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*Middle Rymakonian, the language of Rymako*

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uruwi

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*A complete grammar*

19 February 2018

*Dedicated to Gufferdk.*

Branch: canon

Version: 0.1

Date: 2017-12-22 (29 dia len)

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## 0.1 | Introduction

# 1 | Phonology and orthography

## 1.1 | Phoneme inventory

Middle Rymakonian underwent several sound changes from Lek-Tsaro, in the following order:

$s \rightarrow \text{ɬ}$	$(\blacklozenge\{w, j, u, y\})$	<i>NB this is a whistled sibilant.</i>
$\eta \rightarrow \text{j̥}$	$(\square\blacklozenge)$	
$\theta x \rightarrow \theta$	$\neg(\blacklozenge\square)[x = \emptyset]$	
$C_1[+fr] \rightarrow C_1[+v]$	$(V_1\blacklozenge V_2)$	
$\text{ɹ} \rightarrow \text{z}$	$(V_1\blacklozenge V_2)$	
$\{x, u\} \rightarrow \text{ɰ}$		
$V_1[+r] \rightarrow V_1[-r]$		
$k \rightarrow c$	$(\blacklozenge i)$	
$t \rightarrow \text{tʃ}$	$(\blacklozenge i)$	
$r \rightarrow \text{r̥}$		

Thus Middle Rymakonian has the following phoneme inventory:

Table 1.1: The consonants of Middle Rymakonian.

	Bilabial	Dental	Alveolar	Palatal	Velar	Glottal
Nasal	m		n	j̥	ŋ	
Plosive	p b		t d	c ɟ	k g	ʔ
Fricative	f v	θ ð	s z	ʃ ʒ	x ɣ	
(coarticulated)	fx vɣ	θx ðɣ		fʃ vʒ		
(whistled)			ɬ ʐ			
Affricate			ts	tʃ		
Lateral fricative			ɬ̺ ʐ̺			
Approximant			ɹ	j	w	
Lateral approximant			l			
Tap			r̥			

Table 1.2: The vowels of Middle Rymakonian.

	Front	Central	Back
High	i	ɤ	u
Mid	ɛ		ʌ
Low		a	

In addition to consonants and vowels, Middle Rymakonian has rod signals, represented by numbers. Rod A is blue and held by one's dominant hand and B is red and held by one's non-dominant hand. Rod signals can occur only at the end of words.

1. Rod A is raised to one's chest, while B is pointed down.
2. Rods A and B are crossed in the front.
3. Rod B is raised upwards in front of the nondominant arm, while rod A is lowered.
4. Rod A is pointed sideways near one's nondominant arm, while rod B is lowered.
5. Rods A and B are extended to the sides.
6. Rods A and B are extended, facing forward.
7. Rod A is raised forward, while B is pointed to the side.
8. Rod B is raised forward, while A is pointed to the side.
9. Rod A is raised besides one's head, while Rod B is extended toward the side of the dominant hand. This rod signal does not exist alone, but rather as a transition to the seventh or eighth rod signal.

In addition, the fourth rod signal has a “halfway” form where Rod A is retracted away from the nondominant arm.

Lowering both rods is interpreted as an absence of a rod signal.

If the use of rods are unavailable, the numerals of the positions may be pronounced.

## 1.2 | Hacmisation

As using IPA is quite wieldly, we shall use the following hacmisation, with superscript letters to indicate phonemes not found in Arka.

Rod signs are represented by the hacm digits <1 2 3 4 5 6 7 8 9 Δ> attached to the end of the verbs they encompass. Halfway rod signals are represented by a subscript digit: <9<sub>h</sub>>. Transitions from the ninth rod signal are written <L<sup>9</sup> L<sup>Δ</sup>>. Proper words are preceded by a backslash <\>.

Note that the hacmisation is slightly different from Lek-Tsaro's use of hacm. Lek-Tsaro's <h s> are now written using <1<sup>h</sup> 1<sup>s</sup>>, for instance.

## 1.3 | Phonotactics

As opposed to Lek-Tsaro, which uses syllables, Middle Rymakonian uses *phonoruns*. The following *defined categories* are used:

These are converted into *actual categories* as follows:

Table 1.3: The consonants of Middle Rymakonian.

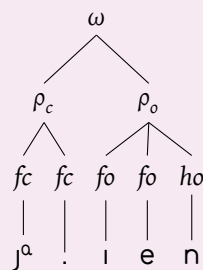
	Bilabial	Dental	Alveolar	Palatal	Velar	Glottal
Nasal	ɒ		n	nʲ	nʷ	
Plosive	d b		ɾ ɳ	ɟ ɲ	ɣ ʁ	ʔ
Fricative	ɑ u	j <sup>a</sup> z <sup>u</sup>	j z	ɬ s	ɰ <sup>l</sup> ʃ <sup>s</sup>	
(coarticulated)	ɑ <sup>h</sup> u <sup>h</sup>	j <sup>h</sup> z <sup>h</sup>		ɑ <sup>l</sup> u <sup>s</sup>		
(whistled)			j <sup>o</sup> z <sup>o</sup>			
Affricate			ʃ ʒ	ɟʃ		
Lateral fricative			ɬ <sup>l</sup> s <sup>l</sup>			
Approximant			ɹ	ɥ	o	
Lateral approximant			l			
Tap			ɾ			

Table 1.4: The vowels of Middle Rymakonian.

	Front	Central	Back
High	ɛ	ɜ	ə
Mid	e		ɔ
Low		ɪ	

- Full-open and full-closed phonemes are always realised as open and closed, respectively.
- Half-open phonemes are open unless the previous phoneme is full-closed.
- Half-closed phonemes are closed unless the previous phoneme is full-open.
- Neutral phonemes that do not occur word-initially inherit the actual category of the phoneme before it.
- Neutral phonemes that occur word-initially are closed.

A *phonorun*, then, is a maximal sequence of phonemes that are either all open or all closed within a word. For instance, take  $\langle j^a \cdot i \cdot e n \rangle$  <  $\times j^h i \cdot e n$  >:



Note that two phonemes in the word were metathesised when it was derived from Lek-Tsaro. In general, a word with  $n$  spoken phonemes cannot have more than  $\lceil n/2 \rceil$  phonoruns. Therefore, the following changes are executed in order until an application of one rule reduces the number of phonoruns to an acceptable number, after which the other rules are not executed:

Table 1.5: Categories of phonemes.

Category	Phonemes
Full-open	ɪ e ɛ ɔ ə u z <sup>u</sup> z z <sup>o</sup> s φ <sup>s</sup> s <sup>l</sup> ʏ o ʔ ɿ
Half-open	ɜ μ ɪ ɒ n n <sup>u</sup> n <sup>φ</sup> ɳ ɹ <sup>q</sup>
Neutral	j j <sup>o</sup> ɹ <sup>l</sup> u <sup>h</sup> z <sup>h</sup> u <sup>s</sup> ɹ <sup>l</sup>
Half-closed	ɑ ɪ ɹ <sup>l</sup> ɹ <sup>h</sup> Δ L <sup>Δ</sup>
Full-closed	j <sup>Δ</sup> ɑ <sup>h</sup> j <sup>h</sup> ɑ <sup>l</sup> d b ɾ ɹ <sup>u</sup> ɹ <sup>u</sup> ɳ ʔ φ ʔ <sup>l</sup> . ʔ ʔ <sup>h</sup>

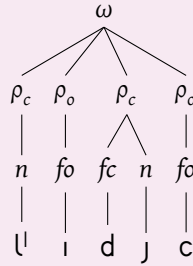
$$\begin{aligned}
X_1[do]X_2[dc]R[do] &\rightarrow X_2X_1R \\
X_1[dc]X_2[do]R[dc] &\rightarrow X_2X_1R \\
X_1[dc]X_2[do]?X_3[do] &\rightarrow X_1?X_2X_3 \\
X_1[do]?X_2[do]X_3[dc] &\rightarrow X_1X_2?X_3 \\
X_1[op \geq 0]X_2[dc]X_3[do]X_4[op \leq 0] &\rightarrow X_1X_3X_2X_4 \quad [X_1.op + X_3.op - X_2.op - X_4.op \geq 6] \\
X_1[op \leq 0]X_2[do]X_3[dc]X_4[op \geq 0] &\rightarrow X_1X_3X_2X_4 \quad [X_2.op + X_4.op - X_1.op - X_3.op \geq 6] \\
X_1[do]X_2[dc]X_3[do] &\rightarrow X_1X_3X_2 \quad \text{for ever} \\
X_1[dc]X_2[do]X_3[dc] &\rightarrow X_2X_1X_3 \quad \text{for ever}
\end{aligned}$$

where  $R$  means a rod signal,  $X$  represents a spoken phoneme and  $op$  stands for *openness* (full-open = 2, neutral = 0, full-closed = -2).  $do$  is short for  $op > 0$ , and  $dc$  is short for  $op < 0$ . (The same rule can occur multiple times within a word, although such invocations may not intersect each other.)

All of the rules above move from right to left and do not occur across compound boundaries. The last two rules are executed in parallel in a loop until the number of phonoruns is reduced to an acceptable number or both rules converge to a fixed point. This process will hereafter be called *phonorun reduction*.

In the example above,  $\langle xj^{\Delta}i.en \rangle$  had  $4 > \lceil 5/2 \rceil$  phonoruns, so the third rule was applied. This changed the word into  $\langle j^{\Delta}.ien \rangle$ , which has  $2 \leq \lceil 5/2 \rceil$  phonoruns.

An example where phonorun reduction does not result in a word with few enough phonoruns is  $\langle l^l idjc \rangle$  *soup*, which has the starting phonoruns



Obviously, the first four rules do not match anywhere in the word. The sixth rule seems promising because it matches the pattern at  $\langle l^l idj- \rangle$ , but the required sum is  $0 + 2 + 2 + 0 < 6$ , so this rule does not match. In addition, the last two rules do not match, and we encounter a fixed point. In such cases, the anomaly is allowed to pass.



The dictionary lists forms of roots *before* the phonorun reduction happens, because affixes can radically affect which phonemes are switched.

### 1.3.1 | Prosody

The time taken to utter a phonorun is given by the model:

$$t_o = K \cdot (1 + v \cdot \alpha + c \cdot \beta) \quad (\text{phonorun is open}) \quad (1.1)$$

$$t_c = K \cdot \eta \cdot (\gamma + v \cdot \alpha + c \cdot \beta) \quad (\text{phonorun is closed}) \quad (1.2)$$

where  $K$  is a constant varying from person to person,  $v$  is the number of vowels and  $c$  is the number of consonants in the run.  $\alpha, \beta, \gamma$  and  $\eta$  are also constants such that  $\beta < \alpha$ , and both  $\gamma$  and  $\eta$  are less than 1. In other words:

- There is a fixed cost for starting a new phonorun. This cost is less for closed phonoruns than open.
- Closed phonoruns are faster to say than open runs with the same number of consonants and vowels.
- Closed phonoruns are also more length-dependent than open runs.
- It takes less time to utter consonants than vowels.

An estimate of the constants for the standard dialect would be  $\alpha = 0.37, \beta = 0.46, \gamma = 0.82$  and  $\eta = 0.61$ .

## 1.4 | Vowel harmony

Middle Rymakonian inherits vowel harmony from Lek-Tsaro. Thus  $\langle \text{c e} \rangle$  are front vowels,  $\langle \text{ə ɔ} \rangle$  are back vowels and  $\langle \text{i ɜ} \rangle$  are neutral. Most roots with neither front nor back vowels act as if they had front vowels, though some might behave as if they had back vowels. Many affixes will change depending on which vowels are present.

If by some odd chance a word has both front and back vowels, then the rightmost vowel (before phonorun reduction) takes precedence.

## 1.5 | Rod signal sandhi

The following rules influence rod signals depending on the previous rod signal (of the current or previous word):

- $\langle \emptyset \rangle$  is realised as  $\langle \text{J} \rangle$  after  $\langle \emptyset \rangle$  or  $\langle \text{ɳ} \rangle$ .
- $\langle \text{ɳ} \rangle$  is realised as  $\langle \text{L}^{\text{ɳ}} \rangle$  after  $\langle \text{ɳ} \rangle$  or  $\langle \text{L}^{\text{ɳ}} \rangle$ .
- $\langle \Delta \rangle$  is realised as  $\langle \text{L}^{\Delta} \rangle$  after  $\langle \Delta \rangle$  or  $\langle \text{L}^{\Delta} \rangle$ .

