	AyiRRu		

\a	AyiRRu	-	-
\c	Verb/Verb		
\ge	Aux.Vb2		
\s	wolY		
\a	wolY	-	-
\c	Verb/Verb		
\ge	Aux.Vb2		
\s	EM		
\a	EM	-	-
\c	Verb/Verb		
\ge	1S.pe		
\s	Om		
\a	Om	-	-
\c	Verb/Verb		
\ge	1P.incl.pe		
\s	Ay		
\a	Ay	-	-
\a	E	-	-
\c	Verb/Verb		
\ge	2S.pe		
\s	Ir		
\a	Ir	-	-
\c	EL	-	-
\ge	Verb/Verb		
	2S.hon.pe		
\s	IrkaL		
\a	IrkaL	-	-
\c	Verb/Verb		
\ge	2S.hon/2P.pe		

\s	AM		
\a	AM	-	-
\c	Verb/Verb		
\gc	3SM.pe		
\s	AL		
\a	AL	-	-
\c	Verb/Verb		
\gc	3SF.pe		
\s	um		
\a	um	-	-
\c	Verb/Verb		
\gc	3SN.pe		
\s	E		
\a	E	-	-
\c	Noun/Noun Pronoun/Pronoun Numeral/Numeral Adjective/Adjective Verb/Verb		
\gc	Emph1.Cl		
\s	O		
\a	O	-	-
\c	Noun/Noun Pronoun/Pronoun Numeral/Numeral Adjective/Adjective Verb/Verb		
\gc	Intrg2.Cl		
\s	um		
\a	um	/[V]~_	-
\c	Noun/Noun Pronoun/Pronoun Numeral/Numeral Adjective/Adjective Verb/Verb		
\gc	Ind1.Cl		
\s	wAM		
\a	wAM	/[Vd]~_	-
\a	wwAM	-	-
\c	Noun/Noun Pronoun/Pronoun Numeral/Numeral Adjective/Adjective Verb/Verb		
\gc	Emph2.Cl		
\s	Avawu		
\a	Avawu	/[V]~_ / [Vbk]v_ / [Vft]y_	-
\c	Noun/Noun Pronoun/Pronoun Numeral/Numeral Adjective/Adjective Verb/Verb		
\gc	Cntg.Cl		
\s	kUta		
\a	kUta	/[Vg]~_	-
\a	kkUta	-	-
\c	Noun/Noun Pronoun/Pronoun Numeral/Numeral Adjective/Adjective Verb/Verb		
\gc	Ind2.Cl		
\s	mattum		
\a	mattum	-	-
\c	Noun/Noun Pronoun/Pronoun Numeral/Numeral Adjective/Adjective Verb/Verb		
\gc	Restr.Cl		
\s	Am		
\a	Am	-	-
\a	vAm	-	-
\a	yAm	-	-

\c	Noun/Noun Pronoun/Pronoun Numeral/Numeral Adjective/Adjective Verb/Verb		
\ge	Supp.Cl		
\s	A		
\a	A	/[V]~_/[Vbk]v_/[Vft]y_	-
\c	Noun/Noun Pronoun/Pronoun Numeral/Numeral Adjective/Adjective Verb/Verb		
\ge	Intrg1.Cl		
\s	tA		
\a	tA	-	-
\a	atA	-	-
\c	Verb/Verb		
\ge	3SM.Voc.Cl.Cl		
\s	tI		
\a	tI	-	-
\a	AtI	-	-
\c	Verb/Verb		
\ge	3SF.Voc.Cl		
\s	tEy		
\a	tEy	-	-
\a	atEy	-	-
\c	Verb/Verb		
\ge	3SM.colloq.Voc.Cl		
\s	yyA		
\a	yyA	-	-
\a	zyyA	-	-
\c	Verb/Verb		
\ge	3SM.hon.Voc.Cl		
\s	mA		
\a	mA	-	-
\a	ammA	-	-
\c	Verb/Verb		
\ge	3SF.hon.Voc.Cl		
\s	pA		
\a	pA	-	-
\a	appA	-	-
\c	Verb/Verb		
\ge	3SM.hon.Voc.Cl		
\s	afka		
\a	afka	-	-
\a	ufka	-	-
\a	fka	-	-
\c	Verb/Verb		
\ge	3S.hon/P.Voc.Cl		
\s	iya		
\a	iya	-	-
\c	Adjective/Adjective		
\ge	bd.Qlf		
\mcc	bd.Qlf	+/good~_	

\s	vaM		
\a	vaM	-	-
\c	Adjective/Adjective		
\ge	3SM.pe		
\s	vaL		
\a	vaL	-	-
\c	Adjective/Adjective		
\ge	3SF.pe		
\s	var		
\a	var	-	-
\c	Adjective/Adjective		
\ge	3S.hon.pe		
\s	wu		
\a	wu	-	-
\c	Adjective/Adjective		
\ge	3SN.pe		

Appendix III

Database for the KIMMO Analyzer in Tamil (KIMMO Version - ,2.1.0)

The KIMMO Rule File

TAMIL.RUL

; Rules file for the Tamil description.

; To load this file, enter the command **LOAD RULES TAMIL**

; This description of Tamil is based on the article "A two-level morphological analysis of English," by Lauri Karttunen and K. Wittenburg, Texas Linguistic Forum 22:217-228 (1983).

; + = Morpheme break

ALPHABET

a A i I u U e E Y o O W k c t w p R F f N n m M y r L v Z l +

NULL 0

ANY @

BOUNDARY

SUBSET V	a A i I u U e E Y o O W;	vowels
SUBSET Co	k c t w p R;	obstruents
SUBSET Cf	t p R;	front consonants
SUBSET Cn	F f N n m M;	nasals
SUBSET Cs	y r L v Z l;	sonorants (non-nasal)
SUBSET Cc	y L l;	continuant
SUBSET Vlg	A U I E O;	long vowels
SUBSET Vsh	a i u e o;	short vowels
SUBSET Vft	Y i I y;	front vowels
SUBSET Vbk	U;	back high vowels
SUBSET Vbl	A O;	back long vowels

RULE "1 Consonant defaults" 1 19

	k	c	t	w	p	R	F	f	N	N	m	M	y	r	L	v	Z	l	@	Surface
	k	c	t	w	p	R	F	f	N	N	m	M	y	r	L	v	Z	l	@	Underlying
1:	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

RULE "2 Vowels and other defaults" 1 13

	a	A	i	I	u	U	E	E	Y	o	O	W	@	Surface
	a	A	i	I	u	U	E	E	Y	o	O	W	@	Underlying
1:	1	1	1	1	1	1	1	1	1	1	1	1	1	

RULE "3 Gemination1, 0:{k,l,y,L,N,M} ⇒ {Vb,l,y,L,N,M} (+:0)___" 7 14

	Vbl	1	y	L	N	M	+	0	0	0	0	0	0	@	Surface
	Vbl	1	y	L	N	M	0	k	1	y	L	N	N	@	Underlying
1:	2	3	4	5	6	7	1	0	0	0	0	0	0	1	
2:	2	3	4	5	6	7	2	1	0	0	0	0	0	1	
3:	0	3	4	5	6	7	3	0	1	0	0	0	0	1	
4:	2	0	4	5	6	7	4	0	0	1	0	0	0	1	
5:	2	3	0	5	6	7	5	0	0	0	1	0	0	1	
6:	2	3	4	0	6	7	6	0	0	0	0	1	1	1	
7:	2	3	4	5	0	7	7	0	0	0	0	1	1	1	

RULE "4 Apocope, u:0 ⇒ ___(+:0) V" 3 4

	u	+	V	@	Surface
	0	0	V	@	Underlying
1:	2	1	1	1	
2:	0	3	0	0	
3:	0	0	1	0	

RULE "5 Nasal Assimilation, m:f ⇒ ___(+:0) k" 3 4

	m	+	k	@	Surface
	f	0	k	@	Underlying
1:	2	1	1	1	
2:	0	3	0	0	
3:	0	0	1	0	

RULE "6 Oblique, 0:w ⇒ m:w (+:0)___" 3 4

	m	+	0	@	Surface
	w	0	w	@	Underlying
1:	2	1	1	1	
2:	0	3	0	0	
3:	0	0	1	0	

RULE "7 Plural Gemination, 0:k ⇒ Vlg (+:0)___k" 4 5

	Vlg	+	0	k	@	Surface
	Vlg	0	k	k	@	Underlying
1:	2	1	1	1	1	
2:	0	3	0	0	0	
3:	0	0	4	0	0	

RULE "8 Glide Insertion, 0:{v,y} ⇒ {Vbk,Vft} (+:0)___V" 4 6

	Vbk	Vft	+	0	0	@	Surface
	Vbk	Vft	0	v	y	@	Underlying
1:	2	3	1	0	0	1	
2:	0	3	2	1	0	1	
3:	0	0	3	0	1	1	
4:	2	0	4	0	0	1	

RULE "9 Assimilation, {M,l,l,L}:{r,R,M,t} $\Rightarrow$ ___(+:0) k" 6 7

	M	l	l	L	+	k	@	Surface
	r	R	M	t	0	k	@	Underlying
1:	2	3	4	5	0	1	1	
2:	0	0	0	0	6	0	0	
3:	0	0	0	0	6	0	0	
4:	0	0	0	0	6	0	0	
5:	0	0	0	0	6	0	0	
6:	0	0	0	0	6	1	0	

RULE "10 Vowel Shortening1, A:a $\Rightarrow$ ___Cn Co" 3 4

	A	Cn	Co	@	Surface
	a	Cn	Co	@	Underlying
1:	2	1	1	1	
2:	0	3	0	0	
3:	0	0	1	0	

RULE "11 Vowel Shortening2, A:e $\Rightarrow$ (+:0)___w" 3 4

	+	A	w	@	Surface
	0	e	w	@	Underlying
1:	2	1	1	1	
2:	0	3	0	0	
3:	0	0	1	0	

RULE "12 Stop Gemination, 0:{k,p} $\Rightarrow$ ___(+:0) {k,p}" 3 6

	0	0	k	p	+	@	Surface
	k	p	k	p	0	@	Underlying
1:	2	3	1	1	1	1	
2:	0	0	1	0	2	0	
3:	0	0	0	1	3	0	

RULE "13 Gemination2, {l,L,l,L}:{M,N,M,t} $\Rightarrow$ ___(+:0) {R,t,M,t} V" 6 9

	l	L	L	+	R	t	M	V	@	Surface
	M	N	t	0	R	t	M	V	@	Underlying
1:	2	3	4	0	1	1	1	1	1	
2:	0	0	0	5	0	0	0	0	0	
3:	0	0	0	5	0	0	0	0	0	
4:	0	0	0	5	0	0	0	0	0	
5:	0	0	0	0	6	6	6	0	0	
6:	0	0	0	0	0	0	0	1	0	

END

The KIMMO Lexicon Files

I. Main Lexicon

;TAMIL.LEX

; Lexicon file for the Tamil description.