Rod sandhi does not affect the orthography or phonorun reduction.



## 2 | Syntax

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### 2.1 | Basic word order

The basic word order is VSO. Descriptors follow what they modify.

However, unlike Lek-Tsaro, Middle Rymakonian has oblique arguments. As these were historically formed from a preclause, all obliques precede V. Likewise, any arguments with conjunctions also precede V. Such arguments that were formed from a clause will be called *historically clausal arguments* (HCAs).

Usually, oblique arguments are prepared by prepositions and fall after what they modify (unless the antecedent is V), but if an oblique argument is a conjunctive phrase or governs an HCA, it uses a postposition instead and precedes its antecedent.

### 2.2 | Questions

In all questions, the intonation of the second word of the last clause is lowered considerably.

Binary questions have the interrogative polarity marker and no change to syntax.

In wh-questions, the wh-word is pulled to the front (i. e. before the verb). This requires case marking for the wh-word:

ʃezcn ʁeəʒɲɪ dɔʒ  
who-ACC speak-FAR.PAST-Q PR.FAR  
Whom did you speak to?

This applies only to questions, not interrogative-mood clauses that act as relative clauses:

ʁeəʒɲɪ dɔ ʃel, ɥɪf ʁɔ.  
speak-FAR.PAST-Q PR.FAR who, see-NEAR.PAST PR.ANAPH\_OBJ  
I saw the person whom you talked to.

### 2.3 | Multiple clauses

A sentence might have multiple clauses. Each clause in a sentence follows the basic VSO order, and clauses are separated with commas.



## 3 | Nouns

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Nouns are declined for number, case and definiteness.

### 3.1 | Number

Countable nouns come in two numbers: *dual* and *non-dual*.

There are two different conceptualisations of the dual number. Some dialects use the dual number to refer to all cases with two objects (we say that they have the *unpaired dual*); others use it only to refer to objects in pairs (these lack the unpaired dual). In general, dialects without the unpaired dual are more prevalent in cities, as well as northern regions.

Each countable noun has an *inherent number*. A noun whose number agrees with its inherent number receives no marking; a mismatch causes the noun to receive a special affix.

### 3.2 | Case

In a clause with both the subject and object directly expressed in that order, both the subject and object are declined in the nominative case (and their roles are inferred through word order). In a clause where only one is present, or where both are expressed in the opposite order, the subject will receive the nominative case and the object will receive the accusative case.

### 3.3 | Noun classes

There are three overarching groups of noun classes.

1. Countable
  - (a) Sentient – such as humans, AIs, deities.
  - (b) Non-sentient – anything else.
2. Measurable
  - (a) Measure – all measurable nouns, especially units of measurement.
3. Uncountable
  - (a) Edible – edible (to humans).

- (b) Inedible – inedible (to humans).
- (c) Abstract – abstract ideas.

### 3.4 | Definiteness

The definite form of a noun is formed regularly by reduplicating the first syllable (without the coda): <DIZI> “a person” becomes <DIDIZI> “the person”.

### 3.5 | Declension table

Here, the inflected forms of words are shown both before and after phonorun reduction to illustrate the pattern. The declension patterns for each class is shown, both for roots ending with consonants and those ending with vowels.

Note that noun declensions for countable classes respect vowel harmony. For nouns with back vowels, replace the front vowels with the back vowels of the same height and rounding, and vice versa. (Noun declensions for measurable and uncountable classes do not respect vowel harmony.)

#### 3.5.1 | Countable classes

Table 3.1: Declensions for countable nouns.

	Direct #	Inverse #
Sentient: <xDIZI> “person”		
Nominative	DIZI (DIZI)	DIZI (DIZI)
Accusative	DIZIn (DIZIn)	DIZInIl (DIZInIl)
Sentient: <xj <sup>0</sup> .en> “magician”		
Nominative	j <sup>0</sup> .en (j <sup>0</sup> .en)	j <sup>0</sup> .el (j <sup>0</sup> .el)
Accusative	j <sup>0</sup> .ezcn (j <sup>0</sup> .ezcn)	j <sup>0</sup> .epcl (j <sup>0</sup> .epcl)
(Note that the final consonant is preserved only in the direct nominative form.)		
Non-sentient: <xD3n <sup>0</sup> ɔ> “rabbit”		
Nominative	D3n <sup>0</sup> ɔ (D3n <sup>0</sup> ɔ)	D3n <sup>0</sup> ɔ.ə (D3n <sup>0</sup> ɔ.ə)
Accusative	D3n <sup>0</sup> ɔD (D3n <sup>0</sup> ɔD)	D3n <sup>0</sup> ɔuə (D3n <sup>0</sup> ɔuə)
Non-sentient: <x.cDen> “house”		
Nominative	.cDen (.cDen)	.cDe.c (.cDec.)
Accusative	.cDezCD (.cDezCD)	.cDeɲcuc (.cDeɲcuc)

#### 3.5.2 | Measurable and uncountable classes

Table 3.2: Declensions for measurable and uncountable nouns.

	Direct
Measure: <xɲ3D3> “day (continuous)”	
Nominative	ɲ3D3 (ɲ3D3)
Accusative	ɲ3D3n (ɲ3D3n)
Measure: <xDeI> “volume” (in expressions such as <xDeI-ɲ3ɔ> “cupful”)	
Nominative	DeI (DeI)

	Direct
Accusative	bezcñ (bezcn)
Edible: <xfeµ.c> “beef”	
Nominative	feµ.c (feµc.)
Accusative	feµ.cn (feµc.n)
Edible: <xðin> “rice”	
Nominative	ðin (ðin)
Accusative	ðincñ (ðincn)
Inedible: <xµəfə> “gold”	
Nominative	µəfə (µəf)
Accusative	µəfəbe (µəfbə)
Inedible: <xlɪɹij> “stone”	
Nominative	lɪɹij (lɪɹij)
Accusative	lɪɹijde (lɪɹijde)
Abstract: <xə <sup>h</sup> əðə> “empathy”	
Nominative	ə <sup>h</sup> əðə (ə <sup>h</sup> əðə)
Accusative	ə <sup>h</sup> əðəñ <sup>ʰ</sup> (ə <sup>h</sup> əðəñ <sup>ʰ</sup> )
Abstract: <xφɕj> “[the number] five”	
Nominative	φɕj (φɕj)
Accusative	φɕzcn <sup>ʰ</sup> (φɕzcn <sup>ʰ</sup> )
Here, the final consonant is voiced if it is a fricative.	

(NB: be sure to change any <ɹ> and <ɹ> into <ɹʰ> and <ɹʰ> respectively before <ç>.)

### 3.6 | Pronouns

Personal pronouns are not divided into first, second and third persons as in most languages. Instead, they fall into six categories that exhibit different behaviour depending on whether they occur as the first non-oblique noun in the clause or elsewhere (second noun, verb inflection, oblique):

Table 3.3: Pronoun persons and their functions.

Person	Role in first position	Role elsewhere
Near	The speaker.	The first non-oblique argument of the clause. The person with which the first argument is conversing. An entity that is neither the speaker, the listener nor the first argument.
Far	The listener.	
Other	A third entity.	
Generic	A generic entity (akin to “one”).	
Anaphoric Subject	The subject of the previous clause. Also used on the verb when an oblique or conjunction is present.	
Anaphoric Object	The object of the previous clause.	

In wh-questions, the wh-word assumes the second position and the other argument becomes the first.

If a clause has no explicit arguments, the first argument is understood to be the subject.

Table 3.4: Personal pronouns (before phonorun reduction).

	Nominative		Accusative	
	Non-dual	Dual	Non-dual	Dual
Near	fi	aczc	fin	aczen
Far	dc	bpi	dcn	bpin
Other	nc	lizc	ncn	lizen
Anaph. Sub.	pi	n <sup>4</sup> cpc	pin	n <sup>4</sup> cpen
Anaph. Obj.	pc	n <sup>4</sup> apc	pcn	n <sup>4</sup> apcn
Generic	.ə		.ən	

### 3.6.1 | Last-clause pronouns

The anaphoric pronoun <ebj> (accusative: <bezen>) is grammatically an other pronoun, and it refers to the previous clause said. Likewise, <bdecj> (accusative: <bdecn>) refers to the clause before the previous one. All of these pronouns should undergo phonorun reduction inside a compound.

## 3.7 | Compounding

Nouns can be compounded together in a head-initial manner. When that happens, only the leftmost noun is the one to be declined.

del-μɜɟɔ-ɑ<sup>1</sup>ɜμə-φcɟ  
 volume-cup-water-five  
 five cupfuls of water

Note that pronouns can modify other nouns, in which personal possession is indicated:

del-μɜɟɔ-ɑ<sup>1</sup>ɜμə-φcɟ-fi  
 volume-cup-water-five-PR.NEAR.ND  
 (arg1)'s five cupfuls of water

Descriptors can also compound on nouns. Unlike in Lek-Tsaro, this is the only way to have descriptors modify nouns.

ɖɪzɪ-lfəi  
 ɖɪzɪ-ləfi  
 person-old  
 old people

## 3.8 | Possession

“X’s Y” is translated as <Y=ɖɪ X> (plus phonorun reduction). The possessive construction is also used to create appositives. (Note the head-marking!)



Observe that possession marks the head, and <-Dɪ> is a clitic, not an affix, as in the following example:

D3D3ŋ<sup>0</sup>ɔ̌-ɑ̌ʔpə-Dɪ j<sup>h</sup>.ien  
 D3D3ŋ<sup>0</sup>ɔ̌-ɑ̌ʔpə-Dɪ j<sup>h</sup>.en  
 DEF~rabbit-water=GEN magician  
 the magician's water rabbit

This construction is also used when compounding would otherwise be used, but the dependent is larger than a single noun or descriptor:

nɣizɪDɪ ɪ.lle an ɪj  
 cat=GEN 4096 and two  
 4098 cats



## 4 | Verbs

Verbs are conjugated for person of the subject, tense, polarity and tellicity, in two paradigms. Conjugation respects vowel harmony. In addition, a final <-j> or <-z> in the stem of a first- or second-conjugation verb becomes whistled in the generic form.

The dictionary lists the stem of the verb and the conjugation scheme used.

Table 4.1: Person-tense conjugations for first-conjugation verbs, using <ɖil-> “(S) eats (O)”, before and after phonorun reduction.

	Nonpast	Past
Near	ɖilɪn (ɖilɪn)	ɖilɪf (ɖilɪf)
Far	ɖilɪn (ɖilɪn)	ɖilɜj (ɖilɜj)
Other	ɖilɪ (ɖilɪ)	ɖilɜ (ɖilɜ)
Anaph. Sub.	ɖile (ɖile)	ɖilel (ɖilel)
Anaph. Obj.	ɖilc.e (ɖil.ce)	ɖilc.el (ɖil.cel)
Generic	ɖilc (ɖilc)	ɖilc (ɖilc)

Table 4.2: Person-tense conjugations for second-conjugation verbs, using <nən-> “(S) kills (O), (O) dies”, before and after phonorun reduction.

	Nonpast	Past
Near	nənɪn (nənɪn)	nənɪf (nənɪf)
Far	nənɪn (nənɪn)	nənɜj (nənɜj)
Other	nənɪ (nənɪ)	nənɜ (nənɜ)
Anaph. Sub.	nənɔ (nənɔ)	nənɛl (nənɛl)
Anaph. Obj.	nənə.ɔ (nənə.ɔ)	nənə.ɔl (nənə.ɔl)
Generic	nənə (nənə)	nənə (nənə)

Notes:

- The polarity-tellicity suffix is added after the person-tense ending.
- “Negative atelic” means something akin to “unsuccessfully tried to avoid doing X”.
- The interrogative polarity, in addition to marking questions, is used to mark clauses that may or may not be true but are referred to later in the sentence.
- As an exception, the generic form of <y-> is <yə>.

Table 4.3: Person-tense conjugations for third-conjugation verbs, using <µeu-> “(S) spreads (O)”, before and after phonorun reduction.

	Nonpast	Past
Near	µeucn (µeucn)	µeucf (µeucf)
Far	µeuin (µeuin)	µeu3j (µeu3j)
Other	µeui (µeui)	µeu3 (µeu3)
Anaph. Sub.	µeue (µeue)	µeuel (µeuel)
Anaph. Obj.	µeuc.e (µeuc.e)	µeuc.el (µeuc.el)
Generic	µeu3 (µeu3)	µeu3 (µeu3)

Table 4.4: Polarity-telicity suffixes for verbs (before phonorun reduction). The interrogative affix can also follow a negative affix.

	Positive	Negative	Interrogative
Telic	-·	-f <sup>4</sup> e / -כ	-ל <sup>1</sup>
Atelic	-DC / -Də	-J	-ל3

Some examples:

דילן ל'רדע ל'כצו.  
eat-NEAR.NONPAST fish flower  
Fish eat flowers.

דילן ל'רדע ל'כצו, דילן חקזי מ.  
eat-NEAR.NONPAST fish flower, eat-NEAR.NONPAST cat PR.ANAPH\_SUB  
Fish eat flowers, and cats eat fish.

דילן ל'רדע ל'כצו, דילן מ'רדע.  
דילן ל'רדע ל'כצו, דילן מ'רדע.  
eat-NEAR.NONPAST fish flower, eat-ANAPH\_SUB.NONPAST grass-ACC  
Fish eat flowers, and they eat grass.  
(Grass is inedible to humans, but edible to fish.)

דילןef<sup>4</sup> ל'כצו ל'רדע.  
דילןf<sup>4</sup>e ל'כצו ל'רדע.  
eat-NEAR.NONPAST-NEG flower fish  
Flowers don't eat fish.

דפנ nc ל'פנל'פנען, ינן לי eב.  
דפנ nc ל'פנל'פנען, ינן לי eב.  
carry-NEAR.NONPAST PR.OTHER DEF~book, worry-NEAR.NONPAST PR.NEAR  
PR.LAST\_CLAUSE  
He has the book; that worries me.  
or: That he has the book worries me.

דפנול' nc ל'פנל'פנען, ינן לי eב.  
דפנול' nc ל'פנל'פנען, ינן לי eב.  
carry-NEAR.NONPAST-Q PR.OTHER DEF~book, worry-NEAR.NONPAST PR.NEAR.INT

## PR.LAST\_CLAUSE

He might have the book; that worries me.

or: That he might have the book worries me.

## 4.1 | Aspect

Verbs can also be marked for aspect, either using a rod sign directly on the verb, or a particle with a rod sign, placed anywhere between the verb it modifies and the next verb.

Table 4.5: Aspect markers. Those with hyphens are attached to verb. Those without hyphens are placed as separate particles anywhere after the verb.

Aspect name	Marking	Meaning
Imperfect	–ɿ	An action that is currently going on. Also used to distinguish static actions as opposed to dynamic (e. g. <i>wear</i> as opposed to <i>put on</i> ).
Interrupted	ɿʔcɿ	An action that was interrupted.
Perfect	–ɿ	An action that has already finished. Changes present tense to immediate past. Also used to distinguish dynamic actions as opposed to static (e. g. <i>put on</i> as opposed to <i>wear</i> ).
Gnomic	–ɿ	A general truth or aphorism, or an action done habitually.
Gnomic dubitative	ɿʔcɿ	A general truth or aphorism that the speaker considers to be false.
Deontic necessity	–ɿ	An action that the speaker insists on happening.
Deontic recommendation	–ɿ	An action that the speaker recommends that happens.
Epistemic necessity	ɿəɸɿ	An action that the speaker infers is happening. ( <i>Situational necessitative and potential moods are grouped with their epistemic versions.</i> )
Deontic potential	–ɿ	An action that the speaker permits to occur.
Epistemic potential	ɿəɸɿ	An action that the speaker infers that might happen.
Unexpected	–ɿ	An action that is unexpected (akin to using “but”).
Comparative	deɿ	Indicates an action of greater intensity than what was described in the previous clause.
Nonexclusive subject	ɿʔcɿ	Indicates that the subject comprises not only of what is explicitly mentioned, but also other things.

Aspect name	Marking	Meaning
Nonexclusive object	$c^{\text{uo}}$	Indicates that the object comprises not only of what is explicitly mentioned, but also other things.
Nonexclusive argument	$c^{\text{uo}}$	Combination of both nonexclusive subject and nonexclusive object.
Temporal universal	$-L^q$	The statement is always true (“never true” when negative).
Temporal non-universal	$j^o L^q$	The statement is not always true (“sometimes true” when negative).
Spatial universal	$-L^\Delta$	The statement is true (false) everywhere.
Spatial non-universal	$j^o L^\Delta$	The statement is false (true) somewhere.

An attached rod signal reverts  $\langle j^a z^u \rangle$  to  $\langle j^h z^h \rangle$ , respectively, and might affect phonorun reduction.

An example:

$\text{f}^{\text{ilil}}\text{f}^{\text{dc1}} \text{fi } nc, \text{lcnc.elf } d3n^{\text{u}}\text{iu}\text{a}-\mu.$   
 $\text{f}^{\text{ilil}}\text{f}^{\text{dc1}} \text{fi } nc, \text{lcnc.elf } d3n^{\text{u}}\text{iu}\text{a}-\mu.$   
 fight-NEAR,PAST-ATELIC-IMPERFECT PR.NEAR PR.OTHER, shoot-ANAPH\_OBJ.PAST-  
 UNEXPECTED knee-INV.ACC-PR.ANAPH\_SUB  
 I tried to fight them, but they shot my knee.

#### 4.1.1 | Simultaneous temporal and spatial aspects

A verb may be modified by both temporal and spatial aspects, in which case their mutual order is significant:

Table 4.6: Behaviour when both temporal and spatial markers exist, where  $t$  is a time variable and  $\vec{x}$  is a space variable.

Marking	Definition	Equivalent
$-L^\Delta q$	$\forall t \forall \vec{x} : P(t, \vec{x})$	$\forall t \forall \vec{x} : P(t, \vec{x})$
$-L^\Delta j^o L^q$	$\neg \forall t \forall \vec{x} : P(t, \vec{x})$	$\exists t \exists \vec{x} : \neg P(t, \vec{x})$
$j^o L^\Delta q$	$\forall t \neg \forall \vec{x} : P(t, \vec{x})$	$\forall t \exists \vec{x} : \neg P(t, \vec{x})$
$j^o L^\Delta j^o L^q$	$\neg \forall t \neg \forall \vec{x} : P(t, \vec{x})$	$\exists t \forall \vec{x} : P(t, \vec{x})$
$-L^q \Delta$	$\forall \vec{x} \forall t : P(t, \vec{x})$	$\forall \vec{x} \forall t : P(t, \vec{x})$
$-L^q j^o L^\Delta$	$\neg \forall \vec{x} \forall t : P(t, \vec{x})$	$\exists \vec{x} \exists t : \neg P(t, \vec{x})$
$j^o L^q \Delta$	$\forall \vec{x} \neg \forall t : P(t, \vec{x})$	$\forall \vec{x} \exists t : \neg P(t, \vec{x})$
$j^o L^q j^o L^\Delta$	$\neg \forall \vec{x} \neg \forall t : P(t, \vec{x})$	$\exists \vec{x} \forall t : P(t, \vec{x})$

## 4.2 | Historically clausal arguments

*Historically clausal arguments* (HCAs) are arguments of a sentence that are derived from clausal constructions. They include obliques and conjunctions. HCAs precede V.

An HCA that modifies a verb causes it to be conjugated in the anaphoric subject person.

## 4.2.1 | Obliques

An oblique expresses a relation between the verb of a sentence or some argument thereof.

An oblique phrase that modifies a verb falls before it. An oblique phrase that modifies either S or O pulls it before the verb as well.

If the argument of the oblique phrase is not an HCA, then it uses a preposition and follows its antecedent (unless it is the main verb). If the argument is an HCA, then the phrase uses a postposition and precedes its antecedent.

Consider the preposition <ɪn> *in, on, at (location)* (from Lek-Tsaro <ɪn> (S) *is at* (O)). The sentence *Ryze is hiding from me in the tree* would be translated as:

ɪn ʃuɔl neɹae1 ɪn ʔɜze  
in tree hide-ANAPH.SUB.NONPAST-IMPERFECT PR.NEAR.ACC Ryze

Now say that we want to translate *Ryze is hiding from me in the tree with fruit*. *With* would be translated as <ɖɹ> (from Lek-Tsaro <ɖɹɔn> *hold, carry*, which also begets <ɹɹ>), but now we have nested obliques, which means we need to use <ɪn> as a postposition:

ʃuɔl ɹɹ ʔɜze ɪn neɹae1 ɪn ʔɜze  
tree with fruit in-POST hide-ANAPH.SUB.NONPAST-IMPERFECT PR.NEAR.ACC Ryze

Deriving a postposition from a preposition is done *after* phonorun reduction. Prepositions that end with a closed phonorun receive <-ɪ>, and those that end with an open phonorun receive <-z>.

The prefix <ɪ- > negates an adposition.

## 4.2.2 | Conjunctions

Conjunctions are derived from verbs as well; for instance, <an> *and* is derived from Lek-Tsaro <acn> *join*. However, in Middle Rymakonian, conjunctions are infixes:

ʔɜze an ʋɪzɪl ɖɪl ʃɛɹ..  
ʔɜze an ʋɪzɪl ɖɪl ʃɛɹ.c.  
Ryze and Tazyl eat-ANAPH.SUB.NONPAST beef

(Note that as long as S still precedes O, no case marking is needed.)

Unlike Lek-Tsaro's approach, this approach works well with more complex sentences:

ʔɜze an ʋɪzɪl ʃɛɹ. an ɭɪɖɹɔ ɖɪl.  
ʔɜze an ʋɪzɪl ʃɛɹ.c an ɭɪɖɹɔ ɖɪl.  
Ryze and Tazyl beef and soup eat-ANAPH.SUB.NONPAST

An entire conjunctive phrase can be modified by treating the conjunction as a nominal antecedent:

ɳɹɪzɪ an-ɪʃɪ ɖɜɳɹɔ  
ɳɹɪzɪ an-ɪʃɪ ɖɜɳɹɔ

cat and-old rabbit  
old cats and rabbits

### 4.3 | Connectors

(This section will refer to section 2.11 of  $\backslash\psi\text{bl } \triangleright \text{nl} \ /(\text{nl}'\text{nn}^\text{p}\text{ln}$  extensively.)

Middle Rymakonian uses connectors to express relationships between clauses. In Middle Rymakonian, connectors do not occupy an indexed position in the clause; however, they tend to be placed near items that should receive less emphasis than others. Two connectors cannot occur consecutively unless the number of connectors is more than one plus the number of other words.

A connector is composed of three parts:

- The **type** (see table 4.7) specifies the semantic role of the connector.
- The **sequence identifier** (hereafter **seqid**) disambiguates the use of multiple connectors of the same **type** within a sentence. This is an arbitrary continuation of the last phonorun of the **type**.
- The **parity** allows the reuse of **seqids** within a **type**. This is  $\langle -\text{f} \rangle$  or  $\langle -\text{l} \rangle$  if the **type** ends with a closed phonorun, and  $\langle -\text{i} \rangle$  or  $\langle -\text{z} \rangle$  if it ends with an open phonorun.

Unlike most parts of speech, a complete connector, composed of the three parts above, does not undergo phonorun reduction.

Connectors **x** and **y** are part of the same **set S** iff all of the following conditions hold:

- **x** and **y** are identical (i. e. all three parts are the same between **x** and **y**)
- they belong to clauses  $\alpha$  and  $\beta$ , respectively (NB: it is possible that  $\alpha = \beta$ )
- there are no clauses between  $\alpha$  and  $\beta$  that has a connector with the same **type** and **seqid** but a different **parity** from **x** or **y**

Note that “belonging to the same connector set” is an equivalence relation.

Table 4.7: Connector types.