; To load this file, enter the command **LOAD LEXICON TAMIL**

ALTERNATION Begin	NOUN_ROOT VERB_ROOT ADJECTIVE_ROOT
	NUMERAL_ROOT PRONOUN_ROOT End
ALTERNATION Noun_Root	NUMBER CASE End
ALTERNATION Verb_Root	TENSE End
ALTERNATION Tense	GNP VERB_INFLECTIONS TENSE End
ALTERNATION GNP	VERB_INFLECTIONS TENSE COMMON_INFLECTIONS End
ALTERNATION Auxiliary_Verb	VERBINFLECTIONS COMMON_INFLECTIONS End
ALTERNATION Verb_Inflections	VERB_INFLECTIONS COMMON_INFLECTIONS End
ALTERNATION Numeral_Root	NUMERAL_INFLECTIONS End
ALTERNATION Pronoun_Root	CASE COMMON_INFLECTIONS End
ALTERNATION Adjective_Root	ADJECTIVE_INFLECTIONS GNP End
ALTERNATION Number	CASE NOUN_INFLECTIONS COMMON_INFLECTIONS End
ALTERNATION Case	NOUN_INFLECTIONS COMMON_INFLECTIONS End
ALTERNATION Particle	NOUN_INFLECTIONS VERB_INFLECTIONS COMMONINFLECTIONS End
ALTERNATION GNPhase	ADJECTIVE_INFLECTIONS GNP COMMON_INFLECTIONS End
ALTERNATION Postposition	NOUN_INFLECTIONS COMMON_INFLECTIONS End
ALTERNATION Adverbial	NOUNINFLECTIONS COMMON_INFLECTIONS End
ALTERNATION Clitic	COMMON_INFLECTIONS End

FEATURES Nom Sg,Nom Pl,Nom Pl,Acc Pl,Gen Ppn,Nom Ppn,Gen Ppn,Acc Ppn,Dat Ppn,Nom/Dat
Adv,Obl Adv,Dat Adv,Gen Adv,Gen/Dat Cl Sg Plur Case,Acc Case,Dat Case,Gen Case,Ben Case,Abl
Case,Loc Case,Instr Case,Soc Adj,Free GNPhase Past Pres Fut GNP Aux,Vb VerbRoot Vb,Pl

FIELD CODE if U
FIELD CODE lx L
FIELD CODE alt A
FIELD CODE fea F
FIELD CODE gl G

INCLUDE tamil.sfm
INCLUDE verb_root.lex
INCLUDE noun_root.lex
INCLUDE pronoun_root.lex
INCLUDE numeral_root.lex
INCLUDE adjective_root.lex
INCLUDE number.lex
INCLUDE case.lex
INCLUDE tense.lex
INCLUDE noun_inflections.lex
INCLUDE numeral_inflections.lex
INCLUDE verb_inflections.lex
INCLUDE adjective_inflections.lex
INCLUDE ftpUx
INCLUDE common_inflections.lex

END

II. RootLexicons

NOUNS

; NOUN_ROOT.LEX

; INCLUDE file for TAMIL.LEX

\lf AN	\lf kAl	\lf poM
\lx NOUN_ROOT	\lx NOUN_ROOT	\lx NOUN_ROOT
\alt Noun_Root	\alt Noun_Root	\alt Noun_Root
\fea Sg.Nom	\fea Sg.Nom	\fea Nom
\gl Noun(AN)	\gl Noun(kAl)	\gl Noun(poM)
\lf ARu	\lf kAtu	\lf poy
\lx NOUN_ROOT	\lx NOUN_ROOT	\lx NOUN_ROOT
\alt Noun_Root	\alt Noun_Root	\alt Noun_Root
\fea Sg.Nom	\fea Sg.Nom	\fea Sg.Nom
\gl Noun(ARu)	\gl Noun(kAtu)	\gl Noun(poy)
\lf eli	\lf maMrwaM	\lf pul
\lx NOUN_ROOT	\lx NOUN_ROOT	\lx NOUN_ROOT
\alt Noun_Root	\alt Noun_Root	\alt Noun_Root
\fea Sg.Nom	\fea Sg.Nom	\fea Sg.Nom
\gl Noun(eli)	\gl Noun(maMrwaM)	\gl Noun(pul)
\lf iY	\lf maram	\lf poruL
\lx NOUN_ROOT	\lx NOUN_ROOT	\lx NOUN_ROOT
\alt Noun_Root	\alt Noun_Root	\alt Noun_Root
\fea Sg.Nom	\fea Sg.Nom	\fea Sg.Nom
\gl Noun(iY)	\gl N(maram)	\gl Noun(poruL)
\lf iwaZ	\lf muL	\lf pU
\lx NOUN_ROOT	\lx NOUN_ROOT	\lx NOUN_ROOT
\alt Noun_Root	\alt Noun_Root	\alt Noun_Root
\fea Sg.Nom	\fea Sg.Nom	\fea Sg.Nom
\gl Noun(iwaZ)	\gl Noun(muL)	\gl Noun(pU)
\lf I	\lf mAM	\lf vaNtu
\lx NOUN_ROOT	\lx NOUN_ROOT	\lx NOUN_ROOT
\alt Noun_Root	\alt Noun_Root	\alt Noun_Root
\fea Sg.Nom	\fea Sg.Nom	\fea Sg.Nom
\gl Noun(I)	\gl Noun(mAM)	\gl Noun(vaNtu)
\lf kaN	\lf narampu	\lf wEr
\lx NOUN_ROOT	\lx NOUN_ROOT	\lx NOUN_ROOT
\alt Noun_Root	\alt Noun_Root	\alt Noun_Root
\fea Sg.Nom	\fea Sg.Nom	\fea Sg.Nom
\gl Noun(kaN)	\gl Noun(narampu)	\gl Noun(wEr)
	\lf nAy	\lf wOL
	\lx NOUN_ROOT	\lx NOUN_ROOT
	\alt Noun_Root	\alt Noun_Root
	\fea Sg.Nom	\fea Sg.Nom
	\gl Noun(nAy)	\gl Noun(wOL)

2. PRONOUNS

; PRONOUN_ROOT.LEX

; INCLUDE Be for TAMIL.LEX

\lf	avaL	\lf	nAM	\lf	yAm
\k	PRONOUN_ROOT	\lx	PRONOUN_ROOT	\lx	PRONOUN_ROOT
\alt	Pronoun_Root	\alt	Pronoun_Root	\alt	Pronoun_Root
\fea	Nom	\fea	Nom	\fea	Nom
\gl	Pronoun(avaL)	\gl	Pronoun(nAM)	\gl	Pronoun(yAm)
\lf	avaM	\lf	nAfkaL	\lf	wAfkaL
\k	PRONOUN_ROOT	\lx	PRONOUN_ROOT	\k	PRONOUN_ROOT
\alt	Pronoun_Root	\alt	Pronoun_Root	\alt	Pronoun_Root
\fea	Nom	\fea	Nom	\fea	Nom
\gl	Pronoun(avaM)	\gl	Pronoun(nAfkaL)	\gl	Pronoun(wAfkaL)
\lf	avar	\lf	nI	\lf	wAm
\k	PRONOUN_ROOT	\k	PRONOUN_ROOT	\k	PRONOUN_ROOT
\alt	Pronoun_Root	\alt	Pronoun_Root	\alt	Pronoun_Root
\fea	Nom	\fea	Nom	\fea	Nom
\gl	Pronoun(avar)	\gl	Pronoun(nI)	\gl	Pronoun(wAm)
\lf	awu	\lf	nIfkaL	\lf	wAM
\k	PRONOUN_ROOT	\k	PRONOUN_ROOT	\k	PRONOUN_ROOT
\alt	Pronoun_Root	\alt	Pronoun_Root	\alt	Pronoun_Root
\fea	Nom	\fea	Nom	\fea	Nom
\gl	Pronoun(awu)	\gl	Pronoun(nIfkaL)	\gl	Pronoun(wAM)
\lf	avE	\lf	nIr	\lf	nAm
\k	PRONOUN_ROOT	\k	PRONOUN_ROOT	\k	PRONOUN_ROOT
\alt	Pronoun_Root	\alt	Pronoun_Root	\alt	Pronoun_Root
\fea	Nom	\fea	Nom	\fea	Nom
\gl	Pronoun(awu)	\gl	Pronoun(nIr)	\gl	Pronoun(nAm)

2. ADJECTIVES

; ADJECTIVE_ROOT.LEX

; INCLUDE ffile for TAMIL.LEX

\lf	nalla	\lf	puwu
\k	ADJECTIVE_ROOT	\lx	ADJECTIVE_ROOT
\alt	Adjective_Root	\alt	Adjective_Root
\foa	Adj.Free	\fea	Adj.Free
\gl	Adjective(nalla)	\gl	Adjective(puwu)

NUMERALS

; NUMERAL_ROOT.LEX
; INCLUDE file for TAMIL.LEX

\lf oMRu	\lf Ynwu	\lf pawwu
\k NUMERAL_ROOT	\k NUMERAL_ROOT	\k NUMERAL_ROOT
\alt Numeral_Root	\alt Numeral_Root	\alt Numeral_Root
\fea Nom	\fea Nom	\fea Nom
\gl Numeral(oMRu)	\gl Numeral(YMwu)	\gl Numeral(pawwu)
\lf iraNtu	\lf ARu	\lf nURu
\k NUMERAL_ROOT	\k NUMERAL_ROOT	\k NUMERAL_ROOT
\alt Numeral_Root	\alt Numeral_Root	\alt Numeral_Root
\fea Nom	\fea Nom	\fea Nom
\gl Numeral(iraNtu)	\gl Numeral(ARu)	\gl Numeral(MURu)
\lf mUMRu	\lf EZu	\lf Ayiram
\k NUMERAL_ROOT	\k NUMERAL_ROOT	\k NUMERAL_ROOT
\alt Numeral_Root	\alt Numeral_Root	\alt Numeral_Root
\fea Nom	\fea Nom	\fea Nom
\gl Numeral(mUMRu)	\gl Numeral(EZu)	\gl Numeral(Ayiram)
\lf nAMku	\lf ettu	\lf latcam
\k NUMERAL_ROOT	\k NUMERAL_ROOT	\k NUMERAL_ROOT
\alt Numeral_Root	\alt Numeral_Root	\alt Numeral_Root
\fea Nom	\fea Nom	\fea Nom
\gl Numeral(nAMku)	\gl Numeral(ettu)	\gl Numeral(latcam)
	\lf oMpawu	\lf kOti
	\k NUMERAL_ROOT	\k NUMERAL_ROOT
	\alt Numeral_Root	\alt Numeral_Root
	\fea Nom	\fea Nom
	\gl Numeral(oMpawu)	\gl Numeral(kOti)