Name	Arity	Middle Rymakonian	Explanation
Ordinary	$n$	$\text{lj}-$	Covers both the sequential and parallel connectors of Jbl.
Analogous	2	$\text{id}-$	“For the same reason $\alpha$ is true, $\beta$ is also true.” Also used as an “and” without stating any order.
Subversive	2	$\text{ln}-$	“ $\alpha$ but $\beta$ .”
Augmentative	$n$	$\text{op}^\text{s}-$	Later statements apply to a greater extent than earlier statements.
Explanatory	$n$	$\text{cd}-$	“ $\theta_1$ causes $\theta_2$ causes $\theta_3$ etc.”
Conditional	2	$\text{cj}-$	“If $\alpha$ , then $\beta$ .”



Clauses of a connector set are joined by the relation of the connector used therein:

דויל ל'רדע ר'צזז יעי.  
 דויל ל'רדע ר'צזז יעי.  
 eat-NEAR.PAST fish flower ORDINARY-⟨e⟩-0  
 The fish ate the flower.  
  
 יעי נדדל ר'רעז ר'צזז.  
 ORDINARY-⟨e⟩-0 dance-NEAR.PAST child tree  
 Then the child danced around the tree.  
  
 יעי דיל ל'ל'רדע.  
 eat-ANAPH\_SUB.PAST ORDINARY-⟨e⟩-0 DEF~fish-ACC  
 Then the child ate the fish.  
  
 דלללל פ'פ'נ' יעז ד.  
 דלללל פ'פ'נ' יעז ד.  
 imitate-NEAR.PAST-IMP frog ORDINARY-⟨e⟩-1 PR.FAR  
 At another time, a frog was imitating me. (...)

#### 4.4 | Comparatives

The comparative is a function  $\text{cmp} : A \times A \times (A \rightarrow \mathbb{R}) \times (A \times A \rightarrow \{0, 1\}) \rightarrow \{0, 1\}$ , where  $\text{cmp}(a, b, f, \sqsupset) = f(a) \sqsupset f(b)$ .

Consider the following sentences:

Fish eat flowers more than cats.  
 More fish eat flowers than cats.

Semantically, they can be translated to:

$$\text{cmp}(\text{fish}, \text{cats}, a \mapsto (\# \text{ of flowers eaten by } a), >) \quad (4.1)$$

$$\text{cmp}(\text{fish}, \text{cats}, a \mapsto (\# \text{ of } a \text{ that eat flowers}), >) \quad (4.2)$$

The heart of comparatives in Middle Rymakonian is the quadrivalent verb  $\langle \text{ר'צזז } a \text{ } b \text{ } f \sqsupset \rangle$ . Thus:

דויל ר'צזז-י'ר'נ, ר'צזז ל'רדע נ'יזי פ'נ.  
 eat-GENERIC-Q flower-ACC-how\_many, CMP-NEAR fish cat PR.ANAPH\_OBJ >  
 Fish eat more flowers than cats.  
  
 דויל ר'צזז-י'ר'נ, ר'צזז ל'רדע נ'יזי פ'נ.  
 eat-GENERIC-Q PR.GENERIC-how\_many flower, CMP-NEAR fish cat PR.ANAPH\_SUB >  
 More fish eat flowers than cats.

Note that we place a clause whose argument is the generic pronoun before the comparative clause. From the dozan-clause, we refer to the function using the anaphoric pronoun referring to the position of the return value.



the following clause uses an anaphoric subject, it refers to the object of the current clause.

Moreover, the verb does not need to be one that can never take an object. In the above example, <ṛḥḥḥ> means “(S) falls on (O)”. However, if the verb in question is taking an object, it cannot be transitivised directly and a more roundabout way is required:

ṛḥḥḥ ḥḥḥḥḥḥ ḥḥḥ.

fall-NEAR.PAST DEF~coin grass

The coins fell on the grass.

ḥḥ ḥḥḥḥḥ ḥḥḥḥḥḥ, ṛḥḥḥ ḥḥḥḥḥ.

ḥḥ ḥḥḥḥḥ ḥḥḥḥḥḥ, ṛḥḥḥ ḥḥḥḥḥ.

PR.NEAR TRANS-fall-OTHER.PAST DEF~coin, fall-ANAPH\_SUB.PAST grass-ACC

I dropped the coins; they fell on grass.

or: I dropped the coins on grass.

## 4.7 | The copula

The copula <j-> (v3) can take a noun as an object, in which case it can mean identity or membership. (Location is expressed with <l-> (v1) “be at”.) With no object at all, it is used to denote existence.

It can also accept a descriptor, in which case the descriptor is attached before <jcn> in the dictionary form. (This precedes phonorun reduction but forms a compounding boundary.)



## 5 | Descriptors

Descriptors act as adjectives or adverbs. They follow what they modify, and are inflected for the verbal person of their antecedents.

Modifying nouns is done through compounding, but there are special forms for modifying verbs. These are separate words.

Table 5.1: Descriptor declensions, using the descriptors  $\langle \text{lef} \rangle$  “large” and  $\langle \text{af} \rangle$  “old”.

Person	Declined form	
<i>Nouns</i>	ṛēḏfī (ṛēḏif)	ṛəfī (ṛəfə)
Near	ṛēḏfup (ṛēḏup)	ṛəfup (ṛəup)
Far	ṛēḏfup (ṛēḏup)	ṛəfup (ṛəup)
Other	ṛēḏfep (ṛēḏep)	ṛəḏup (ṛəḏup)
Anaph. Sub.	ṛēḏfup (ṛēḏup)	ṛəfup (ṛəup)
Anaph. Obj.	ṛēḏfep (ṛēḏep)	ṛəḏup (ṛəḏup)
Generic	ṛēḏfcp (ṛēḏcp)	ṛəḏep (ṛəḏep)

Note that a final <-j> or <-z> in a stem becomes whistled in the generic form.



## 6 | Tree mode

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Anaphoric referents in a linked-list sentence are sometimes insufficient for expressing complex sentence structures. While the easiest method of resolving this issue is using definite nouns, Middle Rymakonian also provides a mode where sentences are not linked lists of clauses, but rather (binary) trees.

### 6.1 | Activation

Tree mode is enabled automatically when the treeing particle  $\langle n^4i^9 \rangle$  is used, and disabled at the end of a sentence.

### 6.2 | Branch-switching

The aforementioned particle  $\langle n^4i^9 \rangle$  marks the beginning of the right branch of the tree. The right branch is ended by the particle  $\langle n^4i^{\Delta} \rangle$ , which causes the next clause to join the left and right branches.

(N. B.  $\langle n^4i^9 \rangle$  and  $\langle n^4i^{\Delta} \rangle$  can occur only between clauses. If the particles are represented by left and right brackets, respectively, then the brackets should match.)

### 6.3 | Anaphoric pronouns in joiner clauses

In clauses that join two branches, anaphoric pronouns require marking whether the antecedent occurs in the left predecessor  $\langle n^4i^9 \rangle$  or the right predecessor  $\langle n^4i^{\Delta} \rangle$ . This is done by marking the pronoun with  $\langle -^9 \rangle$  or  $\langle -^{\Delta} \rangle$ .

Likewise, verbs can be modified with  $\langle -^9 \rangle$  or  $\langle -^{\Delta} \rangle$  to indicate which branch the subject came from.

### 6.4 | Errors

The following are ungrammatical:

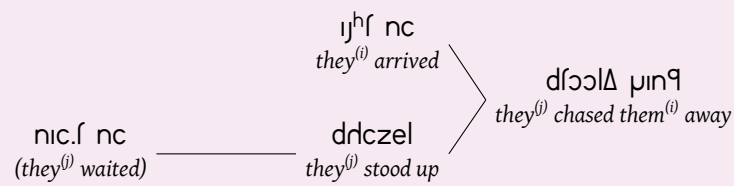
- Using the particle  $\langle n^4i^{\Delta} \rangle$  or the branched anaphoric pronouns when tree mode is disabled
- Using the particle  $\langle n^4i^{\Delta} \rangle$  other than to close a corresponding  $\langle n^4i^9 \rangle$
- Using the unbranched anaphoric pronouns in clauses with two predecessors

- Using the branched anaphoric pronouns in clauses with one predecessor
- Starting a new branch with <ᲚᲣᲗᲚ> when the current branch is empty

## 6.5 | Example

ᲓᲗᲚ ᲚᲥ, ᲚᲣᲗᲚ ᲚᲥᲥ ᲚᲥ, ᲔᲔᲥᲥᲥ, ᲚᲣᲗᲚ ᲔᲔᲥᲥᲥ ᲡᲚᲚᲥ.  
 ᲓᲗᲚ ᲚᲥ, ᲚᲣᲗᲚ ᲚᲥᲥ ᲚᲥ, ᲔᲔᲥᲥᲥ, ᲚᲣᲗᲚ ᲔᲔᲥᲥᲥ ᲡᲚᲚᲥ.  
 go-NEAR.PAST PR.OTHER, BRANCH wait-NEAR.PAST PR.OTHER, stand\_up-  
 ANAPH\_SUB.PAST,JOIN chase-ANAPH\_SUB.PAST-RIGHT PR.ANAPH\_SUB.ACC-LEFT  
 When they<sup>(i)</sup> arrived, they<sup>(i)</sup> stood up and chased them<sup>(i)</sup> away.

The resulting tree is shown below:





## 7 | Numerals

Unlike Lek-Tsaro, which used a downright unusual numbering system, Middle Rymakonian uses base 16 consistently.

### 7.1 | Irregular numerals

Here are the numerals that do not follow the usual pattern, before phonorun reduction:

Table 7.1: Irregular numerals.

base 10	base 16	word
0	0	μ3D
1	1	a3l
2	J	fij
3	?	Ω <sup>4</sup> on
4	0	a <sup>4</sup> μ
5	†	φcJ
6	ƒ	Dye
7	9	βcJ
8	Δ	dən
9	L	l <sup>1</sup> ed
10	F	b3n <sup>9</sup>
11	7	nə
12	£	le
13	#	j <sup>a</sup> cd
14	A	yin
15	V	f <sup>4</sup> el
16	10	.μ
17	11	l <sup>1</sup> el
18	1J	l <sup>1</sup> ela3l
19	1?	l <sup>1</sup> el <sup>1</sup> fij
33	J1	aDil
34	JJ	Dil
119	99	Dlβ
256	100	f <sup>4</sup> l <sup>1</sup> a3
323	10?	l <sup>1</sup> izil <sup>1</sup> in

base 10	base 16	word
4199	10f9	l.ɔlə

Note that digits above 9 use capital haem letters.

## 7.2 | Double-digit numerals

Numerals of the form  $x \cdot 16$  with  $1 \leq x < 16$  are formed by concatenating  $\langle .\mu \rangle x$ . For instance,  $128 = 80_{16}$  is written  $\langle .\mu d \rangle n \rightarrow \langle .\mu \partial n \rangle$ .

Numerals for integers of the form  $x \cdot 16 + y$  with both  $x$  and  $y$  between 1 and 15, inclusive, and not listed in table 7.1, are formed by concatenating  $x \langle \mu \rangle y \langle \mu \rangle$  (before PR). For instance,  $89 = 59_{16}$  is written  $\langle \varphi c j \mu l \partial \mu \rangle \rightarrow \langle \varphi c j \mu l \partial \mu \rangle$ .

## 7.3 | Numerals up to 4096

Numerals for integers of the form  $x \cdot 256 + y$  with  $0 \leq x < 16$  and  $0 \leq y < 256$ , and not listed in table 7.1, are formed by concatenating  $y \langle \mu l \partial \rangle x$ . This is done after phonorun reduction. For instance,  $2018 = 7E2_{16}$  is written  $\langle \varphi i n \mu s i j \mu l \partial \mu l \partial \mu l \rangle$ .

Note that there is no special case for  $y = 0$ ;  $512 = 200_{16}$  is written  $\langle \mu \partial \mu l \partial \mu l \partial \mu l \rangle$ .

## 7.4 | Larger numerals

Multiples of 4096 (up to 65536) are written by concatenating  $\langle .l \rangle x$  before phonorun reduction:  $8192 = 2000_{16}$  is written  $\langle .l \rangle l i j$ . The exception is 4096 itself, which is  $\langle .l \rangle l e$ .

Then other numerals up to 65536 are written as a conjunctive phrase:  $10000 = 2710_{16}$  is written  $\langle .l \rangle l i j \text{ an } .\mu l \partial \mu l \partial \mu l \rangle - 2 \cdot 4096 + 16 + 7 \cdot 256$ .

## 8 | Derivational morphology

The following methods are used to derive related terms from existing ones.

### 8.1 | Abstraction

Abstraction is a derivation that takes a non-abstract noun and returns the abstract noun representing the concept of the argument. Before pronoun reduction, this formation appends  $\langle -ne \rangle$  or  $\langle -n \rangle$  to the noun. In addition, any final fricatives or lateral fricatives after a vowel are voiced, and a final  $\langle \mu \rangle$  after a vowel is changed to  $\langle z \rangle$ .

Examples:

- $\langle l^l \mu c n \rangle$  *book*  $\rightarrow$   $\langle l^l \mu c n e \rangle$  *literature*
- $\langle l^l \nu \rangle$  *cart*  $\rightarrow$   $\langle l^l \nu n \rangle$  ( $\rightarrow$   $\langle l^l \nu n \rangle$ ) *transportation*
- $\langle \nu c \mu \rangle$  *hand*  $\rightarrow$   $\langle \nu c z n e \rangle$  *technique*

### 8.2 | Dematuration

Dematuration is a derivation that takes a noun and returns a noun of the same class that represents an immature form of the argument (not necessarily a diminutive).  $\langle l^l c - \rangle$  or  $\langle f \theta - \rangle$  are prepended to nouns that begin in  $\langle j \rangle$ ,  $\langle l \rangle$  or  $\langle j^o \rangle$ , or  $\langle j c - \rangle$  or  $\langle j \theta - \rangle$  otherwise. In addition, an initial fricative or lateral fricative before a vowel is voiced, and an initial  $\langle \mu \rangle$  before a vowel is changed to  $\langle z \rangle$ .

Examples:

- $\langle \nu \nu \nu \rangle$  *person*  $\rightarrow$   $\langle j c \nu \nu \nu \rangle$  *child*
- $\langle l^l \nu z \theta \rangle$  *fruit*  $\rightarrow$   $\langle j \theta l^l \nu z \theta \rangle$  ( $\rightarrow$   $\langle j \theta l^l \nu z \theta \rangle$ ) *unripe fruit*
- $\langle j e r l i c n \rangle$  *essay*  $\rightarrow$   $\langle l^l c z e r l i c n \rangle$  *draft*

### 8.3 | Verb-to-noun conversions

To derive a noun from a verb, an affix is added to the verb stem:

Table 8.1: Conversion affixes.

Name	Affix
Agent	–en <sup>φ</sup> / –ɔn <sup>φ</sup>
Patient	–ed / –ɔd
Location	–eɣ / –ɔɣ
Instrument	–ɪɸ
Causer	–en <sup>ɥ</sup> d / –ɔɸd

Then the resulting word is declined as an abstract noun, and phonorun reduction happens. After phonorun reductions, the order of phonoruns is reversed, such that the last phonorun becomes the first, for instance. Finally, the final phonorun is continued by appending <–c> or <–ɸ>.

The following words are derived from <nəb–> (v2) *to steal*:

- Agent: <nəbɔn<sup>φ</sup>> → <ɔn<sup>φ</sup>bnəc> *thief*
- Patient: <nəbɔd> → <nəɔbd> → <bdnəɔc> *stolen goods*
- Location: <nəbɔɣ> → <ɔɣbnəc> *site of theft*
- Instrument: <nəbɪɸ> → <nəɪbɪ> → <bɪɸnəc> *tools used for theft*
- Causer: <nəbɔɸd> → <nəɔbɸd> → <bɸdnəɔ> *person or factor that caused the theft*

Occasionally, a word derived by this method might become lexicalised. In that case, it moves to the noun class of best semantic fit and its declension is regularised (based on the nominative form).

## 8.4 | Verb-to-verb conversions

The main productive verb-to-verb conversion is the *immediate reversal*, which is expressed with an infix <–ɪDZ–> or <–dɜn–> immediately before the ending, depending on whether the last phonorun of the stem (before phonorun reduction) is open or closed, respectively. This conversion is often associated with the lack of volition.

- <nəD–> *sleep* → <nəDɪDZ–> *be woken up forcibly* (→ <ɸcnəDɪDZ–> *wake someone up forcibly*)
- <ɒez–> *ride, board* → <ɒezɪDZ–> *be forcefully ejected from a ride* (→ <ɸcɒezɪDZ–> *eject someone from a ride*)
- <nəɸa–> *hide* → <nəɸadɜn–> *be uncovered* (→ <ɸcnəɸadɜn–> *uncover something*)

## 9 | Names

Names fall into two grammatical categories:

- *Nominal names* act as nouns. They are usually single words.
- *Clausal names* are entire clauses. These names usually refer to places, although a few people have clausal names. In extreme cases, such a name can span multiple clauses.
- *Station names* are used for places where a medium of transportation stops to exchange passengers according to a regular schedule (e. g. a train station or a bus stop). These are verbs.

### 9.1 | Nominal names

These names act as nouns, and they are preceded by a backslash <\>. If the name spans multiple words (as common in foreign names), spaces are escaped by backslashes. No distinction is made between native and foreign names.

Only personal names can stand on their own, and even then, only given or full names. Other names must modify a common noun describing the nature of what is named, in the integral number without definiteness.

Table 9.1: Some examples of nominal names.

Name	Type
\p3ze	Personal (native)
\i33l	Personal (native)
\pedcn	Personal (foreign)
dpepe-\oil.c	Place (foreign)

Native names will usually respect vowel harmony. Children of parents who work in professions demanding physical labour (e. g. bricklaying) will usually have names with back vowels. In contrast, those born to parents of professions that do not demand physical strength (e. g. computer programming) will usually bear names with front vowels.

In addition, native names tend to undergo sound changes from Lek-Tsaro to Middle Rymakonian, but foreign names given when Lek-Tsaro was still spoken retain Lek-Tsaro forms, but with the following vowel replacements (and, of course, orthographic changes) – see table 9.2.

Table 9.2: Lek-Tsaro to Middle Rymakonian correspondences for foreign names.

Middle Rymakonian	From these vowels in Lek-Tsaro
ɪ	ɪ ɔ <sup>e</sup>
e	e e <sup>ɔ</sup> ɔ <sup>ɔ</sup>
c	c c <sup>a</sup>
ɔ	ɔ ə <sup>ɔ</sup>
ə	ə <sup>c</sup> ə

In phonorun reduction, foreign names are not affected by metathesis.

## 9.2 | Clausal names

These names comprise of one or more clauses. Due to the nature of clausal names, they are all considered native. However, almost all except the newest clausal names are frozen and might not be valid clauses in Middle Rymakonian; usually, they are Lek-Tsaro clauses with the vowel replacements outlined in table 9.2.

Most of these names refer to places; personal clausal names are almost always nicknames or such. Orthographically, they are put into square brackets <[]>.

Clausal names are used by saying them as their own clauses, then using an anaphoric pronoun to backreference the entity described by the name in question. The type of anaphoric pronoun used varies from name to name. It might be the anaphoric subject pronoun, the object pronoun or the last-clause pronoun.

We call the *referent* the subject, the object or the verb of the last clause, respectively depending on the type of anaphoric pronoun used to refer to the name. If the referent is a noun, it must be declined in the integral number without definiteness.

Here, as common in maps and such, the referent will be capitalised. However, other contexts that make the type of anaphoric pronoun to use clear do not use this type of capitalisation.

Table 9.3: Some examples of clausal names.

Name	Type	Literal meaning
[AEX4€ dɪɪʔɪ (ɔaɔɪ)]	Place	The trees covered the ground
[Dəʔɪ ɸXEDƏ ɲɔɪ-\\lenɲe]	Place	The city remembers the Šedri (Šedrý) star
[ac ɲɪfə-Dɪ jɔɪ jəʔ jʰɪ.en-Dɪ jɔɪ ɲɪne, ɸoejɔ.el ɸXEDƏD]	Place	The city was founded by the warrior of the sun and the wizard of the moon
[Dezi \\ʃETɔF jɔɪ-l'eɪ]	Personal	Gulto takes care of 17 foxes

An example of usage:

[Dəʔɪ dɲede ɲɔɪ-\\lenɲe], n.ɪ bɪnen-cɪjɲɪ jʰe dɪDɪZɪ ɲɪ.  
 (name), in\_time year-next go-ANAPH\_SUB DEF~person PR.ANAPH\_SUB  
 He will go to Muta Pröme Ryk-Šedrý next year.

### 9.3 | Station names

These names describe places where a medium of transportation stops to exchange passengers according to a regular schedule (e. g. a train station or a bus stop). Station names are (usually first- or second-conjugation) verbs whose base meaning is (S) *goes to \$station via \$transportation*. They are marked with a per cent sign <%> before the name.

Unlike with other verbs, the immediate reversal does not necessarily suggest a lack of volition. The reversal of a station name, rather, simply means (S) *goes from \$station*.

The other derivations have the following meanings:

Table 9.4: Derivations of station names.

	(base)	Immediate reversal
(base verb)	(S) goes to \$station	(S) goes from \$station
Agent	A passenger going to \$station	A passenger going from \$station
Patient	(undefined)	
Location	The \$path to \$station	The \$path from \$station
Instrument	The \$transportation going to \$station	The \$transportation going from \$station
Causer	The driver of said \$transportation	

In addition, the aspect marker <-J> changes the meaning from (S) *goes from \$station* to (S) *boards the \$transportation to \$station*. Similarly, combining both the immediate reversal infix and the perfect aspect marker yields (S) *boards the \$transportation from \$station*.

There are several ways a station name can be derived:

- From a nominal name: if it does not end in a verbal affix, then one is attached: e. g. <dpede-\oili.c> → <%oili.-> (v3).
- From a clausal name wherein the referent is S or O: Let C be the nonreferent among S and O (or empty if none). Then the station name comes from a compound of C-V: <[dafi φXEDE μcl-\leqpe]> → <%μcl-\leqpe-daf-> (v2). (In a name with multiple clauses, ignore those that do not contain the referent.)
- From a clausal name with V as the referent: If neither S nor O exists, let C be empty. If S xor O is a “common word”, then let C be the one that is not common. Otherwise, let C be S. Then the station name comes from a compound of C-V: <[AEXψ€ dñlñl fcacl]> → <%dñlñl-nepa-> (v3).

#### 9.3.1 | Common words

“Common words”, in the context of deriving station names, include:

- Numerals
- Sentient nouns that are neither personal names nor modified by <=Dl>
- <dñlñl> *ground*, <fcacl> *tree*, <lñlñl> *stone* or <fñlñl> *river*, as well as their Lek-Tsaro equivalents in frozen names, not modified by any nominal names (but names for a specific kind of tree, etc., e. g. <ncjal> *birch* are not common words)





## 10 | Calendar

Domain II, which contains *Rymako*, has a day that is 26.99410 hours long. Other figures are given in terms of local days:

Table 10.1: Astronomical measures for Domain II.

Period	Length in local days
Local (synodic) day	1.00000
Sidereal day	0.99699
Tropical year ( $l_y$ )	301.94714
Sidereal year	302.03719
Synodic month ( $l_m$ )	30.80152
Sidereal month	27.95032

### 10.1 | Tides

In Domain II, the offset of the sea level due to the tide can be modeled by the following equations:

$$y = y_s + y_m \quad (10.1)$$

$$y_s = A_s \cdot (1 + A_{sa} \cdot \cos(\tau \cdot t)) \cdot \cos(2 \cdot \tau \cdot t) \quad (10.2)$$

$$y_m = A_m \cdot \left(1 + A_{ma} \cdot \cos\left(\frac{\tau \cdot t}{l_m}\right)\right) \cdot \cos\left(\frac{2 \cdot \tau \cdot (1 - l_m) \cdot t}{l_m}\right) \quad (10.3)$$

where:

$$\tau = 2 \cdot \pi$$

$$A_s \approx 0.675$$

$$A_{sa} \approx 0.0532$$

$$A_m \approx 1.267$$

$$A_{ma} \approx 0.176$$

$y$  = offset of sea level in metres

$t$  = time since HAT in local synodic days

An exact solution to  $dy/dt = 0$  is not known to exist. However, the solutions to this equation can be found numerically. Consult Section ?? for a Sage program to do so.