2. VERBS

; VERB_INFLECTIONS.LEX
; INCLUDE file for TAMIL.LEX

\lf Aku	\lf col	\lf koL	\lf pO
\k VERB_ROOT	\lx VERB_ROOT	\k VERB_ROOT	\k VERB_ROOT
\alt Verb_Root	\alt Verb_Root	\alt Verb_Root	\alt Verb_Root
\fea Vb	\fea Vb	\fea Vb	\fea Vb
\gl Verb(Aku)	\gl Verb(col)	\gl Verb(koL)	\gl Verb(pO)
\lf AL	\lf eM	\lf nata	\lf pOru
\k VERB_ROOT	\lx VERB_ROOT	\k VERB_ROOT	\k VERB_ROOT
\alt Verb_Root	\alt Verb_Root	\alt Verb_Root	\alt Verb_Root
\fea Vb	\fea Vb	\fea Vb	\fea Vb
\gl Verb(AL)	\gl Verb(eM)	\gl Verb(nata)	\gl Verb(pOru)
\lf aZu	\lf ikaZ	\lf nil	\lf pUN
\k VERB_ROOT	\k VERB_ROOT	\k VERB_ROOT	\k VERB_ROOT
\alt Verb_Root	\alt Verb_Root	\alt Verb_Root	\alt Verb_Root
\fea Vb	\fea Vb	\fea Vb	\fea Vb
\gl Verb(aZu)	\gl Verb(ikaZ)	\gl Verb(nil)	\gl Verb(pUN)
\lf cA	\lf iru	\lf nO	\lf UN
\k VERB_ROOT	\k VERB_ROOT	\k VERB_ROOT	\k VERB_ROOT
\alt Verb_Root	\alt Verb_Root	\alt Verb_Root	\alt Verb_Root
\fea Vb	\fea Vb	\fea Vb	\fea Vb
\gl Verb(cA)	\gl Verb(iru)	\gl Verb(no)	\gl Verb(UN)
\lf cel	\lf kAN	\lf pani	\lf vA
\lx VERB_ROOT	\k VERB_ROOT	\k VERB_ROOT	\k VERB_ROOT
\alt Verb_Root	\alt Verb_Root	\alt Verb_Root	\alt Verb_Root
\fea Vb	\fea Vb	\fea Vb	\fea Vb
\gl Verb(cel)	\gl Verb(kAN)	\gl Verb(pani)	\gl Verb(vA)
\lf cey	\lf kEL	\lf peRu	\lf viZu
\k VERB_ROOT	\lx VERB_ROOT	\k VERB_ROOT	\k VERB_ROOT
\alt Verb_Root	\alt Verb_Root	\alt Verb_Root	\alt Verb_Root
\fea Vb	\fea Vb	\fea Vb	\fea Vb
\gl Verb(cey)	\gl Verb(kEL)	\gl Verb(peRu)	\gl Verb(viZu)
			\lf wUfku
			\k VERB_ROOT
			\alt Verb_Root
			\fea Vb
			\gl Verb(wUfku)

III. Suffix Lexicons

☒ Number Inflection Lexicon

;NUMBEREXX
; INCLUDE file for TAMIL.LEX

\lf 0
\lx NUMBER
\alt Number
\fea Sg
\gl SG

\lf kaL
\lx NUMBER
\alt Number
\fea Pl

\gl PL

☒ Case Inflection Lexicon

;CASELEX
; INCLUDE file for TAMIL.LEX

\lf Y
\lx CASE
\alt Case
\fea CaseAcc
\gl ACC

\lf Otu
\lx CASE
\alt Case
\fea Case.Soc
\gl SOC

\lf il
\k CASE
\alt Case
\fea CaseXoc
\gl LOC

\lf kku
\k CASE
\alt Case
\fea Case.Dat
\gl DAT

\lf Al
\k CASE
\alt Case
\fea Case.Instr
\gl INS

\lf itam
\k CASE
\alt Case
\fea CaseXoc
\gl LOC

\lf utYya
\lx CASE
\alt Case
\fea Case.Gen
\gl GEN

\lf utaM
\lx CASE
\alt Case
\fea Case.Soc
\gl SOC

\lf ilirunwu
\k CASE
\alt Case
\fea Case.Abl
\gl ABL

\lf itamirunwu
\k CASE
\alt Case
\fea Case.Abl
\gl ABL

\lf kkAka
\k CASE
\alt Case
\fea Case.Ben
\gl BEN

☞ Nominal/Pronominal Inflection Lexicon

; NOUN_INFLECTION.LEX
; INCLUDE file for TAMIL.LEX

\lf mAwiri	\lf mUlam	\lf illA
\k NOUN_INFLECTIONS	\lx NOUN_INFLECTIONS	\lx NOUN_INFLECTIONS
\alt Particle	\alt Postposition	\alt Postposition
\fea Pl.Nom	\fea Ppn.Gen	\fea Ppn.Nom
\gl Pl.Nom	\gl Ppn.Gen	\gl Ppn.Nom
\lf wavira	\lf varY	\lf eMRu
\lx NOUN_INFLECTIONS	\lx NOUN_INFLECTIONS	\lx NOUN_INFLECTIONS
\alt Particle	\alt Postposition	\alt Postposition
\fea Pl .Acc	\fea Ppn.Acc	\fea Ppn.Nom/Dat
\gl PLAcc	\gl Ppn.Acc	\gl Ppn.Nom/Dat
\lf pOl	\lf uriya	\lf eMa
\lx NOUN_INFLECTIONS	\lx NOUN_INFLECTIONS	\k NOUN_INFLECTIONS
\alt Particle	\alt Postposition	\alt Postposition
\fea Pl.Nom	\fea Ppn.Dat	\fea Ppn.Nom/Dat
\gl Pl.Nom	\gl Ppn.Dat	\gl Ppn.Nom/Dat
\lf pOla	\lf Aka	\lf cuRRi
\k NOUN_INFLECTIONS	\lx NOUN_INFLECTIONS	\k NOUN_INFLECTIONS
\alt Particle	\alt Postposition	\alt Postposition
\fea Pl.Nom/Acc	\fea Ppn.Dat	\fea Ppn.Acc
\gl Pl.Nom/Acc	\gl Ppn.Dat	\gl Ppn.Acc
\lf pOMru	\lf eMum	\lf kuriwWu
\k NOUN_INFLECTIONS	\lx NOUN_INFLECTIONS	\k NOUN_INFLECTIONS
\alt Particle	\alt Postposition	\alt Postposition
\fea Pl.Nom/Acc	\fea Ppn.Nom	\fea Ppn.Acc
\gl Pl.Nom/Acc	\gl Ppn.Nom	\gl Ppn.Acc
\lf pOMra	\lf eMRa	\lf wavirwWu
\lx NOUN_INFLECTIONS	\lx NOUN_INFLECTIONS	\k NOUN_INFLECTIONS
\alt Particle	\alt Postposition	\alt Postposition
\fea PLNom/Acc	\fea Ppn.Nom	\fea Ppn.Acc
\gl PLNom/Acc	\gl Ppn.Nom	\gl Ppn.Acc
\lf paRRi	\lf eMpawu	\lf kAttilum
\lx NOUN_INFLECTIONS	\lx NOUN_INFLECTIONS	\k NOUN_INFLECTIONS
\alt Particle	\alt Postposition	\alt Postposition
\fea PLAcc	\fea Ppn.Nom	\fea Ppn.Acc
\gl PLAcc	\gl Ppn.Nom	\gl Ppn.Acc
\lf pati	\lf eMappatuvawu	\lf mattilum
\lx NOUN_INFLECTIONS	\lx NOUN_INFLECTIONS	\k NOUN_INFLECTIONS
\alt Particle	\alt Postposition	\alt Postposition
\fea Pl.Gen	\fea Ppn.Nom	\fea Ppn.Acc
\gl Pl.Gen	\gl Ppn.Nom	\gl Ppn.Acc

\lf kittE	\lf atuwwa	\lf vatakku
\k NOUNJNFLECTIONS	\kx NOUN_INFLECTIONS	\k NOUN_INFLECTIONS
\alt Adverbial	\alt Adverbial	\alt Adverbial
\fea Adv.Obl	\fea Adv.Dat	\fea Adv.Gen
\gl Adv.Obl	\gl Adv.Dat	\gl Adv.Gen
\lf itY	\lf ati	\lf pakkam
\kx NOUN_INFLECTIONS	\kx NOUN_INFLECTIONS	\k NOUNJNFLECTIONS
\alt Adverbial	\alt Adverbial	\alt Adverbial
\fea Adv.Dat	\fea Adv.Dat	\fea Adv.Gen
\gi Adv.Dat	\gl Adv.Dat	\gl Adv.Gen
\lf uL	\lf kurukk	\lf mawwi
\k NOUN_INFLECTIONS	\k NOUN_INFLECTIONS	\k NOUNJNFLECTIONS
\alt Adverbial	\alt Adverbial	\alt Adverbial
\fea Adv.Dat	\fea Adv.Gen	\fea Adv.Gen/Dat
\gl Adv.Dat	\gl Adv.Gen	\gl Adv.Gen/Dat
\lf veLi	\lf mEl	\lf natu
\k NOUN_INFLECTIONS	\kx NOUN_INFLECTIONS	\k NOUNJNFLECTIONS
\alt Adverbial	\alt Adverbial	\alt Adverbial
\fea Adv.Dat	\fea Adv.Gen	\fea Adv.Gen/Dat
\gl Adv.Dat	\gl Adv.Gen	\gl Adv.Gen/Dat
\lf nEr	\lf kiZ	\lf aruk
\kx NOUN_INFLECTIONS	\k NOUNJNFLECTIONS	\k NOUNJNFLECTIONS
\alt Adverbial	\alt Adverbial	\alt Adverbial
\fea Adv.Dat	\fea Adv.Gen	\fea Adv.Gen/Dat
\gl Adv.Dat	\gl Adv.Gen	\gl Adv.Gen/Dat
\lf piRaku	\lf weRku	\lf ewir
\k NOUN_INFLECTIONS	\k NOUNJNFLECTIONS	\kx NOUNJNFLECTIONS
\alt Adverbial	\alt Adverbial	\alt Adverbial
\fea Adv.Dat	\fea Adv.Gen	\fea Adv.Gen/Dat
\gl Adv.Dat	\gl Adv.Gen	\gl Adv.Gen/Dat
\lf appAl	\lf mERku	\lf muM
\k NOUN_INFLECTIONS	\k NOUN_INFLECTIONS	\k NOUNJNFLECTIONS
\alt Adverbial	\alt Adverbial	\alt Adverbial
\fea Adv.Dat	\fea Adv.Gen	\fea Adv.Gen/Dat
\gl Adv.Dat	\gl Adv.Gen	\gl Adv.Gen/Dat
\lf appuram	\lf kiZakku	\lf piM
\kx NOUN_INFLECTIONS	\k NOUN_INFLECTIONS	\k NOUNJNFLECTIONS
\alt Adverbial	\alt Adverbial	\alt Adverbial
\fea Adv.Dat	\fea Adv.Gen	\fea Adv.Gen/Dat
\gl Adv.Dat	\gl Adv.Gen	\gl Adv.Gen/Dat