As the calendar used by Middle Rymakonian uses the high and low tides to count time, it is not synchronised even with days. The basic unit of time in the calendar is the *tidal day*  $\langle \mu 3 \mathfrak{D} 3 \rangle$  ( $l_t$ ) – the amount of time between a high tide and the second high tide thereafter, which is, on average, 1.03356 local synodic days, but can vary considerably. Thus:

$$l_m/l_t \approx 29.80148 \quad (10.4)$$

$$\approx 4053/136 \quad (10.5)$$

$$l_y/l_m \approx 9.80299 \quad (10.6)$$

$$\approx 7215/736 \quad (10.7)$$

This suggests that:

1. most months will have 30 days, but every 136 months, 27 months will have only 29.
2. most years will have 10 months, but every 736 years, 145 years will have only 9.

## 10.2 | Months

Months follow a 136-month cycle wherein the  $5n + 2$ -numbered months (zero-indexed,  $n \in \mathbb{N}$ ) have 29 days and the other months have 30.

The names of months, on the other hand, are determined from their positions relative to the first month of the year:

Table 10.2: The months of the year.

#	Name
0	ææbæ
1	μ3.εδ
2	ριφσλ
3	δζζγι
4	λδεζιδ
5	ςσδζς
6	η⁴ζζες
7	λσβσλι
8	βσδσλ
9*	.cζεζι

## 10.3 | Days within a month

Tidal days have their own names, as follow:





## 11 | Quoting direct speech

Direct speech is not quoted as-is, but rather it is converted into a stack code. A *quotative* begins with  $\langle \text{ldn} \rangle$ . Quotatives are not affected by phonorun reduction.

### 11.1 | Representation of binary data

Nine bits are represented with a syllable. Consider  $0 \leq n < 512$ . Let  $r = n \bmod 6$  and  $q = \lfloor n/6 \rfloor$ . Then  $r$  corresponds to the vowel  $g(r) = (\text{i}, \text{c}, \text{ɜ}, \text{e}, \text{ə}, \text{o})[r]^1$ .  
 $q$  corresponds to one of 86 consonant clusters. Let

$$P = (\text{f}, \text{j}, \text{d}, \text{a}, \text{ɹ}, \text{l}, \text{ɔ}, \text{b}, \text{z}^{\text{o}}, \text{u}, \text{ɸ}, \text{a}^{\text{h}}, \text{j}^{\text{h}}, \text{a}^{\text{l}}) \quad (14 \text{ entries}) \quad (11.1)$$

$$N = (\text{n}, \text{n}^{\text{u}}, \text{ɖ}, \text{n}^{\text{ɸ}}) \quad (4 \text{ entries}) \quad (11.2)$$

$$L = (\text{ɥ}, \text{l}, \text{ɥ}, \text{o}) \quad (4 \text{ entries}) \quad (11.3)$$

$$M = (\text{f}^{\text{l}}, \text{ɸ}, \text{s}^{\text{l}}, \text{l}, \text{f}^{\text{u}}, \text{s}, \text{o}^{\text{u}}) \quad (7 \text{ entries}) \quad (11.4)$$

$$(11.5)$$

Then:

$$f(q) = \begin{cases} \cdot & \text{if } q = 0 \\ P[q - 1] & \text{if } 1 \leq q < 15 \\ N[q - 15] & \text{if } 15 \leq q < 19 \\ P[\lfloor (q - 19)/4 \rfloor] \sim L[(q - 19) \bmod 4] & \text{if } 19 \leq q < 75 \\ L[q - 75] & \text{if } 75 \leq q < 79 \\ M[q - 79] & \text{if } 79 \leq q \end{cases} \quad (11.6)$$

where  $\sim$  denotes string concatenation. Therefore, the resulting syllable is  $g(r) \sim f(q)$ .

Multi-byte numbers are represented in little-endian.

### 11.2 | The stack

The stack is a LIFO data structure with its entries being either an *atom* or a result from an operation. An atom is one of the following:

<sup>1</sup>We use zero-indexing consistently.

- A root, consisting of a string of MR characters and an integer between 0 and 7, inclusive.
- A (computable) real number.
- A pronoun, consisting of a person (near = 0, far = 1, other = 2, anaphoric subject = 4, anaphoric object = 6, generic = 7) and number.

Root atoms are untyped (they can be cast to different parts of speech). The integer part of the root depends on the part of speech it is used as:

- In nouns, this is the noun class (sentient = 0, non-sentient = 2, measure = 3, edible = 5, inedible = 6, abstract = 7).
- In verbs, this is the conjugation pattern (first conjugation = 0, second conjugation = 1, third conjugation = 2).
- In descriptors, this indicates whether the root contains front vowels (0) or back vowels (4).
- The root atom can be cast to an adposition, conjunction or seqid, but in this case the integer part is ignored.

Results from operations (e. g. 001<sub>8</sub>, which pushes a noun) are typed. Attempting to use such a value is a syntax error.

### 11.3 | Bytecode

Note that the bytecode is not *purely* bytecode; some sections are composed of raw Middle Rymakonian characters.

Table 11.1: Bytecodes of direct quotes.

Opcode (octal)	Additional parameters	Effect
000	none	No operation.
001	none	Pop $a$ from the stack and then $n$ from the stack. Treating $n$ as a noun and $a$ as an adjective, push the noun $[n, a]$ to the stack.
002	none	Pop $n_a$ from the stack and then $n$ from the stack. Treating $n$ as a noun and $n_a$ as a noun, push the noun $[n, n_a]$ to the stack.
003	none	Pop $n_a$ from the stack and then $n$ from the stack. Treating $n$ as a noun and $n_a$ as a noun, push the noun phrase $\langle n - \text{DI } n_a \rangle$ to the stack.
004 – 007	none	If bit 1 of <i>opcode</i> is set, then pop $o$ from the stack. If bit 0 of <i>opcode</i> is set, then pop $s$ from the stack. Pop $v$ from the stack. Treating $s$ and $o$ as nouns and $v$ as a verb, push the clause $[v, s, o]$ to the stack.

Opcode (octal)	Additional parameters	Effect
010 – 017	$n : \text{Byte}, \text{root} : \text{Char}[n]$	Reads a size $n$ of one byte and then $n$ raw Middle Rymakonian characters $\text{root}$ . Pushes $\text{Root}(\text{root}, \text{opcode} \bmod 8)$ onto the main stack.
020	$n : \text{Byte}$	Push a pronoun onto the stack. The three least significant bits denote the person and bit 3 denotes number (non-dual = 0, dual = 1).
021	$x : \text{Byte}$	Pop a noun $n$ from the stack and push it back with the following properties depending on the various bits of $x$ : <ul style="list-style-type: none"> <li>• Bit 0: Inverse if set, direct if not set.</li> <li>• Bit 1: Definite if set, indefinite if reset.</li> </ul>
022	$x : \text{Byte}$	Pop $v$ from the stack as a verb and push it back with the following properties depending on the various bits of $x$ : <ul style="list-style-type: none"> <li>• Bit 0: Past if set, nonpast if reset.</li> <li>• Bit 1: Atelic if set, telic if reset.</li> <li>• Bit 2: Negative if set, positive if reset.</li> <li>• Bit 3: Interrogative if set, affirmative if reset.</li> </ul>

Opcode (octal)	Additional parameters	Effect
023	<i>x</i> : Byte, <i>y</i> : Byte, <i>z</i> : Byte	<p>Pop <i>v</i> from the stack as a verb and set its associated aspects according to the various bits of <i>x</i>, <i>y</i> and <i>z</i>:</p> <ul style="list-style-type: none"> <li>• <i>x</i>: <ul style="list-style-type: none"> <li>– Bit 0: Imperfect</li> <li>– Bit 1: Perfect</li> <li>– Bit 2: Gnostic</li> <li>– Bit 3: Deontic necessity</li> <li>– Bit 4: Deontic potential</li> <li>– Bit 5: Unexpected</li> <li>– Bit 6: Left branch</li> <li>– Bit 7: Right branch</li> <li>– Bit 8: (unused)</li> </ul> </li> <li>• <i>y</i>: <ul style="list-style-type: none"> <li>– Bit 0: Interrupted</li> <li>– Bit 1: Deontic recommendation</li> <li>– Bit 2: Gnostic dubitative</li> <li>– Bit 3: Epistemic necessity</li> <li>– Bit 4: Epistemic potential</li> <li>– Bit 5: Comparative</li> <li>– Bit 6: Temporal universal</li> <li>– Bit 7: Temporal non-universal</li> <li>– Bit 8: Spatial universal</li> </ul> </li> <li>• <i>z</i>: <ul style="list-style-type: none"> <li>– Bit 0: Nonexclusive subject</li> <li>– Bit 1: Spatial non-universal</li> <li>– Bit 2: Nonexclusive object</li> <li>– Bit 3: Nonexclusive argument</li> <li>– Bit 4: Set if both temporal and spatial aspects exist and the spatial marker comes first; otherwise, this bit is not set.</li> </ul> </li> </ul>



Opcode (octal)	Additional parameters	Effect
024	$x : \text{Byte}$	<p>Push a verb <math>v</math> such that <math>[v, a, b] \equiv \text{cmp}(a, b, f, \sqsupset)</math>, where the free variables are set according to the bits of <math>x</math>:</p> <ul style="list-style-type: none"> <li>• Bit 0: set if <math>f</math> refers to the anaphoric object, reset if anaphoric subject.</li> <li>• Bit 1 – 4: index into <math>(&gt;, &lt;, =, \geq, \leq, \neq, \approx, \gg, \ll)</math> for <math>\sqsupset</math>.</li> </ul>
025	nothing	Pop $o$ as an adjective and $s$ as a noun and push the clause $[j-, s, o]$ .
026	nothing	Pop $o$ as a noun and $s$ as a noun and push the clause $[j-, s, o]$ .
030	nothing	Push the last-clause pronoun.
031	nothing	Push the second-to-last-clause pronoun.
040	none	Pop a noun $n_p$ , an adposition $p$ and another noun $n$ . Then push $n$ modified by $[p, n_p]$ .
041	none	Pop a noun $n_p$ , an adposition $p$ and a verb $v$ . Then push $v$ modified by $[p, n_p]$ .
042	none	Pop an adposition $p$ and push its negated version.
043	none	Pop a conjunction $c$ and two nouns $n_2$ and $n_1$ . Push the compound NP $[n_1, c, n_2]$ .
050	none	Pop a verb $v$ and push its transitivised version on the stack.
051	none	Pop $v$ from the stack and then $n$ from the stack. Treating $v$ as a verb and $a$ as an descriptor, push the verb $[b, a]$ to the stack.

Opcode (octal)	Additional parameters	Effect
060	$x : \text{Byte}$	Push a connector according to the bits of $x$ : <ul style="list-style-type: none"> <li>• Bits 0 – 2: the type of the connector (0 = ordinary, 1 = analogous, 2 = subversive, 3 = augmentative, 4 = explanatory, 5 = conditional).</li> <li>• Bit 3: the parity (0 = even, 1 = odd).</li> <li>• Bit 4: if set, pop a seqid from the stack. Otherwise, do not pop anything and consult bits 5 – 8 instead.</li> <li>• Bits 5 – 8: one of 16 intrinsic seqids. These depend on the dialect, but in the standard dialect these are <math>\langle \imath \ d \ e \ f \ c \ \Omega \ \wp \ \Theta \ \rangle \ z \ \imath^l \ u \ j^h \ \imath \mu \ d\mu \rangle</math>. Unused if bit 4 is not set.</li> </ul>
061	none	Pop a connector $c$ and a clause $\alpha$ and push $\alpha$ with $c$ attached.
100	none	Pop a literal and push it with information that it is a nominal name.
700	$x : \text{Byte}[4], a : \text{Byte}[x]$	Push the two's-complement integer represented by $a$ to the stack.
701	none	Pop $b$ and $a$ from the stack as numbers and pushes $a + b$ .
702	none	Pop $b$ and $a$ from the stack as numbers and pushes $a - b$ .
703	none	Pop $b$ and $a$ from the stack as numbers and pushes $a/b$ .
704	none	Pop $b$ and $a$ from the stack as numbers and pushes $a \cdot b$ .

## 11.4 | Example

We shall translate the following:

Impressed by her confidence, I said, “Having known Vladimir for nearly 12 years, twice as long as you have, I found it surprising at the time, though not anymore, that he had let Maria, despite her having been ridiculed by her brothers for daring to listen to him, either take the opportunity to quit the Assembly without repercussions or announce there the following: ‘We shall no sooner compensate all of you than let the man

who had allowed the criminal we had let the chairman capture to escape return to his proper role of lifelong slavery.”

Let us first work on the deepest level of nesting:

‘We shall no sooner compensate all of you than let the man who had allowed the criminal we had let the chairman capture to escape return to his proper role of lifelong slavery.’

This is approximately equivalent to stating “if we compensate all of you, then we would have let the man ...”. This requires the use of the conditional connector between the two main clauses. Let us look at the right clause:

... let the man who had allowed the criminal we had let the chairman capture to escape return to his proper role of lifelong slavery.’

We can break this down into a series of simple clauses:

- The chairman captured the criminal.
- We had let the above happen.
- The criminal escaped.
- The man had allowed the above to happen.
- The man would returned to his proper role of lifelong slavery.
- We would let the above happen.

The ASTs for all seven clauses are shown in figure 11.1.

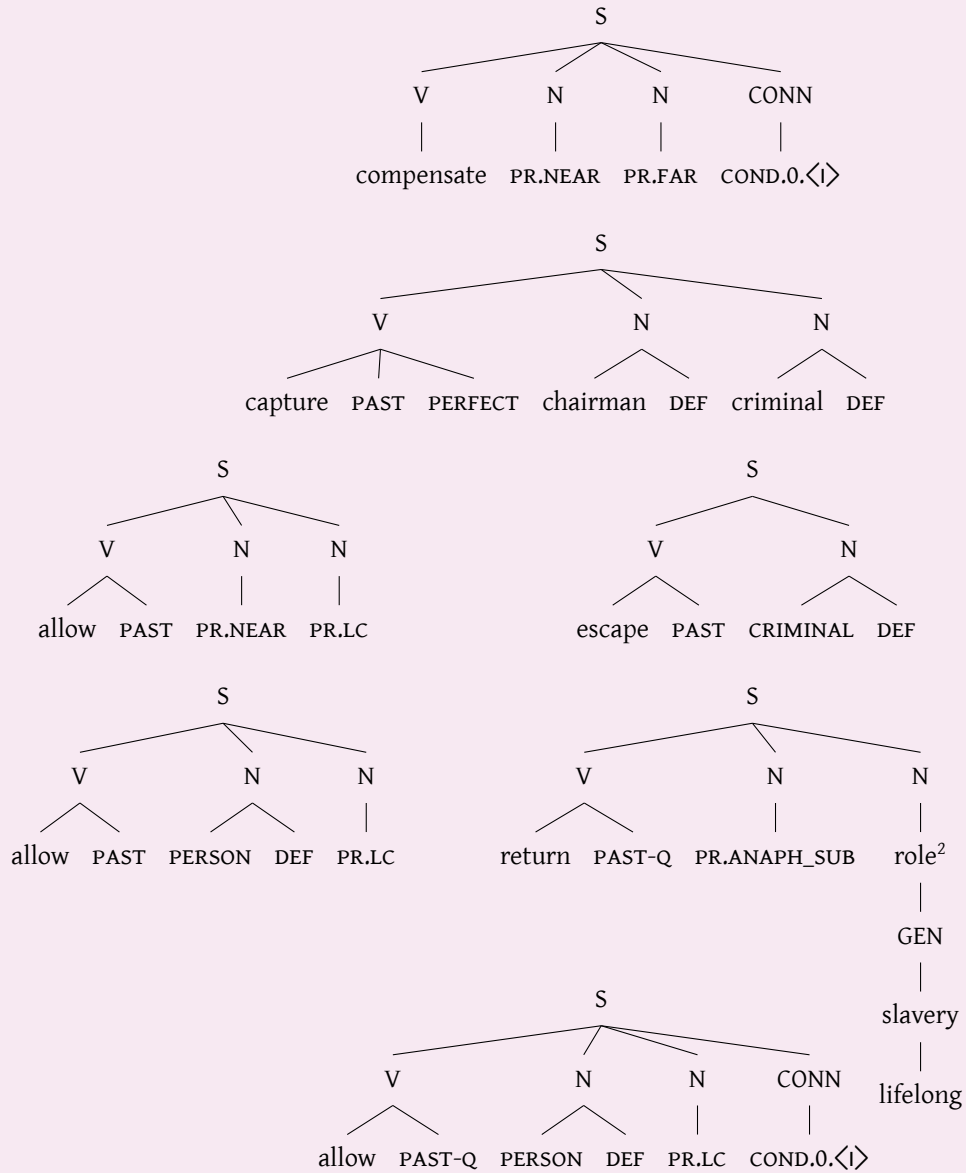
The seven clauses together thus form the word  $\langle \text{ll}\alpha\text{f}\text{z}.\text{enebd}\text{i}.\text{c}\text{j}\alpha.\text{i}\text{j}\alpha.\text{c}\text{f}\text{cb}\text{i}.\text{c}\text{b}\text{c}\text{f}\text{e}.\text{ea}\text{z}\text{d}\text{i}.\text{cdc}.\text{z}.\text{i}.\text{i}\text{f}\text{z}\text{f}\text{cn}\text{i}\text{b}\text{e}\text{j}\alpha\text{n}^\text{p}\text{j}\alpha.\text{z}\text{f}\text{z}.\text{c}\alpha^\text{l}\text{c}\text{f}\text{cn}^\text{p}\text{j}\alpha.\text{z}\text{f}\text{c}\text{f}\alpha.\text{c}\text{h}\text{d}\text{i}.\text{c}\text{j}\alpha.\text{i}\alpha\text{i}\text{f}\text{c}\text{f}\text{z}.\text{ef}\text{i}\text{p}\text{d}\text{i}.\text{c}\text{f}\text{z}.\text{c}\alpha^\text{l}\text{c}\text{f}\text{cn}^\text{p}\text{j}\alpha.\text{z}\text{f}\text{i}\text{f}\alpha.\text{c}\text{h}\text{d}\text{i}.\text{c}\text{f}\text{z}.\text{e}\text{d}\text{i}\text{z}\text{i}\text{j}\alpha.\text{z}\alpha\text{i}\text{f}\text{c}\text{f}\alpha.\text{c}\text{d}\text{d}\text{i}\text{f}\text{e}\text{j}\alpha.\text{e}\text{j}\alpha.\text{c}\text{j}\text{i}\alpha\text{l}\text{j}\alpha.\text{e}\alpha\text{i}\text{f}\text{i}\text{j}\alpha.\text{e}\alpha\text{n}\alpha\text{n}.\text{c}.\text{ef}\text{c}\text{f}\alpha.\text{c}\text{h}\text{d}\text{i}\text{f}\text{e}\text{f}\text{z}.\text{e}\text{d}\text{i}\text{z}\text{i}\text{j}\alpha.\text{z}\alpha\text{i}\text{f}\text{cb}\text{i}.\text{c}\text{b}\text{c}\rangle$ . (See 7\_1/listings/example-nestedquote.qasm for how this was derived.)

Now we work on the middle clause, which can be unfolded as:

- I have known Vladimir for 12 years.
- You have known Vladimir for  $12/2 = 6$  years.
- Maria could have taken the opportunity to quit the Assembly without repercussions.
- She could have announced (...).
- Vladimir let either one of the above to happen. (1)
- She dared to listen to Vladimir.
- Therefore, she was ridiculed by her brothers. This was done despite (1).
- I found the above surprising.
- I do not find it surprising right now.

[illegible]

Figure 11.1: ASTs for the clauses at the deepest nesting level.





## Romanisation

In this text, the romanisation is used only to transcribe names into English. Whenever possible, the hacmisation should be used.

Table 2: The consonants of Middle Rymakonian.

	Bilabial	Dental	Alveolar	Palatal	Velar	Glottal
Nasal	m		n	ɲ	ŋ	
Plosive	p b		t d	tʃ dʃ	k g	ʔ
Fricative	f v	θ ð	s z	ʃ ʒ	h ɦ	
(coarticulated)	fh vɦ	ɸh ðɦ		fʃ vʒ		
(whistled)			ʂ ʐ			
Affricate			c	č		
Lateral fricative			ɬ ɮ			
Approximant			r	j	w	
Lateral approximant			l			
Tap			ɾ			

Table 3: The vowels of Middle Rymakonian.

	Front	Central	Back
High	i	y	u
Mid	e		o
Low		a	

The digraphs <fh vɦ ɸh ðɦ fʃ vʒ ts tʃ> correspond to coarticulated consonants and affricates. An apostrophe can be placed between the two letters if this is not desired.

Rod signs are represented by the Arabic digits <1 2 3 4 5 6 7 8> attached to the end of the verbs they encompass. Halfway rod signals are represented by subscript digits <₄>. Transitions from the ninth rod signal are written <⁹⁷ ⁹⁸>. Proper words are preceded by a backslash <\>.

<ɲ> should be capitalised as <Ŋ> only if one can depend on the majuscule glyph appearing like an N with a hook. Otherwise, it should be spelled <Ng>.





## A | List of glossing abbreviations

An asterisk indicates that this value is unmarked.

Abbr	Definition
<i>Case</i>	
NOM*	Nominative
ACC	Accusative
GEN	Genitive (this is a clitic and not a case <i>per se</i> )
<i>Number</i>	
DIR*	Direct
INV	Inverse
ND*	Nondual
DU	Dual
<i>Person</i>	
NEAR	Near
FAR	Far
OTHER	Other
ANAPH_SUB	Anaphoric subject
ANAPH_OBJ	Anaphoric object
GENERIC	Generic
<i>Definiteness</i>	
INDEF*	Indefinite
DEF	Definite
<i>Tense</i>	
NONPAST*	Nonpast
PAST	Past
<i>Tellicity</i>	
TELIC*	Telic
ATELIC	Atelic
<i>Polarity</i>	
POS*	Positive
NEG	Negative
Q	Interrogative
<i>Aspect and connector type names are not abbreviated.</i>	
<i>Connector parity</i>	
0	Even
1	Odd
<i>Comparisons</i>	

Abbr	Definition
CMP	Comparative
<i>Comparators are glossed using their respective operator symbols.</i>	
<i>Transitivisation</i>	
TRANS	Transitivised
<i>Tree mode</i>	
BRANCH	Create a new branch ( $\langle n^u \uparrow \rangle$ )
JOIN	Join two branches ( $\langle n^u \Delta \rangle$ )
LEFT	Refer to left branch ( $\langle - \uparrow \rangle$ )
RIGHT	Refer to right branch ( $\langle - \Delta \rangle$ )

## B | Quoting assembler

This chapter describes a mnemonic language to assist in the process of quoting as described in chapter 11.

Table B.1: Syntax corresponding to operations of direct quoting. Square brackets denote optional parameters, and pipe characters denote alternation. Non-literals (e. g. parameters) are shown in *italics*. Defaults are shown in **bold**.