☞ Numeral Inflection Lexicon

; NUMERAL_INFLECTION.LEX
; INCLUDE file for TAMIL.LEX

\lf vAkkal
\lx NUMERAL_INFLECTIONS
\alt Partide
\fea Pl
\gl Adv.Obl

\lf peyar
\lx NUMERAL_INFLECTIONS
\alt Partide
\fea Pl
\gl PLNom

\lf maNi
\lx NUMERAL_INFLECTIONS
\alt Partide
\fea Pl
\gl Pl.Obl

\lf watavY
\lx NUMERAL_INFLECTIONS
\alt Partide
\fea Pl
\gl Pl.Obl

\lf muRY
\k NUMERAL_INFLECTIONS
\alt Parade
\fea Pl
\gi PLOW

\lf kAl
\lx NUMERAL_INFLECTIONS
\alt Partide
\fea Pl
\gl Pl.Obl

\lf viwam
\lx NUMERAL_INFLECTIONS
\alt Partide
\fea Pl
\gl Pl.Obl

\lf vakY
\lx NUMERAL_INFLECTIONS
\alt Partide
\fea Pl
\gl Pl.Obl

\lf EkAl
\lx NUMERAL_INFLECTIONS
\alt Partide
\fea Pl
\gl PLQnt

\lf arY
\lx NUMERAL_INFLECTIONS
\alt Partide
\fea Pl
\gl PLQnt

\lf arYkkAl
\lx NUMERAL_INFLECTIONS
\alt Partide
\fea Pl
\gl Pl.Qnt

\lf EmukkAl
\lx NUMERAL_INFLECTIONS
\alt Partide
\fea Pl
\gl PLQnt

\lf muwal
\lx NUMERAL_INFLECTIONS
\alt Adverbial
\fea Pl
\gl Adv.tmp

\lf vaM
\lx NUMERAL_INFLECTIONS
\alt GNP
\fea Pl
\gl 3SM.num.gnp

\lf var
\lx NUMERAL_INFLECTIONS
\alt GNP
\fea Pl
\gl 3Shon.num.gnp

\lf wwi
\lx NUMERAL_INFLECTIONS
\alt GNP
\fea Pl
\gl 3Sfnum.gnp

☞ Verb Inflection Lexicon

; VERB_INFLECTION.LEX
; INCLUDE file for TAMIL.LEX

\lf pO	\lf truti	\lf wIr
\lx VERBJNFLECNONS	\lx VERBJNFLECNONS	\lx VERBJNFLECNONS
\alt Auxiliary Verb	\alt Auxiliary Verb	\alt Auxiliary Verb
\fea Vb.Infln	\fea Vb.Infln	\fea Vb.Infln
\gl Aux.Vb	\gl Aux.Vb	\gl Aux.Vb
\lf woLY	\lf kUtAwu	\lf kotu
\lx VERBJNFLECNONS	\lx VERBJNFLECNONS	\lx VERBJNFLECNONS
\alt Auxiliary Verb	\alt Auxiliary Verb	\alt Auxiliary Verb
\fea Vb.Infln	\fea Vb.Infln	\fea Vb.Infln
\gl Aux.Vb	\gl Aux.Vb	\gl Aux.Vb
\lf pAr	\lf ilLE	\lf AyiRRu
\lx VERBJNFLECNONS	\lx VERBJNFLECNONS	\lx VERBJNFLECNONS
\alt Auxiliary Verb	\alt Auxiliary Verb	\alt Auxiliary Verb
\fea Vb.Infln	\fea Vb.Infln	\fea Vb.Infln
\gl Aux.Vb	\gl Aux.Vb	\gl Aux.Vb
\lf col	\lf veNtum	\lf EM
\lx VERBJNFLECNONS	\lx VERBJNFLECNONS	\lx VERBJNFLECNONS
\alt Auxiliary Verb	\alt Auxiliary Verb	\alt GNP
\fea Vb.Infln	\fea Vb.Infln	\fea Vb.Infln
\gl Aux.Vb	\gl Aux.Vb	\gl IS.pe
\lf vY	\lf veNtAm	\lf Om
\lx VERBJNFLECTIONS	\lx VERBJNFLECNONS	\lx VERBJNFLECNONS
\alt Auxiliary Verb	\alt Auxiliary Verb	\alt GNP
\fea Vb.Infln	\fea Vb.Infln	\fea Vb.Infln
\gl Aux.Vb	\gl Aux.Vb	\gl IP.ind.pe
\lf vitu	\lf avaciYam ilLE	\lf Ay
\lx VERBJNFLECNONS	\lx VERBJNFLECNONS	\lx VERBJNFLECNONS
\alt Auxiliary Verb	\alt Auxiliary Verb	\alt GNP
\fea Vb.Infln	\fea Vb.Infln	\fea Vb.Infln
\gl Aux.Vb	\gl Aux.Vb	\gl 2S.pe
\lf mutiyum	\lf waLLu	\lf Ir
\lx VERBJNFLECNONS	\lx VERBJNFLECNONS	\lx VERBJNFLECNONS
\alt Auxiliary Verb	\alt Auxiliary Verb	\alt GNP
\fea Vb.Infln	\fea Vb.Infln	\fea Vb.Infln
\gl Aux.Vb	\gl Aux.Vb	\gl 2S.hon.pe
\lf mutiyAwu	\lf koL	\lf IkaL
\lx VERBJNFLECNONS	\lx VERBJNFLECNONS	\lx VERBJNFLECNONS
\alt Auxiliary Verb	\alt Auxiliary Verb	\alt GNP
\fea Vb.Infln	\fea Vb.Infln	\fea Vb.Infln
\gl Aux.Vb	\gl Aux.Vb	\gl 2S.hon/2P.pe

```

\lf AM
\lx VERB_INFLECTIONS
\alt GNP
\fea Vb.Infln
\gl 3SM.pe

```

```

\lf AL
\lx VERB_INFLECTIONS
\alt GNP
\fea Vb.Infln
\gl 3SF.pe

```

```

\lf um
\lx VERB_INFLECTIONS
\alt GNP
\fea Vb.Infln
\gl 3SN.pe

```

Verb Tense Lexicon

```

; VERB_TENSE.LEX
; INCLUDE file for TAMIL.LEX

```

```

\lf M
\k TENSE
\alt Tense
\fea Past
\gl Past

```

```

\lf kiR
\k TENSE
\alt Tense
\fea Pres
\gl Present

```

```

\lf w
\k TENSE
\alt Tense
\fea Past
\gl Past

```

```

\lf v
\k TENSE
\alt Tense
\fea Fut
\gl Future

```

```

\lf ww
\k TENSE
\alt Tense
\fea Past
\gl Past

```

```

\lf p
\k TENSE
\alt Tense
\fea Fut
\gl Future

```

```

\lf R
\k TENSE
\alt Tense
\fea Past
\gl Past

```

```

\lf alAm
\k TENSE
\alt Tense
\fea Hort
\gl Hortative

```

```

\lf nw
\k TENSE
\alt Tense
\fea Past
\gl Past

```

```

\lf Aw
\k TENSE
\alt Tense
\fea Proh
\gl Prohibitive

```

```

\lf t
\k TENSE
\alt Tense
\fea Past
\gl Past

```

```

\lf a
\k TENSE
\alt Tense
\fea Admon
\gl Admonitive

```

```

\lf iM
\k TENSE
\alt Tense
\fea Past
\gl Past

```

```

\lf avillY
\k TENSE
\alt Tense
\fea Neg.Past
\gl Neg.Past

```

\lf **amAtt**
 \lx TENSE
 \alt Tense
 \fea Neg.Fut
 \gl Neg.Fut

\lf **a**
 \lx TENSE
 \alt Tense
 \fea **Inf**
 \gl Infinitive

\lf **Ma**
 \lx TENSE
 \alt Tense
 \fea Past Adj.Ppl
 \gl Past Adj.Ppl

\lf **wa**
 \lx TENSE
 \alt Tense
 \fea **Ppl**
 \gl Past Adjectival Participle

\lf **wwa**
 \lx TENSE
 \alt Tense
 \fea Ppl
 \gl Past Adjectival Participle

\lf **Ra**
 \lx TENSE
 \alt Tense
 \fea Ppl
 \gl Past Adjectival Participle

\lf **nwa**
 \lx TENSE
 \alt Tense
 \fea Ppl
 \gl Past Adjectival Participle

\lf **ta**
 \lx TENSE
 \alt Tense
 \fea **Ppl**
 \gl Past Adjectival Participle

\lf **iMa**
 \lx TENSE
 \alt Tense
 \fea Ppl
 \gl Past Adjectival Participle

\lf **kiRa**
 \lx TENSE
 \alt Tense
 \fea Ppl
 \gl Present Adjectival Participle

\lf **urn**
 \lx TENSE
 \alt Tense
 \fea Ppl
 \gl Habitual Participle

\lf **Awa**
 \lx TENSE
 \alt Tense
 \fea Ppl
 \gl Negative Adjectival Participle

\lf **wu**
 \lx TENSE
 \alt Tense
 \fea Ppl
 \gl Positive Verbal Participle

\lf **i**
 \lx TENSE
 \alt Tense
 \fea Ppl
 \gl Positive Verbal Participle

\lf **Amal**
 \lx TENSE
 \alt Tense
 \fea **Ppl**
 \gl Negative Verbal Participle

\lf **Al**
 \lx TENSE
 \alt Tense
 \fea Ppl
 \gl Positive Conditional

\lf **AvittAl**
 \lx TENSE
 \alt Tense
 \fea Ppl
 \gl Negative Conditional

\lf **koNturu**
 \lx TENSE
 \alt Tense
 \fea Ppl
 \gl Durative Conditional

☒ GNP Lexicon

```
;GNP_TENSELEX
; INCLUDE file for TAMIL.LEX
```

\lf	avaM	\lf	vaL
\lx	GNP	\lx	GNP
\alt	GNP	\alt	GNP
\fea	GNP	\fea	GNP
\gl	3SM.gnp	\gl	3SF.gnp

\lf	var	\lf	wu
\lx	GNP	\lx	GNP
\alt	GNP	\alt	GNP
\fea	GNP	\fea	GNP
\gl	3Shon.gnp	\gl	3SN.gnp

☒ Adjective Inflection Lexicon

```
; ADJECnVE_INFLECTIONS.LEX
; INCLUDE file for TAMILLEX
```

\lf	iya	\lf	var
\lx	ADJECTIVE_INFLECTIONS	\lx	ADJECTIVE_INFLECTIONS
\alt	gnpbase	\alt	GNP
\fea	gnpbase	\fea	GNP
\gl	Adj.Bound gnp base	\gl	3Shon.gnp

\lf	vaM	\lf	vaL
\lx	ADJECTIVE_INFLECTIONS	\lx	ADJECTIVE_INFLECTIONS
\alt	GNP	\alt	GNP
\fea	GNP	\fea	GNP
\gl	3SM.gnp	\gl	3SF.gnp

Common Inflection Lexicon

```
; COMMON_INFLECTIONS.LEX
; INCLUDE file for TAMIL.LEX
```

```
\lf E
\lx COMMON_INFLECTIONS
\alt Clitic
\fea Cl
\gl Emph1.Cl
```

```
\lf O
\lx COMMON_INFLECTIONS
\alt Clitic
\fea Cl
\gl Intrg2.Cl
```

```
\lf um
\lx COMMON_INFLECTIONS
\alt Clitic
\fea Cl
\gl Incl1.Cl
```

```
\lf wAM
\lx COMMON_INFLECTIONS
\alt Clitic
\fea Cl
\gl Emph2.Cl
```

```
\lf Avawu
\lx COMMON_INFLECTIONS
\alt Clitic
\fea Cl
\gi Cnrg.Cl
```

```
\lf kUta
\lx COMMON_INFLECTIONS
\alt Clitic
\fea Cl
\gl Incl2.Cl
```

```
\lf A
\lx COMMON_INFLECTIONS
\alt Clitic
\fea Cl
\gl Inter.Cl
```

```
\lf mattum
\lx COMMON_INFLECTIONS
\alt Clitic
\fea Cl
\gl Restr.Cl
```

Appendix IV - a

List of Inflectional forms for the Noun 'maram'

maram	maram]nom	maram]nom+A]cl.intr2
maramA	maram]nom+Avawujcl.min	
maramAvawu	maram]nom+eVnYa]nom.pp+A]cl.intr2	
maramcVnYavA	maram]nom+eVnYa]nom.pp+Avawujcl.min	
maramcVnYavAwawu	maram]nom+eVnYa]nom.pp+e]cl.emph1	
maramcVnYave	maram]nom+eVnYa]nom.pp+kUta]cl.incl2	
maramcVnYakUta	maram]nom+eVnYa]nom.pp+mattum]cl.rest	
maramcVnYamattum	maram]nom+eVnYa]nom.pp+o]cl.intr1	
maramcVnYavo	maram]nom+eVnYa]nom.pp+um]cl.incl1	
maramcVnYavum	maram]nom+eVnYa]nom.pp+wAnY]cl.emph2	
maramcVnYawAnY	maram]nom+eVnYappatuvawu+kU ta] cl. incl2	
maram c Vn Yappa tuvawukkU ta maram]	maram]nom+eVnYappatuvawu+mattum]cl.rest	
maramcVnYappatuvawumattum	maram]nom+eVnYappatuvawu+wAnY]cl.emph2	
maramcVnYappatuvawuwAnY	maram]nom+eVnYappatuvawuj nom. pp+A] cl.intr2	
maramcVnYappatuvawA	maram]nom+eVnYappatuvawujnom.pp+Avawujcl.min	
maramcVnYappatuvawAwawu	maram]nom+eVnYappatuvawujnom.pp+e]cl.emph1	
maramcVnYappatuvawe	maram]nom+eVnYappatuvawuj nom. pp+o]cl.intr1	
maramcVnYappatuvawo	maram] nom+eVnYappatuvawuj nom.pp+um]cl.incl1	
maramcVnYappatuvawum	maram]nom+eVnYpawu+kUta]cl.incl2	
maramcVnYpawukkUta	maram]nom+eVnYpawu+mattum]cl.rest	
maramcVnYpawumattum	maram]nom+eVnYpawu+wAnY]cl.emph2	
maramcVnYpawuwAnY	maram]nom+eVnYpawujnom.pp+A]cl.intr2	
maramcVnYpawA	maram]nom+eVnYpawujnom.pp+Avawujcl.min	
maramcVnYpawAwawu	maram]nom+eVnYpawujnom.pp+e]cl.emph1	
maramcVnYpawc	maram]nom+eVnYpawujnom.pp+o]cl.intr1	
maramcVnYpawo	maram]nom+eVnYpawujnom.pp+um]cl.incl1	
maramcVnYpawum	maram]nom+eVnYrYa]nom.pp+A]cl.intr2	
maramcVnYrYavA	maram]nom+eVnYrYa]nom.pp+Avawujcl.min	
maramcVnYrYavAwawu	maram]nom+eVnYrYa]nom.pp+e]cl.emph1	
maramcVnYrYave	maram]nom+eVnYrYa]nom.pp+kUta]cl.incl2	
maramcVnYrYakUta	maram]nom+eVnYrYa]nom.pp+mattum]cl.rest	
maramcVnYrYamattum	maram]nom+eVnYrYa]nom.pp+o]cl.intr1	
maramcVnYrYavo	maram]nom+eVnYrYa]nom.pp+um]cl.incl1	
maramcVnYrYavum	maram]nom+eVnYrYa]nom.pp+wAnY]cl.emph2	
maramcVnYrYawAnY	maram]nom+eVnYrYujnom.pp+A]cl.intr2	
maramcVnYrYA	maram]nom+eVnYrYujnom.pp+Avawujcl.min	
maramcVnYrYAwawu	maram]nom+eVnYrYujnom.pp+e]cl.emph1	
maramcVnYrYe	maram]nom+eVnYrYujnom.pp+mattum]cl.rest	
maramcVnYrYukUta	maram]nom+eVnYrYujnom.pp+o]cl.intr1	
maramcVnYrYumattum	maram]nom+eVnYrYujnom.pp+um]cl.incl1	
maramcVnYrYo	maram]nom+eVnYrYujnom.pp+wAnY]cl.emph2	
maramcVnYrYum	maram]nom+eVnYum]nom.pp+A]cl.intr2	
maramcVnYrYuwAnY	maram]nom+eVnYum]nom.pp+Avawujcl.min	
maramcVnYumA	maram]nom+eVnYum]nom.pp+e]cl.emph1	
maramcVnYumAwawu	maram]nom+eVnYum]nom.pp+kUta]cl.incl2	
maramcVnYume	maram]nom+eVn Yum] nom.pp+mattum]cl. rest	
maramcVnYumkUta	maram]nom+eVn Yum] nom.pp+o]cl.intr1	
maramcVnYummattum	maram]nom+e V nYum]nom.pp+um]cl.incl1	
maramcVnYumo	maram]nom+eVnYum]nom.pp+wAnY]cl.emph2	
maramcVnYumum	maram]nom+e]cl.emph1	
maramcVnYumwAnY	maram]nom+kUta]cl.incl2	
maramc	maram]nom+kitte]nom.adv+A]cl.intr2	
maerankUta	maram]nom+kitte]nom.adv+Avawujcl.min	
maramkitteyA	maram]nom+kitte]nom.adv+e]cl.emph1	
maramkitteyAwawu	maram]nom+kitte]nom.adv+kUta]cl.incl2	
maramkitte	maram]nom+kitte]nom.adv+o]cl.intr1	
maramkitteKta	maram]nom+kitte]nom.adv+um]cl.incl1	
maramkitteyo	maram] nom+kitte]nom.adv+w An Y]cl.emph2	
maramkitteyum	maram]nom+mAwic] nom.pl+A] cl.intr2	
maramkitteAwAnY	maram]nom+mAwic]nom. pl+A vawujcl.min	
marammAwicnyA	maram]nom+mAwic]nom.pl+e]cl.emph1	
marammAwicnyAwawu		
marammAwicnye		

marammAwirikkUta
 marammAwirimattum
 marammAwirinyo
 marammAwiriyum
 marammAwirwAnY
 marammattum
 maramo
 maramponYrYrYA
 maramponYrYA vawu
 maramponYrYc
 maramponYrYukkUta
 maramponYrYumatum
 maramponYrYo
 maramponYrYum
 maramponYrYuwAnY
 maramum
 maramvarEyA
 maramvarEyAvawu
 maramvarEc
 maramvarEkkUta
 maramvarEmattum
 maramvarEyo
 maramvarEyum
 maramvarEwwAnY
 maramwAnY
 marawwAlA
 marawwAlAvawu
 marawwAle
 marawwAlkUta
 marawwAlmattum
 marawwAlo
 marawwAlum
 marawwAlwAnY
 marawwEyA
 marawwEyAvawu
 marawwEc
 marawwEmattum
 marawwEyo
 marawwEyum
 marawwEwwAnY
 marawwEwwaviravA
 marawwEwwaviravAvawu
 marawwEwwavirave
 marawwEwwavirakUta
 marawwEwwaviramattum
 marawwEwwaviravo
 marawwEwwaviravum
 marawwEwwavirawAnY
 marawwEccurYrYiyA
 marawwEccurYrYiyAvawu
 marawwEccurYrYiye
 marawwEccurYrYikkUta
 marawwEccurYrYimattum
 marawwEccurYrYiyo
 marawwEccurYrYiyum
 marawwEccurYrYiwAnY
 marawwEkkAtilumA
 marawwEkkAtilumAvawu
 marawwEkkAtilume
 marawwEkkAtilumkUta
 marawwEkkAtilummattum
 marawwEkkAtilumo
 marawwEkkAtilumum
 marawwEkkAtilumwAnY
 marawwEkkUta
 marawwEkkurwAwA
 marawwEkkurwAwAvawu
 marawwEkkurwAw