Opcode	Syntax	Notes
000	<b>nop</b>	
001	<b>modadj</b>	
002	<b>modnoun</b>	
003	<b>modgen</b>	
004 – 007	<b>sentence</b> [ <b>s</b>   <b>ns</b> ] [ <b>o</b>   <b>no</b> ]	<b>s</b> denotes subject and <b>ns</b> denotes no subject from the stack. <b>o</b> and <b>no</b> are analogously defined for objects.
010 – 017	<b>literal</b> <0–7 v 1–3  <b>nsent</b>   <b>nnonsent</b>   <b>nmeas</b>   <b>nedib</b>   <b>ni</b> <b>ned</b>   <b>nabst</b>   <b>dfront</b>   <b>dback</b> > <i>literal</i>	The literal is surrounded by double quotes and uses romanisation from hacm. Superscript letters are denoted by caret characters.
020	<b>pronoun</b> < <b>near</b>   <b>far</b>   <b>other</b>   <b>anaph_sub</b>   <b>anaph_obj</b>   <b>generic</b> > [ <b>nd</b>   <b>du</b> ]	
021	<b>setnopt</b> [ <b>dir</b>   <b>inv</b> ] [ <b>indef</b>   <b>def</b> ]	
022	<b>setvopt</b> [ <b>nonpast</b>   <b>past</b> ] [ <b>telic</b>   <b>atelic</b> ] [ <b>pos</b>   <b>neg</b> ] [ <b>nq</b>   <b>q</b> ]	

Opcode	Syntax	Notes
023	setaspect [imp] [perf] [gnom] [deon_nec] [deon_pot] [unexp] [left] [right] [inter] [deon_rec] [gnom_dub] [epis_nec] [epis_pot] [cmp] [tmpu] [tmpnu] [spcu] [nxs] [spcnu] [nxo] [nxa] [spcfirst]	
024	cmp <s o> <g l e ge le ne ae gg ll>	
025	copadj	
026	copnoun	
030	pronounlc	
031	pronounllc	
040	adpton	
041	adptov	
042	negadp	
043	conj	
050	trans	
051	modverb	
060	conn <ordinary analogous  subversive augmentative  explanatory conditional> <0 1> seqid [noimm]	If <i>seqid</i> is one of the intrinsic seqids, then the instruction is converted to not pop a seqid unless the noimm option is set. If a default seqid is not used and <i>seqid</i> is not –, then a literal instruction is generated before this instruction.
061	attachconn	
100	setnname	
700	pushint <i>a</i>	
701	add	
702	sub	
703	div	
704	mul	

## C | Dictionary

---

An entry looks like this:

ᄒᄒᄒ– v1 (S) eats (O)

From left to right:

1. The entry – the Middle Rymakonian term listed.
2. The part of speech of the corresponding entry:
  - *n* – a noun
    - *-d-* – inherently dual
    - *-sent* – sentient noun
    - *-nonsent* – nonsentient noun
    - *-meas* – measure noun
    - *-edib* – edible noun
    - *-ined* – inedible noun
    - *-abst* – abstract noun
  - *v1, v2, v3* – first-, second- and third- conjugation verbs
  - *desc* – a descriptor
  - *pp* – a preposition
  - *-(b)* – this entry has only neutral vowels but acts as if it had back vowels
  - *-(ŋ)* – this entry came from a word that started with <ŋ<sup>0</sup>–> and thus certain prefixes will revert it back
3. The definition – the gloss for the corresponding entry.
  - (S) – subject
  - (O) – direct object
4. If applicable, any special grammatical or semantic notes for this term.
5. Optionally, examples of usage.

| .

.ᄒᄒᄒ– *desc(b)* dare to

.ṣṣṣṣṣṣ<sup>h</sup>– v1 (S) returns to (O) (literally)

.ṣṣṣṣṣṣ– desc new, next

.ṣṣṣṣṣṣ– desc hot

.ṣṣṣṣṣṣ nabst confidence

.ṣṣṣṣṣṣ nnonsent house

## | ṣ

ṣṣṣṣṣṣ nsent child (young person)

ṣṣṣṣṣṣ nnonsent cloud

ṣṣṣṣṣṣ– v1 lose an object

ṣṣṣṣṣṣ– v1 (S) loses, frees (O); (O) escapes

ṣṣṣṣṣṣ nnonsent tree

ṣṣṣṣṣṣ nnonsent bed

ṣṣṣṣṣṣ nnonsent bedroom

ṣṣṣṣṣṣ nedib ice

ṣṣṣṣṣṣ nedib frost

ṣṣṣṣṣṣ nedib beef

## | ṣ

ṣṣṣṣṣṣ nnonsent river

ṣṣṣṣṣṣ– v1 (S) fights (O)

ṣṣṣṣṣṣ– v3 (S) falls on (O)

ṣṣṣṣṣṣ– v3 (O) breaks (S)

ṣṣṣṣṣṣ nnonsent flower

ṣṣṣṣṣṣ nsent who?

## | ṣ

ṣṣṣṣṣṣ– desc handsome, beautiful

ṣṣṣṣṣṣ– v1 (S) follows (O)

ṣṣṣṣṣṣ nnonsent fruit

## | ṣ

ṣṣṣṣṣṣ nnonsent window

ṣṣṣṣṣṣ in, on, at (location)

ṣṣṣṣṣṣ– v1 (S) lives in (O)

ṣṣṣṣṣṣ nnonsent stairs

ṣṣṣṣṣṣ n path, course (of a moving object)

ṣṣṣṣṣṣ nmeas 1/23 of a tidal day

ṣṣṣṣṣṣ nnonsent moon

ṣṣṣṣṣṣ nined stone

ṣṣṣṣṣṣ– desc entire, complete

ṣṣṣṣṣṣ nnonsent tooth

ṣṣṣṣṣṣ– desc old

## | ṣ

ṣṣṣṣṣṣ nnonsent book

ṣṣṣṣṣṣ– v1 ridicule

ṣṣṣṣṣṣ nabst joke

ṣṣṣṣṣṣ nnonsent leaf

ṣṣṣṣṣṣ nnonsent spark

ṣṣṣṣṣṣ nnonsent cart

ṣṣṣṣṣṣ– v1 transgress, commit a crime

## | ṣ

ṣṣṣṣṣṣ– v1 (S) shoots an arrow to (O)

## | ṣ

ṣṣṣṣṣṣ nedib soup

ṣṣṣṣṣṣ nnonsent fish

## | ṣ

ṣṣṣṣṣṣ v3 copula

ṣṣṣṣṣṣ– v3 (S) is (O) (O) can also be the compounding form of the descriptor.

ṣṣṣṣṣṣ nabst role (connotation of normalcy)

ṣṣṣṣṣṣ nabst dawn, wee hours

ṣṣṣṣṣṣ– v1 (S) describes (O)

ṣṣṣṣṣṣ nnonsent land, country

ṣṣṣṣṣṣ– v1 (S) is worried by (O)

ṣṣṣṣṣṣ nsent essay

ṣṣṣṣṣṣ nnonsent fox

## | ṣ

ṣṣṣṣṣṣ nsent magician

ṣṣṣṣṣṣ– v3 (S) creates, makes (O)

ṣṣṣṣṣṣ nabst how many?

## | ṣ

ṣṣṣṣṣṣ toward

ṣṣṣṣṣṣ– v1 (S) goes toward (O)

ṣṣṣṣṣṣ written by

## | n

n.l pp in, on, at (time)  
 n.p pp through  
 nqizi nnonsent cat  
 ni.- v3 (S) waits for/until (O), temporal verb, if  
 ni.ez- v3 (S) covers, spans (O)  
 nibəjən<sup>φ</sup> nanim chairperson  
 ncj nnonsent face  
 ncja nnonsent birch  
 ncd- v3 (S) dances around (O)  
 ne pp for (some period of time)  
 neuc nined fire  
 neb- v1 (S) gives something to (O), (S) rewards, compensates (O)  
 nepa- v3 (S) hides from (O)  
 nen- v2 (S) kills (O), (O) dies  
 nəb- v2 steal

| n<sup>4</sup>

n<sup>4</sup>cz- v1(η) (S) thinks, ponders about (O)

## | u

ucplijf- v3 leave, resign from (an organisation)  
 uenj- v1 hear, listen to

## | a

an conj and  
 aaij nnonsent stick, rod  
 apen<sup>4e</sup> nnonsent coin  
 azl- v2 (S) intersects (O) meet = paths intersect  
 ac.c nabst centre, origin  
 acjn pp according to  
 acz- v1 (S) shines on (O)  
 acze nabst light  
 aczelinc nabst moonlight  
 aclbid- desc without repercussions  
 aeo- v3 jump  
 aəz- v2 capture, arrest  
 aəlɔ ndsent sibling  
 aəlɛp<sup>s</sup> nnonsent key

| a<sup>l</sup>

a<sup>l</sup>- v3 do what?  
 a<sup>l</sup>ize nabst quote, words, speech  
 a<sup>l</sup>ɔɔn<sup>φ</sup> nsent criminal  
 a<sup>l</sup>əpə nedib potable water

| a<sup>h</sup>

a<sup>h</sup>əɔɔ nabst empathy

## | D

D- v2 (S) returns, regresses to (O) (figuratively)  
 Dl pp far away from  
 Dln pp inside  
 Dɔɔɔp nsent nobleman, gentleman  
 Dɔl- v1 (S) eats (O)  
 Dɔlɔ nabst void  
 Dɔlɔ- desc empty  
 Dɔn nedib rice  
 Dɔz nnonsent corpse  
 Dɔzi nsent person  
 Dɔln nabst organisation, group, assembly  
 Dɔli desc far  
 Dɔni nnonsent border, boundary  
 Dɔa- desc current, now  
 Dɔp ndnonsent hand  
 Dɔzne nabst technique  
 Dɔf- v2 (S) produces, makes (O)  
 Dɔn<sup>φ</sup> nnonsent head  
 Dɔd- v2 (S) dreams of (O)  
 Dɔɔɔn<sup>φ</sup> ndsent parent  
 Delin nmeas hour  
 Dejl- v1 (S) buries (O) in the ground  
 Denf- v1 begin, start  
 Deφ- v1 (S) receives (O)  
 Ded- v3 err, miss  
 Debɔ- v1 (S) resembles (O)  
 Debc nabst shape, structure  
 Debcdelbe nabst grammar  
 Debed nabst dream  
 Dez- v3 (S) raises, takes care of, tends to (O)  
 Dez- v1 (S) boards, rides (O)

des- v3 (S) gives birth to (O), (O) is born (S) is not necessarily the mother; this can be either parent

des- v1 surprise, impressed

del nmeas volume

del- v3 (S) imitates (O)

dəɬɔn<sup>ɸ</sup> nsent servant

dən- v2 know (a person)

dɔn<sup>ɸ</sup>ɔ nnsent rabbit

## Ω

Ωɔɬɔ nnsent wall

Ωyɪ- desc weak

Ωcɫ- v1 (S) hits, strikes (O)

Ωɔz- v2 comparative verb

Ωed- v1 (S) sleeps

Ωed- v1 (S) sleeps

Ωə.ɔn- desc sick, ill

Ωəɔ nnsent pathway, street, road

## Φ

φɫcɫ- v3 (S) lowers their own (O)

φpɪl- v1 (S) raises their own (O)

φpə.ɪ nnsent earth, soil

φpən<sup>ɸ</sup> nnsent frog

## D

dɟ- desc healthy, well (not sick)

dɟ<sup>h</sup>f- v1 (S) mates with (O)

dɸcɟ nabst ability, potential, possibility

dɪɪɟpɪn<sup>ɸ</sup> nnsent mist, fog

dɪɪɟɪ nabst ground, floor

dɪcz- v1 stand, get up

dɪen- desc by opportunity

dɪ pp with (comitative)

dɪ- v3 hold, carry, instrumental verb

dɪyɪ- v1 (S) passes (O)

dɪede nnsent city

dɪɟ- v1 (S) sits at (O)

dɪɟɔ nnsent pecan

dɔf- v2 (S) chases away (O), (O) flees from (S)

dez<sup>u</sup>- v1 disagree, protest, disprove of

delbe nabst sentence, utterance

dɔn<sup>ɸ</sup>ɪ ndnnsent(b) knee

## B

bɪn nmeas year

beɸ<sup>s</sup>ɪ nedib sea

## Y

y- v1 (S) sees (O), because, (S) illuminates (O)

yɪɟ- v1 (S) enslaves (O)

## ɾ

ɾ- v3 (S) allows (O)

## μ

μɪd pp with (colour) hair

μɪ pp with (instrumental)

μy pp in front of

μɪɪ nined grass

μɪ- v1 (S) climbs, rises in (O)

μɪdɔ nnsent hair

μey- v3 (S) spreads (O)

μey- v1 (S) says a phrase (O)

μea- v3 (S) speaks to (O), (S) asks (O)

μellɪ nnsent place

μellɪuc.ɔɪ nnsent hometown, home village, (figurative) Rymako

μəɬɔ nined gold

μəz- v2 (S) ties (O) in a knot

μɔɪ nnsent star

μɔɪ nabst nighttime

μɔɟɔ nnsent cup

μɔɬɔ nmeas (tidal) day (continuous)

## Z

z conj or



| o

oɪβɪ *nabst* slaveryoɪβen<sup>ϕ</sup> *nanim* slave

| l

lɛn- *v3* (S) obeys (O)

| ə

ənən- *desc* lifelong, permanent