maram|nom+mAwir|nom.pl+kUta|cl.incl2
 maram|nom+mAwir|nom.pl+mattum|cl.rest
 maram|nom+mAwir|nom.pl+o|cl.intr1
 maram|nom+mAwir|nom.pl+um|cl.incl1
 maram|nom+mAwir|nom.pl+wAnY|cl.emph2
 maram|nom+mattum|cl.rest
 maram|nom+o|cl.intr1
 maram|nom+ponYrYU|nom.pl+A|cl.intr2
 maram|nom+ponYrYU|nom.pl+Avawu|cl.min
 maram|nom+ponYrYU|nom.pl+e|cl.emph1
 maram|nom+ponYrYU|nom.pl+kUta|cl.incl2
 maram|nom+ponYrYU|nom.pl+mattum|cl.rest
 maram|nom+ponYrYU|nom.pl+o|cl.intr1
 maram|nom+ponYrYU|nom.pl+um|cl.incl1
 maram|nom+ponYrYU|nom.pl+wAnY|cl.emph2
 maram|nom+um|cl.incl1
 maram|nom+varE|nom.adv+A|cl.intr2
 maram|nom+varE|nom.adv+Avawu|cl.min
 maram|nom+varE|nom.adv+e|cl.emph1
 maram|nom+varE|nom.adv+kUta|cl.incl2
 maram|nom+varE|nom.adv+mattum|cl.rest
 maram|nom+varE|nom.adv+o|cl.intr1
 maram|nom+varE|nom.adv+um|cl.incl1
 maram|nom+varE|nom.adv+wAnY|cl.emph2
 maram|nom+wAnY|cl.emph2
 maram|obl+Al|insj+A|cl.intr2
 maram|obl+Al|insj+Avawu|cl.min
 maram|obl+Al|insj+e|cl.emph1
 maram|obl+Al|insj+kUta|cl.incl2
 maram|obl+Al|insj+mattum|cl.rest
 maram|obl+Al|insj+o|cl.intr1
 maram|obl+Al|insj+um|cl.incl1
 maram|obl+Al|insj+wAnY|cl.emph2
 maram|obl+E+A|cl.intr2
 maram|obl+E+Avawu|cl.min
 maram|obl+E+e|cl.emph1
 maram|obl+E+mattum|cl.rest
 maram|obl+E+o|cl.intr1
 maram|obl+E+um|cl.incl1
 maram|obl+E+wAnY|cl.emph2
 maram|obl+E+wavira|acc.pl+A|cl.intr2
 maram|obl+E+wavira|acc.pl+Avawu|cl.min
 maram|obl+E+wavira|acc.pl+e|cl.emph1
 maram|obl+E+wavira|acc.pl+kUta|cl.incl2
 maram|obl+E+wavira|acc.pl+mattum|cl.rest
 maram|obl+E+wavira|acc.pl+o|cl.intr1
 maram|obl+E+wavira|acc.pl+um|cl.incl1
 maram|obl+E+wavira|acc.pl+wAnY|cl.emph2
 maram|obl+E|acc+curYrYi|acc.adv+A|cl.intr2
 maram|obl+E|acc+curYrYi|acc.adv+Avawu|cl.min
 maram|obl+E|acc+curYrYi|acc.adv+e|cl.emph1
 maram|obl+E|acc+curYrYi|acc.adv+kUta|cl.incl2
 maram|obl+E|acc+curYrYi|acc.adv+mattum|cl.rest
 maram|obl+E|acc+curYrYi|acc.adv+o|cl.intr1
 maram|obl+E|acc+curYrYi|acc.adv+um|cl.incl1
 maram|obl+E|acc+curYrYi|acc.adv+wAnY|cl.emph2
 maram|obl+E|acc+kAtilum|acc.pp+A|cl.intr2
 maram|obl+E|acc+kAtilum|acc.pp+Avawu|cl.min
 maram|obl+E|acc+kAtilum|acc.pp+e|cl.emph1
 maram|obl+E|acc+kAtilum|acc.pp+kUta|cl.incl2
 maram|obl+E|acc+kAtilum|acc.pp+mattum|cl.rest
 maram|obl+E|acc+kAtilum|acc.pp+o|cl.intr1
 maram|obl+E|acc+kAtilum|acc.pp+um|cl.incl1
 maram|obl+E|acc+kAtilum|acc.pp+wAnY|cl.emph2
 maram|obl+E|acc+kUta|cl.incl2
 maram|obl+E|acc+kuriwuw|acc.pp+A|cl.intr2
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 maram]obl+kaY]plur+wAnY]cl.emph2
 maram]obl+otu]soc+A]cl.intr2
 maram]obl+otu]soc+Avawu]cl.min
 maram]obl+otu]soc+e]cl.incl1
 maram]obl+otu]soc+kUta]cl.incl2
 maram]obl+otu]soc+mattum]cl.rest
 maram]obl+otu]soc+o]cl.intr1
 maram]obl+otu]soc+um]cl.incl1
 maram]obl+otu]soc+wAnY]cl.emph2
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 maram]obl+ukkAka]ben+Avawu]cl.min
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 maram]obl+ukkAka]ben+kUta]cl.incl2
 maram]obl+ukkAka]ben+mattum]cl.rest
 maram]obl+ukkAka]ben+o]cl.intr1
 maram]obl+ukkAka]ben+um]cl.incl1
 maram]obl+ukkAka]ben+wAnY]cl.emph2
 maram]obl+ukku]dat+A]cl.intr2
 maram]obl+ukku]dat+Avawu]cl.min
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 maram]obl+ukku]dat+appA]dat.adv+e]cl.incl1
 maram]obl+ukku]dat+appA]dat.adv+kUta]cl.incl2
 maram]obl+ukku]dat+appA]dat.adv+mattum]cl.rest
 maram]obl+ukku]dat+appA]dat.adv+o]cl.intr1
 maram]obl+ukku]dat+appA]dat.adv+um]cl.incl1
 maram]obl+ukku]dat+appA]dat.adv+wAnY]cl.emph2
 maram]obl+ukku]dat+aruk]dat.adv+il]loc+Avawu]cl.min
 maram]obl+ukku]dat+aruk]dat.adv+il]loc+e]cl.incl1
 maram]obl+ukku]dat+aruk]dat.adv+il]loc+kUta]cl.incl2
 maram]obl+ukku]dat+aruk]dat.adv+il]loc+mattum]cl.rest
 maram]obl+ukku]dat+aruk]dat.adv+il]loc+o]cl.intr1
 maram]obl+ukku]dat+aruk]dat.adv+il]loc+um]cl.incl1
 maram]obl+ukku]dat+aruk]dat.adv+il]loc+wAnY]cl.emph2
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 maram]obl+ukku]dat+at]dat.adv+il]loc+Avawu]cl.min
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 marawwukkatyilo
 marawwukkatyilum
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 marawwukkuMawwijile
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 marawwukkuMelum
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 marawwukkuMerYkilA
 marawwukkuMerYkilAwawu
 marawwukkuMerYkile
 marawwukkuMerYkilUta
 marawwukkuMerYkilattum
 marawwukkuMerYkilo
 marawwukkuMerYkilum
 marawwukkuMerYkilwAnY
 marawwukkuMunwijA
 marawwukkuMunwijAwawu
 marawwukkuMunwijile
 marawwukkuMunwijilkUta
 marawwukkuMunwijilmattum
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 marawwukkuMunwijilum
 marawwukkuMunwijilwAnY
 marawwukkuMunYnA
 marawwukkuMunYnAwawu
 marawwukkuMunYne
 marawwukkuMunYkUta

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 maram]obl+ukku]dat+munYnY]dat.adv+e]cl.emph1
 maram]obl+ukku]dat+munYnY]dat.adv+kUta]cl.incl2

Appendix IV — b

List of Inflectional forms for the Pronoun 'nAnV

eVnY	eVnYjobl1
eVnYakkAkavAvawu	eVnYjobl1+akkAkajben+Avawujcl.min
eVnYakkAkakUta	eVnYjobl1+akkAkajben+kUta]cl.incl2
eVnYakkAmattum	eVnYjobl1+akkAkajben+mattum]cl.rest
eVnYakkAkavo	eVnYjobl1+akkAkajben+ojcl.intr1
eVnYakkAkavum	eVnYjobl1+akkAkajben+um]cl.incl1
eVnYakkAkawAnY	eVnYjobl1+akkAkajben+wAnY]cl.emph2
eVnYakkA	eVnYjobl1+akkujdat+A]cl.intr2
eVnYakkAnYawA	eVnYjobl1+akkujdat+AnYa]adv+awuj euph+A]cl.intr2
eVnYakkAnYawAvawu	eVnYjobl1+akkujdat+AnYa]adv+awuj euph+Avawuj euph+]cl.min
eVnYakkAnYawe	eVnYjobl1+akkujdat+AnYa]adv+awuj euph+ejcl.emph1
eVnYakkAnYawukkUta	eVnYjobl1+akkujdat+AnYa]adv+awuj euph+kUta]cl.incl2
eVnYakkAnYawo	eVnYjobl1+akkujdat+AnYa]adv+awuj euph+ojcl.intr1
eVnYakkAnYawumattum	eVnYjobl1+akkujdat+AnYa]adv+awuj euph+u+mattum]cl.rest
eVnYakkAnYawuwAnY	eVnYjobl1+akkujdat+AnYa]adv+awuj euph+u+wAnY]cl.emph2
eVnYakkAvawu	eVnYjobl1+akkujdat+Avawujcl.min
eVnYakkarukilA	eVnYjobl1+akkujdat+aruk]dat.adv+il]loc+A]cl.intr2
eVnYakkarukilAvawu	eVnYjobl1+akkujdat+aruk]dat.adv+il]loc+Avawujcl.min
eVnYakkarukile	eVnYjobl1+akkujdat+aruk]dat.adv+il]loc+ejcl.emph1
eVnYakkarukilkUta	eVnYjobl1+akkujdat+aruk]dat.adv+il]loc+kUta]cl.incl2
eVnYakkarukilmattum	eVnYjobl1+akkujdat+aruk]dat.adv+il]loc+mattum]cl.rest
eVnYakkarukilo	eVnYjobl1+akkujdat+aruk]dat.adv+il]loc+ojcl.intr1
eVnYakkarukilum	eVnYjobl1+akkujdat+aruk]dat.adv+il]loc+um]cl.incl1
eVnYakkarukilwAnY	eVnYjobl1+akkujdat+aruk]dat.adv+il]loc+wAnY]cl.emph2
eVnYakkeVwirA	eVnYjobl1+akkujdat+eVwir]dat.adv+A]cl.intr2
eVnYakkeVwirAvawu	eVnYjobl1+akkujdat+eVwir]dat.adv+Avawujcl.min
eVnYakkeVwir	eVnYjobl1+akkujdat+eVwir]dat.adv+ejcl.emph1
eVnYakkeVwirilkUta	eVnYjobl1+akkujdat+eVwir]dat.adv+il]loc+kUta]cl.incl2
eVnYakkeVwirilmattum	eVnYjobl1+akkujdat+eVwir]dat.adv+il]loc+mattum]cl.rest
eVnYakkeVwirilwAnY	eVnYjobl1+akkujdat+eVwir]dat.adv+il]loc+wAnY]cl.emph2
eVnYakkeVwiro	eVnYjobl1+akkujdat+eVwir]dat.adv+ojcl.intr1
eVnYakkeVwirum	eVnYjobl1+akkujdat+eVwir]dat.adv+um]cl.incl1
eVnYakke	eVnYjobl1+akkujdat+ejcl.emph1
eVnYakkotEyA	eVnYjobl1+akkujdat+itE]dat.adv+A]cl.intr2
eVnYakkotEyAvawu	eVnYjobl1+akkujdat+itE]dat.adv+Avawujcl.min
eVnYakkotEye	eVnYjobl1+akkujdat+itE]dat.adv+ejcl.emph1
eVnYakkotEkkUta	eVnYjobl1+akkujdat+itE]dat.adv+kUta]cl.incl2
eVnYakkotEmattum	eVnYjobl1+akkujdat+itE]dat.adv+mattum]cl.rest
eVnYakkotEyo	eVnYjobl1+akkujdat+itE]dat.adv+ojcl.intr1
eVnYakkotEyum	eVnYjobl1+akkujdat+itE]dat.adv+um]cl.incl1
eVnYakkotEwAnY	eVnYjobl1+akkujdat+itE]dat.adv+wAnY]cl.emph2
eVnYakkukkUta	eVnYjobl1+akkujdat+kUta]cl.incl2
eVnYakkukkilYakkilA	eVnYjobl1+akkujdat+ki]Y Yakkujdat.adv+il]loc+A]cl.intr2
eVnYakkukkilY YakkilAvawu	eVnYjobl1+akkujdat+ki]Y Yakkujdat.adv+il]loc+Avawujcl.min
eVnYakkukkilY Yakkile	eVnYjobl1+akkujdat+ki]Y Yakkujdat.adv+il]loc+ejcl.emph1
eVnYakkukkilY YakkilkUta	eVnYjobl1+akkujdat+ki]Y Yakkujdat.adv+il]loc+kUta]cl.incl2
eVnYakkukkilY Yakkilmattum	eVnYjobl1+akkujdat+ki]Y Yakkujdat.adv+il]loc+mattum]cl.rest
eVnYakkukkilY Yakkilo	eVnYjobl1+akkujdat+ki]Y Yakkujdat.adv+il]loc+ojcl.intr1
eVnYakkukkilY Yakkilum	eVnYjobl1+akkujdat+ki]Y Yakkujdat.adv+il]loc+um]cl.incl1
eVnYakkukkilY YakkilwAnY	eVnYjobl1+akkujdat+ki]Y Yakkujdat.adv+il]loc+wAnY]cl.emph2
eVnYakkumattum	eVnYjobl1+akkujdat+mattum]cl.rest
eVnYakkumelA	eVnYjobl1+akkujdat+mell]dat.adv+A]cl.intr2
eVnYakkumelAvawu	eVnYjobl1+akkujdat+mell]dat.adv+Avawujcl.min
eVnYakkumele	eVnYjobl1+akkujdat+mell]dat.adv+ejcl.emph1
eVnYakkumelkUta	eVnYjobl1+akkujdat+mell]dat.adv+kUta]cl.incl2
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 cVnYakkuniyawumattum
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 eVnYjobl1+akkujdat+veVrYkujdat.adv+il]loc+mattum]cl.rest
 eVnYjobl1+akkujdat+veVrYkujdat.adv+il]loc+ojcl.intr1
 eVnYjobl1+akkujdat+veVrYkujdat.adv+il]loc+um]cl.incl1
 eVnYjobl1+akkujdat+veVrYkujdat.adv+il]loc+wAnY]cl.emph2
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 eVnYjobl1+kUta]cl.incl2
 eVnYjobl1+kitt]nom.adv+Aj]cl.intr2
 eVnYjobl1+kitt]nom.adv+Awawujcl.min
 eVnYjobl1+kitt]nom.adv+ejcl.emph1
 eVnYjobl1+kitt]nom.adv+kUta]cl.incl2
 eVnYjobl1+kitt]nom.adv+mattum]cl.rest
 eVnYjobl1+kitt]nom.adv+ojcl.intr1
 eVnYjobl1+kitt]nom.adv+um]cl.incl1

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 eVnYmAwiriyA
 eVnYmAwiriyAwawu
 eVnYmAwiriy
 eVnYmAwirinkUta
 eVnYmAwirimattum
 eVnYmAwiriy
 eVnYmAwiriyum
 eVnYmAwiriyAnY
 eVnYmUlamA
 eVnYmUlamAwawu
 eVnYmUlam
 eVnYmUlamkUta
 eVnYmUlamattum
 eVnYmUlam
 eVnYmUlamum
 eVnYmUlamwAnY
 eVnYmattum
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 eVnYponYrYAvawu
 eVnYponYrYave
 eVnYponYrYavo
 eVnYponYrYavum
 eVnYponYrYukkUta
 eVnYponYrYumattum
 eVnYponYrYuwAnY
 eVnYvarEyA
 eVnYvarEyAwawu
 eVnYvarE
 eVnYvarEkkUta
 eVnYvarEmattum
 eVnYvarEyo
 eVnYvarEyum
 eVnYvarEwAnY
 eVnYwAnY
 eVnYnYAlA
 eVnYnYAlAwawu
 eVnYnYAl
 eVnYnYAlkUta
 eVnYnYAlmattum
 eVnYnYAl
 eVnYnYAlum
 eVnYnYAlwAnY
 eVnYnYEyA
 eVnYnYEyAwawu
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 eVnYnYEcCurYrYiyAwawu
 eVnYnYEcCurYrYiy
 eVnYnYEcCurYrYikkUta
 eVnYnYEcCurYrYimattum
 eVnYnYEcCurYrYiy
 eVnYnYEcCurYrYiyum
 eVnYnYEcCurYrYiwAnY
 eVnYnYEy
 eVnYnYEkAttitlumA
 eVnYnYEkAttitlumAwawu
 eVnYnYEkAttitlume
 eVnYnYEkAttitlumlUta
 eVnYnYEkAttitlumattum
 eVnYnYEkAttitlumo
 eVnYnYEkAttitlumum
 eVnYnYEkAttitlumwAnY
 eVnYnYEkUta
 eVnYnYEkkuwAw
 eVnYnYEkkuwAwawu
 eVnYnYEkkuwwe
 eVnYnYEkkuwukUta
 eVnYnYEkkuwumattum

eVnYjobl1+kittelnom.adv+wAnYjcl.emph2
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 eVnYjobl1+mAwirijnom.pl+Avawujcl.min
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 eVnYjobl1+mAwirijnom.pl+kUtajcl.incl2
 eVnYjobl1+mAwirijnom.pl+mattumjcl.rest
 eVnYjobl1+mAwirijnom.pl+ojcl.intr1
 eVnYjobl1+mAwirijnom.pl+umjcl.incl1
 eVnYjobl1+mAwirijnom.pl+wAnYjcl.emph2
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 eVnYjobl1+mUlamjnom.pp+ejcl.emph1
 eVnYjobl1+mUlamjnom.pp+kUtajcl.incl2
 eVnYjobl1+mUlamjnom.pp+mattumjcl.rest
 eVnYjobl1+mUlamjnom.pp+ojcl.intr1
 eVnYjobl1+mUlamjnom.pp+umjcl.incl1
 eVnYjobl1+mUlamjnom.pp+wAnYjcl.emph2
 eVnYjobl1+mattumjcl.rest
 eVnYjobl1+ponYrYajnom.pl+Ajcl.intr2
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 eVnYjobl1+ponYrYajnom.pl+ojcl.intr1
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 eVnYjobl1+ponYrYu+kUtajcl.incl2
 eVnYjobl1+ponYrYu+mattumjcl.rest
 eVnYjobl1+ponYrYu+wAnYjcl.emph2
 eVnYjobl1+varEjadv+Ajcl.intr2
 eVnYjobl1+varEjadv+Avawujcl.min
 eVnYjobl1+varEjadv+ejcl.emph1
 eVnYjobl1+varEjadv+kUtajcl.incl2
 eVnYjobl1+varEjadv+mattumjcl.rest
 eVnYjobl1+varEjadv+ojcl.intr1
 eVnYjobl1+varEjadv+umjcl.incl1
 eVnYjobl1+varEjadv+wAnYjcl.emph2
 eVnYjobl1+wAnYjcl.emph2
 eVnYnYjobl2+Aljins+Ajcl.intr2
 eVnYnYjobl2+Aljins+Avawujcl.min
 eVnYnYjobl2+Aljins+ejcl.emph1
 eVnYnYjobl2+Aljins+kUtajcl.incl2
 eVnYnYjobl2+Aljins+mattumjcl.rest
 eVnYnYjobl2+Aljins+ojcl.intr1
 eVnYnYjobl2+Aljins+umjcl.incl1
 eVnYnYjobl2+Aljins+wAnYjcl.emph2
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 eVnYnYjobl2+Ejacc+Avawujcl.min
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 eVnYnYjobl2+Ejacc+curYrYijacc.adv+ejcl.emph1
 eVnYnYjobl2+Ejacc+curYrYijacc.adv+kUtajcl.incl2
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 eVnYnYjobl2+Ejacc+kunwuwjacc.pp+mattumjcl.rest

eVnYnYEWwawirwwo
 eVnYnYEWwawirwum
 eVnYnYEWwawirwuwAnY
 eVnYnYitamA
 cVnYnYitamAwawu
 eVnYnYitame
 eVnYnYitamkUta
 cVnYnYitamattum
 eVnYnYitamo
 eVnYnYitamum
 eVnYnYitamwAnY
 eVnYnYitamirunwA
 eVnYnYitamirunwAwawu
 eVnYnYitamirunwe
 eVnYnYitamirunwukkUta
 eVnYnYitamirunwumattum
 cVnYnYitamirunwo
 cVnYnYitamirunwum
 eVnYnYitamirunwuwAnY
 eVnYnYotA
 eVnYnYotAwawu
 eVnYnYote
 eVnYnYotukkUta
 eVnYnYotumattum
 cVnYnYoto
 eVnYnYotum
 eVnYnYotuwAnY
 cVnYnYutEyawA
 eVnYnYutEyawAwawu
 eVnYnYutEyawc
 eVnYnYutEyawukkUta
 eVnYnYutEyawumattum
 eVnYnYutEyawo
 eVnYnYutEyawum
 eVnYnYutEyawAnY
 eVnYnYutanYA
 eVnYnYutanYAwawu
 eVnYnYutanYe
 eVnYnYutanYkUta
 eVnYnYutanYmattum
 cVnYnYutanYo
 eVnYnYutanYum
 eVnYnYutanYwAnY
nAnY
 nAnYA
 nAnYAwawu
 nAnYcVnYavA
 nAnYcVnYavAwawu
 nAnYcVnYave
 nAnYcVnYakUta
 nAnYcVnYamattum
 nAnYcVnYavo
 nAnYcVnYavum
 nAnYcVnYawAnY
 nAnYcVnYatuvawA
 nAnYcVnYatuvawAwawu
 nAnYcVnYatuvawe
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 nAnYcVnYappatuvawumattum
 nAnYcVnYatuvawo
 nAnYcVnYappatuvawum
 nAnYcVnYappatuvawuwAnY
 nAnYcVnYpawA
 nAnYcVnYpawAwawu
 nAnYcVnYpawc
 nAnYcVnYpawukkUta
 nAnYcVnYpawumattum
 nAnYcVnYpawo

eVnYnY]obl2+E]acc+wawirwuw]acc.pp+o]cl.intr1
 eVnYnY]obl2+E]acc+wawirwuw]acc.pp+um]cl.incl1
 eVnYnY]obl2+E]acc+wawirwuw]acc.pp+wAnY]cl.emph2
 eVnYnY]obl2+itam]loc+A]cl.intr2
 eVnYnY]obl2+itam]loc+Awawu]cl.min
 eVnYnY]obl2+itam]loc+ejcl.emph1
 eVnYnY]obl2+itam]loc+kUta]cl.incl2
 eVnYnY]obl2+itam]loc+mattum]cl.rest
 eVnYnY]obl2+itam]loc+o]cl.intr1
 eVnYnY]obl2+itam]loc+um]cl.incl1
 eVnYnY]obl2+itam]loc+wAnY]cl.emph2
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 eVnYnY]obl2+itamirunwujabl+Awawu]cl.min
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 eVnYnY]obl2+itamirunwujabl+mattum]cl.rest
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 eVnYnY]obl2+itamirunwujabl+um]cl.incl1
 eVnYnY]obl2+itamirunwujabl+wAnY]cl.emph2
 eVnYnY]obl2+otu]soc+A]cl.intr2
 eVnYnY]obl2+otu]soc+Awawu]cl.min
 eVnYnY]obl2+otu]soc+ejcl.emph1
 eVnYnY]obl2+otu]soc+kUta]cl.incl2
 eVnYnY]obl2+otu]soc+mattum]cl.rest
 eVnYnY]obl2+otu]soc+o]cl.intr1
 eVnYnY]obl2+otu]soc+um]cl.incl1
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 eVnYnY]obl2+utEyalgen+o]cl.intr1
 eVnYnY]obl2+utEyalgen+um]cl.incl1
 eVnYnY]obl2+utEyalgen+wAnY]cl.emph2
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 eVnYnY]obl2+utanY]soc+mattum]cl.rest
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 eVnYnY]obl2+utanY]soc+um]cl.incl1
 eVnYnY]obl2+utanY]soc+wAnY]cl.emph2
 nAnY]nom
 nAnY]nom+A]cl.intr2
 nAnY]nom+Awawu]cl.min
 nAnY]nom+cVnYaj]nom.pp+A]cl.intr2
 nAnY]nom+cVnYaj]nom.pp+Awawu]cl.min
 nAnY]nom+cVnYaj]nom.pp+ejcl.emph1
 nAnY]nom+cVnYaj]nom.pp+kUta]cl.incl2
 nAnY]nom+cVnYaj]nom.pp+mattum]cl.rest
 nAnY]nom+cVnYaj]nom.pp+o]cl.intr1
 nAnY]nom+cVnYaj]nom.pp+um]cl.incl1
 nAnY]nom+cVnYaj]nom.pp+wAnY]cl.emph2
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 nAnY]nom+cVnYappatuvawu]nom.pp+Awawu]cl.min
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 nAnY]nom+cVnYpawu]nom.pp+Awawu]cl.min
 nAnY]nom+cVnYpawu]nom.pp+ejcl.emph1
 nAnY]nom+cVnYpawu]nom.pp+kUta]cl.incl2
 nAnY]nom+cVnYpawu]nom.pp+mattum]cl.rest
 nAnY]nom+cVnYpawu]nom.pp+o]cl.intr1

nAnY|nom+cVnYpawuj|nom.pp+um|j.cl.incl1
nAnY|nom+cVnYpawuj|nom.pp+wAnY|j.cl.emph2
nAnY|nom+cVnYrYaj|nom.pp+A|j.cl.int2
nAnY|nom+cVnYrYaj|nom.pp+Awawuj.cl.min
nAnY|nom+cVnYrYaj|nom.pp+ej.cl.emph1
nAnY|nom+cVnYrYaj|nom.pp+k|t|j.cl.incl2
nAnY|nom+cVnYrYaj|nom.pp+mattum|j.cl.rest
nAnY|nom+cVnYrYaj|nom.pp+o|j.cl.intr1
nAnY|nom+cVnYrYaj|nom.pp+um|j.cl.incl1
nAnY|nom+cVnYrYaj|nom.pp+wAnY|j.cl.emph2
nAnY|nom+cVnYrYuj|nom.pp+A|j.cl.int2
nAnY|nom+cVnYrYuj|nom.pp+Awawuj.cl.min
nAnY|nom+cVnYrYuj|nom.pp+ej.cl.emph1
nAnY|nom+cVnYrYuj|nom.pp+k|t|j.cl.incl2
nAnY|nom+cVnYrYuj|nom.pp+mattum|j.cl.rest
nAnY|nom+cVnYrYuj|nom.pp+o|j.cl.intr1
nAnY|nom+cVnYrYuj|nom.pp+um|j.cl.incl1
nAnY|nom+cVnYrYuj|nom.pp+wAnY|j.cl.emph2
nAnY|nom+cVnYum|nom.pp+A|j.cl.int2
nAnY|nom+cVnYum|nom.pp+Awawuj.cl.min
nAnY|nom+cVnYum|nom.pp+ej.cl.emph1
nAnY|nom+cVnYum|nom.pp+k|t|j.cl.incl2
nAnY|nom+cVnYum|nom.pp+mattum|j.cl.rest
nAnY|nom+cVnYum|nom.pp+o|j.cl.intr1
nAnY|nom+cVnYum|nom.pp+um|j.cl.incl1
nAnY|nom+ej.cl.emph1
nAnY|nom+il|Aj|nom.pp
nAnY|nom+k|t|j.cl.incl2
nAnY|nom+mattum|j.cl.rest
nAnY|nom+o|j.cl.intr1
nAnY|nom+um|j.cl.incl1
nAnY|nom+wAnY|j.cl.emph2

Appendix IV - c

List of Inflectional forms for the Numeral ‘oVnYrYu’

oVnYrYu	oVnYrYu nom
oVnYrYukkUta	oVnYrYu nom+kUta cl.incl2
oVnYrYumattum	oVnYrYu nom+mattum cl.rest
oVnYrYum	oVnYrYu nom+um cl.incl1
oVnYrYuvareEya	oVnYrYu nom+varE+A cl.intr2
oVnYrYuvareEyaAwawu	oVnYrYu nom+varE+Awawu cl.min
oVnYrYuvareEye	oVnYrYu nom+varE+e cl.emph1
oVnYrYuvareEkkUta	oVnYrYu nom+varE+kUta cl.incl2
oVnYrYuvareEmattum	oVnYrYu nom+varE+mattum cl.rest
oVnYrYuvareEyo	oVnYrYu nom+varE+o cl.intr1
oVnYrYuvareEyum	oVnYrYu nom+varE+um cl.incl1
oVnYrYuvareEwAnY	oVnYrYu nom+varE+wAnY cl.emph2
oVnYrYuwAnY	oVnYrYu nom+wAnY cl.emph2
oVnYrYA	oVnYrYu obl1+A cl.intr2
oVnYrYALA	oVnYrYu obl1+Al ins+A cl.intr2
oVnYrYALAwawu	oVnYrYu obl1+Al ins+Awawu cl.min
oVnYrYAk	oVnYrYu obl1+Al ins+e cl.emph1
oVnYrYAlkUta	oVnYrYu obl1+Al ins+kUta cl.incl2
oVnYrYAlmattum	oVnYrYu obl1+Al ins+mattum cl.rest
oVnYrYAlk	oVnYrYu obl1+Al ins+o cl.intr1
oVnYrYAlum	oVnYrYu obl1+Al ins+um cl.incl1
oVnYrYAlwAnY	oVnYrYu obl1+Al ins+wAnY cl.emph2
oVnYrYAwawu	oVnYrYu obl1+Awawu cl.min
oVnYrYEya	oVnYrYu obl1+E acc+A cl.intr2
oVnYrYEyaAwawu	oVnYrYu obl1+E acc+Awawu cl.min
oVnYrYEeye	oVnYrYu obl1+E acc+e cl.emph1
oVnYrYEkkAttulumA	oVnYrYu obl1+E acc+kAttulum acc.pp+A cl.intr2
oVnYrYEkkAttulumAwawu	oVnYrYu obl1+E acc+kAttulum acc.pp+Awawu cl.min
oVnYrYEkkAttulume	oVnYrYu obl1+E acc+kAttulum acc.pp+e cl.emph1
oVnYrYEkkAttulumkUta	oVnYrYu obl1+E acc+kAttulum acc.pp+kUta cl.incl2
oVnYrYEkkAttulummattum	oVnYrYu obl1+E acc+kAttulum acc.pp+mattum cl.rest
oVnYrYEkkAttulumo	oVnYrYu obl1+E acc+kAttulum acc.pp+o cl.intr1
oVnYrYEkkAttulumum	oVnYrYu obl1+E acc+kAttulum acc.pp+um cl.incl1
oVnYrYEkkAttulumwAnY	oVnYrYu obl1+E acc+kAttulum acc.pp+wAnY cl.emph2
oVnYrYEkkUta	oVnYrYu obl1+E acc+kUta cl.incl2
oVnYrYEkkkuriwA	oVnYrYu obl1+E acc+kuriwuw acc.pp+A cl.intr2
oVnYrYEkkkuriwAwawu	oVnYrYu obl1+E acc+kuriwuw acc.pp+Awawu cl.min
oVnYrYEkkkuriwwe	oVnYrYu obl1+E acc+kuriwuw acc.pp+e cl.emph1
oVnYrYEkkkuriwukkUta	oVnYrYu obl1+E acc+kuriwuw acc.pp+kUta cl.incl2
oVnYrYEkkkuriwumattum	oVnYrYu obl1+E acc+kuriwuw acc.pp+mattum cl.rest
oVnYrYEkkkuriwwo	oVnYrYu obl1+E acc+kuriwuw acc.pp+o cl.intr1
oVnYrYEkkkuriwum	oVnYrYu obl1+E acc+kuriwuw acc.pp+um cl.incl1
oVnYrYEkkkuriwuwAnY	oVnYrYu obl1+E acc+kuriwuw acc.pp+wAnY cl.emph2
oVnYrYEmattulumA	oVnYrYu obl1+E acc+mattulum acc.pp+A cl.intr2
oVnYrYEmattulumAwawu	oVnYrYu obl1+E acc+mattulum acc.pp+Awawu cl.min
oVnYrYEmattulume	oVnYrYu obl1+E acc+mattulum acc.pp+e cl.emph1
oVnYrYEmattulumkUta	oVnYrYu obl1+E acc+mattulum acc.pp+kUta cl.incl2
oVnYrYEmattulummattum	oVnYrYu obl1+E acc+mattulum acc.pp+mattum cl.rest
oVnYrYEmattulumo	oVnYrYu obl1+E acc+mattulum acc.pp+o cl.intr1
oVnYrYEmattulumum	oVnYrYu obl1+E acc+mattulum acc.pp+um cl.incl1
oVnYrYEmattulumwAnY	oVnYrYu obl1+E acc+mattulum acc.pp+wAnY cl.emph2
oVnYrYEmattum	oVnYrYu obl1+E acc+mattum cl.rest
oVnYrYeyo	oVnYrYu obl1+E acc+o cl.intr1
oVnYrYEpaparYrYiyA	oVnYrYu obl1+E acc+parYrY acc.pl+A cl.intr2
oVnYrYEpaparYrYiyAwawu	oVnYrYu obl1+E acc+parYrY acc.pl+Awawu cl.min
oVnYrYEpaparYrYiy	oVnYrYu obl1+E acc+parYrY acc.pl+e cl.emph1
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oVnYrYEpolaAwawu	oVnYrYu obl1+E acc+pol acc.pl+Awawu cl.min

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 oVrucilarA
 oVrucilarAvawu
 oVrucilare
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 oVrumurYeyum
 oVrumurYewAnY
 oVruvakE
 oVruvakEya
 oVruvakEyAvawu
 oVruvakEye
 oVruvakEkkUta
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 oVruvarum
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Appendix IV - d

List of Inflectional forms for the Verb *'coVl'*

coVl	coVl rt+ jump
coVl kirYa	coVl rt+ fin+kirYa pradippl
coVl kirYaweVnYrYa	coVl rt+ fin+kirYa pradippl+eVnYrYa pl2
coVl kirYaweVnYrYA	coVl rt+ fin+kirYa pradippl+eVnYrY pl2+Aj cl.intr2
coVl kirYaweVnYrYAl	coVl rt+ fin+kirYa pradippl+eVnYrYAl pl2
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 coVl]rt+nY]pst+om]1pl+eVnYrYajpl2+Ajcl.intr2
 coVl]rt+nY]pst+om]1pl+eVnYrYAl]pl2
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 coVl]rt+nY]pst+om]1pl+eVnYrYajpl2+ejcl.emph1
 coVl]rt+nY]pst+om]1pl+eVnYrYajpl2+ojcl.intr1
 coVl]rt+nY]pst+om]1pl+eVnYrYajpl2
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 coVl]rt+nY]pst+om]1pl+ojcl.intr1
 coVl]rt+nY]pst+om]1pl+pAr]aux

List of Inflectional forms for the Adjective ‘*puru*’319

puwuwiamVnYrYAlkUta
 puwuwiamVnYrYAlmatum
 puwuwiamVnYrYAla
 puwuwiamVnYrYAlum
 puwuwiamVnYrYAlwAnY
 puwuwiamVnYrY
 puwuwiamVnYrYA
 puwuwiamVnYrYAwawu
 puwuwiamVnYrYe
 puwuwiamVnYrYukUta
 puwuwiamVnYrYumatum
 puwuwiamVnYrYo
 puwuwiamVnYrYum
 puwuwiamVnYrYuwAnY
 puwuwiam
 puwuwiamkUta
 puwuwiammatum
 puwuwiam
 puwuwiamum
 puwuwiamwAnY
 puwiy
 puwiyavalY
 puwiyavalYA
 puwiyavalYAwawu
 puwiyavalYVnYa
 puwiyavalYVnYavA
 puwiyavalYVnYavAwawu
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 puwiyavalYVnYakUta
 puwiyavalYVnYamatum
 puwiyavalYVnYavo
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 puwiyavalYVnYrYum

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 puwujfr+viwam]pl1+eVnYrYAl]pl2+matum]cl.rest
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 puwujfr+viwam]pl1+eVnYrYAl]pl2+wAnY]cl.emph2
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